THE PSYCHIC MECHANISM OF THE VOICE IN RELATION TO THE EMOTIONS.*

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THE mechanism of the control of the breath in ordinary speech has become so habitual that, as a rule, one is unconscious of any voluntary effort. It is not so, however, in the arts of oratory, acting, and singing, the conscious management of the breath being of fundamental importance in the expression of the emotions and passions. The correct management of the breathing in the actual technique of vocalization should become a habit, so organized mentally that after a time there is no need to devote conscious attention to the technique of perfect vocalization and clear diction. This fundamental part of the art of dramatic singing can be acquired by careful instruction and practice, so that after a time conscious effort is no longer necessary; for every state of consciousness which is habitually repeated leaves an organic impression on the brain by virtue of which that same state may be reproduced more readily, at any future time, in response to a suggestion fitted to excite it. We can, therefore, readily understand how very difficult it is to cure a bad habit of voice production or diction when once it has become mentally organized; the same applies to any imperfection in phrasing a particular passage in a song. Moreover, consciousness of the difficulty causes nervous apprehension, and a mental struggle may ensue between the conscious right method of rendering and the subconscious habitual wrong method which may make itself apparent to the audience by a faltering and imperfect technique or even a complete breakdown.

A good singer not only pays particular attention to the practising of scales and exercises in order to acquire the habit of correct intonation, but he makes himself thoroughly familiar with the phrasing of difficult passages in classical music as practised by the great master singers, such as Santley and Sims Reeves, for experience tells him that this familiarity will be a mine of wealth which he can constantly utilize not only in the conscious rendering of the particular music in which the passage occurs, but also consciously and unconsciously in learning a new song or operatic part. Not until he has mastered the whole technique of correct vocalization, diction, and memorizing of the words is consciousness relieved of its duties as a watchful censor to prevent mistakes to such a degree that he can devote his attention to the production of all those fine shades of affective tone in the modulation of the voice which are so essential for dramatic singing. The actor and dramatic singer voluntarily expresses the emotions and passions by the conscious control of the force and mode of escape of the breath—for example, the loud outburst of anger and vengeance, the quiver or tremor of fear, the halt of terror, the sob of grief, the sigh of despair, the variations of sympathetic tone and loudness to express the tender emotions of pity and love; and the joyful outburst, tinged with anger, of passionate love, the laughter of joy, the rollicking laugh of mirth, the hiss and sardonic laughter of hatred and jealousy with which he clothes articulate language is the supreme effort of his art.

Sir Charles Bell, who discovered the respiratory system of nerves, pointed out how the lungs from being in the lower animals merely the means of oxygenating the blood, become in the higher animals utilized in the art of expelling air from the body for the production of audible sounds—the elements of human voice and speech.

Likewise, in his great work on the expression of the emotions, he first drew attention to the influence which powerful emotions exercise upon the organs of respiration, including the countenance—for example, the dilated nostrils in anger. Again, he says, when the voice suffers interruption and falters, and the face, neck, and chest are animated by strong passion working from within the breast, language exerts its most commanding influence. But is it necessary or advisable

for the great artist to feel these emotions and passions strongly? He must feel them to a certain degree, for if he expresses them consciously he *must* feel them, and the degree to which he feels them is largely a matter of individual and racial temperament. Darwin pointed out that by voluntarily assuming an expression of the countenance and bodily attitude which an emotion or passion naturally excites, the feeling of that emotion or passion occurs to some degree. But, as Maudsley in his *Mental Physiology* points out, there is a fallacy in the experiment, as, in order to produce the suitable movements of expression, we are compelled to imagine the emotion or passion; but, after allowance has been made for this cause of error, there is still a sufficient reason to believe that the feeling of the emotion or passion is intensified and made more definite by the bodily action. The orator, the actor, or the dramatic singer can consciously assume the expression and bodily action suited to the vocal part, and the feeling tone will be intensified in the voice whether the words are spoken or sung. Every true artist has aesthetic feeling; but he must exercise control of this feeling, for an emotion strongly felt is liable to produce commotion in consciousness and thus interfere with its action, as the censor controlling the automatic subconscious psychic mechanism upon which the successful vocal technique of the artist depends. Such loss of control is very liable to cause imperfections of vocalization, especially faulty intonation, for in anger the pitch of the voice naturally tends to rise, and in fear to fall and the voice to choke. Moreover, he is liable to forget the words. Rather he should aim at keeping a control over his feelings so that his technique does not suffer, and yet be able to arouse in his audience the emotions which he expresses. Thus the art of dramatic singing and acting lies in concealing the art, and the master singer, like the great actor, by the modulation of the voice, by his expression and gestures, feeling himself little or no organic internal disturbance, the essential part of a strong emotion, can nevertheless by his art arouse in the expectant audience that part of the emotion which he does not portray, and probably does not feel, at any rate intensely—namely, the quickening or slowing of the pulse, and respiration, the emotional thrill or shudder of the spine, pallor and coldness or redness and warmth of the skin, tears, and various other manifestations of bodily disturbance. You are all familiar with the passage in *Hamlet* in illustration of this point:

Oh what a rogue and peasant slave am I!
Is it not monstrous that this player here,
But in a fiction, in a dream of passion,
Could force his soul so to his own conceit
That from her working all his visage wann'd;
Tears in his eyes, distraction in's aspect,
A broken voice, and his whole function suiting
With forms to his conceit? And all for nothing!
For Hecuba!
What's Hecuba to him, or he to Hecuba,
That he should weep for her?

I shall be very interested to hear some of the members of the society on this point. How far they feel the emotions and passions they portray in song, facial expression, gesture and bodily attitudes, and how far the assumption of these outward and visible manifestations assist them in the expression of the affective tone in the voice.

MUTISM.

In my experience at the military hospitals a number of remarkable cases have come under my care illustrating several points in connexion with the psychic mechanism of the voice in relation to the emotions. A large number of men suffering with shell-shock, and having no visible signs of injury, have lost their speech, and yet are quite able to write a lucid account of their experiences. This mutism is really an exaggerated form of hysterical aphonia. A woman owing to an emotional shock may lose her voice; she can, however, as a rule whisper. These men cannot whisper or produce any audible sound. They occasionally show the bodily signs of extreme terror, and in a very few severe cases one is reminded of the lines in Spenser's "*Faerie Queen*":

He answered nought at all, but adding new fear to his
first amazement,
Staring wide with stony eyes and heartless hollow hue
Astonished stood, as one who had espy'd
Infernal furies with their chains unty'd.

* A paper read before the Society of English Singers on November 17th, 1915, the President, Sir Charles V. Stanford, in the chair.

We may ask, Why should these men whose silent thoughts are perfect, for they comprehend all that is said to them, and are able to express their thoughts and judgements in writing, be unable to speak? The cause of the mutism is clearly not due to an intellectual defect, nor is it due to volitional inhibition of language in silent thought. Hearing, the primary incitation to vocalization and speech, may be unaffected, yet they are unable to speak. They cannot even whisper, cough, whistle, or laugh aloud. Many of these poor fellows, who are unable to speak voluntarily, yet call out in their dreams expressions they have used in battle and trench warfare. Sometimes this is followed by return of speech, but more often not. There has been a severe emotional shock. Is the fear effect still operating on the mind, full as it is of the recollection of the terrifying experiences of the trench warfare they have been engaged in? The frequency with which these cases of shell-shock suffer with terrifying dreams at night, and occasionally even during the day in the half-waking state, points to the conclusion that the emotional shock is exercising an effect on the mind by thoughts continually reverting to terrifying experiences they have gone through at the front; and probably their continuous influence on the subconscious mind accounts partially, if not entirely, for the terrified or vacant look of depression on the face, the cold, blue hands, feeble pulse and respiration, and the sweats and tremors which the severer cases manifest. As these dreams cease to disturb sleep, so these visible physical manifestations of fear pass off and give place to the sweet unconscious quiet of the mind of normal sleep.

The sudden and varied manner in which these mute patients recover their speech is indicative of a refractory condition of respiration in its function of voluntary production of audible sounds in all forms, even the cough, cry of pain, or the audible sound of explosive laughter, for when tickled so as to produce the full measure of the facial expression of laughter no sound comes. Some of these men, however, have suddenly recovered their speech by crying out when unexpectedly feeling physical or mental pain—for example, one man cried out when some boiling tea was spilt over him, another when he was held down and his feet tickled, others have shouted out in their terrifying dreams, and awaked to find themselves speaking, and have continued speaking aloud to be sure that they have recovered. In most cases it is the sudden and unexpected which restores the function of the vocal mechanism. Surprise is an essential element. Thus, a sergeant saw some soldiers larking in a punt, and he suddenly shouted out, "You will be over." Another recovered his speech when a Canadian, who bet he would make him speak, quite suddenly surprised him by seizing him by the throat. He called out, "Leave off." Occasionally the stimulus of a well known chorus has broken down the refractory condition in the psychic mechanism of the voice and the mute has surprised himself and others by finding himself singing. As depressing emotional conditions, including terror arising from the awful scenes of death, exhaustion, and fatigue, play an important part in aggravating the shock effects of shell fire and maintaining subsequently a more or less transitory functional neurosis in the form of deafness, blindness, paralysis, tremors, and mutism, we may suppose the sudden emotional excitement, especially if it be connected with the preservation of the individual, is followed by such a powerful stimulating reaction on these depressed nervous centres that the refractory phase established in them by the shock is suddenly overcome. I believe this mutism is due primarily to an inhibitory functional paralysis of the voluntary cerebral nervous centres which control the management of the breath and direct its mode of escape through the glottis, mouth and nostrils, for I have seen many cases where they have involuntarily and unconsciously in their dreams talked and uttered cries and swears, but in their conscious state were unable, not only to talk and sing, but to whisper, whistle, utter a cry, cough, or laugh aloud. The worst cases were unable even to blow a candle out. I examined one with the x rays and found the diaphragm hardly moved in respiration; he could not expand the chest necessary to fill the bellows. Latterly he has acquired this power; he can now take a fairly deep inspiration, but yet he cannot talk or even whisper, cry, or laugh aloud; he blows a candle out with the mouth open instead of moulding the lips. Therefore in his case there is an in-

hibition of the whole voluntary mechanism of audible sound production. Now in the cortex cerebri the parts controlling the movements of the lips, the tongue, the jaws, the larynx and soft palate are all contiguous and work together; this, then, is the voluntary nervous mechanism which controls the mode of escape of the breath for the production of audible sounds, whether it be a simple voluntary cry for help or the most complex vocalization. Experiments show that abductors and adductors of the two vocal cords are equally represented in both hemispheres; that there is bilateral representation of the movements of the muscles of the two halves of the larynx. A part of the cerebrum (great brain) controls the voluntary nervous mechanism of the breath in the production of ordinary sounds, and this is represented in both halves of the brain, for the muscles of the two sides of the body which control the breath and phonation never work independently; but the mechanism of phonation cannot say to the breath mechanism, "I have no need of thee," for they are interdependent in the production of audible sound—which reminds me of the story of the organist and the organ-blower. The latter greeted the former one Sabbath morning, "We are going to play as a voluntary, 'O rest in the Lord.'" "We indeed!" said the organist. "Yes, we," said the blower. The service was ended; no sound came from the organ. "Is it *we*?" was heard. "Yes, confound you!"

SYMBOLIC LANGUAGE AND SOCIAL HERITAGE.

Symbolic language is a social heritage in which auditory and visual symbols have been used, especially by civilized races, to express judgements and feelings. The fact that in all right-handed people it is represented in the left hemisphere shows that it has developed with the specialization of use of the right hand. The feeling tone in symbolic language largely depends upon gesture, facial expression, and modulation of the voice. The mere utterance of articulate language, whether in speech or song, fails to express the emotions and passions, however clear the diction may be. Savages and deaf-mutes are able by mimic and gesture to express the emotions and passions connected with the appetites and desires. This universal language is inborn and not acquired; it is understood by all peoples, as it has its roots in the preservation of the individual and the species; it is not acquired by imitation, like articulate language, but is dependent upon an instinctive pre-organized mechanism in the central nervous system. The effect of emotional shock in the production of mutism is upon this preorganized mechanism which controls the force and mode of escape of the breath in the expression of the emotions and passions. In support of the view of the existence of a preorganized mechanism, I may mention the fact pointed out by Galton in his *History of Twins*—namely, that whereas similar handwriting was seldom observed, similar vocal intonation was usual in identical twins brought up in a different environment. This supports the view that the affective tone of the voice is in great measure inborn and correlated with the temper of the individual.

TERRIFYING DREAMS.

The terror sometimes observed in soldiers suffering from "shell-shock" is contemplative fear; it is fear made more or less permanent by the imagination fixing in the memory past terrifying experiences, repressed in great measure by conscious activity of the mind during the waking state, but evident in the dreams which afflict nearly all these soldiers suffering from "shell-shock" and trench warfare. Shakespeare has not only in his characters shown how a passion steals into the soul, so that it becomes the sole tyrant of the desires, but he has clearly indicated how dreams influence the minds of men, and how they are based upon past experiences. Thus Mercutio in the description of Queen Mab refers to the soldiers' dreams in the following lines, which are as true to-day as when Shakespeare wrote them:

Sometimes she driveth o'er a soldier's neck,
And then dreams he of cutting foreign throats,
Of breaches, ambuscadoes, Spanish blades,
Of healths five fathom deep; and then anon
Drums in his ear; at which he starts and wakes;
And, being thus frightened, swears a prayer or two,
And sleeps again.

FIXATION OF REPEATED EXPERIENCES IN SONG.

This fixation and organization of repeated experiences in the mind is shown in other ways—for example, a song that has been sung a number of times only requires the first word or note for it to be continued to the finish without any effort of consciousness, the last note or word uttered serving as the appropriate stimulus of the next; as in an instinct, we have what is termed a chain reflex. This was strikingly exemplified in a soldier under my care who suffered with a bullet wound of the brain. The bullet entered the left side of the head, passing through the part of the brain which controls articulate speech, also damaging the structures which control voluntarily the muscles of the right half of the body. It passed through the right orbit destroying the eye, it also in its passage cut the optic nerve of the left eye through, so that he was made totally blind. This poor fellow was very cheerful, comprehended all that was said to him; thus, by feeling my tunic sleeve he recognized my rank, for when asked was I a Captain he expressed negation by "oot," Colonel also by "oot," meaning "no," and Major by "ah." He obeyed all commands. Now, curiously enough, although he was unable to express judgements only by "ah" and "oot," which correspond to yes and no, he was able to sing several songs through without difficulty provided the first word or bar of music was given. Thus I stood beside him and hummed "'Tis a long way," and immediately he started the well-known chorus of "Tipperary," winding up with "Are we downhearted? No!" I then said, "Say Tipperary, Tom." He replied, "oot," and he was unable to utter any of the words. It must be concluded either that the song had been repeated so often as to have become organized in both halves of the brain or in sub-cortical lower centres. There is reason to believe that whereas articulate speech is primarily represented in the left hemisphere, phonation is represented equally in both halves of the brain, and therefore music may be also; consequently this may account for the fact that the music and the words of the songs he could sing were organized by frequent repetition in both halves of the brain, especially when it stirs the emotions. It is well known how long melodies can be retained in the memory with comparative ease by countless men and women if words are attached to the tunes. The tune may revive the words, or the converse. A month later, when I saw him, he was able to walk and speak. Thus, given a half-crown, he felt it, then tried the rim for milling on his teeth, and said, "Two shilling bit." When asked again, he corrected it with "Half-crown." Given a penny, he tested it in the same way, and the unpleasant taste left in his mouth caused him to throw it down with all the signs of disgust, saying at the same time, "Copper."

THE PSYCHIC AND PHYSIOLOGICAL MECHANISMS INTERDEPENDENT.

For a perfect performance consciousness should only be employed as the Censor (attention) to watch over and prevent the occurrence of imperfections in the technique of the vocal mechanism, whether it be the control of the breath, articulation, phonation, or the memory of the words. When the technique by constant practice of right methods has become perfect and organized in the sub-conscious memory as a fixed habit, the dramatic singer can then devote his whole attention to that portion of his art upon which his success will largely depend, namely, the expression of the emotions and passions by voice, countenance, and gesture. Not only will the successful artist be able to interpret the dramatic feeling of the composer, but he may also colour the part with his own personality, by an individual and original feeling tone, which is afterwards associated with his name. There are many happy mortals who have an inborn disposition to the sense of rhythm and harmony, and start well provided with the raw material necessary for the development of the psychic mechanism of the voice. They are what is termed musical, and, provided they possess a good physiological mechanism, are born singers, bound to succeed if they are properly instructed. There is nothing so deadly dull as monotony of tone in an orator or singer. Pleasure of listening comes from sequence of sounds, such as form musical phrases and cadences. Song in this respect has an advantage over speech because a much

wider range of tones is employed. But there must be a sympathetic quality in the voice due to emotional influence.

A perfect psychic mechanism is as necessary as the physiological mechanism for the production of perfect vocalization, especially for dramatic singing. A person, on the one hand, may be endowed with a grand vocal organ, but be a failure as a singer on account of incorrect intonation, of uncertain rhythm or imperfect diction; on the other hand, a person only endowed with a comparatively poor vocal instrument, but knowing how to use it to the best advantage, is able to charm his audience; incapable of vigorous sound production he makes up for lack of power by correct phrasing and emotional expression. We see, then, that the combination of a perfect physiological and psychological mechanism is essential for successful dramatic singing, the chief attributes of which are: (1) Control of the breath, adequate volume, sustaining power, equality in the force of expulsion of air to avoid an unpleasant vibrato, and capability of producing and sustaining loud or soft tones throughout the register. (2) Compass or range of voice of not less than two octaves with adequate control of mental perception of the sounds of the necessary variation in tension of the laryngeal muscles for correct intonation. (3) Rich quality or timbre, due partly to the construction of the resonator, but in great measure to its proper use under the control of the will. (4) The power to express the emotions and arouse the feelings of the audience. This may be acquired, but largely depends upon the inborn artistic temperament. Something is lacking in a performance, however perfect the vocalization as regards intonation and quality, if it fails to arouse enthusiasm or to stir up the feelings of an audience by the expression of emotion or passion, through the mentality of the singer.

Undoubtedly the effects produced upon the mind by song largely depend upon circumstances and surroundings, also upon the association of ideas. Thus I was never more stirred emotionally by the human voice than upon hearing a mad Frenchman sing at my request the *Marseillaise*. Previously, when talking to him, his eyes had lacked lustre and his physiognomy was expressionless; but when this broad-chested, six-foot, burly, black-bearded maniac rolled out in a magnificent full-chested baritone voice the song that has stirred the emotions and passions of millions to their deepest depth, and aroused in some hope, in others despair, as he made the building ring with, "*Aux armes, citoyens, formez vos bataillons*," I felt an emotional thrill down the spine and a gulp in the throat, while the heart and respirations for an instant stayed in their rhythmical course. Not only was I stirred by the effect of the sounds heard, but by the change in the personality of the singer. It awakened in my mind the scenes of the French Revolution so vividly described by Carlyle. The man's facial expression and whole personality suddenly appeared changed; he planted his foot firmly forward on the ground, striking the attitude of a man carrying a musket, a flag, or a pike; his eyes gleamed with fire, and the lack-lustre expression had changed to one of delirious excitement. A pike in his hand and a red cap on his head would have completed the picture of a *sansculotte*. Dramatic song that does not evoke emotional response in the audience, therefore, is *vox et praeterea nihil*.

THE second part of the annual report of the New York Rockefeller Foundation, issued on September 25th, gives an account of the work of the Rockefeller War Relief Commission in Europe from August 14th, 1914, to January 1st, 1915. Besides vast quantities of food and clothing sent to Belgium, the Foundation, within a fortnight of the outbreak of the war, made a grant of money to enable Dr. Alexis Carrel, of the Rockefeller Institute, who was mobilized as a medical officer of the French army, to purchase antimeningitis serum and antidysentery serum. Funds were also provided to be used by the American Red Cross in sending doctors and nurses to Europe. A commission was sent to Belgium and Holland to investigate and report on the organizations for relief in those countries. This commission afterwards visited Poland and Siberia for the like purpose. The Foundation further appropriated funds at the rate of £4,000 a year for the professors of scientific subjects who had been obliged to abandon their laboratories and who had been provided with opportunities of carrying on their work in England.