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P r e f a c e

The present reader is primarily designed for the students of the Department of Defectology, but might also be usefully read by the students of Psychology and Language. It comprises extracts from books and articles by English, American and Canadian authors covering a wide field of subjects of direct concern to a student of Defectology, ranging from the nature and causes of intellectual inadequacy, juvenile delinquency, stuttering and stammering, deafness and blindness, and the teaching of slow-learning children to examples of modern uses of measurement and evaluation in education. The reader also includes a chapter from the history of the education of the deaf, and the legendary case of Helen Keller, as well as a few abstracts of scientific papers.

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THE NATURE OF INTELLECTUAL INADEQUACY

INADEQUATE - FOR WHAT?

"Well, I decided not to go on for my Ph.D.," remarked one of the two young men sitting behind me in the bus. "I got my Master's," he continued, "but it took me more than two years after I'd finished college. My grades weren't any too hot either, though I sweated blood over the stuff. Anyway," he added in a more cheerful tone, "it's over now and I've got a good job."

"Don't blame you for quitting the profs," remarked the other. "I flunked out of medical school myself. Too stiff for me. So I just switched over to pharmacy."

"No," said Mrs. Ardley, flushing a little as she replied to her friend's question. "No, Louise isn't going to college. She - well, you know she never did learn as easily as Evelyn does. She had to repeat the sixth grade; and high school work was very hard for her. Oh yes," forestalling the next question, "she graduated. But she wasn't recommended for college, and when I talked to the principal about it, he told me very plainly that he thought it would be a great mistake for us to send her. She's thinking of taking a business course, typewriting, you know, so she can work in an office."

"And her age?" asked the school principal, with pen poised above the yellow registration card.

"Eight," admitted the mother, apologetically.

"She's never been to school? Why not?"

"Well ... she ... she's a little backward in some ways. I didn't think ..."

"What makes you think she is backward?" With an appraising glance born of long experience, the elderly principal turned his attention to the little girl who was clinging tightly to her mother's hand.

"She doesn't - she didn't talk very plainly. I could understand her all right but hardly anybody else could. But I've been working with her, and she does a good deal better now. And last year she still used to wet her clothes quite often, but that hardly ever happens any more. So I've been teaching her at home. She knows her colors, now, and quite a lot of her letters."

"Wed," announced the child proudly, pointing to a book on the principal's desk.

"No, darling," corrected the mother in some embarrassment, "that's a blue book. She just loves red," she explained, "so she calls everything red, even though she knows better."

The principal nodded but made no verbal comment. He stared at the yellow card before him for a moment and then said quietly, "Since Emily has never been to school before, I think we had better have our school psychologist see her. I'll call up and find when she is free."

An appointment was made. The day afterward the following report arrived at the principal's office.

"Emily Andrews. Age 8 years, 4 months. Stanford Binet mental age 4 years, 3 months, IQ 51. Marked articulatory defect together with slight stutter. On tests not requiring the use of language, her performance was slightly better than that on the Stanford, averaging about a five-year standard. Comprehension of pictures very poor; could only point to a few simple objects on request. None was named spontaneously.

Brief physical examination by Dr. Peters revealed no special defects. Vision and hearing apparently normal; nutrition good. Mother says child has always been well.

Tentative diagnosis: Mentally defective child of low-moron grade.

Recommendation: Enroll on trial basis in special class for young retarded children. Arrange for special training in speech correction. Retest after six months.

The great clinic was a scene of activity. Nurses hastened along the corridors, patients came and went. But in the book-lined office at the end of the short hallway opposite the reception desk there was tense silence. Sitting at his desk, Dr. Burton stared at the open folder lying before him. He had said what he must say; he knew too well the look on the faces of those who had listened to him.

The silence was broken by a hoarse, inarticulate shout. A boy of some ten years lurched forward, arms swinging loosely, his gait shambling and uncertain, saliva drooling from his open mouth. With fumbling hands he reached for the calender on the doctor's desk, but his father stopped him.

"No, Dennis," he said in a voice that trembled a little in spite of this attempt to control it. "You stay here with me."

But the little episode had broken the spell. It was the mother who spoke first.

"But, Doctor," she gasped, "surely you don't mean - surely there's something - treatment of some kind - or even an operation! We aren't rich people but we'd gladly give our last cent ..."

Dr. Burton shook his head. "That's just what I'm afraid of," he said, firmly. "So many people in your circumstances feel that way - it's natural that they should - and unfortunately, there are charlatans who take advantage of it. I must be cruel if I am to be kind and so I repeat what I just said. Your little boy - just why it happened I do not know - is idiotic. He will never be much, if any, better than he is now. No one knows how to cure such cases. But there are schools and institutions where they can be cared for and taught the little that they are capable of learning by people who have special training and experience in dealing with children like him. I strongly urge you to send him to one of them. You should not give up your entire lives to curing for him and run the risk of ruining your marriage and losing the happiness that can still be

yours. Yes," he repeated as the child's mother sobbed a protest, "yes, I mean just that. If this lad had died at birth you would have grieved but you would have recovered. You must look upon this in something of the same spirit."

"Better if he had," murmured the father bitterly.

"That we cannot know," replied the doctor sadly. "I wish I could encourage you to hope but I cannot. All I can do for you is to urge these things. First, do not keep on making the rounds from doctor to doctor as you have been doing. No one at present knows how to help you. But I promise that if any method should be discovered I will let you know at once. The next thing I urge is that you place him at once in a school where he can be cared for by those who know how. My assistant - " he pressed a button on his desk - " has a list of such schools and will help you to choose one. And finally," he smiled as he offered his hand, but his eyes were full of sympathy, "keep up your courage. Fill your lives with other matters. Don't allow yourselves to brood over what has happened. Let it sink into the past. Mrs. Meadows," he turned to introduce a quiet-faced woman who had entered the room in response to his summons, "will talk to you further about this. Goodbye."

The cases described here illustrate the fact that few people, if any, are endowed with sufficient intellectual ability to meet all situations that life may offer. The two young men in the bus were, it is safe to say, distinctly above average mentality, yet each had found himself unequal to the requirements for the highest professional levels and had been forced to find a place where the intellectual demands were somewhat less strenuous. Although they were intellectually inadequate for the topmost ranks, the great bulk of human activities were still well within their power to achieve. Louise, who completed high school but was not recommended for a college, has a more limited choice of careers before her. None of the professions are open to her, but it is quite likely that her tentative plan to become a

typist will succeed. Failing that, there are a good many other occupations in the field of business and industry or household help into which she might fit, pending the marriage which is likely to take place later on.

The two younger children, Emily and Dennis, are far more limited in their potentialities. Dennis is not equal to the demands of any sort of independent life outside the shelter of an institution. The chances are that Emily, too, will need such protection as she grows older. However, she is only eight, and there is a bare possibility - though not a probability - that her retardation may be in part superficial rather than fundamental. This possibility was recognized by the psychologist who recommended a second examination after the lapse of a few months.

In any case, Emily is less completely inadequate for meeting the demands of ordinary life than Dennis. She is able to communicate by means of speech, although her vocabulary is small and her articulation poor. She can do a good many things for herself. She can feed herself, dress and undress with some help, wash her own hands and face, handle her toys with only occasional breakage. In spite of her eight years, however, she has not yet reached a stage of mental development at which she is likely to be able to keep up with an ordinary first-grade class, but whereas the public schools could not admit Dennis in any department, Emily is thought suitable for trial in a special class. How well she will get on there cannot immediately be foretold.

Intellectual inadequacy is thus seen to be a matter of more or less rather than all or none. All of us are inadequate in some way and to some degree. Only a few are so inadequate in mentality that they cannot learn to perform some useful occupation or, to use Tredgold's phrase, "conduct themselves and their own affairs with ordinary prudence." It is with this group that we shall be concerned in this section. Such persons are often called mentally de-

fective, or feeble-minded. Amentia and oligophrenia are terms less often used. A more appropriate term has been suggested by Leo Kanner. He prefers to speak of this group as the intellectually inadequate since this at once raises the question, inadequate for what? For the extremely inferior deviates with whom we shall deal here, the question can be answered in very simple terms: Inadequate for self-support and self-direction in a world of normal people.

Degrees of intellectual inadequacy

In modern usage the intellectually inadequate are divided into three groups: idiots, imbeciles, and morons. Idiots comprise those of the lowest intellectual level; roughly speaking, those whose IQ's do not exceed 25. Idiots of high level usually learn to walk and perhaps to say a few words; they can be given some training along the line of personal cleanliness, although accidents will continue to occur from time to time. Few learn to dress without help. Their perception and muscular control are insufficient for safe handling of any but sturdy objects. Those of high grade can frequently be taught to perform simple household tasks. They learn to speak intelligibly, though their vocabulary is limited and their articulation nearly always poor.

Morons are those whose IQ is between 50 and 70. Their abilities range from those closely resembling the high grade imbecile to those whose deficiency is so slight that only continued observation or examination by mental test is likely to reveal it.

There is no sharp separation between these classes. In the final analysis, the assignment of a child to one or the other must depend upon the level of behavior at which he actually functions. Differences of personality, adjustment and training will frequently be highly important in determining this level. This is particularly the case for individuals whose IQ is near a borderline.

Cases at the borderline of adequacy

Since intellectual inadequacy is a quantitative rather than a qualitative expression, it is inevitable that questions of classification should sometimes arise. There is no sharp line of demarcation between what is sometimes called the "dull normal" group, who are able to get along reasonably well in jobs making little demand upon abstract intelligence, and the more seriously handicapped, who cannot get on at all without close supervision. The poorest of the former and the best of the latter may be intellectually indistinguishable, for circumstantial as well as fundamental differences may weigh the balance in one direction or the other. Strong muscles and robust health may compensate to some extent for lack of intellectual acumen. When jobs are few and applicants many a higher level of ability is required in order to secure and hold a position than is the case in times of labor shortage. The distinguished lawyer whose son chances to have an IQ of 70 is likely to be reluctant to see him take a pick and shovel job in which he might succeed, but the day laborer has no objections.

There are few areas in the field of mental measurement about which there is so much confusion of thought as that of the distinction between the normal and the feeble-minded. Because Terman, in one of his earlier writings, suggested that as a rule an IQ of 70 may be considered the division point, enthusiastic mental testers were quick to proclaim the doctrine that here is a rule that may be applied blindly to all cases. Actually, of course, all that was meant by the original statement is that the chances were more than even that a child whose Stanford Binet IQ falls below 70 will prove to be intellectually inadequate in the sense in which we have used the term. This is a far cry from saying that all such cases should be so classified. In the first place, the experimental error of measurement, even on so carefully standardized a test as the Stanford Binet, is

large enough to permit a considerable shift in standing on repeated measurement. This makes it impossible to use any arbitrarily fixed standard as a point of division between the normal and the subnormal. We can speak only in terms of probability. As the IQ increases, the probability that the child will be intellectually equal to meeting the ordinary demands of life also increases, though he may still fail for other than intellectual reasons. As the IQ lowers, the likelihood that he will be able to meet these requirements lessens. Experience has shown that Terman's estimate of IQ 70 as the approximate point at which the balance of probability shifts from favorable to unfavorable is not far off the mark. Nevertheless, there are an appreciable number of persons who rank distinctly below this level but who fill useful if humble places in the social structure. Others, whose measured intelligence is considerably above IQ 70, make such poor use of the abilities they possess that they can hardly be considered intellectually adequate.

There is, accordingly, a fairly wide range of test intelligence within which the distinction between the intellectually adequate and the intellectually inadequate may be difficult to make. In part, the difficulties arise from the experimental error of the test itself. An IQ obtained from a single test may differ by several points from that found when a retest is given, and even the average of two or three tests cannot always be depended upon as an indicator of the true intellectual level of the subject, especially when a source of error, such as extreme shyness or a marked language handicap, remains much the same from one examination to another. Doubtful cases of this kind are usually known as borderline cases. Such cases are found within a very wide range of IQ levels,¹ probably not shorter than that repre-

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Unless otherwise stated, the IQ obtained from the Stanford Binet test administered by a properly trained examiner is always to be understood.

sented by IQ 50-90, although by no means are all the cases within this range of questionable mental competence. Most of those who rank near 90 have sufficient mental ability to get along under ordinary circumstances, few of those who test close to 50 are likely to do so. But it must not be forgotten that intelligence differs in quality as well as in degree. Its extensity differs somewhat from person to person among those in whom its intensity or absolute level is much the same. This fact, taken in conjunction with the imperfections inherent in even the best test, should render it obvious that no absolute level in terms of IQ can ever be set as the dividing line between those who are and those who are not intellectually adequate to meet the requirements of everyday life. There are, and presumably always will be, a fair number of borderline or questionable cases, particularly among younger children, for whom the decision must be deferred until events provide a more decisive answer.

The child of borderline intelligence presents one of the most challenging problems in the entire field of the education of retarded children. It now seems clear that some of these children who would otherwise remain charges upon society can be salvaged for a useful life. The earlier point of view that all those with IQ's below 70 were hopelessly "feeble-minded", fit only for permanent placement in an institution is no longer tenable. Even the institutions, in many cases, are changing their emphasis as far as the less seriously retarded among their inmates are concerned. Instead of confining their efforts to making these cases as useful around the institution as possible, attempts are being made to train as many as are able for life outside the institution. At the end of this training they are discharged, usually under some plan of supervision until it is clear that they can get along without further guidance. Some fail, it is true, but many succeed. In a number of states which contain more than one institution

for the metally retarded, subjects of relatively high IQ are separated from those of less promise and placed in special schools where vocational training is combined with training in self-government, the handling of money and the management of other personal affairs.

Whether in or out of institutions, the intellectually inadequate constitute a serious burden upon the normal members of the population. If for only a few of those who stand close to the borderline the extensivity of their intellectual defect can be so reduced that they become contributors to society to however slight degree, the effort is well worth making.

The causes of intellectual inadequacy

There are many factors which may and sometimes do interfere with normal mental growth. Physical damage to the brain, such as occurs in cerebral birth palsy, may do so. Certain diseases, such as encephalitis, in which the brain is affected may leave lasting results. Deficient activity of the thyroid gland, if untreated, results in the condition known as cretinism, in which the body is malformed and the mental state little, if at all, above the idiot level. Other bodily conditions, some of which are operative before birth, others not until infancy or early childhood, may so work upon the nervous organization as to prevent the development of normal mental capacity.

We have seen in previous chapters that the majority of intellectually superior children come from intellectually superior families. By analogy, we might expect that those of inferior mentality would tend to come from families in which the average mental level is below the usual standard. Dozens of investigations have shown this to be the case. "One does not gather grapes from thorns or figs from thistles," say the Scriptures. Retarded children come from all

ranks of society but by no means in equal proportions. Moreover, those who exhibit the physical signs of some organic defect or injury make up the great bulk of the inferior deviates in families of superior mental status. Such cases are unlikely to have a hereditary base.

That the majority of mentally defective children from defective stock should be made up of those who, although they are intellectually inadequate for unsupervised life in the outside world, are nevertheless able to learn to perform a good many useful activities is understandable. The very low-grade cases, the idiots and low-grade imbeciles, rarely produce offspring. Many of them are physically incapable of doing so, others are prevented by being kept in institutions or by watchful care of guardians. But a large percentage of those who approach more closely to the normal standard without quite attaining it are neither placed in institutions nor given the guidance and supervision they need. In and out of wedlock they produce children, many of whom are of the same intellectual caliber as themselves. So it comes about that the very lowest of the intellectually inadequate group are almost if not quite as likely to come from superior as from inferior families, although the majority of those less severely affected are likely to have been born of mentally inferior stock.

A word of caution is needed at this point. We can ascertain the nature of general antecedent factors in intellectual inadequacy by comparing the relative frequency of these conditions among groups of normal and seriously retarded cases. We must be wary, however, placing interpretations upon these facts that are not directly given by the data.

Practically all investigations have shown that among children reared by their own parents, there is usually a fairly close resemblance in the mental levels of parents and offspring. Not all are agreed, however, as to how this relationship has been brought about. Many believe it to be a

result of biological inheritance, just as is the color of the eyes or the hair. Some, however, reject this view. They believe that parent-child resemblance in mentality is not a biological but a social phenomenon brought about by the kind of intellectual opportunity and stimulation provided by the different homes.

MINIMAL BRAIN DAMAGE

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What does the term brain damage mean? Brain damage means that the brain once normal has been damaged or injured. The term, however, is also used where there is no evidence of injury and where the lesion in the brain is due to a failure in normal development. A more accurate term would be organic cerebral disease.

How may this condition arise? It may arise from pre-natal causes before birth, - (1) developmental defects of the brain, (2) infections of the foetus in the first three months of pregnancy, (3) a disturbance in the nutrition of the foetus due to inadequate food intake on the part of the mother or to an inadequate blood supply of the foetus during pregnancy. This condition may also arise from paranatal causes at the time of birth, - (1) difficult, prolonged labour (2) knotting of the umbilical cord during labour (3) prematurity where the skull is thin and the vessels are friable. It may arise from post-natal causes after birth, - (1) jaundice due to Rh. incompatibility between the foetus and the mother (2) head injuries (3) encephalitis or meningitis.

Where is the damage? Damage to the brain may be localized by examination of the brain after death or by the neurological examination and electronencephalography in life. The latter method is by no means as accurate as the former.

The signs and symptoms of a cerebral lesion may be classified as specific or general. Specific syndromes are the result of damage to areas with special function and the

damage to these areas is almost inevitably associated with the development of the same clinical signs. For example, damage to the occipital lobes, the posterior part of the cerebral hemispheres is always associated with loss of vision. Damage to such specific areas can be accurately localized by the clinical examination. The general syndromes are due to the fact that a number of areas of the brain are linked together in their function and damage to any one of those areas gives rise to the same general signs and symptoms. These pathways often involve widely different areas of the brain and widely separated lesions will give rise to the same clinical picture. It is obvious that the area of damage cannot be localized with as much accuracy in the general syndromes as in the specific syndromes. Many of the signs and symptoms associated with minimal brain damage are of the general type rather than of the specific type, consequently we are unable in many cases to accurately localize the area of brain that has been damaged.

What are the signs and symptoms of minimal damage? The signs and symptoms about to be described are considered due to brain damage because they are found in adults or children after damage to the central nervous system and in adults or children who have been born with demonstrable disease of the central nervous system. Such signs and symptoms may, for example, be seen in some children who have had encephalitis or meningitis, and in some children who have been born with cerebral palsy. The adjective "some" is necessary because not all children with these conditions show such disturbance of behaviour.

The most important signs and symptoms are represented by deviations and distortions in behaviour, which may also be classified as specific or general. The specific deviations include such organic syndromes as organic aphasia, an inability to speak due to damage to frontal or temporal areas of the brain, and organic alexia, an inability to

read due to damage to temporal areas of the brain. Aphasia and alexia of organic origin are uncommon and only a small percentage of children with difficulties in speech or reading have organic cerebral disease. The general deviations are more frequently found in children with minimal brain damage and will therefore be discussed in more detail.

Disturbances of Behaviour

These children often show a marked distractibility with erratic, uncontrolled and impulsive behaviour. Their activity shifts from one pattern to another within short periods of time. As a result, they may be socially unacceptable and are in frequent conflict with authority. Their behaviour may reveal evidence of tremendous activity with marked hyperkinesia and restless drives.

They are often unable to complete a simple activity due, partly, to the distractibility noted above, but also due to an inability to organize their behaviour into a total pattern. Their observed behaviour seems to represent fragments of behaviour rather than a carefully planned and synthesized pattern of behaviour.

Perseveration (repetition) may also be evident in behaviour. The child repeats specific patterns of behaviour even though these are unacceptable and he is punished for them. In some children these patterns are almost stereotyped.

In school the children are inattentive; their work varies from day to day and shows a marked variation in quality. They show wide swings in mood, may move from euphoria to depression, are easily frustrated and over-react to emotional stimuli. They are uncertain, anxious and frightened in situations which place pressure upon them.

A pattern of behaviour called "Catastrophic Reaction" has been noted in some children. A lack of flexibility and an inability to adjust to increasing difficulties leads to an increasing sense of failure and frustration. Eventually

the child reaches his level of tolerance and, if pressed beyond this level, becomes overwhelmed, bursts into tears or anger and gives up all attempts to complete the test.

Disturbances of Thought and Concept Formation.

Marked distractibility may be present in many children, with a tendency to shift one idea to another and to give irrelevant answers because the child is thinking of some subject other than the question. This is seen in writing where the individual may begin a paragraph dealing with one subject and end the paragraph dealing with a completely different subject.

Disturbances may be evident in the area of concept formation. A concept may be considered as the act of bringing together several mental images under one heading. It represents the ability to classify, a form of intellectual synthesis, and is the opposite of analysis. An excellent example of a concept is the botanical classification, where various plants are grouped into families, sub-families etc. Some children cannot form adequate concepts. Some are able to form concepts but these are immature or poor concepts based on unessential or minor factors. For example, a good concept embracing an automobile, a bicycle and a train would be "transportation". A poor concept would group them as having wheels, as being made of metal, as being painted.

Persistence may also be evident in thought and concept formation. For example, in the psychological tests which endeavour to group objects together under a single concept, there may be a tendency to group the different objects together in the same manner whether or not that grouping is particularly appropriate. If the first grouping should be based on shape then there will be a tendency to base all further groupings on shape whether or not these groupings should be based on colour or function.

Disturbances of Perception

Perception may be considered as a form of recognition. For example, one sees a structure and recognizes or perceives it, as a specific object, one hears sounds and recognizes, or perceives these as a specific tune. Perception involves the recognition of the individual parts and the synthesis of these parts into a whole. Auditory perception is necessary for the comprehension and development of speech and visual perception for reading and writing.

One of the disturbances may be the inability to discriminate between stimuli. Due to a marked sensitivity to all stimuli, extraneous stimuli, such as light, sound and movement, may distract the individual and prevent him from concentrating on the objects to be perceived. Another perceptual difficulty may be a tendency to focus on small segments of an object neglecting the whole object. Individuals become enmeshed in minor details, failing to perceive the major object; for example, focussing on a button instead of a coat, on a tree instead of a forest, on a nose instead of a face. Another is the tendency to become attached to the same detail in different objects and to perceive the same thing in these different objects. The term "perseveration" is used for this and is seen in children who pick out and name the same object in subsequent psychological tests, neglecting the total tests and the objects which are significant in them. Because the individuals cannot discriminate between foreground and background, they are unable to recognize letters and numbers.

It is important to recognize that the behaviour of the brain-damaged child depends not only upon the organic lesion in the brain but also upon his environment, his parents, his sibling, his neighbourhood and his school. The effects on the individual can be aggravated to a significant degree by such things as parents with high standards who refuse to accept the behaviour of the child; brighter

and more competitive siblings who create feelings of inferiority in the child; children in the neighbourhood who do not accept him but tease and reject him, and teachers, who, not recognizing the syndrome, consider him uncooperative, undisciplined and stupid. The more understanding and tolerant the environment the less the effect of the brain damage on the child. The less understanding and tolerant the environment the greater the effect of the brain damage on the child.

What is the effect on learning of minimal brain damage? This has been covered to some degree in the previous section but may be briefly summarized as follows, -

In the classroom the children are restless, hyperactive, difficult to control and discipline. They are distractible and shift rapidly from one topic to another. They find it impossible to focus on their work, to concentrate and to complete an assignment. Their memory is variable; work learned one day is forgotten the next. These children find it difficult to recognize letters and numbers and distinguish between background and foreground. Consequently they have difficulty in reading, spelling and to a lesser degree in arithmetic. Such children are unable to organize their work and to synthesize facts. They find it difficult to write simple compositions and to develop an organized approach to mathematics. They are easily frustrated, overwhelmed by minor difficulties and show wide disturbances in mood which often appear to have little relationship to reality.

How does one diagnose minimal brain damage? Since we are considering minimal brain damage it is obvious that it will be difficult in many cases to make a precise diagnosis. As previously mentioned the diagnosis is usually made on the basis of the neurological examination and the electroencephalogram.

While there are a number of responses in the standardized tests of intelligence which suggest the possibi-

lity of brain damage - a wide scatter in the results with successes and failures over a number of years - a marked variation in the quality of the responses, failing one test yet passing the same type of tests at a higher age level - a poor visual memory, difficulty in spatial organization, inability to copy squares and diamonds and to carry out coding - a poor auditory memory for numbers, phrases and concepts - it is generally accepted that there are no responses in the standardized tests of intelligence which are specific for brain injury. Special tests - Goldstein - Schaefer, Strauss-Lehtinen and Bender Gestalt - increase our ability to diagnose cerebral disease. However, some psychologists believe that these tests while increasing our ability to recognize organic cerebral disease are not specific or pathognomonic. It is possible that there are, as yet, no psychological tests which are capable of providing a definite and absolute diagnosis of brain damage. It is extremely difficult to be certain about minor neurological findings in children. The report, no neurological abnormalities detected, may mean that there are no abnormal signs in the examination, or it may mean that there are minimal signs which are difficult to interpret. The neurologist may be presented with an awkward child with poor hand skills. He must decide whether this is due to minimal disease of the cerebellar system producing incoordination or whether this is a child who is simply an awkward individual without any organic disease.

Because it is frequently difficult for the neurologist to give definite opinions in this regard the terms "hard" and "soft" neurological signs have come into usage. Hard signs are those which are unequivocal and which are considered to represent definite disease of the central nervous system. Soft signs are those which are equivocal and which may or may not indicate disease. Even the use of these terms does not solve all the problems of the neurological examination.

The electro-encephalogram, a recording of the electrical activity of the brain comparable to the electro-cardiogram which records the electrical activity of the heart similarly presents problems in interpretation. Along with the negative reports from the neurologist one frequently receives the report that the electro-encephalogram is within normal limits for a child of that age. The reason for such a report is the fact that as the child grows older the electro-encephalogram changes. The rates of changes differ in normal children and not all children change at the same relative speed. There is therefore a range of normal patterns for any given age which includes those children who mature slowly and those who mature rapidly. If one finds minimal abnormalities in the recording, one must decide whether these are abnormal patterns due to disease or whether these are normal patterns in a child whose rate of maturation is slow and whose electro-encephalogram is, therefore, within the range of normal. One usually finds that the more experienced electro-encephalographer recognizes the physiological variations and reports more records as within the range of normal.

If the neurological examination, the electro-encephalogram and the psychological tests cannot make a definite diagnosis of minimal brain injury how can it be done? Quite frankly, it is impossible to make an accurate diagnosis of minimal brain damage in many cases. The medical profession is becoming concerned with the increasing diagnosis of this condition, particularly since, in many cases, it is diagnosed solely from the behaviour of the individual.

Certain patterns of behaviour are commonly found in individuals with brain damage. If present they are considered by some as definite evidence of brain damage. This is faulty logic. Because cirrhosis of the liver is usually found in the chronic alcoholic one cannot conclude that every patient with cirrhosis of the liver is a chronic alcoholic. A history of heavy drinking, however, would justify the diagnosis of chronic alcoholism in an individual with cirrhosis of the liver.

Similarly the clinical history is of tremendous help in the diagnosis of minimal brain damage. Was the child born with a congenital defect, club feet, a harelip? Was the labour prolonged or precipitate? Was there excessive drowsiness or difficulty in nursing after birth? Was there a history of any disturbance in development, a delay in sitting, walking or talking? Was the child awkward? Did he stumble or fall in the early years? Did he have difficulty in feeding himself, controlling his hands? Was there a history of encephalitis or head injury? A definite history of some condition which might produce cerebral damage makes the diagnosis of minimal brain damage more likely. One must not forget that minimal brain damage is extremely difficult to diagnose, is often diagnosed on inadequate grounds and is frequently misdiagnosed.

What conditions simulate brain damage? There are a number of conditions which simulate brain damage but of these we will discuss the two which are most important.

A. The hyperkinetic child

The behaviour of many of these constitutionally hyperactive children simulates the behaviour of the brain-damaged child. In infancy they are colicky, present problems of feeding, sleep poorly and are diagnosed as "hypertonic" infants. In the pre-school years they are active, energetic and frequently disobedient. In the school years they are distractible, do not complete their work, function below the level of their ability and are in frequent conflict with the teacher. In later life these children gradually develop control of their behaviour, and as adults are usually capable, energetic and successful. The family history usually reveals other individuals with similar patterns of behaviour. The diagnosis can be made on the normal physical examination, the history of similar patterns of behaviour in the family and the fact that the hyperactive behaviour is on the whole planned and well organized.

B. The child with a maturational lag

By definition a maturational lag is a temporary delay in development. With increasing age the maturation gradually accelerates, the lag diminishes and development eventually reaches normal limits. Maturational lags occur in various areas of development, most frequently in communication. One of the most common is the delayed onset of speech. Children with this condition appear normal in early months, sitting and walking at the usual time. However, they are slow in developing speech and may not say words until they are three or four years of age. Their speech, when it develops, is frequently indistinct but most children have adequate speech by the age of six years. These lags in speech are often mistaken for aphasia or organic origin, but may be diagnosed by the relative physical findings and the ultimate development of normal speech. The family history may be of assistance, for one frequently finds a similar disturbance in other members of the family.

The most common maturational lag encountered by the teacher is the "specific reading disability". Children with this condition present problems in the early grades because of difficulties in reading, writing or spelling. They have normal intelligence and no physical abnormalities can be found to account for their difficulties. They gradually develop these skills and most of them eventually achieve adequate reading, writing and spelling. A few children, however, do not and are handicapped in their higher education. These children often show perceptual problems in psychological tests similar to those found in the brain-injured child, difficulty in the copying of symbols and a poor visual memory. These children are often mistaken for an organic alexia, but may be diagnosed by the normal physical examination and the ultimate development of scholastic skills. Here again the family history is of significant help, as one frequently finds similar disturbances in reading, writing and spelling in other members of the family.

What can be done to help these children?

Various medications have been tried in these children. The drugs used include stimulants such as benzedrine, sedatives such as phenobarbitone and tranquillizers such as phenothiazine. While one finds medication of value in certain children, it is difficult to predict the effect. When effective, they produce hyperactivity, emotional lability and improve the total behaviour of the child.

The most effective method of helping these children appears to be through specialized programmes in the classroom. Some of the principles underlying these programme principles will be briefly reviewed. As many of you know these principles have been evolved by Strauss and Lehtinen.

1. Because of the disturbance in concentration, classes are limited to a small number of children - perhaps a maximum of eight to ten. There are no pictures on the walls; the windows are often frosted; the ceilings are of acoustic tile and the children are seated some distance from each other. In some classes they are separated by partitions or face in different directions.

2. The programme is broken into short periods dealing with different subjects. Because of the difficulty in concentration, periods of normal length are seldom used.

3. In order to reduce the stimuli presented to the child to a minimum, the material is simply prepared with very few drawings or pictures.

4. Because of the problems of visual perception, the background and the foreground of the material are frequently coloured in contrasting colours.

5. In arithmetic, concrete material is used in teaching the principles of mathematics, and in the earlier grades the abacus may be used. Because of the difficulties in concept formation the material is simplified and only simple and easily recognizable concepts are used.

6. Because of the tendency towards perseveration, frequent breaks are given in the work thus allowing the child to detach himself from the previous activity before moving on to the next activity.

7. It is necessary to accept a great deal of behaviour which would be unacceptable in a normal classroom. Discipline, while firm and consistent, must be flexible and tempered by a recognition of the child's disability. While such classes must function within definite limits, the limits of acceptable behaviour are of necessity much greater than these in classes for normal children.

MENTAL PROCESSES

"The influence of heredity is far more elusive than was formerly supposed. Galton's Law of Regression, a law definitely founded on statistics, reminds us that children of geniuses are rarely so brilliant as their parents; and by the same principle, the offspring of the dull are seldom quite so dull. The chip may be better than the block." (Sir Cyril Burt, "The Backward Child". Univ. of London Press.)

When a child is referred to a class for backwardness, the problem for the teacher is not only to assess the degree of retardation in the primary subjects, but to find out the causes and apply remedies, and also to determine whether the child has the intellectual ability to progress at a faster pace than he has done. His mental powers are assessed by intelligence tests. These tests determine "innate, allround, intellectual efficiency". In order to explain this definition, it can be broken down into simpler factors. Mental tests measure certain aspects of human behaviour. They assess the ability to profit by experience, the power of abstract thinking, and the degree of adaptability to new situations.

Each test has some special bias: a verbal bias - questions dealing with words; an arithmetical bias - based on figures; visual - depending on diagrams; practical - based on the arrangement of scattered pieces of an apparatus to make up the whole.

Burt's "Revision of the Standard Binet Tests" was largely used before the war. These tests have been re-standardized in the U.S.A., but adjustments of the further revision have not yet been standardized for use in England. Some of the abilities tested by the Binet Tests are these:

reasoning, memory, speed of response and the definition of words. Group tests have been devised for testing a large number of cases at one time. Performance tests are used for measuring intelligence when it is necessary to overcome language difficulties, and handicaps due to environment.

The tests applied by me to each of the boys were "Burts's Revision". The results are given in terms of Mental Age as compared with Chronological Age; and the Intelligence Quotient (I.Q.) is determined by dividing the mental age by the chronological age and multiplying by 100. A child would have an I.Q. of 100 and would be considered an average child in intelligence. Children with an I.Q. between 70 and 85 are deemed dull; children between 90 and 110 are considered normal.

Here is an analysis of the I.Q.s of 30 children tested:

80-85	85-90	91-100	101-110	111-115
3	7	8	11	1

It will be observed that 10 boys are below average intelligence, eight are a poor average, 11 are a good average, and one above average.

The average chronological age of the class at the time of testing was $10\frac{1}{2}$ years, the average mental age was 9.8 and the average I.Q. was 96.

While the class generally is only a few points below average in intelligence, the standards of attainment in reading and arithmetic are far below the potential mental capacity of the children. Care, however, must be exercised in teaching, as they cannot stand too much mental strain. The physical effects of the war and the poor home conditions must be taken into account in class work.

Meaning and use of words play a great part in the Binet Tests, which are weighted on the verbal side. One test, usually administered first, consists of a list of fifty

words. The child gives the meanings of as many as he can. At eight years of age, he is expected to know 10 words, at 10 years of age he is expected to know 15 words. In view of the importance of vocabulary to a child being prepared for the civilization of today, I append the result of the vocabulary test:

Below 9 words (Fail for 8-year-olds)	10-14 words (Pass at 8-year age level)	15-19 words (Pass at 10-year-old level)
13	12	1

The average age of the class was 10½ years from birth, the average vocabulary age was eight years. The children as a whole are over two years backward in vocabulary.

The determination of the intelligence of a child is useful to get a grading of his mental level, and to relate this level to the standard of his attainments in school subjects and for vocational guidance. Apart from school use, these tests are used in industry and in the Armed Forces. By their means, it is possible to sort out the more educable from the less, the more technically gifted from the academic person. In highly organized industry of today, where different abilities are needed for different processes in production, intelligence tests point out the most suitable persons for performing a particular process. In the second world war, testing was useful in placing recruits in those sections of the war machine for which they might be best suited.

There is some conflict of opinion among psychologists as to whether the intellectual ability of a child remains constant from birth, and whether heredity determines the intelligence of the offspring. Professor J.L. Gray states: "The constancy of the I.Q. is only relative. When we say that it is constant, we mean simply that if nothing occurs to raise or depress an individual's comparative intelli-

gence, it will tend to remain the same. Sometimes it is held to prove that intelligence is not influenced by environment. We know quite well that when some really substantial change takes place in a child's environmental history, his I.Q. will either rise or fall by a greater amount than the rise or fall in the group as a whole." (J.L. Gray, "The Nation's Intelligence". Watts & Co.)

He continues that the elimination of poverty would almost certainly raise the mean Intelligence Quotient of the population and that improved feeding and housing would do more to raise the educational level than extra efforts in the classroom. The studies made by Freeman, Holzinger and Mitchell, of foster children in Chicago, U.S.A., bear out this argument. The conclusions reached are here summarised:

1. Before being placed in foster homes, the children were tested by Binet' Tests at an average age of 8 years. On being re-tested 4 years later they had gained on an average 7.5 points in their I.Q. This increase is attributed to the social and cultural superiority of the foster homes.

2. Of these children, those put into very superior foster homes gained substantially more than those adopted into inferior homes.

3. Children adopted into a family at an early age and reared with "own" children very closely resembled the blood children of the family.

4. Children of the same parents adopted by different foster parents resembled each other less than when children of the same parents were reared together. ("The Influence of Environment on the Intelligence, School Achievement, and Conduct of Foster Children", 27th Year Book, N.S.S.E.)

An experiment which questions the opinion that the level of intelligence remains constant is that performed by Bernardine Schmidt. She raised the average performance in Binet Tests of a group of defective level to a level of be-

low average. She succeeded in this by placing the children in a specially designed social and educational environment for three years. Besides the group that had this special attention, a control group was observed, that did not receive this treatment. The latter group showed a slight fall in ability. ("Psychological Monograph" vol. 60. No. 5., American Psych. Assoc.)

In considering the mental functioning of the child, there is a tendency to overlook that such functioning is the manifestation of something concrete, namely, the brain. In schools the drive is for better results in Arithmetic and English - the two subjects for Common Entrance Examinations for admission to one of three types of secondary school. Physical development, whether through actual exercise, or school meals, is dropped to second place.

In spite of the recognition in the Education Act that educational progress is directly related to physical efficiency, the training of the mind still seems to be the chief concern of schools; and the relationship of the mind to the body generally disregarded. There is overwhelming evidence that the degree of intellectual expression depends directly upon the material state of the body. Dr. A.F. Tredgold states that: "The essential basis of amentia (the state in which the mind has failed to attain normal development), is an imperfect or arrested development of the cerebral neurones (nerve cells of the brain), a fact which is now established beyond doubt by careful microscopical examinations conducted by numerous competent observers." (A.F. Tredgold, "Mental Deficiency (Amentia)", Bailliere, Tindall & Cox.)

There are many chemicals which affect the human mind, while many are made in our own bodies in small quantities and help to regulate our behaviour. If a child has defective thyroid glands, then the administration of thyroid extract will cause an increase in the child's intellectual powers.

General physical growth, and with it the production of these very necessary chemicals in the body, depend on the material conditions of life, and they in turn determine the state of health, of intellectual level and behaviour.

Teachers are sometimes asked to assess the intelligence of their children from observation. While this can be done in some broad manner, they can only measure actual achievement rather than the mental ability to achieve. School placing depends on factors other than mental ability. It can make no provision for the lack of energy, emotional instability, the poor homes and the low physical condition of the pupils.

Physical and mental growth are natural processes beginning at birth. To ensure development to the child's fullest capacity, adequate material conditions such as food, air, sunshine, physical exercise and rest, as well as a high cultural standard and opportunities for learning by experience are necessary. The earlier a child is provided with an optimum environment, the greater will be his chance of reaching full physical and mental stature.

As has been pointed out, Binet Tests are weighted on the vocabulary side and there is usually a high degree of agreement between the score of the vocabulary test and the final figure of the whole test. Verbal ability is closely dependent on home stimulation, apart from intelligence or school work. Lecturers teaching the administration of Intelligence Tests advise the student to commence with the Vocabulary Test and then begin the full tests at one year below the vocabulary level. In the case of children from institutions, it is usual to begin two years beyond vocabulary achievement. Their vocabulary has been found to be far more limited for their intelligence than that of children living under normal home conditions.

Intelligence Tests are also used for determining whether a child has mental abilities so low as to be unable to benefit from the education provided at the ordinary

primary or secondary school. Children in the past were certified as "Mentally Deficient" by school medical officers. In the future, qualified psychologists who have specialist training will help in this work. Children found to have a low Intelligence Quotient are sent to Special Schools, colloquially known as "Silly Schools". These children, however, are trained, so that when they leave school they can take their place in society. This being the objective of the Special Schools, it would be better for those children of low I.Q., who show no behaviour problems, to remain in the normal school. They should, however, be relegated to a class for special methods of tuition. Only children who cannot fit in with the games and social life of the school should be segregated.

In the past, when the school-leaving age was 14 years, such a special class had its objections, M.D.^x Children stayed at school until they were 16. With the extension of the school-leaving age to 15, however, this objection does not hold.

In my class, one boy was certified M.D. and recommended for admission to a Special School, but the parents appealed on the ground that the boy fitted in with other children of the school and the district. The appeal was allowed and the boy is now working happily in the class.

The stress on the use of Intelligence Tests has so far been on the side of the backward child, with whom we are primarily concerned in this book. They can also be used for the bright child.

During the Christmas holiday of 1947, a friend, a solicitor by profession, approached me regarding his daughter. Her high school was closing down and he wished her to obtain entrance to a girls' public school for which the competition was great. While her school reported well on her standard of English, History and Geography, her Arithmetic, it seemed, was hopeless. There were eight weeks to go to the

^x M.D. = Mentally deficient

entrance examination and the parents wished to know if by coaching in Arithmetic, she might raise her standard sufficiently to pass the examination. I first administered the Binet Intelligence Tests, and found that the girl, whose age from birth was $11\frac{1}{2}$ years, had a Mental Age of 16.4 years, giving an Intelligence Quotient of 143. She was therefore a bright girl. In the vocabulary test she reached 18 years of age-level and in Burt's Reading Test, which only goes to 15 years she attained a mark of 14.9 years. She had read "Pilgrim's Progress", "Pride and Prejudice", "David Copperfield", "Master of Ballantrae" and "Treasure Island", "Peter Pan" and other good works of English literature. In Arithmetic, her achievement was 9.6 years, that is, she was two years backward. But in Binet Tests she showed no arithmetical deficiency as regards number or reasoning.

In the circumstances it seemed possible that with intensive coaching, especially as part of the time was in the holiday, she could improve her arithmetic level. This estimate, based on scientifically devised tests, was found correct, for after seven weeks of such tuition re-tests in Burt's Mental, Mechanical Arithmetic and Problems showed an average attainment of 12.1 years, a gain of 2.5 years. The girl passed her examination not only in English, but also in Arithmetic.

If this can be done with one child, the individual treatment of backward children arranged in small classes in schools should do much to decrease the backwardness now existing.

x x x

Child Guidance Clinics play their part in dealing with backward and problem children. They investigate cases referred to them, suggest and apply remedies. The clinics are medical institutions, being administered by psychiatrists. Among cases treated are the backward child, the delinquent, and sufferers from troubles such as enuresis, thumb-sucking and stammering.

Dr. William Moodie, Medical Director of the London Child Guidance Clinic, tells of a boy, 12 years of age, who was referred to him by the Probation Officer, for stealing after put on probation for two years. Investigation showed the boy's reading level was that of a child of four; he lived in a very poor home; he was easily led; he had poor health and was attending hospital; his backwardness at school gave him a feeling of inferiority. The boy was given special coaching at the Clinic. After seven months his reading had improved to that of a child of eight years. This improvement gave the boy more self-confidence. There was no return of delinquency and encouraging reports were received from his school.

It is estimated that from one to two per cent of the ordinary school population needs special help at a child guidance clinic every year.

MOTHERS' HEALTH

"The character of the adult population of any country, its vigour, health, and working capacity, is determined by development and growth of the children, not only in their postnatal environment but also in the wombs of their mothers. The foetus lives, like a true parasite, regardless of the expense to the mother." (Miss M. Bruce Murray, Medical Research Council Report 81.)

The behaviour and educational progress of the child in the classroom and out of it depends to some extent on the health of the mother during pregnancy, on the delivery, and on the physical condition of the mother after the child is born.

This investigation disclosed that three of the boys were prematurely born, one at seven months and two at eight months; in two cases instruments were used to help delivery, and one was a breech birth. David, who is backward in reading by $5\frac{1}{2}$ years, was an eight-months' baby and delivery was by instruments. To this day he finds it difficult to recognize letters by their sounds. There is the possibility that damage was done to the tissue of the brain, causing permanent injury. Psychologists attribute smudgy writing in school to instrument delivery.

To avoid difficult childbirth and possible brain damage, the future mother must be thought of when she herself is a child. A girl who, in infancy and early childhood, suffers from malnutrition, is liable to pelvic malformation. When she reaches womanhood, and with it marriage and pregnancy, it is found that in consequence of a weak pelvis, actual delivery of the child is extremely difficult. This is particularly the case with first-born children. Brain damage may result, and unless this is extremely mild leaves

its mark on the mental abilities of the child. Investigation on children who are considered backward, dull, nervous or fidgety, will in many instances show such symptoms to be due to injury to the brain at birth.

Schwesinger, in "Heredity and Environment" enumerates the special congenital conditions which are popularly considered to leave deficient intelligence in their wake:

1. Extreme malnutrition of the mother during gestation, which results in depriving the embryo of needed elements from the maternal blood stream.

2. Severe, prolonged or wasting diseases such tuberculosis, cancer, diabetes, and pellagra.

3. Toxic conditions, bacterial or alcoholic in origin, may affect the growing embryo; may affect the sperm cell before conception and result in defective offspring. Paternal alcoholism may lead to lowered intelligence factors.

4. Infections, especially syphilis, which attack the nervous system.

5. Under or over activity of ductless glands during pregnancy may affect the mental equipment of the offspring. Creatures born without adequate thyroid equipment are physically and mentally stunted. The condition sometimes responds favourably to early administration of thyroid.

6. Birth injuries, especially mechanical injury resulting from prolonged or difficult labour, as a result of pressure on the child's head, may arrest neural growth.

7. Psychic shocks or severe emotional experiences or strain of the mother, resulting in ductless glandular changes, the secretions of which are carried to the child through the maternal blood stream; or which, producing uterine contractions, may alter the blood supply to the foetus and may affect the mentality of the developing offspring.

Medical science is fast approaching a stage where these vitiating conditions can be largely controlled and therapy instituted either through prevention or early pre-natal treatment.

Sir John Boyd Orr states:

"For the health and physique of the rising generation, the health of women is more important than that of men. One of the common results of malnutrition is anemia. It is much more common in women than in children and men. Its frequency in women is attributed to the extra demands for iron in women of child-bearing age. Diet is an important factor in preventing anemia. About 80 per cent of the deciduous teeth of British children are imperfectly developed. Since this defect may be established before birth, it may be in part due to dietary deficiency in pregnancy."

DELINQUENCY

"As most confirmed criminals began their careers in childhood, it is unwise to ignore such a valuable source of information about the environment in which they take their first steps in crime. It is essential that the home conditions of delinquents should be examined and made known; for of all the varied factors associated with delinquency those relating to environment appear most susceptible to external influence and social progress." (J.H. Bagot, M.A., "Juvenile Delinquency". Jonathan Cape, Ltd.)

There is ample evidence to show that backwardness is directly related to delinquency. Sir Cyril Burt, in "The Young Delinquent" (University of London Press), states that 80 per cent of London school children are placed in that category. Another figure to illustrate this is given. Of 3,000 juvenile police court cases examined, 40 per cent were seriously retarded in reading.

It is not to be wondered at that the Board of Education in its pamphlet on Backwardness writes: "The social value of the work (the teaching of backward children) as a means of combating a dangerous source of delinquency is one that cannot easily be assessed".

Here are cases in which the boys of my class did wrong and were caught by the police, but not all of them were charged. Seventeen boys were caught out of 31 on the roll. The major offences were six cases of stealing from open-counter shops; five cases of trespassing in bombed houses; three of stealing fruit; one of trespassing in a park after closing time; one of stealing flowers from a park "for mother"; one of kicking a ball on the railway; one of breaking

a lorry window with a stone; one of throwing stones; and one of stealing firewood. Donald is a special case and these are his exploits.

Donald got into bad company while Dad was in the Forces. In September, 1946, he "opped the wag" -- played truant from school; took a ticket to Euston Station from Westbourne Park, and jumped a train to Watford. He wanted to visit "Aunt" in Northampton, with whom he had stayed for a holiday. He was spotted by an inspector, returned to Euston, then home to his mother and thrashed. The police called at his home and warned him. In the same month, with two other boys, he broke into a shop, and hid some plates under his jersey. A policeman in a car stopped him and asked what he had. He was taken to Police Station, detained two weeks at a Remand Home and reported weekly thereafter. He attends a Child Guidance Clinic for "play therapy".

Malcolm was put on a year's probation for stealing sweets. Tony's parents were fined 2 pounds when the boy was seen stealing a lighter from the British Home Stores. In all other cases of misdemeanours, names and addresses were taken and the boys warned, as a deterrent.

Even from the facts stated above, it would seem that the police are very kind and understanding in their treatment of these delinquent boys. An interview with an officer who was responsible for investigating children's petty crimes, was very revealing. He said, "If I were a boy living in this district I should most certainly get into mischief. As a lad I was high-spirited, but, living in the country, I could go after a rabbit, climb trees, play football and generally wear off my surplus energy. These children live in overcrowded tenements, have only bombed houses and uncleared bombed sites to play on." It was also a police sergeant who, while on a visit to the school, noticed the great part of the playground taken up by air-raid shelters. He used very strong language as

to what he would do, if he, as a parent, lived on the district where there were almost no facilities for children to play. These shelters have since been removed.

The two offences most frequently committed by the boys in Kensal New Town district are shoplifting and trespassing in bombed houses.

Unsettled marital relationship or loss of a parent often leads to delinquency in children. As was analysed in the Chapter on Families, there were ten such cases out of the 31 investigated.

The high incidence of delinquency among boys who are in the younger age groups occurs in London as a whole. In a report dating from 1947, it is observed that while there was a general decrease in juvenile delinquency for the year ending March, 1947, there were disturbing increases in the age groups from eight to 12 years. The figures for the eight- and nine-year-olds are the highest recorded since 1933 Act. The Report says: "It seems probable that we are now witnessing some of the inevitable consequences of the dislocation of family life during the war years."

In the discussion in the Report, Sir Percy Harris said he had always been very much in favour for many years of public authorities providing entertainment for the children. This was one way of counteracting the evil things of a child's mind engendered by always seeing crime in the cinema. Very often these children are the most adventurous, the kind who might be useful citizens. Better use should be made of leisure time, and, what is extremely important, children should be taught to read. A large portion of the young offenders are normal children, who, if they had the right kind of homes, would become thoroughly good children.

Bagot of Liverpool found that the commonest things stolen were cash, food, clothing and sweets. The majority of the delinquents had very little pocket money and it was the desire to enjoy what others had that led to the stealing of money. The children had a great desire to go to the

cinema. There was a reduction in delinquency in Liverpool during holidays, for children can travel to the outskirts for one penny on the trams.

Of overcrowding, Bagot says: "The proportion of families living in overcrowded homes is so high that this factor must at least be said to be strongly associated with delinquency and may indeed be one of the principal causative factors.

J.A.F. Watson, chairman of the Southwark Juvenile Court says: "Only if we dig deep shall we expose these basic factors and from them alone shall we learn that what matters is not the conduct of the child, but his social and mental background; poverty and slums; disease and drink; immorality; indifference to religion; each of them conducing to that most tragic of all a child's afflictions - a broken home. These are the roots of evil." He continues: "But I do say most emphatically ... that bad housing is one of the root causes of nearly all our social ills."

Stuttering or Stammering

Definitions

Warren, in his Dictionary of Psychology, defines stuttering as "A disturbance in the rhythm of speech, either an intermittent blocking or the convulsive repetition of a sound." He does not differentiate between stuttering and stammering. The Webster's New International Dictionary definition of stuttering is "To speak in a hasty and stumbling way, with spasmodic repetition of syllables and consonants; to hesitate or stumble in uttering words; to utter with spasmodic repetitions or pauses." Stammering is "To make involuntary stops in uttering syllables or words; to hesitate, falter, or block oneself in

speaking." It is further noted that the terms are in general used interchangeably, except that stuttering usually refers to a more marked degree of speech disorder than stammering. In this chapter we shall use the words in the sense just mentioned.

Frequency

Almost everyone stammers at times. Excitement, embarrassment, or other emotional conditions may interfere with the speech mechanisms of those who usually speak normally. The effect of alcohol upon speech is well known. Lasting disturbances of speech which are sufficiently serious to constitute real problems of adjustment occur at some time in the lives of at least 1 per cent of the population and are from two to three times as frequent among boys as among girls. Practically every elementary school contains one or more children who stutter so badly that it is a constant source of embarrassment to them and interferes seriously with their personal and social adjustment. They try to avoid speaking whenever possible and shrink from meeting strangers.

An additional 2 or 3 per cent stammer at times, particularly if excited or disturbed. They have difficulty in finding the words they wish to use and frequently repeat the same word or short phrase and, at times, exhibit the same type of reduplication of initial sounds or complete blocking of speech that characterizes the true stutterer. Actually, there is no sharp line of demarcation between the stammerer and the stutterer. The difference is one of degree, not of kind, for the marked stammerer is also the mild stutterer.

Age of incidence

More than half of all cases of lasting stuttering date from the age at which speech is first established as a

useful tool; that is, early in the third year. Of the remaining cases, the majority take their origin from around the age of six years; in other words, at the time of school entrance. A smaller peak in the age curve comes at the time of puberty. There are, of course, scattered cases beginning at other ages, but the vast majority of stutters date their trouble from one or another of these three periods.

Theories of causation

The three major peaks in the curve of age at incidence obviously represent three periods of unusual strain and stress upon the speech mechanisms. The first is a time when the child first becomes keenly aware of the potentialities of an instrument which he has not yet thoroughly mastered. His desire to speak, to convey his ideas to others, runs far ahead of his ability to do so. As yet, his articulation is likely to be imperfect; he struggles vainly to make people understand what he is trying to say. Often, too, at this time, he is urged to talk by over ambitious parents who insist on parading his small accomplishments for the admiration of friends. The second major peak, coinciding with school entrance, is the time when many children first become members of large groups in whose presence they are expected to talk in more or less specified ways; they must answer the teacher's questions, repeat certain words and sentences. Faulty articulation may be publicly corrected, sometimes in a way that is acutely embarrassing to a sensitive child. This makes him keenly aware of the mechanical aspects of his speech; his attention is focussed upon how he speaks, rather than upon what he says. This division of attention is confusing. His thoughts shift back and forth from the idea he is trying to express to the external mechanisms by which he is to express it. He tries to place lips and tongue as he has been told, but the sound

that he makes does not satisfy him. He tries again, and then again, and he stutters.

The third major peak in the onset of stuttering occurs in the early teens. Despite the fact that this is the age of puberty, it seems improbable that physiological maturation has much to do with the matter, although it is true that many children exhibit some indication of nervous strain at this time. The primary factor, however, appears to be social rather than physiological. This is the time when boy-and-girl parties first become really popular. To the majority of children this change from the gathering of one sex, to which they have largely been accustomed, to those in which the sexes mingle and begin to experiment with love making comes easily and naturally. To a few it at once assumes undue importance and undue strain. They become self-conscious, fearful lest they do or say the wrong thing. They start to speak, hesitate, fumbling for just the right word. And they stutter.

It seems unlikely that age as such has any bearing whatever upon the onset of stuttering, in spite of the marked relationship to the age factor that practically all investigators have found to exist. Rather, it appears that there are certain personal and social factors that tend, at certain ages, to cause many children to become unduly conscious of the speech mechanisms. This leads to hesitation and sometimes to stammering and stuttering. No matter what other theories may be offered as explanations for stuttering, undue attention to the mechanism of speech, accompanied by uncertainty as to one's ability to operate them successfully, is one of the major difficulties with all who stutter.

The theory that an enforced change in cerebral dominance may cause disturbances of many aspects of language, including speech and reading, was mentioned in the preceding chapter. It rests primarily upon Broca's discovery that the control of speech resides principally in a cer-

tain small region on that side of the brain opposite to the preferred hand - left side in right-handed persons and the right side in those who are left-handed. An injury to this center may destroy the power of speech in a previously normal person.¹ A number of investigators, notably Orton and his colleagues, have reported many more left-handed children among those who stutter than among normal speakers.

Among right-handed stutterers, according to the claims of some of these workers, both case-history data and various instrumental devices designed to reveal natural hand preference indicate that at least a large proportion of these cases are really left-handed people who, by means of insistent early training, have been forced to use the right hand for most activities.

Not all investigators have accepted this theory. It has been pointed out that many of the reported figures fail to differentiate between the sexes and that, inasmuch as males greatly exceed females with respect to both the number who are left-handed and the number of stutterers, an excess in the former will necessarily mean an excess in the latter if the sexes are combined into a single table. Much of this apparent excess disappears when sex is held constant. In many persons, hand preference is not strongly marked, and the methods of distinguishing between sinistrals and dextrals among these cases are not very reliable. Thus, it may easily come about that those who favor the cerebral-dominance theory tend to classify the doubtful cases in the way that is in agreement with their previously formed belief, and that those who disagree with it make the opposite classification.

¹ The loss of speech is rarely permanent. Apparently the speech center on the opposite side of the brain may take over the control formerly exercised by the destroyed center. Although the development of a clear-cut stutter is rare, speech is ordinarily much less fluent than it was before the injury.

All that we can say at present is that although the theory of cerebral dominance is no longer so widely accepted as a cause of stuttering as it was a few years ago, the possibility that it may be correct either in many or in a few cases has not been disproved. Since this is true, it would seem the part of wisdom to make no drastic attempts to change the direction of a child's natural tendency to prefer the use of one hand rather than the other. Inasmuch as the world contains a considerable majority of right-handed persons who have adapted its furniture, tools, and social customs for their convenience, it seems desirable to stimulate children to use the right rather than left hand as far as this can be done casually and without insistence. The practice occasionally followed by parents of punishing or reproving children for the use of the left hand can hardly be too strongly condemned.

Some hold with Knight Dunlap that stuttering is just a bad habit, formed as other habits are and subject to like methods of correction. Still others consider it to be the result of attempts to speak too rapidly and urge the stut-terer to speak more slowly. Case-history data indicate that stuttering may sometimes be precipitated by a severe shock, particularly great fright. One such instance known to me was that of a boy whom I first knew at the age of eleven, at which time his stuttering was as severe as any case I have known. According to his parents, this child's early speech was entirely normal up to the age of four years, when he had been knocked down and severely bitten by a large dog. His fright was so severe that he was unable to speak intelligibly for some time, and from then on, so said his mother, he stuttered. I have no way of checking the accuracy of this report, but it is in line with others cited in the literature.¹

¹ This child was an Italian immigrant whose first acquaintance with the English language began several years after the fright and the onset of stuttering. It is noteworthy that throughout the acquisition of a moderate fluency in English, no stuttering occurred except when he spoke in Italian, when it was as severe as ever. No particular speech therapy was given him.

Daily association with others who stutter, especially at the critical age periods, may sometimes give rise to mild cases of stuttering or stammering. That really serious cases can be induced by this cause alone is questionable. Whether or not the tendency to stutter is a familial trait is also uncertain, although it is known that the number of blood relatives who stutter is somewhat in excess of that to be expected by chance. The possibility of unconscious imitation through close association must be excluded before a hereditary factor can be postulated.

Taking all the reported facts into account, it appears that stuttering may arise from any one or from a combination of many factors. As has so often been the case, the search for causes has been hampered by an attempt to find the cause, to make overly simple that which in its nature is complex. That undue parental concern with, and obvious attention to, the mechanical aspects of a child's speech during the formative period may lead to stuttering has been suggested by many. Wendell Johnson is a prominent exponent of this idea, considering that most, if not all, stuttering has parental influence as its major cause. The theory is given some support from the findings of Bloodstein and his colleagues that parents who consider their own children to be stutterers diagnose stuttering in children not their own substantially more often than do parents who do not consider their own children to be stutterers, even when the children being rated are considered by speech therapists to have entirely normal speech.

The treatment of stuttering

Methods proposed for the treatment of stuttering are as numerous as the theories concerning causation upon which they are based. The explosive repetition of initial sounds often makes it appear that the child is trying to speak too rapidly and that what he needs is to be taught to speak more

slowly and deliberately with closer attention to his enunciation. "Don't try to talk so fast; stop and think what you are going to say," urges the parent or teacher when the eager child is stumbling in his speech. Sometimes these admonitions, if given in a casual, good-natured manner that holds no hint of reproof, may be effective when the stammer has not become too pronounced or habitual. The important thing, however, is not the advice to speak slowly but to know in advance what one is going to say. As was mentioned before, the attention of the stutterer is constantly shifting from the content of his speech to the mechanics of speaking. The normal speaker, on the other hand, centers his attention on what he is going to say. He lets the mechanical aspects of speech take care of themselves.

The child who stutters habitually and to a marked degree is but little helped by such admonitions. His difficulties lie deeper. His stuttering has become inextricably bound up with his personality. He cannot think of himself in other terms. All his social relations are colored by the one inevitable fact. He stutters, and this makes people look at him and often laugh at him. If he tries to speak in a crowd of strangers, many of them turn to see who it is that talks in such a fashion and smile with amusement or joke with one another about it. He learns to keep silent.

No matter what other forms of treatment are employed, the restoration of self-confidence and emotional poise is essential if the stutterer is to regain normal speech. The importance of this factor has been particularly stressed by Blanton, who, in common with many other authorities, makes extensive use of relaxation exercises, singing, and reciting memorized selections of poetry. It is noteworthy that many stutterers, even severe cases, can sing or recite poetry without difficulty, although the same words, when occurring in ordinary speech, will all but throw the speaker into convulsions in his efforts to pronounce them.

The combined effect of rhythm and complete certainty

as to the exact sequence of words to be used appears to be the secret. The apparent effectiveness of rhythm suggested to some persons that accompanying speech with a rhythmic movement might help the stutterer. Accordingly, he was taught to move his arms up and down in a rhythmic fashion as if he were beating time to music, keeping the same rhythm in his speech. As speech improved, the movements would be gradually reduced in force and scope until, eventually, they could be discontinued completely. As is true of most methods designed to help the stutterer, some were helped by it, others were not.

Application of the theory of cerebral dominance, with its correlated assumption that stuttering results from an early enforced change in dominance as indicated by the preferred hand, has led to some curious practices. Right-handed stutterers were trained to use the left hand (assumed to be the naturally dominant one) for such sports as table tennis, handball, or tennis. They were instructed to write and eat with the left hand, to button and unbutton their clothing, and to handle objects of all kinds in this manner. They were assured that if they persisted in this practice until it became the easy and natural way of doing things, their stuttering would disappear. And oddly enough, in some cases it did.

Working upon the double principle that stuttering is nothing more than a thoroughly ingrained bad habit about which the individual has become unduly sensitive and self-conscious, Knight Dunlap proposed a method of treatment that at first thought seems to run counter to most of our current theories of teaching and learning. We say that "practice makes perfect," and we think of repetition as something that strengthens a bad habit as well as a good one. Dunlap did not deny this when the practice is carried on under ordinary conditions of motivation, but he came to believe that practice of a bad habit when the attention is focussed upon a desire to correct it is an extremely effec-

tive means of accomplishing such a correction. He first demonstrated this with respect to a typewriting habit he had formed. The word "the" was habitually written het. Over and over again he corrected the mistake, but the habit persisted. One day in exasperation he put a fresh sheet of paper into his machine and wrote an entire page of het, het, het, saying to himself each time, "This is wrong; I will not do this again." Nor did he. By the time the sheet was filled the habit had disappeared, never to return.

Dunlap was surprised and fascinated. He began trying out the method with other forms of conduct; he tried it with various small mannerisms in himself and others. Then, somewhat cautiously at first, he applied it to stuttering.

The stutterer was first assured that if he could learn to stutter intentionally he need not do so unintentionally. He was urged to examine his own speech and note the sounds on which he was most likely to have difficulty. He was to spend regular practice periods stuttering on these sounds and also stuttering over common words beginning with them.

The more effectively he was able to stutter voluntarily, he was told, the sooner he would be able to avoid doing so involuntarily. At first, the subjects practiced their stuttering in private; but later, as they became more proficient and somewhat less sensitive, small groups were formed who stuttered for each other's admiration and criticism. Of those who honestly tried the method, a large proportion were benefited, and some were completely cured. Some, however, refused to try it, and a good many became discouraged and gave it up. Some failed to comply with instructions. An important feature of this method is the rule that while the experiment is in progress, no attempt to avoid stuttering is to be made at any time. If the subject finds himself stuttering, he could at once direct his attention to the task of stuttering longer and more violently than he would ordinarily do. This is a hard rule to fol-

low, for it often leads to embarrassing situations. The embarrassment will lessen if the procedure is kept up, and the time may come when the subject is even able to laugh with the others at his own ridiculous performance.

Perhaps the most striking thing about all these and other methods that have been used for the correction of stuttering is that all of them have been highly successful in some cases, helpful in others, and useless in some. There is, as yet, no sure evidence as to which of the various methods proposed for the correction of stuttering is the most effective. The data are confused by a number of factors, chief among which is the conviction of each therapist that the etiological theory to which he subscribes and upon which his particular plan of treatment is based is the only sound one. The result is not wholly undesirable, for it unquestionably means that his conviction will be transmitted to at least some of the cases with whom he is working, and their resultant gain in self-confidence, with the corresponding loss of nervous and emotional tension, will almost certainly lead to an improvement in speech. As far as I am aware, there have been no well-controlled studies in which different groups of subjects of similar age, sex, and severity of stuttering have been treated by the same therapist in an unbiased attempt to compare the efficacy of the various methods that have been proposed. Until this has been done, judgement must be suspended. It is true that improvement and, in some cases, complete recovery sometimes take place spontaneously, that is, as a result of unknown factors. If this happens at a time when the child is undergoing some type of special treatment for his defective speech, this treatment receives unwarranted credit. However, the number of cases showing definite improvement after treatment is usually greater than can fairly be attributed to chance.

Two rules have emerged from the welter of theories, facts, and figures. The first is this: the child who stut-

ters should never have his attention called to his stuttering. Above all, he should never be told to try not to stutter. He does try. With all his baffled heart and soul, with all his contorted body he does try. This very intensity of effort is one of the main factors that causes his stuttering. The normal speaker pays little attention to the mechanism of speech. The stutterer is preoccupied with it. The second rule is the converse of the first. Whatever special methods may be adopted for correcting the speech of the child who stutters, an essential feature of the retraining procedure must be the restoration of his self-confidence, with the effective assurance that he can learn to speak normally. At the same time, he must be brought to feel that, after all, his stuttering is not the tremendous handicap he has thought it to be, that other people pay little heed to it, that it is not so much how one says a thing as what one says that matters. Some teachers have found that during the retraining period older children may be helped by writing down what they are going to say and either reading it directly or reciting it from memory. But any device of this sort is a crutch which must be discontinued as soon as possible.

Improvement in stuttering means an improvement in personality, especially in that aspect of personality that has to do with the way in which the subject regards himself. Uncertainty, a sense of insecurity, especially in social relationships, anxiety and worry - any or all of these may become attached to the field of speech and give rise to stuttering. No method of re-education is likely to be successful unless it takes account of the stutterer as well as his stuttering.

Speech defects other than stuttering

Defective articulation

To a sensitive ear, the number of persons whose articulation is more or less imperfect is very great. For the most part, however, these small imperfections, although they interfere to some extent with the clearness and beauty of speech are not so marked that they are likely to cause misunderstanding. Most foreign and local accents are of this order. Mistakes sometimes occur, however, as in the case of the young woman from the Midwest who, at the close of a long day's motoring in New England stopped at a restaurant for refreshment. When the waiter brought the deserts, he paused at her place and said, rather hesitatingly, "Let's see, now, yours was apple pie, wa'nt it?"

Uncertain whether the waiter was trying to be funny or was merely stupid and too weary for politeness in either case, the woman snapped back, "Want it? Of course I want it. I ordered it didn't I?" The New England habit of eliding the s in "wasn't" was unfamiliar to her, hence the mistake was natural enough.

The number and range of specific articulatory defects is very great. There is lisping, in which the sibilant consonants are replaced by some other sound, usually th. There is lalling in which various consonants, particularly the r sound, are replaced by l. Other consonants that often give trouble are f, g, j, th.

A particular type of slovenly speech to which Blanton has given the name oral inactivity is characteristic of the mentally defective but by no means confined to them. As the name implies, speech of this kind results from insufficient movement of one or more of the organs of speech. Thus the vowel sounds are insufficiently interrupted for words to be distinctly pronounced. In pronounced cases of oral inactivity only a few of the "easier" consonant

sounds are made. It is sometimes said that the child talks as if he had mush in his mouth. Thus, "I won't do that," becomes "I oh oo a."

Suppression of certain consonants is common in the speech of many persons. How many there are who omit the t, and often the first n as well, from the word mountain, or who substitute the sound of an extra e for the a in reality.¹

When one considers the complexity of the speech process, the surprising thing is not that so many people have difficulty with it but that any at all succeed in mastering it. The speech organs include the larynx or voice box, at the top of which are two parallel membranes, the vocal cords, tightly stretched to form a narrow slit through which the air passes in breathing. Sound is produced when these membranes are tensed, so that the passage of the air acts in much the same way as the wind in an aeolian harp. Variations in pitch result chiefly from changes in the tenseness of the membranes and the consequent change in the size of the opening between them. When the flow of air passes directly through the throat and mouth the sound ah is produced. Other vowel sounds are made by comparatively small changes in the tension of the throat and nasal passages (back vowels), or by slight rounding of the lips and tongue (front vowels).

Consonant sounds are made by interrupting the sound through some highly specific action of the tongue, teeth,

¹ It is not always easy to draw the line between mispronunciation of words merely from ignorance and the habitual mispronunciations that are considered poor articulation. In practice, the distinction is usually made on the basis of the readiness with which the error can be corrected when the subject's attention is drawn to it. The person with normal articulation will repeat the correct sound of a word that he has mispronounced after only a single hearing, but the one whose articulation is genuinely defective requires careful training and many trials before he can do this.

lips, or soft palate, together with such movements of the cheeks and jaw as are required.

The larynx in the throat and sinuses (small cavities) in the bones of the face also act as resonators that affect voice quality.

The extraordinarily complicated nature of the actions involved in speech is apparent at once if one stops to examine the number of different sounds involved in a sentence that can be spoken in not over two or three seconds of time. Each of these sounds requires the co-ordinated action of two or more of the organs of speech and the organization of these sounds into a smooth running order in which some overlap but others remain distinct. The muscular adjustments required are delicate in the extreme; the difference in lip movement, for example, between b and p is almost imperceptible; yet it must be maintained if speech is to be clear. Timing must be equally as exact as the character of the movements of the speech organs. Small wonder that faulty articulation is so common.

Like stuttering, defective articulation is much more common among boys than among girls. With both sexes, the age of the child must be taken into account, for the normal child learns to articulate his words more clearly as he grows older. This, however, is a factor that cuts both ways, for too often poor speech is overlooked in the young child with the expectation that time alone will correct it, until long-continued habit has made the correction doubly hard to bring about. Children of normal intelligence should be pretty well free from habitual faults of articulation by the time they enter school. One of the most important tasks of the primary-grade teacher is to observe and correct the speech habits of the children under her care. Later on, such correction becomes more difficult.

Factors associated with poor articulation

The greater incidence of faulty articulation among boys has already been mentioned. Why this sex difference exists is unknown. It may be just one more example of the generally superior ability of girls in fine-muscle activities. Boys do better in those requiring strength in the use of the larger muscles.

Negative home training - the encouragement of "baby talk" even to the extent of its use by the parents themselves - is a handicap to which many children are unfortunately subjected. Although in the majority of cases the infantile speech is corrected when the child leaves the limited environment of the home for the wider social life of playground and schoolroom, not all free themselves of the early habits so easily.

That twins, particularly those of like sex, are likely to be somewhat retarded in all forms of language development has been observed by a number of investigators. Using the method developed by McCarthy, Day found a considerable retardation in respect to the mean length of the sentences used by twins of preschool age, as well as a far greater percentage of incomprehensible responses than in the conversation of children of similar age and social status who were born singly. Employing the same method with children of school age, and extending the study to include "only" children, Davis found a marked superiority in all aspects of language development among the "only" children as compared either to the singly born in larger families, or to the twins, who, in conformity to the findings of other investigators, ranked lower than either of the other two groups studied, particularly with respect to articulation. Speech is learned by imitation. The totally deaf child does not learn to speak by means of the ordinary channels, because the models that the hearing child imitates are not perceptible to him. The child whose mother sees a "itty

bitty moo-moo" by the roadside, who is put to "beddy-bye" at night and given "beddy-buttah" to eat the next morning can scarcely be blamed for his incorrect speech.

Children imitate the speech of their associates as well as that of their elders. Those who spend much of their time in the company of other children whose speech is less well developed than their own are likely to be less advanced in linguistic development and to speak less distinctly than those who associate chiefly with those whose speech is superior. Of this, twins provide a striking example. Twins play together, as a rule, for a far greater proportion of their waking hours than do other children. They talk together, and they imitate each other's speech. Occasional cases have been reported of twins who developed a language of their own, comprehensible to each other but to no one else. These "languages", however, are usually less original than they seem. They consist, as a rule, of a series of letter substitutions common to the language of both twins. Because language retardation and, particularly, poor articulation are so frequently found among twins, parents should observe the speech of their twin children with unusual care and should make special effort to see that a reasonable amount of the children's time is spent in the company of persons whose speech habits are, if not completely mature, at least well in advance of those of the twins. Not all twins are retarded in language. None need be merely because he chances to be a twin.

That defects in the organs of speech may give rise to defective articulation is obvious. Such defects include hare lip, with the cleft palate that usually accompanies this condition; misshapen jaws or seriously malformed teeth; occluded nasal passages; and so on through a long list of malformations. Most of these can be corrected or at least greatly ameliorated by the proper orthodontal work or by surgery.

A generation ago, it was commonly believed that many, if not most, cases of defective articulation were caused by too short a frenum (the membrane by which the tongue is attached to the lower jaw). Such cases were said to be "tongue-tied", and the usual remedy was to clip the membrane so that the tongue could have freer play. But the results of this operation were rarely as good as was hoped. Now it is recognized that although occasional cases of speech deficiency do result from too short a frenum, these instances are rare.

Minor defects of hearing account wholly or in part for many cases of defective articulation. The child does not hear distinctly and so he speaks indistinctly. To the partially deaf certain sounds often present special difficulties of hearing. Some have particular difficulty with the sibilants; they are likely to lisp. The hearing of all children should be checked as a matter of routine; but those whose speech is defective require much more than a routine examination in order to make sure that a hearing loss is not at least a partial cause of the speech deficiency.

Although physical causes in the form of defective hearing, in some deficiency or malformation of the organs of speech, or as a result of brain damage unquestionably play a part in many cases of defective articulation, examination of the data for large numbers of such leads to the conclusion that the early formation of faulty speech habits far outweighs all other factors in the etiology of defective speech.

Corrective training

The child whose articulation is poor requires, first of all, a thorough examination by properly qualified experts in order to make sure that his hearing and speech organs are normal. Hasty examination by busy school physicians is not enough.

Home conditions should be ascertained. Is the speech of the parents clear and distinct? Do they employ normal speech when addressing the child?

The correction of faulty articulation in the child who is physically normal is usually a much easier task than is the correction of stuttering. One problem that must always be faced by the therapist is that of making the child so conscious of his speech that he may begin to stutter. As was pointed out in the preceding chapter, undue self-consciousness that is specifically directed toward the area of speech is one of the main causes of stuttering, and this must be avoided at all costs. The interest and efforts of the child must be directed toward the improvement of his speech without causing him to worry about it. Many successful therapists succeed in turning speech correction into a game. By the use of mirrors, the child is able to see the position of his tongue and lips. Successful repetitions of difficult words count toward his score. Errors are overlooked but receive no credit. As skill improves, the "hard" words are incorporated into sentences; the child has to watch out for them.

Here, as in the correction of stuttering, the personality of the therapist presumably counts for more than the particular method of correction or the theory upon which the method is based. In both cases the most important element in bringing about improvement is the development of a proper attitude toward his speech in the child himself. The stutterer directs too much, the child with defective articulation too little attention toward the form of his speech. A change in this attitude is the first and most important aspect of corrective speech therapy.

Other forms of language dysfunction

Mutism in children whose hearing and intelligence are normal is a rare manifestation of extreme emotional disturbance. As a rule, it is one of the manifestations of juvenile schizophrenia,

Motor aphasia, if genuine, is the result of an injury

to the speech center in the brain, known as the region of Broca. In motor aphasia, the patient, although he maintains normal or near normal comprehension of speech, loses his ability to speak. He no longer knows how words are formed. For the same reason, he is no longer able to write, for he does not know how to spell the words. He may be able to communicate to a limited extent by means of signs; he nods or shakes his head in reply to a question and indicates his needs by means of other simple signs. But he cannot speak. Recovery from the injury is marked by the gradual return of speech. At first, the patient is able only to repeat words or short phrases that are said to him; or perhaps he becomes able to sing some of the songs that he knew before the accident occurred. Very slowly he regains the ability to use speech as a means of communication, but his articulation is likely to be imperfect, and there will be frequent blocking when the particular words that he wishes to use cannot be brought back to memory. If the original injury was severe, it is unlikely that complete recovery will occur, although the speech may become so nearly normal that the defect is no longer a serious handicap.

Sensory aphasia, like motor aphasia results from an injury to the speech center, but in this case, although the power to speak is little, if at all, impaired and the patient retains his ability to hear sounds, he is no longer able to understand words, either in spoken or written form. Sensory aphasia, however, does not often occur in this isolated or pure form. It is more likely to be an accompaniment of motor aphasia, in which case neither the understanding nor the use of speech is retained.

These and other rare forms of language disturbance are problems for the neurologist, the psychiatrist, and the clinical psychologist to work out in collaboration through careful study of each individual case. Fortunately, their number is small, and because of the severity of the symptoms it is unlikely that the classroom teacher or the school psychologist will ever encounter them.

AN EXPERIMENTAL PROGRAMME FOR SLOW-LEARNING
CHILDREN AT THE JUNIOR HIGH LEVEL

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In every school system there exists a group of pupils who, being neither "average" nor "mentally retarded", have been largely overlooked in most educational thinking and planning. This group, within the I.Q. range of 75 to 90, comprise about 20 per cent of the school population, and is composed largely of children who have tended to drift along with considerable failure and retardation. Only recently has this group been classified with the exceptional, due, no doubt, to the fact that the problems contained within this group are only now being recognized. Heretofore this group of children called "slow learners" has, at best, been tolerated in the school where, through repeated failure in competition with able companions, they have been convinced that they are of little consequence. Most educators have long been aware of this "problem" group of "grey" area in their school systems, but have made little effort towards remedying the situation. That the slow learners are capable of being effectively educated cannot be denied. With instruction suited to their needs, the slow-learning children have a much better chance for ultimate success.

Slow-learning children are tentatively defined as those whose I.Q.'s fall within the range of 75 to 90. They comprise the "dull-normal" or "borderline" group between the mentally retarded and the normal. In school they are likely to be below average in achievement.

For the purposes of this paper, the term "slow learner" will refer to children with the I.Q. range of 80 to 90. This raising of the lower limit from 75 to 80 is done in order to accomodate to the practices of the Winnipeg Public

Schools' System. In Winnipeg the I.Q. range for children in ungraded classes for the mentally retarded is from 50 to 80. Necessarily then, the range for slow learners would follow as 80 to 90.

In Winnipeg, during the school year 1954-1955, a committee of eight people was asked to study the problem of setting up special classes for slow-learning pupils at the junior high school level. This committee consisted of the assistant superintendent who was chairman, two school inspectors, four principals of junior high schools, and the head of the Psychology department of the Child Guidance Clinic. After much deliberation it was decided to try out classes for slow-learning pupils at the junior high school level, and certain policies were determined. The experimental slow learner classes were to be located in five schools selected on the basis of need.

These classes were planned for pupils with I.Q.'s of 80 to 90 whose low school achievement indicated that they would probably benefit from segregation into special classes. Pupils who were 14 years of age or over before December 1st, were eligible for placement in these classes provided that they had spent a year in grade VI. Selection of pupils was on the basis of an individual or group intelligence test and a careful appraisal of the child's achievement. Placement did not have to be checked with the central office. The regular programme in grade VII and VIII was to be followed with the intention of spreading it over three years instead of two. Departmentalization was to be kept to a minimum and there was to be no sex segregation. No special name was to designate these classes nor should any be used about the school.

Five classes were established in five junior high schools in September 1955. By June 1956 only one class had completed in first year of the planned programme. Of the five schools involved in the experiment, two abandoned the plan early in the school year, two carried on a modified

form of the plan, and only one continued the original plan until June.

A survey and analysis of the five original classes revealed the following major reasons for the failure of the experiment: 1) lack of proper identification procedures; 2) insufficient attention given to the matter of reconstruction of the curriculum; 3) need for central office control; 4) lack of understanding of the programme by school administrators.

Since the appointment of a director of Special Education in 1956, this first experimental programme was examined and revised. With the consent of the assistant superintendent in charge of the secondary schools, a second experimental programme for slow-learning children was established in September 1957.

Criteria for Placement

Admission to the classes for slow learners is restricted to pupils who:

1. are over age (i.e. 14 by December 1st);
2. are of dull-normal intelligence (i.e. I.Q. 80 to 90-95);
3. are having difficulty with the grade VI programme, and who are likely to fail grade VI;
4. are barely able to pass grade VI, but who, judging from their achievement in the elementary school, would likely take two years for grade VII.

Selection on the basis of these criteria eliminates from enrolment in Slow Learner classes those pupils who are doing poorly in grade VI but are:

1. of normal intelligence;
2. still relatively young;
3. still learning the English language;
4. of limited cultural background.

Identification and Selection

The most reliable and satisfactory means of identifying any exceptional child is, of course, by means of an individual intelligence test, but this is not practical in terms of the psychologist's load and the time involved. However, selection is made as carefully as is possible under the circumstances.

In Winnipeg we conduct a complete survey of grade VI each year. Our experimental programme is located at grade VII so it is necessary to identify these children while they are still in grade VI. By the time the pupils have reached grade VI they have had a least two group intelligence tests, and many who would be referred for placement in a special class will have had an individual intelligence test.

The survey form for grade VI is sent out in February of each year and on it principals are asked to list all children who should be considered for placement in the junior high school programme for slow-learning children. The survey form requests such information as name, address, birthdate, results of mental and reading tests, and general school achievement. A letter outlining the programme and criteria for placement, accompanies the survey forms.

These survey forms are then carefully studied and those children who are obviously not candidates, are eliminated. Following this initial screening, all children listed with I.Q. ratings slightly below 80 are referred to the Child Guidance Clinic for individual testing. Usually these children rate in the full-normal range when given individual tests and thus become eligible for placement in a Slow Learner class. However, the occasional child is found who should be placed in the ungraded programme rather than in the Slow Learner programme.

After the final selection has been made by the Director of Special Education, classes are set up in various

areas according to need. At this point each elementary school receives the list of its pupils who are to participate in the programme, and the principal is asked to notify the parents. This initial interpretation of the programme to the parents is a very important one and should be made by personal interview. However, due to the pressure of work at the close of the school year, this interpretation has tended to be somewhat sketchy and in some cases to be overlooked. This year, in an attempt to avoid "situations" developing due to inadequate information, we are sending a letter to the parents explaining the programme briefly. This letter will be sent out from the principal's office and the attached "consent" slip will be returned to the principal. The returned consent slips will then be forwarded to the Directors of Special Education.

Selection of Teachers.

The teacher of slow learners, like the teacher in any class, is the most important single educational factor. In a Slow Learner class, where pupils spend most of the day in the homeroom, stability and continuity in teacher-pupil relations are highly desirable. To be effective in the teaching of slow-learning children, the teacher must be interested in the problems of young children, especially those of the exceptional child. Patience, a friendly and understanding attitude, broadmindedness, and the ability to evaluate the pupils' problems sympathetically but objectively are essential. Teachers working with slow-learning pupils should have the characteristics of good guidance workers, and be able to use the case-work approach to pupils' problems.

In Winnipeg we try to select teachers who have given outstanding service for several years. It is not easy to persuade successful teachers to take on the difficult task of teaching slow-learning children who, generally, are

characterized by a strong spirit of apathy and grudging conformity. Often it is necessary to give these classes to teachers who are new to the school system and this does not lessen the difficulties associated with the programme. Study bursaries, provided by The School Board for those who will undertake to teach slow learners, have not encouraged teacher recruitment. The problem of good teachers for these classes is still with us.

The Programme

Each special junior high class of slow learners is composed of children from several elementary schools. At present there is a total of ten such classes in four junior high schools. They comprise a segregated programme within the school but the work is departmentalized in some degree. Where possible, departmentalization is restricted to Art, Music and Physical Education. All other subjects are taken with the homeroom teacher. This type of programme fosters better growth and development because of the continued guidance and interest of a single teacher. Many of these pupils require individual help with both academic and personal problems, and because of this, the enrollment must, of necessity, be limited to between twenty and twenty-five.

There are certain fundamental skills and abilities every pupil needs to develop. Reading, for example, should be developed at least to the point where newspapers, popular books and magazines can be read and understood. The common social needs for conversation, letter writing, filling out of forms and reports require both oral and written language development. Simple mathematics, enough for everyday living, should be mastered.

The development of a curriculum for slow learners at the junior high level has proved to be very difficult. In order to meet the special needs of these pupils, drastic changes must be made in the standard curriculum. Unless these changes are made the whole idea of separate grouping becomes meaningless.

Our programme in Winnipeg is now in its second year and to date we have emphasized three main areas, namely: reading, written and oral communication, and mathematics. Much emphasis has been placed on remedial reading since the achievement tests given at the beginning of the programme indicated serious retardation in this area. Each class has been equipped with one of the S.R.A. Reading Laboratories and a set of readers and workbooks at the grade V and grade VI levels. The Reading Skilltexts have been tried out successfully in one of the classes. Although the literature course has been sacrificed for remedial reading some effort has been made to give variety to the reading lessons by means of carefully selected items from the literature text-book. The remedial reading programme is augmented by the individual classroom library which is stocked with material easy to read and of high interest level.

Because slow-learning children are naturally inarticulate, every effort should be made to give them a great deal of actual practice in speaking. None of them will ever become public speakers, but all should develop the speech skills necessary for normal communication in modern society. Lessons in asking clear, definite, and complete questions and in giving clear answers should be part of the work in oral English. Other socialized forms of procedures such as class discussions, panels, dramatizations and special reports offer many and varied approaches to the development of skills in oral communication. However, it must always be kept in mind that with slow learners, motivation and definite preparation are particularly important.

In the teaching of written composition, emphasis should be upon helping these children learn how to state what they wish to say simply and clearly. They should not be required to write long compositions. Quality rather than quantity should be stressed. Preparation for written work should be thorough and specific with the class planning and working it as a group. As much as possible of the

written work should be done in class under the supervision of the teacher. Whatever devices are employed, the main objective should be to train these children, within the limitations of their abilities, to do the kind of writing which they will be called upon to do after they leave school.

Spelling should be taught thoroughly and systematically. Slow learners are usually poor spellers, and their spelling lists should be made up of the ordinary words which they themselves misspell. No words should be included in the spelling lists which are beyond the very limited writing vocabularies of these pupils. They should be taught to use the dictionary to look up the spelling of unfamiliar words.

In this area of oral and written communication we have found the Allyn and Bacon workbooks "Adventures in English" by Burleson-Cash and McCorkle, very helpful. We use them in preference to the prescribed course, although in content they parallel the course fairly closely. We equip each classroom with a set of these workbooks at the grades IV, V and VI levels. At this point I'd like to interject a word of caution with regard to the use of workbooks. Properly used they are a valuable source of practice material but at no time should they be used for "busy work".

Use of the New Goals in Spelling workbooks together with the prescribed spelling textbook has been found to be satisfactory. The New Goals in Spelling has proved both interesting and beneficial to the pupils.

The organization of the standard prescribed mathematics text makes it adaptable to use with slow-learning pupils. In Winnipeg we use Intermediate Mathematics in the junior high school. These books are designed for use with pupils of varying mental abilities and the slow learners do the simplest work programme. We also equip the classes with the Iennes Essentials of Arithmetic workbooks at the grades IV, V and VI levels for remedial work in arithmetic as needed. The use of concrete arithmetic teaching devices is also encouraged.

In social studies and science, selected sections of the regular programmes of grade VII and VIII are adapted to the needs and abilities of the pupils as the teacher sees fit.

General Observations

1. Admission to a class for slow learners should exclude from placement any pupil who is capable of handling the regular junior high school programme.

2. Attendance in the class should be regarded as a privilege, and pupils who constitute discipline problems should not be tolerated. Those who fail to co-operate should be returned to the regular class. Remedial work in itself is exacting and difficult enough for any teacher, without having it complicated by problems of discipline at this age level.

3. Standards within the class should be sufficiently demanding to discourage the pupils from getting the idea that no work or effort is necessary.

4. Very few of the regular textbooks were found to be of value in teaching slow-learning children. However, some attempt was made in most subject areas at least to "expose" the pupils to the regular textbooks, where the subject matter was within their ability to read and comprehend.

5. The remedial reading programme given as part of the English programme, proved to be very successful. Many of the pupils have made marked improvement in their reading skills as measured by reliable standardized tests.

6. Some improvement has been shown in the mastery of the fundamentals of arithmetic. Some of the teachers feel this is due in part to the wide variety of arithmetic workbooks used to augment the text, and to the amount of individual help given.

7. Many of the pupils have developed a very keen interest in reading stories and short books.

8. Much emphasis was placed upon the development of good work habits, attitudes, and relationships. During the first year of the programme much individual guidance was necessary to ensure good classroom relationships, and to foster within each pupil a feeling of personal worth. On admission to the slow learner classes these pupils had been convinced of their worthlessness, and could hardly wait until they reached school-leaving age. Adjustment to a teacher who accepted them for what they were rather than what they did was not always easy. An attitude of mutual trust and confidence had to be developed between the teacher and the pupils, and among the pupils themselves. Improvement in the general attitude of the classes has been very marked during the second year of the programme.

9. The teacher must give special care to lesson preparation and presentation. Further, there is constant need for individual attention.

10. Judging from the number of changes already made in the original enrolment of pupils placed from elementary school in September 1957, it seems likely that substantial percentage of the remaining pupils will drop out before the three-year programme is completed. This is to be expected as opportunities for employment present themselves to the pupils from time to time. Even though they do not finish the programme, it is felt the pupils are likely to be better equipped to undertake comparatively simple forms of employment as the result of their special work in the basic subjects.

11. The question of promotion at the end of the first year of the programme proved to be a difficult one. After a two-session discussion of this problem with the teachers, we finally came to the decision that promotion should depend upon the pupil's effort. If he worked hard, and it seemed unlikely that repetition would be of any benefit, he was promoted to the next level regardless of his progress.

If he had made little or no effort, he was placed back into the regular VII class to get along as best as he could.

Also, during the year, wherever a pupil seemed to have improved to a point where there was a possibility that he might be able to carry the regular programme at the normal rate, he was moved back into the regular class. The places vacated by these pupils were readily filled by children experiencing difficulty in the regular classes. Occasionally we had a pupil who was unwilling to return to the regular stream.

When a pupil has completed this three-year junior high school programme, he is eligible for placement in the Terminal Course which is conducted in his local high school.

12. It would appear that some thought should be given to the problem of grading pupils in these classes. At the present time the pupils are graded according to the special examinations set by their teachers on the work covered in the special classroom. As a result, the marks so obtained tend to be higher than those previously achieved. This situation is to be expected as the work of the classroom is more in keeping with the ability of the pupils. Occasionally we find pupils and parents who believe that a good work report from a slow learner class implies re-instatement in regular classes.

13. We have found that, with sympathetic and understanding administration, these classes have been able to become a integral part of the school. This together with the guidance and support of the classroom teacher, helps the slow learner to recognize and accept his limitations and to make his school experience more satisfying.

CUSTOMARY USES OF MEASUREMENT AND EVALUTION IN EDUCATION

Never before in history have schoolmen been so interested in accurate assessments of achievement and the factors related to it - intelligence, personality adjustment, reading. In the complex origins of this circumstance, two factors are paramount. In the first place, educational practice has at last been given some scientific underpinning. Out of the laboratories of Wundt, Watson, Thorndike, Skinner, Yerkes, and others have come experimental findings about learning that support a demonstrably effective methodology of instruction. As part of this scientific movement in education, both the factors that affect learning in the schools and the outcomes of instruction have been expected to yield up their secrets to the probing of measurement. Moreover, the analogy of the laboratory and the classroom, of research and of everyday instruction, has largely been accepted. If precise measurement has been applied to motivation, practice, error, learning, and retention by the researcher, should it not also be applied by the teacher?

LANGUAGE ARTS

Language, in its various aspects, is the *modus operandi* for learning in the schools. Pupils and teachers talk and listen, books are read and papers written with a view to learning given things - arithmetic, history, governmental forms, social problems, science. In addition, the outcomes in these subjects, the things learned, are themselves language in many cases - the basic symbols or vocabulary of a subject, concepts of fact and relationship, theories, etc. Moreover, the skills of language are objects of instruction

in the elementary grades. In secondary grades, to these are added the artifacts of language, novels, poems, essays and short stories; plays, new stories, biographies, and propaganda.

In consequence of this fact that our schools are primarily language schools, in one form or another, the measurement and evaluation of language arts phenomena is a matter of great concern in all school grades. In the lower grades where the development of rudimentary language skills is of critical importance, primary attention is given to reading, handwriting, and vocabulary. In the upper grades the measurement of these phenomena per se is less significant and spelling, punctuation, grammar, and composition are the phenomena more often evaluated. Then, in secondary school and in college, specialized aspects of language become the major objectives of evaluation - public speaking, creative writing, foreign languages, dramatics, and journalism.

Reading¹

Reading Readiness

Even before children open the first preprimer in the first semester of the first grade, measurement usually has begun in reading. It has been known for a long time that a given level of maturity must be attained by a child be-

¹ Measurement of reading status, aptitude, and weaknesses is intimately related to instruction in reading. The many current textbooks on reading methodology contain extensive material on measurement and should be consulted by any person who wishes to make a thorough study of measurement and evaluation in reading. Moreover, teachers' manuals that accompany a series of readers usually suggest appropriate evaluative devices and may even present ready-to-go tests.

fore he is capable of learning to read. While important variation is to be noted in individual cases, by and large a child is ready to profit from instruction in reading only when he has the mental age of six years, six months, and possesses the social, emotional, physical, and experimental attributes that tend to accompany this degree of mental development in middle-class native-born American children. Consequently, perhaps the first measurement task that confronts a first-grade teacher¹ is to gauge her pupils' readiness for reading according to this general criterion.

DIMENSIONS OF READING READINESS

No given list of dimensions of reading readiness has yet been agreed to by authorities in reading. Mental maturity, visual and auditory acuity, competence in oral language, and experience relative to the objects and ideas in first readers seem to be the most commonly cited factors. The many published tests of reading readiness differ among themselves as to the dimensions they attempt to measure. As a rule, the tests are directed toward certain factors that also are measured by intelligence tests but add others that relate particularly to reading. The dimensions that two rather different types of readiness test purport to measure are listed below.

1

That this section is presented from the point of view of a first-grade teacher does not mean that readiness is of no concern in later grades. For any child who has yet to read readiness should be gauged at whatever grade.

Metropolitan

Word meaning (oral)
Sentence meaning (oral)

Information
Visual discrimination of
object likenesses and
differences
Knowledge of number
Ability to copy

Murphy-Durrell

Auditory discrimination
(likenesses and differences of letters and words)
Visual discrimination likenesses and differences of letters and words)
Rate of learning of vocabulary

Some Dimensions of Reading

M e c h a n i c a l

Eye movements

Number per line, time and place of fixations, number of regressions; more a laboratory than a school dimension.

Voice and hand accompaniments

Extent of whispering, lip movements, finger reading; of concern in primary grades.

Postural accompaniments

Nature and extent of maladjustive postures; of special concern in elementary grades.

Recognition techniques

Identity of and accuracy of; as, sounding, context, configuration, and syllabification; of concern in elementary grades and in diagnosis of retarded readers.

V o c a b u l a r y

Oral

Identity and number of words pupil understands when spoken; of concern in primary grades and in diagnosis.

Sight

Identity and number of words pupil can pronounce and understand when seen; of concern in primary grades and in diagnosis.

General	Identity and number of words known whether spoken or seen; of concern at all grades but particularly in secondary and college.
Rate	Words read per minute assuming good comprehension; should be differentiated according to purpose and material; of concern at all levels.
C o m p r e h e n s i o n	
Sentence	Length and difficulty of sentences pupil can understand, accuracy of same; of concern at all levels.
Paragraph	Length, difficulty, and type of paragraphs pupil can understand; accuracy of same; of concern at all levels.
Passage	Difficulty of passages pupil can understand, accuracy of same without regard to length; of concern at all levels.
O r a l r e a d i n g	Rate and comprehension; in addition, accuracy of pronunciation and word emphasis, appropriateness of tone, rate, and inflection according to nature of material, way of sounding unknown words; of concern in primary grades and at all levels for public speaking and dramatics.
D i f f e r e n t i a l p u r p o s e s	
To skim	Rate and accuracy for any of the purposes; of concern in upper elementary, secondary, and college levels.
To memorize	
To follow directions	
To get specific information	
To learn how to do something	

To gain general knowledge of a subject

To judge the validity of an argument or conclusion

To judge the literary or technical merit of a passage

To be entertained or inspired

D i f f e r e n t i a l s u b j e c t s a n d m a t e r i a l s

Mathematics

Chemistry

Etc.

Advertising

Maps

Charts and graphs

Etc.

Fiction

Poetry

Etc.

Vocabulary, rate and/or comprehension for any subject or material; of concern in upper elementary, secondary, and college levels.

S p e c i a l r e a d - i n g t a s k s

Rate and accuracy in use of table of contents, indexes, glossaries, directories, dictionaries, encyclopedias, footnotes, etc.; of concern from intermediate grades on.

S p e c i a l d i s - a b i l i t i e s

Identity and extent of systematic errors, letters and common words not known, etc.; of concern in diagnosing cases of reading retardation.

PROCEDURES AND FORMS FOR MEASURING READING

Of the possible methods of behavioral measurement, only product analysis is not readily adaptable to appraising a pupil's status in reading. Observation is necessary for the

mechanical dimensions and is valuable for the several special reading tasks of index and dictionary usage, etc. Often, the most valid approach to measuring comprehension is a freeresponse procedure - the pupil summarizes or interprets what he has read in writing or orally. Guided response instruments, however, are employed more than any other device and can provide reasonable valid and highly reliable measures of most dimensions of reading.

Reading Tests. Various types of guided response items are used in reading.

Rate

1. Several of the objects in the night sky are not
2. stars but planets.
3. One of the most interesting planets is the
4. ringed one called Saturn. Its rings are formed
5. by a cloud of small particles that circle the
(Pupil checks the number of the line he was
reading when the examiner called "stop".)

Comprehension

S e n t e n c e s

So intense were the flames from the factory that it was truly a conflagration (a) steel mill (b) big fire (c) celebration (d) false alarm

(Pupil indicates the best synonym for conflagration.)

P a r a g r a p h s

John, who weighs 150 pounds, wants to fight in a class which has a top weight of 135 pounds. He intends to lose ten pounds and this will make him eligible. (a) eligible (b) intends (c) ten (d) lose

(Pupil indicates which of the option words "spoils" the meaning of the last sentence.)

Long passages

(Pupil reads a given passage - timed, usually answers a series of multiple-choice questions about what he has read.)

Differential Purposes

General significance

Europe is the home of the white storks. People are delighted when they fly north in the spring. Many believe that storks bring good luck to a village. A family is proud when storks choose their roof on which to build a nest. Storks do bring one kind of real luck - they eat anything that is thrown out. This helps to keep the village clean and healthy.

Draw a line under the word that tells what many people believe storks bring.

food nests spring riches luck

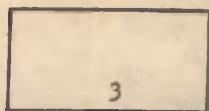
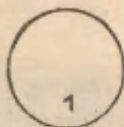
Predicting outcomes

No other creature of the woods is more timid than the deer, yet when winters are particularly severe, deer have been known to visit farms and to accept food. One February after a stretch of very cold weather we saw deer tracks around our barn. That night we threw some hay outside and along with it some kitchen scraps. In the morning we went outdoors.

Our horses were eating the scraps.
We saw two deer eating the hay.
We saw fox tracks in the snow.
We saw the deer pulling our sleigh.

(Pupil underlines one of the sentences.)

Understanding
precise directions



These different shapes all have different names. The first is a circle; it has no corners. The second is a square; it has four corners. Do you know the name of the third? It is longer than a square. Make a cross in the center of the one that has no corners.

Noting details

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 tears came from the cut which dried into a sweet sugar. Now we know that this crying tree was the sugar maple, and that the sweet tears became maple sugar when they dried.

An old book tells a story about a

flag tree book man

The story said that if this tree was cut it would

laugh cry sigh eat

The sweet tears from the tree become

salt powder sugar flour

(Pupil underlines one word for each of the questions.)

Vocabulary

Option..... (a) engine (b) sweet (c) hurry (d) choice

(Pupil selects synonym from options.)

SPEECH

Dimensions of Speech

In general, the systematic evaluation of status and improvement in speech is of concern only to teachers of public speaking and drama and to English teachers who include speech or dramatic expression in their classes. In addition, speech correctionists and pathologists engage in the detection and diagnosis of vocal disabilities. However, this sort of clinical measurement is beyond the scope of our text. The dimensions that speech teachers most commonly assess are stated in the following outline.

Rate	Words per minute.
Rhythm	Smoothness - unevenness of talking; appropriateness of pace to subject; observance of meter if poetry.
Pitch	Usually expressed qualitatively as high to medium to low, but can be measured in mean cycles-per-second.
Amplitude	Usually expressed qualitatively as loud to medium to soft, but can be measured in mean decibels.
Tone	Extent of resonance, nasality, harshness, etc.
Enunciation	Correctness and clarity with which words are pronounced.
Diction	Appropriateness and variety of oral vocabulary and usage.
Posture and movement	Manner and appropriateness of standing, facial expressions, gestures, etc.

Several of these might be omitted and others would certainly be added according to the nature of the measurement task. In public speaking, dimensions relating to the con-

tent of speeches should be important and in dramatics, such factors as stage movements, ability to memorize, and "stage business".

FROM ARISTOTLE TO BELL

Concerning the history of the education of the deaf, only fragmentary bits of information are available prior to the sixteenth century. Some of the bits are indirect and inferred, and it is difficult to trace any complete structure of systematic thought.

In the pre-Christian era, Aristotle and, later, Pliny the Elder observed that there was some relationship between congenital deafness and dumbness, but neither one elaborated the relationship. It is still questionable whether Aristotle assumed a common organic basis for deafness and dumbness, but he placed strong emphasis on sound (speech) as the primary vehicle for conveying thought and therefore as the chief medium for education. Aristotle presumably believed, therefore, that since the deaf could neither give utterance to speech nor comprehend it from others, they were relatively incapable of instruction; and, furthermore, that the deaf were less capable of instruction than the blind. At any rate, Aristotle made no clear statement that dumbness is a consequence of deafness (of the congenital type) and that speech is an acquired skill whose patterns are learned through the ear. Of course, hearing is the normal channel through which speech is most readily perceived and consequently imitated. Note the stress on the normal channel, for we have also learned that it is possible for the deaf to acquire speech through touch, sight, and the sense of movement. Many deaf receive information through the use of manual alphabets and the language of signs.

The idea that deafness and muteness depend on a common organic abnormality and that the deaf were poor educational prospects persisted through medieval times. It is probable that the derogatory use of "dumbness" in our modern slang, suggesting an inferior intellect has its roots in the supposed mental incapacity of the deaf. And it was

inevitable that the notion of the limited mental capacity of the deaf should exercise a powerful influence on their legal and social status. Roman law classified the deaf and dumb with the mentally incompetent, and the Justinian Code (sixth century A.D.) excluded the deaf and dumb from the rights (entering into contracts, and so on) and obligations (witnessing in a law court) of citizenship. In justice to Justinian's Code, it must be said that a sharp differentiation was made between deaf-mutes and those whose deafness was acquired and who had learned speech and writing. Although the Code did not prohibit marriage for the deaf, its influence later caused medieval law to deny to the congenitally deaf and dumb the highly cherished right of primo-geniture.

Although information concerning the attitude of religious institutions toward deafness during this early period is completely meagre, fragments of evidence from church literature indicate that the church shared the prevailing notions of the times. Mosaic Law, through its Code of Holiness in the sixth century B.C., exhorted the faithful not to curse the deaf since their deafness was presumably willed by the Lord. In the second century B.C. the Rabbis of the Talmud classified the deaf with fools and children. Similarly, the Christian Church looked with disdain on the intellectual capabilities of the deaf, although it did permit marriage by a ceremony conducted in the language of signs.

It was not until the middle of the sixteenth century that the mists began to lift. At that time an intellectually versatile Italian physician, Girolamo Cardano of Pavia, in referring to the work of Rudolphus Agricola of Groningen, proposed a set of principles that promised a more hopeful educational, and hence social, outlook for the deaf. He stated, in essence, that the deaf could be taught to comprehend written symbols or combinations of symbols by associating them with the object or picture of the ob-

ject they were intended to represent. To this day, the association of meaningful language with experience is the keystone of techniques for teaching the deaf. The significance of Cardano's contribution lies not so much in his statement of basic principles of teaching as in his implicit rejection of the notion that the deaf cannot be educated and consequently are doomed to social inadequacy.

Cardano's pronouncements initiated a series of serious, although sporadic, attempts to implement his principles. It is reasonable to believe that these developments were in part due to the liberation of humanistic forces by the Renaissance and the subsequent popularization of education in the vernacular induced by the Reformation. As early as 1555 we find oral education of deaf children of the nobility carried on by a Spanish monk, Pedro Ponce de Leon, in a convent of Valladolid. It was in Spain, too, that the first book exclusively on the deaf, by Juan Pablo Bonet, appeared in 1620. Bonet's pupils were taught articulation and language supplemented by a manual alphabet and the language of signs. Other works in many tongues dealing with the education and intellectual and spiritual status of the deaf appeared soon after.

Two individuals, however, tower above all others in their contributions to advancing the cause of the deaf in the latter part of the eighteenth century - Abbé Charles Michel de l'Épée in France and Samuel Heinicke in Germany. De l'Épée found a fruitful outlet for his religious emotions in promoting the well-being of the deaf through education. It is to his everlasting credit that he founded the first public school for the deaf in 1755 in Paris. Heinicke, his contemporary in Germany, founded the first public school for the deaf in Germany and the first recognized by any government. De l'Épée and Heinicke disagreed about the merits of signs and "oralism" as methods of instruction, the former favouring signs and the latter writing prolifically on the advantages of speech and speech reading.

So widespread was the influence of these two men that the pattern of their controversy was reproduced subsequently in many countries. By the end of the eighteenth century it had been convincingly demonstrated that the deaf were capable of instruction, and it was also clearly recognized that it was the moral and legal obligation of society to see that instruction was provided, even though the development of free public schools was slow. Such recognition was indeed a landmark in social progress.

THE AMERICAN ASSOCIATION TO PROMOTE THE
TEACHING OF SPEECH TO THE DEAF AND THE VOITA BUREAU

The history of the Association, which served the deaf and the hard of hearing since it was incorporated in 1890, is interwoven with the life of a man whose genius has benefited all mankind, a man whose knowledge of speech and of the fundamentals of sound has opened up new worlds for the deaf, the hard of hearing, and those with normal hearing. Alexander Graham Bell was a great friend to the deaf and hard of hearing, and his influence on the development of the teaching of speech and lip reading is incalculable. Bell is even more widely known as the inventor of the telephone; and the modern hearing aid is a development from the telephone. Today, over half a million people who would otherwise have been left out of things have been virtually restored to normal living with the aid of an electric hearing device.

Alexander Graham Bell, born in Scotland, came by his interest in speech naturally. His grandfather was an authority on speech. His father, Alexander Melville Bell, was acknowledged as the leading phonetician of his day and perfected a system known as "Visible Speech" by which any sound made in speaking could be exactly expressed in writing. These symbols were originally intended to be used as a method of universal language instruction. The symbols are good for training the ear and were the forerunner of the present International Phonetic Alphabet.

The Bell family moved to Canada in 1870. When Alexander Melville Bell was invited to give a course in the use of his Visible Speech Symbols to a group of teachers in Boston, he replied that he was too busy to come but that his son, Alexander Graham Bell, knew as much about the symbols as he did and would be available. Alexander Graham Bell was

only twenty-three years old when he went to Boston. His work there (quite apart from his electrical invention) was the beginning of a movement which was to spread over America and result in strong differences of opinion as to whether the deaf children could be taught by speech or by the manual alphabet and the language of signs. Although Mr. Bell knew that deaf children could be taught how to speak, it was not until he became convinced of the practical values of lip reading that he became enthusiastic over its possibilities. Thousands of deaf people today who read the lips and speak owe their skill to the pioneering efforts of this genius with unusual mental gifts and a winning personality.

Perhaps in some people's minds the name "Volta Bureau" means a place where electricity is generated. The name owes its origin to three extraordinary men: Alessandro Volta, Napoleon Bonaparte, and Alexander Graham Bell.

In 1800, Volta, an Italian scientist who had been experimenting with a chemical generator of electricity, described his battery at a meeting of the National Institute in Paris. Napoleon, who was a member of the Institute, was present. He grasped the value of the invention, and immediately proposed that France should award Volta a gold medal and a gift of 6000 francs. He also established a permanent fund from which a sum of money, known as the "Volta Prize" should be conferred upon those who made important contributions to the new science of electricity. In 1880, this prize, which now amounted to 50,000 francs, was bestowed upon Alexander Graham Bell for the invention of the electric speaking telephone. He determined to invest this money in such a way that it would promote scientific research and at the same time would remain a permanent fund. This he accomplished in a characteristic fashion by using part of the Volta Fund to further the improvement of phonograph records, the patent rights to which, when sold, brought him 200,000 dollars. June 27, 1887, he turned

over to his father, Alexander Melville Bell, 100,000 dollars to be held in trust and used "for the purpose of founding and maintaining a Bureau for the increase and diffusion of knowledge relating to the deaf".

Three years later (1890) Dr. Bell, not being eligible for membership in the Convention of American Instructors of the Deaf because he was not employed as a teacher of the deaf, organized the American Association to Promote the Teaching of Speech to the Deaf. In 1908, the Volta Fund, which Dr. Bell had created in 1887, was placed in charge of the association. All the activities of the Volta Bureau and of the Association have been carried on in the Volta Bureau Building since 1894 Helen Keller turned the first sod to break ground for the construction of the building.

Membership in the Association has always been open to anyone interested in having children taught speech and lip reading. Dr. Bell realized the importance of opening the membership to parents of deaf children, educators, scientists, physicians, philanthropists, and the general public. Soon hard-of-hearing adults began to seek membership, and today, a large number of Association members are hard of hearing.

Parents of deaf children have found the Association a wise counsellor and a never-failing friend. Through personal correspondence and through literature prepared by experts, thousands of bewildered parents have learned what to do for their deaf children. They have also been told what they should not do if they desired their children to develop into well-adjusted adults, able to converse intelligibly and read the lips. Teachers of the deaf have received inspiration and help through summer schools. The Volta Bureau contains the largest collection of books on the deaf and deafness in America, perhaps the largest in the world.

Speech Reading

Speech reading is the skill that enables a person, regardless of whether he possesses normal or impaired hearing, to understand speech by attentively observing the speaker. So much for the simple definition. Let us analyse it to appreciate all that is implied by "attentively observing".

Spoken language is a rapid succession of overlapping syllables that are in turn made up of forty-odd sounds, or phonetic elements, of varying degrees of visibility. These sounds have been divided by phoneticians into two major categories: vowels and consonants. The speech reader must be able to recognize instantly all the visible movements and fill in those that are invisible. Fortunately, the sounds like f, s, th, ch, that are difficult to hear are easy to see on the lips. Likewise, the sounds that are difficult to see, like short vowels, are easier to hear because they have more speech power and fall in the lower frequency range where the majority of hard-of-hearing people still have useful residual hearing. These forty-odd sounds are produced by changing the relative position of the tongue, teeth, lips, and jaw. It is these visible movements that the speech reader must observe and interpret. To help him fill in the gaps and make the most of what he sees, for only about a third of speech sounds are clearly visible, the speech reader must learn to use the sensations that he feels simultaneously in his own speech muscles as he watches the speaker. Notice what even an expert speech reader does when puzzled. He silently imitates the movements he saw. This repetition helps him translate a visual image into a motor speech image and usually gives him the needed clue. This use of the muscle-feeling sense is a valuable training and checking device and is used in teaching.

It may seem impossible to read speech when only one-third of the sounds are visible, but we are all accustomed to the same sort of confusion to a lesser degree. Two or more words, like "ice", and "eyes", or "up", "come", and "gum" may look alike or nearly so, and the speech reader must recognize by the context or other clues which one is needed. That is no different from what all of us must do with words that sound alike, such as "there" and "their", or "so", "sow", and "Sew", or the many meanings of some single words that not only look alike and sound alike but are even spelled alike. The speech reader simply has many more choices to make than the rest of us, as well as blanks to fill in, and his intuition and many other clues he may have become very important for him.

In conversation there is no pause between words as there is on the printed page. For example, the phrase "plenty of potatoes" has the same number of movements as the jaw-breaking word "plenipotentiary" but both are tripped off the tongue with equal speed and lack of division between syllables. The division into words is an interpretative process that takes place in the mind. It is never seen on the lips.

In addition, the speech reader must observe the rhythm of the sentences; for each language has a characteristic flow, that is determined by the grammar as well as the pronunciation of words. An appreciation of this cadence helps him to fill subconsciously the many gaps in what he actually sees or hears.

Stress and accent also affect what the speech reader sees. By watching the timing of syllables and the pauses between them, he gets additional meaning. The same sentence said with different stress and inflection has its meaning changed entirely. Read aloud the following sentences, stressing the underlined word, and note the result. Then watch to see the differences in timing as some one else says them, and you will have a better appreciation of the point.

Good! By God, we're going to Kansas.

Good-By. God, we're going to Kansas.

Good-by, God. We're going to Kansas.

In addition to the above factors, the cues provided by the general situation are very helpful. Facial expressions, gestures, and reactions are frequently more expressive than words. Often an object handled or pointed to gives a valuable clue, while the place and the particular speaker conversing shed light on the topic under discussion. For example, we can easily anticipate what the clerk behind the counter at the grocery store will say, or the remarks of the conductor coming down the aisle punching tickets, or the comments of the motorcycle cop who has signaled us over to the side of the road for running through a red light.

The deaf and the hard of hearing must learn to recognize and employ these details of every speech situation. The more limited his hearing, the greater the strain on the speech reader, for his attention is concentrated on this rapid succession of ever-changing movements that vary with every individual speaker. This rapid flow of speech must be grasped in a fleeting instant, for there is no opportunity for review. Interpretation must be instantaneous. Attentively observing all these factors demands such alertness that tension and fatigue are produced in a relatively short time. Then too, poor lighting, distance, noise, confusion, and distracting movements can defeat even the most experienced speech reader. Many a deafened person, dependent upon speech reading alone, has been so fatigued by the demands of his daily job that a social evening is an impossible feat.

These difficulties are best encountered (for the hard of hearing) by the use of a properly selected hearing aid. Any sound, however limited, helps the speech reader fill in the gaps and makes for easier communication. This is particularly significant in the light of the statistics of the Naval Hearing Program, which show that a hearing aid put

two thirds of the men back within the range of normal hearing and that only 6 out of 3,500 men were too deaf to use and obtain some assistance from an aid. On the other hand, the use of a hearing aid never eliminates the need to learn speech reading. Both are integral parts of the same process and work together. This is borne out by replies to a questionnaire sent to all graduates of the Naval Hearing Rehabilitation Program. Although ninety-four per cent of the former patients are successfully using their aids, they acknowledge their dependence on speech reading and stress the need to master the skill.

Speech Reading in Aural Rehabilitation

The average person can achieve a basic speech-reading skill in twenty or thirty lessons, but this alone will not overcome the handicap of deafness. A well-rounded, carefully planned aural rehabilitation program is the real solution to the problem. The remarkable results achieved with some fifteen thousand service men and women in the Army and Navy Aural Rehabilitation Programs during World War II clearly demonstrate this fact. In this typical cross section of adult American population, every conceivable type, degree, and duration of hearing loss was encountered, and the needs of all were found to be remarkably similar. Instruction was varied to meet individual differences, but the basic principles were the same.

The advantages of a few weeks of concentrated instruction in communication as against a course of lip-reading lessons extending over a much longer period of time were established beyond question. It proved that in three hours' instruction a day for a period of from four to eight weeks, a well-integrated, comprehensive program can be carried out that will achieve the two basic aims of aural rehabilitation:

First, the proper attitude is developed and fostered. This procedure demands that the student be led to recognize his loss and face objectively the problem it imposes. This can be achieved only if he is fully informed on hearing in general and on his own hearing loss in particular.

Second, the three basic communication skills - speech reading, auditory training, and adequate speech - are developed in a soundly correlated program. This includes the selection of the right hearing aid and training in its use in all situations.

An intensive course of instruction, such as the one described here, may seem to involve some immediate sacrifices on the part of the individual, but the results are well worth the price. It is the most efficient and effective way to master the problems of deafness. The service programs have set the pattern for civilian clinics for adults and children with an acquired hearing loss.

The Teacher of Speech Reading

Experience has shown that in order to carry through such a program successfully the teacher must meet definite educational and professional qualifications. It is important that the teacher be stable, emotionally mature individual, possessed of sound clinical judgment and the ability to guide objectively the complete readjustment of the student. Fundamental requirements are a good voice, natural intelligible speech, and no peculiar mannerisms. Wide cultural interests, a pleasing personality, and a sense of humour are essential. The teacher should be trained in both hearing and speech so that she has the fundamental philosophy and the wide knowledge of communication that is required. This last presupposes that satisfactory grounding has been acquired in the theory and methods of speech reading, phonetics, speech correction, auditory training, au-

diometry and hearing aids, anatomy, physiology, and pathology of the ear and vocal mechanisms, as well as in the related areas of psychology and education. The teacher with such training and experience will avoid putting undue emphasis on speech reading to the detriment of the other skills of communication.

It is not likely, nor is it essential, that the teacher be a proficient speech reader, unless perchance she herself has impaired hearing. The basic factor is her ability to teach, which implies knowledge of her subject and the ability to present it in such a way that it will meet the needs of each pupil.

THE PERKINS INSTITUTE

For a long time now Anne Sullivan's dominant idea had been escape. She wanted to go to school to prepare herself to enter the attractive world through which Mr. Parnell moved. The sick old women hanging to life by the slenderest of threads had told her before they dropped off into oblivion that there were schools where blind children could be taught to read and write, and this gave her something to live for. As a matter of fact, the most famous of all such schools was only about twenty miles from Tewksbury - the Massachusetts School and Perkins Institution for the Blind.

The impossible had been accomplished at the Perkins Institution, and the story of it had gone around the world. The leading press agent was Mr. Charles Dickens, who in "American Notes" gave an account of his visit there to see for himself the miracle that Dr. Samuel Gridley Howe had achieved in placing Laura Bridgman - the first blind deaf mute for whom it was ever done - into contact with the world around her.

Dickens liked the Perkins Institution" I went to see this place (he wrote) one very fine winter morning: (it was on Saturday, January 29, 1842) an Italian sky above, and the air so clear and bright on every side, that even my eyes, which are none of the best, could follow the minute lines and scraps of tracery in distant buildings. Like most other public institutions in America, of the same class, it stands a mile or two without the town, in a cheerful healthy spot; and is an airy spacious, handsome edifice. It is built upon a height, commanding the harbour. When I paused for a moment at the door, and marked how fresh and free the whole scene was - what sparkling bubbles glanced upon the waves, and welled up every moment to the surface, as though the world below, like that above, were radiant with the bright day, and gushing over in its fulness of light: when I gazed from

sail to sail away upon a ship at sea, a tiny speck of shining white, the only cloud upon the still, deep, distant blue - and turning saw a blind boy with his sightless face addressed that way, as though he too had some sense within him of the glorious distance: I felt a kind of sorrow that the place should be so very light and a strange wish that for his sake it were darker. It was but momentary, of course, and a mere fancy, but I felt it keenly for all that."

The children were not in uniform. He liked that.

"Good order, cleanliness, and comfort, prevailed every corner of the building. The various classes, who were gathered around their teachers, answered the questions put to them with readiness and intelligence, and in a spirit of cheerful contest for precedence which pleased me very much. Those who were at play were as gleesome and noisy as other children. ... how free they are from all concealment of what is passing in their thoughts; observing which, a man with eyes may blush to contemplate the mask he wears."

But the face that fascinated him most was that of a girl.

"... blind, deaf, and dumb; destitute of smell; and nearly so of taste: ... a fair young creature with every human faculty and hope, and power and goodness and affection, inclosed within her delicate frame, and but one outward sense - the sense of touch. There she was before me; built up, as it were, in a marble cell, impervious to any ray of light, or particle of sound; with her poor white hand peeping through a chink in the wall, beckoning to some good man for help.

Long before I looked upon her, the help had come. Her face was radiant with intelligence and pleasure. Her hair, braided by her own hands, was bound about a head, whose intellectual capacity and development were beautifully expressed in its graceful outline, and its broad open brow; her dress, arranged by herself, was a pattern of neatness and simplicity; the work she had knitted, lay beside her;

her writing-book was on the desk she leaned upon. - From the mournful ruin of such bereavement, there had slowly risen up this gentle, tender, guileless, grateful-hearted being.

Like other inmates of that house she had a green ribbon bound around her eyelids. A doll she had dressed lay near upon the ground. I took it up, and saw that she had made a green fillet such as she wore herself, and fastened about its mimic eyes...

This was Laura Bridgman.

ANNIE SULLIVAN MACY

The following is an extract from an account of how Annie Sullivan came to teach her first pupil Helen Keller who was to bring her world fame. With her help Helen, this phenomenal child developed into an agreeable personality. Having learned articulated speech and writing (spelling in the palm) Helen Keller graduated from Radcliffe College "in artibus cum laude". She also wrote a book "The World I Live In" and contributed to many journals.

Captain Keller was waiting for them in the yard. Almost breathlessly Annie asked where Helen was, but fervently as she wished to see her, she was afraid.

Helen stood in the doorway, her brown hair tumbled, her pinafore soiled, her black shoes tied with white strings. The Kellers had been meeting every train for two days, and the child had known by the bustle in the house that something extraordinary was about to happen. When she realized that the family had returned she rushed at her new teacher with such force that she would have upset her if Captain Keller had not stood just behind her. She resisted all Annie's efforts to embrace or kiss her, jerked her bag away from her, and flew into a temper when Mrs. Keller tried to get it back. Annie diverted her by giving her her watch, and they went upstairs together, where Annie made her understand by letting her feel a trunk in the hall and by other signs that while there was no candy in the bag there was some in the trunk which would be along later. Helen seemed to understand. It was encouraging.

The signs that Helen had devised on her own account showed that she had intelligence. She asked for bread and butter by going through the motions of cutting bread and

spreading it, for ice cream by turning an imaginary freezer, for cake by beating imaginary butter in her hand. She made the motions of putting on glasses to indicate her father, laid her hand against her face to indicate her mother, and sucked her thumb to indicate her baby sister Mildred, in all of which she acted very much like Laura Bridgman. Annie was enormously relieved by Helen's appearance.

"Somehow (she wrote) I had expected to see a pale, delicate child - I suppose I got the idea from Dr. Howe's description of Laura Bridgman when she came to the Institution. But there's nothing pale or delicate about Helen. She is large, strong, and ruddy, and as unrestrained in her movements as a young colt. She has none of those nervous habits that are so noticeable and so distressing in blind children. Her body is well formed and vigorous, and Mrs. Keller says she has not been ill a day since the illness that deprived her of her sight and hearing. She has a fine head, and it is set on her shoulders just right. Her face is hard to describe. It is intelligent, but it lacks mobility, or soul, or something. Her mouth is large and finely shaped. You see at a glance that she is blind. One eye is larger than the other and protrudes noticeably. She rarely smiles."

It was Annie's plan to move slowly, first winning Helen's love. "I shall not attempt to conquer her by force alone," she said. She had yet to learn (she began to learn it the following day) that Helen has always done exactly as she pleased and, like all tyrants, domestic or royal, intended to keep on. She learned that sometimes it was impossible for days to comb her hair; that force was necessary to get her to button her shoes or wash her face, and that force always brought on a fit of temper. She was exceedingly strong, and since she fought with the complete abandon of a wild animal she was a dangerous adversary. Sometimes members of the family were black and blue from her assaults. Helen is puzzled now when she considers this conduct of hers and wonders what the behaviourists would say about it. She had been

surrounded by kindness and had no pattern to work from, but the baffled rage within her gave her so successful a fighting technique that in one of their early struggles she succeeded in knocking out one of her teacher's front teeth. For a few days it looked as if Annie Sullivan were beaten.

She recognized at once that her biggest problem was to get Helen under some kind of control without breaking her spirit, and saw almost immediately that it could not be done while Helen was with her family, none of whom could bear to see the child punished. Annie, on the other hand, was so used to affliction that she knew no other course but to treat an afflicted person just as she would have treated a normal person. She tried to begin at once teaching Helen to spell. The first word, *d o l l*, was spelled into Helen's hand when the doll that Laura dressed was presented to her. This ended in a tantrum when Helen misunderstood one of her teacher's movements and thought she was trying to take the doll away. *C a k e* was the next word, spelled when a piece of cake was given her. She repeated the finger movements with some interest and seemed to enjoy fussing with the kindergarten materials, but there was no way to know when she was going into one of her rages and no way to stop her until she had worn herself out.

The two girls locked horns one morning at the breakfast table. Annie had been profoundly shocked by Helen's table manners, and when the child tried to pick morsels out of Annie's plate with her fingers (as she did out of all the other plates) Annie refused to allow it. This precipitated the scene, and the family, none of whom had finished breakfast, left the room. Annie locked the door and kept on eating while Helen threw herself on the floor and kicked and screamed (weird, unearthly screams) and tried to jerk Annie's chair out from under her. Curiosity finally got the better of her, and she climbed up to see what her teacher was doing.

"I let her see that I was eating, but did not let her

put her hand in the plate (says Annie). She pinched me, and I slapped her every time she did it. Then she went all round the table to see who was there, and finding no one but me, she seemed bewildered. After a few minutes she came back to her place and began to eat her breakfast with her fingers. I gave her a spoon, which she threw on the floor. I forced her out of the chair and made her pick it up. Finally I succeeded in getting her back in her chair again, and held the spoon in her hand compelling her to take up the food with it and put it in her mouth. In a few minutes she yielded and finished her breakfast peaceably. Then we had another tussle over folding her napkin. When she had finished, she threw it on the floor and ran towards the door. Finding it locked, she began to kick and scream all over again. It was another hour before I succeeded in getting her napkin folded. Then I let her out into the warm sunshine and went up to my room and threw myself on the bed, exhausted. I had a cry and felt better.

Annie's eyes were very much inflamed and she was hideously disappointed.

"I had an idea (she wrote) that I could win the love and confidence of my little pupil by the same means that I should use if she could see and hear. But I soon found that I was cut off from all the usual approaches to the child's heart. She accepted everything I did for her as a matter of course, and refused to be caressed, and there was an end of it."

Annie felt sure that she had to get Helen away from her family. Mrs. Keller finally consented and persuaded Captain Keller to agree. It was he who suggested the little annex near the old Keller homestead, a charming vinecovered refuge with one big room where Helen and Annie stayed. The furniture was changed so that Helen would not recognize it, and she was taken there after a ride so that she would not know where she was. Meals were sent them and the family was allowed to visit them every day on condition that Helen was to know nothing of the visits.

The experiment began badly.

"She was greatly excited at first (Annie wrote), and kicked and screamed herself into a sort of stupor; but when supper was brought she ate heartily and seemed brighter, although she refused to let me touch her. She devoted herself to her dolls the first evening, and when it was bedtime she undressed very quietly; but when she felt me get into bed with her, she jumped out on the other side, and nothing that I could do would induce her to get in again. But I was afraid she would take cold, and I insisted that she must go to bed. We had a terrific tussle, I can tell you. The struggle lasted for nearly two hours. I never saw such strength and endurance in a child. But fortunately for us both, I am a little stronger, and quite as obstinate when I set out. I finally succeeded in getting her on the bed and covered her up, and she lay curled up as near the edge of the bed as possible.

It must have been the following morning, or perhaps a morning or two later, that Captain Keller, on his inspection trip, looked through the window and saw Helen sitting on the floor, still in her nightgown, the picture of stubbornness and despair. She had waked in a bad humour, and when her teacher gave her her clothes to put on, she threw them on the floor. Annie let her understand that she could not have breakfast until she was dressed. At ten o'clock she was still sitting on the floor. Captain Keller stopped by his cousin's house and with tears in his eyes said, "Leila, I've a good mind to send that Yankee girl back to Boston," but Leila dissuaded him, and within a short time Annie's plan had vindicated itself.

Two weeks later (March 20, 1887) Annie could write these lines:

"My heart is singing for joy this morning. A miracle has happened! The light of understanding has shone upon my little pupil's mind, and behold, all things are changed!

The wild little creature of two weeks ago has been

transformed into a gentle child. She is sitting by me as I write, her face serene and happy, crocheting a long red chain of Scotch wool. She learned the stitch this week, and is very proud of the achievement. When she succeeded in making a chain that would reach across the room, she patted herself on the arm and put the first work of her hands lovingly against her cheek. She lets me kiss her now, and when she is in a particularly gentle mood, she will sit in my lap for a minute or two; but she does not return my caresses. The great step - the step that counts - has been taken. The little savage has learned her first lesson in obedience, and finds the yoke easy. It now remains my pleasant task to direct and mould the beautiful intelligence that is beginning to stir in the child-soul.

X X X

Helen has learned several nouns this week. "M u g" and "m i l k" have given her more trouble than other words. When she spells "milk", she points to the mug, and when she spells "mug", she makes the sign for pouring or drinking, which shows that she has confused the words. She has no idea yet that everything has a name..."

They stayed alone for about two weeks, and when they returned to the big house Annie was determined not to lose the ground she had gained. The family promised not to interfere but to help, and Annie began teaching them all the manual alphabet.

April 5, 1887.

"This morning, while she was washing, she wanted to know the name "water". When she wants to know the name for anything, she points to it and pats my hand. I spelled "w a t e r" and thought no more about it until after breakfast. Then it occurred to me that with the help of

this new word I might succeed in straightening out the "mug-milk" difficulty. We went out to the pump-house, and I made Helen hold her mug under the spout while I pumped. As the cold water gushed forth, filling the mug, I spelled "w a t e r" in Helen's free hand. The word coming so close upon the sensation of cold water rushing over her hand seemed to startle her. She dropped the mug and stood as one transfixed. A new light came into her face. She spelled "water" several times. Then she dropped on the ground and asked for its name and pointed to the pump, and suddenly turning round she asked for my name. I spelled "Teacher". All the way back to the house she was highly excited, and learned the name of every object she touched, so that in a few hours she had added thirty new words to her vocabulary. Here are some of them: Door, open, shut, give, go, come, and a great many more."

PICTURE OF PSEUDOOLIGOPHRENIA IN CHILDREN WITH HEARING DEFECTS

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Our research, it seems, could be of importance for abnormal children's diagnosis, and for elimination of the still existing major shortcomings in staffing and planning the auxiliary schools which does great harm to the upbringing and education of abnormal children.

We have studied pupils with defects of hearing, sent to auxiliary schools by mistake - an instance of wrong understanding of the peculiarities of abnormal development. We have come to the conclusion that diagnostic mistakes, so far as children with hearing defects are concerned, result from the widespread underestimation of the auditory analyser in the psychic development of the child. Such mistakes lie in a wrong understanding of the problem of interrelations between the speech and thinking, and in ignoring the analysers' role in the development of higher nervous activity. We have tried to demonstrate the role of the auditory analyser in speech development and in communication, as well as the influence of the underdevelopment of the child's speech on his education.

The main cause of difficulties in education was speech underdevelopment and the resulting limited nature of the language intercommunication observed in children with defects of hearing studying in the auxiliary schools.

The anomalous development of such children was due, on the one hand, to the limited function of the auditory analyser in its peripheral part, and on the other hand, to the resulting underdevelopment of the second signal system.

PECULIARITIES OF ACOUSTIC PERCEPTION IN
CHILDREN WITH SPEECH DEFECTS

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Pathology of acoustic perception occupies an important place in the complicated and diversified structure of speech defects in children with normal hearing. It is characterised with a lower ability to perceive relations between the sounds of speech, i.e. the system of the native language, and its phonetical unity.

As is known, the sounds of speech form certain connected groups, specific for each language. The defects of speech observed in persons with deviations of acoustic perception from normal are usually expressed in substituting and mixing the sounds in such groups.

Defects in written speech habits are governed by the same regularities and are expressed in specific substitutions of letters, in the first place.

Faulty acoustic perception often possesses the nature of primary defects. Soviet pathopsychologists believe these to be cases of acoustic agnosia.

However, deviations in phoneme perception could be of a derivative nature, i.e. secondary defects. This phenomenon is observed when there are breaks in speech kinesthesia, for instance in cases of morphological and motor breaks in the organs of speech.

Certain activity disorders, accompanied with a weakening of the voluntary attention, of the psychic activity and of the power of observation, result in a lag in the development on phonemic perception.

Lags in the development of the latter are also observed in cases of mental retardation resulting from the backward-

ness of the analytical and synthetical processes. Generalized perception of the qualities, common for a certain group of phonemes and characteristic for this group alone, is thoroughly suppressed in oligophrenia cases. Incidentally, herein lies the explanation of the spread of oral and written speech defects among mentally retarded children.

In some cases deviations from normal acoustic perception cover not only the sound composition of the word, but also its syllabic structure. In particular, this phenomenon is observed in children with sensory aphasia. Unlike the above manifestations influencing the perception of certain phonemes, children with sensory aphasia are unable to recognize or render a syllable series. This deprives the child of the most important prerequisite for acquiring verbal speech.

CHARACTERISTICS AND CORRECTIONS OF THE
MENTAL ACTIVITY OF PUPILS DURING MANUAL TRAINING
IN SPECIAL SCHOOLS

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Man's degree of independence in the labour process is determined not only by his working habits, but also by his ability to do certain types of mental activity involved in fulfilling the work allotment. This concerns, in the first place, the ability to make use of diverse oral-and-visual instructions, the ability to plan the work to be done, and the ability of checking and measuring. The above-mentioned abilities are formed and perfected in the process of labour activities.

Special research has proved that in mentally retarded adolescents, pupils of the eighth grade of special school - despite a lengthy previous history of manual training - mental activity (i.e. the use of the instructive information, planning, and self-control by eye-judgement and instrument-measuring) is the most defective and poorly developed component in the general structure of their work. For practical and theoretical purposes it would be interesting to find the conditions under which manual training could entail an improvement in the mental activity of retarded pupils in the process of work.

Teaching experiments have shown that a much higher degree of independence in the work of mentally retarded children can be achieved, if, while teaching them one uses the system of gradually decreasing the oral-and-visual outside information on the nature and the order of the mental activity processes involved in the fulfilment of the task.

THE MECHANISMS OF MENTAL DEVELOPMENT

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Two current questions in the field of mental development are the effect of sensory deprivation and the question of communication. Traditionally the views of Itard and Sequin on experience and learning were opposed by those of Binet and Burt. At present we see a similar dichotomy between Piaget's opposition to any simple didacticism and the emphasis placed on the importance of speech by Vigotsky. Work among the deaf and the severely retarded suggests that the picture is not explained by a simple opposition of two categorical views. Some operations may be predominantly primary, and others predominantly speech dependent. The logic of language, as distinct from phonation, is not itself solely a function of speech or communication although information is of course passed on by speech. Similarly, differences exist between the capacity to perform operations such as reversal and the verbalisation of these operations. Luria's work showed this primary and secondary system dichotomy to be characteristic of defectives but the situation can probably be repeated among adults and among the deaf.

There appear to be at least two kinds of language, and the pertinence of these to development will be discussed. The two systems are sometimes parallel and sometimes interact.

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