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RESPIRATORY CONTROL,

*The Breath in Singing and Speaking.*

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JOHN HOWARD.

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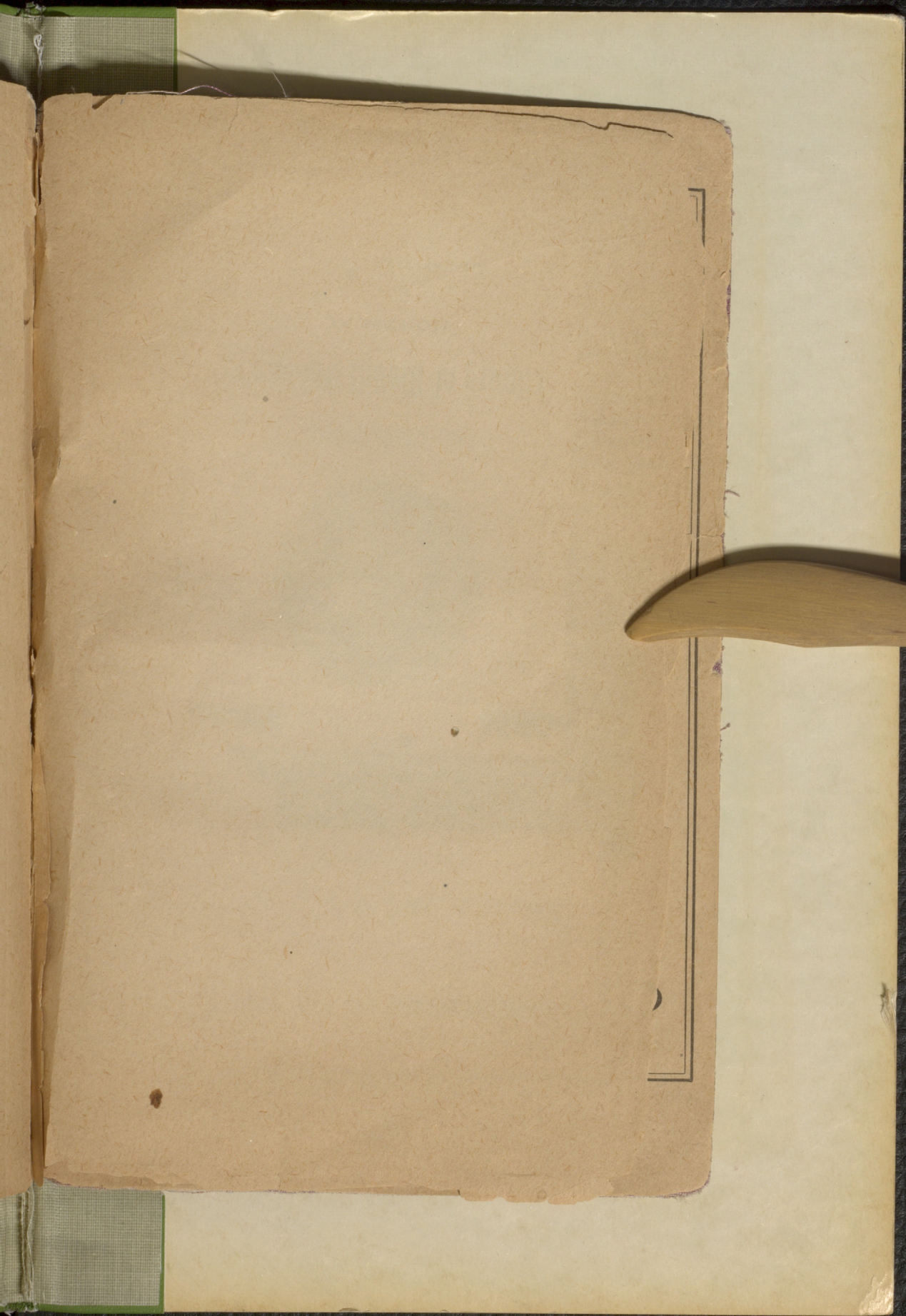


















# RESPIRATORY CONTROL

FOR VOCAL PURPOSES,

INSPIRATION—EXPIRATION.

BY

JOHN HOWARD.

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ALBANY, N. Y.:  
EDGAR S. WERNER,  
The Voice Press,  
1882.

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## RESPIRATORY CONTROL.

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### PART FIRST. — INSPIRATION.

Read before the Music Teachers' National Association at Chicago, July 6th, 1882, advocating *clavicular* inhalation, as opposed to diaphragmatic. This part is filled with exercises so plainly described that each reader may himself perform them and gain personal benefit.

### PART SECOND. — EXPIRATION.

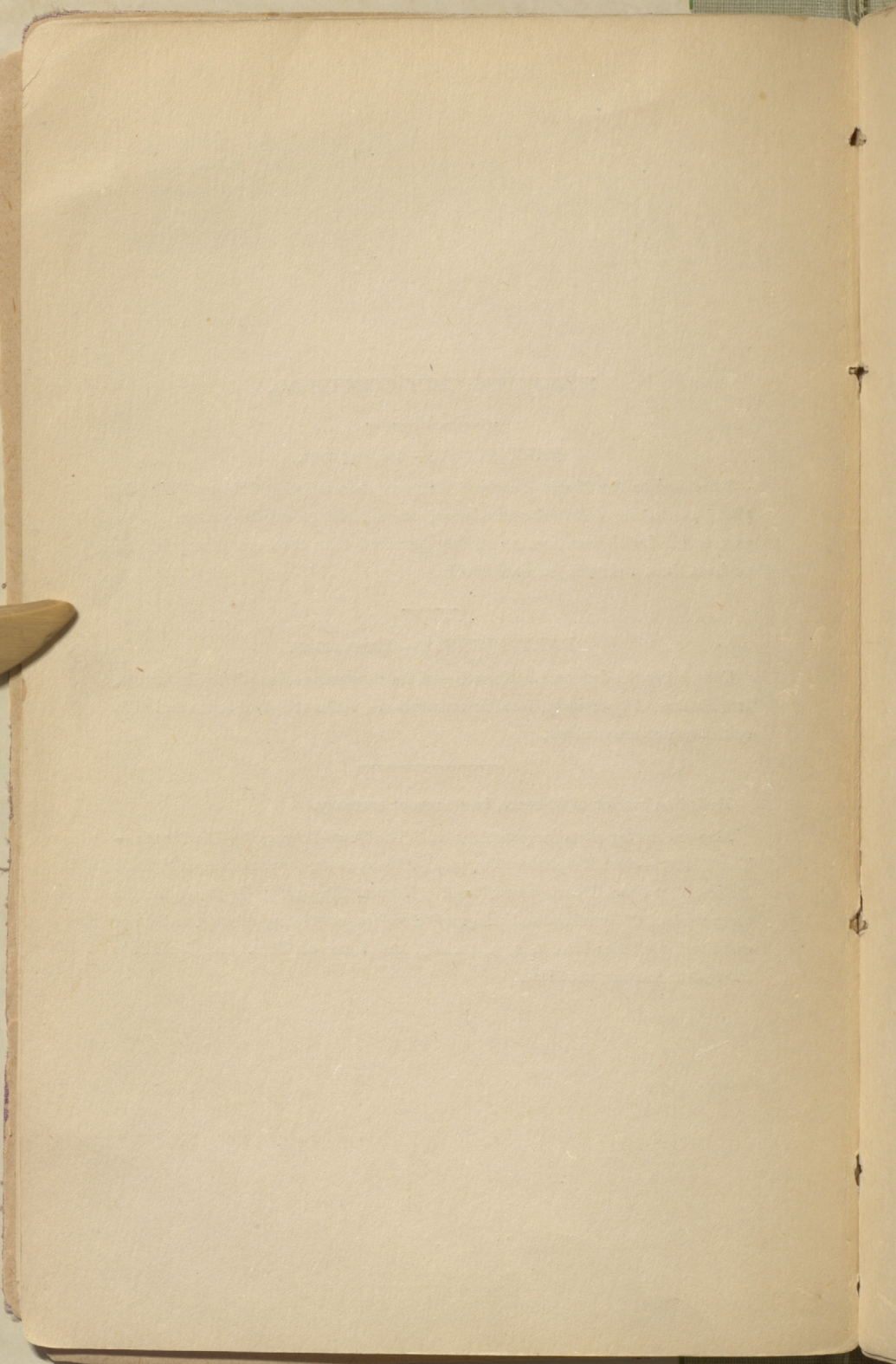
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## P R E F A C E .

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This little book has been written with a double object in view :

The writer sincerely believes that he has new and important physiological truths to make known, notably that the diaphragm should be dismissed from any active participation in the act of Inspiration ; and that it should be consciously, voluntarily employed as an important agent of lung-compressing force in Expiration. Besides this, he has found a constant need of some explanation of the respiratory process, so simply expressed and so familiarly illustrated that his pupils could, with little technical knowledge, understand *at a single reading* the action of the principal respiratory muscles, and learn to mentally picture their efforts and movements during his exercises. Usually each pupil must hear the plainest description at least three or four times, before the unfamiliar bodily parts can be even roughly imagined and their inter-working fairly well conceived. This is true even of the brightest and readiest of listeners, unless they have had the special training of a physician to quickly grasp the meaning of a new diagram, drawn or described.

In this must be found the full excuse for the simple, if not silly, illustrations employed. They frequently have no



merit except to afford the opportunity of saying the same thing twice in different ways. The repetition will help and so will the comparison of the familiar object with the strangely unfamiliar human frame.

So the reader is earnestly urged to picture everything vividly, to pause until a new mental image is well established before proceeding further. Practically, this is the best way, if not the only good way. He will assuredly find such a mental witnessing of the movements of his respiratory organs of wonderful value if he seeks to improve the respiratory support of his voice.

JOHN HOWARD,  
15 East 14th Street, New York city.



## PART FIRST.

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### CLAVICULAR BREATHING.

Great interest has lately been manifested in the question of breathing for vocal purposes. Rival papers have given conflicting opinions. Dr. Cronin who, turning a blind eye upon Mrs. O'Leary's fiery experience,\* dropped the first lucifer which kindled this literary conflagration, has been clearly illuminated if not singed for his rashness. A voice, *THE VOICE*, from Albany, has spoken many words on the side of deep breathing, of abdominal breathing, of abdominal and costal breathing combined — not a syllable in defence of clavicular breathing.

There cannot exist the most shadowy doubt that the heavy weight of authorities tilts the clavicular side of the balance high in the air. Weiss advocates abdominal breathing. Mandl argues famously from the bird with two larynges and no diaphragm, or at best a rudimentary one to man with a single larynx and a powerful midriff, and proves that he can be visionary. Plumptre, Behnke, in short, nearly all who are now addressing the vocal public upon vocal topics, charge their words with the breath drawn from the lower sides or from the abdomen, and confidently affirm that the clavicles or collar-bones should be as immovable as the Chinese wall. The only exception is Dr. Wing, of Boston, who has pamphletted a mild protest against abdominal breathing. He asserts with the most sincere conviction

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\* Referring to the Chicago fire.



that abdominal breathing, as it is practiced in modern Athens, has helped to swell the list of his lady patients. But his restrictions apply more to expiration than to inspiration.

#### DEFINITION OF SUBJECT.

It is well, therefore, to define the question before discussing it, and the definition given by Browne, Mandl and others will be accepted, who confine the subject strictly to *inspiration*, to modes of filling the lungs, not of emptying them.

#### THREE INSPIRATORY MODES.

There are three distinct modes :

(I.) The *abdominal* mode, which expands the abdomen by the contraction of the *diaphragm*.

(II.) The combined *abdominal* and *costal* mode, which expands both the abdomen by the contraction of the diaphragm, and the lower ribs by the contraction of the external intercostal and other muscles.

(III.) The *clavicular* mode, which raises the collar-bones by the contraction of many muscles acting, in the main, not directly upon the collar-bones themselves but upon the sternum or breastbone and the upper ribs; for any upward movement of these parts must also move the closely connected collar-bones. Try for yourselves, by passing a finger downward between the collar and the neck on one side until it rests against both the upper rib and the collar-bone, or the highest bone felt. Make all possible efforts to lift the rib without also moving the clavicle; you will not succeed. Then introduce the finger directly in front, and you will find that the sternum or breastbone is actually bound to the collar-bones and could have no independent movement.



Conversely, whatever muscles raise the collar-bones must raise the upper ribs. The principal muscles are the *scaleni*, extending from the neck to the two higher ribs; the *serrati* muscles, the *trapezius*, *subclavii*, *sterno-mastoid*, *rhomboid* muscles, even the *great serrati* muscles which extend from the shoulder-blade over the eight upper ribs. Many others also assist, but they need not now be specified. You need only notice the great number and great power of these clavicle-raising muscles. They extend from the back of the head over the upper part of the back, from the shoulder-blade over both chest and back, from the neck to the upper ribs; nearly the whole surface of the upper chest and of the entire back and sides is covered with muscles which cannot contract without raising the clavicles or collar-bones.

Anatomical discussions are confessedly as dry as the bones which form so large a part of their subject matter. Physiological disputes, though livelier and more varied, are fascinating only to the specialist. Yet this skeleton of ours must be embraced in its usual embraceable region, and it may be suggested that every reader may with advantage experiment for himself, always with his own waist, as certain movements or efforts are being explained. By this plan the statements made can be proved on the moment, and a more personal interest be maintained.

#### ABDOMINAL INSPIRATION.

But few words and a single exercise will be required to condemn that mode of filling the lungs which bears the abdomen outward by the isolated contraction of the diaphragm, the mode called *abdominal*.

#### EXPERIMENT I.

*Clasp the sides about half way from the hips to the arm-pits and*



*a little toward the back. Then expand or bear forward the abdomen while you inhale breath through the nearly closed lips, as in vulgarly sipping too hot soup or trying to whistle with indrawn breath.*

Nearly every one will feel the hands move outward in some degree. But that expanding movement of the ribs is not caused by the diaphragm. Try again and resolutely check all outward movement of the ribs, thus limiting the movement to the abdomen. Even now you may not be confining your effort entirely to the diaphragm, for Kirke plausibly affirms that the lower ribs would be actually drawn inward by the diaphragm, were not such movements prevented by the external intercostal muscles. But, however that may be, notice the exceedingly small amount of breath that can be thus sipped in through the lips. Try to sing with such a breath and see how quickly you would be forced to renew it.

#### FORM OF THE DIAPHRAGM.

As the whole question of inspiration turns so largely upon the active effort or passive motion of the diaphragm, its form and position must be explained. This huge muscle, or combination of muscular fibres, rises like a dome within the chest. The abdomen, speaking roughly, lies below this dome-like ceiling, the lungs lie above, while the circumference of the dome is attached to the ribs all around the body, just as the arching ceiling of a circular room would be attached to the walls. As the dome-like muscle contracts, it shrinks to or toward the form of a plane and pushes the viscera, or contents of the abdomen, downward; and, as the muscular front and sides of the abdomen are the only



parts that can yield to make room for the viscera thus displaced, the abdomen is expanded or borne outward.

But those singing masters and physiologists who have advocated strict diaphragmatic breath-taking, have entirely miscalculated its inspiratory power. The dome is not high enough, its contractile extent is not great enough to make room for the one hundred or one hundred and twenty additional cubic inches which the vocalist or public speaker requires. This fact has been already mentioned and the simple experiment you have just made is its proof.

#### RESPIRATORY BREATH—VOCAL BREATH.

For the vocalist or public speaker breathes under peculiar conditions. Every singer knows how cautiously he must avoid getting out of breath before the end of a long word or a short passage. The sentence, "I know that my Redeemer liveth," is usually broken in upon by an awkward gasp between the "my" and the "Redeemer," the pronoun and its own substantive. Training is required to survive to the end of an ordinary run in one of Marchesi's or Bordogni's vocalizes. Every preceptor or choir-singer knows the hydraulic nature of a polysyllabic long metre line.

*Clavicular Breathing Gains the Largest Volume of Breath.*— There should not exist a semblance of doubt that clavicular breathing affords the largest reservoir for breath. I have read with unfeigned astonishment the statements of some of our English friends that abdominal breathing or abdominal-costal breathing can make room for a larger volume of breath than clavicular breathing. Reverse the statement and the truth will be exactly told. I cannot believe that they have approached the

*A singer should apply the concept of business to his respiration— when one has money in the bank it is so much wiser to spend only the interest & save the capital.*



subject with that spirit of utter recklessness of authorities which must be felt by any inquirer for physiological truths. The experimenter must hold himself ready to dismount at an instant's notice from the hobby of a life time, to perjure his scientific fathers and forefathers without delay and without remorse. A few personal trials of the different modes will indicate that clavicular breathing does command the most breath: —

#### EXPERIMENT II.

*Again insert a finger between the collar and the neck at one side, and bear it downward until it touches the highest bone, the collar-bone. Then inhale breath through the nostrils by bearing the abdomen forward, and also expanding the sides as far as possible without raising the bone under your finger. Hold yourself in this expanded form for an instant; then suddenly relax all effort and sharply notice the amount of breath that pours out through the nostrils and the duration of its flow.*

The volume of escaping air will be the exact quantity that was drawn into the lungs by the mode called abdominal-costal breathing.

#### EXPERIMENT III.

*Now touch the collar-bone on one side again and inhale breath, heaving or raising the chest and with it the clavicle, allowing the sides and back to also rise a little, just so much indeed as will allow the easiest rising of the collar-bone. Let the abdomen be free from all effort, but observe that it is somewhat flattened by the simple lengthening or drawing out of the upper frame. Hold yourself in this raised form for an instant; then suddenly collapse and wonder at the far greater volume of breath sent through the nostrils than was discharged by the former mode. For no one can conceal from*



himself the fact that nearly twice as much air escapes during the latter collapse—the collapse from the inspiratory effort which lifted the clavicle—proving beyond question that the clavicular mode made room in the lungs for nearly twice as much breath as the other modes.

It may be suspected that those who have found clavicular breathing less effective have made some additional muscular efforts to check the free expansion of the ribs. This may easily be done in more than one way:—If you try to entirely check the rising of the back and shoulders while you lift the chest, you will feel that the movement is stiff, that it requires much effort and that comparatively little breath is inhaled.

And there is good reason for this failure. The ribs encircle not only the front but the back of the upper frame. Their pivoting point is, indeed, at the spine in the middle of the back; but every part of each rib surely rises and expands if allowed free movement, the parts nearer the spine less than the parts in front, but all parts positively and perceptibly to the touch, as a single trial will show:—

#### EXPERIMENT IV.

*Clasp the sides of the back as high as you easily can reach, and inhale breath by heaving the chest, while you check all movement of the ribs beneath the hands. You will not imbibe a large amount of air, for you are making an unnatural effort by actually twisting the front parts of the ribs upward, and holding unmoved the rear part.*

*Now take a new breath, and allow the rear parts of the ribs under your hands to rise freely. They will also be carried outward, and expand the cavity of the lungs at the back of the chest as well as at the front, though in less degree, and far more air will be admitted.*



*False Clavicular Breathing.*— Another equally faulty way of testing the clavicular mode is to bear the abdomen outward at the same time that the clavicle is raised. If you will make the trial, you will find that uncomfortable straining is induced, and that the volume of air imbibed is no greater than by abdominal-costal breathing.

#### WHY THE DIAPHRAGM MUST BE RELAXED DURING CLAVICULAR BREATHING.

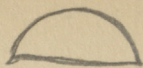
It would indeed seem reasonable to suppose that the lungs could be more completely filled by removing from them all movable boundaries, those which enclose them below as well as above and at the sides. Surely the contraction of the diaphragm would shrink and sink the arching floor to or toward a plane, thus removing from the lungs their lower boundary, and affording more space for air. And why should this enlargement be neglected when the ribs which bound the sides and summit of the lungs are being expanded and raised ?

This difficulty will be made clear if you will consider that the lungs are enlarged by the simple change of the diaphragm's shape from a dome to a plane, and that it cannot matter whether the muscle is active or passive, contracting or left relaxed, if the plane is equally well secured.

#### CLAVICULAR BREATHING FLATTENS THE DIAPHRAGM.

And it can be clearly proved that the lower boundary of the lungs, the diaphragm, even though it remains wholly relaxed, is flattened toward the form of a plane by the expansion and rising of the ribs which attend clavicular breathing. Let this be proved





by a homely illustration, for upon this point turns the whole question.

Suppose a rubber foot-ball has been cut in two, and that the upper half represents the diaphragm. How can its curved form be transformed into a flat plane? If the rubber had the power of shrinking or shortening, as muscles have, it could shrink itself flat, and in that case the circumference of the ball, the part where it had been cut from the other half, would remain the same. This will represent the change of the diaphragm when its muscular fibres are contracting and flattening its arch.

But, mark well, the half foot-ball can be flattened to a plane in another way. The circumference, where it has been cut away from the other half of the ball, may be pulled outward and upward until the half-ball becomes a plane, just as flat as it was made by the shrinking plan, and with the difference that the plane would be much broader than by the shrinking plan.

Does not this exactly represent the change of form which the diaphragm makes during clavicular breathing? Its outer edge or circumference, corresponding to the cut edge of the half-ball, is attached nearly all the way around to the ribs. And the ribs, when expanded and raised during clavicular breathing, pull this circumference out and up exactly as the edges of the half-ball were pulled out and pulled up, to bring it to the horizontal form by pulling out the brim.

The objection will at once be made that this upward pulling of the ribs and of the diaphragm's circumference will diminish instead of enlarging the cavity which contains the lungs, for although the centre of the diaphragm, the highest part of the dome, will not be moved, yet all of its extent, except this central point, will be drawn upward against the lungs and reduce



their capacity instead of enlarging it. This would, indeed, be a serious objection were it not answerable in no less than two ways :

(I.) The crowding upward upon the lungs is more than compensated by the new space they gain from the expansion, the enlarging of the diaphragm. Consider how much broader would be the half foot-ball if its circumference were so enlarged that the half sphere would be stretched out into a plane. The diaphragm would similarly be made broader and afford more space for the base of the lungs to expand from side to side.

(II.) The height of the lungs would not be lessened by the rising of the circumference of the diaphragm, for clavicular breathing raises the whole of the surrounding frame-work of the ribs, not only the part which encloses the lower portion of the lungs but the parts enclosing their upper portion and the parts directly above them. The lungs have as long an up-and-down extension as before ; therefore in no conceivable direction is their measurement diminished.

#### ADVANTAGES.

And what immense advantages have been gained ! The ribs have been allowed their natural movement. They are so pivoted upon the spine that as they move outward they must move upward. Clavicular breathing assists the upward as well as the outward movement. Indeed, one cannot be aided without aiding the other.

Clavicular breathing gains a larger expansion even of those boundaries of the lungs which its opponents believe should be moved ; for the lower ribs can expand more freely if the collar-bones are allowed their natural upward movement.



## EXPERIMENT V.

To prove this, *clasp the sides with the hands as before and swell the lower chest without severe straining while now you check all rising of the clavicles. Pause an instant at the extreme limit of this effort; then gently raise chest and back and see how plainly the hands are borne still farther outward, and how much less severe an exertion has greater inspiratory effect.*

The mode which prevents the rising of the upper ribs and clavicles must, in some degree, embarrass that upward movement of the lower ribs which is needed to allow their free expansion to the extent that the vocalist must expand them to sufficiently fill the lungs.

Clavicular breathing brings into action the most powerful muscles of the upper frame, the *trapezius*, uniting the back of the head and the upper ribs; the greater and lesser *pectoral* muscles; the great *serrati* muscles, extending from the under side of the shoulder-blade or scapula to the eight highest ribs; the *latissimi dorsi*, and many others. So many and mighty are these broad bands which cover nearly the whole surface of the upper chest and back, in some parts with even a double layer of muscular fibres, that the physical effort of lifting the frame-work of ribs the single half inch required is felt to be wonderfully easy and gentle.

It is the natural movement of relief from want of breath. When you sigh from the sense of insufficient breath, do you push the abdomen forward and expand the lower sides? Not at all; for the feeling of oppression would still remain. You hoist the chest and allow the ribs their full expansion at the back as well as in front, above as well as below.

Clavicular inspiration makes room for the last particle of air



almost as easily, so far as conscious effort is concerned, as for the first particle. It is true that the actual effort must be greater toward the end of the inspiration; but the whole muscular force is so powerful, and the natural pivoting of the ribs upon the spine is so freely allowed, that the apparent effort is slight throughout. It may be compared to the exertion of walking. One hundred and fifty solid pounds must be shifted from one limb to the other, and carried two and a half feet forward. Many powerful muscles must combine to balance and propel such a weight so variously, but the healthy man hardly appreciates that he is exerting himself. No muscle puts forth an extreme effort; no part of the body is strained or twisted.

And so it is with clavicular breathing. The force required to lift the whole upper frame is not insignificant; but the muscles which conspire to lift it have so much more power than the movement demands, that their actual exertion is comparatively slight, and is felt and realized as a very moderate outlay of force.

#### OBJECTIONS.

This great advantage has been distorted into an objection by many opponents of clavicular breathing. They say, and say plausibly, "This is the mode adopted by those who suffer from asthma; it is a violent, an extreme effort, a struggle for breath; it has not the ease of lower breathing; it gives the ungraceful appearance of extraordinary exertion; the singer or speaker is seen to labor for breath."

All this is true for the asthmatic, not true for the singer or speaker. The former makes such extreme exertions because he must, by main force, draw in air through the bronchial tubes



which have been constricted by disease. He grasps some firm object in order to fix the arms, and bring into more powerful action the pectoral muscles, and the *latissimi dorsi*, which lift the ribs toward the shoulders. So strongly do the constricted tubes resist the entrance of air, that nearly every muscle in the body is called upon to stiffen the whole frame for violent effort.

Compare with this the gentle inspiration of the vocalist, and realize why it will be so gentle though its actual power is calculated to be one thousand pounds. It is because clavicular breathing avails itself of nearly all the muscles used by the asthmatic, and thus, by multiplying the agents, divides the weight, so that to each muscle falls a very small share to be lifted by a very moderate exertion; for now the tubes offer no unnatural resistance to the entrance of air. It might as reasonably be argued that a quadruped moved with more difficulty because it was gifted with four legs instead of two, as to pretend that clavicular breathing was more difficult because it was performed by many muscles instead of few.

#### CLAVICULAR BREATHING DISMISSES THE DIAPHRAGM.

The strongest argument has not yet been advanced:—It is that the expansion of the upper as well as the lower chest does away with the contracting effort of the diaphragm; for it is sufficiently flattened by the outward and upward movement of the ribs at its circumference.

Abdominal-costal breathing compels the diaphragm to put forth a contracting effort at a great disadvantage. To admit a sufficient volume of air, the lower ribs must be moved outward so far that the diaphragm will be stretched out to a great extent.



Yet though its muscular fibres are being actually lengthened or prevented from shortening, they must perforce exert themselves violently to shorten and pull down the already much-flattened dome, in order to give the lungs some degree of that up-and-down, vertical measurement so easily gained by clavicular breathing.

During the gentle breaths of ordinary respiration these two movements, of the ribs outward and diaphragm downward, do not conflict to do harm. But when five times as much air must be instantly inhaled, as in singing or declamation, the diaphragmatic effort becomes severe. The rule works both ways; for this far more powerful effort pulls inward with its whole force upon the ribs, and must be overbalanced by the still more forcible expansion of the ribs through the now extreme effort of the external intercostal muscles.

In a word, abdominal-costal breathing must struggle to shrink a lengthening muscle. It is a law of muscular action that a lengthened muscle acts at a disadvantage and loses contractile power. This law seems to be proved by many phenomena of throat-action, and, indeed, of other bodily movements. But you need not fall back upon laws which you have not personally tried. For a simple experiment will quickly convince you of the diaphragm's difficult task and meagre results.

#### EXPERIMENT VI.

*Again clasp the sides and bear them outward by a full inhalation, checking all upward movement of the clavicle. At first, allow the abdomen to come a little inward, or at any rate check all outward movement. Pause for an instant; then try to draw in through the nostrils still more breath by bearing the abdomen outward. Does*



*not this induce discomfort? Have you not a distinct impression of strain? Have you not failed to add a great amount of inspired breath?*

Notice another frequent fact: This outward crowding of abdomen calls for so strong a shrinking effort of the diaphragm that the expanded ribs are actually drawn inward. This will be more surely realized if you will suddenly relax the outward abdominal effort while preserving the rib-expanding effort, for then the outward movement of the ribs will be unmistakably felt. This fact gives plain evidence that the contraction of the diaphragm is a severe effort, and that it partially defeats its own ends by somewhat shrinking the lungs from side to side, although it lengthens them in an up-and-down or vertical direction.

Clavicular breathing wholly dismisses the diaphragmatic effort, which can add nothing to the capacity of the lungs — absolutely nothing, if the lungs have been raised and allowed to expand. Try yourself to add the diaphragm's contraction to clavicular inspiration.

#### EXPERIMENT VII.

*Again clasp the sides a little toward the back, and lift chest and back three-eighths of an inch, or, at most, a half inch, and allow the abdomen to be passively drawn a little inward. Keep the mouth closed so that you can feel the breath coming through the nostrils. Hold the back and chest thus raised for an instant; then try to inhale more breath by pushing the abdomen outward.*

You will succeed, it may be, if you exert yourself more severely, in adding a very small amount of breath, and just so much more could have been inhaled by adding to the clavicular effort. But see how insignificant is the added quantity, and again notice that



this extreme effort of the diaphragm pulls the ribs under your clasping hands a little inward, exactly as was the case with abdominal-costal breathing.

#### WHY THE ABDOMEN MUST BE MOVED INWARD.

It has been shown that clavicular inhalation draws the abdomen a little inward; nor must this movement be checked. For the circumference of the diaphragm is lifted by the ribs to which it is attached; and, as the dome is the cover of the abdomen, it follows that its only movable boundary, the abdominal muscular bands in front, must be drawn in to allow the cover to rise. Hence it is not a matter of choice, but of necessity, that the abdomen shall yield a little as the ribs are being elevated. You could check the sinking or flattening only by means of a positive effort of the diaphragm, the very difficulty we are aiming to miss.

#### THE "LUTTE VOCALE," OR VOCAL CONTEST.

It has been objected to clavicular breathing that it leaves the ribs and the expiratory muscles in bad form for the expiration which must support the voice. It is asserted that there is a contest during voice between the inspiratory and expiratory muscles; that the abdominal muscles would compress the lungs too powerfully were they not opposed by the diaphragm. For it is supposed that the abdominal muscles would push the diaphragm upward against the lungs too powerfully, if the diaphragm did not itself contract so much that its upward pressure against the lungs would be lessened. In favor of abdominal-costal breathing, it is argued that the inspiratory effort contracts the diaphragm and that it



will simply remain contracted when the abdominal muscles begin to expel breath in support of the voice, while with clavicular breathing the diaphragm and the abdominal muscles must both of them begin their contraction at the expiratory instant. And beside this difficulty, it is objected that the sudden fall of the up-raised chest would still further embarrass the effort to decide a gentle enough pressure upon the lungs.

#### THERE IS NO RESPIRATORY VOCAL CONTEST.

It lies outside the precincts of the subject to discuss this vocal contest, this "lutte vocale" so much insisted upon by the French school of writers; for it belongs to the subject of expiration. In the writer's opinion, there is no such contest, but a friendly alliance instead. The diaphragm contracts to aid the abdominal muscles to increase the pressure upon the lungs. The abdominal muscles alone can support only a weak or breathless tone. The downright force of the diaphragm is needed to give the voice its weakest singing or declaiming volume. But laying this question aside for the present, let us seriously doubt, nay, wholly disbelieve that there is danger of too strong a compression of the lungs as voice follows clavicular inhaling. Again must the disputed point be brought to the test of personal experiment.

#### EXPERIMENT VIII.

*Lift chest and back about a half inch or even, for the sake of perfect fairness, lift them as high as you can without actual straining. Put in mind a tone at a moderately high pitch, or any note that occurs to you. Suddenly let the chest and back fall with a complete and unchecked collapse and let the shock of the fall start the tone.*



Is it too loud? Is it jarred into existence? Try again and again until you become assured that you are governing yourself according to the exercise, that you are neither holding back nor adding voluntary force.

You will undoubtedly discover that instead of having too loud a note you must add direct and intentional expiratory force to give your voice the volume and resonance a musical or literary audience would demand. For singing is exalted above declamation as declamation is exalted above ordinary conversation. Even those noble voices, rare enough in any nation, who can safely sing *mezzo-voce*, have no need to check the listless downfall of the chest for fear of an obstreperous jar. The whole doctrine of division of breath, of reserving and checking expiratory effort may contain a few grains of sandy truth, but they are sparsely scattered along a whole beach of errors. There must be more and more, never less than the pressure upon the lungs which the full recoil from the most distended thoracic cavity can afford. The principle of reserving breath by lessened expiratory effort is not, to borrow Mr. F. W. Root's phraseology, a "half truth," but an entire falsehood. Repeat the experiment last given in private and you cannot fail to be convinced.

#### IS CLAVICULAR BREATHING AN AWKWARD MOVEMENT?

There remains to be considered only the appearance. Does the body behave awkwardly during clavicular breathing, as its opponents assert? There is a certain affected manner of holding the chest raised unnecessarily high, while the body is bent backward and the sides are drawn in. The superfluous effort is



plainly read in the anxious countenance of the posturer, and such stiff, constrained attitudes are certainly ungainly.

But the movement which lifts both chest and back a meagre half inch, and allows the sides their free expansion, is, in reality, the most natural movement that can be made. And it has the large advantage of being the habitual way of taking a full breath. We sigh with a rising and falling chest when mental disquietude excites the longing for unusual supplies of the comforting fluid; and it seems to be the most appropriate, the most graceful gesture of music, the especial language of emotion.

It cannot be denied that great success has often attended abdominal-costal breathing; for this mode brings distinctly to the singer the consciousness of voluntary power in the lower part of the upper frame; and this very consciousness often conduces to more ready, more voluntary employment of the lower muscles, even for expiration.

And, surely, whatever may be the mode of inspiration, expiration is of incalculable value to the singer or speaker; for this is the really difficult breathing matter. It is many times more arduous, and many times more important than inspiration. Upon the mode of filling the lungs depend ease of inspiratory effort and duration of expiratory breath. But on the muscular mode of emptying the lungs through the little crevice between the ivory cords, depend the vocal quality, power, and, in large measure, endurance.

Very much may be learned by observing those who give us the very best examples of vocalism. Review the artists who have lately launched their farewell notes at the Academy of Music. The writer has reconnoitred their inspiratory manœuvres at short range through a powerful field-glass. Campanini, Galassi, Del

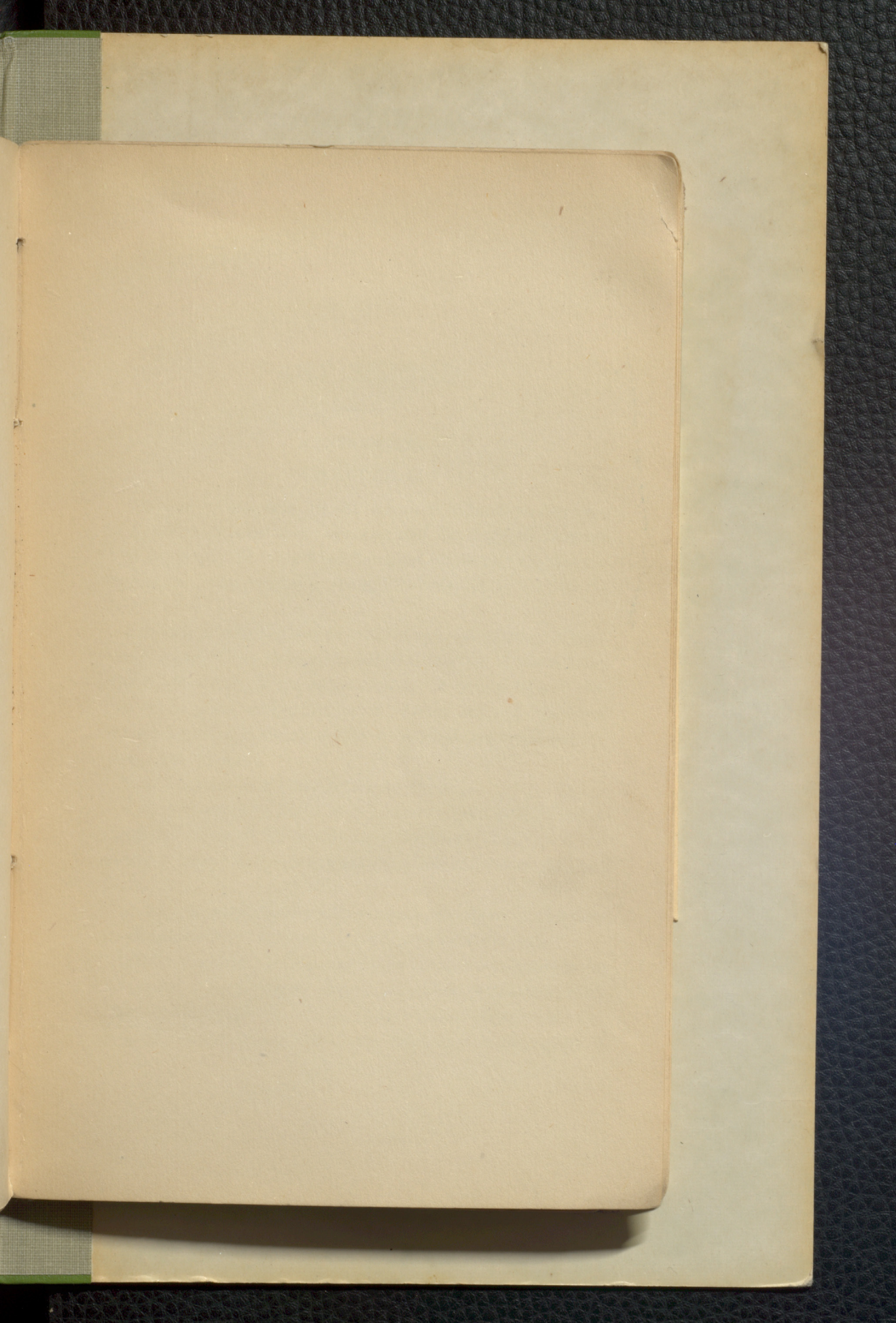


Puente, Ravelli, all imbibe the music-laden liquid by genuine upheavings of the chest. With Campanini, the movement is so easily performed that it is hard to detect beneath the usual folds and ruffles of the hero's costume; but for higher tones and longer phrases it is unmistakable.

Every *prima donna* inspires clavicularly. Many of them raise the back even to an almost ungraceful extent. Have you never noticed the forward movement of the head at every breath-taking, so decided a nod in Gerster as to be commonly commented upon, and easily remarked in Patti, La Blache, Beebe, Thursby, Valleria, and others? This is caused by raising the back a little more than the chest. Try for yourselves, and you will find that the head naturally is thrown a little forward.

An occasional elocutionist or vocalist may have brought himself to check this natural instinctive movement, but they are rare exceptions and their example should have no influence. Your decision should be formed after actual, personal trial of the exercises given or of similar ones of your own devising. Experiment fairly, avoid the great peril of self-deception, shun the warping influence of authorities, and there is little doubt that you will soon array yourself on the winning side of clavicular breathing, and fight its battles with the full assurance of success.











## PART SECOND.

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### EXPIRATION.

#### CHAPTER I.

However serious must be the claims of inspiration, there can be no doubt whatever that expiration is of vastly greater moment. The lungs may be fairly filled by either costal-diaphragmatic or by free clavicular breathing, though the latter mode is by far the best.

But there is only one way to expel breath, one alliance of expiratory muscles, one enforced or habitual inaction of the muscles that might embarrass the true muscles. It cannot be said that one way is good, another better; all except the one functional mode must be, not simply useless or superfluous, but absolutely wrong and injurious.

Faulty expiration has two pernicious effects:—

1. It deprives the vocalist of the power to draw deeply enough upon the volume of air contained in the lungs, and also of the power to bear the breath against the vocal cords with adequate force.

2. Its muscular efforts excite sympathetic efforts in the constricting muscles of the throat, as will soon be made clear.

The inquirer for the best expiratory mode is hampered at the outset by a physiological misunderstanding of the expiratory office of the diaphragm. The author makes claim to the first discovery of the true action of the diaphragm in its support of



the voice, and does this after searching the works of many writers in several languages.

For it has been supposed that the diaphragm is either wholly inspiratory, or, if used with expiratory muscles, is a check and a restraint upon them, lessening the compression of the lungs and the consequent pressure of air against the vocal cords during voice.

#### THE DIAPHRAGM INDISPENSABLE FOR VOCAL SUPPORT.

On the contrary, the diaphragm is an absolutely indispensable expiratory agent of direct, not indirect, force. The lungs could not be compressed with power enough to support even a moderately sonorous tone without the aid of the diaphragm. The abdominal muscles have, indeed, a feeble expiratory effect, but they could support only a husky, weak and quickly-ceasing voice. It even seems probable that the internal intercostal muscles could have little or no lung-compressing power were they not assisted by both the diaphragm and the abdominal muscles.

#### VITAL IMPORTANCE TO THE SPEAKER OR SINGER.

This knowledge is of curious interest to the student of physiology, but it is of vital importance to the student of the art of declamation or of song. For the control of the diaphragm in expiration must be made conscious and voluntary. Upon it the singer must confidently rely to project the high notes and broaden the low; the speaker to place himself firmly upon the higher planes of impassioned utterance, and to sustain to the end his bolder phrases.



## ITS PLACE IN RESPIRATORY TRAINING.

Though the proof came tardily, the writer has long felt sure that it is his first duty, before all other respiratory or vocal demands, to give the pupil this power to employ the diaphragm at will. Even the abdominal muscles cannot be disciplined with good result before their adjutant, the diaphragm, has been taught to assist. Estimate, then, how imperfect, how partial, how practically weak and ineffective must be all respiratory drill which slights or wholly ignores the chief actor, or which exactly reverses the part it ought to play! Probably the secret of such common vocal failure and uncommon success may be largely divulged by this discovery; for, as was hinted above, the throat, as well as the lungs, must have suffered from such ignorance and neglect.

Technical descriptions are always tedious. Hence, so far as is possible in the following explanations, the terms of anatomy will be avoided or shaded with parentheses for the closer view of the more exact inquirer. A clear mental diagram of the cavities of the chest and abdomen must first be roughly outlined, and the manner in which their boundaries can be moved outward or inward be plainly understood.

## ROUGH DESCRIPTION OF CHEST-CAVITY AND ABDOMINAL CAVITY.

Imagine, then, two cavities, one directly above the other; the upper, the cavity of the chest, being entirely surrounded by ribs except at its base and at a small opening at its top; the lower, the cavity of the abdomen, surrounded by muscular bands, except at its base. Trouble yourself not about the shape of the



cavities or their heterogeneous contents, but simply suppose that the chest is entirely occupied by two bags, the lungs, which are filled with air. Also imagine that the abdomen is wholly filled by a plastic mass, the viscera, which yield to the slightest pressure. It remains only to describe the bases of the two cavities:—The base of the lower, the abdomen, is of solid bone (the pelvic bones) which will not yield under any pulling or pressure. The base or floor of the chest is, of course, the ceiling of the abdomen. It is a huge muscle, the diaphragm, which covers the whole abdomen from front to back, and from side to side, a veritable ceiling for the lower cavity, and floor for the upper; though, unlike the common ceiling, it rounds upward instead of extending straight across.

#### NEED OF COMMON COMPARISONS.

Curiously enough, we shrink from viewing our own persons as practically as we do other material objects. The animated form is a beautiful whole, not to be mangled into illustrative parts like an inanimate machine. For this sure though unconfessed reason, anatomical descriptions may be faithfully read, word by word, but will not be vividly realized by the general reader. And on this account, very rough comparisons will be employed; for it is hoped that, by constantly matching some common object or material with a corresponding part of the human form, this great hindrance may be circumvented.

#### THE CHEST A BASKET; THE ABDOMEN A SACK.

Suppose that a cone-shaped wicker-basket, so well lined that it is air-tight, is held upside down, so that its smaller end is



above, its broader mouth below ; let this represent the chest or the frame-work of the ribs, which is likewise smaller at the top and broader below. Presume that this basket is filled with air, as is the chest-cavity.

Let the cavity of the abdomen be represented by a rubber sack hanging downward from the down-facing mouth of the basket, the mouth of the sack being fastened all around to the rim of the basket's mouth,—just as one would insert the mouth of a basket into the open part of the sack which was to receive its contents.

How shall the diaphragm be pictured? Suppose that the basket had a rubber cover so stiff that it did not extend straight across the open end, but curved boldly upward into the interior of the inverted basket. You can see that this cover would be the lower boundary of the contents of the basket and the upper boundary of the sack's contents; and just so is the upward-curving, dome-like diaphragm the lower boundary or floor of the cavity of the chest, and ceiling of the abdominal cavity.

The comparison fails wofully in details, but will bring strongly into view a few prominent relations between the basket (chest) and the sack below (the abdomen); and this imaginary apparatus may easily be repaired or altered when the need arises for more exact illustration.

Further, suppose that the bottom of the sack rests upon something quite solid and immovable, thus representing the pelvic bones into which the abdomen sits. Let the sack be filled with some plastic material, like liquid gelatine, for the real contents of the abdomen (the intestines) are, as a whole, plastic and easily displaced.

Let the basket, above the sack, be filled with air, just as the cavity of the chest is mainly occupied by the two lungs filled with



air. Of course the up-rounding cover of the upside-down basket will separate the body of air above from the plastic body of gelatine below.

The basket and pendent sack may represent the upper frame in its fully relaxed condition, when no unusual amount of air has been either drawn into the lungs or sent out. There is no present need of more breath; for ten times the volume of an ordinary inspiration remain in the lungs untouched in quiet breathing. But in forced expiration one-half (Dr. Flint) or one-third (Dr. Leoming) may be expelled; while by the skilful, artistic expiratory mode to be described, fully two-thirds may be exhausted. Moreover a prolonged flow of breath is not now being sought, but an exact muscular combination.

#### THE REAL PROBLEM.

The real problem is this : How can the lungs be compressed by the contraction of the diaphragm? Comparatively, how can the air in the air-tight basket be compressed by the shrinking of the up-rounding cover? But much must be explained before this point can be directly approached.

Suppose the rubber sack is surrounded by both hands and pressed inward; will it yield? Its contents are elastic, but must have some new place to enter if driven from their present position. Where will they go? Not downward, for the firm support upon which the sack stands will not give way. Some other boundary must yield to make room for the gelatine driven from the compressed boundaries. Will the rubber partition (diaphragm) yield and move upward? It cannot, for the air-tight basket above it is filled with air which will check the upward



movement of the diaphragm as surely as though it were a solid body. The stiff sides of the basket will not easily give way.

But suppose there is an opening at the highest point of the upsidedown basket ; then the pressure of the hands upon the sides of the rubber sack will push the cover farther upward into the basket, for the air can escape through the aperture and allow the cover to ascend. Now, in just the same way, if you will look at it practically, could you suddenly push in upon the abdomen (sack), crowd the viscera (gelatinous mass) against the diaphragm (cover), and, if the throat (aperture) is left open, the air in the lungs (basket) would be driven out through the throat, and allow the diaphragm (cover) to rise. Make the trial by pushing suddenly with the whole palm of both hands upon as much of the abdomen as you can compass. Imagine as vividly as you can that you see a dome-like partition in the chest crowded upward against the lungs, and notice that breath is sent out through the throat.

#### THE ACTION OF MUSCLES.

But there is in respiration no pushing of hands, no outside force. How, then, is the abdomen to be moved inward? What force can be applied? To fully comprehend the answer, that the power is muscular force, the exact nature of muscles must be described :

A muscle may be of any size or shape. It may be as small as ordinary packing cord, as short as a half inch, or may extend one-third the length of the body. It may be slender and long, or short and broad. It is elastic like rubber, and can easily be stretched, as can some other tissues of the body.



## CONTRACTION.

But it possesses one property unshared by any other part : it can *contract*, or shorten itself, and by virtue of this property it becomes a power of transcendent importance, the sole motor power of the human frame.

The fleshy bands are fastened at each end to other parts of the body, usually to bony or cartilaginous (gristly) parts. Extend your arm and let the back of your hand rest upon a table, while with the other hand you clasp the resting arm between shoulder and elbow. Now press the hand heavily upon the table, and you will feel the flesh under your clasping fingers swell and harden. The muscles extending along the under side of the arm from the shoulder-blade are trying to shorten, or *contract* ; and, as the table will not suffer the hand and arm to move downward, the muscles are putting forth such efforts that they knit themselves, gather together their material, thus swelling and hardening.

## FIVE MODES OF MUSCULAR CONTRACTION.

But this single power, inherent in all muscles, can produce five different effects :

(I.) If the muscle extends in a straight line between the two parts which it connects, it will, by making its shrinking effort, draw these two parts nearer together, *if the parts are allowed to move freely*.

(II.) If the connected parts are not allowed to move freely, the muscle will put forth its contracting or shrinking effort, and may pull with great force, but, of course, will not shorten. Nevertheless this is still termed a *contraction* of the muscle.

(III.) If the connected parts are being pulled farther apart by



some other muscles, or by some bodily movement, nevertheless the connecting muscle can put forth its contracting effort, although it is being actually lengthened.

(IV.) If the muscle runs in a curve, and the part of body enclosed by the curve will easily yield, the muscle will first shorten to a straight line before it pulls nearer together the parts it connects.

(V.) If the bodily parts enclosed by the curve will not yield to the pressure of the curve, as it tries to straighten, then the connected parts will be pulled together, very nearly as though the muscle were straight, unless, indeed, the curve is very bold.

Illustrate these modes by the sack, its dome-like cover, and the cone-like basket with its opening at the top. Suppose that the sack and the cover are capable of shrinking, as muscles shrink; how will their separate or combined shrinking effort affect the basket's interior?

Taking first the sack, we find that, if its sides extended straight down from the rim of the basket to the immovable table, they would pull the rim down toward the table. But, in order to match the sack with the abdominal cavity, it must be supposed that the sides extend downward in a bold, outward curve. It must also be assumed that the gelatinous mass in the sack, enclosed by the curving sides, will yield easily.

#### STRICT ABDOMINAL EXPIRATION.

Then the curved sides of the sack must, in contracting, straighten to or toward a plane, pushing inward upon the gelatine enclosed. This gelatinous mass is pushed upward against the dome-like cover which rounds upward within the upside-down basket. The cover, being of rubber, is easily stretched



and pushed upward against the air in the basket ; and, in its turn, the air is driven out through the opening at the top.

This precisely describes the expiratory action of the abdominal muscles ; for they extend downward with a decided outward curve from the lower ribs (rim of basket) to the pelvic bones into which the abdomen sits (the table). They form nearly the whole of the front and sides of the abdomen, and the parts near the spine, being less movable, need not now be considered. The shrinking, contracting effort of the abdominal muscles straightens their curve to a plane, pushes the contents or viscera (gelatine) inward, crowds them upward against the diaphragm (cover), pushes the diaphragm (cover) up into the cavity of the chest (interior of basket), and drives the air out through the windpipe (aperture in highest part of the inverted basket).

This strictly defines "abdominal" expiration, in which mode only the abdominal muscles are active, while all other parts of the body are passive, being simply pushed and pulled — no, being simply *pushed*, for there is in this mode no pulling together of connected parts, but only the fourth mode of muscular effort, that of straightening curves when the parts enclosed yield easily.

#### FEEBLENESS OF ABDOMINAL EXPIRATION.

Exceedingly little air is expelled by this mode. Many, indeed, deem it effective, but a single experiment will disprove such belief.

#### EXPERIMENT IX.

*Clasp the sides half way between the shoulders and the hips, and move inward the abdomen as loosely and as deeply as possible. Allow no movement of the ribs beneath your hands, and you must be surprised to see how little breath is sent out through the nostrils, or*



*through the lips rounded for saying "oo," when you can more sensitively judge the amount of breath. Try to sustain a tone, or read a few words, and notice how feeble the voice will be.*

#### THE GRAND MISTAKE MADE BY VOICE-TEACHERS.

Accurate tests will show that even the mild resonance of conversational tones would not be possible with strict abdominal expiration. Yet this mode, described as above, has been advised by many prominent physiologists and voice-teachers. This is what Weiss means by "isolated diaphragm-breathing," for you will see that the breath in the lungs is compressed by the passive upward movement of the diaphragm, caused by the active contraction of the abdominal muscles, — just as the cover is moved upward against the air in the sack, although it has absolutely no power of upward movement or effort in itself.

Guttman\* advocates the same mode, with the advice to hold the ribs, in the neighborhood of the diaphragm, constantly expanded or held outward. He even has a chapter on the expiratory office of the diaphragm, but has fallen into the very same error that Weiss, Merkel and others have made.

The error is just this: They assume that the contraction of the diaphragm will check its expiratory force. For they argue that its contraction will tend to flatten the dome to a plane, and that this flattening, or bearing-down tendency, will check the effect of the abdominal muscles to push it upward against the lungs. To illustrate more familiarly, they would say that the shrinking sides of the sack would push its contents against the cover, and move it too rapidly upward into the interior of the

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\* "Gymnastics of the Voice." Albany, N. Y.: Edgar S. Werner. Cloth, \$1.25.



upsidedown basket, if the dome-like cover were not capable of shrinking its dome downward to or toward a plane, thus affording the means of retarding its upward movement, of regulating it artistically.

#### THE FALLACY OF TOO GREAT BREATH-PRESSURE.

Firmly allied with this false physiological notion is the fallacy that there is great and common danger of bearing the breath too heavily against the vocal cords, so that it will escape too rapidly between them. Some writers even claim that a strong breath-pressure is destructive of overtones, and, therefore, ruinous to the quality of the voice.

Experiments with the pyrometer, made by the author, prove beyond a flicker of doubt that a powerful breath-pressure increases the power of overtones; for the fingers upon the many times reflected hands so beautifully figured on the revolving band of flame, point more and more plainly as the expiratory effort is increased. The mournful truth is, that the usual expelling force is utterly inadequate, and that the throat is, in direct consequence, compelled to adjust its tender parts abnormally in order to produce effective tones.

Escape of breath is not to be prevented by lessening the breath-pressure, but by gaining that powerful compression of the lungs which will so strongly sway the vibrating vocal bands that they may assume their normal form, position and consistency. They will then fit so exactly, the slight interlinear space will be so small, that no breath-pressure likely to be gained even by the practiced singer or speaker will be able to rapidly exhaust the breath. Besides that, upon powerful tones or inflections



the skilful vocalist increases his throat-effort as his respiratory effort is augmented, and experiment proves that a strong expelling effort, though it may double or quadruple the loudness of the voice, takes but a small fraction from the duration of the breath.

Nor should it have escaped notice that the forced tone—*forced* by the abnormal conditions of throat made habitual when the expiratory effort is at fault—consumes less breath than the true tone. The tests of a wavering paper or flickering candle-flame are ill-chosen and misleading. No tones, except the very husky ones, will disturb either paper or flame. The strained, impure qualities, usually accredited to undue escape of breath, are caused by the presence and admixture of shrill and inharmonious overtones, while by actual trial, made many times and strictly, the amount of issuing air is less than during the clearest and most artistic models.

There is certainly more power required to compress the lungs than the abdominal muscles can possibly afford. To prove that this needed force must be supplied by the diaphragm will be the burden of the following chapter.



## CHAPTER II.

### THE DIAPHRAGM AS AN EXPIRATORY MUSCLE.

Turn again from the human frame to the illustrating basket (frame-work of ribs), the sack (abdomen) and the cover rounding up within the upsidedown basket (the diaphragm). At the moderate risk of excessive repetition—which, after all, is a means of emphasis—be again reminded that the sack is of rubber, gifted with the power of shrinking or of trying to shrink; that the cover of the upset basket (now the cover of the open-mouthed sack) is also of rubber, but that the basket itself is formed of willow strands knit loosely together, and susceptible of being easily squeezed in at any part, or somewhat drawn out. It will thus more nearly represent the frame-work of the ribs; for, by pushing suddenly upon your sides, you will see that the ribs will yield and be crowded inward.

Note again that the cover is attached to the rim of the basket on the *inside*; that the open upper end of the sack is attached to the rim of the basket on the outside, since the basket's mouth is inserted into the upper end of the sack.

### COMPRESSION OF CHEST FROM THE SIDES.

It was shown that a sudden pressure of the hands upon the sides of the sack would crowd the cover higher up into the basket, thus compressing the enclosed air, and driving it out through the small opening at the top.

But the air may be compressed in another way. If the hands



clasp the basket instead of the sack, and are suddenly pressed inward, its yielding sides will be crowded inward against the enclosed air, and will drive it out through the opening at the top. Similarly, let the elbows and upper arms clasp the sides of the chest, and be suddenly pressed inward; the breath will be sent through the nostrils or rounded lips with far more volume and force than before.

How can this lateral compression of the basket be accomplished by the only force at hand, the shrinking power of the rubber sack and rubber cover? The first subject, "Inspiration," has shown that the up-rounding cover would, in shrinking, only approach the form of a plane, making more room in the upside-down basket, and drawing in more air through the opening at its now highest point. This would follow the mode of muscular contraction in which the muscle has the form of a curve, and in shrinking merely takes up its slack and approaches the form of a straight line, *if the parts enclosed by the curve will easily yield and be pushed away by the bow of the curve.*

#### CONTRACTION OF DIAPHRAGM WITHOUT CHANGE OF CURVED FORM.

But suppose the gelatinous mass in the sack will not yield; suppose its upper surface will not be pushed away by the shrinking cover. In that very different case, the cover could not sink its arch toward a plane, and no more room could be made in the lower part of the basket. Similarly, if the viscera, or contents of the abdomen, will not yield to the downward bearing of the shrinking arch of the diaphragm, no more room will be gained in the cavity of the chest, and, of course, no additional air will be drawn in through the windpipe.



This proves that the inspiratory action of the diaphragm is dependent upon the easy yielding and displacement of the contents of the abdomen. It also shows that the diaphragm can put forth its contracting effort without inspiratory effect.

#### ABDOMINAL MUSCLES PREVENT DISPLACEMENT OF VISCERA.

What will prevent the gelatinous mass from yielding to the downward flattening of the arching cover? The rubber sides of the sack are made of easily stretched rubber, but they have the power of shrinking. Suppose they were to shrink at the same time that the rubber cover was shrinking. The out-curving sides would try to straighten at the same time that the up-rounding cover would try to straighten; the sides would bear inward, the cover downward; the gelatinous mass would be pressed inward upon and downward upon. If the two pressures balance each other, the contents of the sack will not change their form; for every part that could yield is now being pressed inward. Indeed, all the boundaries, except the firm base supplied by the table on which the sack rests, are trying to shrink their curved form inward upon the gelatinous mass, but without success.

#### CONTENTS OF ABDOMEN NO LONGER YIELDING, BUT FIRM.

In like manner it will appear that the form of the abdominal cavity may remain unchanged, although it is pressed upon by all its curving boundaries, by the up-rounding diaphragm above, and the out-rounding abdominal muscles on its sides. The only condition is, that the diaphragm shall contract just so strongly that its curve will bear down upon the top of the abdomen just



enough to balance the inward pressure of the contracting curves of the abdominal muscles at the sides of the abdomen.

#### IS THE AIR IN THE CHEST COMPRESSED?

It will at once appear that the viscera may be powerfully or gently compressed; but will there be any compression of the chest?

Again making use of the sack and basket, it will be remembered that the open mouth of the sack enclosed the down-facing basket's mouth, while the bottom of the sack was fastened firmly to the table. Its sides, from table to basket-rim, can put forth their shrinking, shortening effort, but cannot push away the gelatine embraced by their out-rounding curves. For the gelatine, being held firm by the down-bearing cover of the inverted basket, now acts as a solid, unyielding mass, over which the sides of the sack must act according to the fifth mode of muscular action; that is, they will draw nearer together the connected parts, if either or both will yield.

The supporting table cannot be moved, but the inverted basket can be drawn downward; for the loosely intertwined willow twigs can be stretched out just as any one can perceptibly lengthen a common peach-basket by pulling upon the rim of its mouth.

To be more exact in comparisons, the sack must be drawn so far over the mouth of the basket that it will enclose more than half the sides, its rim reaching more than half way up the sides of the upsidédwn basket. Thus, nearly two-thirds of the whole basket will be drawn downward toward the table by the direct pulling of the shrinking sack, while the unembraced upper third will be stretched downward to some extent.

Similarly will the contracting abdominal muscles necessarily act



according to the fifth mode of contracting muscles, for they will try to shorten their course over a mass of viscera held immovable by the downward pressure of the contracting diaphragm's down-bearing curve, and will more or less powerfully pull nearer together the parts they connect, acting almost as a shrinking flat muscle would act. The connected parts are the pelvic bones below, which cannot be moved, and the eight lower ribs, which can be easily drawn downward; for the abdominal muscles are attached to the outside of the eight lower ribs, thus embracing nearly or quite two-thirds of the whole frame-work of ribs,—just as the sack embraced two-thirds of the outside of the basket.

But the diaphragm connects no two particular parts, as do nearly all other muscles. It is a nearly circular muscle, like the head of a drum, or, as has been instanced, like the cover of a basket. Suppose, for the sake of absolute clearness, that a stick were twisted around in the centre of the cover of a peach-basket, what would be the result? The middle of the cover would be wound around the stick, and, of course, the rim of the basket would be more and more drawn inward at all points the more times the stick was twisted around in the same direction, from right to left or from left to right. The rim would be pulled inward to the centre. Now this winding of the cover upon the stick very aptly represents the shrinking of the up-rounded curve, and it will be plain that the rim of the illustrating basket will be drawn inward all around, carrying with it the sides above the rim to a considerable extent, and the air in the basket will be compressed and driven out through the opening at the top.

Here, indeed, has been found a true expiratory force. For the diaphragm, in contracting, draws toward its centre all the parts to which its circumferent border is attached. The at-



tached parts are (mainly) the ribs which must, then, be drawn inward upon the enclosed air in the lungs, strongly compressing them and drawing the air out through the windpipe.

#### CHANGE OF ILLUSTRATION.

Though the expiratory nature of the diaphragm has now been roughly given, the attendant expiratory action of the abdominal muscles has not been described. It was shown that the contraction of the sides of the sack would draw the sides of the basket downward. The air in the basket would not be compressed by simply lengthening its sides. The illustration fails, and must give its place to another and a better one.

Let the reader then conceive that the upper half of a barrel is substituted for the basket; but let him still picture the cover over the down-facing open end of the half barrel, and curving up into its interior, just as the rubber cover of the basket curved up within it. Now knock out every stave of the barrel except one; that stave represents the spine. All the twelve hoops are fastened to this one stave, and it must be unreasonably supposed that they are so broad that but little space is left between them. Still more unreasonably must it be supposed that directly opposite or in front of the single stave each hoop has a piece cut out so that an open space is left in front, and the cut ends of the hoops swing freely. Or they could swing freely were it not that the open space is partly filled by another short stave, to which the cut ends of the hoops are attached by limber pieces of whalebone, only the five lowest of the twelve hoops having no binding with the stave, but swinging loosely. You will see that the half hoops will all have considerable freedom of movement, as they are very loosely bound to the short stave in front.



Compare this half barrel with the frame-work of the ribs. The half hoops represent the ribs ; the stave, the spine to which the ribs are attached. You can feel that the ribs are curved around the body in almost a half-circle on each side, but just in front you will feel that they stop and that you will touch a flat bone extending up and down the middle of the chest. This is the sternum, or breastbone, represented by the short stave in front. Press a finger firmly against this bone and draw it straight downward along the middle of the chest. You will find a point at which the breastbone stops ; yet you will find loose ribs at the sides, below this point, called the false ribs.

Having fully realized these points, your attention must be called to the most peculiar manner in which the ribs are fastened to and pivoted upon the spine. Suppose that each half-hoop was so attached to the larger stave that it could not be either bent straight inward or straight downward, but must move downward as well as inward, inward as well as downward.

This is exactly true of the ribs: They cannot move downward without also moving inward ; nor can they move inward without moving downward as well. In the chapter on "Inspiration" it was explained that the ribs could not be drawn upward without being also moved outward, a similar condition to that of downward movement.

#### THE EXPIRATORY EFFECT OF ABDOMINAL MUSCLES NOW MADE CLEAR.

Now will it plainly appear that the down-pulling effort of the abdominal muscles must be *expiratory*. They extend, like the sides of the sack, upward from the immovable pelvic-bone (table) to the outside of the eight lower ribs. In shortening, their direct



effect is to pull these eight ribs straight downward ; but their indirect and equally positive effect will be to compel the inward movement, which must unavoidably accompany the downward movement. This inward movement will powerfully compress the air in the chest and drive it against the vocal cords, lying across the windpipe, with the force needed for a musical or declamatory tone.

#### THE DIAPHRAGM AND ABDOMINAL MUSCLES ASSIST EACH OTHER.

It will easily be realized that the diaphragm and abdominal muscles are mutually dependent upon each other for their expiratory power.

If the diaphragm remains relaxed, the abdominal muscles can have only the very feeble expiratory force gained by crowding the diaphragm upward against the base of the lungs. This strict abdominal mode has not been hastily declared feeble ; many strict and decisive tests have been made. A part of each lesson-hour has for years been devoted to experiments with the respiratory movements of each pupil. The study has been to ascertain how much the curve of the diaphragm can be borne upward against the lungs, by critically calculating how much the abdominal muscles can shrink their curve inward from the natural abdominal form. Just so much air can be discharged from the lungs, no more and no less, if no other muscular force assists or hinders.

Actual measurements will approximatively show how little breath is thus expelled. With a person of ordinary size the inward traction of the abdomen does not and cannot exceed three-fourths of an inch at its region of fullest curve, while at the sides, as well as at its upper and lower borders, it does not equal one-half inch.



Surely a movement of one-half inch must be called a fair average for the whole movable abdominal surface. It, indeed, appears to be more, but actual measurement may easily be made, as well as described.

#### EXPERIMENT X.

*Rest the cover of a book against the middle of the abdomen, and hold a pencil against the opposite end. Sit opposite a table on top of which a sheet of paper is firmly fastened, and let the pencil-point rest on the paper. Easily but deeply sink the abdomen, still pressing the cover against it; of course it will be moved backward, and will draw the pencil backward along the paper, leaving a mark just as long as is the distance the abdomen moves inward. After several such trials the average length of the marks may be calculated. Again, the edge of the cover may rest against the lower or upper part of the abdomen or against its sides, and the inward movements of these parts be similarly tested.*

Assuming a half-inch as the average inward movement, the extent of surface moved must be found. Six inches up and down, and ten from side to side, will probably be an average height and breadth; and now the whole movement may be estimated in cubic inches. The surface will measure six times ten, or sixty square inches; and the inward movement of one-half inch will displace sixty half inches, or thirty cubic inches. Even though one-half is added to this amount, making forty-eight cubic inches, it will not be more than one-half the amount calculated by physiologists as the reserve air of the lungs; by "reserve" air being meant the amount which can be voluntarily expelled after an ordinary respiratory breath has been exhaled.

Marshall gives ninety cubic inches as the average; others some-



what more or less. Kirke sets the ordinary breath of gentle inspiration and expiration at from thirty to thirty-five cubic inches, and refers to Hutchinsonson.

#### PERSONAL PROOF THAT LESS AIR IS EXPELLED.

But an incontrovertible test may be made by every reader :

##### EXPERIMENT XI.

(I.) *Clasp the sides by the hands, and see that they remain unmoved while you sink the abdomen and allow breath to be sent through the lips rounded as for whistling.*

(II.) *Clasp the sides and hold the abdomen very slightly flattened; then, without abdominal movement, blow out breath through the rounded lips by the down-bearing effort of the diaphragm, allowing, and even favoring, the inward movement of the ribs beneath the hands.*

Surely the outflow will be twice or three times as large as before, if you have voluntary control of the diaphragm sufficient to make the experiment a fair one.

And to make the trial fairly it will be necessary to give the reader a short exercise, so that he may surely know that he is contracting the diaphragm, and not using other muscular forces.

##### EXPERIMENT XII.

*Hold the abdomen somewhat flattened, and inhale a moderate breath; then suddenly, but very loosely, push it forward to its natural form, while you blow out breath through the rounded lips (very much as you would whisper "Whew!" in surprise), letting the sides and chest sink loosely in and down. Give this many practices till you can easily avoid all stiffness.*



*Now put your attention upon the sensation of effort felt in the abdomen, noticing that you seem to bear or plunge forward within the interior of the abdomen. Then hold the abdomen slightly flattened, and inhale a moderate breath. Suddenly, though loosely, make the same forward bearing or plunging effort in the interior of the abdomen (to send out the "whew!" breath), BUT NOW AVOID ALL OUTWARD MOVEMENT; let the sides and chest fall or sink as loosely as before.*

*Finally, return to the original testing practice. Hold the abdomen slightly flattened, and avoid inhaling breath. Then bear forward within the abdomen (without moving forward) and allow the chest, sides and back to yield loosely inward and downward, while the outward-from-within-the-abdomen bearing sends breath through the closed lips.*

Considerable practice may be required before the sides, chest and back (in other words, the whole frame-work of the ribs) can be left loose, free from the habitual stiffening or setting of the intercostal or between-ribs muscles; but there can be no question that twice or even three times as much breath will now be expelled as by the abdominal sinking or flattening alone. The forward effort within the abdomen of course instigates the diaphragm; the check upon outward abdominal movement is secured by the contraction of the abdominal muscles. (This may be easily understood after reference to the illustrative sack and basket.)

#### VASTLY GREATER EXTENT OF BOUNDARY MOVED INWARD.

Measurement may be made, with the aid of a helping friend, of the distance inward that the whole frame-work of the ribs will sink during this abdominal expiratory mode. It will be less than



the average distance over which the abdominal surface will move inward, for it will vary in different places from less than a quarter inch to about a half inch.

But how vastly greater is the extent of inclosing boundary moved inward upon the lungs! For it will be found that not only the sides but also the back and front of the whole frame-work of the ribs will bear inward. Even the spine will yield to some extent.

#### ABDOMINAL SHRINKING COMPRESSES THE LUNGS.

Another great assistance will be afforded by the inward movement of the abdomen itself which attends the later stages of abdominal-diaphragmatic expiration. As the lower chest is drawn inward by the sinking of the lower ribs in front, the abdominal curves must equally come inward upon the enclosed viscera, perhaps to one-third the extent of their movement in strictly isolated abdominal expiration, and this compression or reduction of the abdominal curve must be answered by an equal additional compression of the lungs, and by the expelling of an equal additional amount of the air enclosed within them. In short, the whole upper frame, from shoulders to hips, shrinks upon the lungs either directly or indirectly, and expels a really surprising amount of air. The writer is inclined to think physiologists would estimate that fully two-thirds of the residual air of the lungs would be expelled by this skilled, artistic mode of expiration. This double muscular effort cannot at once be commanded. To the man or woman, who will use his or her voice in public speech or even in private song, this mode must be made familiar by judicious study and practice.



To this purpose a few of the author's written lessons are addressed ; though the study of the throat-affecting muscles is many times more various and arduous.



### CHAPTER III.

#### THE PUZZLE OF LENGTHENING, AND YET CONTRACTING RESPIRATORY MUSCLES.

In the exercise just given, the reader may be puzzled by observing that, though the diaphragm must sink to bear the abdomen outward, yet breath is being expelled. This phenomenon has, indeed, puzzled many experimenters. In "Inspiration" it appeared that this sinking away from the base of the lungs made room for more breath to be inhaled. How could the same sinking attend expiration?

It can be effected only by compressing the lungs at the sides more than they are enlarged below. In other words, the abdominal muscles and the diaphragm must pull the ribs inward upon the sides of the lungs over an even greater space than they find to be made below by the sinking or flattening downward of the diaphragm.

The abdominal muscles are certainly lengthened by being pushed outward, but are they in this case relaxed? If they were, the diaphragm would merely take up its curve and sink to or toward a plane with no inward pulling upon the ribs to which its circumference is attached.

But, on the contrary, the abdominal muscles, although they are being lengthened by the stronger outward bearing of the viscera, *are still putting forth their contracting force*, according to the third mode of muscular action. They are still pulling downward upon the ribs, although they must pull over an enlarging mass. The mass at any rate does not yield to allow them to simply take up



their slack ; they have a firmly swelling body of viscera to pull over and must draw their attached parts nearer together very much as perfectly free muscles would draw.

Besides that, the diaphragm, although its downward bearing actually pushes downward the viscera, does not push away an easily yielding mass, as in inspiration, but must put forth force enough to overpower the compressing effect of the actually contracting abdominal muscles. This force must pull upon the ribs to which the circumference of the diaphragm is attached and aid the abdominal muscles in pulling them powerfully inward to compress the lungs. If this narrowing on the sides is greater than the lengthening of the lungs below, the difference must be considered the expiratory effect of this curious muscular combination.

#### ILLUSTRATION BY MEANS OF A RUBBER BAND.

So many readers find it difficult to understand how a muscle can be *lengthened* and nevertheless can *contract*, that the simple illustration of a rubber band will be used to make the matter clearer. If such a band were somewhat stretched between the hands, its shrinking would pull with a certain degree of power upon the fingers. If it were stretched still farther, it would pull even more strongly. Now this shrinking of the rubber may roughly represent the shrinking of a muscle, and by comparison it may be seen that it might still put forth its effort to shrink and pull upon the parts to which its ends are attached, even though the parts were farther separated, as the rubber band pulls upon the separated hands.

The only differences are that the rubber pulls in its passive recoil to its natural state, while the muscle pulls only when it



is prompted to put forth its shrinking, or contracting effort; and that the rubber band would shrink more strongly the more it was stretched, but the muscle would not gain the power of shrinking more powerfully by being lengthened, but would seem to lose a part of its contractile power, and, indeed, there is a sense of diminished force of effort when the abdominal muscles are much stretched by the too bold forward movement of the viscera.

It may well be noticed at this stage that the muscular force seems to be greatest when the muscle is somewhat shortened, and that this may, in some measure, account for the greater power of the expiratory effort when the abdomen is held a trifle inward.

#### COMPRESSING FORCE AND EXHAUSTIVE FORCE.

To most thoroughly and easily exhaust the lungs, has so far been the principal question, and it is assuredly a question of great importance. It is true that fully or nearly as much supplemental, additional air may be drawn into the lungs over and above their ordinary supply, as can be expelled of this supply before the new breath has been drawn. But the vocalist has constant, the public speaker frequent, need of the double supply. Strict abdominal breathing would not suffice, even when the *quantity* of air for vocal consumption is alone regarded.

But the *compressing* force of the double effort, of the combined abdominal and diaphragmatic efforts, is absolutely necessary to support a singing tone or an ordinary declaiming inflection.

It will be remembered that in "Inspiration" it was shown that the ribs were easily expanded, or borne outward and upward, to make room in the lungs for more breath. This expansion was effected by the up-pulling effort of muscles attached to the ribs.



## EXPANSION OF THE RIBS FROM INTERNAL PRESSURE.

It is a curious fact that the abdominal muscles, *acting alone*, will expand the ribs if they are contracted with force, and if the throat is closed. The experiments hitherto given have allowed breath to escape rapidly in a whispered "Whew!" or with a mild, breathy tone, such a tone as is the natural outcome of a gentle, inward movement of the abdomen.

But let the throat be closed while the abdominal muscles force the abdomen inward. If the hands clasp the sides, they will be felt to move outward. The flattening abdominal muscles will crowd the viscera so strongly against the diaphragm that it will be actually pushed upward into the cavity of the chest. The enclosed air in the lungs will be so powerfully compressed that it will force the elastic ribs outward to make room for the air pushed away from the lower part of the lungs.

This abdominal effort does not exceed or even equal the force required to support a moderate tone. The chest will unavoidably be swelled outward if it is not held firm by some other muscular contraction. The great fault, the bane of all practical study, is, that instinctively the pupil will set the ribs in an unyielding frame by contracting the intercostal or between-ribs muscles, thus checking, to some extent or entirely, the outward movement, and enabling the abdominal muscles to only feebly compress the lungs.

That even a powerful, a straining inward effort must be weakly answered, will be evident to any one who will try to hiss by drawing in the abdomen while he stiffens the chest and sides, either holding them a little expanded or drawn inward. Let him observe how stiff and difficult is the exertion, and how feeble is the pressure of the hissing breath upon the teeth; then let him com-



pare this force with the hissing breath that may be sent against the teeth by the double expiratory effort described in the previous exercise, the one giving the forward-from-within-the-abdomen effort, or effort of abdominal muscles and diaphragm combined. For in this double effort the diaphragm actually pulls the ribs inward against any expanding influence of the up-crowded and out-crowded viscera, and thus every possible requirement and difficulty will be met, as both practice and argument prove convincingly.

#### OTHER EXPIRATORY MUSCLES.

There are, indeed, many other muscles having an expiratory influence. Of these it is probable that the *quadrati lumborum* muscles, connecting the lower ribs with the pelvis and the lower part of the spine, and perhaps the *posterior inferior serrati* muscles, connecting the four lower ribs with the lower parts of the spine, are contracted during the diaphragmatic-abdominal expiratory effort. Otherwise it is hard to see how the abdominal muscles could be prevented from pulling the whole frame-work of the ribs forward, thus bending the body forward upon the hips. For — to return, perhaps needlessly, to the half barrel and sack — it will be seen at once that the half hoops (ribs) are able to yield only in front of the supporting stave (spine), that the shrinking sack would pull mainly upon loosely swinging horizontal half hoops, would bend them downward and pull the stave over with them, *if it were not held firm by some down-pulling or back-pulling force.*

Similarly, as the whole length of the ribs can be pulled downward except at the spine, to which they are firmly united, they would pull the spine over with them, were not the muscles just mentioned contracted to hold it firm against such tilting force.



For they are attached to the ribs so near the spine that they would have this preventing effect. Probably the *erectores spinæ* also exert themselves to hold the spine stiff and straight against the bending effect of the down-bearing ribs.

#### THE INTERNAL INTERCOSTAL AND OTHER RIB AND STERNUM-AFFECTING MUSCLES.

Are the short muscles which connect adjacent or distant ribs (the internal intercostal or the infracostal) also active during respiratory support of voice? It is possible that they are, that they assist or simply accompany the contraction of the abdominal muscles and the diaphragm. But the evidence of innumerable lesson-hours has convinced the writer that they are mainly or wholly inactive. Certain it is that that the pupil must be most carefully trained to avoid all shrinking or lowering effort in the region of the chest itself or of the sides or back, unless, indeed, the sinking effort of the diaphragm may be commanded by an intended downward effort in the very interior of the chest. But, undoubtedly, all effort to locally move the ribs will tend to stiffen or set them in a solid unyielding form, and will check instead of favor vocal expiration. This is true even when the ribs are somewhat forced inward by local effort, as strict experiments will testify.

#### PROBABLE OFFICE OF INTERCOSTAL MUSCLES.

It seems reasonable to suppose that the internal intercostal muscles are mainly designed to aid in those functions which require a powerful expelling of a small amount of air, such as throat-clearing and coughing, or that their office for some acts may be not at all to expel breath, but to render the whole frame-work of



the ribs stiff and unyielding, thus affording a firm support for powerful bodily strainings or efforts, such as lifting, pushing and similar exertions.

For such efforts the abdominal muscles combine with the diaphragm not only to hold the abdomen itself immovable, but also to aid the rib-muscles in setting firm the upper frame. This general bracing or setting of the whole upper frame is often mistaken by voice-producers for the true expiratory support.



## CHAPTER IV.

### INSPIRATION AND EXPIRATION COMBINED.

All that the preceding chapter contains has taken it for granted that the cavity of the chest has not been enlarged to afford more room in the lungs for air. The effortless position of the upper frame, such as it assumes at the end of an ordinary expiration of life-sustaining breath, has been subjected to the muscular efforts described. How will the given laws and advice be affected by the change of form brought about by the muscles which expand the chest to gain a larger supply of breath?

Hardly at all; for an instantaneous relaxation of all inspiratory muscles should take place at the instant of beginning the expiratory and vocal effort. The whole frame-work of the ribs is slightly raised and expanded; even the collar-bones are elevated a half or three-eighths of an inch. All the lifting and expanding muscles will, by their sudden relaxing, let the frame-work of the ribs downward and inward to some extent, *but by no means to the extent that they have been raised*; for the chest, or more strictly the lungs in the chest, have been filled and enlarged, and the ribs can sink only so far as the enlarged form of the lungs will allow. The body of air buoys out the boundaries of the lungs, but all the boundaries must now receive an equal share of the pressure. Therefore the diaphragm will be borne somewhat below its inspiratory position, letting the sides of the chest sink a little inward and downward until a balance has been reached.



Let this be done while the throat is closed against the escape of air. Remain for an instant entirely free from all muscular effort; then suddenly let the throat open and the air be freed. You will surely realize that the chest and back fall still lower, showing that their natural form had not been gained while the throat was closed.

This slight fall at the entrance of voice is not felt to disturb all those delicate adjustments of the parts of the throat which shape it for artistic tones. In actual practice it will be appreciated as an assistance. If the falling weight were so powerful that the body of air in the lungs would be more strongly jarred than the voice demanded for even a mild attack, then, indeed, would the objection be worthy of thought.

Even when a tone is to begin faintly and grow strong by degrees, the slightly lifted chest does not embarrass. It can be let down as gradually as the artist wills, surely with as much ease and as delicate management as the expanded sides or distended abdomen could be held out or allowed to gradually come inward.

#### POWER TO EXHAUST RESERVE AIR.

The voluntary command of the diaphragm, in its alliance with the abdominal and spine-affecting muscles, does not simply draw the raised and expanded ribs downward and inward to their natural form and position. So far they have expelled only the volume of air which voluntary inspiratory efforts have added to the reserve and residual air of the lungs, to the body of air which the lungs contain when they are subjected to no pressure or expansion. Fully as much more may be expressed by the continued contraction of the same expiratory muscles!

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## EQUAL LUNG PRESSURE TO THE END.

And the compression of the lungs can be maintained unlesened almost to the very last instant of expiratory flow ; therefore will the upward pressure upon the vocal cords push them into wide and resounding vibration so long as the musical or dramatic phrase may require. This is, of a certainty, a great and practical gain ; for breathing must too often be considered an infirmity in artistic utterance. To judge well within bounds, a full third is added to the endurance of a single breath.

Many other advantages might be detailed ; a lesson-hour rarely passes without the appearance of new proofs or the renewal of old. These testimonies combine to form an argument irrefragible in strength, powerful to easily withstand all assault on whatever side presented.



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[No. 5.]

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### Opinions of the Press.

Rossini said, years ago, "that the art of voice-training was lost, and that the name of the person who discovered the lost art should go down to posterity, as one of the greatest benefactors of the world." Some years ago the writer became acquainted with and studied under Mr. John Howard, a graduate of Yale College, and who had also spent several years in Leipsic under the best masters. The method worked out by Mr. Howard is the result of patient study and experiment, based on purely scientific principles. These principles have been put to a practical test, and give a thorough, intelligent control of those muscles and agents upon whose mastery the pupil must rely for permanent success.—*Brooklyn Daily Times*, Sept., 1882.

By patient experiment and investigation, a system has been worked out by Mr. John Howard, a graduate of Yale University, and drilled in music by the best masters of Leipsic during the years 1865 and '67.

These principles recognize the legitimate function of muscular control, giving it so thorough drill as to secure for the vocalist an intelligent mastery of the agents implanted in his organism. Taking into view the fact, that with few exceptions those who essay vocal exertion beyond the limit of ordinary speech become victims of ordinary muscular necessities, this method provides the means of successful and finally banishing all these intrusive forces.—*Boston Evening Transcript*, 1882.

her, All



## Singers' Testimonials.

I value your lessons as an almost infinite remove above all other instruction in vocal culture possible to be obtained. I have neither forgotten nor suffered to lapse the benefit received from the former lessons, and only regret that so much time has passed in a comparatively unimproving condition. I have had several hot arguments with teachers of vocal culture, and have invariably characterized their system as one, the foundation of which is, "imitation," an effort depending upon some model, depending for a successful issue upon the accidental acquirement of a certain quality of tone similar to the quality exhibited by some person or persons of vocal reputation. I call the plan "accidental" because it is only the result of long-continued, uncertain experiment.

The Howard Method I characterize as a scientific system, based on certainties, built up on known physiological relations, developed by determinate conditions, compelling correct tone by a complete mastery of well defined principles, and insuring successful development because each step forces nature into alliance and cooperation. The old systems are essentially experiment, imitation, uncertainty; the Howard Method, knowledge, nature and definite success.

I pointed to the fact that all the training I had hitherto received, had failed to develop certain desirable qualities in my voice; while four lessons of the Howard Method had overcome the difficulties and produced tone incomparably superior to all previous tones.

J. J. BOURNE, Box 249, St. Thomas, Ont.

Since starting in this matter, I had feared to risk any regular singing, for the quality of the practicing tone did not satisfy me; but these later formulae let in a flood of light, and upon venturing first with a vocalize and then with melodies set to words, my joy was unspeakable. For the voice poured forth in easy volume from lower to higher ranges; the vibratory ring ensuing for notes that sulked before; the *e* and *a* as docile as the *ah*; the *legato* control asserting itself at every pitch, and the tones made soft without being absurdly muffled as before. The power also fully doubled. My friends are filled with surprise at the changed conditions and I am full of gratitude to you. The channel thus opening to my gladdened ear for the free outflow of the ideal eloquence that has pined in its prison so long is beyond all price. I can indeed never begin to thank you for the joyous release.

MISS J. P. TITCOMB, 81 Waltham street, Boston, Mass.

My voice has improved wonderfully under your tuition, and I cannot tell you how much gratification I have toward you for the kind interest you have always manifested in my progress. I cannot say that I am a good exponent of your views, not being a professional man but a mechanic. I have given my spare hours to the study of your method, and to such purpose that I am now considered (and I say this without boasting) the best bass singer in the city. Of course we have no talented or renowned artists here, so the distinction is not great, but still I consider it something to be proud of.

GEO. B. HINMAN, Atlanta, Ga.

I am more than satisfied with the lessons; my voice has improved wonderfully. I believe that a great share of time and money spent with others was spent in vain. I knew I was wrong; they told me so, but did not tell me how to get right. Your lessons seem to produce the *desired* and *desired* effect every time.

JOSEPHINE BENHAM, Constantine, Mich.

These lessons are certainly and at last the perfection of teaching. Of course it would be very pleasant to have some one say: "This is just right," or "That does nicely." Still, even where I must be both pupil and judge too, the directions to be followed are so complete that one cannot go far wrong. These lessons make a reality of the wonders of Fairy Land; my admiration of them is without limit. I am very much surprised at the improvement in my voice since using them—more than I had imagined possible.

MRS. B. M. SMITH, Ripon, LaBette Co., Kansas.

I am more than pleased with the lessons, they are just what I have wanted for years past. I can do more with your method in one lesson than with my old way in three or four. Further examination has only confirmed my high opinion of them.

H. G. S. WHIPPLE, Voice Teacher, Louisville, Ky.

I prize the lessons more highly than ever; I have found each one a benefit and quite readily understood. I shall be satisfied with nothing less than the full method.

MISS N. E. GUNN, Willimantic, Conn.

Your lessons are admirable in expedients and successful in their presentations.

GEO. H. HOWARD, A. M., Boston, Mass.

I am often asked if I can understand the correspondence lessons. I always reply, "Perfectly; the lesson, if closely followed, must give the right movement." I like your method very much and think it is based on true and scientific principles. I have no hesitancy at all in saying that I find myself much benefitted. I can now sing the high F above the staff as easily as I could the C, or D.

MRS. (REV.) GEO. T. KELLER, South Bend, Ind.

Your written lessons are such a help to me in my teaching that I wish, not only to thank you for the new light received, but, if possible, to influence others to take them, as they should be learned by all teachers, whether of singing or of elocution. I consider these lessons worth \$5 apiece to any teacher of voice, or to anyone with a voice worth cultivating. They are really wonderful and very fascinating, though a lazy person had better not undertake them.

MRS. J. H. MILKINS, Waterloo, Iowa.

I am literally blowing away all obstructions.

J. BALL, 37 sixth Street, San Francisco, Cal.

The break I spoke of has disappeared from A, B and C. I consider my voice *very much* improved; it has greater volume and is more flexible. I have the highest opinion of your system. I have found great benefit both for myself and my pupils.

MISS CLARA C. AYRES, Teacher of Music, Greenwood Seminary, Lebanon, Tenn.

I have taught for ten years, and during that time have taken a great many lessons from teachers who were all very fine, but I have received more benefit (and actual knowledge) from your written lessons than from all the teachers combined. I cannot say too much in their favor. I am always so glad when one comes.

M. L. McPHAIL, 1308 Market Street, Wheeling, W. Va.



My voice is as clear and full as could be desired on low A and B flat, weighing as I do but 115 lbs.; yet I can easily fill any church or opera house in this city. I can assure you that your lessons in breathing and sustaining tones have been of untold benefit to me—and that after very little practice, for my time has been quite limited.

W. CLAY KAUFMAN, cor. Paca and Columbia Aves., Baltimore, Md.

I am very much pleased with your lessons. I can now sing to A above the staff with ease, and before taking your lessons could only sing to F. I have also gained two tones below the staff. I believe I have gained double the former power since taking your lessons. It gives me pleasure to sing now, when before I disliked to. My friends say that I am improving rapidly. I would say more had I the language to express my feeling.

THOMAS Y. EVANS, Morris Run, Tioga Co., Pa.

I always take pleasure in recommending your lessons: I find them so *very valuable*. I feel that they are worth many times what they have cost me. I always had considerable compass of voice, and used to sing a few pieces that went to upper C, but my notes above F were either forced or what you call falsetto. Now my upper notes are usually full, and part of the time quite resonant. I could formerly sing down to G (third space below) almost any time; but since taking your lessons (first course of 20, I sang in the public hall a piece which ran to E, fourth space below, with considerable volume.

(Later.) My voice held out wonderfully yesterday (Easter), though I sang in three services. The knowledge and practice of the "farther back" movement, first given in Prompting Muscles, No. —, were of great service to me."

MRS. M. A. WAKEMAN, Nantucket, Mass.

Some of Madame Taylor's pupils under your drill have acquired phenomenal voices.

M. P. DRUMMOND, Palmyra, Mo.

### Speakers' Testimonials.

Since studying your lessons the teachers of elocution of whom I have any knowledge have grown wonderfully inferior. I am at a loss! The ordinary books are of little value; though the book you sent me (Delsarte\* is every word of it gold, and through that I shall find my way in the right direction to extended knowledge of the subject of gesture.) I value your lessons very highly; I can speak of them only with the highest praise. They seem to me to give a certainty to practice which I had never found before. They also open to me a new and definite means of reforming the evils of school-reading. Please accept sincere gratitude for what I have received from your lessons and suggestions.

E. R. WARRNER, Washington, Warren Co., N. J.

I have practised the exercises sent, and find that they both strengthen the voice and render it more flexible. In addition to this, I find the practice to be an excellent tonic to aid digestion, which happened to be the very thing I very much needed, for indigestion has troubled me for years. I think I understand fully the benefits to be derived from the lessons already sent.

REV. J. D. McLEAN, Woodstock, Ill.

I have practised the fifteen lessons thoroughly, and with most beneficial results. They have greatly improved and strengthened both my singing and speaking voice; and I can heartily recommend them to any speaker or singer, believing that, if faithfully practised, they will be highly beneficial. They are not hard to understand and may be practiced with a reasonable certainty of correctness.

REV. W. H. SPARLING, Cowansville, Que., Can.

The benefits derived from the few lessons that I have taken convince me that the (written) lessons of Prof. John Howard are invaluable to any one desiring to obtain a strong and pure voice.

REV. JOHN S. HOUSTON, Lewes, Del.

I like your method of teaching better than any I have ever seen. I like it better because of its simplicity, clearness and thoroughness. I deem it simply impossible to fail of improvement, if your rules are practised. I only regret that I did not know of your method years ago.

W. J. PHILLIPS, Attorney-at-Law, Anderson, Texas.

You may be pleased though not surprised to learn that with the imperfect practice already given I have derived incalculable benefit. My expectations have been far more than realized. A minister who has just left my house for a tour through the South was making arrangements to take a vocal course in Cincinnati; but when he saw the remarkable success of your system with me, he concluded to visit New York this spring, to enjoy the benefit of your instructions. I hope to be able to present myself before you at the same time for inspection.

REV. W. T. TIBBS, 2917 Laclede Ave., St. Louis, Mo.

My voice, naturally not loud, has gained in strength, and I can use it with very much less fatigue.

REV. C. O. TILLOTSON, Butte, Montana.

Three years ago last January I received great benefit from a series of your lectures on vocal gymnastics, received second-hand from Edw. M. Booth, of the Chicago Theological Seminary. I cannot begin to describe the benefit I received from him. That I should have ever reached success as a gospel minister without such drill is very much *question*. Hence I can cordially recommend your system as an invaluable aid to others.

REV. QUINTUS C. TODD, B. D., A. M., Red Cloud, Webster Co., Nebraska.

I became thoroughly convinced of the genuineness of your course before I began. I have been doubly paid for the outlay and trouble. The greatest benefit has come from learning how to breathe through the aid of the abdominal muscles and the diaphragm. Much help has also come through easier action of the mouth, tongue and throat.

REV. BERNARD PALMISTON, Sandwich, Mass.



Having received so much benefit and obtained such a mastery over my voice, I desire to perfect myself as far as possible. I am now preaching to congregations to whom I ministered more than a dozen years ago, and the old friends wonder very much at the ease with which I do my work. They simply cannot understand it.

REV. E. B. MOORE, Annapolis, Nova Scotia.

My own experience since I began the lessons has been wonderful; my difficulty about the throat is passing away, and the whole vocal apparatus is strengthening. Last Sunday I was so ill that they were obliged to carry me to the church. My mouth and tongue were as parched and dry as a chip. I never could have gone through the service but for your training. I felt so thankful to be able to speak under the circumstances that I should have given you a good Western hug had you been here.

(Later)—I was away last week and took a severe cold, but had practices at the Jaw Efforts. No. 3 lesson put me in shape for my Sunday service. My wife told me after service that I spoke and sang as though afraid of making too much noise, and that was really the case. I found myself literally drowning out the twenty-five boys and girls, men and women who were singing. While preaching I did not dare to let my voice out; it seemed as though it would shatter things if I did. I think I told you at first that I loved to sing, and I assure you it is now a greater pleasure than ever, I find the Jaw lessons of so much benefit in the enunciation of syllables.

REV. T. G. CRUMP, Litchfield, Minn.

I noticed in one of your circulars a letter to you from the Ursuline Convent, Brown Co., Ohio, speaking in the highest terms of your system. Now, my sister was educated in that institution, and I had her write to learn what it thought of the system for a beginner. The answer I received was: "It is decidedly the best system of elocution that is taught." They recommended it even without the personal attention of the teacher in preference to any other with it, although we have several professors of elocution in this city of fine reputation.

FRANKLIN T. CAHILL, 13 West Fourth St., Cincinnati, O.

I should be very glad to have a personal interview to have you test my voice and see how far I have reformed and how fully my voice approximates its probable normal condition. This much I know: no man of my years (69) in this country can excel me in clear, decided resonance, or ease, even when the fullest volume is employed.

My regular Sunday service is the full equivalent of three sermons, and once a month four (say three sermons, two Sabbath-schools and nine miles' travel), and this without vocal weariness. Ten twenty, or thirty years ago I could not have said this. *Persistent vocal training from youth up, and your most excellent system in these later years, have, with God's blessing, secured this result.*

REV. WM. ROBERTS, Forest Grove, Oregon.

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The Lessons by mail are taken by pupils in Canada, Bermuda, West Indies and England, and in every State and Territory of the United States. This entire Bulletin is but a partial account of results gained mainly within the six months preceding its issue, as the dates will show.

The testimonials will themselves indicate the different classes of pupils to be benefitted. These unsolicited reports are not exceptions, for absolutely no pupils have reported adversely.

Not one of the above pupils has been taught in person, all the results described having been gained through correspondence alone. Indeed, only two of them have been either seen or taught personally by Mr. Howard.

Fulfilling the promise of the former Bulletins, Mr. Howard issues Bulletin No. 5, containing testimonials from all classes who use the voice. Even the most skeptical inquirers must finally become convinced of the practical force of written lessons by such cumulative testimony. To teachers of the voice, whether for elocution or for singing, they afford a thoroughly digested plan for assailing all radical faults of the throat or of respiration, besides giving definitely the fundamental principles upon which artistic vocal efforts must be based.

Even piano teachers and piano players, who have the requisite mental discipline in musical forms, but have had no experience with the voice, may confidently adopt this additional and lucrative branch of their profession, after a thorough study and personal application of the physical exercises of "The Howard Method." This has been proved in many instances.

In dealing with the vocal organs no term of anatomy need be used, beyond the common conversational names of the parts of the body, unless the pupil desires to study more minutely, as a matter of scientific interest, the physiology of the voice.

Pupils at a distance who desire to visit Mr. Howard may be sure of finding him any day, except Monday, after the second week of July, when he will be absent to deliver an address upon the voice, before the National Association of Music Teachers in Chicago.

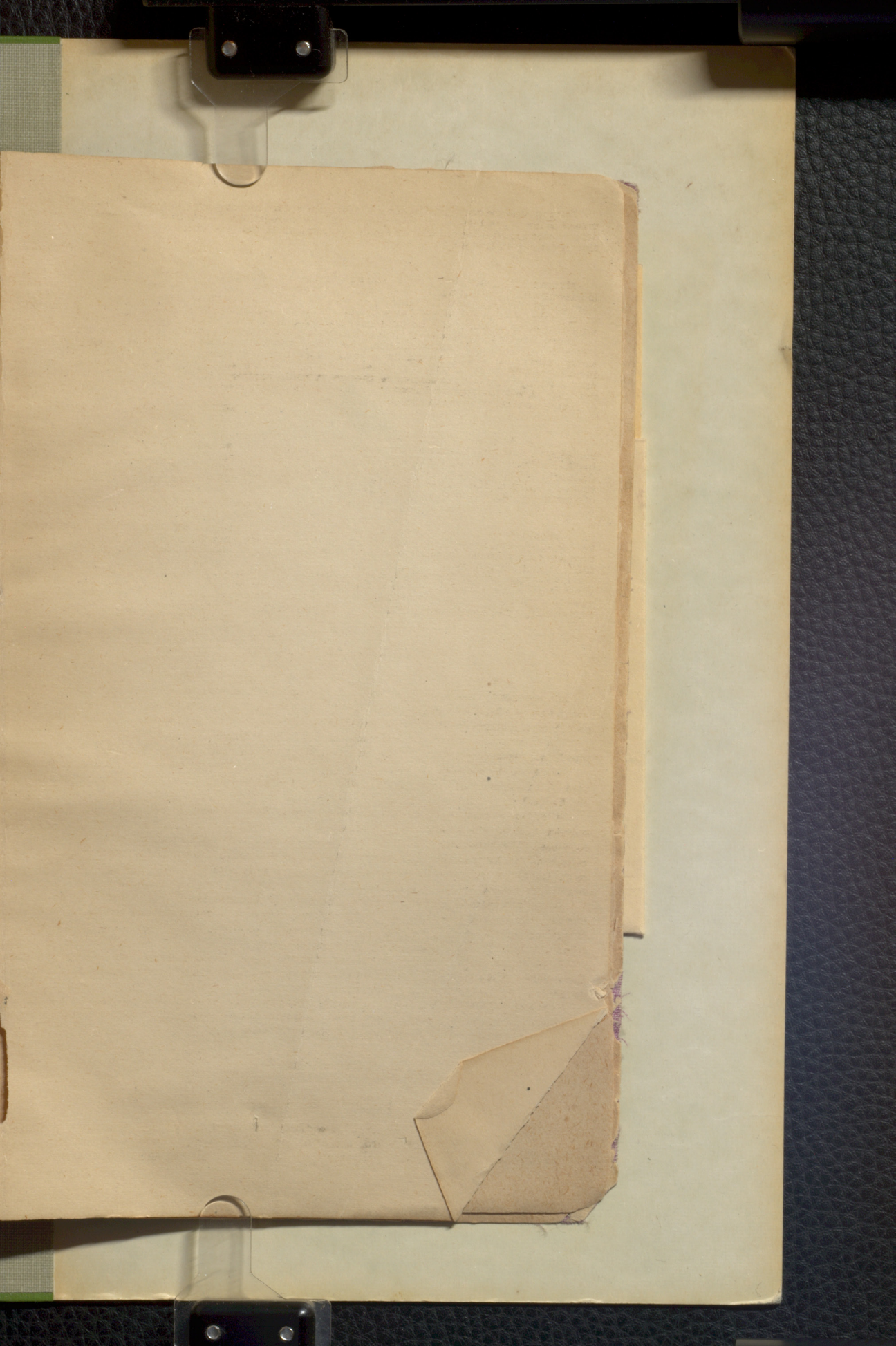
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### *The Normal Method alias Howard Method*

I was lately handed a collection of written lessons sent by a Mr. Clark, of Philadelphia, which were word for word, old and mainly discarded lessons of my own. Any one sending me one of them will receive a circular explaining their full history.

JOHN HOWARD.



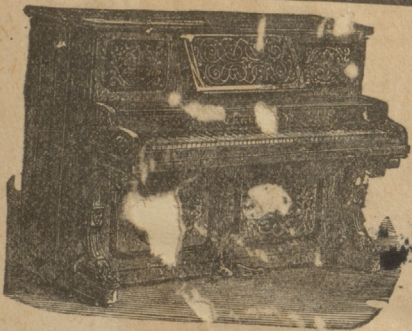








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