A STUDY OF THE BOY'S CHANGING VOICE
BASED ON PHYSIOLOGICAL, PSYCHOLOGICAL,
AND MUSICAL FACTORS

A Thesis
Presented in Partial Fulfillment of the Requirements
for the Degree Master of Arts

by

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1960

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ACKNOWLEDGMENTS

The writer wishes to express his grateful appreciation to Dr. William B. McBride for his counsel in beginning this study. Special appreciation is due Dr. Wayne Ramsey, for his suggestion of this study, and the many long hours of helpful criticism and advice during the course of its preparation.
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CHAPTER I

INTRODUCTION

Purpose of the Study

The purpose of this study was to analyze findings and research in the fields of physiology, psychology, and vocal pedagogy in order to determine how this knowledge might contribute to the development of a more complete understanding and a more effective means of dealing with the boy's changing voice in choral music. Studies relating to physical development of adolescent boys have noted that the voice change is a part of the pubescent cycle of this period of growth. Writers in the field of adolescent psychology discuss the influence the changing voice may have on the social and emotional development of the maturing adolescent. Specialists in the area of vocal pedagogy have presented a wide range of ideas in the search for finding the best means of dealing with the changing voice in singing. Though important reference is made to the subject in each of these areas, little has been offered which points out the relationship of the changing voice to the more inclusive process of adolescent development. Knowledge of this relationship is viewed as a means through which an understanding of adolescent boys is gained which will enable the teacher to create a successful method of dealing with this problem.

Importance to Music Education

The problem of dealing with the changing voice is primarily
confined to the area of vocal music on the junior high school level. However, the changing voice may occur in late elementary grades or in the high school as well. It is therefore vitally important that music educators, especially in the area of vocal music, have a thorough understanding of the adolescent boy's voice. Authorities in music education have stated that "the music teacher faces a problem about which, unfortunately, few scientific studies have been made." Further reference to this problem has been made by Helen Huls in her study of the adolescent voice:

"Specifically, the voice of the adolescent is one of the more serious problems of this age. It is symbolic of, and closely connected with most of the physical, mental, and emotional areas of mutation."2

After noting the importance of adolescent voice training in view of its influence on adult voices, she further states:

"Voice educators, whether private studio teachers or school music teachers, should be well-informed in matters of adolescent behavior, development, and conditions. A background of study is indicated that would be helpful to them; including anatomy, both general and specialized for the vocal areas, adolescent psychology, basic learnings for both group experiences and for individual study, and glandular and sexual development."3

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3 Ibid., p. 17
In view of the widespread knowledge available in these three separate areas, it is considered important that the contributions that each of these make to understanding the changing voice should be synthesized to give a broader and more comprehensive foundation on which to build a concept of teaching which can be of assistance in guiding the development of the mature voice which is gradually evolving. In particular such a knowledge will be invaluable for music educators in safeguarding the use made of the young voice in singing. It will help in sustaining the interest of the boy as his voice changes and thus assure greater numbers of singers in high school, college, and even adult life. It will note the psychological effect of the changing voice which may give rise to disciplinary problems if this is not known and anticipated in planning class activities.

Method of Obtaining Data

The method utilized in obtaining information for this study consisted of a careful analysis of literature concerning the three areas of adolescent growth which are related to the changing voice. These are the areas of (1) physiology, concerned with the complexities of the growth process, including the maturation of the larynx which produces a lower sounding voice, (2) adolescent psychology, which is concerned with how these changes affect the adolescent's behavior, and (3) vocal pedagogy, considering the techniques and concepts developed in aiding the proper development of maturing voices.
The information obtained in physiology was used to trace the general developmental pattern of the growth process. Particular emphasis was given to adolescence, during which the glandular development occurs which causes the growth of the larynx and a change in the sound of the voice. The relationship of the changing voice to other facets in the sequence of physical growth was also pointed out. Information in the area of adolescent psychology was analyzed in order to ascertain the effect of physical growth on adolescent behavior. The changing voice is an important phase of physical growth which contributes to the development of adolescent behavior patterns. Emotional and social growth which occurs at this same time are also important, and the contributions which music can make to this growth are discussed. The literature of vocal pedagogy was studied for definition of the rather basic concepts of the changing voice which have played a strong part in developing the techniques which are used today. Two opposing views concerning singing with the changing voice were found. From these, three rather basic approaches compatible with modern concepts of using the changing voice in singing have developed.

Although it is recognized that there is a voice change which occurs with adolescent girls, this study was limited to the more involved problems which confront the adolescent boy as his voice changes.

Related Studies

There have been other studies in related areas concerning the
changing voice. In 1953, Thomas H. Dooley made a recorded study of
the changing voice in which he dealt with how the voice sounds as it
slowly develops toward maturity, keeping a careful note on chronologi­
cal age as the voice began and continued to change. Marjorie Holland
conducted a study in 1954, which determined the voice range and
quality of boys voices with particular emphasis on the occurrence of
the changing voice in the intermediate grades. In 1956, A. LeMoine
Derr made a study which was concerned with the changing voice as it
related to boy choir work in particular.

Outline of the Study

In Chapter II, the broad pattern of growth from infancy
through adolescence to adulthood is outlined in detail. In tracing the
complexities of this growth, consideration is given to the growth and
development of the boy's larynx which produces a distinct change in
pitch and quality of the voice.

In Chapter III, it is noted how these physical changes cause
the adolescent to react as he does in his associations with his peers and
adults. The social and emotional growth which takes place at this time
is also discussed, and the importance of these two factors to the music
program is reviewed.

Concepts which have been developed by voice teachers, choir
directors, and music educators, as effective means of aiding the boy
in the development of his mature voice are discussed in Chapter IV.
The final chapter contains the implications these areas present to music education. In particular, these are applied to situations which challenge the music teacher to help the adolescent boy bridge the gap between his child voice and his mature voice of manhood.
CHAPTER II

PHYSICAL GROWTH AT ADOLESCENCE

This chapter is concerned primarily with the process of human growth, a complex process which makes itself manifest in many ways. After consideration of the rather general pattern of the growth process, the glandular developments which initiate the beginnings of the pubescent growth cycle which includes the changing voice will be discussed. Particular emphasis will be given to the growth which takes place in the larynx, producing the change in quality and pitch which is evident at this time.

The Growth Process

The first four years of life are a period of rapid growth, during which time the child is primarily concerned with himself, while he is dependent upon others for his comfort and well-being. During these years the child grows from a completely dependent person to one of relative independence. Physical growth is as rapid in pace as it will be for perhaps the remainder of his life. He will grow from a supported body to one which is completely self-supported; from a small, stable world to a wider world of creeping, crawling, and eventually walking and running; from senseless babblings to intelligent expressions of words which will convey his needs and wishes as well as his feelings and reactions to people and situations. His concept of people will evolve from concern primarily over himself and his needs to a gradually de-
developing sense of himself in relation to others. At no other time will his growth be quite so dramatic as in this period of the first four years.

At age five, the child reaches a new level of growth. After these years of rapid growth, he reaches a sloping plateau of continued development. This means that the same pattern of progress will not be continued during the next five or six years, and implies a tapering off of the rapid growth which began life. It is as though a period of rest is needed before the important spurt of growth called adolescence begins. During these intervening years, growth continues, but in a more veiled and subtle manner. Here begins the "give and take" of growth, the quiet well-mannered and gentle period, followed by a period of behavior which is boisterous and difficult to control. Gesell calls this a process of "balancing" which slowly but surely sets up the pattern of real growth and development which must precede adolescence and gives proof that development does not occur in a straight line manner.

After the first five years, the child gains knowledge away from home. His world which before had been centered around home and parents now is widened through learning at school and in association with others. He gains abilities to express himself, to communicate ideas more intelligently, to develop his knowledge through reading and inquiring into the unknown, to take the next step along the road of independence by added responsibilities to his personal self.
"More goes on than frankly meets the eye between five and the teens: there are alternations of relative equilibrium and transitional disequilibrium; there are rhythms of accent in introverted versus extroverted activity, in home versus school, in self versus group interests, in fine motor versus gross motor movements, in the to and fro shifts, in the delicate controls of eye movements."¹

It is impossible to designate a specific time at which a certain level of growth will occur with every person. Each child has a pattern of growth which is unique with him. This fact achieves importance in considering adolescence, the next step in the growth process.

"No two children (with the exception of identical twins) grow up in exactly the same way. Each child has a tempo and a style of growth which are as characteristic of individuality as the lineaments of his countenance."²

The period of adolescence represents the second and final period of rapid growth during which the child travels the road to adulthood. It is a period which is "both a biological process and a social-cultural transition."³ It is that period of life when the second stage of maturity is reached, when further adult characteristics are assumed, physical, sexual, and mental. It is difficult to affix an exact time at which adolescence occurs for the pattern of individual growth manifests

itself again. It should be noted that it occurs at different ages for the male and the female. Gesell noted that:

"the behavioral beginnings of adolescence appear at about eleven. The adolescent cycle continues through the teens well into the twenties. The years from ten to sixteen therefore are significantly transitional in the long march toward maturity."\(^4\)

It is this adolescent period which produces even more striking developments than the first four years of life. This is the initiation into adulthood, which carries with it the full responsibilities of life. It is the period in which a great variety of changes occur simultaneously, though at different rates, and all of these changes are features of the total developmental process of the pubescent growth cycle of adolescence. It is with this phase of development that this chapter is primarily concerned.

Before adolescence is considered in more detail, some mention must be given to the post-adolescent period. Although adolescence is often considered the termination of the growth process, it is in reality only the close of one chapter of mutation. That which follows, adulthood, is a continuation of the growth process. Physically, maximum growth is usually reached within the first twenty-two years, and it is because of this that it is generally assumed that growth stops.

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\(^4\)Arnold Gesell, *Youth, the Years from Ten to Sixteen* (New York: Harper & Brothers Publishers, 1956) p. 4
However, other factors must be given consideration, for this is merely one factor of the growth process. Mental growth for example, can continue until an individual reaches senility. This prolonged mental growth depends upon the ability of the person to learn to profit by mistakes and continue to develop self-confidence and skill in solving the problems that life presents. His personality, his reactions to certain situations, his desires and ambitions, all continue to grow during the years of adulthood. Thus it is that the final shaping of the person occurs at this time, and it is safe to say that it never ceases completely for it is an ever continuing process.

Adolescent Growth and Puberty

With this picture of the total growth pattern in mind, consideration must next be given to the period of adolescence, during which the boy's voice change occurs. Of the many complexities this period presents, perhaps none is more unique than the physiological developments associated with sexual maturity. These developments are included in the term "puberty." Used in its strictest sense, puberty refers to the period which "extends over only the first part of the adolescent years, during which time sexual maturation is taking place."³

Important as it is, puberty is only one part of adolescence, and is not synonymous with it. Adolescence, marked at its beginnings by puberty has come to mean the more complete process of maturation broadened "to include mental, emotional, and social, as well as physical maturation." Such a concept necessarily implies a much longer period of growth than is commonly associated with adolescence, and it certainly demands a much closer examination of adolescence in studying the changing voice.

For centuries man had no knowledge of why sexual maturation occurred when it did, nor could he give any reason for the pattern which it seemed to follow as the young child assumed the appearance of the typical adult. All that was known was that as bodies began to change the sexually immature boys and girls became capable of producing offspring, and this maturation occurred in a regular, predictable manner. In recent years, studies have shown that this maturation, or puberty, is the result of interaction of the several internal glands which make up the endocrine gland system. The inter-relationship of these glands and their effect on the total growth process is almost phenomenal. Despite our modern scientific age, everything is not yet known concerning the intricacies of this complicated interplay of glandular secretion. It is sufficient to say that all of these glands work closely together to contribute to the normal pattern of development which produces the

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6Ibid., p. 2
mature adult.

The principal glands which make up the endocrine gland system include the pituitary gland, situated at the base of the brain; the thyroid gland, located at the base of the neck; the parathyroids, behind and at the side of the thyroid; the suprarenal glands, lying over and above the kidneys; the pancreas, slightly to the left and at the back of the abdominal cavity, lying against the spine; and finally, the gonads, or sex glands.

Puberty is initiated by the interaction of two important glands, the pituitary gland and the gonads, which are called testes in the male. The pituitary gland is divided into two parts. The forward part is the master gland of the entire system and is largely responsible for growth. It determines height and size, keeping these within healthy limits. When it is not functioning properly, dwarfism or giantism or other disturbances in body shape results, such as feminine form in the boy or masculine form in the girl. The growth process is controlled by the secretion of growth hormones, one of the two kinds of hormones the pituitary gland produces. The other secretion, gonadotropin hormone, acts on the gonads and stimulates them into increased activity. The gonads in turn produce two secretions. In the male, they produce spermatozoa, or sex cells which are needed for reproduction, and they produce one or more hormones which influence development of secondary sex characteristics, such as changes in body proportions, growth of
pubic hair, the changing voice, and other distinguishing features not primarily concerned with the process of reproduction. After the gonads are stimulated by hormones from the pituitary gland, they in turn act on the pituitary gland, causing a gradual reduction in the amount or the effectiveness of the growth hormone completely. It is obvious, therefore, that these two glands must work in a reciprocal manner, and the action on the part of both of these glands must be properly timed if growth is to be normal. While the other endocrine glands are essential and make their own contributions to growth, these two glands are of the most importance in considering the changing voice.

While this internal activity is taking place, certain manifestations of it are visible outwardly. Physical growth in terms of increased height, weight, muscle and skeletal growth is one evidence. Secondary sex characteristics including the changing voice is another. Together, these produce the problems so characteristic of adolescent development, which must be understood in dealing successfully with these young boys in a musical situation.

Adolescence and the Changing Voice

Physical growth is manifest outwardly by visible developments such as increased height, weight, a redistribution of body development which will distinguish the physique of the boy from that of the girl, and increased muscular development which must occur to match the increasing size of the physical body. Studies have shown that these
developments are related to the pubescent cycle previously described, and have shown that "growth rates for both height and weight, depend upon pubescence, not upon chronological age." 7

While this growth is occurring, another important development is manifest in the changing voice of the boy. This change in voice is the result of growth in the larynx, where the sound of the human voice begins. This is in keeping with the general pattern of development which is characteristic of adolescent growth, where "different parts of the body grow at different rates and reach their maximum development at different times." 8 Like the growth spurt at adolescence, it is indeed difficult to predict at what age this voice change will occur, since it is a part of the growth process itself which begins at different ages with different individuals. The place in the over-all growth pattern where the voice changes has been described in the following manner:

"In the great majority of cases sexual maturation is somewhat further advanced before the voice change has been perceptible. Only rarely is the beginning of the voice change delayed until later in development. The change is usually not completed until early adulthood." 9

Thus it can be seen that the voice change does have its place in the

7 Ibid., p. 70
8 Ibid., p. 76
9 Henry, op. cit., p. 21
logical pattern of adolescent growth, but that it is no more predictable as far as chronological age is concerned than any other part of the growth process.

The manner in which the voice makes itself manifest in changing is equally individualistic. For some boys this may be a slow process of gradual lowering, losing tones at the top of his range and adding tones at the bottom at the same time. For others the change may occur almost overnight, and along with this type change, many problems may come. In speaking of the fourteen year old boy, Gesell tells how the voice change often occurs:

"The voice change may occur slowly and steadily, or through a cracking process, or all of a sudden. The sudden change may be mistaken for a cold. It is as though fourteen develops a hoarseness which never leaves him. With this sudden change in voice (which occurs in a minority) there are often accompanying sharp changes. Unself-consciousness may suddenly switch over into extreme modesty--almost as if the voice change shocked fourteen into an awareness of his own sexual maturity."  

While studies by G. V. Ramsey have shown that the median age for the first indication of the deepening of the voice was 13.4 years, perhaps of more importance is the fact that "it takes several years for him to acquire control of his voice, the change generally not being completed until early adulthood." 

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10 Gesell, op. cit., p. 185
11 Hurlock, op. cit., p. 49
The Anatomy of the Voice

Singing and speech consist of a four-fold action involving a close coordination of respiration, phonation, resonation, and articulation. Though each of these is affected somewhat during the rapid growth of adolescence, it is the process of phonation which is most greatly affected, and is the source of the most embarrassment to the young boy. The act of phonation is confined, at least in its beginnings, to the mechanism known as the larynx. Contained in the larynx, or voice box, are the vocal cords which vibrate in speech or singing and set forth the beginnings of vocal utterance. The anatomy of the larynx is of vital concern, because this is the center of the greatest change during the mutation of the voice.

Briefly, the larynx is made up of several cartilages and muscles, all closely related and intricately connected to form a mechanism of uncanny abilities. The framework of the larynx is composed of the thyroid cartilage, the cricoid cartilage, the arytenoid cartilages, and the hyoid bone. The cricoid cartilage is in reality a ring. In shape, it is circular and continuous, closed in the back and much higher than in front. It might be termed the foundation of the entire larynx, since it is the lowest of the cartilages, and most of the remaining parts are built around this "ring" cartilage, as it is sometimes termed. Forming the front of the larynx is the thyroid cartilage, which is almost the opposite in many respects to the cricoid cartilage. The thyroid cartilage
is open in the rear, extends upwards, and forms toward the front and sides of the larynx, a shield-like cover. It is hinged to the cricoid cartilage and is pivoted largely by the action of the cricothyroid muscle. This pivoting action is essential both in singing high pitches and in the swallowing action. It is interesting to note that many voice authorities state that speech and singing were not the real purpose of the larynx in man's earliest days. The larynx was mainly a valve-like apparatus which was necessary to protect the trachea during eating. Speech and vocal utterance were somewhat accidental developments during man's evolution.

Connected with both the cricoid and the thyroid cartilages are the arytenoid cartilages, which serve as the posterior foundation for the vocal cords. The hyoid bone is an "U"-shaped bone, unattached but in intimate relationship with the larynx. Its chief function is to serve as a support for some of the muscles of the larynx. By carefully examining the drawing in Figure 1, the relative position of these cartilages can be determined. This drawing is more nearly the position of the thyroid cartilage after the period of its greatest growth, when it becomes more prominent and is often termed the "Adam's Apple." It is interesting to note that it received this name because in the opinion of the superstitious anatomists of the dark ages, "the prominence was caused by the sticking in the throat of the apple from the forbidden tree."\(^{12}\)

\(^{12}\)Ezra Weis, Training the Adolescent Voice (Minneapolis: Burgess Publishing Co., 1936) p. 8
Figure 1

- Cricoid Cartilage
- Arytenoid Cartilage
- Right Vocal Muscle
- Left Vocal Muscle
- Cricoid Cartilage
- Thyroid Cartilage

In describing adolescent growth, it was pointed out that as the body grows, so do its parts. The voice is no exception:

"The vocal mechanism cannot possibly be considered as a set of segregated and more or less isolated structures within the body. Its action is knit into the very texture of the total somatic response. Whatever affects the body as a whole must also affect the voice."  

Changes in the Larynx at Adolescence

Growth of the larynx did not begin with adolescence, for there had been rapid growth until about the age of six. This was in keeping with the general development of the body at that time. Between the age of six and the beginning of puberty there is little change in the size of the larynx or the vocal cords themselves. It is doubtful, however, that there is not some growth in firmness and strength in both the cartilages and their connecting membranes and muscles during this period. But with the onset of puberty, there is once more a period of rapid growth and development of the larynx.

When mutation begins, the larynx increases more in depth than in height, with the result of adding to the length of the vocal ligaments, thereby producing lower tones. This results in the drop in pitch of about one octave for boys. The larynx at this time is more or less red, and the tissue loose. The vocal cords not only increase in length, but also in thickness. In boys the thyroid cartilage loses the

gentle curve, growing forward and becoming the acute projection known as the "Adam's Apple." Hurlock describes the voice change this way:

"The change in the boy's voice, which is one of the most obvious indications of pubertal maturing, is due to the rapid growth of the larynx, and to the lengthening of the vocal cords that stretch across it. The vocal cords become, in time, nearly double their former length. This results in the drop of an octave in pitch. There is also an increase in volume, and the tonal quality is pleasanter than that of the high-pitched childish voice. This changing from a high-pitched to a deeper and fuller voice comes at different levels of development in different boys." 15

There is some difference of opinion among authorities as to which parts of the larynx grow. Some writers speak of the forward growth of the thyroid cartilage and the resultant increase in length of the vocal cords. Others speak of the growth in the vocal cords, intimating that these grow and change the shape of the cartilage. But whichever part it is that initiates the growth in the larynx, "it is apparent that there is a close relationship among all parts. Alterations in size or position in one structure would therefore affect the others." 16 In either case, the two must naturally grow together, for it is the combined growth of these two components which result in the drop in pitch of the boy's voice.

Just as muscles and bones do not always develop at the same rate, resulting in a period of awkwardness for some adolescents, so the cartilages and muscles of the larynx do not always keep pace with

15 Hurlock, op. cit., p. 49
16 Pierce and Liebling, op. cit., p. 23
one another. When this occurs, the uncertainty of the voice is evident in the squeaky, sometimes high pitched sometimes low pitched, wavering, faltering voice which is so often the "ear-mark" of the adolescent boy.

This change in pitch is only the first phase of the changing voice process. Final change will occur as the development of the head and its internal resonating cavities continue to grow. Resonance is perhaps the most important factor to the unique voice which will distinguish one boy from another. The slow, gradual development and ossification of the cavities where resonance occurs results in this slow and subtle change in voice quality. This is completed much later in the growth process, and thus it is possible to say that the final voice is the product of the early adult years, or the twenties.

Summary

This chapter has been concerned with the many facets of human growth. In particular, it has been pointed out that the growth process, although varying widely from person to person in regard to when it occurs and the rate at which it occurs, does follow a certain predictable pattern. At adolescence the changing voice occurs as a result of the glandular developments which mark the onset of the pubescent growth cycle. The change in sound of the boy's voice is the result of growth and modifications of the larynx, where the sound of the voice originates. Because of the misunderstandings concerning what occurs when the voice changes, this chapter has discussed the anatomy of the
larynx and has pointed out the development of the thyroid cartilage which causes the sound of the voice to lower approximately one octave. These physical changes which occur at adolescence have a strong influence on the young boy. The next chapter will point out how these changes cause the adolescent to become aware of himself in relation to others, and to compensate for his changing self in his association with his peers and adults.
CHAPTER III

EMOTIONAL GROWTH AT ADOLESCENCE

Chapter II was concerned with tracing the general pattern of human growth with emphasis on the physical development of the boy at adolescence. In particular, the relationship of the voice change to the general pattern of growth was pointed out. This chapter is concerned with how this growth affects adolescent behavior. It will be noted that physical growth, a part of which is the changing voice, causes the adolescent to become aware of himself in relation to others, and how this awareness causes him to behave as he does. Factors of emotional and social growth taking place along with the increase in body proportions are presented, and the relationship of this part of adolescent growth to participation in singing is discussed. An understanding of these factors provides a basis for working with the adolescent boy in a manner which will encourage him to participate in music activities and thereby feel the satisfaction of something worth while in this unsettled and insecure period.

Factors of Physical Growth

The physical growth which occurs at adolescence is second only to the period of infancy in the rapidity with which the body develops. Marked changes are easily discernable and have been the subject of many studies which show the pattern of individuality of the growth process. These studies have shown that this period of rapid growth com-
mences with the beginning of the puberal cycle (occurring as it will according to the individual growth pattern) and generally lasts over a period of a year or two. After this, growth slows down once more. Other studies have shown that the matter of height and its place in development is definitely related to adolescent growth and not to other factors. In her book on adolescent development, Elizabeth Hurlock states that:

"The adolescent growth spurt results from maturation. It is not brought about by such environmental influences as food, exercises, or tonics."¹

Generally, the physical growth which occurs at this time and which has its effects on adolescent behavior is something of a composite of increased height, weight, skeletal, muscle and body proportions. Each of these is a part of physical growth, and each of these, or a deficiency in any of these, causes problems to the adolescent as he views himself in relation to others. Height, of course, is regulated by the growth hormone from the anterior lobe of the pituitary gland. There is little that can be done to change the pattern of growth in relation to height. Even though he may have wishes to be tall enough to be the star center of the basketball team, he may have to be content with the prospect of being short, and he must learn to live with the body he develops naturally.

¹Hurlock, op. cit., p. 69
"He must learn to live with himself and with those external conditions over which he has no control, however rebellious he may feel about them."\(^2\)

To be physically large is not enough to make the young boy an adult. Physical size is important, but of much more importance is the complete maturity, which must include "the growth changes which occur at adolescence—physical, intellectual, and emotional."\(^3\) These other factors will be discussed later in this chapter.

In addition to growth in height, there is also a growth in weight. Exclusive of the short period of an increased amount of fat which accompanies the onset of puberty in some cases, most of the increase in weight which occurs with adolescence is primarily the result of increase in body size in general, and its related development of muscles and bones. For example, in childhood the muscles are responsible for approximately thirty per cent of the total body weight, while in maturity the muscles are responsible for approximately sixty-three per cent of the total body weight. Along with muscular developments, the bones are also growing in size. In addition to size, the bones change in composition also, becoming not only larger, but heavier. In childhood, bones are rather soft and spongy, primarily cartilage


\(^3\)Ibid., p. 159
and tissues with little mineral matter, changing in adolescence to the harder and more brittle composition of adulthood. This is the result of ossification which takes place quite rapidly during adolescence. Growth of muscles must accompany this growth and change in the skeletal structure, and when it keeps an even pace there is rather good coordination. However, when this development is uneven, there is a very poor coordination and the result is the clumsiness and awkwardness typical of growing up.

As if this amount of growth were not sufficient, there are still more areas of growth during this period. The head and the face change also, primarily in proportion and in general size. Features may change somewhat, even to the point of looking like one parent in early years, slowly changing more towards the other parent in adolescence.

The chest also develops. In early childhood, it is more triangular in shape, somewhat broader in the back than in front. As adolescence progresses, there is marked increase of the chest, expanding not only in width but also forward, until the chest outline becomes more nearly square as opposed to the triangular pattern of earlier life. Along with this chest development, the lungs now have room to increase in size, and among other internal changes, they enlarge and utilize the increased cavity produced by chest growth. Arms and legs increase in length, giving the appearance that the young boy is all arms and legs.
Later, however, the trunk of the body grows also, and the two come into better proportions.

Physical growth does not go unnoticed by the adolescent. Not only others are aware of the physical changes that are taking place, but the youngster himself becomes aware things are happening—that his clothes do not fit any longer, that he must now consider shaving once in a while, that his voice has lowered and is now difficult to control, that others beside himself are important in his relationships, and that he must make adjustments in his somewhat "set" ways of doing things. While the pattern of growth seems very logical to the adult, for the young person who is most directly affected by this development, it often seems quite complicated.

"It is small wonder that the adolescent feels a stranger to himself—almost as if he were not the same person he has been through the years. And he isn't. He is changing in every smallest part of himself, at a rate and in a way which is far from easy, smooth, orderly or predictable. The changes are more than enough to disrupt his earlier assurance. Nothing stays put or in the same relation to other things that it has been. The body is temporarily unreliable." 4

As he becomes aware of his body, through its increased dimensions as a result of physical maturation, so he becomes aware of

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himself as an individual and he begins to think more about how he looks, and how he gets along with others. The boy sees himself apart from those who are around him, and he compares himself with others and then somehow rates himself accordingly. If he is more mature than others, he may become self-conscious and withdraw from the group, or he may become aggressive since others look to him as a leader because of his larger proportions. If this is not the case, and he is behind others in size and general development, he may feel inferior, resulting in withdrawal and perhaps in some cases complete frustration if he is compelled to stay with his group. Dr. Bert I. Beverly states the problem:

"Growth changes create many anxieties in the mind of the adolescent. He is especially concerned over differences between his growth and that of his friends and is often frightened by the possibility that there is something the matter with himself."\(^5\)

For boys, one of the deepest concerns of the adolescent period is whether or not he is going to grow up to match the picture of the perfect male, which lays great emphasis on body size and build. One of the first signs of maturity, the changing voice, and perhaps soon after that the need to shave, bring the outward indications of maturity which he cannot disregard. Because of his interest in his physical development, which must make sure that he is becoming properly and masculinly

\(^5\) Beverly, *op. cit.*, p. 159
mature, sports may become of top importance to him now. Inwardly, he may still be concerned by his height, weight, and strength,

"These are legitimate concerns, for their satisfactory development will prove to the doubtful young boy that he is going to be a satisfactory man—as good as or better than others. Since that is precisely what all the growing is about, there isn't any reason why he shouldn't be absorbed in it."\(^6\)

Just as there are sometimes problems concerning his physical development in relation to his peers, so the changing voice may become a similar concern. If he is the first of his group to undergo the voice change, it may cause him to become embarrassed as he first learns to control this new voice. On the other hand,

"a delay in voice change is sometimes embarrassing to a big boy, who is apt to feel the incongruity keenly—to be as large as a man with a voice like a girl's. However, there is nothing that will interfere with the eventual accomplishment of the voice change short of very severe disorders of sexual development. And in that case the absence of the voice change will be only a minor symptom."\(^7\)

Emotional and Social Development

Along with this awareness of himself in relation to others, comes another kind of growth which is not so obvious at first, nor is it as easily measured as physical growth. The emotional and social growth of the adolescent is very subtle in comparison with physical growth.

\(^6\) Farnham, *op. cit.*, p. 48

\(^7\) Ibid., p. 7
growth. In fact, it is only an overt expression which is the sign of some inner feeling that allows us to know something of emotions.

An increase in the intensity of emotions comes with physical growth at adolescence. When the boy was a young baby, his emotions were easily noted through observations, when they took the form of temper tantrums, violent crying, and other loss of control of his behavior. As his violent expressions of emotion brought disapproval of others rather than approval, like most children, he learned to control his emotional expressions and thereby win the approval which he so deeply craved. As adolescence approaches, these emotions become very strong once more, partly by glandular changes and partly through social factors. And like the young child, the adolescent will give way to his feelings rather easily, and he seems temporarily at least, to lose control of his behavior. Though these expressions are not so violent as those of early childhood, nevertheless they are signs of behavior which the adolescent himself realizes is immature, and he becomes ashamed of his childish behavior. Thus in time, he learns to control his emotional responses, yet throughout the period of adolescence, heightened emotionality is quite common. The emotions lack steadiness and consistency as is easily seen through the extremes which adolescents can display in a relatively short period of time. One moment of extreme happiness can give way very easily to extreme depths of despair and gloom. How to express these feelings is even something
of a problem:

"Giggling and weeping are rather uncommon with the adolescent boy. But, as with girls, the boy's responses to emotions have little direct relationship to the emotional state that has given rise to them. The pleasant emotions are accompanied by twitching, squirming, standing on one foot and then on the other, twisting a tie or a handkerchief, pulling at the ear, or other nervous mannerisms that clearly show the adolescent is happy though self-conscious about how to show it. Almost always there is a sheepish grin on the boy's face when he is happy. The unpleasant emotions are invariably expressed by a sullen glumness and a refusal to speak or do what he is asked to do. Frequently the boy gives vent to his emotions by swearing, either audibly or under his breath."

As time goes on, the adolescent learns control of his emotions and then quite often becomes moody. A mood is merely a prolonged or drawn out emotion, and these are common to most adolescents. Moods are, in a sense, measuring sticks for the adolescent's ability to control his emotions, for the better the control of the emotions, the more moody he will be. And for better or worse, the periods of moodiness are one more part of typical adolescent emotional growth. In extreme cases moods may be a sign of deep emotional maladjustment, but for the most part they are quite normal signs of a better control of the emotions.

In helping the young boy learn to live with his emotions, there may be many conflicts which develop very easily. This too is normal, for he is still a child, dependent upon others for help and guidance, yet

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8 Hurlock, op. cit., p. 115
physically he appears to be almost equal to most adults. To him this
presents problems, for he sees himself looking like an adult, yet com-
pelled by custom and tradition to being the young child complete with all
the restrictions that childhood seems to imply. His sexual maturity
makes him conscious of the opposite sex, and he finds difficulty in try-
ing to cope with his feelings in this respect. He dresses like an adult,
his voice is deep, he shaves, he feels adult in every respect, yet he is
commonly treated like a child. The conflict which results here is al-
most impossible to avoid, for it is just as much a part of growing up
as are the other features about his development which occur with little
or no effort on his part. This too, is a matter of adjustment, and in a
matter of time, it will right itself. Dr. Farnham, in her book on ado-
lescence, gives the following advice concerning this difficult period:

"The watchwords for the parents are tolerance, acceptance,
patience, and humor. They must stand by to be there when
they are wanted and needed, to provide a sounding board for
the exploring youngster and a corrective when he seems to
be wandering too far afield. Provided with an environment
which gives him a good relationship with his parents and
understanding and respect, the youngster will find the strength
he needs to deal with himself and arrive at a sure sense of
his own inner identity."\(^9\)

There is wisdom here for the teacher also. Frederick Swanson, states
it in these words:

"Psychologically there is a satisfaction in piercing through

\(^9\)Farnham, op. cit., p. 59
the false outer-shell of these young adolescents, and in discovering that they are really uncertain, awkward, somewhat scared boys who would like to be young men but don't quite know how and would like to have somebody help them—if it can be done without loss of face."

As the adolescent becomes aware of his feelings and how they affect his behavior, the realization comes that they affect his associations with others also. This growth in social relations is one which is a part of adolescence also, for it is one of the steps toward further maturity, the gradual weaning away from a close parental care towards more complete independence. To be sure, at this stage it is only the first faltering steps in this direction which will be more fully realized as the adolescent becomes more mature, yet this is the beginning. The implications of this growth are quite vast, and perhaps for the purpose of this study can be simplified somewhat by stating that social consciousness is very marked during adolescence. The adolescent wants group approval, and he wants approval of the opposite sex, and his social group has a marked influence on what kind of a person he will grow up to be. It is alarming to think that this group influence may be so strong, but it is nevertheless true. It is easy to see why youth were so important to Hitler in developing the forces of Nazi Germany.

This interest in group and acceptance by the group has tremendous influence of importance to the music program. Since this is

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10 Frederick J. Swanson, "When Voices Change" Music Educators Journal, XLVI (February-March, 1960) p. 56
the period of strong interest in groups and belonging to groups, it is a time at which there can be great appeal in belonging to performing musical groups. It has been stated in these words:

"The boy is social and wants to belong to a group of some kind; he is emotional and desires to give expression to feelings that stir his entire being; he is sentimental, and seeking the admiration of the other sex, looks with favor on possible prominence as a member of a group which appears in public; he is (at least in some cases) musical, and craves the ability to create his own music."\(^{11}\)

Summary

Physical growth, or in some cases the lack of it, causes many anxieties in the mind of the adolescent. These anxieties are expressed by a wide variety of behavior patterns, which are faced not only by parents but by teachers and all those with whom the boy comes in contact on his road to maturity. In understanding something of how this behavior is largely a part of the growth process, the teacher can set up a climate in his relations with the student which will assure the young boy he can receive wise, sympathetic understanding and guidance, and that an adult can be helpful during this cataclysmic period in his young life. Along with this understanding, it is important that the teacher realize the emotional and social growth which is also taking place at this time. These factors account for much of the interest in music

\(^{11}\)John Beattie, Osbourne McConathy, Russell Morgan
Music in the Junior High School (New York: Silver Burdett Company, 1930) p. 21
which can be fostered during adolescence. At this time, the adolescent is in need of activities which give him a wholesome and worthwhile outlet for his emotions, and satisfy his need to be a part of a group which has high standards of accomplishment and regard for its individual members. With these forces under his control and working for him, a teacher may accomplish great things not only musically, but also emotionally through the helpful guidance which sends young boys on the road to becoming the mature young man which is his ideal as an adolescent.
CHAPTER IV
DEVELOPING THE ADOLESCENT VOICE

In this chapter various concepts of the use of the changing voice developed by voice teachers, choir directors, and music educators who deal with adolescent boys are explored. Through their work with boys in choirs, voice lessons, and musical groups, these authorities have developed three distinct concepts of the changing voice and its use in singing. The first concept discussed is the "alto-tenor" idea, which was developed in music education in this country. The second concept discussed is the "counter-tenor" plan, while third is the concept which refers to the changing voice as "cambiata." These concepts of singing were developed in opposition to a strong European tradition of complete rest when the voice began to change or "break," singing again only when the voice had completely settled. This viewpoint is first presented as a background to the discussion of more recent concepts initiated in this country. Finally, the chapter includes a brief consideration of the various applications which have been made of these three rather basic concepts of the changing voice.

European Traditions and the Development of American Concepts

With the many theories of voice training prevalent today, it is not strange that there should be many ideas concerning suitable training of the changing voice. Although there is a much wider area of agreement in recent years, no concept has been developed which satisfies all
sides of the issue of how the boy's voice is best trained during this period of change. In trying to understand present concepts concerning this phase of voice training, it is helpful to review the evolution of current thought on the subject.

The training of boy choirs in European countries has long been common while in this country the boy choir has been regarded as something of a novelty. For years the tradition of boy choirs had existed in Europe and it is logical that when public school music in this country suddenly faced the problem of working with changing voices, educators turned to Europe for guidance. England became a strong source of leadership even though it was recognized that there was not complete agreement among English authorities on the subject. One group was strongly in favor of complete rest of the voice during the period of its change. On the opposite side, a much smaller and less powerful group felt it would do no injury to the voice to continue singing during this period. It is understandable why there has not always been complete agreement in this country.

The proponents of the "break" theory (who stated that when the voice "broke" or changed boys should cease singing) were very much assured that there was little hope of anything but complete ruin if adolescent boys were permitted to sing at this time. Even as late as 1923, George C. Martin stated this point of view extremely well in his book on training choir boys:
"Some choirmasters retain a boy in the choir after the voice is broken. This should never be done. It is likely to injure the vocal tone for ever after. Many otherwise fair musicians have been deprived of vocal power by this reprehensible practice. A boy whose voice is changed or broken, ought no more to be allowed to sing than a man with a fractured limb ought to be permitted to walk or use it... It is almost a certainty that boys who are permitted to over strain the vocal organs at this period will never, as men, possess good voices... The practice of allowing boys to sing while their voices are in a transitional state is unartistic (as the tone is unnatural) and the effect is so painful that all pleasure in the music they perform is totally extinguished."\(^1\)

Such a strong statement seems final enough, yet he later states his views on any further consideration of this or any other theory regarding the changing of the voice:

"The young choirmaster, however much he may be attracted by the subject, is advised not to waste his time in studying it, more especially as physiologists, with all their knowledge and their worthy anxiety to advance the cause of science, are at present unsuccessful in agreeing with each other."\(^2\)

It would appear that there was a feeling that the best course to follow was this idea of complete rest, and there was little further thought on the matter. The idea was to be commonly accepted and not challenged, nor was there even a thought to try to prove or disprove the theory. In 1928, voice teachers in England continued to proclaim this idea. In their book on voice training, Edgar Evetts and Robert Worthington

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\(^1\) George C. Martin, *Choir Boy Training* (London: Novello & Co., Ltd, 1923) p. 21

\(^2\) Ibid., p. 22
stated:

"The wisest course is for a boy to rest his voice for three years or longer after it has 'broken.' Singing may then be started afresh, using the adult mechanism throughout the compass."\(^3\)

While this pronouncement may seem dated in view of more recent developments, it is interesting to note that these men understood the fact that the voice change is a quite lengthy process, and encouraged caution in the demands made of the new voice until after the singer had reached the age of twenty. On this point at least, they were well ahead in the field.

For its third meeting, at Cincinnati, Ohio, the Music Supervisors National Conference heard a speech in 1910, by Dr. Douglas Powell, a medical doctor of English background. He was more concerned over damage to girl's voices than over the problem of boys singing. It was his theory that through the embarrassment and dissatisfaction the boy had over his singing voice at this time, there was no real problem with boys--they would just quit singing of their own accord. His very eloquent plea seems very amusing in the light of our present day knowledge.

"I therefore beg that you make every effort to prevent both girls and boys taking part in the singing exercises\(^3\)

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at this time in their lives, though I must leave the means
to attain this end in your very capable hands."^4

It is doubtful that this plea was given much serious consideration, al-
though the discussion which followed his speech did not seem to indicate
that there was any violent opposition to his ideas.

Five years later, this same growing organization heard Hollis Dann speak on adolescent voices. He approached the subject in a more
realistic way, through stating his proven idea of placing voices in
correct classifications after carefully testing them to determine their
comfortable range. He recognized that the changing voice was one which
was really non-descript, absolutely defying classification according to
traditional terminology. He specifically stated that:

"It is all important that they be assigned to a part that
has a comparatively limited compass, neither high nor
low, and that all loud and sustained singing shall be
carefully avoided."^5

This, he felt, was the safe way to handle the majority of changing
voices. There were exceptions to this rule however, and he stated:

"Boys will be found in the grammar and high school who
should stop singing for an indefinite time. It is a grave

^4 Douglas Powell, "A Talk on the Child Voice" Journal of
Proceedings of the Third Annual Meeting of the Music Supervisors
National Conference (Cincinnati, Ohio, 1910) p. 31

^5 Hollis Dann, "Classification of Children's Voices" Journal of
Proceedings of the Eighth Annual Meeting of the Music Supervisors
National Conference (1915) p. 103
error to allow or encourage a boy to sing when his speaking and singing voice is broken and unreliable."^6

He reiterated his belief that most boys should sing however, and stated:

"Experience has led me to believe that a large proportion of boys may continue to sing during adolescence without injury, provided that the voice is not forced beyond its legitimate compass, and provided loud, sustained, strenuous singing is avoided."^7

From this point, it would appear that Americans began to think for themselves with due regard to the long established practices in Europe.

There seemed to develop a feeling that English practices did not fit the situation American schools presented.

It is interesting to note that English teachers of music have not remained immovable in regard to their opinion on this subject. Perhaps the best evidence of this changing opinion came in 1932, when Robert McLeod prefaced a book of songs for adolescent voices with this statement:

"Within the last ten years or so, a really enlightened inquiry has been going on with regard to the treatment of the voice of the adolescent boy. Experimental courses in voice production and observation of the effect on the mature voice have been made. From the experiments and observations there is no doubt that in schools and colleges, during the years between the ages of fourteen and nineteen, the vocal loss to the country has been enormous."^8

^6Ibid., p. 104

^7Ibid., p. 105

In 1935 there was even more explicit comment by others:

"As a result of carefully recorded experiments and tests which have been carried out for some time in boys' schools of different types, we can say with confidence that we are convinced that the change of voice is seldom a break. It is a gradual and completely natural process of evolution. With due care it is possible and desirable that the boys should sing in class right through this period."\(^9\)

It is therefore safe to say that the present status of opinion on the subject, both in England and in America, seems overwhelmingly in favor of continuing singing during the voice change. The best method of training this voice is still another matter, and the several concepts which have been set forth and are in use have much to be considered before any one and final concept can and should be agreed upon.

Miss Esther Keller has stated the problem of finding "the" method:

"Sometimes I wonder if the good Lord himself knows exactly what is going on in the adolescent voice. There seems to be no rhyme or reason to it, and it would be the utmost folly to set up any hard and fast rules of procedures in working with these voices."\(^10\)

**The Strong Influence of the Alto-Tenor Concept**

One of the oldest American concepts, and one which has not been completely discarded in terms of present day thinking, is to call the changing voice by the name "alto-tenor." This term implies that the changing voice is somewhat like an alto voice in quality, but not

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\(^9\) Ibid., p. 11

\(^10\) Esther Keller, "Vocal Problems in the High School Vocal Program" The Bulletin of the National Academy of Teachers of Singing XIII (February 15, 1957) p. 12
quite so high in range, and in its lower notes it begins to approach the range of the tenor voice. There is no intention of suggesting the mature tenor quality. It is a term which was often used in conversation by many of the pioneers in public school music, but which seems to have been avoided in their writings. Such people as Hollis Dann, Luther Whiting Mason, George Veazie, and George James M. McLaughlin all referred to the changing voice within the meaning of this term, yet avoided calling the voice by any certain term in their writings. This was the first expression which indicated that Americans were more interested in singing during this period than following the complete rest theory which was still quite popular in England.

By 1930, the term "alto-tenor" was well enough established to be used in an early book on junior high school methods of teaching music, written by a well qualified team consisting of John W. Beattie, Osbourne McConathy, and Russell V. Morgan. They assigned a suggested range of approximately one octave from G below middle C to second line G of the treble staff, and said of the alto-tenor voice:

"Being neither changed nor unchanged but in the process of change, it will not permit singing of higher notes of ordinary alto parts nor of the lower notes of many tenor parts. Often it is capable of producing easily only five or six tones hovering about middle C. If the vocal parts are carefully written to remain in this limited range, no harmful results will come from such singing as the boy will do. On the contrary, use of the singing voice often assists in the control of the rather uncertain speaking voice... Difficult, sometimes, to distinguish from the
third part or alto, the clearest sign of differentiation lies in the fact that the alto-tenor is definitely a changing voice, as may readily be discerned in his speech, whereas the true alto voice is one that remains for some time in the lower compass of the unchanged voice, or that is slowly lowering without break from the child's voice to the man's voice."¹¹

Five years later, Karl W. Gehrkens suggested utilizing this theory and this term in this manner:

"The more modern plan is to encourage the boy to sing second soprano when his high tones begin to be less clear or less easily produced, and especially as lower tones develop; and, similarly, to sing alto as the voice goes down still farther, this being followed by a more recently devised part called alto-tenor, which has a very small range midway between alto and tenor. From this part the boy goes to tenor or baritone or bass—sometimes through all three in succession."¹²

Utilizing this theory and keeping the boys singing during this period, early work in the area of junior high school music certainly contributed much to modern thinking on what is the best plan for the changing voice:

"With the advent of the junior high school movement in the beginning of the century, it became possible to experiment with the plan on a large scale and bring about its general use in America. The plan proved itself beneficial to the boy's future voice, not injurious to it. Hence, it can be said that the junior high school has been the proving ground for the acceptance of the modern theory about the boy's changing voice as opposed to the traditional theory."¹³

¹¹Beattie et al., op. cit., p. 110

¹²Karl W. Gehrkens, Music in the Junior High School (Boston: C. C. Birchard & Co., 1936) p. 73

¹³McKenzie, op. cit., p. 24
Even though there still may be disagreement concerning the use of the term "alto-tenor" and discussion in regard to the exact range of the voice suggested, it is obvious that this plan contributed greatly to establishing the practice of encouraging boys to sing during this period. With this as a foundation, and with the realization that the alto-tenor concept has never been completely replaced in terms of current thinking, consideration should now be given to the other concepts which, to a certain extent, have developed from this one basic idea.

The Boy Tenor Concept

While the alto-tenor concept was growing in acceptance, Hollis Dann continued his work with reference to developing greater understanding of the changing voice and its use in singing. He refused to accept the term "alto-tenor," yet he was not in complete disagreement with the basic ideas which this terminology implied. Instead, he suggested that the voice change was a gradually lowering process, from the soprano voice to that of an alto with the range of G or A below middle C to the fourth line D or the E above. He insisted that:

"at this stage, the one and only part he can sing comfortably is the alto part. Normally this period is of short duration—a few weeks, or a few months at the longest. At this transient and fleeting stage the voice is called boy alto." 14

As the voice continued to lower, he used the term "boy tenor" to refer to the changing voice. The range he assigned to the changing voice was

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rather wide, from E or F below middle C to second line A above middle C, or the B above that. Since this was a distinctly tenor compass, he insisted that this part should be called the boy tenor, and suggested that the length of time the boy sang this part was indefinite, ranging from a few weeks to a year and seldom longer than one year. It was during the period of singing as a tenor which was the critical time for his training. Here a special effort was made to encourage the use of the upper range of the voice as much as possible, and to safeguard against long and loud singing during this period. Also important to this concept was the importance of the boy's understanding that he was to consult with the music teacher whenever he felt uncomfortable singing in the higher register. The final step in the lowering process brought a range of low B-flat or A on the bass staff to the D or E-flat just above the bass staff. He called this voice the boy bass and suggested:

"The compass of the boy alto and the boy tenor is indefinite, the compass of the same boy varying widely at different times, as does the length of time the boy can comfortably sing alto and tenor parts. The remarkable uniformity of compass at the boy-bass stage of adolescence is surprising."\(^{15}\)

This was not to be implied as the final classification of the boy's voice, since that would be determined only after the voice was finally settled.

The fact that both those who would eventually be tenors as well as

\(^{15}\)Ibid., p. 103
those who would be basses passed through a period when this range seemed common to all voices. He stated that this was a semi-permanent classification and said:

"During this boy-bass period, lasting approximately two years, more or less, there is usually no definite indication of the future classification of the voice, no way of knowing whether it will ultimately be tenor or bass."16

A few years later, Peter W. Dykema and Hannah Cundiff suggested a somewhat similar plan, although they used the term "alto-tenor" once again. They also saw the changing voice as a gradually lowering process which passed from soprano to alto, to alto-tenor, and as the voice matured still more to tenor or bass. While they had little to say in regard to actual techniques in training this voice, they were explicit in reference to the range of these voices:

"As the voice continues to mature, more of the upper tones are cut off and the alto tones, broadening more and more, become like the upper tones of the tenor voice, hence the term alto-tenor is applied to boys at this time. It is only when the alto becomes deep and robust that this tenor part is possible for boys with changing voices. Some boys' voices take on the mature changed quality, but do not extend downward beyond the third line d (bass clef) but continuing to hold the upper tones, become real tenors. Others continue to drop until they reach the first line g (bass clef) or lower, losing at the same time more of the upper tones, thus becoming basses."17

16 Ibid.

The following ranges were suggested:

Alto: Alto-tenor: Tenor: Bass:

While this concept was not entirely contrary to the ideas already expressed by Hollis Dann, Dykema and Cundiff returned to the use of the term "alto-tenor," stipulated ranges which were not in agreement with Dann, and avoided any indication of the length of time during which the voice should stay on a certain part. They did recognize the fact that many alto-tenors might be problem voices involving individual attention:

"Sometimes the voice is practically unusable for a short period, but more often if the proper care is exercised the boy continues to sing a little day by day within his more or less restricted range. Sometimes there is freedom left in only four or five tones, but when the boy knows what these tones are and when the music provided is properly selected, and sensible advice given as to certain tones best transposed or omitted, the boy can still take his part in the work with profit to himself and to the whole group."\footnote{18}{Ibid.}

The Boy Choir Concept of the Counter Tenor

At the same time the concept of the alto-tenor voice was being developed, the Rev. William J. Finn founded a great choir in Chicago, called the Paulist Choristers. Since this boy choir was growing at
the same time that the art of choir training was coming of age in the United States, it is logical that Father Finn became an important influence in choir training and with boys' voices in particular. His book on choral conducting stressed all the intricacies which go into developing a choir, and since his own first love was the boy choir, it included his ideas concerning how the changing voice should be treated. His counter tenor concept included these three important points:

"(1) The symptoms which indicate the beginnings of the change process. (2) The range in which the youths may safely continue to sing. (3) The vocalizations which will bridge artistically the space between the treble and bass staffs."^{19}

The first step was the recognition of the changing voice as it was about to occur, which included the fact that there is a certain brilliance which seems to come into the higher notes of the soprano voice just before the change process begins. Other factors which he pointed out include the physical growth which is taking place and the sound of the speaking voice, and a certain regard for the age of the boy, although he recognized the wide range of ages at which the voice change occurs. At the beginning signs of voice change, he removed boys from the soprano part and assigned them to a lower part where they continued to sing within the range of middle C to the top line F of the treble staff. During

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^{19}William J. Finn, The Art of the Choral Conductor (Boston: C. C. Birchard Company, 1939) p. 138
this period there were two major concerns in the training of the voice, the first of which was the matter of dynamics:

"It is safe--until the appearance of the next symptom--to permit them their customary crescendos from $j_2^oL_\sim z<>$, but from $d$ they should be kept on the soft side of the mezzo-forte panel."\(^{20}\)

The second concern was the method of vocalization which was used. He consisstantly suggested that a downward vocalization be used to keep the correct tone placement of the soprano voice. With these he mixed:

"Vocalizations of wide intervals, rather than exercises of consecutive steps, in order to prepare the boys for the feeling of different registers which will be a valuable asset in the counter tenor's control when he is called upon later to mix two types of utterance, i.e., the upper (falsetto) and the lower (natural) baritone."\(^{21}\)

It should be stated here that during this period the voice is placed on the alto part for choral singing, and the quality of the voice is described in Father Finn's own words as that of a "falsetto." He felt that it was perfectly safe to keep singing in this upper range as long as was possible, and that there was no damage to the voice as was likely to occur if the voice were forced down to a lower part too soon. But this was not the final disposition of this voice, for as soon as the voice pro-gressed low enough to actually take on the changed quality, and in this

\(^{20}\)Ibid., p. 140
\(^{21}\)Ibid.
quality sing around F below middle C or lower, then the range of the falsetto voice was restricted to within first line E to the fourth line D of the treble staff. The next step was to continue vocalization, in the falsetto range, and in addition to begin vocalization in the baritone range, always using downward vocalization. As these two extremes of the voice were developed and under control, then an attempt was made to bridge the gap between these two qualities.

"The space between the treble and bass clefs is the 'no man's land' of the changing voice and care must be taken to avoid all attempts at singing there until the upper and lower ranges have been well practiced in juxtaposition."\(^{22}\)

If this plan were to be judged on the basis of the choirs which were produced by Father Finn, it would be difficult to say that this plan was not helpful in producing good mature voices.

This plan has been used by others, and Mr. William Ripley Dorr, who directs the famed St. Luke's Choristers, uses it in his choir work, but does not find it useful in school teaching. He trains the boy soprano voice in both situations much alike, though the school boys are not given quite the intensive training the choir boys receive. He states:

"In the counter\text{tenor} plan, the method of training enables the boy to have a much wider alto range than in the alto-tenor plan; hence it is very practical for choir purposes, but not

\(^{22}\text{Ibid.},\ p.\ 141\)
so practical for school conditions because of the time the more intensive training requires."  

Another difficulty with this plan, at least as far as school work is concerned, is summed up in this statement:

"The kernel of the counter-tenor plan is that because of the type of training he has received as a soprano, the adolescent boy is able to keep his unchanged voice in use in the alto range during the period that the changed voice is emerging."  

It is quite doubtful that many boys in a non-choir situation would have the strong training as sopranos that this plan implies. It should be noted however, that this plan has given evidence that the boy can use his unchanged voice for alto work and use it in this way far longer than had previously been thought possible. This use of the changing voice is not infrequent in many boy choirs throughout the country.

It might be well also to note the difference between the alto-tenor plan and the counter tenor plan. The first seems to encourage the voice to lower, and as it gradually lowers works to include the lower notes into the range of the boy's voice. The counter tenor plan encourages the boy whose voice is changing to continue using the unchanged voice and sing as an alto even though he may be able to sing tenor and perhaps bass in the changed quality he is adding.

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23 McKenzie, op. cit., p. 110

24 Ibid.
The Concept of the Cambiata Voice

While these two concepts have been prominent in thought on the changing voice for several years, there has come about within the last ten years a new concept stated by Dr. Irvin Cooper. He felt that there was considerable misunderstanding regarding the changing voice with the result that junior high school music teachers placed too much emphasis on activities other than singing during this period. He further felt that the alto-tenor concept in many ways suggested an almost unusable voice which was so restricted in range that it could contribute very little in part singing. His concept, which calls the changing voice "cambiata" suggests a wider range for the changing voice and much more careful selection of unison singing to keep changing voices from singing in the lower register too soon. He encourages the use of the higher voice and suggests that the premature singing on too lower a part is often the cause for a lack of tenors as the voice matures more fully. He states that he:

"prefers to refer to the changing voice as Cambiata (nota cambiata--changing note) rather than "alto-tenor." There is a very definite reason for this identification mark. Many textbooks have acknowledged the incidence of the changing voice in Junior High School, and alto-tenor has become associated with a vocal range extending from F below middle C upwards an interval of a sixth or seventh, whereas, the "cambiata" extends upwards to octave middle C. Admittedly the upper fifth of this range frequently holds some soprano quality, but is still part of the voice and is available for use."

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25Irvin Cooper, "The Junior High School Choral Problem" Music Educators Journal XXXVII (November-December, 1950) p. 21
He further suggests that nearly all junior high school classes will contain the voices which will fit into his classifications (Soprano I, Soprano II, Cambiata, and Baritone) though widely differing in proportion from grade to grade. He feels that an unusually fine choral group can be created by using seventh, eighth, and ninth graders in the same group, each grade supplying its own particular number of voices in each classification.

In addition to the importance of this wider range of the changing voice, Dr. Cooper feels that it is equally important that teachers have a better understanding of proper classification of adolescent voices. Careful classification will assure the best development of the voice, and will guard against premature assignment to a lower part than can be comfortably sung during this period. This proper classification, coupled with careful choice of singing material to include not only part singing but also goodly amounts of unison singing within the range of B-flat below middle C to the third space C of the treble staff, will assure the production of a mature voice which will be developed naturally and not forced.

Although it has not been included in his writings, it would appear that there is one other factor which contributes greatly to the success of Dr. Cooper's theory. He places a great deal of emphasis on the cambiata part, even to the extent of giving this voice the melody in many of his arrangements. But more important, he places a strong
emphasis on these voices in his work with groups. This additional work, which is not just vocalization and drill, makes the cambiata singer feel important, and it develops the interest and the pride of the boy in his singing voice. The ability to succeed in performing this part is something of this pride and interest, but it is also due to the "glamour" which is built up by the director in working with these voices which makes this seem so important to the boy who can sing in this range.

Other Practices, an Outgrowth of These Concepts

These concepts have proved strong motivation for careful thinking on the part of many choral directors, with the result being the development of many other approaches to training the boy's changing voice. Most of these utilize parts from each of these preceding concepts, and show that for the most part there is growing agreement toward the fact that it is not harmful for boys with changing voices to sing. There is also strong argument for permitting the boy to sing where it is most comfortable for him to sing, guarding constantly to avoid misuse and vocal strain.

The multiple choir program which has grown in popularity with many Protestant churches, makes it possible to find a proper place for the adolescent boy in some choir. Most of these situations permit the unchanged voice to be used with the girls who sing soprano or alto, transferring the boy to another group and perhaps even another choir.
when his voice changes. There he may make use of his singing voice where it is most comfortable for him, either in a baritone-like range, or possibly tenor. This is advocated somewhat in a plan which is called the "comfortable range policy" by Duncan McKenzie. He feels that most plans which have been used are really based on this idea and states:

"As the alto-tenor plan, for example, is carried out in the junior high school, a boy is transferred to the next lower classification as soon as he begins to have difficulty with the highest notes of one he is in. Thus the lowest notes have an opportunity to develop while the highest notes, being unused, gradually disappear. Success with the alto-tenor plan lies in encouraging the voice to lower, for that is what nature intends it to do. Accordingly, when there is any doubt about the classification of a voice during the adolescent period, it is best to put the boy in the lower one, with the proviso that he must never force the lowest notes."\textsuperscript{26}

He further states the need to have an accurate check on the progress of the voice change, and by noting the rate at which the voice is changing, he is more likely able to note when the next shift in parts should come:

"If the rate is slow, the full range may be more or less stationary for a time, possibly for more than a semester, but less than a year; if the rate is more rapid, the full range is likely to alter during a semester."\textsuperscript{27}

Not far removed from this comfortable range plan, is one which is used by Hugh Rangeler, who has had considerable success in developing boy choirs. He states his first belief that:

"The best preparation for the changing voice period is

\textsuperscript{26}\textsuperscript{26} McKenzie, \textit{op. cit.}, p. 34

\textsuperscript{27}\textsuperscript{27} Ibid.
proper training before the voice starts to change. With all the knowledge available from the masters in the training of boy's voices, it seems rather ridiculous that we in public schools have ignored it so completely in dealing with the problem. The approach has been made through working with the printed music. In developing the boy's choir the approach should be through working with the boy and his voice.

In simpler terms, he says that if the boy's voice is properly trained as a soprano, there will be no problem with the voice as it changes. He is insistent that the developing of light quality throughout the range, blending this quality into the lower range is the method which produces good singing from boys. He stresses the fact that the word light refers to quality and not to volume, which must not be suppressed to the point of losing the joy of singing. His concept also includes something of the individual approach, which is easily accomplished in a choir situation, but not so easily developed in a school situation, especially a mixed class.

Another approach has been suggested in an experiment by Frederick J. Swanson. In this experiment the boys were first separated from the girls, for the problems which the boy faces as his voice changes are unique with him. Placing him in a mixed class only adds to the embarrassment which often occurs with this change. Further

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29 Hugh Rangeler, "Boys Like to Sing" The Etude Magazine (March & April, 1956) p. 16
classification was then made to place boys whose voices were of approximately the same voice range in one class, thereby placing the unchanged, the changing, and the changed voices each in their own group. The result permitted each of these classes to concentrate upon the problems which were a part of that stage of voice change. As the experiment progressed, it was possible to develop a great interest within the boys, and a certain amount of pride in their achievements as they progressed throughout the year. Arrangements were made for boys to be transferred from group to group as their voice change indicated, and something of the more individual work which is effective with this problem was thus brought into a class situation with a minimum amount of embarrassment to each boy.

Summary

There is no one positive approach which holds the complete answer to this vocal problem. Each teacher will have to draw upon a vast background of wide-spread knowledge of all the various techniques which have been helpful and proven useful, picking and choosing from this storehouse and adding his own personal resourcefulness to this knowledge to find the solution to the situation he finds confronting him. George Bowen stated the situation well in his report to the National Academy of Teachers of Singing:

"Some experts have in the past advocated complete cessation of singing during the period of mutation. But experience and practical experiments have established the fact that instead
of being detrimental and injurious to the vocal organ, its use during this time is decidedly helpful to a speedier development to the new normalcy. The change which is taking place is one of nature's own; it is not a pathological condition or one which requires complete disuse of the organs. It is pointed out that the vocal mechanism consists of materials similar to those which make up other muscular parts of the body, and they need exercise for their development just as the muscles of the arms and legs must have exercise or they become useless. With proper guidance, which consists of a good deal of 'horse-sense' on the part of the teacher, the boy's voice will gradually grow up and develop, and within the course of four or five years, sometimes a shorter time, become a new musical instrument."²⁹

²⁹George O. Bowen, "Experience and an Experiment with Boy's Voices" The Bulletin of the National Academy of Teachers of Singing VII (September-October, 1951) p. 15
CHAPTER V

CONCLUSION

In the preceding chapters the physical, psychological, and musical factors which affect or relate to the use of the changing voice in singing were analyzed. As a result of this study a number of generalizations are drawn from each of these three areas as basic to developing more effective techniques of dealing with the adolescent voice. It would not be logical to suggest that any one solution could be sufficiently comprehensive in scope to include all the variables associated with the process of the voice change. Success in teaching boys with changing voices will be due, to a large extent, to the skill and the insight with which the teacher approaches the problem in the classroom. The following generalizations from each of the three areas of this study are presented to provide a better understanding of the many factors involved in dealing with this complex problem.

Factors of Physical Growth

1) Manifestations of physical growth provide some indication of the impending change of the voice. In a study of physical development from infancy through adolescence to adulthood, a logical pattern of the growth process is apparent. While there is no specific age at which the period of adolescent growth begins, no indication of what the rate of growth will be, or the problems which may arise during the course of this development, certain signs of physical growth provide evidence of the beginnings of the voice change. As was noted in discussing the
place of the voice change in the overall developmental pattern, the pubescent growth cycle precipitates the voice change. A rapid increase in height often indicates the onset of this cycle. The appearance of slight downy hair on the face is also another indication, along with an increase in body fat which often accompanies the beginnings of puberty. All of these may indicate that the voice change will soon follow. Similarly, the quality of the voice itself is often indicative of the impending mutation. The soprano voice of the boy often takes on an added brilliance immediately prior to the change. Similarly, the speaking voice provides indications of change through the development of a broader, fuller quality. At the same time there may still be little indication of change evident in the quality of the singing voice.

It must be stated most emphatically that these are not the determining factors as to the classification and the disposition of these voices in the classroom. The range and quality of the voice are the final determinants, but these physical signs may be helpful in anticipating the mutation.

2) Physical growth and the changing voice are matters of individuality as are other factors which contribute to the unique personality of the adolescent. Chronological age has little to do with specific phases of the total growth process. The first indications of approaching adolescence may occur as early as the age of eleven. Studies mentioned in Chapter II indicated the age of 13.4 years as the median age at which
the voice changes. It is not impossible for the change to occur even as late as sixteen or seventeen years. As a factor of the total growth process, the changing voice, as well as other aspects of physical growth, cannot be encouraged or stimulated by external influences. Attempts at singing higher or lower than is natural for a particular voice will not insure the development of that range in maturity. There are some indications that sociological factors affect the chronological age at which the pubescent cycle begins. However, the progress of the voice change remains a matter of individual development.

3) Physical changes taking place in the larynx do not necessitate discontinuing singing during mutation. The change in pitch of the male voice is the result of growth of the thyroid cartilage which causes an increase in the length of the vocal cords. This normal process of growth is not considered a pathological condition which makes the use of the voice at this time harmful. In some cases, the uneven development of muscles and cartilages makes the voice difficult to control temporarily. This is not considered an indication that singing is detrimental to the development of the adult voice. These difficult to control voices may be temporarily limited in range and for a while may contribute little in terms of beauty of tone, yet the careful use of the voice at this time aids in developing control for both singing and speech.

Since the larynx is still a growing organ, it is essential that there be wise and careful guidance in singing at this time. It is possi-
ble, through misuse of the voice, to cause permanent damage to the sound of the voice. It is essential that music be carefully chosen in terms of range and in terms of appropriate style. Music which demands full, loud, sustained singing more appropriate to completely mature voices, is most unsuitable for the changing voice, no matter how well the parts may fit adolescent vocal ranges. The wise use of the comfortable range of the changing voice is the primary consideration in choosing music for adolescent singers.

4) The development of the mature voice parallels physical growth. Physical growth proceeds with a pattern of rapid growth during the first four years, followed by a period of five or six years of more gradual growth. At adolescence another period of rapid growth takes place followed once again by a more subtle period of physical growth which ends in the earlier years of adulthood. The voice develops in a similar manner. At adolescence, this period of rapid growth assumes the character of a changing voice in the case of the boy. After the initial change in range and quality, the voice continues to develop through the high school years as do other phases of physical growth. Thus despite bass or tenor quality, the high school boy's voice might still be considered, in a sense, a changing voice. Therefore, it is important that testing of voices be continued and permanent classification of the voice is avoided until the early adult years. Again, the caution of making adult demands on this immature voice is an important consid-
eration for the music teacher. Though it is subtle in comparison with the first change, the growth of the voice is by no means ended until the years well beyond high school.

Psychological Factors

1) The changing voice is a significant factor of physical growth which affects adolescent behavior. Considering the physical developments which occur during adolescence, the changing voice is indicative of the insecurities and the loss of self-confidence noted in this study as characteristic of adolescence. The awkwardness and insecurity which develops is heightened by the voice which assumes a new quality and a much lower pitch. Because it is difficult to conceal, the voice may easily become one of the most common sources of embarrassment. Among the consequences of difficulty with the changing voice that can be noted in the classroom are embarrassment caused by singing in a pitch range different from other members of the class, uncertainty in finding the proper pitch for singing, discouragement and discontinuance of singing, misbehavior by formerly well behaved students, and outward appearances of disinterest in music. Occasionally, a boy enjoys the attention his new voice gains him, and proceeds to exhibit his vocal difficulties and thereby create a discipline problem. On the other hand, the beginning sounds of a mature voice, together with more demanding music literature containing texts associated more with adulthood, provides a basis for a new interest and enthusiasm for sing-
ing. A well controlled voice may become a source of pride and an ob­jective toward which to work.

2) Adolescence is a period of social and emotional growth as well as physical growth. The physical changes which have been noted in this study have strong influence in the rather subtle area of emotional and social growth. Psychologists have emphasized that as the adoles­cent boy becomes aware of others, there is an increasing need for be­longing to a group and for the acceptance of his changing self by his peers. At the same time, the adolescent finds a growing emotional intensity which he also finds difficult to express. Musical groups can be of great value in satisfying these two strong needs of adolescence. Individually, one voice may provide little satisfaction, but as a part of a group it may achieve importance because of the accomplishments of the group. Some measure of confidence and security are achieved through participation in groups. Satisfaction is derived from being a part of a working group which provides opportunity for self-expression.

Vocal Factors

1) Modern concepts of the changing voice encourage singing. Present day authorities advocate the continuance of singing through the period of change. It was noted earlier that physical growth taking place in the larynx is not an impediment to continuing singing. While English choirmasters for a number of years have advocated complete rest dur­ing the period of change, leaders in music education in this country
have studied this problem and have established a practice of continued singing during the period of change.

2) A wide variety of concepts of the range of the changing voice exist. The concepts which have been discussed in this study have been based on the premise that singing will be continued during the change. Early ideas of the limited range of the changing voice have been replaced by more recent conceptions of the voice as containing a portion of the boy soprano range as well as a downward extension of several notes. Irvin Cooper has effected a kind of compromise between the rather limited alto-tenor range and the extreme use of the falsetto quality utilized in the boy choir idea of the counter tenor. This wider range prevents forcing the voice downward prematurely which may cause a changed voice to develop which is unnaturally low and perhaps limited in range. This use of the upper range of the voice also encourages the properly placed "head" tone of the soprano voice to be carried over into the voice as it changes and gradually lowers.

3) The voice change is as unique in terms of a particular individual as are other factors of his growth. The ranges which have been suggested in this study by music educators are considered as guides, and not as the final solution for each particular voice. Probably the best policy is that of using the full comfortable range of the voice, and to encourage the boy to use only the natural limits of the voice. In singing parts, the voice should be used only on those notes which can be
comfortably sung, omitting those which may be too high or too low.

Because the changing voice manifests itself differently with different boys, there is strong indication that the individual work which is possible in a boy choir is something of the ideal which should be used in a class situation. The classroom situation is far more difficult because of the presence of girls whose voices do not present the many problems of the type boys encounter. However, this individual approach is an ideal which ought to be attempted as much as is possible.

Summary

Considering the physical, psychological, and musical factors which have been discussed in this study, it is obvious that the problem of the boy's changing voice is only one segment of the much larger and inclusive problem of adolescence. It is a problem which presents two challenges to the music educator. One of these challenges is musical, relating to what can be done for the boy while his voice is changing that will help him maintain an active interest in singing and to develop the best voice in maturity. The other challenge is a matter of human relations, relative to meeting the many problems which are a part of the complex pattern of adolescent development and for the boy in particular, the related problems of the changing voice. It remains for the teacher to successfully meet these challenges if the best preparation of adolescents for adulthood is to be accomplished.
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