

17
C. 7. 18
1862

GYMNASTICS
OF THE
VOICE.

OSKAR GUTTMANN.

PN G985g 1882

60641610R



NLM 05026057 2

NATIONAL LIBRARY OF MEDICINE

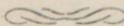
✓ 5

10C

SURGEON GENERAL'S OFFICE.

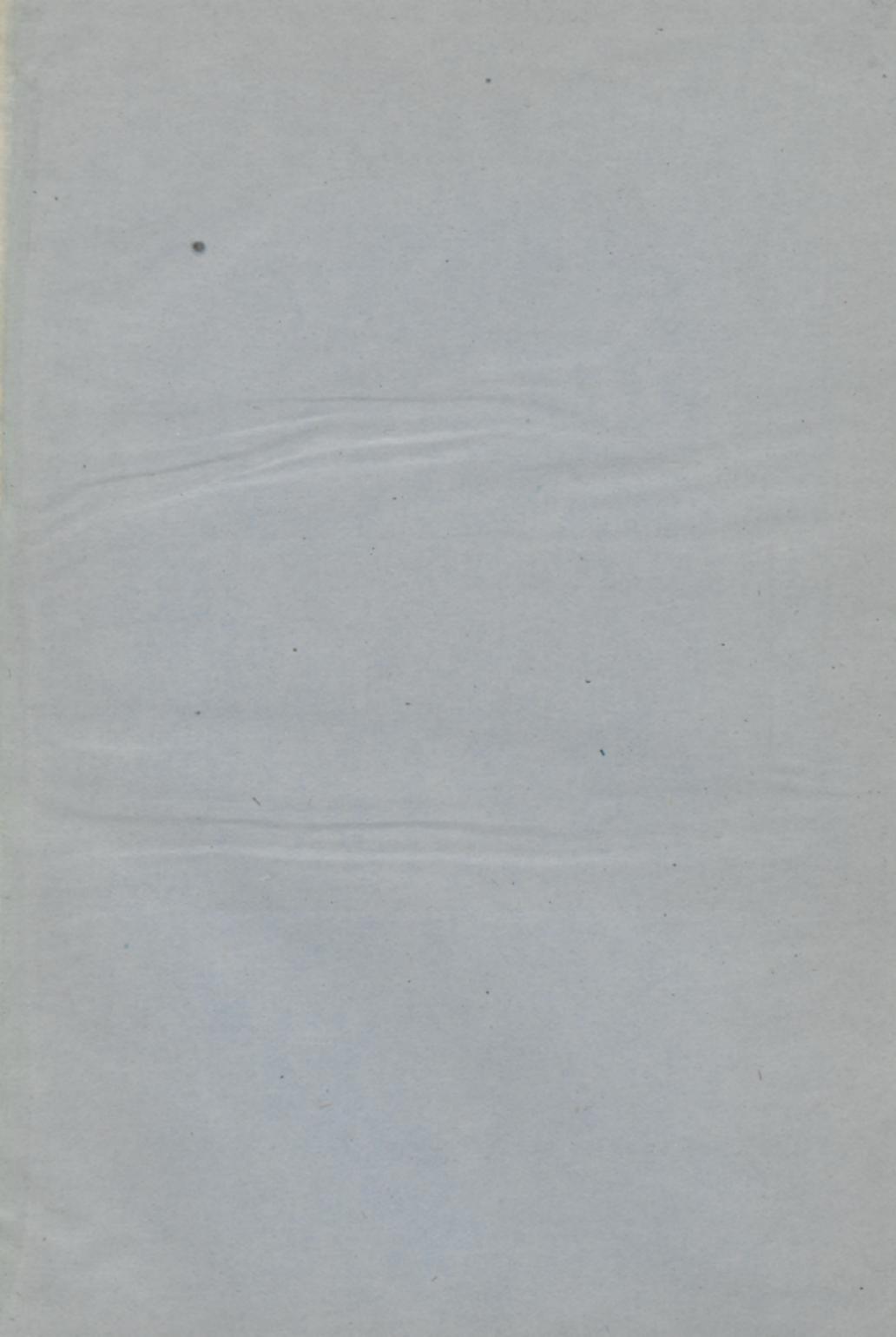
LIBRARY.

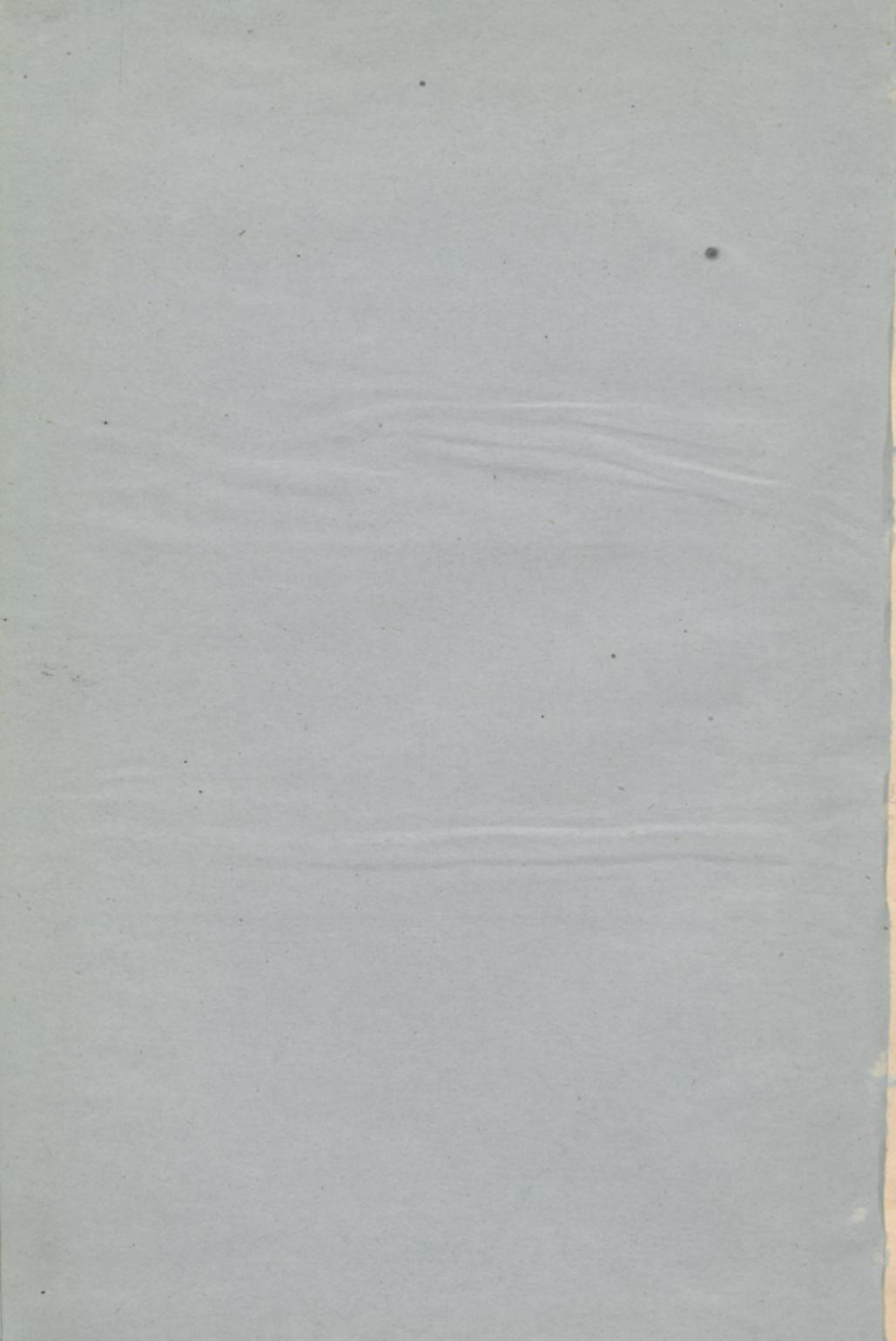
~~ANNEX~~



Section,

No. 159463





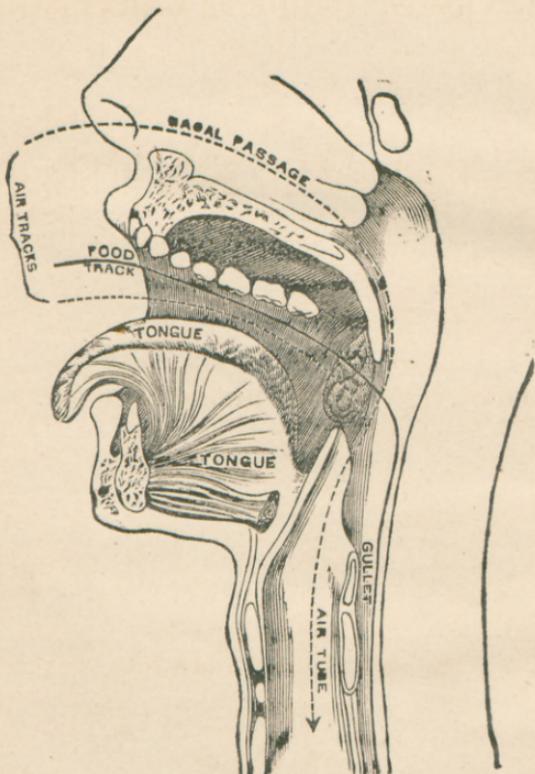


DIAGRAM SHOWING THE FOOD AND AIR TRACKS.

GYMNASTICS OF THE VOICE.

A

SYSTEM OF CORRECT BREATHING

IN

SINGING AND SPEAKING,

BASED UPON PHYSIOLOGICAL LAWS.



A Self-instructor in the Training and Use of the Singing
and Speaking Voice.



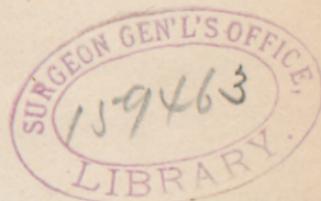
BY

OSKAR GUTTMANN,

PROFESSOR OF ÆSTHETIC CULTURE, ORATORY, DRAMATIC READING AND
ACTING; AUTHOR OF "ÆSTHETIC PHYSICAL CULTURE," "TALENT
AND SCHOOL," ETC.

ILLUSTRATED.

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



WVB
G 985g
1882

Copyright by
EDGAR S. WERNER,
1882.

[All rights reserved.]

CONTENTS.



	PAGE.
Preface to the English edition.....	ix
From the preface to the first German edition.....	ix
From the preface to the third German edition.....	xiv
From the preface to the fourth German edition.....	xv

PART FIRST.

THE ANATOMY OF THE RESPIRATORY AND VOCAL ORGANS.

Introduction.....	3
The muscles in general.....	7
Exercises for the muscles of respiration.....	10
Trunk exercises.....	11
Arm exercises.....	14
Division of the muscles.....	18
The abdominal muscles.....	20
The diaphragm.....	22
<i>A.</i> in inspiration.	
<i>B.</i> in expiration.	
The chest.....	24
The oral cavity.....	25
The nasal cavity.....	26
The pharynx.....	28
The larynx.....	28
The trachea.....	31
The air-receivers (lungs).....	32

PART SECOND.

THE ACTIVITY OF THE VOCAL ORGANS.

THE VOICE.....	37
“Direct attack” and “indirect attack”.....	39
The force of voice.....	41
Timbre.....	43
Compass.....	44
Period of mutation.....	45
Chest-register.....	46
Falsetto register.....	46
PRODUCTION OF THE VOICE IN SINGING AND SPEAKING.....	48
The qualities of tone.....	49
Position of body.....	50

Position of lips and organs in the oral cavity.....	51
Importance of a movable tongue.....	53
Correct use of the tongue.....	54
Exercise for the soft palate.....	56
Exercise for the lips.....	56
Tones produced by incorrect use of the organs.....	58
How to prevent a nasal tone.....	59
Depression of larynx.....	60
Six conditions necessary for a beautiful tone.....	61
PRESERVATION AND STRENGTHENING OF THE VOCAL ORGANS.....	61
Temperature and purity of the air.....	62
Wearing of wigs, etc.....	63
Food.....	63
Laryngeal fatigue.....	63
Use of cold ablutions.....	64

PART THIRD.

THE CORRECT PRONUNCIATION OF LETTERS AND THE CORRECTION OF DEFECTS.

GENERAL OBSERVATIONS.....	69
THE VOWELS :	
Pure vowels.....	70
Nasal vowels.....	75
Diphthongs.....	76
THE CONSONANTS :	
Labial sounds.....	77
Dental sounds.....	78
Lingual sounds.....	82
Nasal sounds.....	84
Palatal sounds.....	84
CORRECTION OF DEFECTS :	
Connecting a final consonant with the initial vowel or consonant of the following word.....	86
Imperfect vowel attack.....	87
Adding wrong consonants and swallowing syllables.....	87
Intoning between words.....	87
Wrong use of the lower jaw.....	88
Exercise for the correct use of the lower jaw.....	89
How the wrong use of the lower jaw may be recognized.....	90

PART FOURTH.

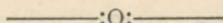
RESPIRATION.

INSTINCTIVE RESPIRATION :

Voluntary and involuntary breathing.....	93
--	----

Three main modes of taking breath.....	94
ARTISTIC RESPIRATION (<i>in Song and Speech</i>):	
§ 1. Strengthening the lungs.....	98
<i>Exercise I. Breathing without interruption.....</i>	99
<i>Exercise II. Breathing with interruption.....</i>	100
§ 2. Beginning of speech or song.....	102
§ 3. "State of readiness".....	103
§ 4. Closure of the glottis.....	103
§ 5. Inspiration and expiration to be done as slowly as possible, and uniformly.....	103
§ 6. Even during any unusual activity of the lungs, as in moments of excitement or passion, it is quite necessary to breathe as slowly as possible.....	103
§ 7. Abdominal or diaphragmatic.—Rib or side-breathing.....	104
§ 8. The necessity of consciousness of the diaphragm and the abdominal muscles.....	106
§ 9. The diaphragm and abdominal muscles usually act combined..	107
§ 10. Correct application of the diaphragm and the abdominal muscles.....	109
§ 11. Peculiar phenomena during the application of the diaphragm and abdominal muscles.....	110
§ 12. Inspiration to be performed noiselessly, and visible only to such a degree as is absolutely necessary.....	111
§ 13. Cases in which the breathing is audible (yawning, sighing, panting, sniffing, hawking, aspirating, snoring, sobbing, coughing, sneezing, loud laughter and weeping).....	114
§ 14. The air not to be aspirated during phonation.....	117
Exercises for the singer.....	118
Exercises for the speaker.....	118
§ 15. Path traversed by the sounding air-column.....	120
§ 16. How to increase the compass of the voice.....	123
§ 17. Inspiration to be performed completely and at the right time..	124
§ 18. Breathing after an impassionate phrase.....	130
§ 19. Breathing while the body is in any position.....	130
§ 20. Not more air to be exhaled than is absolutely essential.....	131
§ 21. Breathing through the nostrils.....	132
§ 22. Time and duration of the exercises.....	133
§ 23. What to do if, through carelessness,* the lungs are emptied too soon.....	135
§ 24. Wearing apparel in regard to breathing.....	136
EXPRESSION.....	137

LIST AND EXPLANATION OF ILLUSTRATIONS.



	PAGE.
Frontispiece. Diagram showing the food and air tracks.	
Fig. I. Base position.	10
Figs. II-V. Trunk exercises.....	11-14
Figs. VI-X. Arm exercises.....	14-19
Fig. XI. The form of the abdominal wall, freed from all its insertions and stretched out flat, and the position of the muscular fibres of the abdominal muscles.	21
Fig. XII. Diagrammatic section of the body. The diaphragm in inspiration and expiration.....	23
Fig. XIII. An anterior view of the thorax	24
Fig. XIV. View of parts seen when the mouth is widely opened.....	26
Fig. XV. Representation of section through head and neck.....	27
Fig. XVI. A connected view of the hyoid bone, thyroid body, larynx, windpipe and lungs.....	29
Fig. XVII. Image of the larynx and surrounding parts, seen from above,	30
Fig. XVIII. View of the interior of the larynx, the posterior half being cut away.....	32
Fig. XIX. The glottis in action.....	38
Fig. XX. Section of the head, showing the oral-cavity and tongue in producing <i>A'</i>	71
Fig. XXI. Section of the head showing <i>E</i> (as in <i>he</i>).....	72
Fig. XXII. Section of the head showing <i>O''</i> (as in <i>cool</i>).....	73
Fig. XXIII. Section of the head showing <i>T, D</i>	79
Fig. XXIV. Section of the head showing <i>Th</i> (in <i>thin</i> and <i>thine</i>).....	80
Fig. XXV. Section of the head showing <i>Z</i> (in <i>azure, sh</i> in <i>push</i>).....	81
Fig. XXVI. Section of the head showing <i>N</i>	84
Fig. XXVII. Section of the head showing <i>K, G'</i>	85
Fig. XXVIII. Section of the head showing <i>K, G''</i>	85
Breathing exercises.....	99, 100

Figures I-X are taken from my book, "Æsthetic Physical Culture." Figures XIV-XVIII are taken from Dr. Louis Elsberg's *The Throat and its Functions* (by permission of the author). Figures XX-XXVIII are taken from Dr. Ernst Brücke's *Grundzüge der Physiologie und Systematik der Sprachlaute*. Vienna: Gerold's Sohn, 1855. 2d edition, 1876.

P R E F A C E .

PREFACE TO THE ENGLISH EDITION.

Twenty-three years have elapsed since the publication in Germany of my "Gymnastics of the Voice," which met with so much favor that a fourth edition has already appeared. At that time, I stood alone in the field, but many others have since taken up the subject. I have not been able, however, to discover a real system, not even in the United States, where I have passed sixteen of my forty-two years of study, acting and general experience as a teacher of oratory and the dramatic art.

At the request of many of my friends, I now venture to present, in the language of my adopted country, the system which has been followed by such favorable results in my native land.

1882.

OSKAR GUTTMANN,

436 East 57th Street, New York.

FROM THE PREFACE TO THE FIRST GERMAN EDITION.

It has often been our lot to meet highly talented persons with the most healthy and powerful organs of speech ; who, as soon as they attempted to use them artistically, not only made a very disagreeable impression upon us, but frequently even forced us to leave the place in which they were speaking. On departing, we would exclaim with regret :— "It's too bad that they do not know how to employ the means given them by nature — what great results they could accomplish !"

Then they did not understand how to use their organs ? Is singing, is speech, then, an art ? Are there laws and rules which must be obeyed and followed in order to make our speech pleasing and effective ?

Yes! song and speech, with proper breathing, are an art. There are laws and rules according to which our vocal organs must work. But how shall speech and song be made beautiful, pleasing and effective; how shall the difficult art of breathing be acquired, when the majority of persons not only have no knowledge of these rules, but even cannot name the organs engaged in breathing, speaking, or singing! They say: "I have breathed from birth. The Creator has given me good lungs, therefore I can speak." And the more they scream the better they think they have spoken!

The mere possession of organs, however, is not of itself sufficient for the purposes of speech and song. We must know how to use them; and the better we can do this, producing the greatest effects with the least expenditure of force, the higher is our culture, the more favorably do we impress the hearer, and the greater are the results obtained. This is proven by those persons of ordinary, yes, feeble organs, who, by the right training and employment of them, not only cause the screamers to be forgotten, but accomplish results that astonish the ignorant, who judge only according to the degree of physical power. All people cannot have figures like an Apollo; cannot possess a voice as resonant as a bell and as powerful as a lion's roar, yet they can be asked to cultivate and rightly use their organs. The assertion, that the art of acting and of oratory requires no rules; that, indeed, it will not submit to any, but that the inspiration of the moment must do everything, is made continually by certain dramatic novices. They learn their parts by heart—a thorough understanding and mental assimilation of the matter is out of the question,—and play them just as it happens to go. Then, if by some chance, owing, perhaps, to their excellent talents, they do display some energy or force, they believe they have proof of the correctness and infallibility of their principle:—"Genius acts upon the instant and needs no preparation." If a person, in addition to exceptional natural abilities, possesses also a thorough education, he is almost sure to attribute his success not to the

training, but to the fine gifts he has received at the hands of nature, so little inclined are people to consider culture essential.

It is to be regretted that so little is done for the proper training of the vocal organs, and that the art of correct breathing is almost unknown. Even distinguished artists, known as such far and wide, are suffering under the bane of totally wrong or at least defective breathing. While the soldier does not begin to use arms until he has perfect control of his body and limbs, and has mastered their various movements; while the painter is not allowed to paint a large picture before he has learned to draw its parts; while musical students have to practice for weeks and months the most simple exercises,—the orator, declamator, actor, and often the singer, will appear in public without any or with only a very superficial knowledge of the right use of the vocal organs, and proceed at mere hap-hazard.

One may often hear a speaker say: "I don't know how it happens that having spoken half an hour, I am dry in the throat, I have pain in the chest, the larynx, etc.!" We hear a singer inquire timidly: "What must I do to avoid getting out of breath in certain difficult passages?" We often hear that a speaker or singer feels apprehension before the execution of this or that piece and says: "Would it were over!" And when we go to the bottom of the matter we always find that such persons have never had any proper training of their organs; and are, as a consequence, unable to perform their part with the necessary calmness, and also lack the necessary strength and power of endurance.

The remark is not seldom made, even by professionals: "What is the use of method? Let everybody breathe and speak as nature permits; in dramatic art the *soul-inspiration* will furnish the means, anything else is secondary!" Who would deny that talent and inspiration are the soul of dramatic art? Who would claim that there can be any art, for which the inner, heart-felt inspiration is not the first requirement? Has there ever been any great painter, sculptor, musician, composer, poet, etc., without this soul-afflatus? But, on the other side, it is a most legiti-

mate claim, that in no art more than in dramatic art is it necessary to bring the soul-inspiration into harmony with the external organs by which it has to become manifest.

While other artists mainly use only special parts of their organism (the musician his hands or lungs, the dancer his legs, etc.), the dramatic actor can only excel by a harmonious use of *all* his organs. While the painter may have an imperfect or even infirm body, and still be a great artist by virtue of mental gifts and a good eye, the dramatic actor must possess the most perfect control of all his organs, physical and mental. The truth of this claim becomes particularly evident, when we see dramatic actors, such as have attained to a certain distinction in their art, suffering from special defects, as bad gait, attitude, indistinct articulation or faulty breathing, — defects which painfully disturb the total effect, while a less gifted, but more perfectly trained dramatic actor, makes a most pleasant and agreeable impression.

This refutes the assertion, that nothing but genius, soul-inspiration, is required for the dramatic art, and that everything else is of secondary importance.

If we turn from the votaries of dramatic art to other classes of public speakers and observe ministers, members of legislative assemblies, lawyers, academic professors, — although we certainly cannot accuse them of defective mental training, still the same ignorance in regard to vocal art and oratory becomes apparent, with rare exceptions.

Especially is it a matter of deep regret, that this defect shows itself so frequently in a class of public speakers with such a high vocation, but who so rarely are fully competent to fulfil it. I mean the defect of all knowledge of vocal art in most members of the ministry. In this profession it has been heretofore thought that nothing was required but mental and spiritual training and a voice, without putting any special claims on the latter point; for there are ministers who have so inferior physical means in that respect, that they cannot be heard or understood in a hall of ordinary dimensions. What is the result of it? The pulpit

is the principal place where all can hear public speaking on subjects of momentous interest. Not every one can or will visit the theatre, but everybody can go to church; this is, therefore, the place where a true, perfect vocal art should show itself and exercise its cultivating influence on the people. The remark often heard in this respect, that a pulpit speaker ought only to care for *what* he says, not *how* he says it, cannot be made any longer. How can a perfect sermon be brought to a true appreciation without a perfect delivery? Let less stress, therefore, be put on the sinful state of man and more stress on the sinful neglect of a true æsthetic form and culture, and let there be given a good example in this respect by an artistic training and cultivation of nature's gifts; for only in this way can the true moral sense in the people be fed and cultivated. Let the people be attracted and accustomed to go to church by the perfection of pulpit oratory. Let the noble thoughts be clothed in a noble form!

But, while we have expressed regret at the defects which are noticeable in pulpit speakers, we must also say, with congratulation, that the satisfaction is great, when now and then we meet a pulpit speaker with whom the external form of delivery shows as much perfection as the inner substance of his discourse, who will render the Word of God in that purity and nobility, as our imagination longs for, whose discourse does not furnish an involuntary picture of human infirmity. Such, only, have fully realized the importance of their office.

In regard to acquiring perfection in the dramatic art in general, as well as for a logical and æsthetic training in declamation, I refer to the writings of Lessing, Goethe, Schiller, and others. My object in this work has only been to write a gymnastic of the voice for speakers and singers; that is, a guide based on physiological laws for the development and correct use of the physical organs, combined with a system of correct and practical breathing; and as language is intimately connected with this subject, I have something to say thereupon, but only so far as regards the production of the different vowel and consonantal sounds.

Encouraged by the success I have had with my pupils, and urged by friends, I undertake to publish my method, in the desire to communicate to others the results of my experience, and thus to save them a great deal of time and labor.

THE AUTHOR.

Mannheim, Germany, 1860.

FROM THE PREFACE TO THE THIRD GERMAN EDITION.

In 1867 I received from the publisher the gratifying request to prepare a second edition of this work. If the sale of the first edition justified the conclusion that my method had found acceptance and followers, I was confirmed in this belief by the call for the third edition.

After the success which the second edition has had, and after an examination of all that has been written since then on the human voice, I do not feel induced to make any changes in my system. These alterations could only be caused by scientific differences and points of dispute, and this does not lie in the scope of this work. The student for whose self-training this book is mainly written, can only be benefited by practical directions which have been proved to be correct by experience and long application.

The practical directions, which have been given in the preceding editions, have never yet been shown to be unpractical or contrary to science; and the necessity of a third edition may be taken as a new confirmation of their correctness. I have, therefore, in this edition, only made some further additions, for the purpose of more special explanation, and establishing a firmer scientific basis for the benefit of the student, in accordance with the latest investigations of Helmholtz, Rossbach, and particularly of C. L. Merkel.

In thus offering the third edition of this book to all who are

interested in the subject, in bidding my readers farewell, I cannot omit to state, that it has been a great satisfaction to me to have seen my "Gymnastics of the Voice," which first appeared sixteen years ago, confirmed in all essentials by recent investigations of science.

THE AUTHOR.

New York, 1875.

FROM THE PREFACE TO THE FOURTH GERMAN
EDITION.

When I made the attempt, twenty-three years ago, to write "Gymnastics of the Voice," I was almost alone in this field. So far as I know, no one had published a method of vocal gymnastics for speakers and singers, based upon physiological laws. Some of my colleagues greeted my book with an ironical smile; others were unable to see the necessity of such a work, while only a few admitted its practicability. The press, however, judged otherwise. From all sides favorable criticisms were pronounced; "Gymnastics of the Voice" was declared to be, beyond all doubt, a most helpful book for oral expression in speech and in song; and it received greater praise than the author had even dared to expect.

Since that time others have had a great deal to do with the human voice. All sorts of books, by laymen and scientists, have appeared. Especially in the last ten years has this kind of literature grown to large proportions, containing much of value with much that is superficial and even positively erroneous and harmful. It would seem, on first thought, that all these new treatises would have superseded and driven out of the market a book which was first published nearly a quarter of a century ago. Yet, during this period, "Gymnastics of the Voice" has passed through three editions; and so soon after the issue of the third edition, a *fourth* is demanded. This is certainly the best proof

that in this book are treated topics which are wanting in other books, or which are passed over superficially, but *which are of the greatest importance* to the speaker and singer.

And this is the fact. Among the many books on the human voice which have since appeared, there is none that can show such a *system of breathing* in song and speech as that given in "Gymnastics of the Voice." This distinguishing and indispensable feature was at once recognized and commended by the press, which declared such a method absolutely essential for the cultivation of voice and speech.

In regard to the new edition, the author can say that, without in the least injuring the pith, the book has been thoroughly revised and entirely rewritten. Many additions and explanations have been made, they being the results of daily teaching and riper experience, as well as of recent scientific progress. Through the kind liberality of the publisher, illustrations are for the first time added, which will increase still more the practical usefulness and value of the book.

"Gymnastics of the Voice," in its new, enlarged and improved form, will serve, then, as my salutation from over the ocean to all of my friends, and all those who know of my efforts, and who, by their friendly sympathy and interest, encourage me to press on in this field of labor.

THE AUTHOR.

New York, 1882.

PART FIRST.

THE ANATOMY OF THE RESPIRATORY AND
VOCAL ORGANS.

INTRODUCTION.

HUMAN language consists of *sounds* (tones), of *modifications* of the *sounds*, of *noises combined* with *sounds*, and of *noises without any sound* (tone).

The *sounds* are the human *voice*; the modifications of the sounds are the vowels; the noises combined with sounds (tones) are the *sounding consonants*; and the *noises without any sound* are the *voiceless consonants*. (Particulars given in Part III.)

Human language, therefore, originates from *unarticulated sounds* (tones), which, with help of *certain organs*, are changed in *articulated sounds* (words), or by a longer duration in *singing tones*.

Speech is the medium by which the mind of man communicates with the outer world. It is not our object to speak of this mode of communication, or of the mental processes required therefor, but of the bodily, material means, the *organs*, which man has received from God, at the hands of nature, for the purpose of manifesting his mind, as also of their cultivation and correct use, in order that the *mechanism* of the *organs of voice* and *speech* may be understood.

The human vocal organ is the *most perfect* musical instrument imaginable. It can, by proper exercise, be improved and refined almost indefinitely from its originally crude condition. It possesses great endurance and power of resistance to external influences, and still it is only, so to speak, an accidental function, an addition to other important ar-

rangements necessary to life, a small appendage to the respiratory apparatus, but using the entire large compass of the latter for its own purposes.

The *elements* of *voice* and *speech* are identical, and speech is distinguished from voice only by a *different application* of the same elements, and, furthermore, by the fact that the voice — joining these fundamental elements instinctively, accidentally and unsystematically — produces only the expression of the bodily *impulses, impressions* and *sensations*, while speech unites, according to laws of thought and to certain well-defined principles, the same elements into *syllables*, these into *words*, the words into *sentences*, and thereby forms a strict order with the greatest variety.

Speech is, therefore, nothing but audible thought, and is as reason itself, — the attribute of man alone.

As voice is always, or almost always, intended for communication at a distance, the *louder, further audible* elements of voice — *i. e.*, the vowels — *preponderate*; the weaker, hissing sounds (noises), which are necessary to speech, that is, to audible thought, are *less frequently* used. While, therefore, the *sounding* elements predominate in the voice, and the hissing sounds in speech, the signs of both appear united in song.

The tone is the same in *speech* as in *song*. Its manifestations in both cases can be made apparent in *exactly the same* manner, and a difference is to be found only in the duration of the sound. The voice is produced by the air contained in the lungs passing through the larynx, thereby inducing sounding vibrations of the vocal cords.

In *speaking*, the vocal cords vibrate only for a second; in the next moment the vibrations are interrupted by others. The sound first produced has, therefore, no time to make use, for its perfection, of all the means of consonance, etc.; and, therefore, receives a feebler and emptier impress.

It is not thus with the *sound* of *song*. This must — and just here lies the most essential part of singing — be continued for quite a length of time. A sound in song, suddenly interrupted immediately after its beginning, no longer retains the character of a *sound sung*, but evidently that of *one spoken*.

The chief obstacle in the way of singers and orators, despite their good vocal organs, is ignorance of the correct use of the respiratory organs. Correct breathing, however, is the basis of speech as well as song; for the voice, as much as speech, can originate only *in* and *by* the air expelled from the lungs.

Singing and speaking are, on the whole, only a branch of respiration, whose main function in life is the oxygenation of the blood and the production of animal heat. The inspired air, which, after performing this function, is expelled, has, nevertheless, been useful before mixing with the atmospheric air by acting as the motive power for the vocal cords, and by becoming a tone, the result of having been, in its return, set into a new vibratory movement.

The voice, then, is, as we have said, produced by the air contained in the lungs passing through the larynx, thereby inducing sounding vibrations of the vocal cords. If the voice is to be formed into words, we need, besides the respiratory organs and the larynx, those organs which are situated above the larynx, and to which the *pharyngeal* cavity, the *nasal* and *oral* cavities, including the *tongue*, *palate*, *teeth* and *lips*, belong.

Only by the right application of these organs can pure tones and correct formation of words be produced. The slightest misuse, the smallest deviation from the right path, is the cause of such strange sounds, such peculiar word-formations, as we frequently hear, and in which *palatal*, *nasal* and *guttural* tones predominate.

The reader can infer the importance of breathing in song and speech from these few introductory remarks, which may be summed up in this sentence: The *air which streams from the lungs is the primary cause of all vocal phenomena*, and the *larynx is the generator of the voice*.

The organs which we require for respiration are the following:

First. The chest (thorax) with the muscles of respiration.

Secondly. The *air-passages* through which atmospheric air is drawn into the *air-receivers* (lungs), and which are composed of the *oral* and *nasal* cavities, the *pharynx*, the *larynx*, the *trachea* (windpipe) and *bronchi*.

Thirdly. The *lungs* (air-receivers).

All movements of the human body are brought about by the action of the muscles which are attached to movable apparatuses, and are made to operate through the medium of the nerves.

Without the proper coöperation of the muscles, it is impossible to accomplish anything.

Thoughts originate in the brain, the brain acts upon the nerves, the nerves act upon the muscles, and the muscles upon the bones; and only after this process are we able to undertake an act.

It, therefore, becomes necessary, above all, to understand the constitution of the muscles in general, as well as their preservation and development, and especially the inner character and working of those which pertain to our subject.

So much for voice and speech in general. Let us enter into details.

THE MUSCLES.

THE muscles consist of muscular tissue (flesh), which possesses the property of contracting and expanding.

The contraction of a muscle is followed after a time, either voluntarily or through exhaustion, by an abatement of contraction, a state of rest, during which a change of material (nutrition) can be carried on better; whilst, during contraction, a greater consumption of blood and of the nerve power occurs.

By frequently recurring, gradually increasing activity of the muscles, and by partaking of the necessary meat diet, these can be made to increase considerably in power and size; whereas a surplus of fat and inactivity will cause them to become flabby and powerless.

What wonderful strength and versatility is achieved by man through habituating (correctly exercising) the muscles to certain functions, the exercise being, of course, gradually increased and interrupted by the necessary repose, is attested by all those whose chief occupation consists in the use of the muscles, such as *gymnasts, athletes, dancers, pianists*, etc.

As in the contraction of a muscle, a larger amount of blood is required, so in its relaxation a greater blood-formation occurs; it is perfectly natural that a muscle in constant change (in contraction and relaxation, *i. e.*, activity and rest) is strengthened much more, and tires itself much less, than

one whose activity is either constantly or for a long time one-sided.

It is owing to this that continued standing is more fatiguing than continued walking.

When a muscle is either too much strained, or kept in motion too long, lameness frequently follows.

Only continued exercise of the muscles, alternating with the required rest, will eventually succeed in enabling them to make those movements which the human will dictates. At the commencement of these exercises one is seldom able to do this, and can hardly, while exercising certain muscles for certain purposes, prevent other muscles, which are not requisite for those functions, from coöperating.

Observe any person who is beginning to learn gymnastics, dancing, fencing, or piano-playing, and you will find our assertion confirmed.

It is in the highest degree amusing to watch a young, imaginative, talented and impassioned person when reciting for the first time. Not only the required, but all the muscles move in a spasmodic and ugly way, and the face generally expresses, if not exactly the contrary, yet only partly, the disposition of the mind.

We note the misapplication of the muscles most generally in cases where the human voice is used in either singing or speaking, and this is the frequent cause of defective speaking and singing.

Many may be astonished, even provoked, because they must hear so much about the muscles, — they who want to become neither athletes nor dancers, but simply singers or orators. This, however, cannot be helped. Nature is so obstinate that she demands a correct muscular movement as well from the singer and the orator as from the athlete and dancer (of which we shall learn more further on); nature

makes no exception of them, but that our reader or scholar may be disposed to follow the further description of the muscles with pleasure, it will be well for him to bear in mind what we said in the introduction, viz.: "Thoughts originate in the brain, the brain acts upon the nerves, the nerves act upon the muscles, and the muscles upon the bones; and only after this process are we able to undertake an act."

Here, again, we come upon something which will be still more distasteful to the class of persons we have referred to, viz.: That their brains and nerves must also be employed whilst singing and speaking. Perhaps, in the end, this curious writer will require that the brain and nerves should also be educated! Of course; for the first task is to educate our brain through mental exercises, because only a brain educated and imaginative, well exercised in thinking, and that, too, in quick and decisive thinking, will be able to act upon the nerves and muscles. Only after continued practice shall we be able to bring into operation such muscles as should be employed.

To strengthen the muscles, and with them the entire body, and make them obedient to our will, we must practice systematically. Gymnastics are, of all bodily exercises, the best qualified for this purpose, because very nearly all the movements of the human body are embraced in them; but we must observe very closely the following rules, if we do not want to receive more harm than good through these exercises:—

First, discard all tight-fitting garments before commencing the exercises, in order that the blood may circulate freely. Then never exercise for such a length of time that actual exhaustion ensues, and do not educate *single* muscles, but *all* the muscles.

Particular attention should be given to the perfecting of

the respiratory muscles (chest and abdominal), and one should be particularly cautious not to over-exert them. Always allow a certain lapse of time for rest before beginning to exercise anew, and bear in mind that only a slow and gradual exercise, continued for a long time, and interrupted only by the proper rest, will enable us to achieve our aim.

Exercises for the Muscles of Respiration.

The person exercising must stand perfectly erect, with straightened knees, the heels close together, the toes turned

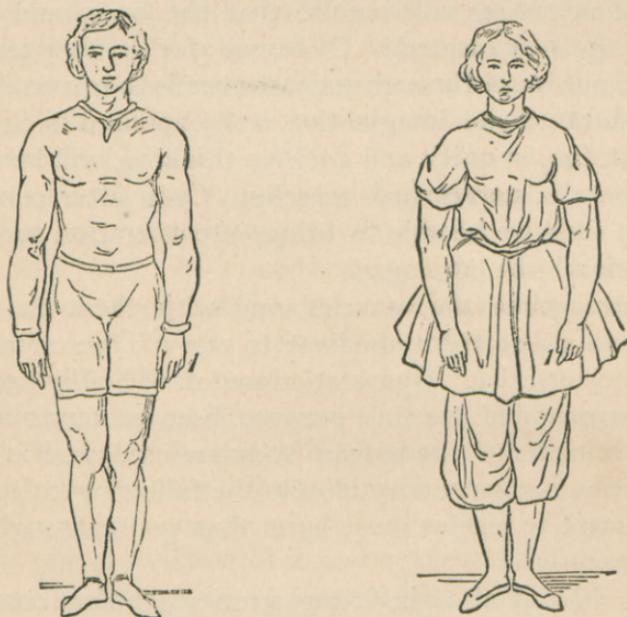


FIG. I.

slightly outward so that the feet shall form the sides of a right angle, the chest thrown outward (not excessively), the shoulders thrown back, and the hands hanging loosely at

the side or set akimbo. From this position he should begin all his exercises. We will call it "Base position." (Fig. I.)

Trunk Exercises.

(a) Raise both shoulders as high and as forcibly as possible, then allow them slowly to return to their original



FIG. II.

position. A too sudden lowering in frequent exercising would jar the head. (Fig. II.)

Begin the exercise with both shoulders, then alternate, retaining strictly the *base position*, except in regard to the arms, which, without bending the elbows or keeping them too stiff, will be drawn along by the shoulders. Then draw the shoulders backward and forward singly, and afterward both together. From the combination of these movements we have exercise

(b) In which we move the shoulders upward, backward, downward, forward and again upward, without interruption, not in jerks, but so as to describe a circle; then the same in reverse order, that is, upward, forward, downward, backward, etc.

In all these exercises we must be very careful that only the muscles which are to be exercised be active, and that all the others are perfectly at rest.

(c) In this exercise the trunk is turned on its axis alternately to the right and to the left, without moving the hips,

the vertical position being always retained, the legs kept firmly in the *base position*, and the arms set akimbo. (Fig. III.)



FIG. III.

(*d*) With the legs in the *base position* and the arms set akimbo, the trunk, kept straight from the hips to the crown of the head, is bent slowly forward until it forms a right angle with the legs, and then is brought slowly back to the *base position*; without stopping it is in like manner bent backward as far as possible, returning again to the *base position*. This exercise must be performed at first slowly, then more quickly, and at last with a certain stress, as though the upper part of the body were about to be thrown to the ground and were suddenly jerked back to the *base position*, and then beyond. (Fig. IV.) In the same way the trunk should be bent to the right (Fig. V., *a*) and left (Fig. V., *b*), but without the already-mentioned stress. The

sideward movement, and still more so the backward movement, can be executed only to a limited extent. From the combination of these movements we have exercise

(*e*) In which the trunk, perfectly straight, moves round on the hips without changing front. (Fig. V. The arrows indicate the direction of the movement *a, b, c*, from right to left, and then *vice versa*.) This exercise will be best

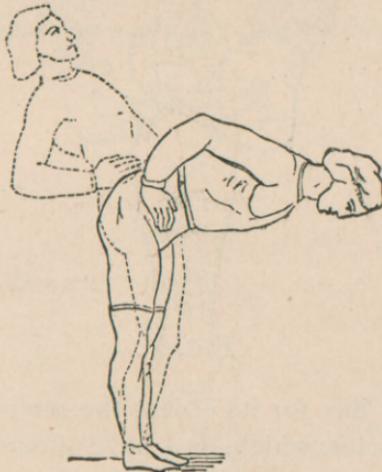


FIG. IV.

executed with the arms set akimbo. The back and the abdominal muscles are by these movements especially developed, and this is absolutely necessary for singing and speaking, as well as for every very exerting position. This exercise, too, must finally be performed with *particular stress*.

(*f*) The pupil should lay himself flat on the floor, on his back, with his arms folded over his chest or laid along his sides, and must then, without changing the position of the legs or separating the feet, raise himself slowly without a throw to a sitting posture, and, after a couple of seconds, let

the body sink again to the floor. Many will at first find it impossible to perform this exercise, especially persons with weak abdominal muscles. These should place a pillow under the head, or place the toes under some firm object. After a while they will be able to dispense with these aids.

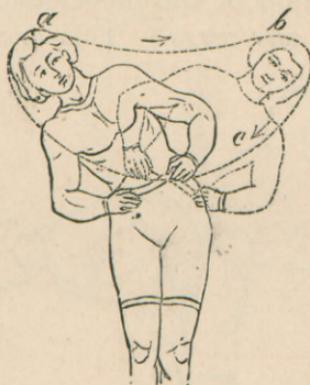


FIG. V.

This exercise has for its object the strengthening of the abdominal muscles, which, as I have already said, is necessary not only for our health, but also for oratory and song.

Arm Exercises.

(a) *With outstretched arms, i. e., by simple movements of the shoulder-joints.*

(1) Having placed the body in the *base position*, move the arms stretched slowly forward (Fig. VI., *a, c*), raising them up to the sides of the head until they touch the ears and stand perpendicularly (Fig. VI., *d*), and then let them swing back gently to the *base position* and beyond. (Fig. VI., *e*.) Both these movements should at first be performed slowly, but gradually quicker and quicker until we obtain the full swing. The raising of the arms sideways is

performed first with the back of the hand, and then the palm turned upward, the arms being raised until they touch the sides of the head, and then made to return to the *base position*. Here, too, we pass over gradually to complete swinging of the arm. After having attained perfect control over the shoulder-joints, we proceed to

(2) The pupil should endeavor, with outstretched arms, to describe a broad circle from the front backward, and *vice versa*, in the following way: Having raised the arms as in

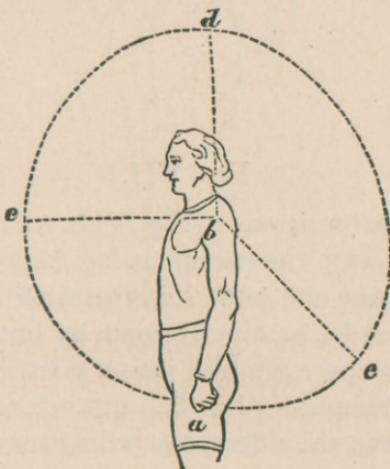


FIG. VI.

a (1), he should continue to move them round backward until they return to the *base position*. The movement should be slow at first, then quicker and quicker up to a full swing. The curve described will, at the beginning, be rather an ellipse than a circle, but after long practice it will be possible to approach very nearly to a circular motion. The shoulder-muscles, as well as all those encircling the thorax, are by this means put into a free and general activity. The effect will be an increased flexibility to the

shoulder-joints, and a strengthening of the respiratory muscles, which also involves the widening of the thorax.

(3) Raise the outstretched arms laterally to the level of the shoulders, the back of the hand upward (Fig. VII., *b*),

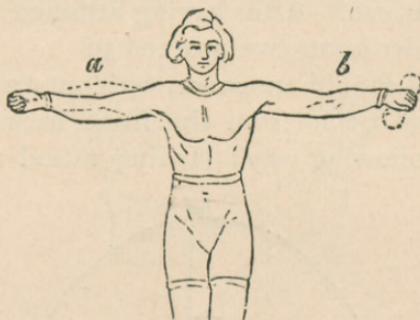


FIG. VII.

then turn the palm upward (Fig. VII., *a*), and continue reversing in this way, the wrists being kept as stiff as possible. Then make the same exercise with clenched hands. This exercise can be best performed by imagining yourself in the act of driving a gimlet into a post.

(4) The pupil should raise the outstretched arms forward to the level of the shoulders, the palms turned toward each other; then move them round backward horizontally, with a stress, as though he wished to bring the upper surfaces of his hands together behind his back, which is impossible to accomplish entirely; and, finally, move them forward with the same stress, etc. Movement to be slow at first, then quicker and quicker up to a full swing.

(*b*) *With the aid of the shoulder and elbow-joints.*

(1) The pupil should bring the lower arms with clenched fists from the *base position* up till the fists nearly touch the shoulders (Fig. VIII.); then, with a violent throw, make the arms return to the *base position*.

This exercise should be executed *downward, upward* (Fig. VIII.), *forward, backward* (to a certain extent, Fig. IX.), and

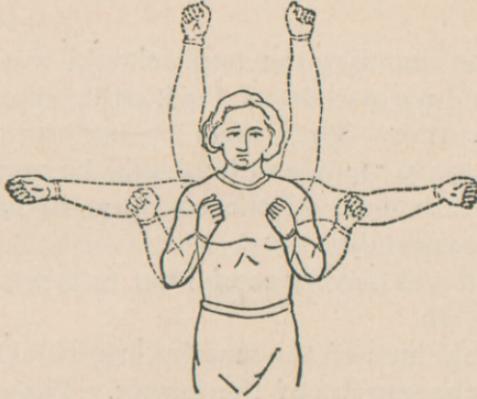


FIG. VIII.

sideward (Fig. VIII., in each way six times). The upper arms remain in the *base position* in the downward movement; in all other cases they follow the movement of the lower arms. We should observe in regard to the feet, that the weight of the body should fall more on the toes than on the heels, so as to make the shock to the brain as slight as possible.

(2) Place both arms akimbo, and move the elbows back as far as possible. The back must be held perfectly erect. The particular stress of this movement is in the thrusting back of the elbows, which must be made to correspond with each inspiration.

(3) Fold the hands on the back, near the region of the loins, so that the palms face each other; now endeavor to extend the arms without loosening the hands, and raise them thus extended upward as far as possible (Fig. X.). Lower them and continue in this way, first slowly, then with increased rapidity. The spine must not be curved during this exercise.

In these movements the shoulders are powerfully and firmly drawn back and down, and the front walls of the thorax mechanically extended, which is conducive to breathing.

After these exercises the pupil should rest thoroughly, and he should not partake of food, either shortly before or immediately after. They must be performed in a thoroughly ventilated room, and he should be particular not to hold the breath, but, on the contrary, to inspire slowly, deeply and uniformly.

That he should be very careful not to take cold, does not require mention.

What is said here of the muscles in general pertains particularly to the muscles of the larynx. These must be ex-

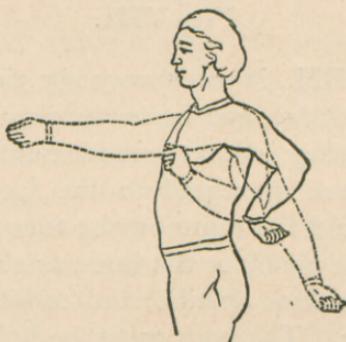


FIG. IX.

ercised with the utmost care, and in a slowly and gradually increasing manner (as we shall see further on), unless we wish a total incapability of action to ensue.

Division of the Muscles.

The muscles are divided into voluntary and involuntary. To the latter belong the diaphragm, the heart and the intestines.

To the voluntary belong all the remaining muscles.

We must distinguish (*a*) muscles of the head (*b*), muscles of the trunk (*c*), muscles of the upper limbs and (*d*) muscles of the lower limbs.

After having treated of muscles in general, we have only to observe particularly the muscles in *b*, since our method of tone-formation, as far as breathing is concerned, is based chiefly upon the correct activity of the *abdominal muscles* and the *diaphragm*.

Of the *muscles of the trunk* we only require to observe more closely the *chest* and *abdominal* muscles, as well as the *diaphragm*.

The muscles of the chest serve in breathing to move the chest, as also at times, the arms, and to lower the shoulders.



FIG. X.

They lie upon the front surface of the thorax (without covering the middle), toward and at the sides, and fill out the spaces between the ribs.

The abdominal muscles serve particularly (for our purpose) for expiration. Besides this they shield the intestines,

promote the bending of the body, and help to contract the abdominal cavity.

“The ribs are attached to the spine so as to be freely movable upon it; but when left to themselves they take a position which is inclined obliquely downward and forward. Two sets of muscles, called *intercostals*, pass between the successive pairs of ribs on each side. The outer set, called *external intercostals*, run from the above obliquely downward and forward to the rib below. The other set, *internal intercostals*, cross these in direction, passing from the rib above, downward and backward, to the rib below. The action of these muscles is somewhat puzzling at first, but is readily understood if the fact that *when a muscle contracts, it tends to make the distance between its two ends as short as possible*, be borne in mind. Consequently must the external intercostals raise and the internal intercostals must depress the bony ribs.”*

The other muscles of the chest, which connect the ribs with parts of the spine above them, and with the shoulders, require no special description. The function of all these muscles is merely either to raise single groups of ribs, or to raise them and at the same time force them outward so as to considerably expand the chest.

The Abdominal Muscles.

The abdominal muscles are like all voluntarily movable muscles,—thicker in the middle than at both ends, where they terminate in shorter or longer tendons, by which they are fastened to the bones or to other tendons. They lie in layers one upon another, form the fore and side covering of the abdominal cavity, and are always found in pairs. This is because the single muscle does not extend the whole width of the abdomen, but only to the middle where it ends with its tendon on the *musculus rectus*, in the middle of the latter and *in* or *on* the *linea alba* (by which the *musculus rectus* is equally divided). A similar formation is found on the other side, so that the two muscles are connected by

* Huxley's "Lessons in Elementary Physiology."

their tendons and practically form one. These muscles are called, —

1. Musculus rectus abdominis.
2. Musculus transversus abdominis.
3. Musculus obliquus descendens. (The external oblique.)
4. Musculus obliquus ascendens. (The internal oblique.)

Imagine the entire wall of the abdomen freed from all its insertions, and stretched out flat, and it will show about the following form and position of its muscular fibres :

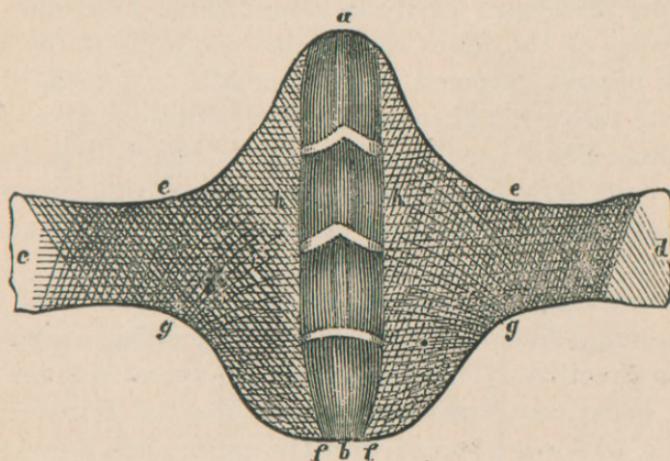


FIG. XI.

In a perpendicular line from *a* to *b*, musculus rectus abdominis; transversely from *c* to *d*, musculus transversus abdominis; obliquely from *e* to *f*, musculus obliquus descendens; obliquely from *g* to *h*, musculus obliquus ascendens.

The action of the muscle oblique *descendens*, and that of the *ascendens*, if acting separately, are dissimilar. The *descendens*, marked *e. f.*, *e. f.*, when alone active, or specially so, presses the contents of the abdomen upward, the *ascendens*,

g. h., *g. h.*, more downward. Owing to this the first mentioned oblique descendens is active particularly in singing and speaking.

If, however, the descendens and ascendens of both sides coöperate, *i. e.*, all four act uniformly and simultaneously, then the combined action in all parts of the abdomen, especially at the sides, will be a contraction of the abdominal cavity from the front backward.

The musculi transversi abdominis, marked *c. d.*, contract the abdominal cavity in a horizontal direction. The shortening of the fibres causes the side walls of the abdomen to become flattened, and the middle wall to be drawn nearer to the vertebral column. Their fibres can all contract simultaneously, or one division can be especially active; in every case, however, both sides operate simultaneously. The upper fibres, which are attached to the ribs, can only then contract powerfully when the ribs are fixed.

The musculi recti abdominis, those marked *a. b.*, draw the sternum down, contracting the abdominal cavity in a vertical direction. These muscles are comparatively the least active, being very narrow, whilst the musculi transversi abdominis, which are spread over the entire abdomen, are the most active.

The coöperation of all the muscles causes contraction in all parts of the abdominal cavity; and through this contraction, as before stated, expiration is brought about and strengthened.

The *diaphragm* is a flat and sinewy muscle. It is attached to the interior surface of the lower ribs, and also to the vertebral column. It forms a wall between the thoracic and the abdominal cavity. The part of the muscle extending toward the chest-cavity is arched. In the act of inspiration it contracts, *i. e.*, it flattens itself, and by this means in-

creases the chest-cavity; but that an empty space should not result in consequence, we must, by means of the larynx and trachea, inhale fresh air into the lungs. Through relaxation, *i. e.*, by the re-arching of the diaphragm, the lower part of the chest-cavity is made smaller; and, in this way, the air from the lungs is expelled. (Fig. XII.)

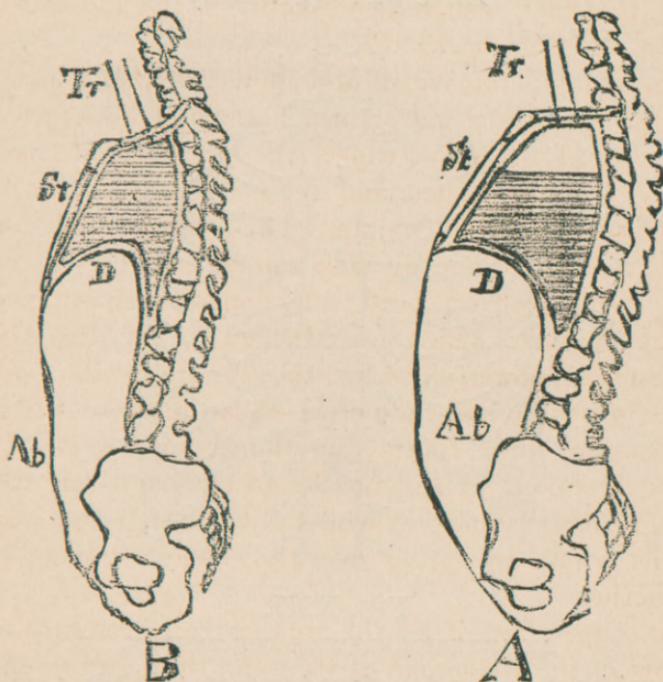


FIG. XII.

DIAGRAMMATIC SECTION OF THE BODY.

A, the diaphragm in inspiration; B, the diaphragm in expiration. *Tr*, trachea; *St*, sternum (breastbone); *D*, diaphragm (midriff); *Ab*, Abdomen. The shading roughly indicates the stationary air.

The diaphragm, although considered an involuntary organ, can, owing to the diverse nature of its nervous fibres, be made voluntary to a certain extent; and it is *this* which en-

ables us to *sing* and *speak*, as far as *inspiration* and *expiration* are concerned.

We shall see further on how much depends upon our ability to cause the diaphragm to perform certain movements, upon the power of controlling its action.

The Chest. (Thorax.)

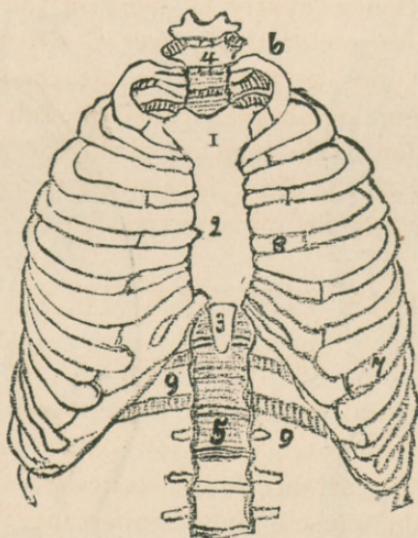


FIG. XIII.

AN ANTERIOR VIEW OF THE THORAX.

1, the manubrium, the first bone of the sternum (breastbone); 2, the body; 3, ensiform cartilage; 4, the first dorsal vertebra; 5, the last dorsal vertebra; 6, the first rib; 7, the seventh or last true rib; 8, the cartilage of the fourth rib; 9, the last two false ribs.

The bony frame of the chest is composed of the following parts: The *upper twelve* (cervical or dorsal) vertebræ, the *ribs* (twelve on either side) and the *sternum* (a bone in the anterior and the median line of the chest), beginning at the base of the neck and reaching to the so-called "pit of the stomach."

Most of the ribs are connected with the sternum by cartilages.

The cavity (of the chest) formed in this way contains the *heart* and the *lungs*, and is divided from the abdominal cavity by a large muscle, the diaphragm, as has been described.

By means of muscles and tendons, which surround the bony walls of the chest, these latter possess the capacity to expand, and consequently to increase the thoracic cavity. Upon the degree of this power of expansion depends the size of the lungs, as they, being attached to the chest walls by enclosing membranes (called *pleuræ*), can only expand in proportion to the increase of the thoracic cavity.

The functions of the chest, in respect to respiration, will be fully explained in the division treating of "respiration."

ORGANS OF RESPIRATION.

The Oral Cavity.

By the term "oral cavity" we understand the free space enclosed by the tongue, palate (soft palate and uvula), and lips. It forms the entrance to the stomach and to the lungs, and contains the muscle most important to speech, the *tongue*, which is attached to the floor of the oral cavity.

The roof of the oral cavity is called the "palate," which consists of two portions, the *anterior* being named the *bony* or *hard palate*, the *posterior* (from the centre of which depends the *uvula*), the *soft palate*. The hard palate also composes the floor of the nasal cavity. The sides of the oral cavity are formed by the jaw-bones and the teeth. The tonsils are placed at the sides of the soft palate. The opening (fauces), which lies between the soft palate and the *back part* of the tongue, is of great importance during singing and speaking, as we shall see further on.

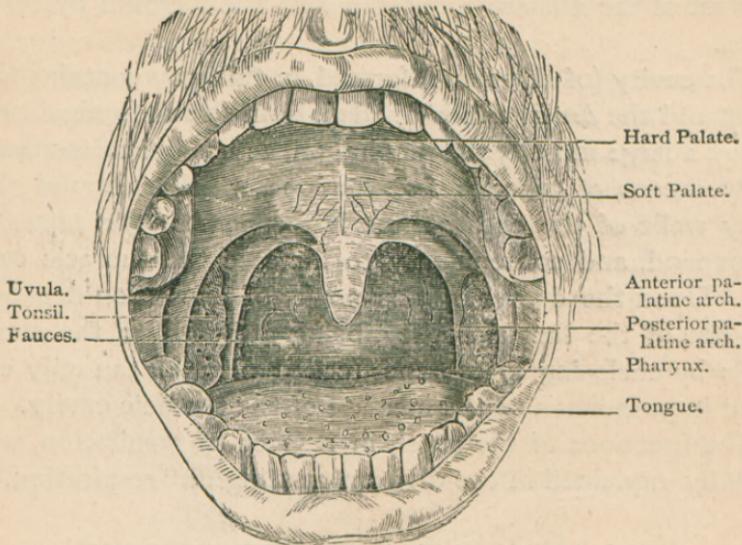


FIG. XIV.

VIEW OF PARTS SEEN WHEN THE MOUTH IS WIDELY OPENED.

The Nasal Cavity. (Nasal fossæ.)

The part of the human body wherein nature has placed the olfactory nerves (nerves of smell), is called the "nose." We distinguish the outer from the inner nose. Our attention is here called only to the inner nose, the nasal cavity. This is lined with mucous membrane (within which the nerves of smell are distributed), and is intended not only for the sense of smell, but also quite especially for *respiration*. It is divided by a cartilaginous, vertical partition into two parts; its floor is, as already stated, formed by the hard palate. The external orifices are called "nostrils;" the internal ones are the nares (*choanæ*). The latter communicate with the pharynx, and by means of this with the oral cavity, the larynx and the windpipe.

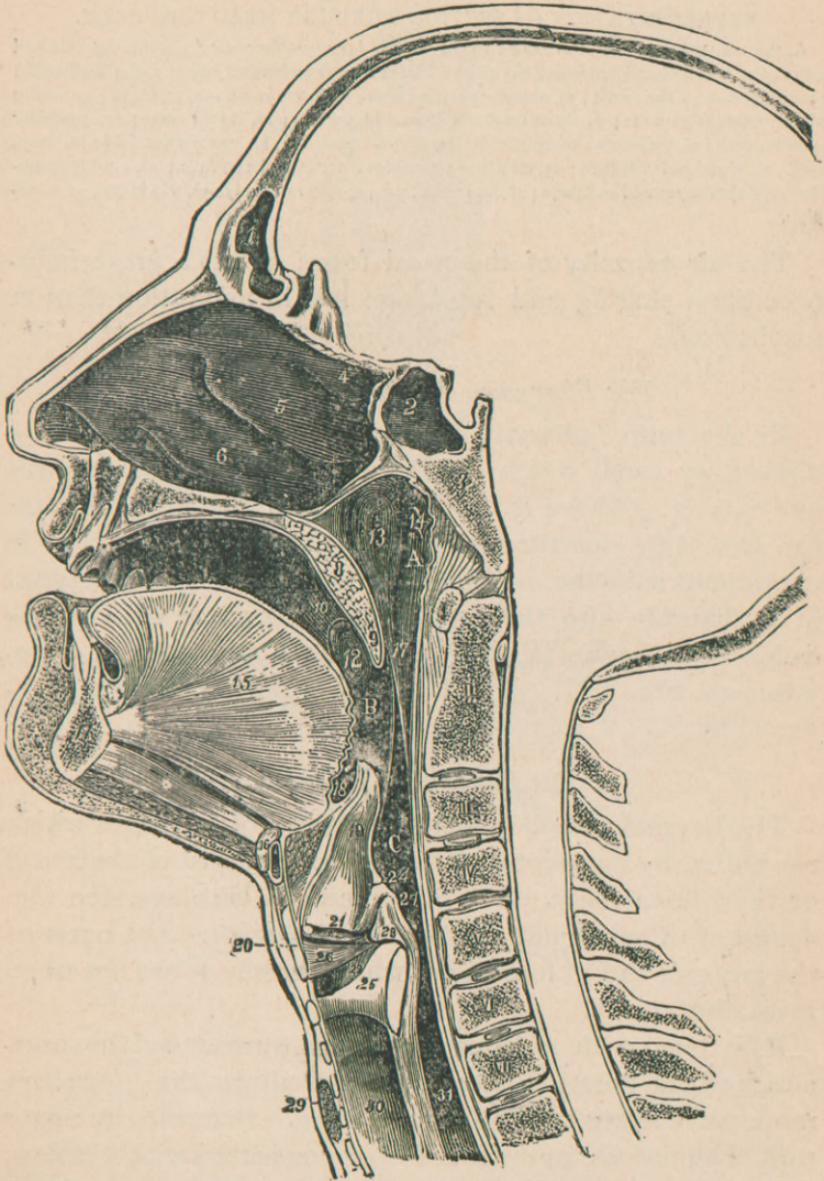


FIG. XV.

REPRESENTATION OF SECTION THROUGH HEAD AND NECK.

A, the *naso-pharynx*; B, the *oro-pharynx*; C, the *laryngo-pharynx*; 4 is the superior and 5 the inferior turbinated process of the ethmoid bone; 6, the turbinated bone; 7, the hard and 8 the soft palate; 9, the uvula; 10, anterior palatine arch; 11, lower jaw-bone, 12, tonsil; 13, orifice of the eustachian tube; 14, Rosenmüller's fossa; 15, tongue; 16, hyoid bone; 17, posterior palatine arch; 18, vallecule; 19, epiglottis; 20, thyroid cartilage; 21, ventricular fold; 22, vocal cord; 23, arytenoid cartilage; 24, cuneiform cartilage. 25, cricoid cartilage; 26, anterior muscle; 27, supra-arytenoid cartilage; 28, lateral muscle; 29, thyroid body; 30, windpipe; 31, food-pipe.

The air capacity of the nasal fossæ exerts a great influence upon singing and speaking; less in expiration than in inspiration.

The Pharynx. (Fig. XV., A, B, C.)

By the term "pharynx" we understand that part of the alimentary canal which is placed behind the nose, mouth and larynx. Above it is connected with the nose through the two large apertures called *posterior nares*; below it is continuous with the œsophagus, and attached to the larynx. It is divisible into three portions, the middle of which is called *oro-pharynx* (Fig. XV., B), the upper portion, *naso-pharynx* (Fig. XV., A), and the lower portion *laryngo-pharynx* (Fig. XV., C).

The Larynx. (*Voice-box.*)

The larynx is a hollow body composed of cartilages which are united by ligaments. The cartilages consist of the *shield* or thyroid cartilage, the *ring* or cricoid cartilage, the two *pyramid* or arytenoid cartilages, the *epiglottis* (the cover of the larynx), and of four more, which, however, are not of so great importance.

It is lined with mucous membrane, surrounded by muscles, and its function is to admit the air to the lungs, but more particularly to produce the voice. It forms the upper part of the windpipe (Fig. XVI.), is connected with it below, and is situated at the upper and fore part of the neck, be-

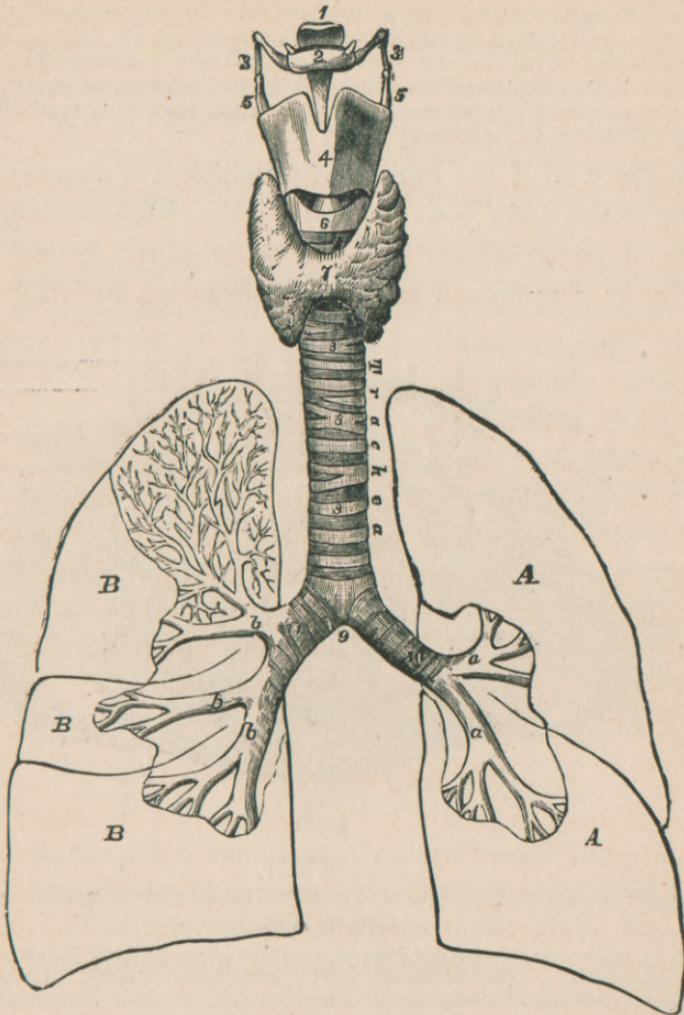


FIG. XVI.

A CONNECTED VIEW OF THE HYOID BONE. THYROID BODY, LARYNX, WINDPIPE WITH ITS RAMIFICATIONS, AND LUNGS.

1 is the epiglottis, 2 the hyoid or tongue bone ; 1, 4, 5 and 6 show the larynx ; 4 is the thyroid cartilage ; 5, 5 are the superior horns of the thyroid cartilage, and 3, 3 the thyro-hyoid ligament ; 6 is the cricoid cartilage, 9 the bifurcation ; at 8, 8, 8 are seen tracheal cartilaginous

rings; 7 shows the thyroid body, 10 the left bronchus, and 11 the right bronchus. *A, A* show in outline the two lobes of the left lung into which the bronchial tubes *a, a*, are seen to enter. The three lobes of the right lung are indicated by *B, B, B*, with the corresponding bronchial tubes *b, b, b*. In the upper lobe of the right lung is indicated in outline the manner in which the bronchial tubes subdivide into smaller and smaller tubes, which finally terminate in air-passages and air-cells of the primary lobules.

neath the root of the tongue, with which it is connected by means of the *hyoid* bone (lingual bone). Right through the centre of the larynx two highly elastic cords extend from the shield cartilage, anteriorly, to the two pyramid carti-

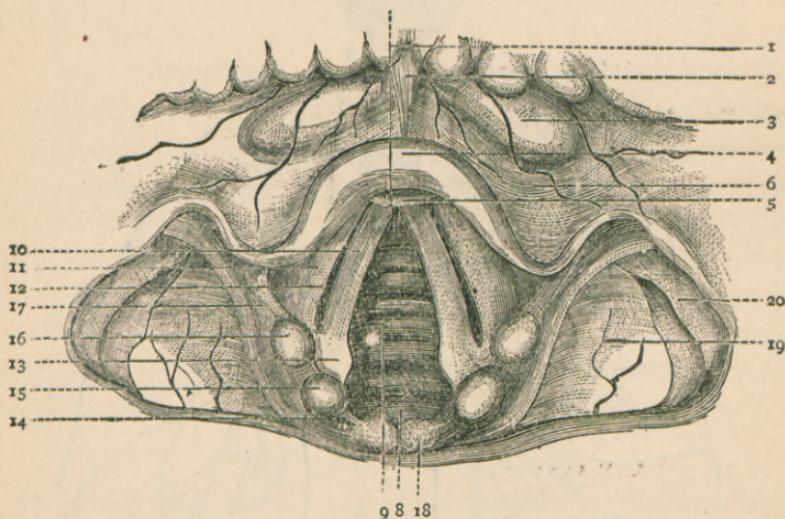


FIG. XVII.

IMAGE OF THE LARYNX AND SURROUNDING PARTS, TWICE THE ACTUAL SIZE.

1, base of the tongue; 2, epiglottic frænum, or middle glosso-epiglottic ligament; 3, vallecule; 4, epiglottis; 5, cushion of the epiglottis; 6, lateral glosso-epiglottic ligament; 7, anterior, and 8, posterior commissure of the larynx; 9, rima glottidis; 10, vocal cord; 11, ventricular fold; 12, ventricle; 13, posterior vocal process; 14, arytenoid cartilage; 15, supra-arytenoid cartilage; 16, cuneiform cartilage; 17, ary-epiglottic fold; 18, posterior laryngeal wall, entrance to the œsophagus; 19, pyriform sinus; 20, hyoid fold of mucous membrane.

lages posteriorly. They are called the *vocal cords*. On the one side they are firmly attached to the laryngeal wall, and the opposite sharp edge projects into the interior of the lar-

ynx. They meet at an acute angle at the depression between the two wings of the shield cartilage, but diverge from there backward, and leave an interval for the passage of air. This interval or free space, the *glottis*, or *rima glottidis* (chink of the glottis), is either an equilateral triangle, or, as in very deep inspirations, an almost perfect oval (Fig. XVII.).

By the air forced from the lungs, the vocal cords can be put into sounding vibrations, whereby voice is produced.

Under the shield cartilage is the ring cartilage, which connects the larynx with the trachea (windpipe). Over the rima glottidis we find the epiglottis, a protecting cover, projecting from before and below in an oblique direction backward and upward over the larynx. It is a pear-shaped, flat cartilage, which shuts down upon and closes the glottis when food and drink are to pass into the stomach, so that they must glide over the cover. (Figs. XVI., XVII. and XVIII.)

Most changes of voice arise from narrowing and widening, and from lengthening and shortening, of the glottis, as well as from contraction and relaxation of the vocal cords.

Trachea. (*Windpipe*, Fig. XVI.)

The trachea is a cartilaginous tube, which can, like the rest of the air passages, expand, contract and shorten by means of elastic fibres. It measures from three and one-half to four and one-half inches in length. Its superior end is connected with the larynx; thence it descends vertically into the chest, and divides in the region of the third dorsal vertebra into two canals, the bronchi (the left and the right bronchus), one of which leads into the right, the other into the left lung. The interior of the trachea also is lined by mucous membrane.

The Air-Receivers. (Lungs, Fig. XVI.)

The lungs occupy the greatest part of the thoracic cavity. They are divided into the right and left lung, connected above by the bronchi, branches of the windpipe, and between which the heart and the largest artery (aorta) are situated. Each lung has a broad, concave base, by which it rests upon the diaphragm, and a rounded apex, which stands behind the first rib.

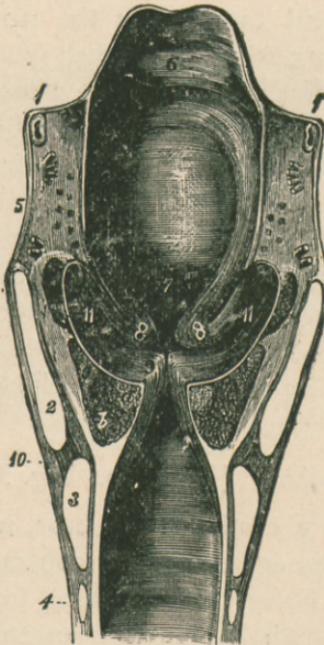


FIG. XVIII.

VIEW OF THE INTERIOR OF THE LARYNX, THE POSTERIOR HALF BEING CUT AWAY.

1, 1, the greater horns of the hyoid bone, cut across; 2, thyroid cartilages; 3, cricoid cartilages; 4, first ring of the trachea; 5, the thyro-hyoid membrane; 6, upper portion of the epiglottis; 7, cushion of the epiglottis; 8, ventricular fold, showing above it the wedge-shaped space of the upper laryngeal cavity; 9, left vocal cord; a, b, c, showing the different portions of the interior muscle.

Each lung is divided by deep fissures, the right into three, the left into two lobes, and these again into numerous small lobules.

The activity of the lungs consists in *inspiration* and *expiration*. In the former the chest expands; in the latter it contracts.

The lungs do not represent a simple hollow space, like common bellows, but a very complicated tubular system. The *substance* of the lungs consists, especially at their periphery, almost entirely of very minute lobules, each of which possesses a narrow outlet (duct). These ducts combine to form gradually larger and larger canals, until, finally, the two before-mentioned canals, the bronchi, are formed, which in their turn form, by their union, the trachea (windpipe).

In inspiration the air passes through the glottis, trachea and bronchi to the air-cells of the lungs, whereby these are forced to expand.

The expansion of the lungs depends upon the size or expansibility of the thorax. It is, therefore, necessary to strive, by appropriate exercises, to make the chest capable of expansion.

The main function of the lungs is the removal of carbonic acid from the blood, and the introduction of oxygen.

PART SECOND.

THE ACTIVITY OF THE VOCAL ORGANS.

THE VOICE.

WE have learned from the introductory remarks that the voice is produced by the air contained in the lungs passing through the larynx, and thereby inducing sounding vibrations of the vocal cords.

The sound, then, is not produced in the oral cavity by any certain position of its organs; it exists the moment the air escapes from the glottis, although it certainly gains or loses by the position of the organs of the oral cavity and by the pharynx. It gains in euphony by a correct, natural position of the tongue, of the soft palate, *i. e.*, by more passive than active position of these parts; and loses when these parts, acting in a wrong way, spoil the sound.

We know that the vocal cords, during respiration, diverge widely; that thereby an orifice, the glottis, of the shape of an equilateral triangle, or, in very deep respirations, of an oval, is left between them (Fig. XIX., 1). But to be put into sounding vibrations, the previously diverging vocal cords must be brought into complete (Fig. XIX., 4) or partial contact (Fig. XIX., 6).

The previously large triangular or oval glottis contracts to a narrow chink, and the current of air is thereby for a time either entirely interrupted — by perfect closure — or decreases in rapidity by incomplete closure, an impediment being formed to the expiration. Through this hindrance above, by the continuous pressure of the true expiratory

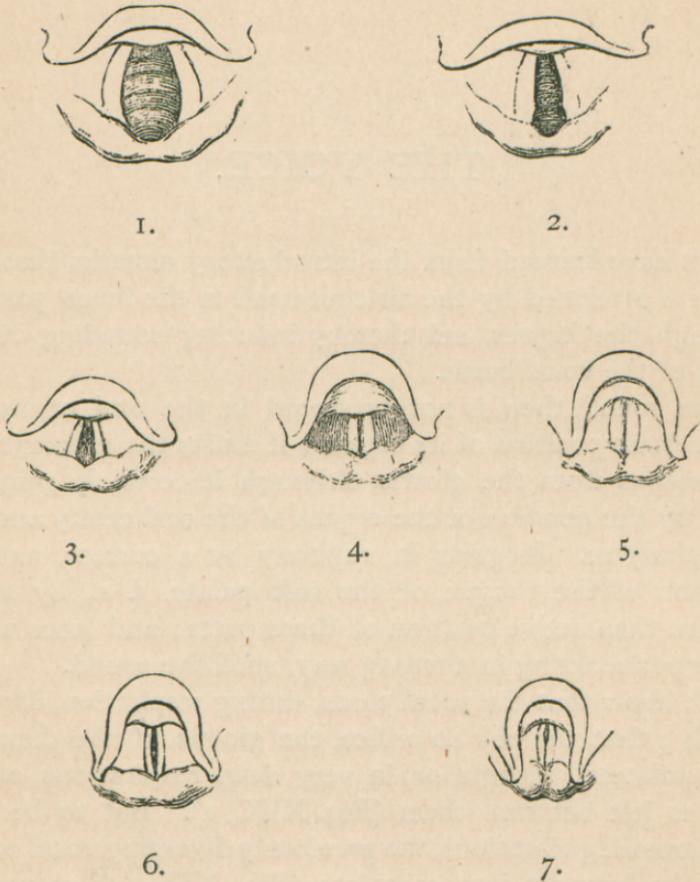


FIG. XIX.

GLOTTIS IN ACTION.

- | | | |
|--------------------|------------------|----------|
| 1, Inspiration. | 4, Low chest | } tones. |
| 2, Expiration. | 5, High chest | |
| 3, Spiritus asper. | 6, Low falsetto | } tones. |
| | 7, High falsetto | |

muscles (the abdominal muscles), a great tension of the air contained in the lungs arises, and with that greater force of the air-current previously passing freely through the trachea, but now restrained by a narrow exit, it thereby becoming possible to bring the vocal cords into a vibratory and sounding motion.

The vocal cords having approached so closely that by their vibrations (alternate opening and closing of the respiratory canal, that is, continual interruptions of the air-current are produced) the air-current is brought into strong sounding vibrations, and we receive the most beautiful sounds that can arise only from a union of the vibrations of the vocal cords and those of the air-current.

This approach of the vocal cords occurs in different ways. There are, accordingly, various modes of beginning the tone ("attack"); the "direct attack" and the "indirect attack."

In the "direct" the vocal cords come into contact throughout their entire length, from the front backward, so that the lower part of the larynx is completely separated from the upper, and the approach of the vocal cords is rapid and decided; at the same time the vocal cords become shortened, and must, therefore, with the immediately following intonation, alter their degree of tension, their shape, length and thickness, according to the sound which is to be produced, and must separate somewhat. A tone thus produced will be marked and separated from other tones.

In the "indirect attack," on the contrary, the glottis is not completely closed by the approach of the vocal cords. Here their length, tension, shape, etc., are at once such as are required for the production of the desired tone, and, consequently, the vibrations begin immediately after the approach of the vocal cords, without any change in the length or tension, as is necessary in the "direct attack."

Philologists have long ago subdivided this "indirect attack," and distinguish the *soft* — the so-called *spiritus lenis* — and the aspirated (commencing with an *h*) — the *spiritus asper*.

In the "direct attack" the vocal cords come together rapidly, and completely close the glottis. In the *spiritus lenis* they approach just as rapidly, but do not come into contact. In the *spiritus asper* the approach is very slow and hesitating, as though there were a power which endeavored to retard their progress (Fig. XIX., 3). Whereas the "direct attack" is distinguished from the "indirect" by the closure of the glottis, the subdivisions of the "indirect" are distinguished not by the closure, but by the rapidity of the approach of the vocal cords. In the "direct attack" there is, moreover, a momentary interruption of the column of air, but not in the "indirect."

A perfectly normally formed tone of the human larynx is one by whose production the entire expiratory air, passing at once through the glottis, is brought into permanent vibrations. We distinguish here the *normally* formed from the *aspirated* tone, which is impaired by *wild* air (that is, air not brought into permanent vibration), in which, therefore, the conditions of tone-formation are not perfect or not unimpaired. In *chest-tones* the glottis is momentarily closed at the beginning of the tone and at the termination of each vibration. The vocal cords vibrate in their entire width and length. In *falsetto* tones the glottis remains open, and the vocal cords vibrate only at their edges.

We can, therefore, assume that there are four chief ways of expiration which are distinguished by a gradually increasing approach to each other of the vocal cords:

1. Inaudible expiration — entirely open glottis.
2. Audible expiration — contracted glottis; the noise of the letter *h*, *spiritus asper*.

3. The "indirect attack" — the vocal cords are so near each other that the exhaling air sounds, *spiritus lenis*; and
4. The "direct attack" — completely closed glottis, which only opens when the tone commences to be produced.

The second kind of expiration, the noise *h*, is used for the so-called whispering voice. But whispering must not be confounded with low speaking. The lowest speaking may still be full of sound, and should for that reason not be called whispering. It is not low sound, but the total lack of sound, that characterizes the latter. It is called *whi per-voice* because, with the exception of the loud sound, it has all the essential marks of voice. Here, also, we find a "direct attack" and two "indirect attacks," as we have just become acquainted with them, and only the loud sound is missing. If, on account of a disease in the mucous membrane covering the vocal cords, the latter are in a condition to be unable to approach each other, then not only sounds, but even the larynx noises, of the whispering voice become impossible, or can be clearly heard only by a great strain and force of the exhaled current of air. It is, therefore, entirely wrong to explain the origin of the noise *h* in the manner in which it has been generally explained; viz., that the air, escaping from the larynx, bounds against the pharynx, or any part of the oral cavity, and there a noise is produced. Not in the oral cavity, nor in the pharynx, but in the *larynx* is the noise *h* produced. Through air that is exhaled only, can a sound be formed. Air that is inhaled, at the utmost produces a noise.

The *force* of the voice is dependent on the condition of the organs of respiration — the chest, the lungs, the larynx, etc., — but its *metal* depends on the condition of the mucous membrane that covers the larynx as well as all air-passages. The *ability of contraction* and *vibration* of the

vocal cords, as well as the *higher* or *lower* position of the larynx, and the shortening or lengthening of the glottis, decide the height or the depth of the voice. The fewer the vibrations of the sounding body in a certain period of time, the deeper, the more vibrations, the higher the sound will be. The deepest audible tone has sixteen, the highest thirty-eight thousand vibrations in a second.

As to the influence of the air-pressure upon the quality of the loud voice, it is certain that by a *stronger* pressure of air the sound of the voice will become stronger, but it will also become *higher*.

If, by a stronger pressure of air against the vocal cords, you wish to prevent the heightening of the sound, a consequent remission in the contraction of the vocal cords is necessary; if, on the contrary, the strength of the sound is to be weakened without suffering a change in its height, then, with the decreasing of the pressure of air, the contraction of the vocal cords must increase. We find an example in the "crescendo" and "decrescendo."

The peculiarity of so many singers in producing the higher notes of the chest-register by a greater expenditure of breath and a pressure of the muscles of the neck, is entirely wrong. It is a law in nature that the larynx rises by heightening and falls by the deepening of the sound, but there should be no pressure on the muscles of the neck, for thereby the natural function of the larynx is hindered.

A too great expenditure of breath, or concussion of the vocal cords, will be followed by screaming tones, and not only that, but the vocal cords will in time lose their elasticity, and with this their ability of vibrating. *This is the cause of the ruin of so many voices.*

Now, is the tone produced by the vocal cords in the larynx sufficient for speaking and singing? Certainly not.

The tone produced in the larynx could not be used for music without the *resonator*. This is composed of the cavities above the larynx; viz., the pharynx, the oral and nasal cavities. Through these the sound produced in the larynx by the vocal cords receives a greater variety in tone-quality, more fulness, roundness, and in general its beauty.

The peculiar, variable character which everything that is spoken or sung, every tone-register, every tone, apart from its intensity, can assume as soon as the sound produced in the larynx has entered into the pharynx, Garcia (the inventor of the laryngoscope) calls *timbre* (the real tone-quality).

This timbre of the human voice allows (according to Garcia) of several modifications, — gutturals, nasals, round, hollow and dismal; but these may be reduced to two main timbres — the *light* and the *dark*. If the mouth is opened wide, and if, on account of the high position of the larynx, the opening of the pharynx is but small, the *light* timbre is produced; if the mouth is opened little, and if, on account of the low position of the larynx, the width of the pharynx is great, the *dark* timbre is produced. (More on this in Part IV.)

By means of the light timbre the chest-tones receive their lustre. It is particularly adapted to the expression of delicate and joyful feelings, but by too great a strain the voice sounds screaming. The dark timbre gives to the chest-tone the rounded fulness and might. It is particularly adapted to the expression of the solemn, of pain and sorrow. If exaggerated, the tone is smothered, and becomes hollow and rough.

According to Garcia, the effect of the timbre can also be distinctly felt in the falsetto tones, although in a less striking degree than in the chest-register.

We have been often asked : " What is your opinion ? Shall I practice only the *dark* or only the *light* timbre ? My teacher always said that I should practice the first "

What shall we answer to this question ? And let it not be believed that this teacher is the only one who thinks so ; numerous examples prove the contrary. Here and there we still find people who are of the opinion that we can cultivate a nice voice existing alone, and not dependent upon the feelings of man. This is certainly possible, and to our sorrow we must too often listen to such a voice ; but such tones will not be able to reproduce man's feelings. If this is to be the case, the voice must be cultivated in such a way as to be capable of producing every shade of sound. As already stated, the two principal timbres are light and dark, and each of these, by correct cultivation of the voice, allows as many shades as man is able to produce.

In singing or speaking only feelings are expressed, be they feelings of pain or of joy. Sounds without feeling are, consequently, not singing. Many modern singers do not sing feelings, but sounds ; and it is impossible that it should be otherwise. Feelings can appear in the sound only when the voice is used in a *perfectly correct* manner, and when the voice is *free* from all mannerism. Where this is not the case we hear sounds which, by means of all sorts of expedients, as, for instance, lower, louder, slower or quicker singing, are to be shaded differently ; but always we hear the same shade of tone and lack of all feeling. Consequently, in art the human voice cannot be said to exist without feeling, and this does not express itself in the light or the dark, but in *both* timbres.

In old age the vocal organs lose in elasticity, whereby the organs of respiration become wider, and, consequently, the voice loses its metal.

The human voice has a compass of about two, two and one-half, to (as the celebrated Catalani) three octaves, and is divided into different kinds, called soprano, alto, tenor and bass ; or soprano, mezzo-soprano, alto, tenor, baritone and bass.

This diversity in the human voice is caused by the construction of the vocal organs, *i. e.*, by longer or shorter vocal cords, smaller or larger size of the larynx, and even the elasticity of the air-passages and the force of their resonant walls.

The vocal cords of children and of women are shorter

(consequently the glottis also, and, therefore, their voice is higher and finer) than those of men.

The period of *mutation* (*i. e.*, the development of the boy to youth and the girl to womanhood) has great influence upon the voice, and should not be neglected by parents and teachers. It is indicated by the voices becoming hoarse and rough, and frequently producing double sounds (more to be noticed in the male than in the female sex), and, if the voice is to develop naturally and to advantage, the vocal organs should be spared. We do not mean to say (what so many affirm to be absolutely necessary) that during the period of mutation all exercises in singing are to cease. This is necessary only when the voice is entirely hoarse. On the contrary, even in this period, exercises for the voice are very advantageous for the development of the vocal cords. It should be well understood that the exercises must be easy, very moderate, in no way forced, and not long continued.

Man can produce different kinds of tone, according to the way he allows the air to pass from his lungs, by more or less stretched vocal cords.

A tone can be produced twice from the same vocal cord by strong breath and weak stretch, and by weak breath and strong stretch; in this way the several registers of the human voice originate.

Every compass of voice in individuals of moderately good voice is composed of two to three rows or registers of tones, partly following or lying over each other, which allow various sounds to be heard, and which are caused by various vibrating mechanisms of the vocal cords. By a register of tones we understand a continuous longer or shorter row (scale) of tones, which are produced by an instrument by one and the same vibrating mechanism, whereby the gen-

eral timbre of the tones may not be changed. As soon as a noticeable difference in the color of the tone (timbre) takes place, the one tone always belongs to another register than the other.

Notwithstanding all seeming differences of opinion upon the registers of the human voice, experience clearly shows that there are principally *two* registers of voice in the male vocal organs—chest and falsetto register. In the female organ *three* registers may be clearly distinguished:—a low, a middle and a high one, of which the hearing can noticeably distinguish the low from the middle one.

Chest-Register. (Fig. XIX., 4 and 5.)

In every singer, whose voice has not been cultivated in a wrong way, we hear that he can strike the general row of his natural tones, from the lowest up to a certain height, with a full breath; these are the tones that a man uses in general speaking and declaiming, but which women use only under certain circumstances. They are correctly called *chest-tones* because by the man, at least, they are formed not only with full chest, *i. e.*, with full, well-used breath, and are allowed to swell strongly, but because they resound in the full extent of the chest, and thereby reach their fullness and size. The hearer has the feeling of the full, the natural, the healthy, the strong. In the *woman*, however, these tones of the low register make the impression of something foreign to the female nature, and here they are the expression of a state of emotions which we are apt to find in a man, but not in a woman.

Falsetto Register. (Fig. XIX., 6 and 7.)

If a singer tries to reach higher notes with his vocal organ than he is able to do with his chest-mechanism, we not only

find a certain change in the mechanism of the tone, but also a noticeable change of the timbre; we feel that not all that was set into vibration by the chest-tones is vibrating now, and the tones produced do not make the impression of the full, the natural, the marked, the strong, upon us, but remind us rather of something abnormally weak or feminine. In the woman this register, which does not here deserve the name of *falsetto*, but should be called *middle* register, is altogether different. The falsetto or middle register is the chief one of woman; it sounds better, fuller and nicer than a man's falsetto, and it is more consistent with the feminine disposition and character than her chest-register, which sounds better in a man. While a man usually sings, speaks and declaims in the chest-register, most women, single as well as married, use their middle register.

The falsetto register does not commence only at the end of the chest-register; it can even commence in the middle, and in women still lower; and for this reason a certain number of tones can be sung in both registers.

The entire number of tones which can be produced in a larynx, therefore, consists of three divisions, viz.:

1. Tones which can be produced by the chest-voice only.
 2. Tones which are possible in the falsetto voice only;
- and
3. Tones which can be produced by both the chest and falsetto voice.

The tones under (1) are the lowest, those under (2) the highest, and those under (3) embrace a middle register depending for its larger or smaller size upon the individual to whom they belong.

The cultivation of those tones which can be produced by both chest and falsetto voices, requires great study, and in their correct use (*i. e.*, already to take the falsetto tone

where the chest-tone might still be taken, and vice versa still to remain two or three tones in falsetto, where the chest-tone might already be taken) frequently lies the wonderful sympathy, the irresistible attraction of the speech and song of so many speakers and singers.

PRODUCTION OF THE VOICE IN SINGING AND SPEAKING.

As already stated, the tone originates in the glottis by means of air expelled from the lungs through the larynx.

The qualities a tone must have to give entire satisfaction are :

1. Metallic.
2. Clear (of the right height).
3. Strong and full.
4. Firm, not trembling, and
5. Durable.

Let us look more closely at the premises which cause these qualities.

A strong, healthy chest and good respiratory and vocal organs must be named as the first condition for the production of a tone; without these a good tone is impossible, although it is not thereby said that these qualities alone will cause a good sound to be produced.

The quality of the *mucous membrane* covering the vocal cords, as well as the *power of vibration* of the vocal cords themselves, the width of the fauces and the oral cavity, the amount of air the nose is able to hold, as well as the pharynx, the thickness of the soft palate with the uvula and of the tonsils, greatly influence the tone. All of these

may be influenced to advantage. The sooner this is done, the more advantageous it will be.

We know that the tone produced in the larynx only reaches its variety in timbre, its fulness, its roundness, and altogether its beauty, in the resonator. We add thereto, *but only by correct use of the resonator.*

“Can the resonator be used incorrectly?” I have been often asked. Certainly! The resonators of *artificial* instruments cannot be used incorrectly for they cannot be changed; but the resonator of the human vocal organs is capable of great changes — changes which are caused on one hand by speech, on the other hand by incorrect use of the organs *at* and *in* the resonator to which lips, teeth, tongue, soft palate and tonsils belong.

In order to use these organs correctly, it is necessary that we should attain a complete mastery over them by means of gymnastics, and to know how they should be used. In this mastery great results can be obtained if we have the will to attain them.

The *strength* of the tone may be increased if the chest and lungs are widened by means of deep breathing and gymnastic exercises. (See Part IV.) As these exercises also strengthen the organs of respiration, the evenness of the tone is also influenced, as this depends upon the evenness with which the air is expelled from the lungs.

The *metal* and *clearness* of a tone depend upon the condition of the mucous membrane covering the vocal cords, and the slightest change in this (drier, moister, thicker, harder than necessary) has a disadvantageous influence upon the metal of the tone.

The *power of duration* of a tone depends upon the strength of the muscles of the larynx and can be attained only if these parts are nourished by animal food and by a gradual heightening in singing, but never without allowing the necessary rest to follow.

The *evenness* of the tone depends upon correct breathing, and will be treated under “breathing.”

This is the case not only with the singer, but also with the orator, as we shall see further on.

How the voice gains in height and depth will be shown in Part IV.

Before the muscles of the vocal organs have attained the necessary strength, the voice will always more or less vary from the correct pitch, as well as tremble. This may also be in case of poor musical hearing and of poor method of teaching. Strengthening of the voice, cultivation of the hearing and correct method of teaching are the chief conditions for the prevention of singing out of tune.

Tonsils that are too large must be made smaller by means of caustic or tincture of iodine.

What the condition of the organs of respiration should be has already been told in the discussion upon the lungs, the windpipe, the larynx and the muscles, and will be treated further in Part IV. Here we must only speak of the *production* of the tone and of the *position* of the organs necessary.

When the body is in a quiet position during the production of the tone, the following is to be observed:

The body should not be distorted in any of its parts. It must stand straight, with protruded chest, the shoulders back. The chin should not be held high or low, but should have a horizontal position.

The neck must sit free and unforced upon the shoulders, and not, as we frequently see, *between* them. The shoulders should not accompany the tone or word with rising and falling, in order to give it a particular expression. It is understood that shrugging of the shoulders, as well as some few cases in which the shoulders may move, are excepted. To the latter, among others, belong the repre-

sensation of fright, whereby the neck, and, consequently, the head fall between the shoulders, etc.

The arms should not be pressed against the sides of the body, but should hang light and unforced (in which case the pushing back of the elbows, an often noticeable mistake of women, will be prevented), and when they are moved it must be done without any excessive straining of the muscles.

The organs in the oral cavity and the lips must be placed according to rule:—The jaws separate a little, the lips are slightly drawn back from the teeth (in *a* as in *father*, *a* as in *fate*) as in a friendly smile, whereby the tips of the teeth become visible, but without allowing any strain to appear, or that one lip is drawn back more than the other. But in *e* (in *eve*), *o* (in *old*), *oo* (in *ooze*), the lips should be held as is described in Part III.; but they may not, as we often find in noted singers, be pushed too far forward, whereby they get the appearance of a carp's mouth; nor may they close on one side of the mouth and open wider on the other, thereby forcing the tone to pass unclearly and poorly from the side of the mouth.

We often find other mannerisms of holding the lips, and for that reason we mention them: This is the so-called *pointing of the mouth*, whereby the opening through which the tone has to pass becomes so small that a clear, full tone is impossible; and holding and pressing the under lip upon the teeth, while the upper lip is pulled from the teeth.

All these faults seem incredible, but they have been noticed by us in person.

The mannerism of opening the mouth wide during production of high tones and of reducing it to its minimum opening in production of deep tones, is entirely incorrect. The width of the jaws and opening of the mouth (during

production of tone) is normal when we can put the thumb between the teeth. The singer should always attempt to reach the normal opening, although this opening undergoes various modifications by the formation of different vowels.

I cannot understand why singing teachers are not stricter about the position of the mouth and of the organs of the oral cavity, as a pure, clear tone is impossible with incorrect position of these organs.

I once had a pupil who (having had a few years' musical education in Paris) sang with the most disadvantageous and ugliest position of the mouth; it required the greatest strictness on my part, and the most continual diligence on the part of the pupil to change these incorrect positions of the lips, for they had become her second nature.

Singing teachers cannot, therefore, be told too often: before all, be particular about the correct position of the mouth as well as of the organs of the oral cavity.

The soft palate must be raised as much as possible, the tonsils (altogether the side walls of the soft palate) should not be pressed together.

The knowledge how to hold the palate is of the greatest importance to singers and speakers. The disagreeable singing of so many comes from their not having learned how to lead and break the waves of tone correctly by means of the soft palate. This is an art the attainment of which requires a long period of time, but the singer must attain possession of it, for he who cannot regulate his palate, will never learn how to sing.

The fauces must be as wide as possible and may not be decreased in width by the tonsils.

In the production of tone unconnected with speech (singing the vowel *a*, see Part III.), the tongue must lie horizontally in the mouth, the tip touching the lower row of teeth, but without rising over it. In the middle of the tongue a small depression is formed, similar to the form of

a cylinder cut through lengthwise. Not under any circumstance may it extend into the oral cavity in the shape of an arch, which happens more or less in forming the other vowels (see Part III., "The Vowels"), nor should it contract spasmodically at its root, nor press downward upon the larynx whereby the oral cavity becomes smaller, and the resonance of the tone is injured. If a word is connected with a sound, the different vowels demand their several rights (see Part III.), but we should always strive to bring the tongue into the position required by the rules for the formation of tone. It is only necessary to remove the tip of the tongue from the lower teeth in the formation of the different dental and palatal consonants (see Part III., "The Consonants"). Its entire activity consists in the mobility of its tip and the raising of its back, but never in spasmodic contraction backward, downward nor toward the soft palate; and exactly this occurs in the incorrect use of the tongue.

Chiefly necessary for easy speech, therefore, is a movable tongue, and for good singing a quiet tongue.

As soon as the tongue is contracted spasmodically toward any direction, a squeezed, disagreeable, unclear sound is produced, which most people regard as characteristic of the voice of the individual who uses it, but which, if formed by the same organs according to rule, may become a beautiful tone. No one need, therefore, believe that these squeezed, disagreeable sounds are natural qualities not to be got rid of; they are only the result of a poor method, and we will undertake (let it be well understood if the person has the necessary diligence) to free any one's voice from this nightmare.

Such tones as laryngeal, nasal and palatal sounds occur as

frequently in speaking as in singing, but they are more noticeable in the latter.

A palate-tone speaker or singer need, therefore, not console himself with the idea that it is his fate to be obliged to use these sounds, but should accuse himself as the murderer of his voice.

The correct use of the tongue is very difficult to attain, and only by means of gymnastic exercises for the tongue, will the scholar be able to make it movable, so instead of being in his way it will aid him.

It is not to be believed how little most speakers (singers, only, partly excepted) understand how to use their tongue correctly. By most it is nothing but a helpless lump of meat which is in the way of every tone and word, and I have often met colleagues who were not able to move their tongue independently. I have even heard some say: "My tongue is in my way." This sounds as if in shooting a soldier would say: "My gun hinders me, I wish I could shoot without it." Some will smile at this saying, and yet I have often heard it and understand it very well. The tongue really hinders by incorrect use (before it has been mastered by means of exercises), and clear singing and quick flowing speech are impossible without correct action of the tongue.

Most peculiarities and singularities in pronunciation have been altered by means of correct use of the tongue; and still we find numerous artists who, if we wish to prove to them that their poor singing is caused by the spasmodic contortions of their tongue, laugh in our face.

These exercises are to be practiced not with the tongue alone, but also with the soft palate, lower jaw and lips.

The *first* of these exercises consists in protruding the tongue without any pressure and independent of the muscles of the larynx, and then in slowly drawing it back as far as possible. The tongue is to be protruded during *expiration*, and drawn back during a deep *inspiration* through the mouth while the nostrils are closed by the fingers. This exercise is to be repeated frequently while he who practices should try to become conscious of the muscles by means of which this is accomplished (for the knowledge of the mus-

cles to be used at all times is the chief requirement). He will find that in drawing back the tongue its root will contract and thereby push down the larynx; while in protruding the tongue, its root will come forward and the larynx will be drawn up. With this exercise let him combine the raising of the soft palate, for while (during the production of a tone) the tongue should not form an arch which protrudes into the oral cavity, the soft palate may not be drawn too far downward, in order to fulfil the first condition of a full, clear tone, viz.: wide fauces and wide oral cavity. Then with the tip of the tongue let him try to touch the hard palate at all parts, and the soft palate as far backward as possible, so that the oral cavity becomes almost empty.

The *second* exercise consists in protruding the root of the lowered tongue without allowing its tip to pass beyond the front teeth.

The *third* exercise consists in singing a tone (*ah*), holding it as long as possible, without allowing it to lose its clear character, and at the same time trying to make a circling movement with the tip of the tongue; and later, when this exercise has been fully mastered, try to make a horizontal movement with the tip of the tongue from one side of the mouth to the other, first slowly and gradually increasing in rapidity.

To hold down the tongue by means of a stick or handle of a tooth-brush, I do not consider at all beneficial. He who does not learn to move the muscles of the tongue independently, will not derive any aid by forcibly holding down the tongue, or the aid will only last as long as the forcible pressure continues. The only radical cure for the incorrect activity of the muscles of the tongue lies in its entire control, and this control can only be obtained by means of the exercises prescribed.

He who, during the activity of the muscles of the larynx, is able thus to move the tongue, will also be able to keep it in an inactive state.

The *fourth* exercise consists in moving the lower jaw (without any pressure upon the larynx) horizontally to right and left, and then in describing a slightly circling movement ; both to be done while singing a tone. The object of this is to free the muscles used for chewing.

The *exercise for the soft palate* consists in opening the mouth wide, and attempting to raise the soft palate *without singing*. The exercise should be practiced in front of a mirror. Here also it would be serviceable if the raising of the palate occurred during deep inspiration through the mouth, the nostrils being closed.

The *exercise for the lips* is the following: Attempt to move them *singly*; for instance, draw the under lip downward without allowing the upper lip to move, and vice versa. Produce a tone, hold it a while, and make the same movements of the lips. He who has mastered the muscles of the lips singly, can let them rest when they are not to act.

Great diligence is needed to attain the ability of moving the lower jaw correctly, and we consider it very necessary to call attention toward a mannerism, which we shall do in Part III. under "Correction of Defects." In passing, we will remark that a certain stiffness or incorrect use of the lower jaw is the consequence of the habit of setting other *unnecessary* muscles into activity in the use of the larynx and the tongue.

I have met speakers and singers whom I really pitied. The veins of their neck swelled to the thickness of a small finger ; the neck itself attained an unusual size, their face became red as fire and their eyes, whose whites had become reddish, protruded from their sockets. And all this on account of incorrect activity of their muscles, ignorance of the correct method of breathing and ill-treatment of their vocal and articulating organs. The consequences thereof were a quick, noticeable tiredness, even after slight tasks, and finally a total inability of the vocal organs. And it is curious that these people look for the cause in everything else but in this mistake.

A particular peculiarity of people who speak and sing in this manner, is the compression of the upper chest by the shoulders and arms, and a permanent shaking of the head, as well as a chin lifted by spasmodic muscles of the neck.

I have known singers who thought they could not sing a high tone without crossing the arms upon their chest, as if imploring, and thus, instead of freeing the chest of all pressure, pressed it together.

A false activity of the muscles occurs oftener, both in speaking and singing, than we think. A young man, who, after twelve years of troublesome practice in art, had not, with all diligence, passed the beginning, whose organs, though good, were almost spoiled by wrong use, determined to become my pupil. After three months' activity, having freed him from the nightmare that lay upon his organs as well as upon his heart, he was satisfied with the total change that had come over his being. He confessed to me that he had formerly not been able to appear upon the stage without straining all his muscles in the most unnatural manner; and when reproached for not being able to walk, stand, or move, he had sorrowfully asked himself, "What shall I do?" Despairing, he began to think that nature had neglected him, and that he must waste his life—and he was a good-looking young man, blessed with all other advantages. When he had become entirely changed, the regret for the twelve years he had wasted mastered him and he wept. I could only comfort him by holding before him the fine prospect for his future career. I could name dozens of similar incidents, but will only make the following remarks:

We are too apt to regard every peculiarity of an organ (caused by incorrect use) as something peculiarly given by nature to that organ only, and we can be assured that (not counting a certain timbre peculiar to each voice) such an organ would sound altogether different, and would hardly be recognizable if, in the production of the tone, the activity of the muscles were a correct one. Many persons, by a slight but noticeable speaking through the nose, by a mannerism of always speaking high or low, strong or weak, pointed or screaming, through the teeth or otherwise forced, attain a certain individual coloring which is lost as soon as the organs are used correctly.

When a person is inclined to use the larynx incorrectly,

or generally to act with incorrect muscular activity, then, as a general thing, all the muscles are strained unnaturally, and thus hinder the free development of the organs. An unnatural straining of the muscles can only be overcome by the pupil, while speaking and singing in a certain tempo, making certain movements with his arms in a different tempo, and also by slightly turning the head to the right and left while the tone continues, and by generally preventing the limbs from assuming a stiff attitude.

I have had pupils who could not turn their heads during singing without causing the tone to cease suddenly. Then I have had such who could not circle their arms in a different tempo from that in which they spoke. Only by means of exercises which I caused them to make, and which consisted in moving their limbs in a different tempo from that in which they sang or spoke, could I bring ease and gracefulness into their limbs.

Four tone-colors in particular are produced by incorrect position of the organs:—

1. Palatal tones.
2. Nasal tones.
3. Guttural tones.
4. Dental tones.

The theory of the palatal and nasal tones is the following: In both kinds of sound the position of the larynx, the lingual bone and soft palate changes in comparison with their position *without* these kinds of sound. In the palatal tone their position is higher, in the nasal sound it is deeper. In both cases the middle of the tongue is pressed upward toward the palate, and the more one or the other of these sounds is expressed, the more is this done. In the palatal tone the current of air is too much impeded by the contracted soft palate and the spasmodically arched tongue, whereby the space above the larynx becomes too small. If the larynx is forcibly pressed downward, and the pharynx contracted, the so-called throat or guttural tone is produced.

If the soft palate is allowed to hang loosely or is not held firmly against the posterior wall of the throat (as the formation of every pure tone requires), so that the vibrations of the air-column are directly communicated to the air in the posterior nasal cavity, there results what is known as the *nasal tone*.

It is, therefore, a mistake to suppose that the nasal tone can result only through the escape of too much air through the nasal passages. The nasal tone may be produced even when the nose is kept closed, so that it can only proceed from the vibration of the air in the posterior nasal cavity. How the palatal tone may be got rid of will be shown in Part IV.

When the jaws are not separated sufficiently the results are the *dental tone*.

It is, of course, plain that there ought to be no gaps in the teeth, and that in case there are any, recourse must be had to artificial teeth.

To prevent the tone in song or speech from having a *nasal* character, the following exercise should be resorted to :

The pupil should bring the organs into the proper position for the production of a tone (as has been described); he should then sing or speak while keeping the nose shut, and should see that in spite of this the tone does not become nasal.

This exercise is excellent for, the nose being shut, the palate must in consequence be elevated and the tongue be kept perfectly immovable, if the tone is not to become nasal.

The larynx, being movably seated upon the likewise movable and extensible trachea and connected with the loosely suspended hyoid bone, must always be drawn more or less downward and be held fixed by the force of the muscles, if any definite tone is to be produced in it, for the more or less greatly increased air-pressure tends to press the larynx upward and to alter the number of vibrations of the tone.

This depression of the larynx should not be the same for every gradation of tone (as many teachers of singing demand of their pupils), but its position should vary with the formation of the different vowels, each of which requires it to be in a special position.

Having described the correct use of the resonator and its internal and external organs, we must state that the fundamental principle with regard to tone-formation, as far as the resonator and its organs are concerned, is that the air poured from the lungs must not be allowed to be affected either by the tongue, the palate, or the tonsils, or by forcibly raising or depressing the larynx, and should be made to pass over the flatly or, better still, concavely held tongue, and escape between the jaws held in exactly the right position. The *manner* will be explained under the head of "Breathing."

Let the tones (the sound-waves) issue from the lungs without any pressure of the vocal organs, and they will always reflect our sensations. If the contrary is the case, we have tones compressed, not susceptible of modulation, and whose unnatural formation cannot, for a moment, be concealed.

I cannot refrain from making a general observation here. I have often heard those of my pupils, whom I have enabled to get rid of palatal tones, and whose voice has received an easier and freer development generally, make the strange remark that it was no longer an exertion for them to sing or to speak. So little idea have such persons of the effect of a method, that they imagine that, when they adopt a given method, the exercise of it will be accompanied with a certain amount of extra exertion.

An excellent exercise for promoting the ability to carry downward the larynx, is to practice the singing of the chest-tones with the mouth closed, as this can be effected easily only with depressed larynx and raised palate. If we raise or press upon the larynx, we shall have nothing but squeezed tones.

The organs having been placed in exactly the right position, the air must be allowed to pass out very gently from the lungs. Most singers and speakers are particularly apt to fail in this; for, to emit the air properly from the lungs, requires special skill,—a skill which, unfortunately, we seldom find in artists.

There are six conditions which singers and speakers have to fulfil, if they desire to bring forth correct and beautiful tones, or to achieve success in their art:

1. The air must pour out slowly.
2. It must not be violently ejected, but should, so to say, be spun out.
3. It must impinge against the roots of the upper incisors, at the hard palate (see Part IV.).
4. The inspiration must be inaudible.
5. No more air must be permitted to escape than is absolutely required for the tone; and, consequently,
6. The tone must not have an aspirated character.

As the fulfilment of these conditions is intimately connected with the whole question of correct breathing, a more detailed explanation will be found under that head, where some other points connected with tone-formation are also discussed. It is not proposed here to lay down a complete method of singing, but to set forth the correct method of tone-formation for singers and speakers.

PRESERVATION AND STRENGTHENING OF THE VOCAL ORGANS.

Whoever desires to preserve his voice (whether the singing or speaking voice) must closely observe the following rules. It is to be regretted that circumstances do not

always permit of their observance, yet their neglect through any avoidable cause can never be justified. Such neglect has often to be atoned for with a long indisposition, if not with the loss of the voice.

1. In the first place, the air we inhale must not be too cold and too raw; inflammation of the mucous membrane of the larynx, and especially of the vocal cords (hoarseness), is the usual consequence.

2. The air must be pure and not vitiated with smoke (especially tobacco smoke), dust, or noxious gases. Frequently recurring catarrhs of the larynx cause a thickening of the mucous membrane of the vocal cords, and an unmetallic, harsh voice is the natural consequence.

3. After prolonged singing, exerting discourse, or after the inhalation of warm air, the larynx should never be exposed internally or externally to cold air; an inflammation of the mucous membrane, however slight, is generally the result.

It is easy to guard against either of these kinds of exposure; but this is generally not done, through want of precaution and through a false shame. It has been shown that most persons fail, not so much on account of the weakness of their organs, as because they have the insane belief that they are able to stand everything, that they must accustom the larynx to exposure, to cold air and the wind, after severe exertion and the inhalation of warm air.

Those, who are so careless, will have to stand the consequences; but we advise those, who are more careful, and we lay it down as a positive rule for them, to protect the neck in such cases, externally, with some covering, and to prevent the entry of cold air into the larynx, by keeping the mouth closed and breathing through the nose, or by keeping a silk handkerchief before the mouth.

There is still something to be said in regard to male dra-

matic actors, which is of great importance in respect to health. In consequence of the coiffures and wigs of every kind, with which they have to burden the head, sometimes for hours at a time, they are apt to become extremely heated. Now, in winter, when such a headgear is removed, and the actor goes forth into the open air, with nothing on the head but a modern hat (the most insufficient portion of our attire), it is impossible to avoid catching cold. A very good protection against this consists in an embroidered hood of fine wool or silk, covering the head and neck and leaving only the face exposed. Over this, he can put on his useless hat. This covering should not be put off until he reaches his room, the temperature of which should be uniform with that of the hall, which he has quitted.

4. Our food also has great influence on our organs of speaking and singing. All very sharp and exciting condiments and drinks should be avoided (as pepper, mustard, spirits, acids, etc.). But, above all, it is necessary, after any severe exertion of the larynx, to abstain from very cold drinks. The chewing of tobacco is also very pernicious.

5. Extreme care should be taken to avoid any too severe or too prolonged exertion of the larynx, in shouting, as well as in speaking or singing, generally.

It will, perhaps, be objected that, in this way, it would be impossible to attempt anything with one's voice, or to undertake a long rôle. This is not the case, however. A long rôle, even if it be of twenty pages, does not produce as much exertion as all the accumulated talk and gossip that go on among the actors within the dressing-rooms and behind the scenes. We have known actors to have become more fatigued by loud and excited talk before the beginning of the performance than their entire rôle would have caused

them. Such persons are sure to get their vocal cords and muscles into poor condition.

We have often heard artists exclaim, in the course of a performance: "I am altogether out of trim to-day; my whole part is going to be spoiled; and I thought I was in such excellent condition." They seemed to be unaware that they had themselves caused the trouble.

6. The neck should be strengthened with cold ablutions (begun in the warm season), and must not be too closely covered.

It is strange how people treat such fine and delicate organs as the vocal apparatus. While a watch (which, in case it is broken, can readily be repaired) is handled with the utmost care, and while everything is avoided that may in anyway possibly injure it, they imagine that their vocal organs can stand almost anything, organs which, when once injured, can never be restored, or, at best, but partially. They indulge, indiscriminately, in almost everything that can act injuriously upon them. They stay up half the night, and sometimes all night, smoking, or shut up in a room where others are smoking, and the next morning they complain of hoarseness, roughness of the throat, in other words, of irritation of the larynx. Instead of feeling guilty, however, about these bad consequences, they wrongly assign for them some insignificant cause, and they point to the performances of artists, who have habitually exposed their organs to these deleterious influences, as an evidence that such habits may be indulged in with impunity. It is true we have seen dramatic celebrities who have abused their finely endowed organs, and have abused them long (in proportion to the extent of their resources); still their achievements, as a whole, have always clearly manifested that their organs had not been spared, that they would have been able to

achieve much more, have stood much higher in their vocation, if they had acted otherwise. We have seen most of them compelled to retire prematurely from the field of their activity, because their powers were ruined, or even hurried to an early grave. If there have been now and then artists who could afford to trifle with their vocal organs, this must be no argument that should justify us in attempting the same. If a man happens to make a crazy leap from a tower without breaking his limbs, does that show that we could do it with like impunity, nay, that we ought to attempt it? Let every one answer this question for himself.

PART THIRD.

THE CORRECT PRONUNCIATION OF LETTERS
AND THE CORRECTION OF DEFECTS.

GENERAL OBSERVATIONS.

The signs, which we employ to designate the single sounds of speech, are called letters. The letters collectively constitute the alphabet, the arrangement of which is different in different languages.

The letters are divided into vowels and consonants.

The *pure* vowels are :

E (as in *he*), *A* (as in *hay*), *A'* (as in *ah*),

O (as in *or*), *O'* (as in *oh*), *O''* (as in *cool*).

The consonants are divided into *sounding* and *voiceless* consonants.

The *sounding* consonants are *L, M, N, R*, the nasal *N* (*ng, nk* in *sing, sink*), *V, Z* (in *zone*), *Z* (in *azure*), *Y* (in *ye*), *W* (in *woe*), *Th* (in *then*), *B, D, G* (in *give*).

The *voiceless* consonants are *K* and its equivalents *C* (hard) and *Q*; *F, P, T, S* (in *sit*) and its equivalent *C* (soft, in *cider*); *Th* (in *thin*), *Sh* and *H*.

Ch, J and *X* are compound consonants.

THE VOWELS.

Pure Vowels.

The vowels are the fundamental sounds of all speech, and are uttered almost instinctively, for they are produced by the simple flow of the air from the lungs (which air has been formed into sound in the larynx), and the lengthening, shortening and narrowing of the resonator (*i. e.*, the pharynx, and the oral and nasal cavities).

According to Dr. Ernst Brücke (of Vienna), the three vowel sounds of *E* (as in *he*), *A'* (as in *ah*) and *O''* (as in *cool*), are the fundamental sounds on which the system of vowels rests, the other vowels being only intermediate sounds resulting from these three.

Of these three vowels *A'* is produced without any change in the resonator; *O''* by lengthening it and narrowing its exterior end; and *E* by shortening and narrowing it.

Or with respect to the length of the resonator, we may say it is greatest with *O''*, and least with *E*, and intermediate with *A'*.

These three fundamental vowels are, accordingly, to be formed in the following ways:

Let us begin with *A'*.

Separate the jaws so far as to admit the thumb between the teeth; keep the lips perfectly still, without pressing them against the teeth or thrusting them out, but in such a way as to leave the extremities of the front teeth slightly visible; then perform a sounding expiration.

The tongue should lie perfectly flat and inactive, at the bottom of the oral cavity; or, better still, it may be made to assume a longitudinally concave position. *A'* is the only vowel in the production of which the hyoid bone preserves the same position as when the organs are inactive; the larynx, however, is carried upward, somewhat, so that the sounding air-column, issuing from it, shall strike more forcibly against the roots of the upper incisors than against any other part (Fig. XX.).

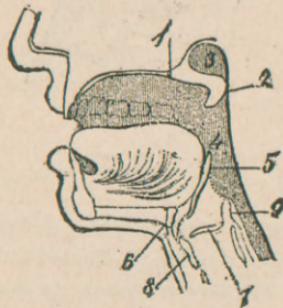


FIG. XX.

The transition from *A'* to *E* is effected by the elevation of the larynx and hyoid bone, without their relative positions being altered; from *A'* to *O''* by the larynx being drawn downward as far as possible away from the hyoid bone, which is carried forward somewhat.

The production of *E* (in *he*) requires the greatest narrowing of the oral passage, and the greatest shortening of the resonator. The *first* is effected in this way: the middle portion of the tongue is brought on both sides in contact with the palate, while its tip is made to press against the lower incisors (without, however, projecting beyond them), and its body being placed so as to present a longitudinal cavity through which the air passes. The *second* is effected

by carrying the larynx upward as far as possible, while the resonator at the opposite end is shortened by drawing the corners of the mouth back in the direction of the ears (Fig. XXI.).

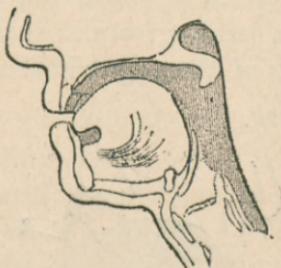


FIG. XXI.

It may be as well to remark in this place, that the positions which the mouth and other organs have to assume in the production of the vowels, should never in any way be strained, nor the muscles held in the least degree in an unnatural state of tension; the position of the lips especially, despite their flexibility, must never *be such as to become unseemly*, so as, for example, to give to the face the expression of a grin (which is apt to be the case in the production of *E*).

In the production of *O'* (as in *cool*), the larynx occupies the most depressed position. The resonator is consequently the longest, and is narrowed at its exterior end. The lips are thrust forward in such a way as to leave only a small, nearly circular opening between them. The tip of the tongue, which with *E* was pressed against the lower incisors, is drawn back a little from the teeth and held on a level with the edges of the lower incisors, while the back of the tongue is slightly arched (Fig. XXII.).

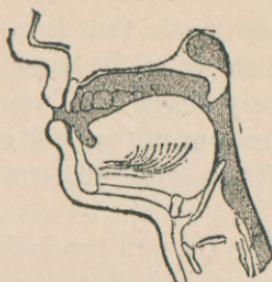


FIG. XXII.

The essential conditions of *A'*, *E* and *O''* may thus be briefly stated together:

A'.

Mouth most widely opened; oral passage in no way narrowed either in the middle or at the end; tongue kept still, and larynx carried upward a little, so that the sounding air-column issuing from it shall strike with most force against the roots of the upper incisors.

E.

Mouth widest; tongue very much arched, with its tip pressing against the inner surface of the lower incisors; larynx carried farthest upward.

O''.

Lowest position of the larynx; back of the tongue slightly arched; lips thrust forward so as to form a narrow, nearly circular opening.

As has already been said, *A'*, *E* and *O''* are the fundamental vowel sounds; and the other vowels are merely intermediate sounds. The changes which take place in the resonator in passing from *A'* to *E* and producing the intermediate vowel sounds, *A* (as in *an*) and *A* (as in

mate) are as follows: the resonator is gradually shortened and, likewise, narrowed; that is to say, the lower jaw is brought closer and closer to the upper, the corners of the mouth are drawn away more and more, and the tongue presses more and more toward the palate, until at *E* — where its tip presses against the lower incisors — it becomes most arched.

In passing from *A'* to *O''*, and producing the intermediate vowel sounds *O* (as in *or*) and *O'*, the resonator is gradually lengthened, and its exterior end, the mouth, narrowed.

In passing from *A'* to *O'*, the only change that takes place is that the lips are pushed out a little and made to form a rounded opening, while the larynx is carried downward, somewhat.

To verify the foregoing assertion, that it is mainly the position of the lips that determines the sound of *O'*, let the pupil pronounce, in the way given above, the vowel *A'*; let the jaws, tongue, and larynx retain their position, and set the lips only for the production of *O'*; now try to pronounce *A'* once more; it will be impossible. The sound of *A'*, although the tongue and larynx have retained their position, has been changed into *O'*, by the rounding and thrusting forward of the lips; all that is necessary, besides, to the perfect formation of *O'*, is a slight depression of the larynx. Now pronounce *O'* first, and then set the lips for the formation of *A'*; it will be no longer possible to produce a clear *O'*, though there still will be no clear sound of *A'* in consequence of the larynx being slightly too much depressed, yet the poor *O'* will have disappeared.

In order to fully appreciate the nature of these changes, let the pupil pronounce, alternately, *O'* and *A'* (speaking or singing) from six to ten times in succession, connecting the vowel with "indirect attack," *O'A'oaaoaova*, and he will

soon perceive that the position of the lips only is changed, while the larynx scarcely moves. It is indeed possible to produce an *O'* without pushing out the lips; that is to say, without lengthening the open end of the resonator, but this can only be done by a further depression of the larynx; *i. e.*, by lengthening the resonator at the opposite end, and even then we shall not produce the pure sound of *O'*.

The Nasal Vowels.

In the production of the pure vowel sounds, the soft palate is held against the posterior wall of the throat, so as to divide the throat into halves, the upper being in connection with the nasal cavity, and the lower with the oral cavity and the larynx. When this takes place, the air cannot escape through the nose. The old theory, that in the production of the pure vowels, the air escapes both through the mouth and nose, has been very ably controverted by Brücke. In the formation of the nasal vowels, the soft palate hangs loosely, and the air emitted from the lungs escapes through the nose, as well as through the mouth:

In the French language the nasal vowel sounds are extremely frequent (*sang, singulier, ombre, enfin, enlever*, etc.).

In the English language there are no nasal vowel sounds; but when a vowel is followed by the consonants *ng* or *nk*, forming part of the same syllable (as in *sing, tongue, bank*), then the vowel becomes, to a certain extent, nasal or a semi-nasal vowel, which differs from the French nasal sounds in that in its production the air does not escape both through the nose and mouth (as in *sang*, etc.), but only through the nose, the oral cavity after the formation of the vowel being closed by the tongue.

Kempelen makes the following observations in regard to the pronunciation of *ng*: "In the French nasal sounds

(*sang, singulier, etc.*) the nasal and oral cavities are both open, so that the sounding air-column, which, with all the other letters, passes through only one of the two passages, divides into two streams; accordingly, the part passing through the nose must necessarily be weaker than in the case of every other nasal sound, in which the entire sounding column passes through the nose. But the reason why the French nasal tone appears to such a degree to sound through the nose, much more so than is the case with all other nasal tones, will soon become very evident if we regard such tone from a different stand-point, according to which it is nothing more than a vowel sound in which the nose is also open. If I wish to pronounce the French *en*, I produce an *A'* (in *ah*) with the nose left open; this gives the perfect *en*. And so it is with all other vowels, as with *on* in *bonté*, *ain* in *ainsi*, etc. Now with all (pure) vowels the nose must remain closed. If it is not, the vowel becomes at once impure, and the ear, which hears the nasal sound where it is out of place, becomes so offended that one is induced to think that he hears nothing but the nasal sound, and that produced with the greatest exertion."

The Diphthongs.

If we begin uttering a simple vowel and then change the position of the mouth to that of another vowel, keeping up the sound while this movement takes place, and no longer, there results a new sound which we term a diphthong (as *ou, oi, etc.*).

If it is necessary to produce the vowels pure, and strictly in accordance with physiological laws, this is more particularly the case with regard to *A'* (*ah*), the fundamental vowel *par excellence*. If we form this vowel incorrectly, it will be very difficult to form the others correctly; that is,

the slightest misplacement of the vocal organs in the production of *A'* (as when the larynx is too much elevated or depressed, the tongue raised, etc.) will be repeated in the formation of the other vowels. The faculty of forming a correct *A'* gives one the ability to form all the vowels correctly.

THE CONSONANTS.

The characteristic feature of the vowels is that their sound can be kept up as long as the voice lasts, the sounding air-column being variously modified, but never interrupted in the resonator. With the consonants just the reverse is the case. They are formed by impeding or interrupting the stream of air, or by narrowing the oral passage.

The consonants are divided into labial, dental, lingual, nasal and palatal, according to the positions of the vocal organs, mainly instrumental in their formation.

Labial Sounds.

F (*ph*), *v*, *w*, *p*, *b*, *m*.

F

is produced by bringing the upper incisors against the lower lip, raising the upper lip somewhat; and, while this position is maintained, causing the air to pass out, but not as a sounding expiration.

The teeth should by no means be pressed against the lower lip, nor should they be placed too far forward or back, and the lower lip should not be stretched or pushed out too far. In the formation of this consonant, the upper lip is passive.

V

is produced by placing the mouth in the same position as

in *f*, but causing the effluent air to sound, instead of blowing it out, as in *f*.

W (as in *woe*)

is formed by rounding the lips, as in articulating *oo* (in *ooze*), but slightly compressing them and holding them closer to the teeth; a brief vocal murmur is formed by the breath.

P

is formed by closing the lips tightly, separating the nasal from the oral cavity, by means of the soft palate, and emitting the air compressed within the oral cavity, by suddenly opening the lips.

B.

The only difference between *b* and *p* is that with *b* a vocal sound is already heard when the mouth opens, while with *p* the sound begins only after the mouth has been opened. We may, in fact, say that with *b* the lips are opened by the voice, and with *p* simply by the air. With *p* the lips must be closed tightly, but not so with *b*.

M

is formed by placing the mouth in the position required for *b*, and performing a sounding expiration through the nose.

Dental Sounds.

T, *d*, *th* (in *thin*), *th* (in *thine*) *z* (in *azure*), *sh* (in *push*), *s* and *c* (in *sin*, *cider*),
z (in *zone*).

T

is formed by placing the lateral edges of the tongue against the upper molars and pressing its tip against the roots of the upper incisors, and, having in this way closed the oral passage, by forcibly expelling the air, as with *p* (Fig. XXIII.).

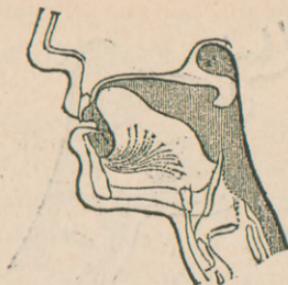


FIG. XXIII.

D

differs from *t* in the same way that *b* does from *p*; that is to say, *d* is formed with the sounding breath, and *t* with a voiceless breath.

Z (in *zone*)

is formed by placing the mouth in the position required for *t*, but with this difference, that the tip of the tongue is not pressed against the roots of the upper teeth, and then performing a sounding expiration in which the air is made to pass out very gently between the upper teeth and the tongue, which is kept in a horizontal position. While in the formation of *t* the tongue is kept slightly convex, it must be kept nearly concave with *z*, that is to say, the tongue, especially the anterior half, should form a sort of gutter, through which the stream of air gently passes.

Th.

When, instead of the tongue being placed in this last position, its tip is held too low so as to touch the edges of the upper incisors or to protrude between the teeth, there results a sound which the English call *th*, but which with other nations is called a lisp (Fig. XXIV.).

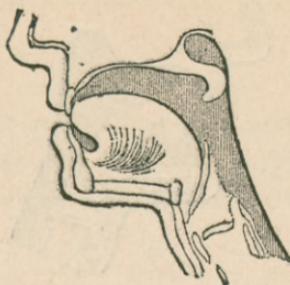


FIG. XXIV.

The distinction between *th* in *thin* and *th* in *thine* is, that with the first we simply expel the air, while the second is formed with a sounding expiration. The position of the tongue is the same for both.

Those who are troubled with the defect of *lisp*ing must draw in the tongue, and the tip, which is bent back, should be somewhat raised. It is better, in exercising, to raise the tip of the tongue too much at the outset, rather than too little; the stiffness thereby occasioned will disappear with the continuance of the exercises.

A good exercise is to take words beginning with *s* and utter them in the following manner: take, for instance, the word *some*; first pronounce the *s* with a sounding expiration; keep up this buzzing tone for a time, and then add on the *one*. Exercise in this way all the words beginning with *s*. Having become accustomed to pronouncing the *s* without thrusting forward and out the tongue, it will be easy to pronounce all the dental letters correctly.

Whoever forms the consonants according to the strictly physiological rules here laid down, will not find it necessary, in order to learn to pronounce this or that sound, to take pebbles into his mouth, as is said to have been done by

Demosthenes, who, of course, knew nothing of the science of the physiology of the vocal sounds such as exists at the present day.

We must repeat what has been said in Part II., in speaking of the position of the tongue, that the surest and quickest way of getting rid of any curable defect is to obtain a complete control of the muscle through whose false activity the defect has been occasioned.

S and C.

The sharp sound of *s* and *c* (in *sin*, *cider*) is produced by keeping the tongue in the same position as with *z*, but not causing the escaping air to produce a vocal sound. The tongue must be drawn in more than with *z*.

Z (as in *azure*)

is formed by a partially vocal sound, modified by gently raising the whole forepart of the tongue towards the roof of the mouth, and allowing the breath to escape between it and the teeth (Fig. XXV.).

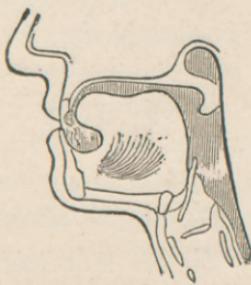


FIG. XXV.

Sh (as in *push*)

is formed in the same way, but by means of "aspiration," not "vocality," in the emission of the breath.

*Lingual Sounds.**L*

is produced by placing the mouth in the position required for *d*, but leaving an opening on both sides in the region of the molars, through which a sounding breath is emitted.

R

is produced by vibrating the tip of the tongue, which is held flat in the mouth, with the tip somewhat elevated.

There are two kinds of *r*—the lingual or pure *r* and the uvular or impure *r* (see “Oral Cavity” in Part I.); with the *first* the vibrating part is the tip of the tongue, the uvula remaining passive; with the *second*, it is the uvula, the tongue remaining passive.

A method for acquiring the ability to pronounce the pure *r* correctly, which was proposed by Talma, the celebrated actor and professor, at the *Ecole de Déclamation*, has proved very successful with my pupils through many years of experience, and I, therefore, reproduce it here. It is thus given by Fournier:

“Take for the exercise the word *travail*, giving it the French pronunciation; write *tdavail*, substituting a *d* for the *r*. Then let the pupil, who should try to completely banish the idea of the letter *r*, pronounce the *t* and *d* several times, unconnected, adding each time the concluding portion of the word, thus: *t-d-avail*. He will imperceptibly interpose a short *e* (as in *met*) between the *t* and *d*, and divide this new word into three syllables, *te-davail*. When this exercise has been repeated several times, the pupil should utter the same word closely connected, but slowly, *tedavail*. Let it be pronounced gradually faster and faster; by the rapid articulation the interposed *e* will be dropped, and there will remain *tdavail*. The pupil should then continue to pronounce this word as rapidly as possible, closely connecting the sound of *t* with that of *d*, and laying special stress on the first let-

ter. He will, already, by this new step in the exercise, unconsciously convey to the listener the impression of the letter *r*, which sound appears to result from the rapid combination of *t* and *d*. The *r* will be insensibly articulated, and the letter *d* will disappear, permitting the newly-formed sound to become more decided. By means of this exercise, the pronunciation of *r* will be acquired in a natural way.

What the American writers say on *r*, we read in "Orthophony," by James E. Murdoch and William Russell, edition of 1877:

"*R* (as in *rap*), differs from the *r* (as in *far*) in having a harder and clearer sound, executed by a forcible but brief vibration of the tip of the tongue against the first projecting ridge of the interior gum, immediately over the upper teeth; while the latter has a soft murmuring sound, caused by a slight vibration of the whole forepart of the tongue, directed toward the middle part of the roof of the mouth.

"The common errors of careless usage substitute the soft for the hard *r*, and omit the soft *r*, entirely; thus, *fah* for *far*. Another class of errors consists in *rolling*, or unduly prolonging, the sound of the hard *r*, and substituting the hard for the soft sound.

"The greater prolongation of sound, which takes place in the average of *singing* notes, or in impassioned recitation, renders a slight comparative roll of the hard *r* unavoidable, at the beginning of a word. But it is a gross error of taste to prolong this sound, in the style of foreign accent, as in French and Italian pronunciation, or to substitute the rough sound of the hard *r* for the delicate murmur of the soft *r*."

An English gentleman used to say: "Our *r* is something between *ah* and nothing."

*Nasal Sounds.**N* (Fig. XXVI.)

is produced by taking the position required for *d*, and making a sounding expiration through the nose.

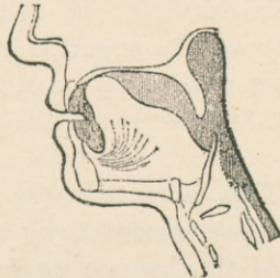


FIG. XXVI.

Ng

is produced by a sounding expiration through the nose, with the oral cavity shut off from the pharynx, by raising the back part of the tongue.

Palatal Sounds.

K and *g*, and their equivalent *c* hard (as in *cake*); *g* hard (as in *give*), *y* (as in *ye*).

K.

The sound of *k* is produced by closing the oral passage by means of the middle or posterior portion of the tongue and the middle or posterior portion of the palate, by forcing the air against this barrier, and then forcibly expelling it by suddenly withdrawing the obstruction.

Q

is formed like *k*. It occurs only in the combination *qu*, which is pronounced like *kw* (*queen*, *quarter*, etc.).

G (in *give*)

is produced by taking the position required for *k*, but mak-

ing a *sounding* expiration; *g*, therefore, bears the same relation to *k* as *b* to *p*, or as *d* to *t*.

There are two *k*'s and two *g*'s, the oral passage being in the one case closed more anteriorly than in the other. The one is heard in *kept*, *kitchen*, and in *get*, *give*, *gate*, etc. (Fig.

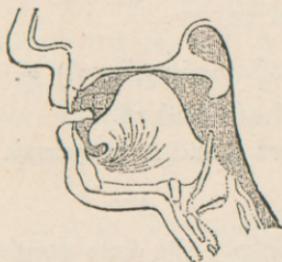


FIG. XXVII.

XXVII.); the other in *cough*, *cool*, and *ghost*, *gall*, *garden*, etc. (Fig. XXVIII.).

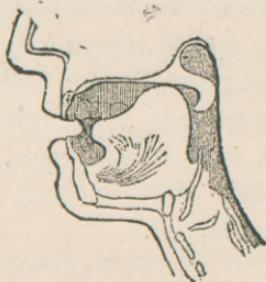


FIG. XXVIII.

Y (in *ye*)

is formed from *g* (in *give*) by not completely closing the oral cavity, the position of the tongue being such as to permit the air to escape through a small channel.

H

is produced by so contracting the glottis as to make the emission of the air *audible* (*spiritus asper*), (Fig. XIX., 3). It may rightly be said that this noise, *h*, originates *in the glottis*, and is not, as was until recently held, produced by the air emitted from the lungs striking against the walls of the throat, or of the oral cavity.

Ch (as in *church*), *J*.

Ch is a compound of *t* and *sh*.

J is a compound of *d* and *z* (in *azure*).

X

is equivalent to *ks* or *gs*; the first combination is heard in *axe*, and the second in *example*.

Having become acquainted with the correct formation of the letters, we have still to consider the question of the transition of the organs, from one position to another, in articulating different sounds. When a sentence contains a number of words, whose articulation requires great changes in the position of the organs, there will be a certain harshness, a want of smoothness, in the delivery. On the contrary, where the transitions are slight, the utterance is smooth and easy. A fine ear will avoid all harshness in the utterance of a sentence, but without its meaning being thereby, in the least, affected.

CORRECTION OF DEFECTS.

Connecting a final consonant with the initial vowel of the following word.

This not only occasions great indistinctness in the delivery, for instance, instead of "I woke up early," "I wo-ku-

pearly ;” but often gives a different signification to the sentence, for instance, “Can you remember that rain ?” “Can you remember tha-train ;” “First-rate,” “Fir-strait,” etc.

Imperfect Vowel Attack.

It is generally the habit in uttering the initial vowel of a word, not to separate the lips beforehand, which is absolutely necessary if correct utterance is desired. The consequence is the prefixing of all kinds of sounds in the nature of initial consonants, which disfigure the speech. We sometimes hear, for example, *nambition* for *ambition*, *nenemy* for *enemy*, etc.

It is always necessary, in beginning a sentence with a vowel sound, to open the mouth slightly beforehand, and to remove the tongue from the palate, with which it lies in contact when the mouth is kept closed in a state of repose. We must likewise be careful to give the distinct pronunciation to a final consonant before an initial vowel.

Adding Wrong Consonants and Swallowing Syllables.

Words are frequently disfigured by the ^{adding} ~~prefixing~~ of consonantal sounds; for example, *lawr*, *idear*, *drawring*. A not unfrequent habit is the swallowing of parts of words; for instance, *particular*, *gography* (geography), *lectric* (electric), *fah* for *far*, etc.

Intoning Between Words.

An unpleasant habit, which is unfortunately very frequent, must be noticed here. It is the peculiarity of introducing unnecessary sounds between the words, as: “Have you seen that . . a . . representation ?” This is as when the notes struck on a musical instrument continue to sound beyond the proper time.

These sounds facilitate the passing over from one word to another, which generally accounts for the habit. Sometimes, however, this defective way of speaking is the result of inability to think fast. In any case, we should seek to get rid of it.

Wrong Use of the Lower Jaw.

Imperfect speech, however, is not merely due to the defective pronunciation of the sounds, but is also, in a great measure, the consequence of keeping the lower jaw too far forward (the lower incisors projecting beyond the line of the upper) or of moving it to one side.

This is a grave defect, and no pains should be spared to avoid it.

The lower incisors must be kept in their natural position, a little back of the line of the upper. (Those cases in which nature has placed the lower jaw too far forward do not concern us here.) In impassioned and loud speaking, great skill is needed to resist the inclination to push out the jaw too far. It is easy to recognize the nature of this defect. Take a sentence and pronounce it with due regard to the position of the lower incisors, taking care in moving them up and down to keep them always behind the line of the upper; the pronunciation will be most distinct, provided, of course, that the vocal organs are correctly applied. Then pronounce the same sentence with the lower jaw, if only in the least degree, too far forward, and the vowels will become surprisingly indistinct. The inclination to thrust forward the lower jaw is greatest with *O'* and *O''*; and to add to this defect, the lips are thrust forward too far, so that in consequence of the empty space between them and the teeth, the consonants also become indistinct.

In pronouncing, for example, such a syllable as *vote*, one

is generally inclined, after setting the lips for *v*, to thrust them out too violently and too far, in order to get them into the position for *o*. The transition, however, from the *v*-position to the *o*-position is not an easy one. The lips cannot be brought out from the *v*-position quick enough, and there is, in consequence, an unpleasant noise, which occasions indistinctness; apart from which the projecting lips produce the impression of a fish-mouth. Or else one pronounces the *v* with the lips already in the *o*-position, and indistinctness is likewise the result.

It will be well, therefore, to observe the following: The correct formation of the vowel *O'*, as well as of *O''*, requires, it is true, a thrusting forward of the lips, as the resonator is thereby lengthened; but we ought to possess the ability to produce this lengthening without depending too much on the lips. This will, however, be possible only if we lengthen the resonator at the other end by carrying the larynx far downward, which should be done without pressing upon the organ. By doing this we shall be enabled to combine all the labial consonants with *O'* and *O''* with correctness and distinctness. In this way alone is it possible to carry on an easy, rapid and lively conversation, without anything of what is said being lost.

A person can produce the vowel sounds *O'* and *O''* without thrusting forward the lips at all, by carrying downward the larynx far enough, but this is in no way necessary; the lips may be thrust forward, but only slightly, so that no unnecessary sounds shall slip in.

Exercise for the Correct Use of the Lower Jaw.

The following exercise will give one the ability to keep the lower jaw in the proper position: Draw back the corners of the mouth as far as possible without giving the face

the appearance of a grin, and then take a long sentence and repeat it (keeping the corners of the mouth well drawn back) at first very slowly and softly, and then in a more and more rapid, impassioned and vehement manner. Having done this for a sufficient time, repeat the same sentence in all these various ways without drawing back the corners of the mouth, and taking care not to thrust out the lower jaw and the lips. By drawing back the corners of the mouth the speaker will be compelled to keep the lower jaw in the right position, or else he must be forcibly thrusting it forward.

How the Wrong Use of the Lower Jaw may be recognized.

If anyone desires to know whether he has this defect or not, he may employ the following test:

Let him take a narrow, flat stick of ivory or other material, four or five inches long (as the handle of a tooth brush), and press it in a vertical position against the middle of the chin, so that its upper extremity is kept tight against the inner surface of the upper incisors, and let him, while keeping the stick firmly in this position, sing various tones. If the defect is present, he will be surprised to see how much force will be required to keep the stick quite vertical, that is, to keep the chin, or, in other words, the lower jaw, from pushing outward. This operation may serve as an exercise for acquiring the ability to use the lower jaw correctly.

PART FOURTH.

RESPIRATION.

INSTINCTIVE RESPIRATION.

To comprehend a system or method of breathing correctly in singing and speaking, it is necessary to know how man really does breathe.

Breathing takes place *involuntarily* and to a certain extent *voluntarily*.

Involuntary respiration is divided into two parts: *inspiration* and *expiration*; *voluntary* respiration into three: *inspiration*, *holding the breath* and *expiration*. This second mode (three-fold respiration) is what really characterizes *artistic* respiration.

In inspiration the chest is expanded; in expiration the expanded parts return to their original state. The expansion of the chest, during inhaling, takes place in two ways: one by the movement of the ribs upward and outward, together with the sternum (breastbone) and clavicle (collarbone), the other by the contraction of the ordinarily arched diaphragm, — the fleshy partition between the cavities of the chest and abdomen. We have described the diaphragm, under the "Organs of Respiration," and of its importance in phonetic expiration we shall shortly have more to say. We can, therefore, breathe at will either with the ribs or the diaphragm; and hence we have *chest-breathing* and *abdominal* breathing.

Neither of these movements entirely excludes the other; they are rather both present at the same time, but usually one predominates.

In *deep abdominal* respiration, the entire trunk bends backward; the abdomen protrudes through the agency of the

diaphragm, the lower ribs expand and are pushed *forward*, the upper ones *backward*.

In *chest-breathing* we distinguish *two* kinds: If the upper ribs are especially drawn up, we have the so-called *shoulder* or *collar-bone* breathing, in which the shoulders, and principally the shoulder-blades, are very perceptibly raised; the collar-bones and the ribs naturally accompany them directly upward; the walls of the abdomen at such times press the intestines together and backward; the abdomen, especially the *epigastrium*, recedes. The whole trunk becomes elongated; hence the lungs, and especially their tips, are lengthened and expanded.

If, however, the lower ribs are especially drawn outward, so-called *rib* or *side-breathing* results, by which the chest, above all, increases in breadth. The whole trunk bends more or less forward; the abdomen recedes so that the fore arch of the abdomen, especially the region of the stomach, is drawn flat and even inward.

We have, then, *three* main kinds of respiratory movements:—

1. *Abdominal* or *diaphragmatic* breathing.
2. *Shoulder* or *collar-bone* breathing, and
3. *Side* or *rib-breathing*.

In abdominal or diaphragmatic respiration there is complete expansion of the lungs. In the two other modes of respiration this expansion is incomplete or partial; since in the one (second) the upper, in the other (third) the middle region is affected.

Since the appearance of the first edition of this work, in which for the first time, in a popular scientific treatise, diaphragmatic breathing was taught and designated as the only true method of breathing, the author has heard a great deal of talk about the diaphragm. Wherever tone-formation was discussed the subject of diaphragmatic breathing has been brought up. The writer, however, has very frequently had to hear complaints from pupils, who had gone through a

long course of instruction at the hands of singing teachers, that while their teachers had insisted upon their breathing with the diaphragm, the way to do this had not been taught them. Many of them have even declared that when they did breathe in the way in which they had been instructed, the least quantity of air was introduced into the lungs. From this it is evident that both teachers and pupils have had a wrong conception of the nature of diaphragmatic or abdominal breathing, and have practiced it falsely, having mistaken for it the simple and feeble contraction of the diaphragm which takes place in sleep as well as in a state of perfect repose, and which almost of itself alone (but not altogether alone) keeps up the respiration at such times. They have made the mistake of supposing that this purely diaphragmatic breathing was meant. But this is altogether an error. Of the two kinds of respiratory movements termed *diaphragmatic* and *rib-breathing*, neither, it is firmly settled, excludes the other entirely; they are, on the contrary, always associated, but usually in such a way that one or the other predominates. During the activity of the diaphragm in sleep or in perfect repose, the lower seven or eight ribs remain almost inactive; but in a state of wakefulness and bodily exertion there is the full abdominal respiration; that is to say, the full activity of the diaphragm combined with side-breathing to a certain extent; this latter consisting in the raising upward and outward of the lower seven or eight ribs to one-half or three-fourths of the utmost possible limit. The raising of the lower seven or eight ribs is an essential condition of the full activity of the diaphragm, of which they form the frame, inasmuch as its fibres are attached to the ribs and can contract effectually only when these are forced upward and outward and held firm in that position. There can be no such thing, therefore, as perfect diaphragmatic or abdominal respiration unless this condition is present. It is in the correct diaphragmatic respiration, and not by the *exclusive* activity of the diaphragm, that the greatest quantity of air is admitted into the lungs. We may, indeed, cause the principal respiratory movements to take place each by itself alone, thus producing a forced action, but in this case an unsatisfactory result is obtained. As long as we allow nature to act unhindered, a forced action cannot take place. It is in the *combination* of the respiratory movements that the free action of nature appears, and according to the muscles mainly involved we designate each kind of respiratory movement.

Shoulder-breathing is found mostly in women; side and especially abdominal breathing among men.

Without entering upon the old dispute of the physiologists, as to whether women naturally breathe in the above-mentioned way, or whether the disadvantageous man-

ner of dressing is the cause, we here contend that women must at all times make the same respiratory movements in the art of song and speech as men, if they wish to fulfil the requirements demanded of both, for which rule we shall give the reason further on.

While, then, inspiration takes place by means of the muscles of inspiration, and so becomes an *active* process, expiration takes place during ordinary respiration, less by means of the muscles than through the return of the previously expanded parts to their original state, resulting from their elasticity, — usually a purely *passive* process.

This is, however, the case only in so far as expiration promotes animal life; *i. e.*, as long as it is involuntary; as soon as it becomes voluntary, and is used to remove foreign substances that impede respiration, or is made the agency of voice and speech, then several groups of muscles are brought into activity, because the simple expiratory pressure is too weak to accomplish the desired end, and expiration, too, becomes an *active* process.

The activity of the muscles which now steps in, has two duties to perform: first, to support and strengthen expiration; secondly, to retard and check it.

The *first* is done by the abdominal muscles which draw down the ribs, compress the abdomen, and so, while pressing the intestines and the diaphragm upward, narrow the cavity of the chest from below also.

The *second* is accomplished mainly by the diaphragm, whose chief function is to regulate the voluntary retardation, to counteract the pressure of the intestines when forced upward by the abdominal muscles (as we shall learn further on).

In inspiration the glottis *widens*, in expiration it *contracts*,

in order to make the expirations *slower*. This is the case with all the air-passages, because they are elastic.

In strong, quick inspiration the larynx sinks slightly; in expiration it resumes its original position.

It is in our power to use the one or the other of the groups of respiratory muscles. If, however, we permanently prevent an expansion of the lower ribs by a too great narrowing of the waist, the natural consequence will be that these parts will finally lose entirely the ability to expand, and, therefore, the diaphragm will be unable to take any part in *phonetic expiration*.

After having learned how man breathes instinctively, we shall now show how it is necessary to breathe in singing and speaking.*

ARTISTIC RESPIRATION (IN SONG AND SPEECH).

What the singer and speaker must chiefly be intent upon, is to spare the respiratory organs. This, however, can be effected only by regular, slow, inaudible and correct breathing. In a state of repose these conditions may be easily fulfilled; but with every considerable exertion we perceive that the respiratory organs work faster, that the blood flows quicker through the veins, and it appears impossible to breathe slower at such moments. In reality it would never be possible to prevent the quickening of the respiration altogether; still a great deal can and must be done to preserve the organs by a system, by a correct method, and a constant exercise of the same.

To make the lungs capable of unusual exertion, it is first

* For the benefit of the reader, this entire subject is divided into twenty-four distinct parts.

necessary to exercise them carefully and slowly, with the necessary pauses, and thus to strengthen them. *Most people believe that it is sufficient to have lungs in order to be able to speak continuously and with a strong voice.*

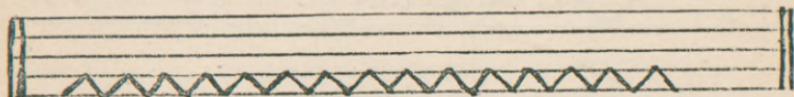
§ 1. *Strengthening the Lungs.*

The exercises of the muscles of respiration have been described in treating of the muscles. The following scheme exhibits the set of exercises we have drawn up, for the enlargement of the lungs and for increasing their elasticity. These exercises consist simply in respiration, beginning with the inhalation of a small quantity of atmospheric air, the quantity being gradually increased until it becomes as great as the lungs can possibly hold: Let a line be drawn obliquely upward from left to right (\nearrow) representing the *in-spiration*; another line drawn obliquely downward from left to right (\searrow) representing the *expiration*. When two such lines incline against each other, so as to form an angle (\wedge), it indicates that expiration follows inspiration without a pause. When the lines do not come to a junction ($\nearrow \searrow$) the space between them indicates a pause. A figure inserted in the space ($\nearrow^3 \searrow$) indicates the retention of the breath for so many seconds; thus, in this instance, there is an interval of three seconds during which not a particle of air must be permitted to pass from or enter the lungs. We have selected musical notation lines for these diagrams, so as to clearly represent the progression in the increasing respiration.

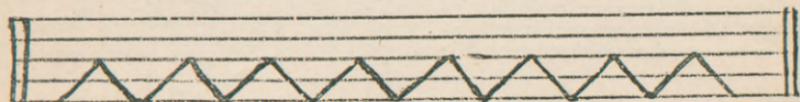
EXERCISE I. Breathing without Interruption.

Increasing respiration *without* pauses; inspiration through the nose and expiration through the mouth. Inspiration and expiration equal in duration.

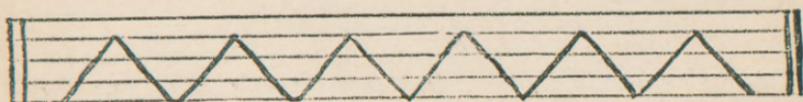
(a.) Rhythmical movement of the diaphragm, gentle as in sleep.



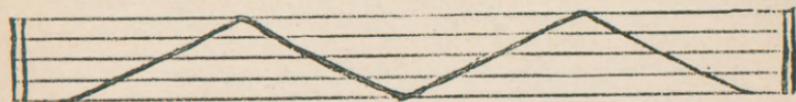
(b.) Raising of the lowermost ribs, movement of the diaphragm twice as great as in (a).



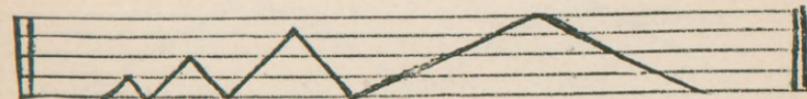
(c.) Raising of the lower seven or eight ribs, together with the lower portion of the sternum, to half of the utmost extent possible; movement of the diaphragm three times as great as in (a).



(d.) Complete activity of all the muscles used in inspiration, without lifting the clavicles.



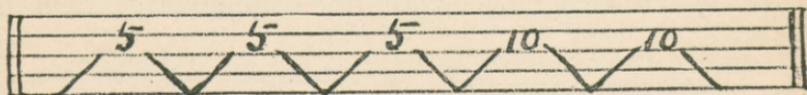
(e.) Increasing each successive respiration.



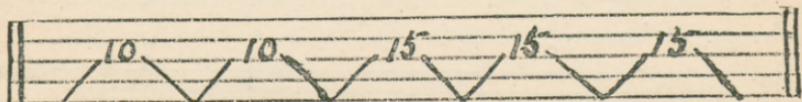
EXERCISE II. Breathing with Interruption.

Increasing respiration *with* pauses of several seconds.

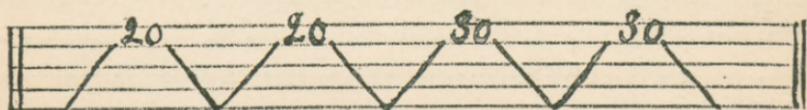
1.



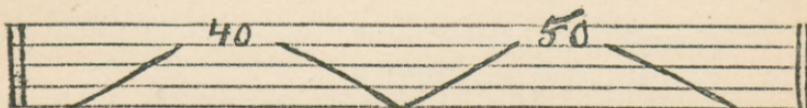
2.



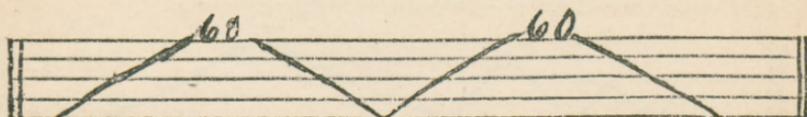
3.



4.



5.



Perform Exercise II., 4 and 5, alternately with each of the three modes of respiration, abdominal, side and shoulder-breathing, in order to develop the lungs uniformly.

With careful exercise it will, after a short time, be apparent that the lungs are capable of absorbing a greater quantity of air than before, and that one is enabled to retain the breath, and with ease, which is of incalculable utility.

I have seen people, who were unable to retain the inspired air even for a second ; who had such short breath that they considered themselves invalids, although they were in perfect health ; who did not even know what position the organs of the mouth assume when the breath is retained. By means of careful, persevering, and not too fatiguing exercise, under proper direction, their breath (as they have expressed it), became longer, that is, they were enabled, after going through these gymnastics with their respiratory organs, to take in a much greater quantity of air into the lungs than they could before, and naturally to emit so much more.

For those who are unable to retain their breath, the following directions will be of service :—

In order to be able to retain the breath, we must close the glottis ; under ordinary conditions— that is, when there is a natural cause—this takes place spontaneously, as, for example, in the application of *abdominal pressure*.* The action of *abdominal pressure* is induced by the need of protecting the abdominal organs in any unusual exertion of the body, as in bending, lifting, etc., and is brought about by closing the glottis after the lungs have been filled with air and exercising a downward pressure with the diaphragm and abdominal muscles. Merely thinking of abdominal pressure gives one the ability to close the glottis at pleasure.

Another means of arriving at the consciousness of the muscular movements required for the closing of the glottis, is the following :

*The combined activity of the abdominal muscles and the diaphragm I call *abdominal pressure*.

Pronounce the vowel *A'* with "direct attack" (as has been taught in the beginning of Part II.) ten or fifteen times in succession, but in such a way as to keep the glottis closed before every *A'* for a few seconds before pronouncing the vowel. By this means we can obtain a full consciousness of the muscles of the vocal cords, and acquire the ability to use them, that is, the power of closing the glottis at will.

The closing of the glottis does not suffice by itself, however, for the retention of the breath. One must also possess the ability to keep the ribs, raised outward by the external intercostals, and the contracted (drawn downward) diaphragm fixed in their position; for, with the sinking of the ribs and the return movement of the diaphragm upward, the air is forcibly expelled from the lungs. In fact, it is necessary to be able, without the closing of the glottis, to retain the breath by merely keeping the ribs fixed in the position of inspiration and the diaphragm pressed downward.

It may as well be remarked here, that certain gymnastics of the lungs, as well of the other organs, must be performed daily just so long as the artist desires to practice his art with success; for just as the dancer through long inactivity loses the elasticity of his limbs, so the singer or the speaker fares with his lungs.

§ 2. *Beginning of Speech or Song.*

The orator or singer must not begin a single sentence, not even the smallest, before having filled his lungs sufficiently with air. But it must not be understood that the lungs are to be so completely filled that not another atom of air could be contained in them, but only seven-eighths filled; for keeping the lungs completely filled increases the

difficulty of holding the breath; and, therefore, also of singing and speaking.

§ 3. *State of Readiness.*

This condition, *lungs sufficiently well filled*, we call "the state of readiness."

The sensation of having the lungs filled must not be absent during singing or speaking, until a pause is reached.

§ 4. *Closure of the Glottis.*

After an inspiration, the glottis should be closed for a moment, *i. e.*, the breath held back before one commences to speak or sing. But if we begin at the same instant that the last atom of air has entered the lungs, too much air will naturally pour out at the first words, thus rendering them unmetallic and aspirate.

§ 5. *Inspiration and Expiration to be done as Slowly as Possible, and Uniformly.*

This condition must be fulfilled whenever the construction of the sentence will permit. Slow breathing will be mainly brought about by right use of the diaphragm and the abdominal muscles, and keeping the ribs raised; therefore, more on this subject in sections 7 and 9.

§ 6. *Even During any Unusual Activity of the Lungs, as in Moments of Excitement or Passion, it is quite Necessary to Breathe as Slowly as Possible.*

It must not be considered impossible to attain this; the activity of the human organs depends undoubtedly to a certain degree upon our will, and though this is less the case with the lungs than with the other organs, it is still here also possible to arrive at really wonderful results by regular exercises, interrupted only by necessary rest.

§ 7. *Abdominal or Diaphragmatic Breathing.* — *Rib or Side-Breathing.*

We have shown in treating of the respiratory movements, that man can execute inspirations and expirations in *three different modes*, namely, by *shoulder, side or abdominal* respiration. We must here urge that singers and orators should make habitual use only of the two latter modes of respiration (side, and especially abdominal respiration), and shoulder-respiration only when the temporary position of the body does not permit of the other two.

The upper part of the thorax is, at the same time, also active in a certain way; when expanded for inhalation, it remains, more or less, in this condition during speaking and singing, so as not to impede inspiration and expiration, which would be the case if the *upper ribs* should constantly rise and fall.

If we permit the inspired air to escape from the lungs only by means of the upper part of the thoracic wall (shoulder-breathing), as is generally the case with women, the following phenomena will result:

1. The tone will not be quite clear and metallic.
2. It will not be full.
3. It will not be firm or strong.
4. It will not be sufficiently prolonged.
5. The air will not pass from the lungs *slowly* and *uniformly* enough; but, on the contrary, in puffs; and
6. The plastic lines of the body will be disturbed by heaving of the bosom and shaking of the shoulders, not to mention the increased exertion required.

The tone produced in such a way will, likewise, always be somewhat heavy, for the movement of the upper chest-muscles causes an involuntary participation of the muscles of the neck and larynx, and thereby disturbs these muscles,

so that the tone not unfrequently becomes compressed and trembling and loses its clearness, and especially its fulness, because the upper part of the air-passages being pressed together, the resonance of the sound is, in consequence, diminished. But by mainly using the *lower* part of the chest (side and especially abdominal respiration) all these phenomena are absent.

The following comparison may serve to prove that this method is the correct one :

Imagine a tube, whose walls can be compressed at will, filled with water. We can press the water in it upward in two ways : either we compress the *walls* of the tube, or we drive the water upward by means of a *piston*, which we apply to the lower end. In the former case (that is by compression of the walls), the stream becomes trembling, irregular, frequently interrupted ; in the latter case (that is pressure by means of a piston) the stream becomes strong, uniform, uninterrupted, as we can see in any engine-hose, which is correctly handled.

It is the same with man and his lungs. The back, front and the sides of the chest are the walls of the tube, the diaphragm, lower ribs and abdominal muscles are the piston.

Herein lies the proof of our theory of the diaphragmatic or abdominal respiration.

To dispel any doubt as to the possibility of mastering this mode of respiration, I take the following important example from the world of art : —

Wilhelmine Schröder Devrient, the greatest dramatic singer, attained a wonderful degree of perfection with regard to this faculty (through unremitting practice, as she herself informed me). She sang the most difficult passages without the slightest movement of the upper portion of the chest, and it was she who gave the incitement to the preparation of this work, when, twenty-six years ago, I had the good fortune of attracting the notice of that remarkable lady, an artist who at the age of fifty-two stood unrivaled among dramatic singers.

It is true, all I learned from her was that I breathed in a wrong manner ; and

on my arguing that I breathed with the full action of the chest, I was answered : " It is with the abdomen that you must breathe, with the abdomen." This was all the explanation I received. And just as the student in Goethe's *Faust* exclaims :

" I feel as stupid from all you've said,
As if a mill-wheel whirled in my head ! "

so it was with me from that moment.

After the lapse of three years (passed in sleepless nights, and in laboriously seeking for the solution of this riddle by means of study and experiment) appeared the first German edition of the present work.

Therefore, in order to avoid the occurrence of the above-mentioned phenomena, it is necessary to empty the lungs, not by causing the *sternum* and the *upper ribs* to sink to their normal position; but, while the sternum and the upper part of the chest generally are held raised upward and outward, by the combined action of the *diaphragm* and the *abdominal* muscles (abdominal respiration).

Although women make the respiratory movement more with the upper part of the chest, still they must, by exercises and correct method, learn to use the lower ribs, the diaphragm and the abdominal muscles.

§ 8. *The Necessity of Consciousness of the Diaphragm and the Abdominal Muscles.*

We shall soon achieve this if we observe more closely the act of expiration when coughing. Coughing consists of a deep inspiration followed by one or more successive powerful expiratory impulses. Every expiratory impulse is preceded by a movement (contraction) of two groups of muscles: one of the abdominal muscles, working from without inward; the other, of the diaphragm, working from within outward. After the contraction of these muscle-groups (the glottis remaining tightly closed), has attained a certain degree of tension, the diaphragm suddenly ceases its con-

traction, and the compressed air in the lungs is driven noisily through the forcibly opened glottis by the still greater contraction of the abdominal muscles. This process is usually involuntary, but may be rendered completely voluntary. The noise (cough) is various. According to its cause it will be strong, moderately strong or weak; and we find the contraction of the above muscles varying in the same degree.

The pupil should practice the different degrees from weak to strong cough; whereby he will arrive at a consciousness of the diaphragm and its action, also of the abdominal muscles and their action, as will be described in the next section.

§ 9. *The Diaphragm and Abdominal Muscles Usually Act Combined.*

After an inspiration has been performed, that is, when the diaphragm has by its contraction pressed the intestines downward, thereby pushing the abdomen forward and extending the abdominal muscles, — after this, a slow contraction of the abdominal muscles (whereby the intestines are pushed upward) begins for the purpose of expiration; the diaphragm, remaining in the state of contraction, thereby exerts a counter-pressure.

Upon the gradually increased contraction of the abdominal muscles (that is, the increased pressure of the abdominal muscles upon the abdominal viscera upward), follows a gradual relaxation of the contraction of the diaphragm, whereby a uniform pressure is exerted upon the lungs, and in consequence of which the air passes through the glottis in the same uniform way. This can be continued until a new inspiration becomes necessary; in which case, then (either slowly or with lightning rapidity, according to neces-

sity) the previous state of both groups of muscles is reproduced by the freshly inhaled air, only to recommence their antagonistic activity.

The *stronger* the upward pressure of the abdominal muscles on the intestines and the slighter, relatively, the resistance offered by the diaphragm, the more *rapidly* the air will escape from the lungs. On the other hand, the feebler the pressure of the abdominal muscles and the slower the resistance of the diaphragm relaxes, the *less* rapidly will the air be forced out.

The *stronger* the antagonistic action of the abdominal muscles and the diaphragm, the greater is the pressure on the air in the lungs, and the *louder* and *more powerful* the tone.

In what concerns the position of the larynx, it is to be observed that whenever the tone is considerably increased, not only is this organ placed perpendicular, but the side walls of the laryngeal canal are compressed by the muscles on the *sides of the neck*, and thus hindered from spreading outward.

If the antagonistic action of both these groups of muscles is in equilibrium, a cessation of expiration takes place. This is the case with the stutterer where the diaphragm sometimes falls into a state of spasmodic contraction which cannot be overcome by the abdominal muscles.

This function of the diaphragm, to retard the escape of air, is supported by the ability of the vocal cords to approach at will, whereby the the glottis is so diminished in size, that an impediment is offered to the escape of air.

This antagonism of the two muscle-groups, the diaphragm against the abdominal muscles, admits of countless modifications, according to their respective degrees of contraction, and is of the utmost importance. Without this arrange-

ment, without this ability to quicken or retard the expiration at will, it would not be in the power of man to modulate the voice, or to speak successive words in one breath, without a second inspiration.

The chest would collapse so rapidly, and the current of air escape so fast, that only *one* or *two* sounds of equal strength could be uttered in quick succession. The *expression* of *feeling*, mainly due to the various modifications of the expiration, would be impossible.

This air-current, set in motion in the most diverse ways, weak or strong, interrupted or continuous, is the power by which are produced all sounds and noises that form the elements of voice in the larynx and pharynx, and in the nasal and oral cavities.

From the foregoing we perceive that the action of the abdominal muscles directly promotes the phonetic expiration; whilst that of the diaphragm operates indirectly, checking and regulating the upward pressure of the abdominal muscles.

That the diaphragm may act in the above-mentioned way, it is necessary that the ribs which form its frame remain firm in the position they occupied at the *end* of the inspiration (raised outward) as long as its action is to continue; because a relaxation of these ribs hinders the contraction of the diaphragm, without which the downward pressure against the intestines is impossible, or at best very limited.

§ 10. *Correct Application of the Diaphragm and the Abdominal Muscles.*

It must be particularly noticed that we should work less with the muscles which pass vertically over the stomach

(musculi recti), than with those which cover the *sides* (musculi transversi and external oblique and internal oblique).

A painful pressure upon the stomach is experienced when the musculi recti work much more than the musculi transversi and external and internal oblique; they should work less. We must have such a control over the diaphragm and the abdominal muscles that the air can be emitted at will in any quantity.

If we are asked to state more particularly *when* it is best to apply side-breathing and when abdominal-breathing, we should say: Every tone-formation for *lively* and *quick* speech in *light* conversation and in song, is best attained by side-breathing, with the abdominal muscles strongly drawn in and held firm, but every tone-formation for sustained and weighty speech, for *heroic* song, can succeed only when produced by full abdominal respiration.

§ 11. *Peculiar Phenomena during the Application of the Diaphragm and Abdominal Muscles.*

Every one, who has learned this method of breathing, will, by exact observation of the rules and with a firm determination, be able to carry them out. Before long, however, it will strain him so much that he will begin to doubt whether he ever will be in a position to make this method second nature. But the scholar must not allow himself to be discouraged; for this strain results from three causes:

1. From being *unaccustomed* to make a more than ordinary use of these muscles.*
2. From their over exertion, as the scholar, having become convinced of the efficacy of this method, continually tries to arrive as quickly as possible at his aim.

* We have already learned in treating of the muscles, it is only by the force of habit that they can be brought to work with more than ordinary activity.

3. From the occasional wrong application of the abdominal muscles; for the scholar, at first, will press upon the stomach more or less, since he uses the *musculi recti* too much and allows the lower ribs to sink, instead of keeping them firmly raised.

These three causes can be removed only by long continued, careful, correct practice, interrupted by the necessary pauses.

It must not be supposed that the mere *knowledge* of a method is sufficient for its application, for the application of a rule, practice, time and great perseverance are necessary.

§ 12. *Inspiration to be Performed Noiselessly, and Visible only to such a Degree as is Absolutely Necessary.*

Loud breathing is not only unbecoming, but also destructive of the organs, especially the vocal cords. This can be explained by the following: We have already learned that in inspiration the glottis expands, while the larynx slightly sinks, and during expiration it contracts, whilst the larynx not only regains its former position, but rises still higher. This is so by nature, and, if we acted accordingly, many mistakes would be avoided. But there are many who in inspiration compress the glottis as much as it contracts in expiration, by falsely using the muscles of the larynx for inspiration, and thereby hindering the descent of the larynx; this causes the disagreeable sound of the air brought into friction against the walls of the glottis (the vocal cords).

This constantly recurring forcible crowding through of the air produces *dryness* of the mucous membrane, even inflammations, which greatly hinder the formation of sound and not unfrequently lead to total ruining of the vocal cords.

It is necessary, therefore, to pay particular attention that no incorrect muscular activity be developed, that the glottis

instead of being compressed, be widely opened, and the larynx be permitted to sink naturally. This will occur if the air be inhaled only by means of the muscles of inspiration, the glottis regarded merely as a passage, and the vocal cords not used for muscles of *inspiration*. In this respect it is with the glottis as with the nose, when we breathe through the latter; but of this more further on.

Audible inspiration has also another cause. Most singers and speakers possess the fault of discharging the air from the lungs *entirely* before inhaling fresh air. When the latter is done, it is impossible (except, perhaps, in the case of the most perfect orators and singers) to avoid making the inspiration audible and disturbing.

To make inspiration inaudible, it is necessary that the aperture, through which the air is inhaled, be as large as possible, that the larynx, and with it the root of the tongue, be drawn downward as far as possible, and the soft palate raised.

Through long practice this process can be executed with astonishing rapidity, as is absolutely necessary in quick singing and speaking. The ability to regulate the diaphragm at will, is also necessary, because just as soon as the larynx sinks, the diaphragm contracts, and the abdomen is made to protrude. If we observe these rules, it is almost impossible to inspire audibly.

The exercise, which the pupil will have to make in order to understand the foregoing and to be able to practice it by himself, will be as follows:

Let him fill the lungs with air, then strike any particular tone he chooses, and prolong it, singing until all the air in the lungs has been exhausted; let him now make a fresh, quick inspiration inaudibly, and go on at once with the same tone, and repeat this several times, until he arrives at a con-

sciousness of the muscles involved in the operation, and he will soon become familiar with the position assumed by the organs. He will perceive that the soft palate has been quickly drawn upward, and that the root of the tongue and the larynx have been drawn downward, and that the diaphragm has contracted. These movements all take place spontaneously; the pupil has only to become conscious of them and to perfect them.

Inaudible inspiration is a thing so important that too great pains cannot be devoted to practicing it; and, with sufficient industry, what the pupil has deemed unattainable, will finally become second nature.

Through the want of this faculty of inspiring inaudibly, the finest artistic achievements have fallen short of the attainable effect, and the greatest artists have lacked the highest degree of perfection. Two of our most famous artistic celebrities were afflicted with the defect of audible inspiration, which they preserved to the last. And strange to say, even in these cases the world has held fate responsible for the defect. The people say, "What an artist would this man be if that defect were only absent;" which is like saying, "If this man hadn't a hump!" We cannot get rid of a hump, but we can of audible breathing. In such cases, therefore, we have not to bestow pity, but to express condemnation. It is the duty of the actor and the orator to learn how to use the vocal organs, and no one has a right to plead natural defects; for, if they really exist, then such a person has no business to appear before the public.

The failure to comply with what has been up till now demanded, produces results more or less unpleasant to the hearer; the non-fulfilment of what is urged in the present section acts like a shaft which rebounds back to the breast of the archer; for, besides the torment occasioned to the listener, the ruin of the vocal cords of the artist is the inevitable result, and cases in which this does not occur must be looked upon as rare exceptions.

In the heading of this section we have said that inspiration should be noticeable only as far as is absolutely neces-

sary. This necessity presents itself to the concert singer less frequently than to the dramatic singer or speaker. The concert singer must mainly strive for the production only of the most perfect tone-formation (which, as we have seen, is attained chiefly by diaphragmatic and rib or side-breathing); whereas the dramatic actor must bring before the spectator's eyes people in the most different states of emotion. The outburst of emotion, however, whether powerful or weak, requires in nature a swelling of the breast (the seat of emotion), which becomes outwardly visible through the lungs filling themselves with air. This swelling of the breast should also be visible in dramatic acting; but let the scholar be careful not to attempt to accomplish this by raising the shoulders. This would be a movement which we have already expressly condemned. There should be an outward and forward movement of the breast, and the shoulders should be drawn slightly back, but not upward. The ordinary conversational tone in speech and song is produced by simple diaphragmatic breathing (without visible motion of the breast); but every *inward* excitement, even when only very slight, manifests at once the activity of the breast which becomes more marked, as the excitement is greater.

§ 13. *Cases in which the Breathing is Audible.*

There are cases in which audible breathing is not only permissible, but becomes a necessity. If, for instance, an oppressed chest seeks relief by a deep sigh, this is done with a loud and slow evacuation of the lungs. A person, after much walking, running, after extraordinary muscular exertion, will breathe *audibly*. A sudden fright checks breathing; the renewed escape of air will be *audible*. A painful, loud, prolonged *Oh! Ah! Yea! Nay!* will immediately after its formation change into perfect aspiration,

and so close. We may also remark that the dramatic performer and orator requires *much more air* than he would believe for such exclamations, if he desires to prevent their being weak and without effect.

This fault is noticeable with all those who try to finish these exclamations with the small quantity of air which may have been left in the lungs, and who do not know that for such short exclamations, as well as for all others, the lungs must always previously be put into a "state of readiness."

Let us now consider several variations of breathing, in which audible inspiration and expiration are necessary.

They are the following: *Yawning, sighing, panting, sniffing, hawking, aspirating, snoring, sobbing, coughing, sneezing, loud laughter and weeping.*

Through external causes, these variations appear of their own accord; in art, however, where all outward causes are absent, and imagination must supply their place, such changes are very difficult of production. Hence the unnatural laughter and weeping on the stage with beginners, and even with actors who have been on the stage for many years. It is, therefore, absolutely necessary to learn the physiological process required in these modifications of breathing.

Yawning consists in a deep and long inspiration, followed sometimes by a short, often by a long, loud expiration. The mouth, as well as the glottis, must be opened widely.

Sighing is a slow, deep, and often intermissive inspiration, taking place usually through the mouth, frequently, also, through the nose, followed by a long, slow, at times trembling, and audible expiration.

Panting is a short, violent inspiration and expiration.

Sniffing consists in short and rapidly succeeding inspira-

tions through the nose, while the mouth is kept closed by the tightly compressed lips.

Hawking results when we drive air quickly and powerfully through the glottis, partly with open partly with closed mouth. It is produced by slow expiration; oftener, however, by jerks.

Aspirating is a hollow, monotonous and gentle expiration through the mouth, either slow or coming in short puffs.

Snoring results from a vibration of the soft palate in inspiration and expiration through the mouth. It can also be produced by breathing through the nose, the mouth remaining closed, but not as easily, and certainly not as loud, as the other way. It is less a modification of breathing than an attendant noise.

Sobbing consists in a cramped contraction of the diaphragm which shakes the whole body and allows itself to be heard at varying intervals through one or more quickly following noises. The noise itself is produced in the glottis by inspiration which takes place quickly.

Coughing is the result of one deep inspiration followed by one or more impulsive expirations in succession, as has been fully stated in Part IV., § 8. This process is usually involuntary; it can, however, be brought about quite voluntarily.

Sneezing consists in a quick, deep inspiration, followed, usually, by a very powerful expiration sounding like the combination *ts*. This expiration represents the actual sneeze. Directly before this expiration the nasal cavities are closed by the contact of the soft palate with the posterior wall of the throat, and they are opened again with the expiration. The muscles of the face are drawn together in the region of the nose and eyes more or less according to circumstances, and resume their original position with the expiration.

Loud laughter and *weeping* are the most difficult to produce without external causes, and it requires long practice to attain a certain degree of perfection. Most actors laugh and cry unnaturally on the stage; that is to say, their laugh does not originate as it does in nature. Laughing consists in sounding expirations, which, broken off short, succeed one another quickly or in slower tempo; it always, however, originates in a shaking of the diaphragm, which must be more marked as the laugh is more violent. We justly say, "My sides shook with laughter." The sides can be made to shake, however, only by means of the diaphragm. Therefore, we call an unnatural laugh, which is not brought about by shaking the diaphragm, a *laryngeal laugh*; since it is produced principally by a continued monotonous opening and closing of the glottis.

In laughing, expiration goes on with quickly succeeding narrowing and widening of the glottis; at every narrowing there ensues a jerky noise which derives that quality from the action of the diaphragm. If we desire suddenly to stop violent laughter, we have only to close the glottis, *i. e.*, to hold back the breath; but, if the desire to laugh is too violent, and the closed glottis can no longer restrain expiration, there invariably results a sudden expulsion of the air which will drive the lips apart and thus cause a loud noise. Commonly speaking, we call this "bursting out."

Weeping consists in inspiration and expiration; the first takes place quickly and deeply, the second slowly and in jerks with narrowed glottis. The expiration is the real weeping, and is frequently interrupted by fresh inspirations. Yet the inspiration can be slow and deep and the expiration quick, according to circumstances.

§ 14. *The Air not to be Aspirated during Phonation.*

It is to be observed that in the formation of a sound (in

the beginning as well as in its duration) no wild air (that is air not brought into permanent vibration) shall be audible, as the normally formed sound requires.

In regard to this point, many singers and actors make mistakes (especially the latter) and particular attention must be paid to this.

EXERCISES FOR THE SINGER.

In order to achieve this, the pupil, after bringing the lungs to the "state of readiness," should produce a tone with the vowel *A'* firm and decided, with the full closure of the glottis ("direct attack," see beginning of Part II.); but *piano* and without any pressure upon the vocal cords. The tone, at first short, should be frequently repeated and somewhat prolonged each time, special care being taken that it should not begin with an *h*, and that there should be no aspiration during its continuance.

Having gone through this exercise for a time, he should now attempt to sing the scale within an octave, but no longer as before, giving each tone separately, but, on the contrary, seeking to combine the tones ("indirect attack"), and still without aspirating. Not being permitted to exhale more air than is necessary, he will be under the necessity of keeping the vocal cords in the proper tension, and in a general way of increasing the activity of the muscles, by which an aspirated tone will be less possible. These exercises should all be performed *piano*, and only when the pupil has acquired a pretty full control of the vocal cords, can there be any idea of his attempting to pass over to *crescendo*.

EXERCISES FOR THE SPEAKER.

Pronounce a short sentence (a line) in one tone; begin with the lungs quite full, and after each syllable take as

much breath (quick and inaudible) as was required for the preceding syllable, so that the lungs shall always be in a "state of readiness." The replenishing of the lungs, in this quiet and slow manner, after each syllable, has for its object to bring abdominal breathing fully to our consciousness, and to make the necessary muscular movements our second nature. Each syllable being pronounced with full lungs and with careful avoidance of aspiration, the tone will gradually become sonorous, and in this way the pupil will most readily accustom his ear to recognize metallic quality and clearness in tones. When the pupil has for a time pronounced the sentence in this manner, he should start afresh with a slight change, reproducing now half the sentence without taking breath, but pronouncing the syllables as he did before, when he took breath after each, so that the syllables shall all be uttered singly and in the same tone. When this has been done for a time, he should proceed a step further, uttering the whole sentence in one breath, but still continuing to syllabicate; and, finally, he should utter the whole sentence in one breath, not syllabically but rhetorically, always being careful not to aspirate.

The pupil should, in addition, make the following exercise: utter the whole sentence in the manner of the chromatic scale; that is, begin with a high tone and descend a half tone with each syllable; and, having reached the end of the sentence, repeat it in like manner but with each syllable ascending a half tone, his whole attention being directed toward maintaining the correct position of the vocal cords, as has been described in treating of chest-tones; that is to say, he ought always to have that sensation in the larynx which he has when uttering a vowel sound (*A'*, for example) with the spiritus lenis and not with the spiritus asper (*Hah*). By this exercise the voice will be fitted for every modulation.

The pupil should perform these exercises within the compass possessed by his voice. If, for example, this embraces ten tones, he should first utter the whole sentence with all its variations in the lowest tone; he should then do the same thing with the next tone, then with the third, and so on until he reaches the limit of his compass.

The scholar must here be particularly warned against something. It is the attempt to give the tone too great strength and fulness in vocal exercises. If he does this he either presses upon the larynx or squeezes the vocal cords together; and the tone becomes raw, hoarse and full of mannerisms. Without the least pressure he must form the tone very softly, strengthening it gradually; for only long and careful exercise, not forced expulsion of air, can add strength and fulness to the tone.

§ 15. *Path Traversed by the Sounding Air-Column.*

The air, which has been expelled from the lungs through the glottis and set into sounding motion by the vocal cords, acquires — on account of the manifold reflection which it constantly undergoes on the way from the epiglottis along the walls of the pharynx and the oral cavity, according to physical laws — the same curves and the same dimensions which this canal shows in itself; its direction, therefore, is decided by the position of the walls, between which it takes its course. Apart from the *natural* walls of this canal the form of the same depends also on the *position of the larynx* (higher or lower), on that of *the root of the tongue* as well as of the *tongue* generally, and also on the position of the *soft palate*, and the column of sound is thereby induced to strike with greater intensity in some places than in others.

Let us take, for example, three such points and mark them in our explanation: *a, b, c* — *a* is the point where the poste-

rior nasal orifices (posterior nares) are situated ; that is, the pharyngo-nasal cavity ; *b* is the soft palate, and *c* the hard palate, at the root of the upper incisors.

As the *timbre* (that is the real quality of a tone) of the sounding air-column depends more or less upon the condition of the walls (harder or softer, drier or moister) upon which it impinges, each one of these points, *a*, *b*, *c*, might cause another timbre, because each offers in part at least a different kind of wall.

If the column of sound strikes with greater intensity on point *a* (the pharyngo-nasal cavity), we obtain the so-called *nasal tone*.

If the column of sound strikes with particular intensity upon *b* (the soft palate), the sound is *full* but *dull*, and is permissible only where a *dull* coloring of the tone is absolutely necessary.

But in cases, where the palatal tone is to be gotten rid of, the point *b* is of the utmost importance, as a confirmed palatal-tone singer can only rid himself of the palatal tone by directing the sounding air-column upon *this* point.

If, through the position of the larynx and situation of the tongue, the canal is so formed that the sound-column strikes with more intensity on point *c* (the hard palate at the roots of the upper incisors), the sound will possess the qualities of the best tone to be derived from these vocal organs. Here, therefore, (to express it popularly) will be the right "touch."

The singer, as well as the orator, requires much study to be able to guide the sound-column just to this point. He can readily determine whether or not he has directed the sound-column to this point by observing if at this spot a slight sensation, not unlike a cool breath, is produced.

This manipulation must not be considered very difficult. The Creator has given us such vocal organs that in their

normal condition, that is, if we do not misuse the organs, the air-column always strikes with greater intensity against the roots of the upper incisors than it does against any other point without any exertion on our part; and only under falsely developed conditions or through a passion for achieving something extraordinary, do we change the position of the organs and induce a false "touch" and, consequently, an incorrect sound.

If we correctly pronounce the vowel *A'*, we have already the proper tone, for this is nothing else than the correct sound of the vowel *A'*; as, in fact, correct tone-formation depends solely on the right formation of the vowels.

Only when we can form a clear, correct *A'* (as in *far*) are we able to pronounce with ease, and without depriving the sound of its purity and fulness, every other vowel with the same clearness, although the position of the tongue and larynx is different from that in *A'*; for the slight changes in the position of some of the organs, which are necessary in song in the case of certain vowels, are easily learned with a little attention. For instance, that with *A* (*hay*) and *E* (*he*) the larynx must be *lower*, and the root of the tongue be pushed somewhat *forward* and *downward*, so that the sounds produced with these vowels are not too thin and pointed.

The purity and the accuracy of the *A'* are the principal requisites for speech and song. If we are not able to form a pure *A'*, it is impossible to acquire a correct tone; without a correct formation of sound, however, there can be no correct song. We may, therefore, justly say that, as a correct *A'* is the foundation of all vowels, the correct formation of sound is the foundation of song.

The hard palate consists, as its name implies, of a hard, the soft palate, of a soft mass. The "touch" of the air-

column on the third point, *c*, will, therefore, lend to the sound more metal and hardness; that on the second point, *b*, more tenderness.

The moving the "point of touch" forward or backward is left to the judgment of the singer or speaker who has, in fact must have, the power to determine the course of the air-column, so that it shall strike with greater intensity on this or that spot. The nearer the "point of touch" is brought from *c* backward to *b* by a sinking of the larynx, the softer, but also the more obscure, does the tone become; and the further forward it moves from *b* to *c*, by raising the larynx, the sharper and clearer do we find the tone.

If the "point of touch" goes beyond *c*, the tone becomes shrill and completely a *dental tone*.

§ 16. *How to Increase the Compass of the Voice.*

A belief still prevails among pupils and teachers—especially among piano teachers who, without any knowledge of the human voice, but simply because they can perform on the piano, pretend also to be able to give instruction in vocal music—that it is possible to alter the compass of the voice at will, to make it ascend higher in the scale or reach lower according to one's desire. *This belief is the ruin of many a voice which, with proper training, might have achieved fine results.*

Nature has provided every human being with vocal organs; but the structure of these organs varies in different persons; the vocal cords being longer or shorter, the larynx larger or smaller, the air-passages more or less elastic, and the resounding walls of the passages stronger or weaker.

If it is sought to increase somewhat the compass of the voice, especially to increase the upward range, then the only way to do this is for the pupil to make the sum of the tones

which he can readily produce and can properly designate as the compass of his voice, the exclusive subject of his study; to cultivate these tones alone with a correct method. Only in this way will the vocal cords gradually acquire increased elasticity, extensibility and increased power of vibration; qualities, which are the essential condition of the formation of high tones.

If the teacher fails to examine closely the natural compass of the voice, but, on the contrary, endeavors from the start, without any previous exercise of the tones that can be readily produced, to forcibly increase the compass in its upward range, then the ruin of the voice is certain. No forcing is permissible in the exercises; and it is an error to suppose that any given result can be achieved in less time by hurrying on the instruction. The vocal organs can only by slow degrees be brought to produce the desired results.

If the voice has been thoroughly trained within its natural compass, the pupil will perceive with surprise and delight that its compass has actually been increased, without anything special having been done toward this object, and that the acquired tones, few though they be, can be produced just as easily as the old ones. The tones thus freshly won should be incorporated in the regular exercises, special care being taken in exercising them, and should be made uniform with the rest.

§ 17. *Inspiration to be Performed Completely and at the Right Time.*

It is possible to expel all the air from bellows, but the lungs, which we can compare to bellows in regard to inspiration and expiration, differ from these in so far that no full expiration can ever take place. The art of singing and even speaking requires that much less air be drawn from the lungs than they can give.

In an organ or other similar instrument the stock of air must never be entirely exhausted in playing; in like manner during continued activity of our vocal organs, we must retain a certain amount of air, so that we may at any time produce any required degree of respiratory pressure. Toward the extreme end of an expiration the strength of the air-current diminishes considerably; by waiting until this occurs, the lack of breath requires an inspiration, which, being of longer than the desired duration, produces perhaps an inappropriate pause in singing or speaking.

As we do not, like the organ instruments, possess several bellows for filling our lungs of which one maintains the air-current during the inactivity of the others, it is necessary to refill the lungs with air at every favorable moment of rest, before they have been completely emptied.

The want of several bellows is replaced in the human vocal organs by the circumstance that these, unlike every artificial instrument, produce great effects with the smallest quantity of air.

Many believe that perfection in rhetoric consists in speaking as long as possible, without renewing the air in the lungs, or, as it is generally called, speaking with one breath. This remark applies also to singing. They, therefore, take great pride in overlooking all commas, or, frequently, also other marks of punctuation, and in speaking two or three lines of the most diverse thoughts, or singing several different passages *without inspiring once*, as they boastingly say.

This is entirely false. Long breath is undoubtedly of great importance, but only in passages in which inspiration cannot take place without interrupting the thought; in calm speech, which requires little consumption of air, it is also permitted to inspire less; that means less frequently. In all impassioned or emphatic speech and song, however, it is

the first rule to inspire as often as the thought permits. This is an absolute necessity, for violent speech requires much more air than calm speech.

But apart from this, it is necessary for the simple reason that with constantly renewed breath the thought becomes more clearly defined, for expression depends not only upon the words, but also upon the coloring of the tone, and the singer or speaker would never succeed in making very perceptible distinctions with one inspiration. By repeated inspiration, the lungs being always, even after the slightest thought, put into the "state of readiness," the sound will be powerful, clear and metallic; whereas the strongest man, with fully developed lungs, by speaking much with one inspiration, will express only the first part of the sentence clearly and purely, whilst the latter part will be lacking in metal, purity and strength. If, for instance, we express the following thoughts: "Oh, this woman! What did I say? Have you seen her?"—and we speak this, as is frequently done, with one inspiration, we shall clearly perceive that the beginning of the last thought, "Have you, etc.," is less clear and pure, and the end considerably weaker and less metallic than the commencement, "Oh, this woman!"

If, however, we say, "Oh, this woman!" (short inspiration) "What did I say?" (short inspiration, so that the lungs always return to the "state of readiness") and then, "Have you seen her?" the last sentence will have the same coloring, the same power, the same metal, as the first.

It will be readily understood, from what we have said, that these inspirations must be neither audible nor visible.

We must also remember that it is not only necessary to inspire frequently, but to inhale sufficient air with each inspiration. This is of great importance. If, by one inspiration, we do not bring sufficient air into the lungs, we shall

have less in the next, still less in the following, etc.; and, in consequence, we shall be compelled to take a long, rapid inspiration (requiring much more time than the thought permits, sometimes even in the midst of a sentence) and make our breathing audible and unpleasant.

To prevent this, every inspiration, the shortest as well as the longest, must supply the lungs with as much air as the speaker has consumed in the preceding sentence; or, as this would be difficult to determine, to speak more plainly: the lungs, after every sentence, even if this consists of but two words, must be brought to the "state of readiness," as has been said in section 3.

Particular attention should be paid to the strict observance of this last rule, for the non-observance or superficial application of the same is the cause of so many imperfections in rhetoric and in song, in regard to breathing.

The singer or speaker should immediately after finishing a phrase, be it long or short (slowly in a long pause, rapidly in a short one), inaudibly bring the lungs to the "state of readiness;" and, if utterance is resumed after a few seconds, he should retain the air until then; but if a somewhat longer pause (not, however, permitting a positive rest) occurs, he should keep the lungs fully supplied by drawing short, inaudible inspirations with expanded chest, by means of the diaphragm (the feeblest inspiration will suffice if made frequently). In this way, he will be enabled to breathe without permitting the air contained in the lungs to escape entirely, as is done in a full expiration. If he now begins a new sentence, after having kept the air-receivers constantly filled, he avoids the unbecoming, visible and audible "preparation" by which, as it must be performed rapidly, head, shoulders and chest are moved in an unsightly manner.

We have spoken of a slow and a rapid inspiration. Special

attention must be called to this rapid inspiration which we term the "short" one, and which is of the utmost importance in song and speech. We may attain in this such a point of perfection that after every comma, even if this is repeated after every two or three words, it may with the greatest advantage be applied in rapid speech. It naturally requires much practice, but we can and must succeed.

Without the ability to make at will this "short" inspiration, which must always be inaudible, it is simply impossible to take part in a lively dialogue, as by taking a deeper and slower inspiration, an involuntary pause (if ever so small) would check the flow of speech, and lessen considerably the vivacity of the dialogue. This rapid inspiration must, therefore, be practiced carefully and must by no means be audible or visible.

Much time will usually elapse before the speaker acquires the ability to refill the lungs immediately after having completed a sentence, for his thoughts are generally still occupied with the just-completed sentence, and he forgets to inspire immediately.

Only by continued practice will this become second nature, and it will be impossible for him to speak without this short, rapid inspiration.

Many, who have understood the necessity of inspiring immediately, make, however, the following mistake: As soon as they have completed a sentence, they close the mouth tightly, compress the lips, and then inspire through the nose; in consequence of this there results a noise like that of audible sniffing. This, however, is just as incorrect as the audible inspiration through the contracted glottis.

We remarked at the beginning of this section that a long breath is of great importance in passages where taking

breath would disturb the expression of the thought. We shall explain this more fully by means of a few examples.

There are moments in which a deeply-excited person is too much affected to contain himself sufficiently to follow the slow succession of words; he gives vent to his feelings in mute actions, then gestures, postures, glances precede the words as the lightning does the thunder.

There are cases, however, in which a person, carried away by excitement, suddenly recalls all the required expressions. Words rush to his lips as quickly as thoughts originate in his mind; both arise instantaneously and follow each other without an interval.

The utterance of the actor or orator should, in this case, be compressed, produced hastily, as if with one outburst, but he must avoid giving the public the impression of exertion by being suddenly forced to draw a long breath. Drawing a long breath always is a means of rest, which, done at an improper point, subdues the fire of the moment and destroys its effect. If, for instance, the actor representing Shakespeare's Shylock, in Act III., Scene I, where he addresses Salarino, saying, — "Hath not a Jew eyes? Hath not a Jew hands, organs, dimensions, senses, affections, passions?" should wish to take breath after each comma, or even only once, the extraordinary gradation of passion contained in these words would be utterly destroyed. In this and similar cases it is absolutely necessary to command a long, powerful and effective breath, if we wish to give full expression to the thought to produce the greatest possible effect.

Passion does not always yield to the rules of grammar; it does not always stop where grammar requires; it has usually no regard for periods, commas, etc.; it omits or transfers them according to the irregularity of its outbursts.

To be fully able to represent this artistically, a complete mastery of the respiratory organs is decidedly necessary.

When Shylock, continuing, says: "Fed with the same food, hurt with the same weapons, subject to the same diseases, healed by the same means, warmed and cooled by the same winter and summer as a Christian is;" in this case the actor should make a short, rapid inspiration after every comma (with the exception of the last before "as a Christian").

For on! by means of these short and rapid inspirations can these lines be spoken fluently and with the requisite fervor and rapidity. Long inspirations in this case would destroy the wonderful rhetorical construction which Shakespeare has arranged.

It naturally requires a long time to become such an adept in the practice of this short and rapid inspiration to make its application appear second nature. The *short, quick* inspiration is accomplished by *side-breathing*; the *slow* inspiration by *abdominal breathing*.

When the lungs have become somewhat strained by singing, the best way to refresh them is to make a few successive respirations faster than usual.

§ 18. *Breathing After an Impassioned Phrase.*

Most speakers and singers, on coming to the end of an impassioned passage in like impassioned manner, fill their lungs again visibly and audibly. This is altogether wrong.

There may, indeed, be situations where to make a quick and audible inspiration is not only permissible, but necessary (as, for example, in the expression of anger or rage, or in a comic position), but in general the rule must be observed to make slow and deep inspirations.

§ 19. *Breathing while the Body is in any Position.*

When a person has finished an impassioned locution, and

the body has for a moment assumed an expectant or defiant attitude, he, as a general thing, retains the breath while that posture lasts (of course, only if the duration be short). But in art it is different. While it should seem as though the breath, like every member of the frame, up to the muscles of the face, were perfectly still, the actor should fill the lungs well, slowly, inaudibly and invisibly (employing that method of respiration best conforming to the momentary position of his frame), in order to have the lungs in a "state of readiness" for his next utterance, so that he should appear to have enough air in the lungs for any expiratory movement.

In those cases in which the body has assumed a decided, fixed posture, and it is sought to retain it for a time in this position as firm and immovable as possible, and where a long and deep inspiration, a prolonged retention of the breath and a complete expiration are necessary, then the position of the body will determine the mode of respiration to be resorted to—whether abdominal, shoulder or side-breathing, or a combination of these movements. For the attitude of the frame, previous to respiration, will permit certain portions of the lungs to expand more freely than others; that is to say, to become more easily filled with air, so that the mode of respiration is thereby determined to a greater or less extent.

§ 20. *Not more Air to be Exhaled than is Absolutely Essential.*

It is astonishing with how little air man may produce sounds, and that the sounds, produced with little air (if the vocal cords are in normal condition), are the finest in *piano* or in *forte*, because too much air imparts to the tone a hoarseness, frequently a screeching sound, and both these qualities destroy the tone.

If the rule, to produce a great effect with little air, must be generally observed, it is especially necessary where the utterance is rapid and forcible ; here it is necessary to speak, as it were, with diminished consumption of breath, that is, here we must scrupulously observe the principle to expire only as much air as is absolutely necessary.

It is especially important to confine ourselves to a small consumption of air, if we wish to change from a chest to a falsetto tone (be it in singing or speaking).

In such cases, that the transition may not be unpleasantly audible, we use but a small quantity of air ; in fact, it is in this way only that the transition can be made æsthetically.

The slow emission of the air from the lungs is effected by permitting the gradual subsidence of the feeling of expansion in the lower portion of the chest and the abdominal muscles produced by a full inhalation ; that is to say, by keeping the upper portion of the chest immovable, by letting the contracted diaphragm relax slowly, and the lower internal intercostals to contract gradually, and by diminishing the opening of the glottis as far as possible, but without pressing the vocal cords together ; whereas, with the rapid sinking of the ribs, the quick relaxation of the diaphragm and the rapid widening of the glottis, the air is quickly expelled from the lungs.

§ 21. *Breathing Through the Nostrils.*

Breathing through the nostrils is very essential, because not only is this less noticeable than breathing through the mouth (with which we inhale usually less air than by means of the nostrils), but it has also the advantage of not drying the mucous membrane of the oral cavity, the entrance to the throat, the throat itself and the vocal cords, as the frequent inspiration through the mouth is apt to do. And

the moisture of these parts is one of the most important qualities required in originating a tone.

Every singer or speaker should, therefore, breathe as far as possible through the nose, and should make use of every opportunity that presents itself for doing so. But where is there such an opportunity? Wherever he has two or three seconds' time, which is quite ample for a full inspiration.

But in inspiring through the nose, we should not move the muscles as though we wished to smell; this checks the air which is to be inhaled, and becomes unpleasantly audible. Inspiration should be performed solely with the inspiratory muscles (the diaphragm and the external intercostals), the nostrils to be used only as openings for the passage of the air. We should also be careful not to compress the lips, while inspiring through the nostrils. Compressing the lips tightly reduces the opening of the nostrils, by which inspiration is rendered infinitely more difficult and a noise is produced as in audible smelling.

If we are compelled, by rapid singing or speaking, to breathe through the mouth, it is quite necessary in inspiration to hold the tongue convexly toward the palate, as in pronouncing *E (he)*, as the air is thus prevented by the narrowed cavity of the mouth from striking directly against the vocal cords, and there is much less danger of the mucous membrane becoming dry.

With regard to the health, breathing through the nostrils is also of the greatest importance. Those who are especially interested in this, may read Catlin's "Shut Your Mouth."

§ 22. *Time and Duration of the Exercises.*

I propose the following method of exercise, which many years' experience with my pupils has shown to be attended with excellent results:

Having risen in the morning and refreshed the body, or

at least the neck and the bust, with a cold ablution (or taken a bath in summer), the pupil should dress, not too heavily or too tightly, and perform a quarter of an hour's bodily exercise, as has been described in Part I., with the proper intervals of rest. After that, wait a quarter of an hour; then take breakfast, and half an hour or three quarters of an hour after it begin the exercises with the vocal organs. The exercise (whether singing or speaking) should never be performed continuously for more than ten minutes; allow a pause of five minutes and begin anew. When through several weeks' exercise the muscles have been brought up to a certain point of endurance, the time should be extended to a quarter of an hour, the interval of rest remaining five minutes. In the first four weeks the total duration of the daily exercise must not exceed an hour in the forenoon and an hour in the afternoon. After four weeks another half hour may be added, and at the end of eight weeks the exercises may be made as long as one's powers will readily allow; the moment, however, that any unpleasant sensation begins to manifest itself, the exercise should be suspended.

In regard to the method of the exercises, it is merely necessary to observe here that they should be performed, if possible, at regular hours of the day; that one should begin with the less difficult, and gradually go over to those which are more exerting; for it is only through their gradually increased activity combined with the constantly recurring intervals of rest, that the muscles can be effectually strengthened, as we have seen when treating of these organs. After a meal, the singer or actor should not begin until after the main work of digestion has been accomplished; that is, after two or two and one-half hours.

In all that has been stated till now, we believe to have fully explained the system of inspiration and expiration,

and by a close and scrupulous observance of the rules laid down, the orator and the singer will meet with certain success. As, however, a strict compliance with all the details is not always persisted in, at least at the outset, and as after all there might arise some perplexity in regard to inspiration, we have deemed it necessary to provide for such a contingency, by a few special instructions, which, however, are to be applied only in cases of such perplexity.

§ 23. *What to do if, through Carelessness, the Lungs are Emptied too Soon.*

If, in spite of all due care, it should happen, that, as is generally said, the breath gives out, and we are compelled to inspire before the last two or three words of the sentence, and by this spoil every thought and destroy every effect, as unfortunately so frequently happens, there is but one remedy; it is the following:

In our system of inspiration, the activity of the abdominal muscles is of the utmost importance, and in such an emergency it is these alone that can save us from the disagreeable division of a sentence and the complete spoiling of the effect. In such a case, when the supply of air gives out and we are unable to draw any more air from the lungs by the action of the ribs, we must bring the abdominal muscles into greater activity, and by pressure upon the abdominal organs which, forced upward, exercise a pressure upon the lungs, enable ourselves to force as much air from the lungs, as we still require for the remaining words.

It is wonderful how this manipulation, which is the only correct one, helps us over every obstacle; we must, however, not abuse it, but apply it only on the most urgent occasions; otherwise we must strictly conform to the given rules.

§ 24. *Wearing Apparel in Regard to Breathing.*

Singers and speakers should always see that their attire allows the necessary play to the organs of respiration. With concert singers, declaimers and public speakers this is at all times practicable ; but it is not always so in the case of dramatic performers. Among the various kinds of costume which they have to put on, there are some the cut of which is not favorable to free respiration, inasmuch as they compress one or other of the groups of respiratory muscles.

In such cases the artist should know exactly which group of respiratory muscles he has to bring into activity. Of course, it is the question of such costumes only as absolutely admit of no other cut ; as for example, certain character costumes.

The actor can never afford to have the two kinds of respiratory movement — abdominal and side-breathing — hemmed ; for, in that case, it would be necessary to breathe with the upper chest, and this we know to be both unseemly and defective.

The actor can easily avoid this by making himself acquainted in time with his costume and causing any necessary alterations to be made. Many a fine effect has been lost to the dramatic artist by his having become aware too late that his attire greatly compressed his respiratory organs.

Such considerations, however, will weigh lightly with our ladies, whose figure resembles a wasp rather than a human being, and with our beaux, who are so thoroughly of opinion, that “the smaller the waist, the greater the work of art ;” and we, therefore, advise the former, as long as they persist in lacing, to see to it that not all the groups of respiratory muscles are thereby affected.

Whoever desires a healthy development of the lungs, must be careful to relieve the respiratory organs from all pressure.

We have now reached the end of our "System of Correct Breathing in Singing and Speaking."

I may incur the reproach that my rules lead to pedantry and stiffness. "Who," it may be asked, "will or who can follow these rules with such strictness? They are too complicated!"

To this my answer is: No rule, however simple, will ever attain the desired result, unless we practice it with the greatest perseverance, with the utmost patience; until it has become second nature, until it can no longer be noticed, because warm, fresh life has taken the place of the cold, lifeless rule.

EXPRESSION.

A general remark concerning expression may still be in place here.

We should always seek to preserve a certain nobility of expression. In our ordinary life the muscles of the face are contracted by pain in a way unpleasant to the sight. In crying, the glottis closes and emits short, broken and disagreeable sounds. But it is a different thing in art. Here we must strive to throw an æsthetic veil over every emotion, whether of pain or of pleasure. In the representation of the deepest emotion, originating in the recesses of the heart and reflected in the features and voice, we should never allow the look, the tone or the words to go beyond the limits of the fine and the exalted; we should have such a command of our respiratory and vocal organs that, whilst the glottis emits the most profound tones of pain and pleasure, these should never be ignoble, unpleasant or ugly, except indeed, it be the intention to produce a characteristic or comic effect.

If this principle were strictly observed, that is, were the artist to apply himself more assiduously to securing a full command of the muscles, we should then not see, what so often happens, especially with ladies, the features greatly distorted in the representation of emotion. In fact, many

persons, in their ordinary conversation, change their naturally not ignoble features to their disadvantage, and it is rightly said of them that "they are handsomest when they are silent."

ERRATA.

Page 25. Omit the head line, "Organs of Respiration."

Page 71. The description of the single parts of Fig. XX., which are the same in all the figures from XX. to XXVIII., is as follows: 1 is the boundary between the hard and the soft palate; 2 is the uvula touching the posterior wall of the pharynx during the production of pure vowels and consonants, hanging down only in production of *nasal* sounds; 3 is the naso-pharynx, 4 the oro-pharynx, 5 the epiglottis, 6 the hyoid (lingual) bone, 7 the right *true* vocal cord (the line above being the *false* vocal cord), 8 the thyroid (shield) cartilage, 9 the right arytenoid (pyramid) cartilage.

REVIEWS OF THE FIRST EDITION.

[HEIDELBERG GAZETTE.]

Although many a teacher of song and of speech has achieved great results in imparting his art to his pupils, yet this has been accomplished more through the natural gifts and peculiar tact and personality of the teacher than through any conscious, comprehensive, systematic method. The rules employed were the product of individual empiricism, and were devised and applied without any regard to physiological principles. Oratory was studied in its entirety without fully understanding its essential constituent parts, and how each part should be cultivated and brought to harmonize with the other. This course produced now and then an orator more thorough chance than through the use of positive scientific knowledge, while many pupils, with excellent physical and mental endowments, labored in vain and not seldom were harmed by false teaching.

Realizing the chaos and erroneous doctrines existing among those who teach the vocal art — in song and in speech, Herr Guttmann has sought to dispel the darkness and to bring order out of confusion by publishing "Gymnastics of the Voice," which presents, as its title indicates, "a system of correct breathing in singing and speaking *based upon physiological laws*," being "a self-instructor in the training and use of the singing and speaking voice."

The leading feature of the book is *right breathing*. Some, who have not given special attention to this subject, may feel inclined to ridicule the idea of the necessity of understanding and developing proper respiration, arguing that it is an involuntary, natural function, which will take care of itself. But this opinion is entirely changed after reading "Gymnastics of the Voice." Its author presents the matter so clearly and incontrovertibly that we can no longer doubt or deny the evil consequences of wrong breathing; indeed, we ourselves can, on second thought, recall instances thereof, in ordinary intercourse, in the pulpit and on the stage and rostrum. The proof is too convincing to require further argument.

The book gives, in plain and popular language, a complete method for the voice.

Without entering into an extended review, we refer to the contents, which show the main topics treated and the plan pursued. However, we will again state that, according to our judgment, *the system of breathing is the distinguishing characteristic which places the book far above any other similar publication.*

There may be a doubt in the minds of some as to the possibility and practicability of carrying out the author's rules, and especially of instructing one's self. We admit that self-instruction is by no means an easy task, but from *personal experience* we confidently assert that, with ordinary application and perseverance, a person can comprehend and apply the rules. After practicing them awhile, he will be delighted at his improvement, and will perceive that he can accomplish results with half the physical exertion he previously used; and, instead of straining and exhausting his respiratory and vocal organs, speech and song will be a pleasing and invigorating exercise.

Herr Guttmann's book cannot be too highly recommended. To recapitulate, in conclusion, it contains *the first system of correct breathing ever published*. The author teaches the practical development and use of the organs of song and speech, and gives the means to prevent "clerical sore throat" — generally caused by a wrong mode of breathing, — and pulmonary consumption, which not seldom results therefrom. Surely, respiration *has never before* been treated in so thorough, scientific and practical a manner. The book is of great value to singers, elocutionists, actors, lecturers, public readers, lawyers, clergymen, legislators, and others who use their voices in public.

[MANNHEIM JOURNAL.]

The author's method for the cultivation of the speaking voice is the same as for the singing voice. He considers purity and beauty of tone in speech as important as, indeed more so than in song; for song belongs to art exclusively, while speech is inseparably joined to every phase of social and professional intercourse. Upon this basis is the book written, affording a sure means for the attainment of perfect oratory, and for preserving and strengthening the organs therein employed.

He who cannot express his thoughts well orally, no matter what may be his other attainments and talents, is thereby crippled in his enjoyment and in his usefulness. Many ladies, moving in cultured circles, have reason often to feel ashamed because they are unable to use their mother-tongue properly, fluently, gracefully and effectively. If impure, strained speech has so great disadvantages in private life, how must it injure public speakers! As one of the evil consequences of a false use of the respiratory and vocal organs, we have an affection commonly known as "clergyman's sore throat." The different kinds of wrong muscular activity, and the remedies therefor, Herr Guttman has treated in his book ably and clearly. We know actors and singers who, as a result of a wrong use of their organs, could not perform their roles without great exertion and becoming hoarse; they were even on the point of retiring from their profession, when, fortunately, they practiced the Guttman method and were fully restored, simply because they were led to observe nature's laws.

[CARLSRUHE GAZETTE.]

Herr Guttman can fully substantiate his claim as a teacher, for, with Demosthenic patience and perseverance, he has overcome all the obstacles of a weak voice and defects of pronunciation, so that his own speech, now so full, resonant and expressionful, is a brilliant illustration of the efficacy of his method. Here we have no experimenting with untried theories, but positive knowledge resting upon long experience and scientific data.

[HAMBURGH NEWS.]

After long years of study the author has succeeded in building an infallible system for the training of the organs of song and speech. We cannot do otherwise than warmly recommend the book, not alone to dramatic and musical artists, but to all who speak or sing in public. We go still further and assert that it should be in the hands of every one who is engaged in the education of youth.

[BERLIN SCHOOL JOURNAL.]

In handling Part III., which treats of the correct pronunciation of letters, the author has displayed a thoroughness which we have never seen before in any text-book. The distinction between the various vowel and consonantal sounds is drawn with great exactness and clearness; the positions which the organs should take in the formation of these sounds are so described and illustrated that the pupil receives a clear comprehension and distinct mental image of them, and, with faithful practice, soon acquires certainty and facility in their production. The pupil's attention is directed to matters of which he probably has never thought, but which the teacher knows to be indispensable for the acquisition of perfect utterance.

PUBLISHER'S ANNOUNCEMENT.

Much is written in these days about breathing. This is certainly very gratifying as showing an awakening to a vital matter hitherto slighted. In the discussion, however, it should not be forgotten that Oskar Guttman was the first to publish in popular language a system of breathing based upon physiological and hygienic laws, and which also is the only correct one for artistic purposes. We emphasize this fact because certain writers (especially Englishmen) are now promulgating ideas, as if original with them, which were embodied in "Gymnastics of the Voice" nearly a quarter of a century ago. While prior to this allusions to respiration were made in a few physiological and medical works (particularly Dr. Neumann's), yet *there was no book on breathing practically available for the speaker and singer.*

"Gymnastics of the Voice" was, then, the *pioneer* in teaching artistic respiration. Helmholtz warmly welcomed it and in a lecture at the Heidelberg University recommended it to the students. Dr. Paul Niemeyer, in his book, "The Lungs," says: "For a more elaborate handling of this subject (respiratory action for vocal purposes) I refer the reader to Oskar Guttman's excellent and right practical book, 'Gymnastics of the Voice.'"

The reviews prefixed to our Announcement, are only a few of the favorable criticisms which have been pronounced upon "Gymnastics of the voice." What was written twenty-three years ago, holds good to-day, and the international reputation and repeated editions prove conclusively that *this is a standard work* which has stood the test of practical experience and of recent scientific advancement. By its teachings men and women have won distinction and prolonged their career in the pulpit, on the stage and on the rostrum. By its teachings *private individuals* as well as public personages may learn the proper use of their respiratory and vocal organs, whereby the ordinary talk of daily social and business life can be made more pleasing and less fatiguing. In view hereof the publisher would recommend "Gymnastics of the Voice" not alone to the actor, the preacher, the lawyer, the public reader, the lecturer, the singer, the speech-sufferer, but to *every person*. There is no greater mark of culture than a well-trained voice; there is no surer way to ward off pulmonary and throat disease than well developed and rightly used organs of respiration, voice and articulation. Among all the attainments that modern civilization requires, there is none more important and more useful than this. That it has been shamefully neglected, is a sorry comment upon our boasted enlightenment, but furnishes no excuse for its further disregard.

In now announcing the completion of the book and offering it to the American public, we add and fully endorse the opinion of Herr J. J. Weber, the great German publisher, who issues the work simultaneously in Germany. Herr Weber addressed the following to Herr Guttmann :

“My Esteemed Professor :

“ I have received the manuscript for the fourth edition of your ‘Gymnastics of the Voice.’ I must express my genuine satisfaction at the addition of illustrations, and sincerely thank you for the great pains taken in the revision. Our book, in its new form, will be again, what it has been in the past — *the best in this department.*

“ Leipzig, Germany.

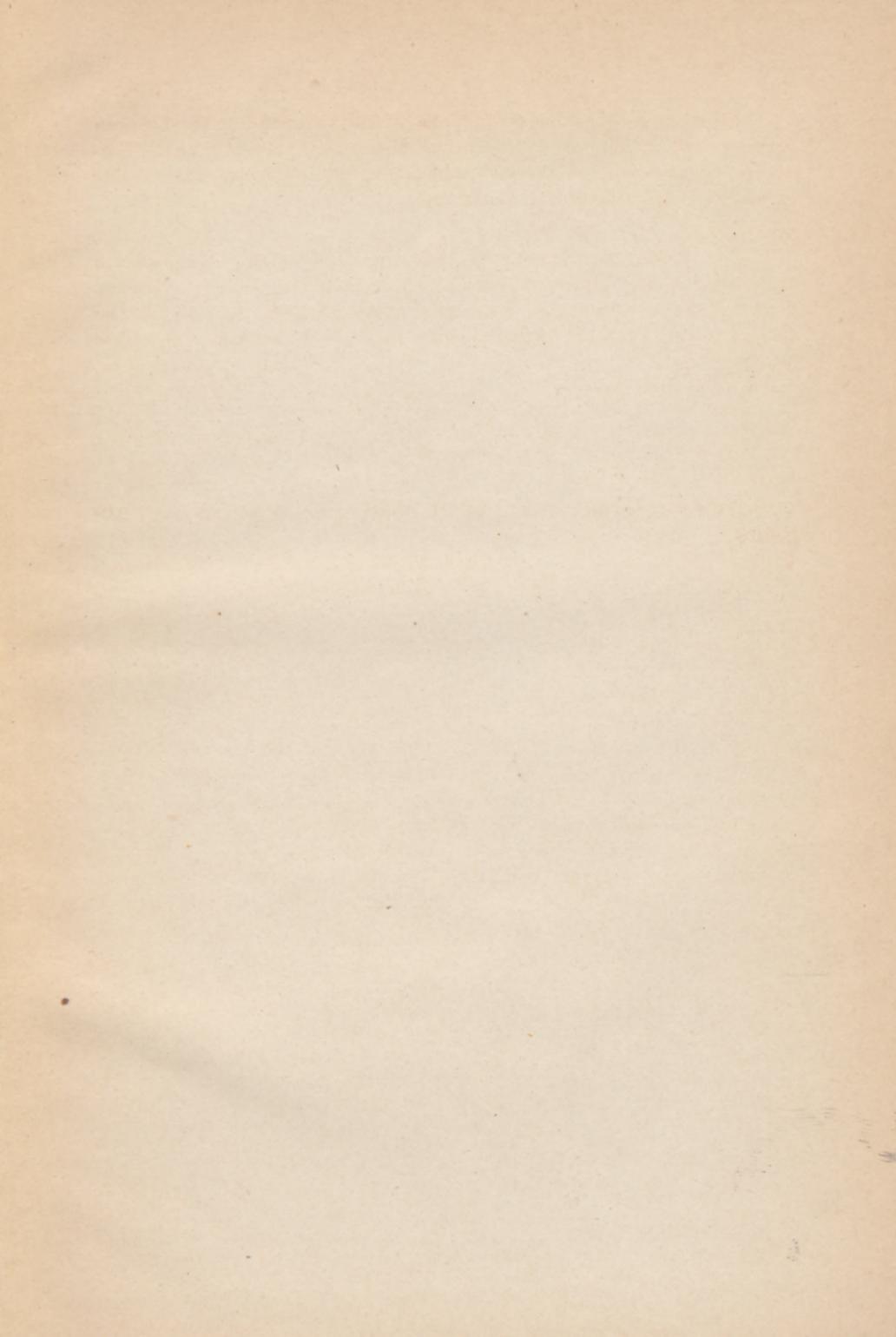
J. J. WEBER.”

Fully illustrated ; cloth, \$1.25 postpaid. Address the publisher,

EDGAR S. WERNER,

Editor of THE VOICE,

Albany, N. Y., U. S. A.



60641610R



NLM 05026057 2

NATIONAL LIBRARY OF MEDICINE