

THE KINAESTHETIC TECHNIQUE OF TEACHING NON-READERS:
ITS HISTORY AND PSYCHOLOGY

SCHOOL OF EDUCATION COLLECTION

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TABLE OF CONTENTS

SECTION	PAGE
I. INTRODUCTION.....	1
II. PROBLEM.....	2
III. HISTORY AND STUDIES UP TO 1921.....	4
IV. WORD-BLINDNESS.....	11
Terminology; Theories of Cause; Frequency.	
V. SUMMARY OF REMEDIAL METHODS.....	18
VI. THE KINAESTHETIC METHOD.....	21
Description of the Method.....	24
VII. WORK OF FERNALD AND KELLER.....	27
VIII. RECENT STUDIES RELATED TO THAT OF FERNALD AND KELLER.....	33
IX. PSYCHO-EDUCATIONAL CLINIC, OREGON.....	37
Organization; Basic Courses; Diagnosis of Subjects; Cases.	
X. SUMMARY.....	65
XI. BIBLIOGRAPHY.....	68

SECTION I

INTRODUCTION

Reading is the most important subject in the elementary school curriculum. The mastery of it is essential. It is also the most troublesome of the subjects since pupils in the beginning fail in reading far more frequently than in any other elementary skill.

The reading failures with which we are concerned in this study are the children of normal mentality who, after two or three years in school, have been unable to learn to read by the ordinary methods. Such cases are variously termed: non-readers, word-blind, dyslexia or visual aphasia. The difference, we believe, is one of degree and not of kind.

An historical sketch of congenital word-blindness is also presented here, with illustrative case studies, remedial procedures used, and records of improvement, not only in reading ability, but in general scholastic achievement which follows the elimination of reading difficulties. And in particular, the kinaesthetic method as an effective remedial teaching procedure in reading, is given in some detail as it has been successfully used in general and also in the Psycho-Educational clinic at the University of Oregon.

SECTION II

PROBLEM

Educators, administrators, and teachers, in fact all those who are interested in the normal scholastic progress of children, have long been conscious of the too great percentage of reading failures among children who are normally endowed mentally. Many of these failures have been aided and their disability overcome by giving them individual attention.

The method commonly used has been the traditional and formal appeal to the visual type of imagery. The few who are not able to learn to read by means of any of the variations of the visual method constitute our problem. These individuals, as previously stated, are of at least normal mentality and, barring any irremedial sensory defect, can learn to read. Only recently have psychologists and educators made studies and experiments in an earnest effort to help such individuals broaden their knowledge and experiences through reading.

Of all the known methods of teaching the word-blind, aphasic, or non-reader to read, the one which seems to have been most successfully used is the hand and throat kinaesthetic method. From the experience of various experimenters cases are

presented to show that the method, rightly used, succeeds and that the newly acquired reading skills are permanent.

The material on which the study is based has been gathered from the recorded experience and findings of medical men, neurologists, physiologists, psychologists, and teachers. Their contributions have been used in an attempt to acquaint the reader with the condition and its common characteristics, the theories of its cause and the principles on which are based the technique by which persons so afflicted may learn to read.

SECTION III

HISTORY AND STUDIES UP TO 1921

While it is true that in recent years psychologists have given more of their attention than formerly to the problem of congenital word-blindness, it is interesting to note that the question had its beginning among neurologists and even ophthalmologists. The earliest contributions on the topic and the first recorded cases of word-blindness are to be found in medical literature.

In 1872 Sir William Broadbent (Hinshelwood³⁰ p. 1) called attention to cases where patients were unable to read printed and written words, but in these cases the inability to read was accompanied by speech disturbances in a greater or less degree. Five years later, in 1877, it was Kussmaul (Hinshelwood³⁰ p. 1) who first clearly pointed out that blindness for words is capable of being met with as an isolated condition.

Dr. Hinshelwood's paper on word-blindness and visual memory, published in "The Lancet" on December 21, 1895, attracted much attention and was followed by reports of individual cases of congenital word-blindness by various persons

of the medical profession.

In "The British Medical Journal" of November 7, 1896, Dr. W. Pringle Morgan (Hinshelwood³⁰ p. 41) reported the case of one of his patients, a fourteen year old boy, who was intelligent and in no way inferior to others of his age except his inability to read. By constant application he had acquired a knowledge of the letters but after seven years of instruction he could only with difficulty spell out words of one syllable. Dr. Morgan's article attracted much attention and created much interest among English ophthalmologists. His article was followed by reports of a number of cases brought to them for examination as possibly suffering from defective vision.

Hinshelwood³⁰, who has contributed a great deal on the subject of word-blindness, cites several cases from his early observation. One of these cases (pp. 48-49), a girl of ten, required nine months' teaching before she learned the letters of the alphabet and even then knew it only imperfectly. Small and common words she learned to recognize by sight alone. The others she had to spell either aloud or silently appealing to auditory memory or to the memory of speech movements or glosso-kinaesthetic memory, so called by Bastian. Hinshelwood considered the method of learning the alphabet, then spelling

the words, as superior to the "look and say" method.

Mr. E. Nettleship in "The Ophtalmic Review" for March 1901 (Hollingworth³¹) cites five cases of "congenital want of power to acquire knowledge by printed signs" (p. 43). One of these cases has been frequently quoted because Nettleship states that nine years after the first examination the subject had learned to read fluently, in fact had become a lawyer. How this was achieved was not stated.

A paper by Dr. E. Bosworth McCready read in 1909, cited the case, which is reviewed by Town⁵⁵, of a twenty year old youth who had not been able to learn to read. Bastian had advocated that the left hand be trained to write thus aiming to bring into activity the right hemisphere and gradually produce a substitution of function. McCready used this method in conjunction with other training aimed to present word impression through every possible sensory approach at the same time. The subject listened to words, looked at them, pronounced, and traced them simultaneously. Six months after such training had been started Dr. McCready reported that, "His improvement has been most satisfactory. He can now read a page of ordinary printed matter composed of the more common words, almost as quickly as a person with normal visual memory, and is able to read for pleasure, a thing he was never able to do before." (p. 172-173).

Owing to the fact that so many methods were combined in the instruction of this individual it is not possible to tell the extent of the effect of the training of the left hand. Quoting Town⁵⁵, "Training of the left hand in the finer coordinations used in writing, necessarily causes additional activity in some portion of the brain and will therefore cause an increase in the sum total of brain activity and efficiency. This increase in activity might be correlated with a rise in 'l'intelligence générale' and improvement ensue, without any functional substitution whatever". (p. 173).

In 1918 (reported in 1925) Elizabeth E. Lord⁴³ in an attempt to teach a non-reader to read used the method, which had been suggested by Thomas, of reinforcing the visual memory of the word by drill in writing, this is, by kinaesthetic sensation. "A word which the subject did not know how to spell was written on a sheet of paper, and the subject was asked to copy it five times with his right hand. The paper was then put out of sight and the reading lesson continued. After ten minutes the subject was asked to write the word. . . . After ten minutes the majority of the words had been forgotten. It was also found that the ability to write a word did not seem to aid the subject in reading the word in print. As a great deal of time was necessary to carry out this method it was abandoned." (pp. 12-13).

This result may have been due to the failure to have the subject pronounce the word as he traced it thus giving hand and throat kinaesthetic sensations simultaneously. The teaching of the word could hardly be considered as completed until the child had correctly written it immediately after tracing and before giving his attention to other work. The transfer from the written to the printed symbol would probably have been more effective and complete had the printed word been presented with the script form. It is also probable that the method was not pursued for a long enough time.

Freeman¹⁹ (1920) presents a case of word-blindness and its treatment. The subject, a girl nine and a half years old, had been in school three years and had been in the hands of a tutor for one year but was unable to read. In her instruction in reading she had had much sight work in which phonetic analysis was emphasized. Her tutoring had also included a large emphasis on phonetic drill. A series of tests was given and V. P.'s condition was diagnosed as having no deficiency in general intelligence, vision normal and able to recognize and to interpret the meaning of ordinary visual percepts, and no general motor deficiency or general language disturbance. The defect apparently consisted in an inability to make the association between the visual symbols and the sound of the words.

Freeman believed that in this case phonetic drill had been carried beyond the point of usefulness and had become a block to the recognition of the meaning. Phonetic drill was abandoned and an attempt made to speed up silent reading through the use of easy reading material and devices were used to compel the attention to all details of the passage. Parallel with the reading instruction there was practice in spelling and in writing words and sentences.

At the end of the training period of approximately two months V. P. was again tested and found to have made progress equivalent to perhaps three years of ordinary progress in a school.

The marked improvement in reading ability in the case of V. P. would seem to be due to the parallel work in writing words and sentences which presented the word symbols by means of the kinaesthetic approach combined with other cues previously in use.

Thus far in the history of word-blindness and in the several cases reviewed, it will be noted that different methods and combinations of methods have been used in the remedial instruction of these individuals. These different methods which have been used may be briefly summarized as the alphabet, the "look and say", and the use of phonics. In one case, that of

McCready's, a combination of methods was used including the kinaesthetic element and the training of the left hand to bring into activity the right hemisphere and gradually produce a substitution of function. The varied treatment appears to be the result of experiment, a blind search for a procedure which seemed to be suited to the needs of those handicapped in this manner.

The method which was developed by Fernald and Keller¹⁶, and which is given in detail in Section VI was the result of a chance discovery. The cases are adequate evidence that the method is adaptable to the needs of those having some reading disability and that the newly acquired skill is permanent.

SECTION IV

WORD-BLINDNESS

Terminology; Theories of Cause; Frequency.

Throughout the literature on the subject a variety of terms - word-blindness, visual aphasia, and non-readers - has been applied to the same basic reading disability, any variations being of degree and not of kind.

According to Scheidemann⁵¹ Kussmaul was the first to describe word-blindness as the inability to understand or interpret the printed or written characters, although the subject is able to see them. It is the imagining, remembering and interpretation which is affected and not the perception of printed symbols. Word-blindness may affect only letters or numerals, certain syllables, whole words or phrases, or certain languages but not others. The condition may affect musical notes only to which the term amusia is applied. In some cases, word-blindness is accompanied by agraphia, the inability to write, though seldom is auditory aphasia, inability to understand spoken language found with the inability to read. A case of this nature is that of Verna and is given in Section IX. Hinshelwood stated that true congenital word-blindness is marked

not only by extraordinary difficulty in learning to read, but also by a lack of any other symptom of cerebral defect.

Of the more recent experimenters and writers, Town⁵⁵ definitely includes the inability to learn to read among the aphasias. She defines aphasia as a "total or partial inability to understand or to use language in any one or all of its forms, such inability being independent of any other mental incapacity or of any disease or deformity affecting the organs of articulation". (p. 168).

Schmitt⁵² like Hinshelwood, regards word-blindness or dyslexia not as an inability to learn but as "an extreme difficulty to learn to recognize printed or written language on the part of the persons otherwise normally endowed mentally and without defect of vision or other physical defect of such gravity as to constitute an interference of the process of learning to read". (p. 680).

Wallin⁵⁶, in his work, discovered no qualitative difference between word-blindness in a moron, in a border-line case, and in a normal person. The differences found in word-blindness are like differences found in general intelligence, they are differences in degree and not in kind. Word-blindness varies from a state of profound visual aphasia to a slight degree of dyslexia or reading disability.

Dr. Grace M. Fernald¹⁶ who has had much success in

overcoming reading difficulties in clinical cases designates such a case as a non-reader, a child of at least normal mentality, who after adequate schooling has failed to master even the mechanics of reading.

The conditions just described have long been regarded as a special defect responsible, at least in part, for retardation of some pupils in scholastic achievement. The condition has received a new interest and emphasis since these retarded children, when measured by the Binet scale, were found oftentimes to test normal or superior in intelligence. An analysis of these children showed that their failure to advance in school subjects was definitely due to their inability to read at all or to a marked inadequacy of reading ability. Such inability constitutes a serious handicap to normal progress in a school system which depends largely on mastery of the printed page. Many of these children have been diagnosed as mentally deficient and assigned to special classes for such defectives.

In an attempt to explain these conditions several theories have been advanced.

The majority of persons who have reported cases of word-blindness, either congenital or acquired, have accepted Hinshelwood's explanation of it. His belief that word-blindness is due to a lesion in "the left angular gyrus, where are stored

the visual memories of words and letters"³⁰ (p. 72) was based on his observations and the careful study of the brain by an anatomist and pathologist. Even though several cases of word-blindness have been reported in which lesions of the cerebral area of the visual memory centers for language were not found, the explanation by Kinshelwood is most commonly accepted.

Witmer⁵⁹ reported a case of congenital word-blindness - a child who at times suffered a degree of word-deafness and motor verbal aphasia. The case was not one of simple congenital word-blindness but involved special defects. On the subject Witmer says, "While it is doubtless true that brain injuries may produce aphasia or amusia in children and if such injuries occur during uterine life the condition may properly be described as congenital, nevertheless I believe we must consider that congenital aphasia and amusia do not rest upon a pathological condition of the brain, but are indicative of a tendency to biological variation appearing in the affected children restrictedly as a variation of the functional activities of language and music. Congenital aphasia and amusia are to be explained in biological terms, in somewhat the same manner as we should undertake to explain left handedness in about 2% of the race." (p. 178).

Clinical and pathological findings from cases of aphasia support the theory of definite brain centers to the extent that various acquired forms point to somewhat isolated defects of visual, auditory or motor response, which are involved in speech. According to Scheidemann⁵¹ the physiologist Howell says, "Each part is a distinct center, but their combined use in intellectual life would imply that they are connected by association fibers, so that a lesion may affect only one of these various centers, . . . although fundamentally distinct they are practically combined in activity." (p. 405).

Lord⁴³ concluded that the condition "is not a pathological condition of visual memory center for words and letters, but is due to a defect in the association fibers; to insufficient associations between the sense areas, and to a lack of coordination in the motor response to visual and auditory stimuli." (p. 28).

In the light of the reading ability developed by the children who received special teaching, Schmitt⁵² says, "one must doubt the theory of a specialized brain center lesion. We must assume in the case of the lesion theory that, in the brain of the congenital word-blind child who has learned to read, connections with some other group of brain cells has been made by the stimulus-receiving center involved and that the new

center then took over the specialized function of storing word images, a conception not in line with the trend of current thought concerning imagery; or that the center biologically set aside for this purpose has undergone a development of some sort. The latter is, of course, untenable." (p. 765).

It has just been noted that psychologists and physiologists are not agreed as to the etiology of word-blindness, neither are they agreed as to the degree of reading difficulty which constitutes word-blindness and for that reason any estimate of its frequency is at best only approximate. Hinselwood, who has made notable contributions to the knowledge of word-blindness, met thirty-one cases during fifteen years of his experience.

In a sketch of the history of the knowledge of the subject of congenital word-blindness in 1904, Mr. Sydney Stephenson (Scheidemann⁵¹) stated that up to that date fourteen cases had been reported by a number of writers. McCready in 1909 totaled the number of reported cases in literature since 1896 at forty-one.

Thomas, according to Judd³⁶, calculated that cases of congenital word-blindness existed to the extent of one in 2000 of elementary school population and that 25% of such cases were girls. Quoting Judd³⁶, "Warburg, school physician of Köhm, found

fourteen among 2000 Volkesschule children and seven others among 400 Hilfsschule children." (p. 124) Wallin⁵⁷ in a study of over 2000 school children found 4.48% of them word-blind.

Though children from all parts of California were taken to Fernald and Keller as non-readers, during five years they found but seven cases of actual non-readers, that is, children of normal mentality who could not learn to read by ordinary methods, individual instruction and proper motivation.

From the above citations one might expect to find cases of pure word-blindness or of the zero non-reader in from .05% to 4.48% of the school population.

SECTION V

SUMMARY OF REMEDIAL METHODS

So far no attempt has been made to classify and explain in detail the methods employed in the various remedial procedures. It is the aim of this section to summarize these methods.

The alphabet method is probably the oldest and its early use, according to Hinshelwood, was recorded by Morgan in 1896. In an attempt to teach a 14 year old boy to read, the alphabet method was used but met with little success.

Hinshelwood³⁰ considered the old-fashioned "alphabet" method superior to the "look and say" method and as supporting the belief that the difficulty in word-blindness is localized in the visual memory for words. He believes that the alphabet method first stores up in the visual center the visual memories of the individual letters of the alphabet, and in the auditory center the spelling of the words. The word-blind child, he says, "is now able to read words by spelling them out letter by letter, and thus appealing to his auditory memory, he gets the proper word, or sometimes he may simply be seen to move his lips, spelling silently each letter, and thus appealing to his memory of speech

movements, or glosso-kinaesthetic memory, as it has been called by Bastian, or he may sometimes be seen tracing the letters with his fingers on the table and thus appealing to his writing center." (p. 54).

McCready's case stands apart from all others when considered from the standpoint of methods used in its treatment. He used, according to Schmitt⁵², a combination of methods and introduced one of Bastian's theories which advocated that the left hand be trained to write thus aiming to bring into activity the right hemisphere and gradually produce a substitution of function. McCready utilized all possible sensory approaches at the same time - visual, auditory, and kinaesthetic through pronunciation and tracing of words simultaneously. Though in this case the kinaesthetic element was used it was done, not in the belief that it was the essential one to give meaning to the word symbol, but as a means of increasing brain activity.

The "look and say" method was also one of the early ones used. In this method the child was taught at once to recognize the printed word as a unit and not to recognize the word at first by a process of analysis and spelling it out letter by letter as in the old method. Hinshelwood, who believed in the superiority of the alphabet method claimed that it appealed to three centers - the auditory, speech movements, and the visual

while the "look and say" method appealed only to speech movements and to the visual center. Hinshelwood had no direct contact with the latter as a remedial method but one or two of the cases taken to him had failed to learn to read by the method as it was then used in the schools. Had he included the appeal to the auditory center, in the "look and say" method, by having the child pronounce the word and persisted in its use as he did the alphabet method he no doubt could have reported at least an equal degree of success.

Dr. Schmitt⁵² used the phonetic method also extra devices to enrich the stock of associations between the sounds of letters and words, and the muscular sensations resulting from articulation. These associations are supposed to be established by the ordinary phonetic method but, according to Schmitt, are not ordinarily carried out with sufficient detail and persistence to meet the needs of the exceptional child.

Until about the last decade the alphabet, "look and say", and phonetic methods, or combinations of all three, were used with varying degrees of effectiveness in the training or education of the individual having some reading disability. Literature on the subject and the records of cases show a most limited use of kinaesthetic aids and its true significance seems to have been missed by specialists in the field.

SECTION VI

THE KINAESTHETIC METHOD

In the section devoted to the summary of remedial methods up to 1921, the kinaesthetic method does not have a place, for only since that time has it been recognized and used as a remedial technique.

However, it is most interesting to note that persons who could not learn readily by means of the most common visual cues have endeavored to discover for themselves the means by which they could learn more naturally and easily.

As early as 1886, Binet³ (translation by Whyte) classifies these individuals as "the motor type, which is perhaps the most interesting of all, and by far the least known. People who belong to this type . . . make use of, in memory, reasoning and all their other intellectual operations, images derived from movement." (p. 23). "It is probable that a child would learn to read and write more quickly if he were trained to trace the characters at the same time they were spelled. . . . The motor image enters as an essential element into a large number of mental combinations although its presence is often unsuspected." (p. 25). "Other patients, struck by verbal blindness, make accurate use of

these motor images in order to make up for what they lack in another way. . . . An individual afflicted by verbal blindness is no longer able to succeed in reading the characters placed before his eyes, although his vision may be intact or sufficiently good to permit of perusal. The loss of the faculty of reading is sometimes the only trouble which exists at a certain time; the patient who is thus maimed may, however, succeed in reading, but indirectly, by means of a roundabout method which he often discovers for himself; all he has to do, in order to understand the meaning of the characters, is to trace them with his finger. . . . The motor image gives us the key to the problem. That the patient is able to read, in some way, with his fingers, is because he receives, in describing the characters, a certain number of muscular impressions which are those of writing. We may say . . . the graphic motor image suggests the meaning of the characters according to the same standard as the visual image." (pp. 26-27).

The theory set forth by Binet and quoted by James³⁵ is substantiated by some interesting observations of Thomas in 1905 and which are briefly summed up by Judd³⁰ (p. 125-126). Thomas related that one child will arrive at the meaning of a word by silent spelling, that another will trace the word with the fingers to gain the meaning, still another child found no meaning in seeing the word, in having it spelled to him or in

spelling it for himself but the moment he wrote the word he grasped its meaning. After such observations Thomas concluded that the word-blind child should be placed in a special class where he could have individual attention also that he be required to trace the letters with the finger, "thus utilizing one form of kinaesthetic imagery. It is probable," he says, "that the earliest memory of letters is a muscular one." (Scheidemann⁵¹ p. 418).

Possibly the most convincing case regarding the kinaesthetic cue as the essential link to complete associations and to give word meaning is illustrated in the case of David which is reported by Wooley and Ferris⁶¹. He was in his fifth year in school and doing unsatisfactory work in the second grade due to reading inability. As a last resort, in an effort to teach the boy to read, he was sent to a school for the blind to learn to read Braille and with the instructions not to use his eyes. At the end of a month it was discovered that he was able to read it with his eyes as well as with his fingers. The explanation of the fact that learning Braille gave David his start in mastering print is probably due, not to a new set of letter symbols, but to the kinaesthetic cue provided by the method essential in learning Braille.

Gates²¹, who has written extensively on reading and

who advocates special training in the visual perception of words as a remedial measure, claims to have originated, in its essential features, the kinaesthetic method for remedial reading instruction and to have used it for several years. In the cases reported by Gates, which the writer has been able to find, no mention is made of the application of this method.

Having made the chance discovery that the motor activity is the essential element to enable some types of persons to learn to read, Dr. Fernald set herself the task of working out the detailed technique by which this could be accomplished to the best advantage.

The work of Fernald, as reported in 1921, is the first on record which definitely incorporates and stresses the kinaesthetic experience in a successful scheme for overcoming reading disabilities not due to defects. This plan, as has been noted, employs all avenues of sensory approach - visual, auditory, and motor. As it is set forth here is taken almost verbatim from Fernald and Keller¹⁶.

DESCRIPTION OF THE METHOD

The method as described is given in five stages.

1. Learning first words. The child asked for some

word which he wished to learn. The word was written in large script on the blackboard or with crayola on a large piece of paper. The child pronounced the word and as he did so traced it, if he wished to, with the first and second fingers of his hand. When the child felt confident that he knew the word, the copy was erased or covered and he attempted to write the word, saying the syllables to himself as he wrote. If his attempt to write the word correctly was not successful the entire process was repeated until the word could be correctly written without the copy. After learning a few words in this way the printed word was shown the child as well as the script form. The following day the printed form only was exposed and if the child failed to recognize it, it was written for him. If he failed to recognize the word in script it was retaught as on the first presentation.

2. Spontaneous sentences. After the first few days the child asked for sentences instead of words. The sentence was written, he learned the words comprising it, then wrote the sentence from memory, never from copy. These sentences which had been built by the child were printed or typewritten for him to read.

3. Words in context or story selected by the child. As soon as the child demonstrated his ability to make simple sentences he made his own selection of a library book and the

first paragraphs worked over in the following manner. Before reading, each word which had not previously been learned was exposed through a slit cut in a piece of card board. If the word was not recognized it was pronounced for him, he then pronounced it and wrote it without the use of a copy. If he met difficulty in writing the word after seeing it in print, it was taught as on the presentation of the first word.

4. Apperception of phrases. After the new word in the paragraph had been studied in this manner, flash exposures of the words were given until the child was certain of them, then flash exposures of various phrases were given until the entire paragraph had been so covered. Then the child was told to read the paragraph silently and give back what he had read.

5. Silent reading for content. Now the child was encouraged to read to himself. After progress had gone into the fourth phase there was no difficulty in getting these cases to read silently.

SECTION VII

WORK OF FERNALD AND KELLER

Fernald and Keller¹⁶ in 1921 reported marked success with several cases in teaching reading to children of normal mentality who had failed to learn to read after three or more years in the public schools. The method was the result of chance observations of Fernald's in connection with the work in spelling in 1918. Whatever change or development the method may have undergone up to the time of its first publication is not a matter of record. Of the seven cases which up to this time had been successfully treated all but one had normal vision.

The method which was described in Section VI was used only after the child had been given several weeks of individual instruction by recognized methods and had failed to make any improvement.

One of the cases cited in this report was that of Lester, a ten year old boy with an I.Q. of 94, who had been in the elementary grades of Los Angeles for more than four years and was totally unable to read. The special work at the time Lester's case was brought in was with groups of poor spellers and he was assigned to one of these classes. Except for this

special work in spelling, the method was the same as that already described. He developed a craze for writing words and spent hours in tracing. After the first week he wrote from memory words that had been learned several days earlier. The printed words were presented with the written form he had learned, and recognition of them developed readily. Lester chose for reading a history of the United States and using the method suggested above he made surprising progress. In six months he developed from zero in reading ability to ready word recognition. During the following three and a half years, and without further special training, he has advanced from the first to the seventh grade.

Henry, age 9 years 8 months with an I.Q. of 131 was not able to do second grade work in reading and spelling. Henry did not tend to trace the words but soon developed much skill in writing. He was slow at first in making the association between the written and printed symbols but by the fifth week he had gained speed and was making rapid progress. Following four months of instruction he was put into the fifth grade and made satisfactory progress.

The third case described was that of a nine year old boy, I.Q. 100. Fred had spent three years in the first grade of the public schools of Riverside, California but was unable to

read or write the simplest words. He was considered mentally deficient until mental tests proved him to be normal. His early progress was very slow and he continued to trace for more than two months. His development went through well marked stages, the transition each time being quite apparent and sudden. Five months of instruction prepared him for the regular third grade.

Joe was 12 years 5 months of age having an I.Q. of 120. Although Joe had almost no ability in reading he did not have to go through the first two stages and as the experiment was discontinued the fourth stage was not reached. After six weeks of instruction he was able to do the work of the seventh grade though his reading was slow and stumbling. A year and a half later it was found that Joe had made little progress in reading to himself though he seemed to have retained the concrete detail he had acquired.

It is interesting to note that there are a number of cases, similar to that of Joe, in which the subject through drive and determination has forced himself to a reading level which eliminates the first two outlined steps in the remedial program.

With the exception of the last case which began at the third stage, all the cases seemed to progress in four definite

stages. (1) Learning to write words. The development of ability to write words may be very slow at first. It is necessary for the child either to trace or to articulate the word while looking at the script copy, and then to articulate it as he writes from memory. The need for tracing gradually disappears but the subject continues to articulate in learning to write new words. (2) Associating the written with the printed form. The word is seen in print, it is written for the child then he writes it himself though tracing first may be necessary. Soon recognition carries to print after the child has written the word. (3). The ability to write a new word from memory after looking at the printed copy and repeating the word to himself. The word must be pronounced by another than by the child. Retention of words at subsequent times is not assured unless the child writes them. (4) Ability to pronounce new words if they resemble words he has already learned. The end of this stage is normal ability to read.

Two years later Keller and Fernald³⁸ submitted a report of their continued successful experience in teaching non-readers to read. M., a boy of 8 years 6 months, I.Q. 106, had attended the public schools for two years and six months. At the time the remedial teaching was started he was in the low second grade. The teaching procedure which was followed has

been outlined in preceding pages.

The work period averaged an hour daily between February and June 1922. Comparison of results of tests given before and after remedial teaching showed that M. had brought his oral reading from zero to second grade level, both silent reading and comprehension rose from zero to third grade level. In March 1923, M. was given a test for recognition of the 368 words learned during the special instruction period of the previous year. The result of this test showed 95% of recognition or permanency of retention.

In 1926 the Division of Psychology and Educational Research of the Los Angeles Public Schools³⁷ organized rooms to provide remedial instruction for non-readers. In that year three rooms, enrolling seventy children were operated. During the next two years two more rooms were operated with an enrollment averaging twenty-nine pupils per room. These rooms received reading failures, who were classified as non-readers, from nearby schools.

The method used in all of these rooms was that developed by Dr. Fernald whose work has been previously discussed. Helen Bass Keller, who has been closely associated with Dr. Fernald in her remedial work with non-readers, shows in this article that from 80 to 100% of the words written under the conditions prescribed by the kinaesthetic method are retained

permanently. Mrs. Keller¹⁶ maintains that to use this method with a group of children is not difficult. The tracing stage is necessarily individual work but the preliminary writing can be done with the group as a whole. She believes that this method "is the basis for efficient spelling and should become a part of the regular school room procedure." (p. 345).

Children entered in these remedial rooms are also enrolled in regular class rooms where they fit socially. It is believed that they lose less time in making a complete adjustment if, along with the individual help in reading, they are allowed to continue with their groups in other activities. When a child has completed his work in the remedial reading room he returns to his group with an adequate number of words at his command. He also has a working knowledge of phonics which enables him to compete with his classmates as an independent reader. It has been learned that phonics as a synthetic method can not be successfully taught to these people.

SECTION VIII

RECENT STUDIES RELATED TO THAT OF FERNALD AND KELLER

Since Fernald and Keller developed and so successfully used the kinaesthetic method of teaching non-readers to read, several experimenters have recorded successes based upon this method.

A monograph completed in 1923 by Elizabeth M. Hincks²⁹ records several reading disability cases, all but one of normal mentality, of the Psycho-educational clinic of Harvard University. The method used was in most cases that developed by Fernald. Test scores are not given and the quantitative results can not be stated. Some of the author's statements regarding the subjects of the remedial instruction are indicative of qualitative improvement.

Of Rebecca she states, "The tracing of the written word had given her a feeling of confidence that after all she had found a way by which she could learn a word." (p. 43). Rebecca's parents were so relieved and delighted at the complete change in her that they proposed financing a demonstration class for teachers, giving this technique of teaching reading to children with special disability.

Jack's progress was stated as being exceedingly slow

but that he was working hard. There was an improvement in his behavior which kept close pace with his reading. He ceased to be troublesome at school and his mother reported that he was much less difficult at home.

Phyllis Blanchard⁴, psychologist of the Philadelphia Child Guidance Clinic, in 1928 describes cases of reading disability which had been referred to the clinic because of maladjustment. The remedial instruction of the cases here cited was based directly on the method as evolved by Fernald and Keller. Marked improvement was noted in reading ability, reading interests and in behavior deviations.

In the summer of 1929 a Reading Clinic was established at the School of Education of Western Reserve University in connection with a reading-clinic course. Helen Coe Clowes⁷, of the Reading Clinic, after giving a general survey of its work describes Peter's case to give a clearer idea of the type of work attempted. Peter in the II B grade was 7 years and 9 months old with an I.Q. of 119. He was a mirror writer and had many confusions in consonants and words. For the remedial work the kinaesthetic method was used, "which so far is the only one that has proved successful in curing these cases of reversals and confusions." (p. 267). At the end of six weeks it was found by a comparison of test results that he had accomplished 4/10 of the

work of a year. At the close of his summer's work he was recommended for the II A grade where individual instruction was continued. At the time of Miss Glowe's report Peter was considered as well on his way to real achievement in reading and with an absence of any personality problems.

Miss Julia Detraz¹³, also of the Reading Clinic at Western Reserve University, says of the Fernald method, "It seems to be effective when every other method fails. It gives a feeling for word form needed by those with confused brain pictures of the word." (p. 271).

The clinic for remedial teaching at the University of Oregon also dates from the summer of 1928. Dr. B. W. DeBusk, of the School of Education, organized the clinic and has directed the work during its four summer sessions. An account of the work done and detailed descriptions of atypical non-reading cases will be presented later.

Thelma A. Dreis¹⁵ (1930) of the Minneapolis Child Guidance Clinic, describes one of their cases as an example of the success of the kinaesthetic method. The subject was a boy of 13 years and 9 months with an I.Q. of 85 in spite of his reading handicap. He had repeated several semesters of work at different grade levels but after repeating IV A he had been promoted with his group because "he was not learning anyway."

(p. 292). At the time remedial instruction was begun he was in VI B, his reading and spelling ability equaled only first grade level.

The program was based chiefly on the Fernald kinaesthetic method including the use of the spontaneous story. Some use was made also of the phonetic method and of spelling out words. However, be it noted that, "The tracing method of Fernald and Keller . . . was used with words which gave particular difficulty and which could not easily be introduced in a more economical way." (p. 295). Each lesson was made up of reading, writing and spelling activities. The subject was tutored during three periods a week for about sixteen weeks. At the end of that time he had attained a level of efficiency in reading and spelling ranging between that of the third and fourth grades.

No doubt there are many others who are interested and actually engaged in the remedial phase of teaching reading and who are using the Fernald technique but who have not published the results of their efforts. However, the sketches just reviewed are ample evidence that the method succeeds if its principles are understood and are followed through the final stage of the new learning process.

SECTION IX

PSYCHO-EDUCATIONAL CLINIC, OREGON

Organization; Basic Courses; Diagnosis of Subjects; Cases.

Dr. Grace M. Fernald was invited for the summer session of 1928 and accepted. After the opening of the session fifteen children were gathered together for remedial work. Of these fifteen several were pure non-readers. These cases were taught by teachers who were students in Dr. Fernald's classes in Psychology of Atypical Children and who were interested in the particular technique which she used in remedial teaching.

The work during the session with these fifteen children was so successful that parents requested that it be continued during the post session of four weeks. In order to do this, parents contributed toward the salary of a tutor and the Kiwanis Club of Eugene donated \$100.00. Miss Lillian Rayner, teacher of remedial English at Central Junior High School, Los Angeles, was secured as tutor and the work was carried on with marked success.

At the end of the first session plans were laid for a more extended clinic for the following summer and the organization

took on more definite form. Dr. Fernald accepted an invitation to return for the 1929 session. Miss Ruth Kneeland, formerly principal of Bellvue School for Clinical Cases, Los Angeles, was put in general charge of organization. Miss Rayner joined the staff to coach certain cases in need of private work and was again in charge of the post session.

No advertising was done as such. However, a week before the opening of the session the daily papers of Eugene ran an announcement that the clinic would be operated again. On the opening day forty-five children were present, cases of reading and spelling disability were in the majority, there being but one or two arithmetic cases. Teachers were again selected from Dr. Fernald's classes and an hour's credit given to those who continued the work during the entire session.

At the close of the 1929 session plans for the summer of 1930 were outlined. Dr. Fernald was to return again as in absolute charge of all non-readers and primary work also as consultant for all other work. Miss Kneeland was put in charge of a special group to demonstrate values of the technique used in the regular clinic classes. Miss Rayner was assigned a supervisory position covering upper grade, high school, and college cases. Miss Kathryn Fry, a graduate student at the University of Oregon, was appointed secretary to the clinic.

In definite charge of the entire clinic organization was Dr. B. W. DeBusk, Professor of Educational Psychology, University of Oregon.

At the opening of this session, the clinic was faced with sixty-five cases coming in from the public schools of Oregon, neighboring states and the Hawaiian Islands. The number of arithmetic cases showed a considerable increase over such cases of the previous session.

For the fourth session, that of 1931, the staff of the clinic remained unchanged except that Miss Kneeland did not return. One hundred fifty pupils presented themselves for admission to the clinic, forty of whom had to be turned away. About one-third of those permitted to remain were remedial cases in arithmetic. By organizing the children of like difficulties into small groups, using group instruction, by shortening the time and giving the certain cases one hour instead of the usual two hours, the clinic was able to keep approximately one hundred ten pupils. This use of group teaching and shortening the hours did not prove to be highly satisfactory.

A group of sub-normal children was accepted and placed under the direction of Dr. Fernald. The active teaching of these children was carried on by a group of special room teachers from various sections of Pacific Coast and Central states.

This experiment with the sub-normal pupils is to be continued in the fifth session.

The clinic has also given attention to cases of aphasia. Its first case was diagnosed the second summer of the clinic but the child was not enrolled for remedial instruction. The following summer one aphasia case was registered for work and since then the number has increased.

The clinic is to be continued not only for the benefit of children who come for remedial instruction but for the training of teachers as well. It is the feeling of the staff that the amount of improvement in the training of pupils was approximately up to standard during the fourth session but that other values were lost which made it necessary, in the judgment of the staff, to recommend for the fifth session either additions to the staff or a limitation of enrollment. The summer session office, because of limited finances, felt compelled to accept the second alternative. The staff for 1932 will remain the same and the number of pupils to be accepted will be limited to seventy-five. These will be accepted on the basis of the need of children as determined by entrance tests to be described later.

During the first session of the clinic, the summer of 1928, Dr. Fernald offered two courses in Psychology of Atypical Children, one a beginning course, the other advanced.

The second summer the courses of the first summer were repeated and one on the Psychology of Childhood by Dr. DeBusk was added. This course and Dr. Fernald's elementary course were required for all those who taught in the clinic. Originally the plan was to select teachers only from Fernald's advanced class but with the unexpected increase in enrollment in the clinic it was necessary to take teachers from all classes and to work out a scheme for teacher training.

For the third summer session the basic courses remained the same and to these was added a course in the Teaching of Atypical Children under the supervision of the staff of the clinic, to be taken as a regular laboratory course carrying three hours of university credit for six weeks of teaching. These course, four in all, remained unchanged for the fourth summer.

For the summer of 1932, the fifth session of the clinic, Dr. Fernald's elementary and advanced courses in Psychology of Atypical Children are to continue. Dr. DeBusk's course in Psychology of Childhood is to be discontinued. In its stead he is to conduct a course in Diagnostic Technique for those interested in the diagnosis of cases. Another new offering is a course by Miss Rayner on Remedial Work for Advanced Cases, that is, cases on high school and college levels. These courses are so arranged that a student is able to select any combination he wishes with

the Supervised Teaching in the clinic. Prerequisites for teaching atypical cases are psychology and a certain amount of teaching experience.

First in the diagnosis procedure all children are given the Stanford-Binet intelligence test. It is the belief of the clinic staff that in cases of reading difficulty the Stanford-Binet test rates a pupil ten to fifteen I.Q. points below his true level. This is especially true in cases of intermediate and upper grade children due to the fact that in those test items where the child is called upon to read he will inevitably fail. The test does, however give some idea of the innate ability of the pupil.

The Stanford-Binet test is followed by a reading test - the Gates Primary Test for the younger children and the Stanford Reading Test for the older pupils. With this one gets by comparison with the norm, an idea of the present reading achievement of the subject and his deviation from the accepted norm. These tests do not give an idea of the real cause of the reading difficulty which must be otherwise determined.

Even though the subject may definitely seem to be a reading case, the Stanford Achievement Test in arithmetic is given those children from third grade level up in order to discover possible difficulties in arithmetic. Often it is found that cases

which are reported as arithmetic difficulty are not primarily arithmetic cases but that the difficulty is one of reading inability.

Pupils are also given a list of twenty words from the Buckingham Extension of the Ayres Spelling Scale. Words selected for the test are of such a degree of difficulty that the average child of his grade position should spell from 50% to 60% of them correctly.

In some instances a child is also given the appropriate Stanford Achievement Dictation Test.

Finally the child is asked to write a short composition or friendly letter that some idea may be had of his written expression, continuity of thought, spelling, and natural interests.

The cases which follow are those of children who have had all of their remedial training in the clinic on the Oregon campus. The sampling is exceedingly small when compared with the total number of cases taught in the clinic but they show the type of cases handled and the results actually obtained.

Case I

Betty attended the summer clinic of 1931. She was not given a mental test but was considered as of normal intelligence. At the time Betty was entered in the clinic she was 8 years 9

months of age and considered a reading problem. In paragraph meaning her score was 2.6 and in word meaning 2.9. She had never failed a grade but due to infantile paralysis she had missed a semester of work. As a result of this illness Betty's left hand and foot were still somewhat stiff. The home background was considered as good.

Betty began the remedial reading work in its beginning stage. During the first three lessons she traced each word, which she wished to learn, from two to eight times. The number of tracings necessary seemed to depend not only on the length of the word but on the complexity of some of the letter forms. On the fourth day it was found that one tracing was sufficient for Betty to write the word correctly. Tracing each word continued but with decreasing frequency until the fourteenth lesson when the case gave evidence of merging into the second stage, that is, the ability to look at and pronounce the word then, without tracing to write it correctly. At the close of the fourth full week of remedial instruction Betty had eliminated all tracing and wrote words readily from sight.

At the close of the summer session Betty had built up a reading vocabulary of 275 words. In learning these words 75 required no tracing, 83 needed but one tracing, 32 needed two tracings, and the remainder of 85 words required from three to

nine tracings in order to learn them permanently.

Of the 275 words learned the average length was found to be 5.7 letters. Tracings totalled 489 which is an average of 1.7 tracings per word. During the first seven lessons the words used were below the average in length and the number of daily tracings was much greater than the average number. The following eight day period was one of irregular but general improvement. The balance of the term was a period during which the tracings were consistently below the average and reaching the zero point with the length of words fluctuating from slightly below to high above the average length.

A record of the words learned during this session, the number of tracings required to learn each word, and the frequency of use in the original stories is given below.

June 26

	tracings frequency			tracings frequency	
America	4	1	Christmas	5	1
aunt	2	1	cook	2	1
backs	8	3	Eugene	3	1
blankets	6	1	fourth	3	1
books	4	1	friends	2	1
brother	5	1	girls	3	13
circus	5	7	July	3	2
chicken	8	1	jumps	3	1

June 26 (Con.)

mean	tracings frequency		spotted	tracings frequency	
	2	1		7	1
monkey	5	1	stairs	3	1
paints	2	1	there	4	16
sister	3	1	wore	2	1

June 29

brown	8	7	necks	4	2
front	5	2	saw	3	2
giraffe	8	3	spots	3	2
hind	3	2	than	3	2
legs	6	4	they	3	1
longer	2	2	was	2	2

June 30

animals	6	3	jump	3	2
ball	4	1	likes	3	9
bark	9	1	lives	3	3
black	4	4	pack	2	1
build	4	1	Pal	1	1
camel	5	8	rope	3	2
desert	3	1	used	3	4
his	3	1	with	1	1
hump	4	1	would	1	1

July 1

babies	4	2	carry	1	1
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July 1 (Con.)

	tracings frequency			tracings frequency	
high	3	1	tails	5	1
kangaroo	4	5			

July 2

bear	2	8	polar	2	1
icy	1	1	tack	1	1
lands	3	1	them	1	1
park	1	1			

July 3

around	4	2	growls	2	1
called	2	2	hair	1	4
chase	6	1	lean	1	5
contents	2	4	mane	1	1
elephant	3	8			

July 6

bloom	1	4	roses	3	10
climbing	4	2	some	1	2
perfume	3	2	yellow	3	9
pretty	3	8			

July 7

best	1	1	Holland	3	1
bulbs	2	1	many	1	2
colors	1	2	purple	1	2
expensive	4	1			

July 8

bird	tracings frequency		June	tracings frequency	
	1	8		1	2
bouquets	3	1	nasturtium	9	5
horn	2	3	pollen	1	1
humming	1	1			

July 9

flowers	4	9	pink	2	3
odor	2	2	seeds	1	2
peas	1	1	white	5	10

July 10

because	1	8	picture	2	4
blue	1	6	soup	1	2
children	5	2	these	1	3
dishes	1	1	very	1	6
everybody	1	1	vegetables	3	1
happy	7	10			

July 13

asters	1	5	prettiest	1	4
pastel	1	1	shady	1	1
places	2	1	short	1	3

July 14

arrange	2	1	celebrate	3	1
birthday	3	1	cherry	1	1
blossom	1	1	cookies	1	1

July 14 (Con.)

tracings frequency			tracings frequency		
food	1	2	main	1	1
furniture	3	1	people	1	6
great-	1	1	rice	1	2
Japan	1	3	some	1	4
Japanese	1	2	vases	2	1
learn	2	2			

July 15

behind	1	1	log	0	1
boat-	1	6	might	2	1
cabin	1	2	pasture	3	2
lake	2	5	wonder	1	1

July 16

disgusted	3	1	piano	2	3
falling	1	1	right	2	1
music	2	1	sweating	2	1
other	4	2	teacher	2	2
over	4	2	teaching	3	2

July 17

churches	3	1	houses	2	4
cleanliness	1	1	kinds	1	1
decorating	3	1	lilies	1	6
Easter	1	3	several	3	1
fragrant	1	1			

SCHOOL OF EDUCATION COLLECTION

July 20

tracings frequency			tracings frequency		
box	0	4	road	1	1
Chevrolet	5	2	sedan	1	1
coach	1	2	selling	1	1
electricity	3	1	summer	1	2
frigidaire	1	5	trimming	1	1
instead	1	1	wheels	1	3
only	0	2	while	1	1
orange	3	3	wire	1	1
our	1	9	woman	1	2
own	0	1			

July 21

American	0	2	nest	0	1
cold	1	2	ocean	2	9
cotton	1	1	one	0	4
everything	1	1	ones	0	1
feathers	1	1	ship	1	1
feeding	1	4	smoke	1	1
foam	0	1	steamer	1	2
green	0	1	water	1	1
insects	0	1	worms	1	1
mud	0	1			

July 22

beach	0	2	carrying	0	2
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July 22 (Con.)

	tracings frequency			tracings frequency	
drinking	0	2	raft	1	1
floor	0	1	sailboat	0	3
following	1	1	skipper	0	3
milk	1	3	this	0	11
pails	0	2	tide	0	1
pouring	0	1	umbrella	7	22
putting	1	1			

July 23

cage	0	1	seagulls	0	2
candy	0	5	sometime	9	1
clown	0	1	tent	0	1
flag	0	2	three	0	2
flying	0	1	tiger	0	2
popcorn	0	1	valley	0	1
race	0	3			

July 24

any	0	1	setting	0	2
calm	0	2	side	0	1
dresses	0	3	sun	0	1
frog	0	1	toward	0	2
leap	0	1	waves	0	2
page	0	3	windy	0	2
pants	0	1			

July 27

tracings frequency			tracings frequency		
anxious	0	1	puppets	0	5
armistice	0	1	sailor	0	1
bending	0	1	snowing	0	1
blowing	0	1	soldier	0	1
broom	0	1	stripped	0	1
dough	0	1	sweater	0	1
outfit	0	1	tablecloths	0	1
parade	0	3			

July 28

chocolate	0	1	round	0	3
clothes	0	4	shape	0	1
heart	0	3	square	0	1
oblong	0	1	tinsel	0	1
paper	0	1	twins	0	4

July 29

Indian	0	2	spring	2	3
lady	0	1	their	4	13
sheets	0	1	washing	0	1

During the first semester of the following school year, Betty was transferred to another building and, owing to the fact that there was no III A class in the building to which she was transferred, she was placed with the third grade group.

She was recognized as a problem and a careful analysis made of her case. Both the principal and the reading teacher understood Betty's reading difficulty and adjustment problems and instruction was modified to suit her needs. Near the close of her stay in the third grade the principal reported that in a comprehension test Betty's score was perfect and her speed had been raised from 70 to 304 words per minute which placed her at a fourth grade reading level.

Case II

Raymond was 11 years old and regarded in his community as a subnormal. He had been promoted to the fourth grade but, as reported by his teacher, was unable to accomplish anything in school work.

He entered the clinic the third week of the 1930 session. During the diagnosis Raymond was asked to write the sentence, "I like to ride in an automobile", and after putting forth much effort he wrote, "ill oimobls". It was of course impossible to give him a reading test. He was diagnosed as a pure non-reader.

He began his training by tracing the words he wished to learn to write. During his brief stay in the clinic he wrote ten original stories which averaged 8.4 words learned. Due to

an attack of the measles Raymond's work was discontinued at the end of two weeks.

He returned to the clinic for the 1931 session. As far as real ability was concerned it seemed that he had not quite completed the first stage but he refused to trace yet he was determined to master new words. He wanted to use the word "California" in his story and he could find no satisfactory substitute. The word was written and carefully pronounced for him. Raymond then studied the word and as he did so slowly pronounced it several times. He made a number of unsuccessful attempts to write it. After each failure he returned to the study and pronunciation of the word. The fifth attempt was successful and gave him a new confidence in himself, no longer did he fear the length or sound of a word to be learned.

During the latter part of the session Raymond used many of the small and familiar words in his stories without any help and longer words were coming into use more readily. Each day brought forth a new story which averaged 11.1 new words for him to add to his growing reading vocabulary.

The following list of words is taken from only one of Raymond's books covering thirteen days of work. By trials is meant the number of attempts to write the word correctly after studying and pronouncing it. Under frequency is given the number

of times the word was used in the stories of this one book.

trials frequency			trials frequency		
above	1	1	circus	4	1
air	2	3	colored	1	1
airplane	4	5	cream	1	1
another	3	1	cut	1	1
are	4	6	Devil	2	1
back	2	2	did	1	1
bananas	2	1	do	1	1
be	1	1	doors	1	1
been	1	1	Dorothy	4	1
Bend	1	1	down	1	1
big	1	1	drew	1	1
board	1	1	ends	1	1
boat	3	4	fast	1	1
bring	2	2	faster	2	3
brush	1	1	feet	1	1
building	1	1	five	1	1
California	5	1	flying	2	1
canoe	1	1	for	6	2
cans	1	1	from	1	2
carries	4	1	fun	1	1
caught	1	1	gallon	1	1

trials frequency			trials frequency		
getting	2	2	jar	1	1
go	0	1	kinds	1	1
goes	1	2	knife	1	1
going	4	6	largest	2	2
good	1	2	like	2	3
has	2	3	little	1	1
here	1	1	looks	1	1
Hester	4	1	machines	2	1
high	1	1	made	1	2
him	1	1	man	1	1
holds	2	3	many	1	1
horses	1	2	men	1	2
hour	1	1	miles	2	2
house	2	4	motors	4	3
hundred	3	1	much	3	1
I	0	4	New York	1	1
if	1	2	of	0	2
in	1	6	off	1	2
Indians	1	2	on	1	2
Ingram	2	2	one	2	3
inside	1	1	or	1	1
is	1	16	our	1	1
it	1	9	over	1	1

trials frequency			trials frequency		
parachute	4	2	swimming	2	1
passenger	3	1	tail	1	1
people	1	1	tank	3	4
picture	4	1	tender	2	2
plane	8	8	than	1	1
port	1	1	that	2	3
Portland	4	1	the	2	37
races	1	1	them	1	1
rain	1	1	there	3	2
rainbow	1	1	these	5	7
razor	1	1	they	3	4
ride	1	1	think	2	1
Rocky's	3	1	this	11	18
ropes	1	1	three	1	1
sail	1	2	.to	1	31
saved	2	1	too	1	3
second	3	2	town	3	1
shave	1	1	trail	1	1
shoot	1	1	train	1	1
six	1	1	tube	1	1
string	1	1	up	1	1
stunts	5	1	use	1	4

trials frequency			trials frequency		
used	3	3	when	1	1
using	1	1	which	2	2
very	2	2	will	1	3
watch	2	1	with	2	6
water	4	1	world	1	1
war	1	2	would	3	2
went	1	1	you	1	2
were	1	1			

Raymond's case is not finished for he still needs help in associating meanings to words to enlarge his vocabulary. His progress, for the time spent with this method, has been so marked that those knowing his case intimately feel confident he will acquire adequate reading skills.

Case III

Hubert was 11 years old in May 1931 and the following month entered the summer school clinic. On mental tests he scored an I.Q. of 80 which is low and probably due to his reading level which was that of the second grade.

His school history reveals attendance for five years, but owing to having repeated the third grade, he has just been promoted from the fourth to the fifth grade. He was reported as

being very inattentive and not very dependable which is apt to be true of non-readers.

During the session he made three books varying in size from nine to sixteen stories and the length of stories averaging from three to seven lines each. In writing his stories he learned 251 words, their frequency ranging from 161 words being used once up to one word occurring sixteen times.

Even in Hubert's beginning lessons it was not necessary for him to trace all of the words which he wished to use in his stories and in only a few cases did he seem to need to trace a word more than once to be able to write it correctly. During the latter half of the term he was able to look at and pronounce a word then write it correctly without tracing.

At the end of the session Hubert was tested on the new words which he had used in his stories. It was found that of these 251 words he recognized all but eleven, eight of which he had only used once. In other words 95.7% of the words were permanently learned.

Case IV

When Spencer entered the clinic in 1928 he was a pure non-reader and could not be tested in reading. He was nearly 11 years old with an I.Q. of 123.

At the end of the post session Spencer's instructor wrote that he had made especially fine progress. The regular six weeks' summer session was devoted to starting him on the road to reading and at the beginning of the post session he had done no work from a reader. A first reader, "The Cherry Tree Children" by Blaisdell was used. During the post session Spencer read 77 pages of the reader, acquiring a vocabulary of 486 words through the reader and his original stories. The last of the ten week period of remedial teaching found him making his own sound combinations and acquiring new words with little effort. He was reading new words such as: mother, peep, long, running, worm, fast, baking, cakes, these, baby, keep, berry, and could without any teaching recognize them easily.

In view of the fact that the time usually allotted to such cases for correction is five months, Spencer's progress was considered as truly remarkable for the ten weeks' work.

He returned to the clinic the two following summers to continue the remedial work. The third summer found him in the final stages of learning to read. During his training period he had brought his reading ability from zero up to 3.1 grade placement for paragraph meaning and 3.3 grade placement for word meaning. He is now taking the first year of junior high school.

Case V

Buddy, in April 1930, was 8 years 3 months old, I.Q. 90. His principal reported to the clinic that Buddy had learned five words in his two years of school experience.

It was necessary for Buddy to begin at the first stage to learn to read. At the end of six weeks of teaching he tested as follows on the Gates Reading Test: I - 1.70; II - 1.35; III - 1.65 and at the end of the second summer session he tested: I - 3.37; II - 1.60; III - 2.8. During the summer session Buddy acquired a reading vocabulary of 234 words learned through his original stories.

Case VI

Verna was recommended to the clinic by physicians for a mental examination as they believed she should be sent to an institution for mental defectives. She was, at the time, 13 years old but could not read or speak. Because of this inability Verna could not be given a mental test.

To get some estimate of her mental ability she was shown how to work the Healy Form Board "B". After a single demonstration she worked the form board quickly and accurately the first time she attempted it. Following this other form boards were used including several which were used in the army

service. In every case Verna performed the test accurately and well under the standard time. Upon completion of the examination the clinic staff believed her to be very bright but in reality a case of auditory aphasia.

Taking the cue from Verna's ability with the form boards, the diagnostician wrote the word automobile on a piece of paper as he pronounced it, pointed to a car which was standing in front of the building and said automobile, again pointed to the written word pronouncing it as he did so, then drew attention to the picture of a car and associated with it the sound of the word. This complete association was repeated several times. Verna was then given the idea of tracing the word. After one tracing she wrote the first half of the word correctly, after the second tracing she wrote the word correctly except for the last two letters. The third tracing resulted in the reproduction of the entire word.

Assured that by this method Verna could learn to use language symbols, arrangements were made for her to attend the clinic of 1929. At the end of two days she could reproduce, without error, a sentence of four or five words after a single tracing. By the end of the summer session she could read simple sentences and could take the list here given at dictation. In dictating, the teacher stood behind her so that there was no possibility of lip reading.

apple	cherry	horse	ribbon
baby	cow	house	ring
bay	dog	iron	running
bed	dress	jump	skipping
bird	eat	leaf	spoon
blackberry	egg	little	stockings
boat	eye	milk	stool
book	fish	nose	stove
boy	flower	off	strawberry
bread	go	open	table
cake	good-bye	pencil	take
candy	ham	pig	telephone
cat	hen	pitcher	ticket
chair	home	plate	tomato
			walk

At the close of the six weeks of training Verna could not speak words as distinctly as could a child without her difficulty but her speech was such that she could be easily understood. Work on this case was checked as the family moved away.

Regarding the theory of the specific cases studied it may be stated that the throat, lip, and hand kinaesthetic elements seem to be the essential connection between the visual

cue and the various associations which give it word meaning. It seems necessary for the child to acquire a kinaesthetic background before the visual sensations, stimulated by the printed form, take on meaning. Even the associations between the spoken and printed word do not seem to be fixed without the kinaesthetic connections. Articulation and writing seem essential for developing word recognition.

It has been observed that kinaesthetic factors tend to persist even after these cases become fluent readers. Those who began with the tracing stage continue to make slight arm and hand movements in learning a new word or in an effort to recall a difficult one. It has been observed that all of these children make pronounced lip movements in saying the words (not the letters) when learning a new word, even though they have passed through the beginning stages of learning to read and no longer have to trace or speak it aloud. They are hopelessly confused in any attempt to spell orally or to write a new word without saying it silently.

The children who trace their words develop a free and easy handwriting of good form. Incidentally they acquire a working knowledge of phonics and as a rule there is an improvement in enunciation. More often than not a self-confidence is gained from the newly acquired ability which enables the

child to compete with others of his group and gives him a changed attitude toward the learning situation.

The traditional methods of teaching reading have always seemed to overlook or to neglect the kinaesthetic factors, except those which in no way express the word as written or printed. It has been assumed that, for all children, the visual stimulus is adequate to arouse such associations as will give this cue its essential meaning. Experimenters with this method believe that its general principles are applicable to many cases in which there is merely a difficulty in learning to read also that progress would become normal, at least in many cases, if the proper kinaesthetic content were given.

SECTION X

SUMMARY

In summarizing the history of congenital word-blindness and the development of the remedial procedures employed, a few outstanding points may be noted:

1. On the basis of remedial technique used, the subject divides itself into two periods, from the 1870s to 1921, and since 1921 down to the present time.
2. In the earlier period there is little evidence of a well defined scheme or program of remedial teaching but it is characterized by a trial and error process.
3. During this period the traditional methods - alphabet, "look and say", and phonics - were used. The assumption was that all persons could learn to read by means of the visual stimuli, supplemented by auditory aids in spelling the words to be learned. It is now believed that any success which was achieved by such methods was due, not so much to the two sensory approaches employed, as to the individual and intensive instruction.
4. Regarding the possibilities of the kinaesthetic aid, it was early suggested by Binet that some persons were able

to learn more readily by a combination of visual, auditory, and motor stimuli. Several years later the same theory was advanced by Thomas but evidently no teaching method was based on it.

During this period McCready's case stands out as one in which the kinaesthetic element was used. In addition to using the visual and auditory stimuli, the kinaesthetic cue was introduced but as an activity for the left hand. The theory was that brain activity of the right hemisphere would thus be increased and a substitution of function result.

5. In 1921 the period of trial and error came to a close. During three years of work, Fernald and Keller had developed a method, for teaching non-readers to read, a method definitely based on the kinaesthetic cue but in conjunction with visual and auditory elements. They convinced themselves that their method did succeed and that the newly acquired reading abilities were permanent.

6. Since 1921 recorded cases of remedial instruction in reading show a general tendency to a wider use of the method as developed by Fernald and Keller.

7. Of these, The Psycho-Educational Clinic at the University of Oregon, established in 1928, is probably the most outstanding experiment which is founded directly on the

kinaesthetic method.

8. The increasing number of teachers and children who come from all parts of the country to the Oregon campus to receive instruction in the method or the remedial benefits of it furnish ample evidence that the method is one which satisfies a real need.

9. The cases submitted from the Oregon Clinic show that the method is a practical one not only for non-readers but for reading difficulties of a lesser degree. Though this study has been confined to deficient reading skills and an adequate remedial treatment, it might properly be added that, in principle, this method is equally adaptable in overcoming learning difficulties in both spelling and arithmetic.

10. It is very evident that the technique studied is of great practical significance not only in the teaching of non-readers, but in the teaching of children in general. Experiments checking upon its value when used as a procedure for the average class need to be carried out. Nor is the method lacking in interest for those who are more concerned with the theoretical aspects of the problems touched upon in this study.

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