

A SURVEY OF SPEECH DEFECTS

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During recent years, there has been an increasing interest in the problem of speech defects in school children. The newly organized speech clinic of New York City, the speech improvement work in the schools of Wisconsin and other states, the notable survey of 89,057 children in the St. Louis schools under the direction of Dr. J. E. Wallace Wallin, show how seriously this matter of speech defects is being considered. With the hope of adding some new light to this subject, a personal survey was undertaken by myself, assisted by Erminie Ballard and Margaret Gray Blanton, of all the children below the high school grade in the public and parochial schools of Madison, Wisconsin.¹ Madison has a population of about 30,000, and may be considered a typical American city of the middle West, so the figures gathered will probably hold true of other cities. The aim of the survey was to make a careful first hand study of the speech defects found in the schools, and to compare the results with those gained by the questionnaire.

METHOD OF PROCEDURE

A blank was used, whereon was recorded the name, age, and grade of each child with a speech defect. By comparing the age of the child with the grade, it was possible to tell if the child was retarded. The speech defects were classified under three heads: Stuttering, lipping and miscellaneous; a further sub-division under each head of mild, medium, and severe, was used. It is not possible to make distinction between mild, medium, and severe with scientific accuracy; the distinction was a rough one and depended largely upon the experience of the observer.

Stuttering, which includes stammering, was used to designate a speech defect that can be defined as a psycho-neurosis, of which the most obvious signs are continuous or interrupted spasms of the organs of respiration, phonation, or articulation. The mind is usually dominated during the symptoms by the emotion of fear. Ordinary hesitations and repetitions in reading, choreic

¹ I wish to thank Supt. Dudgeon and Father Conway, through whose kind cooperation the survey of the Madison public schools and the parochial schools was made possible. Thanks are also due to Dr. J. A. Bancroft, who made the impressions for the cuts used in this article.

movements, tics of the face during speaking, were not included under this head. Under the heading lipping were placed all those cases that definitely gave the wrong sound for the consonants s, z, t, and th. Age and dentition were taken into consideration. Under miscellaneous were included five groups: thick speech, indistinct speech, aphasia, mutism, and nasality. Thick speech is the type of defect found in children who have poorly developed tongues caused often by rickets or lack of thyroid extract, resulting in cretanism, or those who have a defective nervous system and are unable to make the fine coordinations necessary for correct speech. The "feeble-minded" have chiefly this kind of speech defect. Indistinct speech occurs in those who continue to use the slurring, indistinct speech of babyhood after they have reached school age. Examples will be given presently. Only cases of motor aphasia were considered. Motor aphasia in this case may be defined as the inability to use spoken language when there is no injury or destruction of peripheral nerves that govern the speech mechanism. By mutism is meant a defect in which the child, due to inhibitions or mental conflicts, refuses to, or is unable to, speak in school or with strangers, but is able to talk normally with certain persons, usually members of his own family. All cases grouped under nasality had cleft palates, either the hard or soft palate, or both. No case of any type of defect was included unless it was so marked that it could be recognized even by the casual observer. Slight slurs on the s and z sounds, ordinary nasal voice, or cases of slovenly speech were not considered. The cases of defects discovered in the classroom were referred to the teacher, and unless she agreed that the condition was severe enough to be called a speech defect, they were not included.

From kindergarten to fourth grade, the test used was some Mother Goose rhyme. After it had been ascertained that the children were familiar with the rhyme, each was asked to repeat it, saying it as well as he could. From the fourth through the eighth grade, this sentence was used: "The quick, red fox jumped over the simple, lazy dog." This was repeated several times until all the children with normal intelligence had memorized it. After a speech defect was discovered in this way, further tests were given to more clearly distinguish it. Those who seemed to have a lisp were asked to say the Mother Goose rhyme "Simple Simon met a pie-man" or "Simple Simon sold silks." For thick

and indistinct speech, various words and combinations of letters were given. Tests were given to determine aphasia, and some of those appearing very dull were given the Binet-Simon and the Knox-Healy mental tests. The speech of each child suspected of stuttering was further tested by reading and conversation. Finally, the mouth of each child was examined for the shape and formation of the hard and soft palate, for the shape of the jaw, and the occlusion of the teeth.

RESULTS OBTAINED

Seventeen schools were visited, twelve public and five parochial, and the number of pupils examined was four thousand eight hundred and sixty-two, ranging in age from four to eighteen years. Twenty-four of these were in special classes, but the children were recorded as being in the grade corresponding to the grade of work they were doing.

TABLE I.

	Stutterers	Lispers	Miscellaneous					
			Indist.	Thick	Nasal	Mutism		Aphasia
Female.....	8	69	19	1	2	0	2	101
Male.....	27	90	49	5	3	2	0	176
Totals.....	35	159	68	6	5	2	2	277

From Table I can be seen the total number of speech defects, the number of each type of defect, and the distribution among the males and females. The percentages are as follows:

Total number of speech defects.....	5.69
Stutterers.....	.72
Lispers.....	3.27
Miscellaneous.....	1.71

The percentage of total number of speech defects is about twice as large as the 2.46% found by Conradi in 1904 in a survey of 87,440 children in Kansas City, Milwaukee, Cleveland, Louisville, Albany, and Springfield, Mass.,² and as the 2.8% found by Wallin in a survey made in October, 1915, of 89,057 children in the St. Louis schools.³ The percentage of stutterers, .72, is practically the same as that found by Wallin, .7, but the percentage of lispers and miscellaneous defects is about three times as large. Wallin's percentages are lispers, 1.6, miscellaneous, .4. This difference is due, I think, to the fact that the figures were gathered in the St. Louis survey by means of the questionnaire,

² CONRADI. *Speech Development in the Child*. Ped. Sem. Vol. 11, p. 365.

³ WALLIN. *A Census of Speech Defects*. School & Society, Feb. 5, 1916.

and many of the cases of thick and indistinct speech and cases of lisp'ng were not reported by the class teacher, not accustomed to classifying speech defects. It should be remembered that in the present survey in order to avoid the criticism that cases were called speech defects that were merely cases of poor enunciation, no case was recorded unless the class teacher agreed that the child in question had a definite speech defect.

Table I shows the usual relationship of three males to one female stutterer. It also shows a decidedly smaller number of cases of lisping and miscellaneous speech defects among the females than among the males.

Table II shows the great number of deformities of jaw and teeth found, a total number of protruding and retracted jaws of 99, or 35.7%. Some of the jaw conditions are illustrated by the cuts shown on another page. There were many more cases of enlarged adenoids and tonsils than were reported, but as a thorough physical examination of the throat and nose could not be made and the records of the examining physician could not be easily obtained, only six cases were recorded. The large number, 49 or 17.7%, of retarded children found among those with speech defects is significant. The cases were called retarded that were two or more years behind their grade, without adequate explanation. About ten of these were feeble-minded children whose

TABLE II.

	Sum Total	Male	Female	Mild	Medium	Severe	P. L. J.	R. L. J.	Tonsils and Adenoids	Retarded
I.....	26	15	11	5	13	8	12	3	1	4
II.....	15	10	5	9	5	1	1	3	0	3
III.....	18	11	7	10	7	1	0	3	0	2
IV.....	12	4	8	5	5	2	0	1	1	0
V.....	5	3	2	1	2	2	0	0	0	0
VI.....	12	9	3	3	6	2	0	0	0	0
VII.....	24	18	6	9	13	2	2	0	1	4
VIII.....	14	12	2	3	7	4	7	0	0	2
IX.....	36	21	15	15	12	9	15	11	2	8
X.....	30	17	13	16	7	7	10	4	0	8
XI.....	18	11	7	10	4	4	3	6	0	0
XII.....	35	28	7	18	8	9	7	4	0	12
XIII.....	4	1	3	0	4	0	0	0	1	1
XIV.....	15	10	5	1	8	6	1	2	0	1
XV.....	6	3	3	1	4	1	0	0	0	1
XVI.....	7	3	4	1	6	0	1	1	0	3
Totals.....	277	176	101	107	111	59	61	38	6	49

speech defect was due to the lack of brain development. We felt, however, that a great majority were retarded *because of the speech defect*, and in a number of these cases, the class teacher declared that it was the sole cause of the backwardness. There can be no doubt that speech defects, especially stuttering, cause backwardness in the school work of otherwise normal children.

Table III shows the different types and the total number of speech defects in each grade. It is seen that the number of defects is greatest in the first grade and gradually diminishes until, when the eighth grade is reached, they have practically disappeared. The curve shows this graphically. A great many children get over their speech defects, that is, they are able to speak without a noticeable defect, but there remains, in practically every case of lisping and thick and indistinct speech, a poor articulation, a slovenly condition of the speech that is so common. Many children are so retarded in their school work by their speech defect that they drop out as soon as they reach the age when the law allows them to stop school, and many children who acquire a speech defect at pubescence get discouraged and drop out. Most of these cases drop out about the fifth grade. In the case of the stutterers, even though the symptom be recovered from, there remains in many cases the original mental conflict, the lack of adjustment that causes other neurotic symptoms beside stuttering.

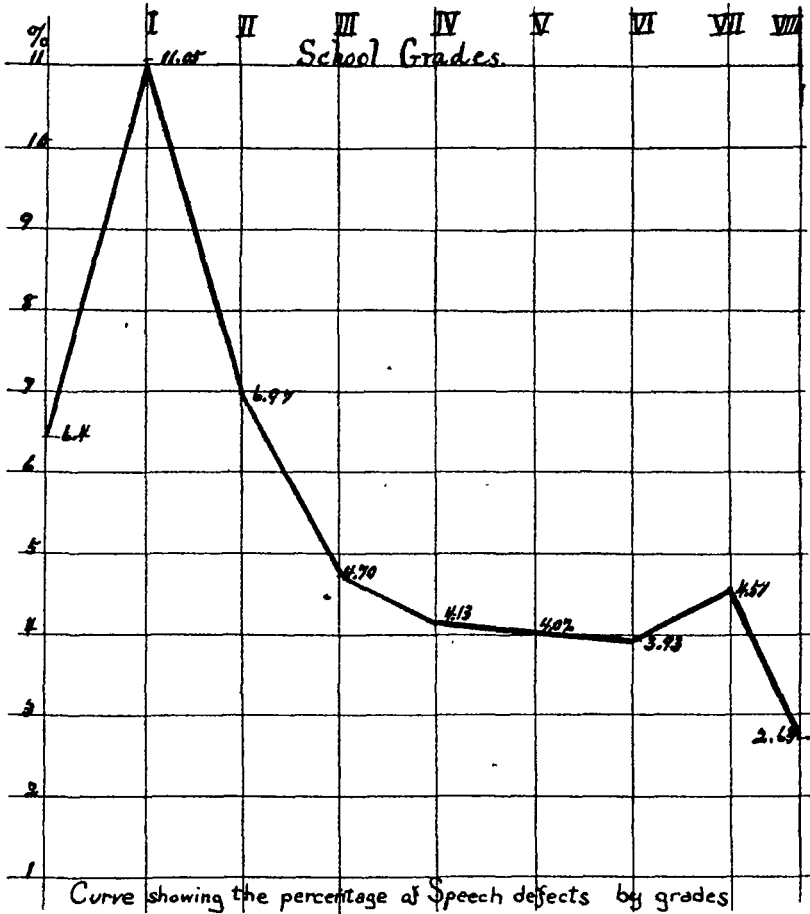
The most significant points on the chart are the kindergarten, 6.4 per cent., first grade, 11.05 per cent., and the seventh grade, 4.51 per cent. Experience shows that the children in the kindergarten who have speech defects acquired them at the beginning of speech development. The increased percentage in the first grade may be attributed to four causes:

1. The beginning of formal study.
2. The breaking of home associations.
3. The change in dentition.
4. The study of reading.

In the beginning of formal study, the nervous child is made more nervous, the sufferer from malnutrition and the sickly child are put on a still further strain, all of which is likely to cause or aggravate cases of stuttering or neurotic lisping. The breaking of home association may cause mental conflicts that affect the speech mechanism. The change in dentition: in order to make the proper sound of s and z, the teeth must be closed, and when

TABLE III
Speech Defects. First 8 Grades and Kindergarten

By Grades	Stutterers			Lisping			Indistinct			Thick			Nasal			Mutism			Aphasia			Percentages	Totals						
	Ml.	Me.	Se.	Total	Ml.	Me.	Se.	Total	Ml.	Me.	Se.	Total	Ml.	Me.	Se.	Total	Ml.	Me.	Se.	Total									
K	M.....	0	0	1	1	5	0	6	5	2	2	2					0	0	0	1		17							
	F.....	0	0	0	0	3	2	0	5	1	0	2					0	0	0	1		3							
	Total...	0	0	1	1	4	7	0	11	6	2	4					0	0	0	1		20							
I	M.....	2	0	0	2	7	12	5	24	5	5	6	16	0	1	0	1	0	0	1	1	45							
	F.....	2	0	0	0	10	10	2	22	2	4	3	9	0	1	0	0	0	0	0	0	13							
	Total...	4	0	0	2	17	22	7	46	7	9	9	25	0	2	0	1	0	0	1	1	58							
II	M.....	2	1	1	4	6	3	4	18	2	2	2	9	1	0	0	1					33							
	F.....	2	0	0	0	4	3	4	11	0	0	0	0	0	0	0	0					13							
	Total...	4	1	1	4	10	11	8	29	2	2	2	11	1	0	0	1					46							
III	M.....	1	0	0	1	3	3	2	13	0	1	0	1	0	1	0	1					17							
	F.....	1	0	0	1	5	3	0	8	0	1	1	2	0	0	1	1					12							
	Total...	2	0	0	2	8	11	2	21	0	2	1	3	0	1	1	2					29							
IV	M.....	2	1	0	3	5	7	0	12	2	1	0	3	1	0	0	1					19							
	F.....	1	0	0	1	3	2	0	5	0	0	0	0	0	0	0	0					6							
	Total...	3	1	0	4	8	9	0	17	2	1	0	3	1	0	0	1					25							
V	M.....	2	2	0	5	0	3	2	5	1	2	2	5	0	1	0	1					16							
	F.....	2	2	0	2	1	2	0	3	0	1	0	1	0	0	0	0					6							
	Total...	4	4	0	7	1	5	2	8	1	3	2	6	0	1	0	1					22							
VI	M.....	4	0	1	5	3	1	2	6	0	2	0	2									12							
	F.....	1	0	0	1	2	3	1	6	0	0	0	0									7							
	Total...	5	0	1	6	5	4	3	12	0	2	0	2									19							
VII	M.....	0	0	2	2	2	1	1	4	0	2	0	2									10							
	F.....	0	1	1	2	3	1	1	5	0	1	0	1									6							
	Total...	0	1	3	5	5	2	2	9	0	3	0	3									16							
VIII	M.....	1	1	0	2	1	0	0	1	1	0	0	1									5							
	F.....	2	0	0	1	2	0	0	2	0	0	0	0									4							
	Total...	3	1	0	3	4	0	0	3	1	0	0	1									9							
Male.....							27			90			49			5			3			2			0			176	
Female.....							8			59			19			1			2			0			2			101	
Total.....							35			159			68			6			5			2			2			277	



the front teeth are absent, there is a slurring of these sounds. The speech habits formed at this time are in some cases carried over into later years. In this survey, no child was counted as having a speech defect who lisped because of absence of the front teeth. In reading, different phrasing and breathing are necessary for the potential stutterer. The increased percentage of defects in the seventh grade is due to the influence of puberty, instability of the nervous system, and mental conflicts. The sharp decline between the seventh and eighth grades is caused by the dropping out of school, by a relatively great per cent. of unfit children. As has been mentioned, many of the cases drop out before the seventh grade. But if all the cases of speech defects in the first grade remained in school until the seventh grade, the percentage would be astonishingly higher in this grade.

The thirty-five cases of stuttering ranged in severity all the way from a slight hesitation to a condition where there were severe spasms of the face and body, as well as the muscles of the speech mechanism. Some interesting facts were discovered by a thorough study of fifteen of these stuttering cases.

1. In one-third of the fifteen cases studied heredity played a part in the etiology, as it was found in five cases that one of the parents stuttered or had stuttered.

2. Another third of these cases seemed to be developed by some specific shock, which gave rise to some mental condition. H. S. is a good illustration. He is a Russian Jew thirteen years and two months old. At the age of nine years, he was struck and abused by a boy some years older than himself. He seemed to become troubled and less cheerful after this, and shortly he began to stutter. He is a severe stutterer, and has an unusual tic when talking that takes the form of a rhythmic swaying of his body backward and forward when he tries to talk. The association test and psycho-analyses are being used to determine the mental conflict that causes his symptoms.

3. The third five were caused by some mental conflict arising in relation to the child's home or school conditions. T. M. is an Italian boy of nine years, and illustrates how conflicts causing speech defects arise in relationship of the child to his school. He spoke only Italian when he started to school, and when he tried to speak English, he began to stutter. There are other elements in this case, but the language conflict seems to be the chief etiological cause.

The average age at which stuttering began was six years. At least ten of the cases studied are decided neurotics, and unless given treatment, will become chronic neurotics and social failures. It is this fact that should be emphasized, that the stuttering child is suffering from a neurosis, and in most cases, unless treatment is given, he will become a social failure.

Lisping is the most frequent of all the speech defects. It may be divided into three types; simple, neurotic, and organic. Simple lisping arises because of carelessness, or during the period between the loss of the first teeth and the eruption of the permanent teeth. Phonetic drills are sufficient to cure the simple lisp.

In the neurotic lisp, there exists such a nervous condition that the child is unable to use the speech mechanism properly, and the tongue is not placed in the right position for making the s sound. Good hygiene, as well as phonetic drills, is needed here in order to eliminate the defect. In the case of organic lisping, there is some abnormality of the teeth or jaws or palate. If there is a marked protrusion of the lower jaw, so that the lower teeth come in front of the upper when the jaws are closed, lisping or imperfect speech is sure to result. And the same is likely to occur if the upper teeth protrude too far in front of the lower. These deformities are often caused by thumb sucking and the use of the pacifier. The following six pictures illustrate the different types of deformities found in lisping children. Such children require the care of the oral surgeon before they can speak correctly.

The case of S. M. illustrates a type of indistinct speech. S. is 7 years, 4 months of age. When she entered kindergarten at the age of five, she made only inarticulated sounds. She had poor ability in hand work, and was awkward in her movements, often falling down when attempting to run and skip with the other children. She is now in the first grade, but will not pass this year. For the past three months, she has been given work in corrective phonetics. When we began this training, her speech was absolutely unintelligible, but it had improved 100% by June. Even yet, her speech is quite imperfect. When asked to say Mother Goose rhyme:

“Jack and Jill
Went up the hill
To fetch a pail of water;
Jack fell down
And broke his crown,
And Jill came tumbling after.”

Picture No. 1

Medium Lisp Age: 12 yrs. 2 mos. Fifth Grade

This case had enlarged adenoids and tonsils and as a result has a high, narrow arch. The upper jaw is pointed and protruding. Because of the high narrow arch of the hard palate and the retracted lower jaw, the child has difficulty in raising the tongue to the roof of his mouth, so as to take the correct position in making the sound s.

Picture No. 2

This is the arch of the hard palate of the impression shown in picture No. 1.

Picture No. 3.

Medium Lisp Age: 13 yrs. 2 mos. Fourth Grade

This child is backward, repeated first and second grades. She was late in learning to talk, and at the age of seven could not speak distinctly. Beside a slight retraction of the lower jaw, there is a backward tilt of the lower teeth. The lisp occurs almost exclusively on the s sounds.

Picture No. 4

Severe Lisp Age: 13 yrs. Fifth Grade

In this boy, there is such an irregularity of the teeth that they do not meet, and hence the sound of s cannot be properly made.

Picture No 5

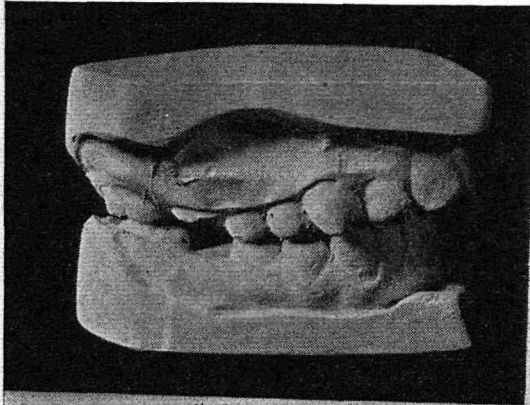
Mild Lisp Age: 6 yrs., 11 mos. First Grade

In this case, the occlusion of the teeth is about normal, but the teeth are very irregular. Th is substituted for the s sound.

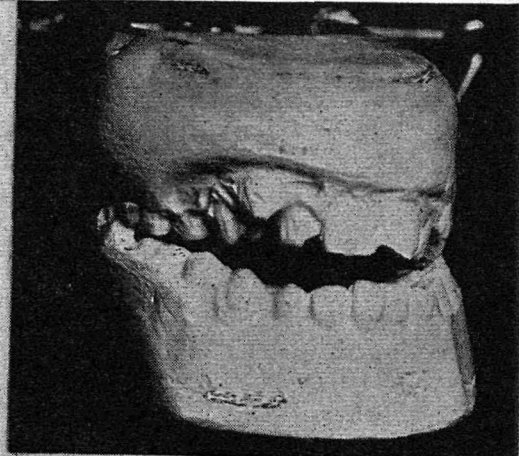
Picture Nb. 6

Medium Lisp Age: 9 yrs. 2 mos. Fourth Grade

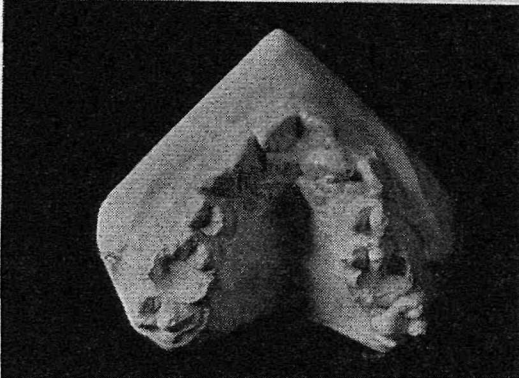
This little girl was without front teeth for about six months and at this time the lisping began. There is a protrusion of the lower jaw, and the upper teeth are large and uneven. The lisp is chiefly on the s sound.



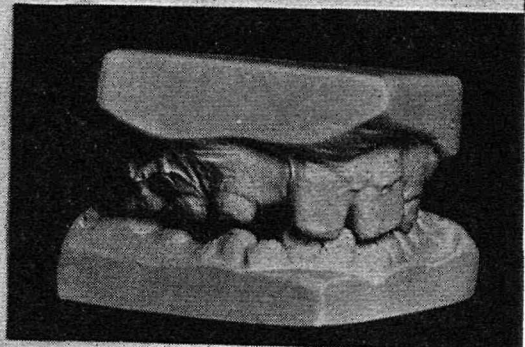
#1



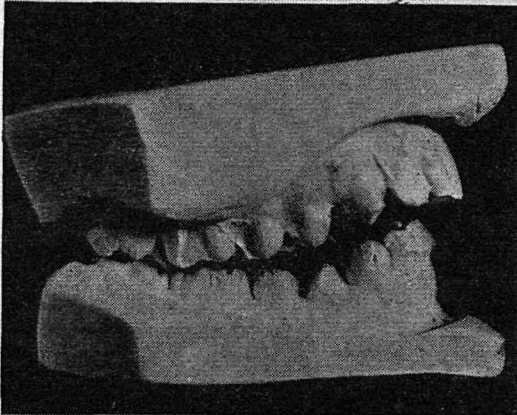
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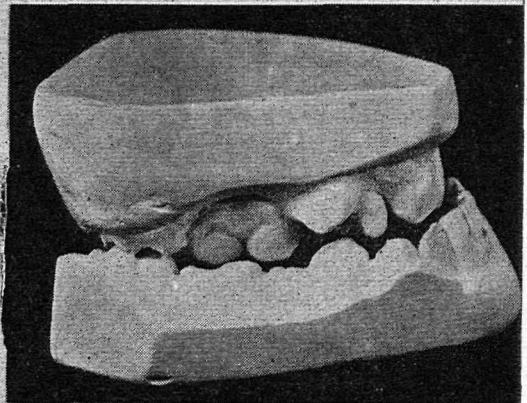
#2



#5



#3



#6

she said it this way:

“Da er De
Weh er o Hill
To feh er pa er wotty;
Da feh dow
And boke he pow
De ta tuddy atte.”

From an analysis of this phonetic representation of the speech of S., we can see that she did not make the j sound, nor the p, t, ch, n, r, and f sounds. Without speech training, this child would probably become more and more retarded and possibly never get out of the high grade moron class. In this, as in other cases, the speech defect was only a symptom of a wide-spread condition. There was lack of motor co-ordination in the hands and legs, becoming more marked in the fine muscles of the speech mechanism. Speech training in such cases is not only needful to improve the speech, but it stimulates the growth of the brain cells in quite a direct way. Of course, general motor education was given, as well, for its effect on the speech mechanism.

The conclusions to be drawn from this study of children with defects of speech are, we believe:

1. There are five per cent. of school children, more than are given in most surveys, suffering from speech defects.
2. Speech defects relate themselves to the problem of the feeble-minded and retarded children, and also to those who have some neurotic trait that disqualifies them from adjusting themselves to the school routine.
3. There should be special teachers appointed to treat the children with speech defects. Courses in speech training should be given in the kindergarten and first and second grade, where most of the speech defects begin, and by such a training, mild cases of speech defects could be cured, and many defects could be prevented altogether. The special teachers should have more than a training in phonetics or public speaking or elocution. They should know the anatomy and physiology of the speech mechanism, and know something of abnormal psychology and the principles of psycho-analysis. Teachers so trained are needed in a majority of the school systems of this country.