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AN EXPERIMENTAL TREATMENT OF INACCURATE
SINGERS IN THE INTERMEDIATE GRADES

THESIS

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CHAPTER I

INTRODUCTION

Statement of Problem

A study of the causes and remedial treatment of inaccurate singing through experimentation and research was chosen by the writer as a practical problem urgently in need of solution. During a two-year period 150 inaccurate singers found in the intermediate grades of two Fort Worth, Texas, public schools were selected for study. A comparison of a group in one school¹ which was given ten minutes' special help in the classroom each period was made with a similar group in the other school² which was not given this special help.

Definition of Inaccurate Singers

Children who do not carry the tune of a song have often been referred to as monotones. However, since none of the cases studied sang all tones on one pitch, this term appeared to be misleading, and the term inaccurate singers was selected. The ability to sing America in the key of G without

¹Oakhurst Elementary School.

²D. McRae Elementary School.

varying as much as one half step from the proper tune was chosen as the standard for selection of inaccurate singers. At first the children were not asked to sing individually, since this might be emotionally disturbing to them. Therefore, all members of the class sang as a group, and as the teacher walked about among them, she listened for inaccurate singers.

America was chosen for a number of reasons. It was well known by the children and had a very favorable emotional concomitant. It had a medium range for children in the intermediate grades. Its rhythmic and tonal patterns were of average difficulty.

Although America is written in the keys of F and G, it is understood that the key of F is more suitable for adults and the key of G for children. The compass of the tones in the key of G comes within the natural registers of the child voice.

Dearth of Published Material

A survey of research material on inaccurate singing showed that little had been done on the subject and that which was done was deemed so insignificant that no mention was made of it either in the table of contents or in the indexes of many of the references examined. When the subject was included in the indexes, its identification was

difficult because of the great variety in terminology employed.

Practical Value of the Study

Public school music in the United States has its roots in attempts to improve singing in the church service. . . .

Public school music, as contemplated by its founder, Lowell Mason, was part of a general educational plan which included every community activity, the school, the church, the choral society, the singing-school and the home. [He influenced teachers who were] working always in the interest of music in the schools, and passing on to their classes the belief in music for everyone, adult and child, which animated them and their great leader.

. . . there had come about a well indoctrinated belief that only a talented few possessed a musical ear. . . . It was the mission of Lowell Mason to break down the doctrine of the talented few, and to show that its foundations were largely mythical.³

How well he succeeded in accomplishing this mission is indicated in a letter written by the masters of the Hawes School in May of 1838 to the Mayor of Boston.

. . . enough has, in our estimation, been already accomplished, to warrant the belief of the great utility of vocal music as a branch of public instruction. One thing has been made evident, that the musical ear is more common than has been generally supposed. There are but few in the school who make palpable discords when all are singing. Many who at the outset of the experiment believed they had neither ear or voice, now sing with confidence and considerable accuracy; and others who could hardly tell one sound from another, now sing the scale with ease; -- sufficiently proving that the musical susceptibility is in a good degree improvable.⁴

³Edward Baily Birge, History of Public School Music in the United States, pp. 2, 60, 62, 35-36.

⁴Ibid., p. 50.

In a similar vein Gildersleeve writes:

In spite of controversy concerning methods, procedures, or materials, [this] idea has remained unchanged for one century, with our single most important task still that of teaching children to sing, teaching all of them to sing, all of them to participate, all of them to become absorbed in beautiful music.⁵

"The beauty and inspiration of music must not be restricted to a privileged few but made available to every man, woman, and child," says Leopold Stokowski. This is quoted by Ethelyn Lenore Stinson, who adds that this should be given more consideration today than ever before with need for treatment in adjustment to changing environment, altered social relationships, and increased emotional stress.⁶

That the goal of public school music is the gift of music for all our children is the belief of A. A. Beecher.

During the past ten years I have wondered, more and more, how far we would go away from that goal before we realized we were on the wrong road. For with each year that passed, we seemed to be directing our energies more diligently to the development of musical skill in the talented few, instead.

Listening to many carefully laid plans for music education in the post-war world -- plans that speak in glowing terms of advancement of skills and extended horizons -- my concern over the foundation stones of our public school music increases.

Expressing this concern, I have encountered sharp criticism on occasion. I have been accused of advocating a level of mediocrity -- even the neglect of talented

⁵Glenn Gildersleeve, "Rural School Music," Music Educators' National Association Yearbook, 1936, p. 175.

⁶Ethelyn Lenore Stinson, How to Teach Children Music, p. ix.

children. I plead guilty to the first charge. All public school education is charted on a level of mediocrity. Founded on the principle of democracy, how else could it be constructed?⁷

Coinciding with this belief is the statement of Barrett Stout: "The real test of a teacher's worth is the improvement he has brought about in a large number of his pupils."⁸

As to the number of children benefiting by music instruction, the following quotations from Mursell seem pertinent:

Schussler,⁹ using a rather rigorous criterion, came to the opinion that from five to ten percent of all children were probably "unmusical"; but he hastens to qualify this statement by saying that even most of these can benefit substantially from musical opportunities and music education. We can certainly proceed in reasonable confidence that music has an exceedingly general appeal and that at least ninety percent of human beings can derive marked benefit from the right kind of musical opportunities.

We know perfectly well that some children are sure to go much further in music and do far more with it than others. But we do conclude from this, as is so often done, that the proper course is to discover the poorly endowed children as soon as we can and then limit their opportunities in advance. On the contrary, we believe that it is our duty to take everyone along, just as far as he is able to go.

⁷A. A. Beecher, "The Gift of Music for All Children vs. Promotion of the Talented Few," Music Teachers' National Association Yearbook, 1944, p. 414.

⁸Barrett Stout, "An Analysis of Pupils' Problems in Learning to Sing," ibid., p. 310.

⁹H. Schussler, "Das unmusikalisches Kind," Zeitschrift für angewandte Psychologie, 1916, vol. II, pp. 136-166, quoted in James L. Mursell, Human Values in Music Education, p. 371.

We do not believe that there is any considerable number of pupils who will be unable to respond to musical opportunities or to learn to appreciate fine music.¹⁰

From the preceding paragraphs the value of teaching all children to sing is apparent. However, as all children do not sing accurately, a study of the methods for dealing with the difficulties of these inaccurate singers becomes necessary. The practical value of such a study is two-fold.

1. Remedial treatment for inaccurate singers in order that they may gain a feeling of security and happiness for themselves through music, and therefore, that their associates in the class and in the community, both in the present and in the future, may enjoy their musical experience to the fullest extent.

2. Findings through research and experimentation which will be helpful to the classroom teacher and other music educators.

It is hoped that such a study will prove valuable to others and that it will encourage further research on this particular problem.

¹⁰Marsell, op. cit., pp. 372, 377.

CHAPTER II

PREVIOUS STUDIES

Terminology Used in Defining Inaccurate Singers

Most authorities use the term monotones to designate those children who are unable to carry a tune. There are very few real monotones, but it is the term usually applied to people who sing out of tune.

Other general terms used in referring to the singing of such children are inaccurate, uncertain, unreliable, or non-singers, and it is often said that they are pitch deficient, tone deaf, musically dull, or so-called monotones with little singing ability, untrained voices, or voice problems.

The term inaccurate suggests inaccuracy in pitch. Uncertain may impress one as meaning that the child feels insecure while the term unreliable indicates that the teacher is doubtful of the child's ability. Non-singer implies that the child does not sing at all. Pitch deficient does not specify whether it is a lack of ability in aural recognition or vocal reproduction of pitch. The terms uncertain, musically dull, little singing ability, untrained voices,

and voice problems might refer to various aspects of vocal ability other than that of pitch. So-called monotones implies that the term is incorrect but that a more accurate one is unknown. Although many writers on the subject use the term monotones in the indices of their books, they explain that the term refers to those who are unable to carry a tune.

The term inaccurate singers, which is to be used throughout this thesis, was defined in Chapter I.¹ It is short and seems to describe more exactly the type of singer under consideration than any of the other terms found.

So varied is the terminology used, it behooves us to delve into the classification of such singers as given by outstanding music educators.

Classification of Inaccurate Singers

Inaccurate singers may be classified in a general way as (1) those who show inability to carry a melody, and (2) those who are unable to match more than a few tones, or (3) those who are unable to sing more than one tone.²

A classification according to causes of inaccuracy is (1) lack of interest, (2) lack of practice in coordinating vocal chords, (3) failure in recognizing melodies or in

¹See page 1.

²Delinda Roggersack, "Pertinent Factors in Monotone Correction," Music Educators' National Conference, XXX (1939-1940), 369.

remembering them, and (4) defective physical condition affecting ears or vocal organs.³

Mursell's classification and that of the Music Hour Series, which follows, are the same:

Nearly all monotones may be grouped in one of three classes:

(1) Those who have not yet found their singing voices.

(2) Those who are inattentive to pitch, or who do not yet recognize the difference in pitch.

(3) Those who still lack coordination of the vocal muscles.

(4) . . . Those children who may have physical defects.⁴

Dykema states:

They differ widely in their limitation: some have not learned to sing high; some have difficulty in singing low; some lack the sense of tone direction. Some hear pitch differences sung by others. . . . Very seldom is the trouble physical, in ear or voice. Generally it is a matter of inexperience in listening and singing.⁵

The Series on Childhood Education adds the classification concerning defective mental conception of tone.⁶

It seems that the most satisfactory means of classifying inaccurate singers is, first, according to comparison of advancement within the group (i. e., those who deviate slightly from the melody, those who sing parts of the melody

³Horatio Parker, Osbourne McConathy, Edward Baily Birge, and W. Otto Miessner, Teacher's Manual of the Progressive Music Series, pp. 16-18.

⁴Osbourne McConathy, W. Otto Miessner, Edward Baily Birge, and Mabel E. Bray, The Music Hour in the Kindergarten and First Grade, p. 189.

⁵Peter W. Dykema and Hanna M. Cundiff, New School Music Handbook, p. 108.

⁶Music for Young Children, Series on Childhood Education, edited by Patty South Hill, p. 8.

correctly, and those who sing only a few of the tones correctly), and second, according to individual ability which includes attitude, aural perception, memory, vocal reproduction, and physical makeup.

Frequency of Inaccurate Singers

The terminology and classification concerning inaccurate singers is so diversified that statistics concerning their frequency can not be satisfactorily compiled at present. The frequency of inaccurate singers as found by various investigators can be stated, but the classification of each group must be understood. The following statements concerning frequency of inaccurate singers are based on the particular investigators' terminology.

Dykema and Cundiff explain it in this way: "Almost never is a person a real monotone, incapable of singing on more than one tone or pitch, but there are many persons who cannot carry a melody accurately."⁷

Of the four hundred children in the first, second, and third grades tested by Laura Bryant, fewer than fifteen were unable to match tones. Most of these entered school late in the term or had prolonged absences. In order to clarify this statement, it is necessary to point out that there were fifty others not classified as monotones who needed so

⁷Peter W. Dykema and Hannah M. Cundiff, School Music Handbook, p. 69.

much individual help that they were not allowed to sing continuously with the class.⁸

"Non-singers should be practically non-existent after the second or third year of school."⁹

Although children in the first grade have little singing ability, instances of tone deafness are rare.¹⁰

The following assertion was made in the Elementary School Journal: "Only a small number of children from any one grade possesses unreliable voices." In this group of inaccurate singers there was a predominance of boys. Whether this was true in other schools was unknown to the investigator. However, if this fact were substantiated, it was believed that the cause of the boys' inability to sing might be due to the anatomy of the voice box.¹¹

Eleanor Smith states that one-third of the children in the kindergarten and first grade are monotones.¹²

⁸Laura Bryant, "The Function of Rote Singing and Music Reading in the Elementary Schools," Music Educators' National Conference Yearbook, 1936, p. 138.

⁹"Course of Study in Music for Rural Schools," Report No. 19 of the Music Educators' Research Council, Music Educators' National Conference Yearbook, 1936, p. 188.

¹⁰Music, a Tentative Course of Study for Grades One, Two, Three, Four, Five, and Six, Curriculum Bulletin No. 120, Fort Worth Public Schools, 1933, p. 15.

¹¹"An Experiment with Unreliable Singing Voices," Elementary School Journal, XLI (June, 1941), 760.

¹²Eleanor Smith, Song Devices and Jingles, p. 5, quoted in E. E. Blind, "The Effect of Special Practice upon a Selected Group of Monotones" (Unpublished Master's Thesis, University of Cincinnati, 1937), p. 8.

Blind mentions a study by Mabel G. Phillips of approximately four hundred pupils, 8.7 per cent of whom were classed as monotones.¹³

If the primary teachers have been conscientious and skillful, there will be only a few if any uncertain singers remaining in the fourth grade, except those who may come in from schools where no training has been given them.¹⁴

Investigations

In an excellent report given in the Music Educators' National Conference, Roggersack writes that several years ago he found specific instances which promoted him to make this survey. One was that of a first-grade boy, a star singer, who suddenly sang badly off pitch. The other was a girl whose voice was stubbornly low. Both voices were corrected by removal of the tonsils.

A survey of the city showed ninety per cent of those unable to sing had diseased tonsils or adenoids, or speech defects.

The objective for the school was to correct all monotones by the end of the second grade and six types of tests were given.

(1) Classification -- General, as previously listed,¹⁵

¹³Mabel G. Phillips, "A Case Study of the Monotone Problem in the Junior High School, Terre Haute, Indiana" (Unpublished Master's Thesis, Indiana State Teachers College, 1929), quoted in Blind, ibid.

¹⁴Dykema and Cundiff, op. cit., p. 110.

¹⁵See p. 7. for general classification.

quality of voice and range. Results showed low voices (indicative of nose and throat trouble), rarely high voices, hoarseness, huskiness, breathiness, and nasality. Adenoids were easily detected through diction in singing and speaking. The natural range was considered to be only the notes on the staff.

(2). Rhythm -- If the child cannot sing but is able to respond rhythmically to music, there is a point in favor of eventual correction of this vocal handicap.

(3). Recognize Melodies -- Some eight or ten familiar songs are sung with neutral syllables or played on an instrument for the children to recognize. . . . Where rhythmic response is low, recognition of melodies is low, and the child is a monotone, the case looks rather hopeless. On the contrary, where singing ability is low and the other two are high these factors lead us to believe that the child hears and feels that which he cannot yet put into his voice.

(4). Mentality -- [Records of accomplishment, repetition of grades and intelligence quotients were checked.] An I. Q. may be merely indicative of a possible ability to concentrate on melody or pulse or of his degree of coordination in responding either rhythmically or vocally to what he hears.

(5). Health -- In one year (1937-1938) some thirty cases of corrected tonsils and adenoids showed immediate improvement in vocal ability. . . . On the other hand, some fifteen uncorrected cases of diseased tonsils and adenoids became definitely worse in singing ability. [Malnutrition has also been an important factor.] Lack of body coordination, so common among those of low mentality, prevents good rhythmic response and less often, good voice response. [The seven epileptics in the school system were monotones. Sometimes there are serious speech defects (not lisping and stuttering) but cleft palates, no palates, deformities of the mouth or throat or congenital conditions of the throat. Hearing is accepted without question as a serious factor. Most of those studied who showed this deficiency have become deaf since birth.]

The results of our survey show that practically all the stubborn cases which have remained monotones all through the special treatment of our elementary grades have also been cases of serious speech defects, hearing, and epilepsy. Where pathological cases have been remedied, we have found also, except in very rare cases, that our vocal difficulty is all remedial.¹⁶

A study was made by Wolner in which he attempted to improve the ability of "pitch-deficient" children through training in pitch discrimination. The group studied consisted of seven children, three boys and four girls, representing a cross-section of the fifth, sixth, and seventh grades from three schools.

There was an average of sixteen hours for each of the seven observers over a period of eighty-one days. He particularly noticed individual differences and states that a recognition of these and the proper remedial applications accounted for the success of the experiment.¹⁷

The treatment by Stinson concerns the inaccurate singer's interest. This type of singer was referred to as the "exceptional child" (mentally retarded, emotionally unstable, or physically handicapped). Notes were made over a four-year period to evaluate their responsiveness to music. Pupils ages eight to eighteen from the girls' school were given two forty-five minute class periods a week. Realizing that many of the pupils were not having the opportunity

¹⁶Roggersack, op. cit., pp. 368-370.

¹⁷Manuel Wolner, "An Experiment in Individual Training of 'Pitch-Deficient' Children" (Unpublished Master's Thesis, College of the City of Detroit), p. 11.

for training in a field which would be helpful to them, plans were made to give all children instruction in music appreciation.¹⁸

In direct contrast to this type of procedure is the one given by Bryant, who divides the regular class into four groups, and does not allow the inaccurate ones to sing continuously with the class until they can sing fairly correctly. She acknowledges the strenuous opposition concerning this type of separation by educators who say: "It is non-socializing. It makes the children self-conscious. . . . The children don't like it."

To them she answers:

Then lead them to like it. . . . I am old-fashioned enough to believe that a little rivalry, a little grading, a few bumps, tend to growth and also strengthen a child's character. Life is no bed of roses, and he might as well get a little hardening in his early music training as anywhere.¹⁹

Frances Wright describes an eight-year record concerning the number and improvement of monotonemes by student teachers in three elementary training schools connected with the University of California. At the beginning and close of each semester each child in grades one through six was tested and classified. The number of monotonemes found in the three schools varied during this period from thirteen

¹⁸Stinson, op. cit., p. x.

¹⁹Bryant, op. cit., p. 138.

per cent high to 4.33 per cent low in School I, from fourteen per cent high to 1.9 per cent low in School II, and from eleven per cent high to six per cent low in School III.

The average attendance in each school was three hundred, five hundred, and three hundred, respectively. At the end of the semester the number of monotones in the three schools dropped to an average of eight per cent with the mean standing at four per cent. The chart showed the percentage is rising and falling instead of continuously falling. This was partly due to changes in class personnel.²⁰

Practice teachers under the direction of Kwalwasser gave three hundred children in the early grades and junior high school the opportunity of choosing the key for singing America. The pitch selected by most of them was D. Two-thirds of them selected a pitch between B $\frac{1}{2}$ (below middle C) to F first space. Not one child out of ten chose the key of G or higher. Kwalwasser believes that the child feels greater security when allowed to sing within his speech level, which is the lower half of the singing range. "Contrary to popular practice, it may be infinitely wiser to make a transition from speech to song by employing the speech range first."²¹

²⁰Frances Wright, Elementary Music Education, p. 40.

²¹Jacob Kwalwasser, "Voice Problems in Public School Music," Twenty-sixth Yearbook of the Music Supervisors' National Conference, 1933, pp. 106-107.

Marion Flagg gives an interesting study on "Melodic Appreciation and Vocal Reproduction." Forty-six children in grades three through six attending a private school were found to be unable to meet the class standards of accurate intonation. Recordings of each child's singing were made, after which the child and the teacher together analyzed the results and discussed ways of improvement. At a later date another recording was made and one or two interviews were held.

The recording included (1) the singing of America, chosen because of its familiarity, first from the child's choice of pitch, then from the usual pitch (G); (2) the child sang the major scale from D, descending and ascending, by "loo" and by numbers; (3) he repeated dictated tone groups.²²

In conclusion she writes:

Several have already corrected any difficulties; and appreciable numbers will be able to help themselves through their regular music class work and through musical experiences outside school, once they have located their difficulty and been given a technique for freeing themselves from tension. A smaller number need specific study of tonal relationships as felt through the body and inner ear, in order to measure them more surely. The greatest problem is with those who perceive tonal impressions only with concentration.²³

E. E. Blind checked the voices of two thousand children, many of whom were having music for the first time, and found eighteen per cent monotones at the first of the

²²Marion Flagg (supervisor of music, Dallas Public Schools), "Tonal Learning: The Basic Factor in Musical Growth" (mimeographed).

²³Ibid.

year and fifteen per cent at the close of the year. Later he found eighty-seven per cent of the first graders in a non-musical community to be monotones.

In his thesis we find a detailed account of the study of nineteen monotones in the primary grades. His purpose was to discover methods for their correction, to find out whether stubborn cases of monotones can be taught to sing, and the effect of special treatment. The singing of a major third used in three drills was the basis for selection of monotones. Absolute monotones was the term used for those who had no flexibility in their voice and partial monotones was used to designate those whose flexibility was less than a third. To verify his belief that monotones sing low, he tested sixty-six monotones in another school. He found that the average monotone sang on D^b, a half-step above middle C. Out of the nineteen students studied he discovered eight absolute monotones and eleven partial monotones.

After ten weeks of special training with two fifty-minute periods a week, he found that the range for monotones was C-E' (lower than that of normal singers), and that all monotones could be taught to sing within this range unless physically handicapped. Two children out of the nineteen studied were thus handicapped.²⁴

²⁴Blind, op. cit., pp. 1-69.

Causes

Monotones! Why are they? How many of them can be corrected? What factors prevent correction? Are these factors due to that indefinable spark we call musicianship, or are they mental or pathological?²⁵

There are three main causes of monotonism: undesirable attitudes, lack of tonal imagery, and incoordination of vocal chords. Yet other factors greatly influence these, such as mentality, physical makeup, health, social adjustment, home and school environment, both past and present.

Attitude

Kilpatrick gives as his first law of learning mind set. There must be an inner urge or desire to learn.

" . . . the stronger the purpose the stronger the learning that takes place. . . ." ²⁶ In the Progressive Series it is stated: "Above all, the imagination of the children and the desire to learn must be aroused."²⁷

Furthermore, many children do not realize the importance of singing each tone exactly on pitch. There are those who feel that they are incapable of singing, too timid, or aggressive or otherwise socially unadjusted. The source of this maladjustment may be found in an unhappy

²⁵Roggersack, op. cit., p. 368.

²⁶William H. Kilpatrick, Foundations of Method, p. 202.

²⁷Parker, McConathy, Birge, and Miessner, op. cit., p. 17.

home environment.

In the home, whether the parents are musical and sing and whether they encourage the children to sing, or tell them that they cannot sing, are very important factors in developing the child's musical attitude and ability. Pre-school musical training in the home, as Katharine Detmold sees it, is the basis for good singing.

If from day to day, all young children could hear their mothers singing Mother Goose rhymes, beautiful lullabies, or songs about their pets, what an excellent beginning that would be. Interest would be aroused by these tunes, the words of which tell things of their own experience, of things which are dearest to their hearts. A love of music could be built up so easily that the child thus aroused would soon be expressing himself in song, or at least trying to.

Then, if this practice of emotionalizing or dramatizing music were carried through the primary grades, the problems of monotones would be almost wholly eliminated.²⁸

Frances Wright also emphasizes the importance of pre-school training.

Monotones are not, therefore, necessarily musical deficiencies, but usually are merely musically retarded because of a lack of proper or sufficient musical stimuli previous to school age.²⁹

Tonal Imagery

The uncertain singers need to be led to listen, and to try, alone, again and again, to do the various things that will help them to find and control their voices. Their progress is much quicker this way, for when singing alone they can better hear themselves.

²⁸Katharine D. Detmold, "The Correction of Monotones," Music Educators' National Conference, Yearbook, 1937, p. 251.

²⁹Wright, op. cit., p. 40.

If left to sing in the group without special help, they frequently gain little themselves, and, moreover, mar the tone of the group. Their imperfect singing is confusing and retards the progress of the others, which is certainly unfair as well as unwise.³⁰

Not only must the child give attention to hearing the music, but he must also develop melodic perception.

What the listener hears and what comes into his ears are two different things. His ears are subjected to a continuous inflow of vibrations of tremendous complexity. But out of this he selects certain elements which are significant because they stand in intelligible tonal or rhythmic relations to one another; and he hears not a bewildering chaos of impressions, but a sequence of coherent patterns. . . . the mind selects and gives shape to what we hear . . .³¹

Another important factor to be discussed later is the child's physical ability to hear and comprehend.

Singing

If a child cannot sing correctly, it is due to lack of practice in coordination of vocal muscles, the use of the chest register, the limited range, or a changing voice.

Many causes for monotone singing have been suggested but, to my mind, the prime reason for it lies in the fact that the child has had no musical experience just at the time when the vocal cords should be exercised in coordination with the organs of hearing in producing tones in correct musical pitch.³²

³⁰Dykema and Cundiff, op. cit., p. 109.

³¹Marsell, op. cit., pp. 13, 50.

³²Detmold, op. cit., p. 251.

It is a well-known fact that we learn by doing. In the Progressive Series is given reference to this idea that "many famous musicians have been unable to sing -- probably for no other reason than that they never really attempted to sing. No one would think of terming such a musician 'unmusical.'"³³

Kwalwasser, Kern, and authors of the Progressive Series and others state that part of the difficulty may be due to the lack of singing experience.

In bad singing the style is coarse and shouting, and the tone is muffled, guttural or nasal in quality. The children begin to lose interest, because, producing their tones in the wrong manner, they soon find that they cannot "get up" to the high notes, and so come to the conclusion that they cannot sing. Then stimulated by the others who can produce the high notes, the others begin straining their voices in order that they too may reach the coveted "top note," and the more the voices are strained, the more the singing tends to become out of tune.

This loud and so-called "hearty" singing, accompanied as it almost invariably is, especially in the case of boys, by the straining of the whole voice and the forcing upward of its lower "registers," often results in serious injury.³⁴

On the other hand, Mabelle Glenn writes:

When boys of ten to twelve who possess beautiful, light soprano voices are allowed to force their voices down to a low part just because they are boys, a hoarseness is sure to follow. This . . . is taken as an indication of the approaching change . . .³⁵

³³Parker, McConathy, Birge; and Miessner, op. cit., p. 18.

³⁴James M. McLaughlin and W. W. Gilchrist, The Educational Music Course: Teachers' Edition for Elementary Grades, p. x.

³⁵Mabelle Glenn, "Singing in Elementary Schools and Junior High Schools," Music Supervisors' National Conference, 1933, p. 102.

Since, as Dykema and Cundiff have said, some have difficulty in singing high while others have difficulty in singing low, "the singer should avoid attempts to obtain notes not within his or her natural compass . . ." ³⁶

The exact terminology to use concerning the quality of voice, such as "placement," and the registers classified as chest register, medium register, and head register (the latter sometimes being called the head voice) is a much discussed subject.

The Educational Music Course and the Progressive Series give similar statements concerning the registers used in singing. The Educational Music Course quotes Emil Behnke's definition which is: "A register consists of a series of tones which is produced by the same mechanism." By mechanism is inferred the action of the vocal cords. ³⁷

In discussing the singing voice the registers are often confused with range. Baratoux himself, in a book which he has just published, often uses these two terms interchangeably. What is range exactly? With Faure, we shall define it as follows: "The series of consecutive notes produced with facility, and having good quality and timbre; it is the natural voice production. A register is, on the contrary, the series of notes which one produces with the aid of the same vocal mechanism." ³⁸

³⁶A. Tweedie, "Crossing of Air and Food Tracts, etc.," personal communication quoted in V. E. Negus, The Mechanism of the Larynx, p. 436.

³⁷McLaughlin and Gilchrist, op. cit., p. xi.

³⁸E. L. Moure, "The Vocal Organ in Singing. Overuse and Misuse of the Voice," translated by Chevalier L. Jackson in The Nose, Throat, and Ear and Their Diseases, edited by Chevalier Jackson, George M. Coates, and Chevalier L. Jackson, p. 811.

The boy's changing voice is sometimes confused with that of the inaccurate singer.

Up to the age of twelve or thirteen usually, there is little difference in the range or quality of the boy and girl voice. Generally at this time the lower tones of the boy begin to broaden and coarsen in quality and the high tones to come less easily and to possess a shriller, sharper quality.³⁹

Gescheidt has said that male voices sometimes break from the ages of eleven to fourteen. They break because the way of singing is out of harmony with the new physical growth. In the head production method the larynx is held high and strained. If it happens to be the larynx of a bass singer when matured, there will be a break when the growth is settled and worse if he has been singing soprano.⁴⁰ There are many educators, however, who disagree with this idea.

The boys who have changing voices are sometimes called inaccurate singers. Furthermore, it is a misnomer to classify children who have a naturally low range as inaccurate singers. As previously stated, inaccurate singers have a lower range and can be taught to sing within this range unless physically handicapped.⁴¹

³⁹Dykema and Cundiff, op. cit., p. 289.

⁴⁰Adelaide Gescheidt, Make Singing a Joy, pp. 22-23.

⁴¹See p. 18.

Physical Defects

Gehrkens makes the following statement pertaining to inheritance: "Certain children 'take to' music, and whether this is due to inheritance or to early environment, the ability must be recognized. Other children have 'no ear.'⁴²

Most children in the public schools are considered normal. However, they show varying degrees of ability as to span of attention, concentration, and social adaptability.

Roggersack and others believe that such symptoms as hoarseness, huskiness, breathiness, nasality, low pitch, and diction may be indicative of nose and throat troubles.⁴³

Every child has the ability to learn to sing as he learns to talk unless there is a serious physical defect.⁴⁴ Very seldom is the trouble physical in ear or voice.⁴⁵

Treatment

The children who sing inaccurately should be listed by the teacher and classified according to their individual abilities. The teacher is now ready to evaluate the child's

⁴²Karl W. Gehrkens, "Course of Study in Music for Grades 1, 2, and 3," Music Educators' National Conference, 1936, p. 169.

⁴³Roggersack, op. cit., p. 368. ⁴⁴Wright, op. cit., p. 37.

⁴⁵Dykema and Cundiff, op. cit., p. 108.

difficulties with him and to create in him the state of readiness.⁴⁶ This is Kilpatrick's second law of learning.

Stinson has well said that it is important to approach the child on his own level and to give him confidence in his own ability.⁴⁷

We all know that knowledge is the parent of understanding, and it is only of correct understanding that confidence can be born. . . . Many a real voice is discovered by the individual himself in class work through the freedom of the situation and the spirit of emulation and satisfaction involved.⁴⁸

. . . Dull pupils . . . will be encouraged to do as well as they can, but will not be treated harshly when they have reached the psychological limit beyond which they cannot go. And if they are not so enthusiastic about music as the others, the teacher will remember that all of us are normally more enthusiastic over something that we can do well than over something in which we are clumsy and uncertain.⁴⁹

A first essential is that the child be made to feel that singing is fun and that he can do what the others do. The laughing voice is closely akin to the singing tone, and bubbling joy and happiness may be one of the teachers' greatest assets in this difficult task.⁵⁰

The kindergarten teacher must build upon the past experiences of the pre-school child. Alice Thorn aptly

⁴⁶Kilpatrick, op. cit., p. 72. ⁴⁷Stinson, op. cit., p. 1.

⁴⁸W. Warren Shaw, "Modern Trends in Voice Class Instruction," Music Educators' National Conference, 1936, pp. 215, 217.

⁴⁹Gehrkens, op. cit., p. 169.

⁵⁰Alma M. Norton, Teaching School Music, pp. 49-50, quoted in Blind, op. cit., p. 17.

explains an ideal kindergarten situation.

The kindergarten teacher realizes how important is the influence of environment, and tries to make the kindergarten a musically stimulating place for the individual as well as the group -- a place where children can have music at any time of the day as long as the rights of others are considered. In order that this might be brought about she would try (1) to have music materials, such as music books with simple illustrations, a part of the room library, and simple instruments of good tone; (2) a flexible schedule built up because of need in order to avoid regimentation and promote security, well-being, and an avoidance of tensions; (3) a willingness to let children progress at their own rate of speed; and finally, (4) to make music meaningful by having it grow out of and related to interest and need. If we can hope to accomplish a satisfying realization of these goals, we will have helped to make music experience a meaningful one which enriches not only the future but, even more important with young children, the present moment of living.⁵¹

The intermediate teacher should be encouraged to adopt this type of classroom. Such an environment will help to develop accurate singers.

The writers of the Progressive Series and others suggest that one-half of the period be given to individual singing because this develops independence. They also advise seating the children in this way: the best singers in the rear of the room, the dependent or followers in the middle, and the inaccurate ones on the front.⁵²

⁵¹Alice G. Thorn, "Music in Kindergarten," Music Educators' National Conference, 1936, p. 149.

⁵²Parker, McConathy, Birge, and Miessner, op. cit., p. 13.

In every way possible enable them to hear the song correctly done. . . . Let them hear many songs and give them a chance to sing. . . . Do not put them in a group and say to yourself, "These children spoil the singing of my class; I will therefore just let them sit."⁵³

Mary Kern points out that another important factor is the voice of the teacher. "She would possess what she would transfer to the child, namely, a child quality of singing voice, correct in pitch."⁵⁴

In a report of the Music Educators' National Conference by the Committee of the Southern Conference, the statement is made that

over half [the teachers] allow the children of defective pitch sense to sing along with the class. Most of the supervisors report that they provide for individual corrective work in the regular class; a very few provide help in a special class. Almost all provide activities other than singing.⁵⁵

The young teacher, who cannot find time in the crowded school program for individual help for the monotone, should commandeer the help of the mother, give her definite instructions and devices, show her how to use the piano for matching tones, and enlist her daily help with the child in the home.⁵⁶

Gehrkens recommends that the teacher go about among the children, suggesting, and encouraging, and stopping to

⁵³Detmold, op. cit., p. 251.

⁵⁴Mary R. Kern, "Report on Corrective Treatment of a Group of Monotones," Elementary School Journal, XXIII (November, 1922), 251.

⁵⁵Joy Mendes, Chairman, "Music in the Elementary Schools of the South -- Practices and Needs," Report of a Committee of the Southern Conference, Music Educators' National Conference, XXX (1939-1940), 183.

⁵⁶Wright, op. cit., p. 39.

give one-half a minute of private instruction where needed.⁵⁷

"The first remedy for a monotone is to teach him to carry a perfectly smooth tone."⁵⁸ If correct posture, natural breathing and the proper use of vocal apparatus are observed, there will be no muscle strain or interference, writes Bartholomew.⁵⁹

In an outline for first grade it is recommended that each child sing with a good head tone, mellow, free, and relaxed. Listening is important in helping him find his singing voice. Such activities as matching tones, using "toot, toot" and short, simple sentences on a tone are also suggested.⁶⁰ Hollis Dann gives many similar drills.⁶¹ Other exercises are the use of wide skips in singing bird calls and other sounds of nature. Practice in sliding the voice up to match a tone is very helpful to the inaccurate singer.⁶²

Many educators advocate the practice of starting from

⁵⁷Gehrkens, op. cit., p. 165.

⁵⁸Thaddeus P. Giddings, Grade School Music Teaching, p.136.

⁵⁹Marshall Bartholomew, "Problems of Tessitura in Relation to Choral Music," Music Teachers' National Association Proceedings, 1944, p. 327.

⁶⁰Lloyd W. Funchess, Chairman, "Rural-School Music Curriculum," Committee Reports, Music Educators' National Conference, 1944, p. 50.

⁶¹Hollis Dann, Hollis Dann Music Course, First Year Music, pp. 7-9.

⁶²Giddings, op. cit., p. 137.

an easy pitch and working upward, but Wodell mentions starting on this pitch and working down, taking care to avoid coarseness.⁶³

Hollis Dann warns that low tones should be avoided. In contrast to Wolner's opinion that the piano is helpful in aiding the inaccurate singer,⁶⁴ Hollis Dann is emphatic against its use.⁶⁵

Most investigators believe that if there are no physical handicaps the inaccurate singer can be taught to sing. It is very important that the parents be notified of any physical symptoms which might interfere with the child's general health or with his learning to sing. If the seriousness of the case seems to justify it, the teacher should suggest that the parents consult the family physician. The removal of enlarged or diseased tonsils or adenoids has in many cases been the remedy.

The teacher should have a general knowledge of the anatomy and physiology of the voice mechanism in order to prevent the overuse or misuse of the child voice. She should see to it that correct habits of breathing and posture are formed and that backs are straight but not rigid. She should teach correct focusing of the tone

⁶³Frederick W. Wodell, "How to Secure Power in the Voice of the Child and the Youth without Sacrificing Beauty of Tone," Music Supervisors' National Conference, 1929, p. 114.

⁶⁴Wolner, op. cit., p. 12

⁶⁵Dann, op. cit., p. 71.

whether it is the use of head register only or a mixture of the head and the medium registers. This probably can be taught best by the child's imitating the voice of another child.

She must know how to classify voices as to quality and range of tones. Howard has stated that the compass of the voice is from E first line to F fifth line, but that the tones F first space to G fifth space are easier.⁶⁶

Tentative grouping of voices for part singing should be carefully done and each child should be reassigned whenever the need is felt. When dealing with changing voices, a good example to follow is the one by Dykema and Cundiff: boy soprano, C first line below the staff to G above the staff; boy alto, A below the staff to C third space; alto tenor, G below the staff to G second line. Experience in singing harmony should be enjoyed by all children.⁶⁷

They also suggest:

Relaxed, open throat; loose tongue and lower jaw; and flexible parted lips. It is unwise with children, to refer specifically to these physical conditions, but, rather, they should be obtained through general suggestions as to facial expressions, feeling of yawning, laughing, etc. An excellent help which also does much to develop distinct enunciation is having the children repeat the words of the song silently with lip movements only. The spirit of play tends to relax the vocal organs.⁶⁸

⁶⁶Francis E. Howard, The Child's Voice in Singing, p. 74.

⁶⁷Dykema and Cundiff, op. cit., p. 289.

⁶⁸Ibid., pp. 106-107.

The necessary daily individual help for the inaccurate singer can be given during the music period with the class cooperation.⁶⁹ With an intelligent, enthusiastic teacher in a room filled with fresh air and an atmosphere of pleasantness and beauty, the children will enjoy music. Each child will feel that he is accomplishing something each day. This is Kilpatrick's third law of learning, the law of success.⁷⁰

⁶⁹Ibid., p. 109.

⁷⁰Kilpatrick, op. cit., p. 73.

CHAPTER III

EXPERIMENTAL PROCEDURE

During the two school years, 1943-1944 and 1944-1945, the inaccurate singers of the intermediate grades in School O¹ and School D² were studied. In School O the high third grade was taught for one term by the special music teacher in order that she might have eight music classes and facilitate matters of administrative organization. Otherwise the organization was like that of School D with eight classes from the fourth, fifth, and sixth grades. These classes came to music three times one week and two the next with periods of forty minutes each.

The inaccurate singers attending School O and School D during 1943-1944 were compared in order that an evaluation might be made as to the benefit of special training. The children in School O made up the control group which was given ten minutes of specific training in each class period. The children in School D made up the uncontrolled group which was not given ten minutes of help.

¹Oakhurst Elementary School, Fort Worth, Texas.

²D. McRae Elementary School, Fort Worth, Texas.

It must be remembered, however, that it is the purpose of the special music teachers in this system to lead children with various degrees of ability to enjoy broad musical activities. Nevertheless, no definite amount of time and few prescribed methods of treatment are designated to enable the inaccurate singers to attain this goal.

In the year 1944-1945 the children in the controlled and uncontrolled groups who were still enrolled were further observed. Other children admitted to the schools this year were added to the study.

The boys and girls were listed separately because there are physical differences which might influence their singing. The fact that the majority of the inaccurate singers were boys indicated that physical differences do influence singing. Boys with changing voices were not to be confused with inaccurate singers. Because of the influence of physical growth upon singing, it was believed best to list children according to the grade.

Method of Selection

The pupils in each grade were asked to sing as a group America in the key of G. The teacher went among them and listened to the intonation. If necessary, the song was sung again. The same verse was sung by the class either as a whole or by rows. In this way inaccurate singers were

found, that is, those who deviated as much as a half step from the tune.

From the very first the teacher tried to make music fun and to build up a desire for accomplishment. The children were not told of the experiment, and in general, the music period was conducted as usual with the exception of the ten minutes of special training.

After confidence had been built up among the teacher, the individual, and the group, each child was allowed to come to the piano to sing America in the key of G individually. When help was needed, the class gave assistance, or the tones were played on the piano. Through the cooperation of the class each child was made to feel that he was in some way successful, if in no other way than that he knew the words.

If some children were now unable to sing correctly, even with assistance, but had sung correctly when previously heard with the class, they were particularly noticed in the next lesson when the class sang the song again. Then, if necessary, the list of inaccurate singers was revised.

One of the difficulties in selecting inaccurate singers was the fact that some children sang accurately on some occasions and inaccurately on others.

General Procedure

In order to judge the frequency of inaccurate singers it was necessary to check the enrollment of the classes taught by the special music teachers in School O and School D and note the inaccurate singers in each school.

To find the causes for inaccurate singing, many things had to be considered. One factor was the child's ability to concentrate, to judge the intensity of sound, and to tell whether one pitch was higher or lower than the other. The Loudness and Pitch Tests by Seashore were given to all of the children.

In order to test their general ability to hear, the nurse gave an audiometer test³ to all of the children.

Phonograph recordings were also made for each child in the department. America in the key of G was sung, and the beginning pitch was given on the pitch pipe preceding each child's recording. After all of the children in the class had sung, they listened to their recordings. These were discussed individually with the inaccurate singers. All were encouraged to believe that they could sing accurately if, hand in hand, they and the teacher worked together.

Even though the pitch was given for the phonograph recordings, some children pitched their songs lower. Finding

³Western Electric Audiometer was used.

that some sang accurately in lower keys, the objective now was to find out in which key they could sing accurately and with ease.

Each child was given three trials in singing America in the keys of D, E, F, and G. If the voice was particularly low, the key of G below middle C was tried. The teacher at the piano and the pupils gave assistance when necessary. If the child sang correctly in the lower keys, the key was raised immediately without interruption. If, however, the child sang incorrectly, suggestions were made or other children came up to sing with him. Often with strong singers on each side and back of him he made his tones blend. On the other hand if, after three trials in a key that seemed most natural to him, only a few tones were correct, he was asked to sing a single tone and sustain it. Procedure was interrupted for a game among the class.

"On the Beam" was a game in which the children added their tone as an imaginary radio beam sent its light up and down the rows. All "got on the beam" and sustained the tone by humming until the sign of release was given. Up and down the rows the sound traveled. There was fun. The children must not become tired and lose interest. Thus refreshed the remaining students began their individual singing of America until all had sung.

A great deal of time was necessary in helping the most

difficult cases, yet the class as a whole must also receive the benefit from the lesson. Each child, talented, average, or retarded, must engage in activities best suited to his advancement. The inaccurate singer was not to be forgotten and asked to "just sit," yet the class should have opportunity to hear their sweet voices blended with other beautiful tones in true intonation. At times the inaccurate singers sang with the group in order to gain help in focusing and blending their tones, yet they were not allowed to sing constantly out of tune.

There was no time for calling the names of the children who were not to sing with the group. They were not to be called monotones. A name was necessary. They were not to feel that they could not sing. The children in the class knew that there was a difference in their voices. These voices were low; that was nothing to be ashamed of. Some great singers were basses, they remembered. Again it was fun, thought the inaccurate ones, to be able to sing with the class.

Many divisions were to be made within the group under study, but in the beginning they were distinguished from the rest of the class by the title "The Marines." This title was chosen and cherished by this group and even others asked to join it (particularly the boys who thought that the Marines is the highest branch of the service). Some of

the children who had decidedly low voices asked to be "Submarines."

Numerous games were played to help all children to sustain tones, feel the song as a unit, distinguish phrases, and understand melodic patterns. Although rhythmic response was not considered to be so difficult for the inaccurate children, the "Rhythm Game" was a favorite. The rhythm of a familiar song was clapped and a child was called upon to guess what it was. If the correct answer was given, the class sang the song and then the one who answered correctly clapped another song. This developed a feeling for the phrase, the song as a whole, and its exact rhythmic patterns.

Visualizing the direction of tonal patterns was gained when the game of "Guess What" was played. A few notes or a phrase of a song was placed on the board and the children guessed what song it was from. At first the staff was used, but later notes were placed on the board without a staff. These notes were drawn showing the up and down or repetition of the tones. Sometimes lines were drawn to show the general contour.

The lines connecting the groups of notes formed patterns. The repetition of patterns and the variety found reminded the children of the designs which they had made in art. They were even more eager to see how music was made.

Some children went to the board and drew short melodic patterns; then others were called upon as in the previous game to guess the name.

All children could draw and sing at the same time if imaginary patterns were drawn. The arm moved up and down in order to show direction, or to the right if the tone was repeated. The rhythm was kept and each child's mental tonal image could be seen by the way he drew his patterns in the air.

Slow songs with wide skips were easiest for the inaccurate singers. "Taps" sung to the words "Day Is Done" was played thus in the air. The sustained tones gave time for listening and matching tones. The soft tones and the mood of the song helped to blend all voices.

The game "Throw Me the Ball" was one which every child, regardless of ability, could sing. A child had a rubber ball and sang:



If the child called upon could sing it back to him correctly, he was permitted to catch the ball and continue the game. If he was unable, someone else was chosen. To vary the game and to give those children who were unable to sing it thus an opportunity, they were asked to make up their own tunes. Their tunes were usually more difficult to

return. At other times they started the game with their own tunes. Catching the ball, as well as feeling successful in singing, made the game interesting; care was taken, and no windows were broken.

Another way in which the direction and distance of intervals was made clearer to the pupils was through the use of the hand as a staff. The palm of the left hand was turned toward the body. The little finger was the first line of the staff. Simple songs were played on this staff by placing the right index finger in the spaces between the fingers which represented spaces of the staff, and by touching the tips of the fingers which represented the lines of the staff. They played America in this way, and afterwards, with a copy of the song before them, they wrote it on the staff.

To determine the range of the inaccurate singers, they were asked to sing the broken chord 1, 3, 5; 8-5, 3, 1 to a neutral syllable. The beginning tone was D and the pitch was continuously raised or lowered until the tone seemed to come less easily. A relaxed body, and light spontaneous tones proved helpful to the singers.

All children were encouraged to pick out simple tunes on the piano, and to match these tones with their voices. Many times it was necessary for them to slur up to the

tones. They liked the chromatic scale; they liked to make their voices sound like sirens.

Rounds were found beneficial to the inaccurate singers; however, neutral syllables were often used instead of the words so that the tones could be clearly heard. Phrases or parts of phrases from these and other songs were used for practice in two and three part harmony.

A variety of songs were used in the general class. The texts were Rhythms and Rimes, Songs of Many Lands, Blending Voices, and Tunes and Harmonies.⁴ Supplementary texts were Elementary Music, Intermediate Music,⁵ Music Hour III and V⁶ and Our Music in Story and Song.⁷ Dispersed among these were additional folk songs and other community songs.

The final test of the student's ability to sing was judged in the game "Guess Who." A group of inaccurate and accurate singers formed a line in front of the room. A card on which "yes" or "no" was written was shown to those

⁴Mabelle Glenn, Helen S. Leavitt, Victor L. F. Rebmann, Earl L. Baker, and C. Valentine Kirby, The World of Music.

⁵Thaddeus P. Giddings, Will Earhart, Ralph L. Baldwin, and Eldridge W. Newton, Music Education Series.

⁶Osbourne McConathy, W. Otto Miessner, Edward B. Birge, and Mabel E. Bray, The Music Hour.

⁷Robert Foresman, Books of Songs.

standing. If the card said "yes" they were to sing; if "no" they were to open their lips as if they were singing. Those at their seats closed their eyes, listened to those who had secretly been chosen by the teacher to sing, and then guessed who was singing. The children suggested that some of the children at their seats might peek; therefore, by forming the words with their lips, the children who were not singing tried to deceive the others. This part of the game enabled the teacher to check how well these children were following the melody. The singing group strived to make the guessers think that only one person was singing. Indeed, occasionally only one child was actually singing. Sometimes all of the children sang. This game helped the pupils greatly in blending their voices. Furthermore, if the inaccurate singers learned to sing accurately with others, the problem of inaccurate singing was solved.

CHAPTER IV

RESULTS OF FINDINGS

It was felt at the beginning of the study that the natural range for children with unchanged voices included the tones F sharp on the first space of the staff to E on the fourth space, which tones are used in the singing of America in the key of G.¹ The fact that many educators included these tones in the natural range and because the key of G has been the key used for America in public school music texts, seemed to be proof enough for setting this standard.

If children were unable to sing America in the key of G correctly with a group, whether in school or in the community, the difficulty must be diagnosed and remedial treatment undertaken. Thus all children with unchanged voices who were unable to sing America in the key of G without deviating as much as one half step from the melody were considered inaccurate singers.

Table 1 shows the number of boys and girls enrolled in the group studied in the two schools. It lists them according to grade and gives the number of boys and girls

¹See p. 59, paragraph 2.

TABLE 1

TOTAL NUMBER OF BOYS AND GIRLS ENROLLED IN EIGHT MUSIC CLASSES IN THE FALL OF THE YEAR 1943-44 IN SCHOOL O IN GRADES H3, L4, H4, L5, H5, L6, AND H6, AND IN SCHOOL D IN GRADES L4, L5, H5, L6, AND H5 DIVIDED AS TO ACCURATE OR INACCURATE SINGING ABILITY

Grade	School O								
	Boys			Girls			Total		
	Accu- rate	Inaccu- rate	To- tal	Accu- rate	Inaccu- rate	To- tal	Accu- rate	Inaccu- rate	To- tal
H3	11	9	20	10	6	16	21	15	36
L4	19	6	25	21	4	25	40	10	50
H4	17	6	23	16	3	19	33	9	42
L5	15	8	23	25	2	27	40	10	50
H5	11	3	14	20	2	22	31	5	36
L6	31	6	37	28	1	29	59	7	66
H6	16	6	22	18	0	18	34	6	40
Total	120	44	164	138	18	156	258	62	320

TABLE 1 -- Continued

School D								
Boys			Girls			Total		
Accu- rate	Inaccu- rate	To- tal	Accu- rate	Inaccu- rate	To- tal	Accu- rate	Inaccu- rate	To- tal
...
21	11	32	38	10	48	59	21	80
...
36	12	48	32	2	34	68	14	82
12	3	15	21	4	25	33	7	40
23	20	43	36	6	42	59	26	85
13	2	15	18	0	18	31	2	33
105	48	153	145	22	167	250	70	320

who are inaccurate singers.

The total enrollment was the same for both schools, but there were eleven more boys in School O than in School D. There were eight more inaccurate singers in School D than in School O. The frequency of inaccurate singers is shown by the figures: ninety-two boys and forty girls making a total of 132 inaccurate singers in the group of 640 students. This means that twenty per cent of the total group studied were inaccurate. Twenty-nine per cent of the boys were inaccurate singers and twelve per cent of the girls. Although the total enrollment was almost equally divided as to boys and girls, there were over twice as many boys as girls who were inaccurate singers.

The test scores for the Seashore Pitch Test taken by the boys who sang inaccurately in School O¹ and in School D² were divided as to good with scores 1, 2, and 3; average with scores 4, 5, 6 and 7; and low with scores 8, 9 and 10. The scores of the boys in School O were: good, 2; average, 12; and low, 31. The scores of the boys in School D were: good, 4; average, 10; and low, 31. Of the ninety inaccurate singers among the boys in both schools, six per cent made good, twenty-four per cent made average, and sixty-seven per cent made low.

¹See Table 4 in Appendix.

²See Table 6 in Appendix.

For the twenty-five boys in School O who took the Seashore Loudness Test,³ the scores were: good, 7; average, 7; and low, 11. The scores of thirty-eight boys in School D⁴ were: good, 8; average, 15; and low, 15.

In School O the scores on the Seashore Pitch Test made by the girls⁵ who sang inaccurately were: good, 0; average, 4; and low, 14. The girls in School D⁶ made the following scores: good, 0; average, 5; and low, 16. Of the thirty-nine inaccurate singers among the girls, none of them made good; twenty-three per cent made average; and seventy-seven per cent made low.

The ten girls who took the Seashore Loudness Test in School O⁷ made these scores: good, 1; average, 1; and low, 8. The eight girls in School D⁸ who took the test made: good, 2; average, 5; and low, 7.

The fact that the inaccurate singers, both boys and girls, made low on the Seashore Pitch Test seemed to indicate that the lack of ability to recognize intensity and variation of sounds and to record their reactions was an important factor in the cause of the inability to sing accurately.

³See Table 4 in Appendix.

⁴See Table 6 in Appendix.

⁵See Table 5 in Appendix.

⁶See Table 7 in Appendix.

⁷See Table 5 in Appendix.

⁸See Table 7 in Appendix.

In order to determine whether or not the singing ability affected the scores, a study of the scores for accurate singers was made. The independent singers were classified as good, the followers as average, and the inaccurate as low.

Table 2 shows that the good and the average as well as the inaccurate singers had their largest per cent of scores in the low score group. The slightly higher per cent of low scores in School O may have been caused by the immaturity of the high third grade children, yet the scores made by the different grades do not show that the higher grade students made higher scores.

After nine weeks of special training, the students in School O were given three trials in singing America. This time various keys were tried. Out of forty-four inaccurate singers among the boys,⁹ nineteen learned to carry the tune accurately in the key of G; fourteen were able to sing it in a lower key; and eleven were unable to sing it correctly in any key.

We find that out of eighteen inaccurate singers among the girls, fourteen were able to sing America in the key of G; four were able to sing it in a lower key; but three were unable to sing it in any key.¹⁰

⁹See Table 8 in Appendix.

¹⁰See Table 9 in Appendix.

TABLE 2

THE NUMBER AND PER CENT OF BOYS AND OF GIRLS IN SCHOOLS
O AND D WHO HAD GOOD, AVERAGE, OR LOW SINGING
ABILITY WHO MADE GOOD, AVERAGE, OR LOW
ON THE SEASHORE PITCH TESTS

School	Singing Ability	Boys							
		Number				Per Cent			
		Good	Average	Low	No Test	Good	Average	Low	No Test
O	Good	11	6	19	1	29.7	16.2	51.4	2.7
	Average	13	15	43	12	15.6	18.1	51.8	14.5
	Low	21	12	30	..	4.5	27.3	68.2	..
D	Good	6	6	12	5	20.7	20.7	41.4	17.2
	Average	15	21	25	15	19.7	27.6	33.0	19.7
	Low	4	10	31	3	8.3	20.8	64.6	6.3
Total	Good	17	12	31	6	25.7	18.3	46.9	9.1
	Average	28	36	68	27	17.6	22.6	42.8	17.0
	Low	6	22	61	3	6.5	23.9	66.3	3.3

TABLE 2 -- Continued

School	Singing Ability	Girls							
		Number				Per Cent			
		Good	Average	Low	No Test	Good	Average	Low	No Test
O	Good	17	13	14	..	38.6	29.6	31.8	..
	Average	5	23	60	6	5.3	24.5	63.8	6.4
	Low	..	4	14	22.2	77.3	..
D	Good	7	20	13	..	17.5	50.0	32.5	..
	Average	13	29	48	15	12.4	27.6	45.7	14.3
	Low	..	5	16	1	..	22.7	72.7	4.6
Total	Good	24	33	27	..	28.5	39.3	32.2	..
	Average	18	52	108	21	9.1	26.1	54.3	10.5
	Low	..	9	30	1	..	22.5	75.0	2.5

As the children sang, the points of difficulty were noted and recorded.¹¹ Thirty-one of the boys were unable to begin on the correct pitch; six of these had difficulty in getting the pitch for the word sweet, and twenty-five of them sang the word land, which is on the fourth line, lower. Five of the boys sang the song correctly until they came to the word land. One boy made mistakes on sweet and land, while two others had trouble in all three places. These last two boys recognized the general contour of the song, but few of the tones were correct.

Of the eighteen inaccurate singers among the girls, fourteen were not sure in focusing the tone for the beginning pitch; thirteen of these failed to get land, and the other one got off pitch on the word sweet. Four girls sang correctly until they came to the word land, and one child missed the pitch in all three places.¹²

The range of voices in the control group was taken during the first week of the second term, which was eighteen weeks after the beginning of school. There were five boys and one girl whose range did not include the tones used in America in the key of G.¹³

Children who remained in School 0 during the school

¹¹See Table 8 in the Appendix.

¹²See Table 9 in the Appendix.

¹³See Tables 8 and 9 in the Appendix.

year 1944-1945 continued to work for accurate singing, and the teacher continued to search for causes of inaccurate singing. It was found that seventeen of the boys had naturally low voices.¹⁴ These voices were not believed to be changing because records of their singing in previous years showed unusually low voices. Two girls also had difficulty in carrying the tune because of low vocal register.¹⁵ In School D there were sixteen boys¹⁶ and two girls with low voices.¹⁷

At the beginning of the study it was believed that children with unchanged voices should and could learn to sing in the key of G. However, some of the children in the high third and fourth grade, as well as those in higher grades seemed to have naturally low voices. In fact there was so much difference in their singing in the key of G and the key of D below that it sounded as if two individuals had sung, one good and the other poor.

Therefore, the inability to sing in the key of G was no longer considered a factor in the cause of inaccurate singing. These children did not sing inaccurately in a key natural to them. Nevertheless, unless the key is lowered or these children are trained to sing in harmony, they

¹⁴See Table 10 in Appendix. ¹⁵See Table 11 in Appendix.

¹⁶See Table 12 in Appendix. ¹⁷See Table 13 in Appendix.

will sing inaccurately.

If the home has not furnished the proper musical atmosphere or if there has been no singing in the home, these factors may cause the student to be incapable of forming tonal images and may retard his interest in singing. Thirteen boys and three girls came from homes which did not furnish the proper background.

One of the most important causes of inaccurate singing is lack of interest. This is affected by the home and school environment, and whether or not there is a desire to sing correctly. Also the social adjustment and the general health of the child may affect his interest. In the two schools there were twenty boys¹⁸ and no girls¹⁹ who showed lack of interest.

A prerequisite to correct coordination of vocal muscles is correct tonal imagery. If there is not a keen interest or if there is general poor health or physical disabilities, the mind will not be able to form these tonal images. Thirty-five boys²⁰ and twenty girls²¹ were lacking in ability to form correct tonal imagery. This was discovered when they showed inability to recognize themes of familiar phonograph recordings and to judge whether or not their own singing or that of others was accurate.

¹⁸See Tables 10, 12, Appendix. ¹⁹See Tables 11, 13, Appendix.

²⁰See Tables 10, 12, Appendix. ²¹See Tables 11, 13, Appendix.

The most noticeable cause of inability to sing was the lack of coordination of vocal muscles. This contributes to the difficulty of most inaccurate singers. There were thirty-nine boys²² and twenty-four girls²³ who lacked practice in singing accurately.

It is agreed that most children can be taught to sing if they are mentally normal and have no physical handicaps. Although some of the children were retarded, all were considered capable of learning. Six boys²⁴ and three girls²⁵ were in poor health and twenty-one boys²⁶ and nine girls²⁷ had defective ears or throats.

Table 3 shows the number of children who remained uncorrected in the controlled and uncontrolled groups. It was found that five boys and four girls in the controlled group and twenty-one boys and eight girls in the uncontrolled group remained uncorrected.

The causes of these pupils' inability to sing was listed as follows. In the controlled group, there was one boy who apparently lacked interest, and the remaining four boys and the four girls had physical defects. In the un-

²²See Tables 10 and 12 in Appendix.

²³See Tables 11 and 13 in Appendix.

²⁴See Tables 10 and 12 in Appendix.

²⁵See Tables 11 and 13 in Appendix.

²⁶See Tables 10 and 12 in Appendix.

²⁷See Tables 11 and 13 in Appendix.

TABLE 3

THE CAUSES OF INACCURATE SINGING AMONG BOYS AND
GIRLS WHO REMAINED INACCURATE SINGERS THROUGHOUT
THE STUDY IN SCHOOL O AND SCHOOL D

School	Pu- pil	Boys				Girls				
		Inter- est Defic- iency	Prac- tice Defic- iency	Phys- ical De- fect	Low Voice	Pu- pil	Inter- est Defic- iency	Prac- tice Defic- iency	Phys- ical De- fect	Low Voice
O	HT			x		SD			x	
	WD			x		HG			x	
	AC			x		FT			x	
	WS			x		NJ			x	
	TR	x								
D	AG			x		BB		x		
	MT		x			EP		x		
	RY	x				LW		x		
	AJW			x		PM		x		
	HT	x				PH				x
	PR			x		AS			x	
	RD			x		SF				x
	CW		x			WA			x	
	CS		x		x					
	CB	x								
	MH		x							
	BJ	x								
	JP	x								
	ML		x		x					
	TO	x								
	JH		x							
	DC	x								
GC		x								
HL				x						
PH		x								
GJ		x								
Total	26	8	9	9	6	12		4	6	2

controlled group seven boys lacked interest, nine lacked practice, and five had physical defects. Four girls lacked practice and two had physical defects.

In conclusion it appears that the ten minutes of special training given the control group was valuable in the correction of inaccurate singing.

Through the two years' study in School O all children learned to carry the tune correctly, and this included those listed above as inaccurate singers. However, these factors must be remembered. Their accurate singing was done with a great deal of concentrative effort and the psychological factors, as well as physical factors, had to be suited to the individual. Children were constantly advised to listen, to think, and to sing softly. Even though the nine children listed as inaccurate singers could sing correctly under these conditions, they were still unable to sing with the class and were therefore considered inaccurate singers.

It is believed that if the inaccurate singers are corrected in the primary grades the habit of inaccurate singing will be less well established and the correction will be easier. If, however, some of the children reach the intermediate grades uncorrected, at least ten minutes of special training in the class should be given them. Those who have naturally low voices should be included in the group and given special training in harmonizing.

With these factors in mind the teacher in School O

gave special training to eighteen additional inaccurate singers in two low fourth grades during the school year 1944-1945. It is hoped that these classes will make better progress in music and will continue to be happier singing groups.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of the study was to find the causes and remedial treatment of inaccurate singing through experimentation and research. They were found to be lack of training in listening to music and in singing in the home, lack of interest, lack of tonal imagery, vocal incoordination, physical defects of the ear and voice, and poor health.

The fact that some children have naturally low voices must be remembered when the keys of songs are selected. Kwalwasser found that nine out of ten children preferred to sing America lower than the key of G.¹ The students in School D were accustomed to singing America in the key of F. It was found in this study that America in the key of E or F was easier for most children.

The type of songs given children was found to be an important factor in the correction of inaccurate singing. Dr. John Lewis, when studying inaccurate singers in the intermediate grades, found that the folk songs of Stephen Foster furnished good material for the correction of this

¹Kwalwasser, op. cit., pp. 106-107.

difficulty.² Eva Hudson recognized the importance of the type of songs used in the classroom: "To know what music to give a child one must know the individual. It should be commensurate with his age level, and emotional and physical reactions. It should satisfy his present needs."³ Short, simple songs which contained smooth and naturally flowing melodies and words suited to the age and interest of this group, were found to be easier for the inaccurate singers.

To help all children to sing accurately should be the goal of all teachers, and since a musical atmosphere is conducive to accurate singing, we agree with the following statement: "Primarily, the most helpful thing teachers and mothers can do to enrich the lives of young children musically is to make them conscious, even in the cradle, of the music that is about us at all times."⁴

At the present time in public school music the basic watch-word is music for all children and all children for music. In order that this may be attained, the ability to sing is believed to be one of the most important accomplishments to be gained in public school music.

²John Lewis, Associate Professor of Music Education, Texas Christian University, personal interview, July 19, 1945.

³Eva Hudson, "The Why, What, and How of Nursery School Music," Committee Reports, Music Educators' National Conference, 1944, p. 69.

⁴Elizabeth C. Lloyd, "Widening the Horizons for Nursery School and Kindergarten Children," Committee Reports, Music Educators' National Conference, 1933, p. 68.

. . . I, for one, would happily trade all young "brilliant" children for a nation of naturally, joyfully singing children. . . . a nation of children to whom music is an accompaniment to life itself.

Give us that day and the leaders. . . . Then, and only then, would we be on our way to a truly Musical America. . . . An America of music for everyone, skilled and unskilled. . . . Musical maturity will come to our nation when music is part of our national diet . . . and the public school is the soil in which it will grow.⁵

As public school music had its beginnings in attempts to improve congregational singing,⁶ so it is today even more important that children learn to sing. "A congregation which can express itself musically in the worship of God is likely to be vigorous and vital."⁷

⁵Beecher, op. cit., p. 415.

⁶Birge, op. cit., p. 2.

⁷Warren D. Allen, "Report of the Committee on Functional Music," Music Teachers' National Association Proceedings, 1942, p. 166.

APPENDIX

TABLE 4 -- Continued

Grade	Pupils	Seashore Pitch Test										Seashore Loudness Test										
		Good			Average				Low			Good			Average				Low			
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	
H5	AD										X										-	
	BS										X											-
	PS								X													-
L6	NS						X															-
	BA							X														-
	WR								X													-
	MJ'								X													-
	MJ										X											-
H6	BR								X													-
	BD				X																	-
	DB'					X																-
	OC					X																-
	RB								X													-
	TR						X															-
	HD									X												-
Total	44	1	0	1	3	6	1	2	10	3	17	2	2	3	3	2	1	1	2	3	6	

- Did not take the test.

TABLE 5

INDIVIDUAL TEST SCORES ON SEASHORE PITCH AND LOUDNESS TESTS OF ALL GIRLS WHO SANG INACCRATELY IN GRADES H3, L4, H4, L5, H5, L6, AND H6 IN SCHOOL O

Grade	Pupils	Seashore Pitch Test										Seashore Loudness Test									
		Good			Average				Low			Good			Average				Low		
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
H3	HD									X										-	
	JC									X									X		
	LJ								X									X			
	PJ								X											X	
	SD							X												-	
	WC										X			X							
L4	HG									X									X		
	SC								X											X	
	MA					X								X						-	
	WL				X															-	
H4	FT									X										X	
	HW									X									X	-	
	TP									X										-	
L5	OJ									X									X	-	
	BD									X										-	
H5	NJ									X										-	
	LJ						X													-	
L6	CM									X										-	
H6																					
Total	18	0	0	0	1	1	1	1	0	3	11	0	0	1	1	0	0	0	1	4	3

- Did not take the test.

TABLE 6 -- Continued

Grade	Pupils	Seashore Pitch Test										Seashore Loudness Test									
		Good			Average				Low			Good			Average				Low		
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
L6	BJ*									X											
	BC					X								X							
	EK								X								X				
	GB									X							X				
	HM										X										
	HR										X						X				
	HyR					X											X				
	JP								X												
	ML							X						X							
	TD																			-	
	RJ*	X																		-	
	CJ						X											X		-	
	DC					X							X								
	GC								X											X	
	GJ					X											X				
	HL					X							X								
	MM								X								X				
	AB																			-	
	MC																X				
	AC*								X												
H6	PH*	X																	X		
	GJ*									X									X		
Total	48	2	1	1	0	5	3	2	12	6	13	2	2	4	6	3	3	3	0	3	12

* Only one pitch test.

- Did not take the test.

TABLE 7

INDIVIDUAL TEST SCORES ON SEASHORE PITCH AND LOUDNESS
TESTS OF ALL GIRLS WHO SANG INACCURATELY IN GRADES
L4, L5, H5, L6, AND H6 IN SCHOOL D

Grade	Pupils	Seashore Pitch Test										Seashore Loudness Test									
		Good			Average				Low			Good			Average				Low		
		1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
L4	BB*									X										-	
	EP									-										-	
	LW*								X											-	
	MP*									X										-	
	TP*						X													-	
	PB*									X										X	
	HP*									X										-	
	AS								X											X	
	TJ								X										X		
	WM*										X									X	
L5	CP									X										X	
	HJ				X															X	
H5	FS									X										X	
	PC									X					X						
	RM								X							X					
	TE									X					X						
L6	WA*									X					X						
	AJ							X							X						
	CC						X							X						X	
	HN						X							X						X	
	McS*										X				X						
	ER*										X				X					-	
H6																					
Total	22	0	0	0	1	0	3	1	3	1	12	0	1	1	0	4	1	0	1	0	6

* Only one pitch test.

- Did not take the test.

TABLE 8 -- Continued

Gr.	Pupil	Key					Point of Difficulty			Range																
		D	E	F	G	G	Begin	Sweet	Land	Musical Staff																
										Musical Staff																
L5	AC	3	3	3	3		x		x	b												#				
	RG	3	3	3	3		x		x	b													x	b		
	WS	3	3	3	3		x	x	x			x														
	PD	1	1	1	1					x																A
	DR	3	3	3	3		x		x	E																
	LF	3	3	3	3		x		x	E ^b														x		
	RD	3				3	x																			
SG	2	2	2	1		x																		x		
H5	AD	1	1	1	1					#																
	BS	3	3	3	3		x		x														x	b	#	
	PS	3	3	1	1		x	x				x												x	x	
L6	NS	1	1	2	3		x		x																#	
	BA	2	3	3	3		x		x															x		
	WR	2	3	2	3				x															x		
	MJ'	3	3	1	3		x		x																x	
	MJ	2	2	2	1		x																			
	BR	1	1	1	1																					
H6	ED	1	1	1	1																					
	DB'	3	3	3	3		x		x																	
	OC	3	3	3	3		x		x																	
	RB	3	3	3	3		x		x																	
	TR	3	3	3	3		x	x	x																	
HD	2	1	1	3			x	x																		
										5F#	11	8	2	1	0	1	1	0	2	1	3	10	11	2		
										2E ^b																
										5																

G - Octave below G second line.
 - - Did not sing accurately.
 H - Sang high.

TABLE 9

THE VOICE RANGE OF EIGHTEEN GIRLS IN SCHOOL O WHO WERE INACCURATE SINGERS, THE NUMBER OF TRIALS NECESSARY BEFORE THEY COULD SING AMERICA IN THE KEYS OF G, D, E, AND F, AND THE POINTS IN THE SONG WHERE DIFFICULTIES AROSE

Gr.	Pupil	Key					Point of Difficulty			Range																	
		D	E	F	G	G	Begin	Sweet	Land																		
H3	HD	3	3	3	3		x		x																		
	JC	1	1	1	2		x		x																		
	LJ	1	1	1	2				x																		
	PJ	1	1	1	2				x																		
	SD	3	3	3	2		x	x		x																	
	WC	1	1	1	3		x		x																		
L4	HG	3	3	3	3		x		x																		
	SC	3	3	3	3		x		x																		
	MA	1	2	2	3		x		x																		
	WL	3	3	3	3		H		x																		
H4	FT	3	3	3	3		x		x																		
	HW	3	1	1	1		x		x																		
	TP	3	3	3	3		x	x	x																		
L5	OJ	1	1	3	3		x		x																		
	BD	1	1	3	3		x		x																		
H5	NJ	3	3	3	3		x		x																		
	LJ	1	1	1	2				x																		
L6	CM	1	1	1	2				x																		

- - Did not sing accurately.
H - Sang high.

TABLE 10

THE CHRONOLOGICAL AGE, EDUCATIONAL AGE AND CAUSES
OF INACCURATE SINGING OF BOYS IN SCHOOL 0 IN
THE H3, L4, H4, L5, H5, L6, AND H6 GRADES

Gr.	Pupil	Chron. Age	Edu. Age	Lack of Singing in Home	Lack of Interest	Lack of Tonal Imagery	Vocal Incoordination	Physical Defects		Poor Health	Low Voice Range
								Ear	Voice		
H3	FP	10	8-3			x	x				
	FR	9	8-3			x	x				
	FJ	10	8-4	x				x	x		
	HJ	9	8-4			x	x				
	HT	..						x	x		x
	PB	9	8-11			x	x				
	PN	9	10-3	x		x	x				
	MR	10	8-3		x						
CH	9	8-0						x			
L4	HJ	9	10-2					x	x		x
	LP	9	9-8								x
	MC	9	8-4	x		x	x				x
	UG	9	8-3								x
	MM	10	8-5			x	x				
	FN	9	9-0			x	x				x
H4	AM	9	8-2	x	x	x	x				
	DB	9	10-5			x	x				
	GB	9	8-8	x				x	x		x
	WD	9	10-8	x				x	x		x
	DJ	9	8-6	x							
RH	9	9-1				x					
L5	AC	11	9-6	x			x	x			
	EG	10	10-10		x	x	x				x
	WS	10	9-9	x			x	x			
	PD	12	12-0		x	x	x				
	DR	13	...			x	x				x
	LF	12	10-8		x	x	x				x
	RD	12	...			x	x				x
SG	11-2	13-9			x	x					x

TABLE 10 -- Continued

Gr.	Pupil	Chron. Age	Edu. Age	Lack of Singing in Home	Lack of Interest	Lack of Tonal Imagery	Vocal Incoordination	Physical Defects		Poor Health	Low Voice Range
								Ear	Voice		
H5	AD	11					X				X
	BS	11		X			X	X			
	PS	11				X	X				
L6	NS	11	6-14		X	X	X				X
	BA	12			X	X	X				X
	WR	11				X	X				
	MJ'	11-4	10-10			X	X				X
	MJ	12-6	8-6			X	X				
BR	11-4	9-7			X	X					
H6	BD	11-4	10-10			X	X				
	DB'	12-0	10-100			X	X				
	OC	12-0	10-8			X	X	X			
	RB	11-10	13-11						X		X
	TR	11-11	14-4		X			X			
	HD	14-1	9-8			X	X				
				8	9	27	33	10	7	0	17

TABLE 11

THE CHRONOLOGICAL AGE, EDUCATIONAL AGE, AND CAUSES OF
INACCURATE SINGING OF GIRLS IN SCHOOL 0 IN THE
H3, L4, H4, L5, H5, L6, AND H6 GRADES

Gr.	Pu- pil	Chron. Age	Edu. Age	Lack of Sing- ing in Home	Lack of In- ter- est	Lack of Tonal Imag- ery	Vocal Inco- ordi- na- tion	Physical Defects		Poor Health	Low Voice Range
								Ear	Voice		
H3	HD	9	9-1					x	x		x
	JC	9	8-6					x	x		x
	LJ	10	8-4								
	PJ	9	8-4				x				
	SD	9	8-6			x	x				
	WC	8	9-6					x	x		
L4	HG	9	9-2	x			x	x			
	SC	9	8-2			x	x			x	
	MA	9	8-7				x				
	WL	9	9-5					x			
H4	FT	11	8-8	x				x	x		
	HW	10	8-8								
	TP	11	8-5					x	x	x	
L5	OJ	10	10-8			x	x				
	BD	11	9-2			x	x				
H5	NJ	12					x	x			
	LJ	11				x	x				
L6	CM	11	10-8				x				
H6											
				2	0	5	10	8	5	2	2

TABLE 12

THE CHRONOLOGICAL AGE AND CAUSES OF INACCURATE
SINGING OF BOYS IN SCHOOL D IN THE L4, L5,
H5, L6, AND H6 GRADES

Gr.	Pu- pil	Chron. Age	Lack of Sing- ing in Home	Lack of In- ter- est	Lack of Tonal Imag- ery	Vocal Inco- ordi- na- tion	Physical Defects		Poor Health	Low Voice Range
							Ear	Voice		
L4	WA						X			
	AG	9					X			
	CD	9		X						
	MF	9				X				
	YR		X	X						
	BA	11								
	AJW	9							X	
	AT	11		X			X			
	HT	9	X	X						
	PR								X	
RD	10							X		
L5	AC	10								X
	AL	9								X
	CW					X			X	
	CS					X				X
	CB	10		X						
	MH	10				X				
	MG	10								X
	HF	10	X	X						
	HD							X		
	McQ	10					X		X	
RH	10								X	
TJ	10								X	
H5	GC	11							X	
	GL	11								X
	MJ					X		X		
L6	BJ	13		X						
	BC	11				X				X
	EK	11					X			

TABLE 12 -- Continued

Gr.	Pu- pil	Chron. Age	Lack of Sing- ing in Home	Lack of In- ter- est	Lack of Tonal Imag- ery	Vocal Inco- ordi- na- tion	Physical Defects		Poor Health	Low Voice Range
							Ear	Voice		
H6	GB	11			x	x				
	HM	11			x					
	HR	11	x					x		
	HyR	11		x						
	JP	12	x	x						
	ML	11				x				x
	TD	11			x					
	RJ						x			x
	GJ	11					x			
	DC	11			x					
	GC	11					x			x
	GJ	11					x			
	HL	12						x		x
	MM	12						x		x
	AB									x
	MC	11								x
	AC									x
H6	PH	12				x				x
	GJ	12			x					
T.	48		5	11	8	6	5	3	6	16

TABLE 13

THE CHRONOLOGICAL AGE AND CAUSES OF INACCURATE
SINGING OF GIRLS IN SCHOOL D IN THE L4, L5,
H5, L6, AND H6 GRADES

Gr.	Pu- pil	Chron. Age	Lack of Sing- ing in Home	Lack of In- ter- est	Lack of Tonal Imag- ery	Vocal Inco- ordi- nation	Physical Defects		Poor Health	Low Voice Range	
							Ear	Voice			
L4	BB	9			x	x					
	EP				x	x					
	LW				x	x					
	MP					x					
	TP					x	x				
	SP					x	x				
	HP										x
	AS									x	
	TJ				x						
	WM				x	x					
L5	CP	10									
	HJ	11			x						
H5	FS	11									
	PC	12			x	x					
	RM	11			x	x					
	TE	11			x	x					
L6	WA	10						x			
	AJ	11									
	CC	11			x	x					
	HN	11			x	x					
	McS	11			x	x					
	ER										
H6											
	22		0	0	15	14	1	0	1	2	

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