

PART III

THE THEORY AND PRACTICE OF A NEW METHOD OF RESPIRATORY RE-EDUCATION

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"Whoever hesitates to utter that which he thinks the highest truth, lest it should be too much in advance of the time, may reassure himself by looking at his acts from an impersonal point of view. . . . It is not for nothing that he has in him these sympathies with some principles and repugnance to others. He, with all his capacities, and aspirations, and beliefs, is not an accident, but a product of the time. He must remember that while he is a descendant of the past he is a parent of the future; and that his thoughts are as children born to him, which he may not carelessly let die."—HERBERT SPENCER.

INTRODUCTORY

IT may be of interest to my readers to know that the method I have founded is the result of a practical and unique experience, for my knowledge was gained—

1. While vainly attempting to eradicate personal, vocal, and respiratory defects by recognized systems.

2. While afterwards putting into practice certain original principles, which enabled me to eradicate these defects.

3. While giving personal demonstrations of the application of these principles from a respiratory, vocal, and health-giving point of view.

I first imparted the method thus evolved to patients recommended by medical men over ten years prior to June, 1904. At that date I introduced it to leading London medical men, who, after investigation, decided that the method was, as one doctor put it, "the most efficient known to (him)."

The method makes for—

In Education

1. Prevention of certain defects hereinafter referred to.
2. Adequate and correct use of the muscular mechanisms concerned with respiration.

In Re-education :

1. Eradication of certain defects hereinafter referred to.
2. Co-ordination in the use of the muscular mechanisms concerned with respiration.

The result of (2) is not only to make that function efficient, but also to ensure that normal activity and natural massage of the *internal organs* so necessary to the adequate performance of the vital functions and the preservation of a proper condition of health.

F. MATTHIAS ALEXANDER.

THE THEORY OF RESPIRATORY RE-EDUCATION

THE artificial conditions of modern civilized life, among which is comparative lack of free exercise in the open air, are conducive to the *inadequate* use of breathing power. Indulgence in harmful habits of feeding and posture have caused these same habits, through heredity and unconscious imitation, to become "second nature" in the great majority of adults to-day and frequently in children, even at an early age.

The normal condition of vigour in the action of the component parts of the respiratory mechanisms is greatly interfered with; general nervous relaxation is brought about, and a feeble, flabby action becomes permanent.

Certain muscles of the thoracic mechanisms which should take the lead in the performance of the breathing movements remain entirely inert for the greater part of life, whilst others, which were never intended by nature to monopolize this particular act but only to serve as a relief or change, are used solely for the act of breathing.

Hence arises a condition in which the posture, the symmetry of the body, the graceful normal curves of the whole frame, suffer alteration and change.

The capacity and mobility of the thorax (chest) are decreased, its shape (particularly in the lumbar region, clavicles, and lower sides of the chest) is changed in a harmful way, and the abdominal viscera are displaced, whilst the heart, lungs, and other vital organs are allowed to drop below their normal position. Inadequate holding-space of the thorax—which means a distinct lessening of the "vital capacity"—and displacement of the vital organs within it, are great factors in retarding the natural activity of the parts concerned, which are therefore unable fully and naturally to perform their functions. In these circumstances the natural chemical changes in the human organism cannot be adequate.

The serious interference with the circulatory processes and the inadequate oxygenation of the blood prevent the system from being properly nourished and cleansed of impurities, for

the action of the excretory processes will be impeded and the whole organism slowly but surely charged with foreign matter, which, sooner or later, will cause acute symptoms of disease.

It will at once be understood that the defects enumerated produce distinct deterioration in the condition of the different organs of the body, and it is well known that an organ's power of resistance to disease depends on the adequacy of its functioning power, which in its turn depends on adequate activity.

Records exist which prove that Chinese physicians as early as 2000 B.C. employed breathing exercises in the treatment of certain diseases. It is therefore obvious that the people concerned had reached :

1. A stage in their evolution which corresponds with that of our time, i.e., demanding re-education.
2. A stage of observation of cause and effect similar to that of to-day, which led them to see the need of re-education. Such re-education is essential to the restoration of the natural conditions present at the birth in every normal babe, though gradually deteriorated under conditions of modern life.

In recent years the following members of the medical profession have urged the inestimable value of the cultivation and development of the respiratory mechanism, and their conclusions have been borne out by the practical results secured by respiratory re-education combined with proper medical treatment.

MEDICAL OPINIONS CONCERNING THE EVIL EFFECT OF
INTERFERENCE WITH AND INADEQUATE USE OF THE
RESPIRATORY PROCESSES

Mr. W. Arbuthnot Lane, surgeon to Guy's Hospital, in his lecture published in the *Lancet*, December 17, 1904, p. 1697, urges that reduction in the respiratory capacity is a very great factor in lowering the activity of all the vital processes of the body, and that in the first instance inadequate aeration and oxygenation is the result of a serious alteration in the abdominal mechanisms, and afterwards this insufficient aeration impairs the digestive processes.

Dr. Hugh A. McCallum, in his clinical lecture on "Visceroptosis" (dropping of the viscera), as published in the *British Medical Journal*, February 18, 1905, p. 345, points out that over ninety per cent of the females suffering from neurasthenia (exhaustion of nerve force) are victims of visceroptosis, and that the conditions present are bad standing posture, imperfect use of the lower zone of the thorax, and the lack of tone in the abdominal muscular system which leads to defective intra-abdominal pressure. He also mentions that Dr. John Madison Taylor of Philadelphia and Keith of England were the two first to point out that the origin of this disease begins in a faulty position and use of the thorax.

In a leading article in the *Lancet*, December 24, 1904, p. 1796, this passage occurs :

"Whatever may be the causes, it is certain that an increasing number of town-dwellers suffer from constipation and atony of the colon, and that purgatives, enemata, and massage are powerless to prevent their progress from constipation to coprostasis."

CONVALESCENTS

The value of respiratory re-education in the treatment of convalescents was pointed out recently (1905) by M. Siredey and M. Rosenthal in a paper read at a meeting of the Societe Medicale des Hopitaux.

An excerpt from the *Lancet*, February 18, 1905, p. 463, reads as follows:

"They said that respiratory insufficiency was one of the causes of the general debility which showed itself after an acute illness. It was easily recognized by the following symptoms, which the patient presented, namely, thoracic insufficiency, shown by absence or impairment of the movement of the thorax; and diaphragmatic insufficiency, shown by immobility or recession of the abdomen during inspiration—a condition met with in pseudo-pleurisy of the bases of the lungs.

"Respiratory re-education was, in their opinion, the specific treatment for respiratory insufficiency. In the case of convalescents it constantly produced a progressive threefold effect, namely, expansion of the thorax, diuresis,

and increase of weight. It promoted in a marked degree the recuperation of the vital functions which followed acute illness, and the general health of the patients improved rapidly. It ought to be combined with other forms of treatment, and the action of the latter was enhanced by it."

The matter of preventing defective and restoring proper action clearly calls for attention. The foregoing will enable the reader definitely to understand what is necessary, viz.,

1. In *Prevention*. The inculcation of a proper mental attitude towards the act of breathing in children, to be followed by those detailed instructions necessary to the correct practice of such respiratory exercises as will maintain adequate and proper use of the breathing organs.

2. In *Restoration*. A body possessing one or other or all of the defects previously named will need re-education in order to eradicate the defects brought about by bad habits, etc., and to restore a proper condition. As the breathing mechanism is ordinarily *unconsciously* controlled, it is necessary, in order to regain full efficiency in the use of it, to proceed by way of *conscious* control until the normal conditions return. Afterwards, when perfected, unconscious control—as it originally existed prior to respiratory and physical deterioration—will supervene.

II

ERRORS TO BE AVOIDED AND FACTS TO BE REMEMBERED IN THE THEORY AND PRACTICE OF RESPIRATORY RE-EDUCATION

" Each faculty acquires fitness for its function by performing its function; and if its function is performed for it by a substituted agency, none of the required adjustment of nature takes place; but the nature becomes deformed to fit the artificial arrangements instead of the natural arrangements."—HERBERT SPENCER.

ANYTHING that makes for good may be rendered harmful in its effect by injudicious application or improper use, and many authorities have referred to this fact in connection with breathing exercises. For the guidance of my readers I will detail some of the harmful results which accrue from the attempt to take what are known as " deep breaths " during the practice of breathing and physical exercises, in accordance with the instructions set down and the principle advocated in recognized breathing systems.

At the outset let me point out that respiratory education or respiratory re-education will not prove successful unless the mind of the pupil is thoroughly imbued with the true principles which apply to atmospheric pressure, the equilibrium of the body, the centre of gravity, and to positions of mechanical advantage where the alternate expansions and contractions of the thorax are concerned. In other words, *it is essential to have a proper mental attitude towards respiratory education or re-education, and the specific acts which constitute the exercises embodied in it, together with a proper knowledge and practical employment of the true primary movement in each and every act.*

I may remark that I recognized this factor and put it to practical use over twenty years ago, but it has been quite overlooked or neglected in the other systems formulated before and since that time. In fact, when I introduced my method to leading London medical men they quickly admitted the value of this important factor, and expressed their surprise that on

account of its importance it had not been previously advocated, seeing that from a practical point of view it is so essential, not only in the eradication of respiratory faults or defects (re-education), but also in preventing them (education).

A proper mental attitude, let me repeat, then, is all-important. From its neglect arise many of the serious defects ordinarily met with in the respiratory mechanism of civilized people, all of which are exaggerated in the practice of customary "breathing exercises."

1. "*Sniffing*" or "*Gasping*." If the "deep breath" be taken through the nasal passages there will be a loud "sniffing" sound and collapse of the *alae nasi*, and if through the mouth, a "gasping" sound. The pupil has not been told that if the thorax is expanded correctly the lungs will at once be filled with air by atmospheric pressure, exactly as a pair of bellows is filled when the handles are pulled apart.

It is a well-known fact, but one greatly to be regretted, that many teachers of breathing and physical exercises actually tell the pupils that, in order to get the increased air-supply they *must* "sniff."

Worse than this, many medical men are guilty of similar instruction to their patients, and when giving a personal demonstration of how a "deep breath" should be taken, they "sniff" loudly and bring about a collapse of the *alae nasi*, throw back the head, and interfere with the centre of gravity. Of course, it is only necessary to remind them of the law of atmospheric pressure as it applies to breathing, and they at once recognize their error.

Such a state of affairs serves to show that lamentable ignorance prevails even in the twentieth century in connection with so essential a function as breathing, and on reflection we must realize the seriousness of a situation which, from some points of view, is really pathetic.

Most people, if asked to take a "deep breath," will proceed to—I use the words spoken by thousands of people I have experimented upon—"suck air into the lungs to expand the chest," whereas of course the proper expansion of the chest, as a primary movement, causes the *alae nasi* to be dilated and the lungs to be instantly filled with air by atmospheric pressure, without any harmful lowering of the pressure.

2. During this harmful "sniffing" act it will be seen that—

(a) The larynx is unduly depressed; likewise the diaphragm.

The undue strain, caused by this unnatural crowding down of the larynx and its accessories, is undoubtedly the greatest factor in the causation of throat troubles, especially where professional voice-users are concerned. This has been abundantly proved by the practical tests which I have made during the past twelve years. My success in London with eminent members of the dramatic and vocal profession, sent to me by their medical advisers, might be mentioned in this connection.

(b) The upper chest is unduly raised, and in most cases the shoulders also.

(c) The back is unduly hollowed in the lumbar region.

(d) The abdomen is generally protruded, and there is an abnormally deranged intra-abdominal pressure.

(e) The head is thrown too far back, and the neck unduly tensed and shortened at a time when it should be perfectly free from strain.

(f) Parts of the chest are unduly expanded, while others that should share in the expansion are contracted, particularly the back in the lumbar region.

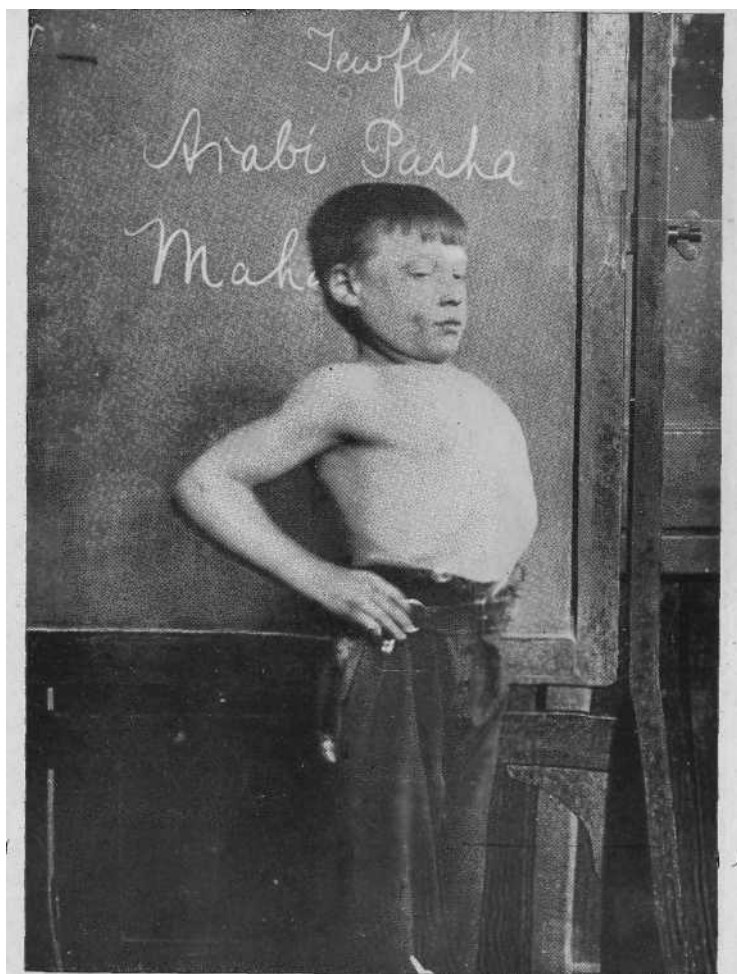
(g) During the expiration there is an undue falling of the upper chest, which harmfully increases the intra-thoracic pressure, and so dams back the blood in the thin-walled veins and auricles and hampers the heart's action.

(h) Undue larynx depression prevents the proper placing and natural movements of the tongue, the adequate and correct opening of the mouth for the formation of the resonance cavity necessary to the vocalization of a true "Ah."

It is well known that the tongue is attached to the larynx, and therefore any undue depression of the latter must of necessity interfere with the free and correct movements of the former.

(i) The head is thrown back to open the mouth.

This is a common fault, even with professional singers, but a moment's consideration of the movements of the jaw—from an anatomical point of view—will show that it should move downwards without effort, and that it is not necessary to move the head backwards in order to effect



This photograph, published a few years ago in a daily paper, represents a member of a class in a London County Council School performing deep-breathing exercises. On the back of this page this lad may be seen at work in the class. These unfortunate boys as here shown are simply being developed into deformities. Luckily of late a change for the better has taken place in school calisthenics.



See note on previous illustration.

the opening of the mouth by the lowering of the jaw, since, as a matter of fact, the latter movement will be more readily and perfectly performed if the head remains erect without any deviatory posture.

Every voice-user should learn to open the mouth without throwing back the head. Very distinct benefits will accrue to those who succeed in establishing this habit.

It is well known that the practice of "physical-culture" exercises has caused emphysema, and it has been suggested that unnatural breathing exercises have also been responsible for the condition. I refer to this because I wish to show that it would not be possible to cause emphysema by the method of respiratory education and re-education I have formulated.

Emphysema may be caused by :

1. The reduction of the elasticity of the lung cells and tissue resulting from undue expansion of the lungs and from their being held too long in this expanded position.
2. The undue intra-thoracic pressure, during an attempt at expiration or some physical act, upon the air cells, which remain filled with air in consequence of the means of egress from the lungs being temporarily closed by the approximation of vocal reeds and ventricular bands.

If the fundamental principles of my method are observed, these conditions cannot be present during the practice of the exercises, and emphysema therefore not only cannot be produced, but is likely to be even remedied where previously existing.

In the first place, the tendency unduly to expand any part or parts of the thorax in particular, to the exclusion of other parts, is prevented by the detailed personal instruction given in connection with each exercise in its application to individual defects or peculiarities of the pupil. Moreover, the mechanical advantages in the body-pose and chest-poise assumed in these exercises cause them to be performed with the minimum of effort, and lead to an even and controlled expansion of the whole thorax. There is not, as is too often the case, an undue expansion of one part of the chest, while other parts, which

should share in such expansion, are being contracted—a condition that obtains, for instance, when the diaphragm is unduly depressed in inspiration. In this latter case there is a sinking above and below the clavicles, a hollowing in the lumbar region of the back, undue protrusion of the abdomen, displacement of the abdominal viscera, reduction in height, undue depression of the larynx, and the centre of gravity is thrown too far back.

The *striking feature* in those who have *practised customary breathing exercises* is an *undue lateral expansion* of the lower ribs, when several or all of the above defects are present. This excessive expansion gives an undue width to the lower part of the chest, and there are thousands of young girls who present quite a matronly appearance in consequence. The breathing exercises imparted by teachers of singing are particularly effective in bringing about this undesirable and harmful condition.

The guiding principle that should be invariably kept in mind by both teacher and pupil is to secure, with the minimum of effort, perfect use of the component parts of the mechanisms concerned in respiration and vocalization. Then, sooner or later, adequate mobility, power, speed, absolute control, and artistic manipulation must follow.

Most people—teachers as well as pupils—when thinking of or practising breathing exercises, have one fixed idea—viz., that of Causing a *great expansion* of the chest—whereas its proper and adequate *contraction* is equally important. There are, indeed, many cases in which the expiratory movement calls for more attention than the inspiratory.

Careful observation will show that those who take breath by the "sniffing" or "gasping" mode of breathing always experience great difficulty with breath-control in speech and song, or during the performance of breathing exercises. This remains true whether the air is expelled through the mouth or nasal passages, and it is due to the imperfect use of the thoracic mechanism, and the consequent loss of mechanical advantage already referred to at the end of the inspiration.

The natural and powerful air-controlling power is therefore absent, and its absence causes undue approximation of the vocal reeds, and probably of the ventricular bands in the endeavour to prevent the escape of air, which air, when once released

under these conditions, is thereafter inadequately and imperfectly controlled.

In vocal use there is considerable increase in this lack of breath-control, the upper chest being more rapidly and forcibly depressed during the vocalization.

This is not a matter for surprise, for if a mechanical advantage is essential to the proper expansion of the thorax for the intake of air, it is equally essential to the controlling power during the expiration, and if during the expiration the upper chest is falling, it clearly proves that the advantage indicated is not present.

III

THE PRACTICE OF RESPIRATORY RE-EDUCATION

" If we contemplate the method of Nature, we see that everywhere vast results are brought about by accumulating minute actions."—
HERBERT SPENCER.

HABIT IN RELATION TO PECULIARITIES AND DEFECTS

THE mental and physical peculiarities or defects of men and women are the result of heredity or acquired habit, and the most casual observer has noticed that certain peculiarities or defects are characteristic of the members of particular families, as, for instance, in connection with the standing and sitting postures, the style of walking, the position of the shoulders and shoulder-blades, the use of the arm, and the use of the vocal organs in speech, etc.

Such family peculiarities or defects are unconsciously acquired by the children, often becoming more pronounced in the second generation, such acquirements making for good or ill, as the case may be. I will, however, confine myself to an enumeration of those with a harmful tendency, as an understanding of bad habits is essential to the consideration of the teaching principles adopted in my method of respiratory-physical re-education.

The chief peculiarities or defects may be broadly indicated as :

1. An incorrect mental attitude towards the respiratory act.
2. Lack of control over, and improper and inadequate use of, the component parts of the different mechanisms of the body, limbs, and nervous system.
3. Incorrect pose of the body and chest poise, and therefrom consequent defects in the standing and sitting postures, the interference with the normal position and shape of the spine, as well as the ribs, the costal arch, the vital organs, and the abdominal viscera.

Re-education, when one or other or all of these peculiarities

or defects are present, means eradication of existing bad habits, and the following will indicate some of the chief principles upon which the teaching method of this re-education is based :—

That where the human machinery is concerned Nature does not work in parts, but treats everything as a whole.

That a proper mental attitude towards respiration is at once inculcated, so that each and every respiratory act in the practice of the exercises is the direct result of volition, the primary, secondary, and other movements necessary to the proper performance of such act having first been definitely indicated to the pupil.

It may prove of interest to mention that W. Marcet, M.D., F.R.S., and Harry Campbell, M.D., B.S., London, are of opinion that volition as such makes a direct demand upon the breathing powers, quite apart from all physical effort, and with these great advantages, that, unlike the latter, it neither increases the production of waste products nor tends to Cause thoracic rigidity, thus more or less retarding the movements of the chest. The experiments made by Dr. Marcet show that the duration of a man's power to sustain the muscle contraction necessary to raise a weight a given number of times depends on the endurance of the brain-centres causing the act of volition rather than upon the muscular power. An instance is quoted of a man who lifted a weight of 4 lb. 203 times, and who, after resting and performing forced breathing movements, raised the same weight the same height 700 times.

Regarding muscle development and chest expansion, Dr. Harry Campbell has in his book on breathing taken the case of Sandow. His conclusion will prove of interest. He pointed out that Sandow claimed to be able to increase the size of the chest 14 inches—that is, from 48 to 62 inches in circumference. Dr. Campbell then expressed the opinion that this increase is almost entirely the result of the swelling up of the large muscles surrounding the chest, and that most probably the increase in his bony chest (thorax) is not more than 2 to 3 inches, seeing that his "vital capacity" is only 275 cubic inches.

(For ten years past I have drawn the attention of medical men to the deception of ordinary chest measurements and to the evils wrought by the physical training and the "stand-at-

attention " attitude in vogue in the Army, and also to the harmful effects of the drill in our schools, where the unfortunate children are made to assume a posture which is exactly that of the soldier, whose striking characteristic is the undue and harmful hollow in the lumbar spine and the numerous defects that are inseparable from this unnatural posture.)

There is such immediate improvement in the pose of the body and poise of the chest whatever the conditions (excepting, of course, organized structural defects), that a valuable mechanical advantage is secured in the respiratory movements, and this is gradually improved by the practice, until the habit becomes established and the law of gravity appertaining to the human body is duly obeyed.

The mechanical advantage referred to is of particular value, for it means prevention of undue and harmful falling of the upper chest at the end of the expiration, which is always present in those who practise the customary breathing exercises, the pupil being then deprived of the mechanical advantage so essential to the proper performance of the next inspiratory act.

Then follows due increase in the movements of expansion and contraction of the thorax until such movements are adequate and perfectly controlled.

Further, these expansions are primary movements in securing that increase in the capacity of the chest necessary to afford the normal oscillations of atmospheric pressure, without unduly lowering that pressure—or, in other words, they give opportunity to fill the lungs with air, while the contractions overcome the air pressure and force the air out of the lungs, and at the same time constitute the controlling power of the speed and length of the expiration.

The excessive and harmful lowering of the air pressure in the respiratory tract, and the consequent collapse of the *alae nasi*, is prevented by so regulating the respiratory speed that the lungs are filled by atmospheric pressure.

The value of this will be readily understood when it is remembered that such lowering, which is always present in the "sniffing" mode of breathing, causes collapse of the *alae nasi*. It also tends to cause congestion of the mucous membrane of the respiratory tract on the sucker system, setting up catarrh and its attendant evils, such as throat disorders, loss of voice, bronchitis, asthma, and other pulmonary troubles.



A (*Correct*)



B (*Incorrect*)

A—The feet are here placed in the ideal position for obtaining perfect equilibrium of the human machine, and for permitting the maximum activity of the functioning of the whole organism. NOTE.—It is evident that either the right or left foot may be in advance without affecting the correctness of the pose.

B—The feet are here placed in a position which compels an imperfect adjustment of the whole organism in order to secure even an imperfect equilibrium. This position results in the minimum activity of the vital functioning.



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From the first lesson the effect upon the splanchnic area is such that the blood is more or less drawn away from it to the lungs, and is then evenly distributed to other parts of the body. The intra-abdominal pressure is more or less raised, and there is a gradual tendency to the permanent establishment of normal conditions.

The use of bandages or corsets is to be condemned as treatment in protruding abdomen instead of the adoption of practical means to remove the cause. Such support to the abdominal wall is artificial and harmful, since it tends to make the muscles more flaccid. The respiratory mechanism should be re-educated, for this would mean a re-education or strengthening of the supports Nature has supplied. In other words, the sinking above and below the clavicles and the undue hollowing of the lumbar spine—the great factors in the direct causation of the protrusion of the abdomen—are removed, and a normal condition of the abdominal muscles established. This means a very decided improvement in the figure and general health.

The improvement in the abdominal conditions (the improved position of the abdominal viscera and the development of the abdominal muscles) is proportionate to that of the respiratory movements—a fact that can be readily understood when I point out that the movements of the parts are interdependent. When the faulty distention of the splanchnic area is present, it will be found that the diaphragm is unduly low in breathing; and when there is excessive depression of the diaphragm in respiration there is interference with the centre of gravity by displacement forward, and the compensatory arching backward in the lumbar region.

After a time there is such improvement in the use of the component parts of the mechanism that an inspiration may, if desired, be secured by a depression of the diaphragm, while at the same moment the condition in the splanchnic area is actually improved.

Improvement in respiratory exchange is secured by gradual increase in the expansions and contractions of the thorax, which increases the aeration of lungs, the supply of oxygen, and the elimination of CO_2 .

The quantity of residual air in the lungs is greatly increased, and if the expired air is always converted into a controlled whispered vowel during the practice of the breathing exercises,

very great benefits accrue, notably those derived from the prolonged duration of air in the lungs, and the proper inter-thoracic pressure necessary to force the adequate supply of oxygen into the blood and eliminate the due quantity of CO_2 .

The employment of these whispered tones means the proper use of the vocal organs in a form of vocalization little associated with ordinary bad habits, and that perfect co-ordination of the parts concerned which is inseparable from adequately controlled whisper vocalization.

There is a rapid clearing of the skin, the white face becoming a natural colour, and a reduction of fat in the obese by its being burnt off with the extra oxygen supply.

This reduction in the weight and size is often quite remarkable, as also the development of the flaccid muscles of the abdominal wall and the consequent improvement in the activity of the parts concerned.

CONCLUDING REMARKS

THE foregoing will serve to draw attention to the far-reaching and beneficial effects of what, for the lack of a more satisfactory and comprehensive name, I refer to as respiratory re-education.

It is a method that makes for the maintenance and restoration of those physical conditions possessed by every normal child at birth, the presence of which ensures a proper standard of health, adequate resistance to disease, and a reserve power which, if a serious illness should occur, will serve to turn the tide at the critical moment towards recovery. The insurance of such a condition for a generation would mean the regeneration of the human race as constituted to-day; and I have no hesitation in stating that the results secured during the past twenty years, and particularly during the past thirteen years in London in co-operation with leading medical men, justify me in asserting that the practical application of the principles of this new method in education and re-education will be invaluable in overcoming the disadvantages and bad habits of our artificial civilized life, and that they will prove the great factor in successfully checking the physical degeneration of mankind.