THE TREATMENT OF CERTAIN FORMS OF VOCAL DISABILITY BY THE APPLICATION OF THE PRINCIPLES OF VOICE-CULTURE.*

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I HAVE chosen the subject of this short paper for several reasons. It happens to have engaged my thoughts for some years. I have been constantly consulted in a class of cases in which it has been necessary to prove that the disability complained of was not due to disease but to misdirected physiological action. Because, also, that although much has been written explanatory of vocal phenomena, very little can be learned from books with regard to the essentials of voice-culture and the right method of restoring impaired vocal function.

The subject might have been termed, "*Something about vocal gymnastics*," and that expression may convey to some of you a clearer idea of what I have to talk about.

Let me say here that I do not propose to discuss the acoustical and physiological qualities of the human voice except in the simplest manner. The anatomy of the larynx, the action of its various muscles, the nature of sounds and the laws which govern their production, are quite well known to all of you.

The laws of acoustics and physiology have analytical, explanatory connection with our subject. The object of this paper has synthetical significance. The thing to be done is to restore what has been lost, not to account for what already exists. If the results obtained are found to answer

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not only the requirements of art, but are in accordance with the known laws of physiology and the accepted theories of the nature of musical sounds, we shall have the double proof of the justness of our methods.

I yield to none in my admiration and thankfulness for the discoveries of Helmholtz and other physicists, and I regret the lack of time and ability to pay a fitting tribute to Madame Seiler for her original and priceless exposition of vocal phenomena; but I am compelled to say that, as the full powers of the human voice were exhibited many years before such discoveries were made, it is more than likely that the methods of voice-production may be formulated without the help of the laryngoscope or the application of what is known of the laws of sound. That we are not without guides to such methods I shall show further on.

To enable the singer to regain lost tones; to teach the beginner to produce each note of the scale in such a manner that the vocal organs shall receive no injury but rather gain strength by continued practice; to correct a vicious production, such as has already impaired the organs and must necessarily result in the annihilation of the singing voice, some method must be known which does not necessitate a knowledge of physiology or the laryngoscopic appearances of the glottis, on the part of singer or teacher.

That there is need of such information, I think all laryngologists will admit. My own experience, as briefly given in the cases about to be narrated, leaves no room for doubt of its value for those who use the throat, and for those who would treat its diseases and disabilities.

How diverse and conflicting published opinions are with regard to the proper method of vocalization, your own reading has shown you.

One teacher says: "Sing upon the breath" (whatever that may mean); another, "Sing and feel no parts." One instructor advocates the glottis stroke, but another asserts that the *coup de glotte* will surely weaken and destroy the vocal organ. One physiologist affirms that the larynx rises for every note of the scale, but another says it descends for all notes above a certain pitch. Some say that the produc-

tion of the vowel is based upon the action of the consonant-articulating organs, the name of such production being "exploded vocality." On the other hand, it is asserted that the ineffectiveness of the singing voice in certain countries results from the multiplicity of consonants in the spoken language, the result being a weakening of the true laryngeal action. These are but a few of the various opinions which are to be met with in treatises on the physiology and hygiene of the singing voice.

Where then shall we look for that which shall prove beyond contradiction what may be considered to be a true way of producing musical tones?

I know of but two sources of such information, viz.: great singers, and such teachers as have proved, by the results of their labors, that they can cultivate the singing voice to the extent of its full development and lasting integrity in any individual case.

Information which I have obtained from personal intimacy with exceptionally fine singers, and the scrutiny which I have given to the methods of all those whose public or private efforts I have witnessed, have led to this conclusion, viz.: *that the means used by all successful vocal artists are identical;* the variations in result correspond with the varying success or manner of application of these factors, such success being influenced by the physical conformation of the artist, his musical aptitude or cultivation. [I may be pardoned for saying that my own artistic experience confirms my belief in the truth of this position.]

The question which interested us is *how to use the instrument by which the singing or speaking voice is produced.* The instrument exists, so wondrously constructed, capable of such varied functions that the human mind has as yet been unable to completely analyze its modes of action, and yet it is so perfectly adapted to the end for which it was made, that the possessor, no matter how uneducated, may play upon it for the wonder and gratification of the whole world, provided only that he is endowed with the still more wonderful gift of musical inspiration.

The instrument of which we speak consists of three or

more grand parts. The *larynx* with its so-called vocal cords capable of instigating sounding vibrations. The *lungs*, the cavities containing the air to be set in motion to produce the sounding vibrations. The *respiratory muscles* or levers for applying force to the parts to be set in motion. The *bronchial tubes*, the *trachea*, *pharynx*, *nasal cavities*, and the *bones of the head*, which act as resonators and reflectors.

Each of these factors must be so perfectly used as in their combination to produce all the effects of which the voice is capable.

Defects and shortcomings in vocalization may result from the wrong employment of any or all of these parts.

1st. If the larynx is forced or allowed to remain in such positions as render the efforts of the glottis to produce the desired tones inoperative, except by some complementary wrong action, the result will be, sooner or later, loss of those particular tones. If the muscles which control the position of the larynx and glottis-opening are not used in their integrity, the resulting tone will have a corresponding deficiency.

2d. If the reservoir of air to be set in motion is not allowed to act to its full capacity, the effect will be to lessen the amount of the real sound producer in the column of air.

3d. If the respiratory muscles are not used to the greatest advantage, the result will be that which is always obtained by too short leverage.

4th. If the reflectors are not made to vibrate, the greatest leverage or blast may be employed, with the vocal cords in the necessary position for any particular note of the scale, and the resulting tone will be inaudible at a greater or less distance.

To name the acts necessary for the production of tone, is to formulate the defects and disabilities of the singer.

The perfection of mechanism would be: The larynx immovably fixed in its vertical and longitudinal position for the production of any given note of the scale of that particular voice; the lungs and their continuations in such

condition as would allow them to contain the necessary amount of air to be used in the particular vocal effect desired; the respiratory muscles acting in such a way as to render the leverage perfectly adjustable to the amount of action desired; the column of air, of a certain vertical and longitudinal size, vibrating through given dimensions, must be made to impinge upon the necessary reflectors, and from them to be delivered to the mass of outer air to give rise to sound-conveying waves.

One source of error for the singer and the scientific observer also exists in the wonderful compensating ability of the vocal instrument. Wrong action of one part is compensated for by increased or modified action of other parts, and the resulting imperfect or wrong mechanism is frequently mistaken for the normal one, the progressively destroying effect of which is not seldom discovered, when, unfortunately, wrong scientific theories have been published, or the disabled organ has lost its pleasure-giving or money-gaining attributes. Of the action of some of the parts concerned in vocalization, I shall have almost nothing to say, because much has been already accurately written about them. I must, however, emphasize the mechanism of other parts because they are more frequently disused, and because the substitution of compensating action is less easily detected.

First, I shall speak of the position which the larynx assumes during the singing of the scale, from below upward. What is true of one kind of voice is true of all, since the form of the singing organ is the same for all species of voices; the only variation is in dimension. The same mechanism pertains to all; the direction of the movements must therefore be the same.

There are no muscles peculiar to the soprano larynx,—none which do not exist in the bass organ also.

The nerves are the same. The situation and gross form of the organ are the same in all voices. The only modification is that the smaller instrument is fitted to produce higher-pitched and more slender vocal effects. So true is this, that the observer who has carefully noticed the external

and internal outlines of the singing organs can pronounce with certainty upon the kind of voice for which any organ is adapted.

Here I must state that the notes throughout the scale can be produced in two ways, viz.: by force of blast or by muscular adjustment. This fact cannot be too strongly emphasized.

Many of the most erroneous deductions have been based upon the fact that the successive notes of the scale can be produced by force of blast alone. Those who have experimented with the dead larynx have, all of them, so far as I know, formulated wrong doctrines as to what the action of the living larynx should be. The fact is that the extrinsic and intrinsic muscles of the larynx are quite capable of effecting all the changes in position necessary to produce all the notes of any voice.

The proof is at hand, and can be supplied by any singer among you. Fix upon a note of definite pitch and then think of any note above it. A movement will be felt in the throat which is the adjustment of the larynx. Preserve that new position ; give the slightest impulse by the breath, just enough to set the cords in vibration, and the pitch of the note will correspond with the note which was predetermined by the mind. The accuracy will be in proportion to the cultivation of the singing voice.

Think for a moment how direct and simple this method is, compared to that which calls for an increased force of blast for every higher note. Who could accurately measure beforehand the exact quantity of breath necessary to produce not only the thirty-six or more notes comprising the compass of good voices, but the great number of inharmonic divisions between these tones? And yet this is the very method which is frequently taught, and is the means usually adopted by the untrained singer to enlarge the compass of the voice. From substitution of force of blast for normal muscular adjustment, arises much of the disappointment to which most of those who employ it are doomed.

Another point claims close attention. Nothing can be more unprolific of good results than the directions to " Sing

and feel no parts," or, as some direct, "Sing out, sing out." As well tell the cornet player to play out. The successful singer would say, "Feel all the parts," for through sensation comes knowledge of what is being done. Rather sing in, viz., use the reflectors. Place an india-rubber head over the larynx and what sort of a tone would come from it? Every one admits the value of the hard structure of the head as a voice intensifier, but nowhere does one find in books definite rules for the use of those bony reflectors and cavities. To be sure, it is casually mentioned by one writer that the lower base notes get an increased resonance by being sung in the nose, and another says that the head tones are so-called because they seem to be produced in the head; but I believe that no one could obtain information from such statements which would direct to the philosophical and artistic use of the reflectors. The fact is that the proper use of the reflectors is quite as necessary as that of any portion of the instrument; their non-use is equivalent to the removal of the pavilion of any brass instrument. How to use them is a part of the unwritten law of the art of singing. How they are used by successful singers may be learned from listening to Campanini, and was to be witnessed in the perfect method of Mad. Titiens. It is sufficient to say that every vibration of the glottis must find its corresponding vibration of a reflector, and any note which is emitted without being so reflected will be deficient in one or more vital qualities. The physicist will explain the nature of these deficiencies by means of analytical instruments; the singer has only sensation for his guide.

A few words with respect to the employment of a vibrating column of air of more or less definite vertical length, and I will briefly relate a few cases which exemplify what has already been said.

If the scale is sung from below upward with full tone it will be noticed that a kind of vibratory thrill is experienced in the region of the sternum. With the low tones the situation of the vibration is lower than with the higher tones, but it can be experienced even with the notes above the staff in the tenor and soprano voices. This I believe is

caused by the vibration of a column of air below the glottis, and as its position is largely under the control of the will, I believe that sensation may be used to regulate the dimensions of the column of air to be used under any circumstances of pitch or volume of tone.

One word more with regard to registers, so called, at certain notes of the scale. In all species of voice, changes of quality of tone are noticed. The groups of notes which are all of one quality, are called registers. It may be said, however, that the better the voice, the less noticeable are these differences of tone. These changes in quality of tone are, I believe, due to two causes: changes in position of the larynx and variations in reflection. The register called "falsetto" is due, in my opinion, to an abnormal, imperfect use of the extrinsic and intrinsic laryngeal muscles. The tones are as abnormal in quality and power as the mechanism is imperfect which produces them. Such tones are never to be cultivated in the male or female voice. To cultivate them is equivalent to the deliberate manufacture of an imperfect musical instrument.

In the following case, the above principles found their application for the restoration of the voice. This first case, and each of the others, may be considered as a type, and of many similar.

Case 1.—Miss A——, 16 years old, a strong healthy girl, had formerly an excellent voice of large compass. She is very ambitious and intends to become an operatic artist. She has received vocal instruction during six months from an Italian teacher, a graduate of a foreign conservatory. She has lately noticed that the tones above Fa on the staff were sung with increased difficulty, and that attempts to sing were followed by aching of the throat. Parents, teacher and pupil were alike discouraged. Upon hearing the scale sung it was evident that the attempt to sing the notes above the staff was attended by a straining of the pharyngeal muscles, caused by the endeavor to sing the group of notes above the staff with the laryngeal adjustment proper for the notes below. She was told to allow the larynx to rise, and to sing the note from the new laryngeal position. Instantly, all feeling of effort disappeared, and these upper notes became, after some

months, so easy in their production, and so beautiful that she was advised by an impresario to fit herself for the stage as quickly as possible, for such tones were rarely heard in Europe.

The fault in this case was that the vertical position of the larynx did not correspond to the longitudinal position.

CASE 2.—Miss H. A. Has a voice of beautiful quality which she formerly used for her own gratification and that of her friends. Began to receive instruction in singing two years ago ; was taught a very definite method, but at the end of the year such weakness of tone was experienced at the note D. on the staff and on all above, that she ceased to sing. After some months she became the pupil of another teacher who advised her to consult me for what seemed to be a "sort of paralysis of some throat muscles." The weakness in this case was due to the cultivation of the falsetto production on the note D., a production which, from its seeming ease and resulting flutey quality of tone, is a most seductive one. A few minutes' instruction in the manner of raising the larynx and applying the necessary amount of tension was enough to remove not only the feeling of weakness of the throat, but to inaugurate a way which simply needed practice to insure continually increasing power and vitality of tone. One characteristic of the cultivation of the falsetto tone is the inability to cause it to gain in power ; it remains forever incapable of translating any emotion except that of weakness.

CASE 3.—Mr. W., a tenor singer with a voice of nearly three octaves, complained of frequently disabled throat from attempts at singing, and lately of almost constant slight hoarseness. He was a man of powerful frame, with breathing capacity much greater than common.

The pharynx was congested, the vocal cords somewhat reddened, and pains were complained of in the region of the pillars of the fauces, and aching in the larynx, at times.

It was found that two great defects existed in the production of tone in this case :

The upper tones were obtained by force of blast, and the reflection of tone was a matter of accident.

Misdirected force was used not only to *obtain* the notes, but also to increase their power. The physical strength of the patient enabled him to get by main force what should have been obtained

by nicely adjusted exercise of power, and the result was in proportion to the singer's ability to wrongly and continuously apply this strength.

Complete disuse of the singing voice was enjoined. The congestion of the mucous membrane was treated by the application of various stimulants and astringents, and the return to a healthy condition was not long delayed. A few exercises were given with the object of securing the proper action of the laryngeal muscles (such as a quick reflection of every tone, singing with closed mouth, articulating the vowel by causing it to follow quickly after labial consonants, and insisting that every note of the scale should be produced with exactly the same force of breath).

The result was all that could be desired. The throat has remained well for several years.

The number of cases is large in which suggestions as to the natural use of the voice (and the natural is the artistic) have not only enabled the singer to increase its power, and beauty, and compass, but have caused also the disappearance of pathological conditions, such as congestions of the pharynx, swelling of the membrane covering the arytenoids, congestion of the cords, and physical discomforts of various kinds.