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C. FISCHER'S NEW AND AUGMENTED EDITION

WARD-JACKSON'S  
GYMNASTICS

FOR

THE FINGERS AND WRIST

A SYSTEM OF GYMNASTICS

BASED ON ANATOMICAL PRINCIPLES—FOR DEVELOPING  
AND STRENGTHENING THE MUSCLES OF THE  
HAND; FOR MUSICAL, MECHANICAL  
AND MEDICAL PURPOSES

BY  
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WITH SEVENTY-TWO ILLUSTRATIONS

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## INTRODUCTORY REMARKS

### AS TO THE ORIGIN OF THIS SYSTEM OF GYM- NASTICS FOR THE FINGERS AND WRIST.

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The subject of this little work, based upon anatomical and physiological principles, develops a system of Gymnastics for the Fingers and Wrist, the object of which is to impart to them a solid and scientific foundation for the acquisition of technical skill, applied to the playing upon musical instruments as well as to finger work in general.

A simple statement of the fact may be made, that both the scientific principles and the practical utility of this system of gymnastics have met with the approval of the highest anatomical, musical and gymnastic authorities of Europe, at whose special solicitations I was induced to thoroughly investigate this special field and who induced me to make my discoveries known by means of public and private lectures delivered in many German cities, during the summer of 1864.

In addition to this, I also have the satisfaction of knowing that this little work has been received with the same approval by the medical, musical and gymnastic authorities of this country and has proven a means of practical utility among those for whom it is more particularly intended.

In all gymnastic establishments throughout Europe and America gymnastic exercises have been introduced for every part of the body *excepting for the fingers*, notwithstanding that these important members of the human frame—together

with the mental organs—are the chief factors in distinguishing man from the brute creation.

The following might serve as an explanation to all such who might desire to know in what manner I, as a private individual, had my attention directed towards researches of this nature:—

When I was twelve or thirteen years of age I learnt to play the violin, and afterwards, for upwards of thirty-five years, discontinued it. But, later in life, desiring to accompany my children, I was induced to take it up again. I then found that, although I was in all other respects exceedingly strong and healthy and capable of all athletic exercises, my fingers and hands became painfully fatigued, after only a few minutes' exertion; in fact, I found that my *fingers* were the only weak parts of my body. This happened some few years ago and surprised me to such an extent as to awaken an earnest desire in me to search into the cause. I became confident that some unknown hidden cause must surely be responsible for this phenomenon and that it would be necessary for me to thoroughly probe the matter. With this end in view I made it my business to come in personal contact with such individuals who earned their bread by the sweat of their brow; viz : The smith, the joiner, the brick-layer, the laborer, the peasant, the gardener, the wood-cutter, the miner, etc., etc. I found that all these persons worked with their *arms*, acquiring muscles like steel and arms like giants' thereby; but none of them worked with their *fingers*.

After this I visited schools for boys and girls, and again I found that in nearly every instance, they made *no use* of the fingers in their work. With the educated class of every age and sex I made the same observation and came to the same conclusion.

This revealed to me the fact that the muscles of the fingers are *exercised and developed altogether too little* in the ordinary occupations of life; and therefore, from a physiological standpoint, must be weak—a fact of much importance.

. then visited *the most renowned gymnastic establishments*, and begged to be shown all the varied bodily gymnastic exercises, from the crown of the head to the sole of the foot; and when all these various movements had been exhibited before me, I enquired: "But, where are your gymnastic exercises for the *fingers*?"

"We have none, we never thought of that."

"But they surely require them as much, or more, than all!"

"It has never occurred to us; we did not know the *fingers* required gymnastics, and they have been entirely overlooked."

Thereupon I visited houses and institutions where men *do* work with their fingers; viz: where carvers in wood and ivory, in steel, copper and stone, painters and draughtsmen, watch-makers and fine mechanists, spinners and weavers, printers and compositors, etc. drive their trade; and after that, people who are in the habit of writing a great deal, even throughout a whole day, such as authors, copyists, clerks, stenographers, lithographers as well as seamstresses and ordinary workwomen; in short, all those who depend upon their fingers for earning their living. Here I observed all kinds of *finger diseases*, such as stiffness of the joints and limbs, writer's cramp, hands and forearms debilitated in the highest degree, paralyzed limbs, nervous weakness, etc. And these observances not only led to careful investigation on my part, but convinced me that the above mentioned drawbacks were directly brought about by the following causes: *first*, that the fingers are the least exercised of all the active members of the body, in the ordinary occupations of life; *secondly*, that they are relatively and physiologically the weakest on that account; and *thirdly*, that they are also the *only* active members which are not gymnastically trained and treated; and in order to bring about a radical change in this direction the movements of the finger and wrist would have to be considered from an *Anatomical Physiological* and *Gymnastic* standpoint.

Following these conclusions I forthwith began to experiment in various ways, for the purpose of gymnastically exercising, stretching and developing the muscles, ligaments and joints of the fingers and hands in all directions, in order to strengthen and prepare them for playing the violin and piano as well as other instruments, and for all kinds of finger-work and handicraft.

In doing so, I studied the physiology of the muscles and ligaments, and directed especial attention to the *transverse metacarpal ligament*. In comparing this anatomy with the difficulties experienced, I sought to discover a means of stretching the *ligaments* or bands which run *transversely* across the hands and knuckles more particularly. This I succeeded in effecting and thereby discovered, to my great astonishment, that the moment I had applied my gymnastic movements to these stout and very obstinate elastic bands, the *muscles* instantaneously became looser, and moved with greatly increased freedom and agility. To sum up: The muscles *were set free*.

Through these experiments and discoveries, the extraordinary difficulties of learning to play the piano or violin became surprisingly clear to me. It cannot fail to become clear to all when considering that these difficulties arise from the very fact, that an art, the most complicated from a muscular point of view, which we know of, has to be performed with the *least practised* and proportionately the *weakest of muscles*. The impediments and difficulties in almost all cases can be traced to the muscles and it is this weakness which must be overcome.

Following this, I visited anatomical, surgical and medical institutions, in order to study the anatomy of the hand, the fingers and the arm in still greater detail. I found that the muscles, the ligaments and the tendons of the fingers and hands consist of *elastic masses*, intersecting the hand; and I especially discovered, after a number of experiments, that the *Trans-*



*verse Ligaments, unless they be exercised, remain quiet and stiff, and to a certain extent, impede the movements and activity of the muscles, when the latter are more than ordinarily exerted; furthermore, that in order to exercise and stretch them practically, and particularly the Transverse ligaments and tendons, and to render them strong and supple, it is not only necessary to move the fingers up and down, but also laterally; in short, that both muscles and ligaments ought to be practised gymnastically; and that the fatigue and the danger to health, the nervous weakness, and the disgust often experienced by musical students arise from the following causes:*

*Firstly*, that the muscles, tendons and ligaments of the hand and fingers are proportionately the least practised, and, consequently, as stated before, the weakest;

*Secondly*, that they have never been gymnastically trained or treated;

*Thirdly*, that the methods now in use for strengthening those weak muscles, and rendering them flexible, are insufficient and erroneous;

*Fourthly*, that the *transverse ligaments have never been stretched*; thus, on these several grounds, hampering the learning of music with unnatural difficulties, and with exertions of the muscular and nervous system injurious to health;

*Fifthly*, that as soon as the muscles are properly and gymnastically exercised, and the ligaments and tendons stretched, the fingers, set at liberty, move glibly and freely over the instrument, on the simplest anatomical and physiological grounds.

The idea, that there existed a certain deficiency or want in the method of learning or practising music, as well as finger-work of various kinds, presented itself to me and I set to work to find a remedy for both. The exposition of my method having met with cordial approval, the results of my labors are now offered in a new and cheap edition to artists, musical

students and to all friends of music, as well as to all who are dependent upon the work of their fingers or who suffer from finger disease; also to anatomists, physiologists, surgeons and gymnasts; indulging the hope that, if applied correctly and carefully, they will go far towards removing the evils to which I have alluded, and be of much practical usefulness and advantage.

E. WARD-JACKSON, J. P.



# WARD-JACKSON'S GYMNASTICS FOR THE FINGERS AND WRIST.

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## CHAPTER I.

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### Anatomy of the Hand. On Ligaments, Tendons, Etc., Etc.

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A close study of the anatomy of the hand reveals to us that it is made up of 27 different bones and its movements made possible by 40 different muscles, combining firmness with pliant flexibility in the most remarkable manner. Owing to these qualities it is equally capable of executing the roughest as well as the most subtle and delicate work, its well calculated and highly developed mechanism forming a fitting addition to that spiritual superiority through which man has gradually raised himself to the proud position of ruler of the universe. Placed at the extremity of each arm, the hand by means of its covering of skin, presents itself as a highly developed organ of touch, which, while movable in every manner and direction, informs us at once as to size or physical peculiarity of any object or material.

Regarding the system of gymnastic training of the fingers in particular, which I am now placing before the public, it is founded on an important fact namely, the action of the **LIGAMENTS** and **TENDONS**.

It has been acknowledged at all times that in exercises of this nature, the ligaments and tendons play an indispensable part, although up to the present time, it has

never been sufficiently acknowledged nor explained. Furthermore, it is generally known that, in playing the piano, the principal method now in use of strengthening and rendering the joints and muscles of the fingers flexible consists in alternately raising and dropping the fingers, and that this method requires great exertion, besides consuming very much time. Now, by means of many different experiments and exercises which I have made with the hands and fingers, I have found that the tight ligaments and skin-folds intersecting the hand transversely, unless they be properly exercised, remain firm and stiff, and for this very reason impede the movements of the muscles whenever they are more than ordinarily exerted; contrary to this, the stretching of the transversal ligaments produces a remarkable influence on the movability of the fingers and the hand, facilitates the work of the muscles and imparts freedom, steadiness and precision to them.

This result can only be explained by the fact that the ligaments and folds of the hand having been stretched by the cork cylinders (mechanical finger-exercises, chapter 12) become loosened and in consequence, as I said before, release the muscles in their fatiguing work. If, on the other hand, all the muscles, ligaments and tendons are put into motion in both directions, longitudinally and transversely, they soon become strong and flexible.

## CHAPTER II.

## The Muscles of the Hand and Fingers.

Aside from the vessels and nerves, which are of no importance in connection with our subject, we may describe the hand as being composed of three classes of organs :

1. Bones with joints.
2. Ligaments.
3. Muscles.

1. Bones with joints.—The hand is subdivided into five separate limbs (fingers) lying at the side of each other and being firmly joined together into one whole at the lower end. Each of these five limbs is composed of a number of bones, similar to the long bones. The first of these bones, next to the lower arm, and is called the metacarpal or middle-hand bone (Fig. 1 a); the others are called finger-joints. The thumb has only two finger-joints, the other fingers three each. The fourth and fifth fingers are the weakest of all.

The union of the five fingers into one whole is effected by means of the extremities of the middle-hand bones, commonly known as knuckles, which are turned towards the forearm being connected with one another by very tight transversal ligaments (Fig. 2 aa and Fig. 3 bb) and being thus connected, are again fixed to a row of four roundish bones, joined to one another in the same manner (Fig. 1 b).

Thus, the five middle-hand bones and the four bones of the upper wrist form one firm structure. In this structure the middle-hand bone of the thumb and of the little finger possess more freedom of movement than the others. Owing to the movability of these two extreme middle-hand bones, it is possible to draw the two edges of the hand close to one another, whereby the palm of the hand assumes a groove-like shape. (See Figure 2).

The structure here described (i. e. the hand) is connected with the lower arm by means of three muscles (the posterior row of the bones of the wrist Fig. 1 c). The movement between these bones and the hand may be

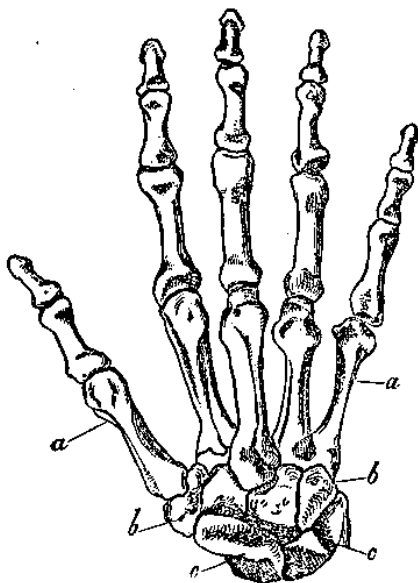


FIG. 1.

likened to that of a hinge; that between them and the lower arm, however, is a movement in all directions. The bending and stretching of the hand is, therefore, produced with the participation of both joints, the side movement of the hand, however, almost exclusively by the joint

situated between the posterior row of the bones of the wrist and the lower arm.

2. Ligaments.—All the finger-joints are provided with capsules which are woven from or consist of strong transversal fibres (Fig. 3 aa). The bones of the wrist are con-

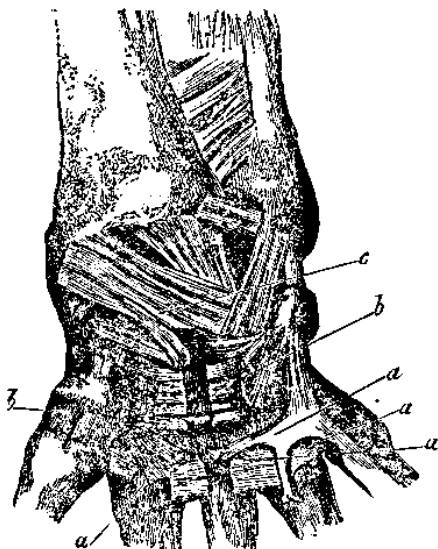


FIG 2.

nected among themselves and with the bones of the middle-hand by tight transversal and longitudinal ligaments, as seen in Fig. 2 aa bb. Lastly the two ends of the middle-hand bones or knuckles, are connected with one another and with the first joints of the fingers by a separate, strong, transversal ligament (Fig. 2aa, 3bb).

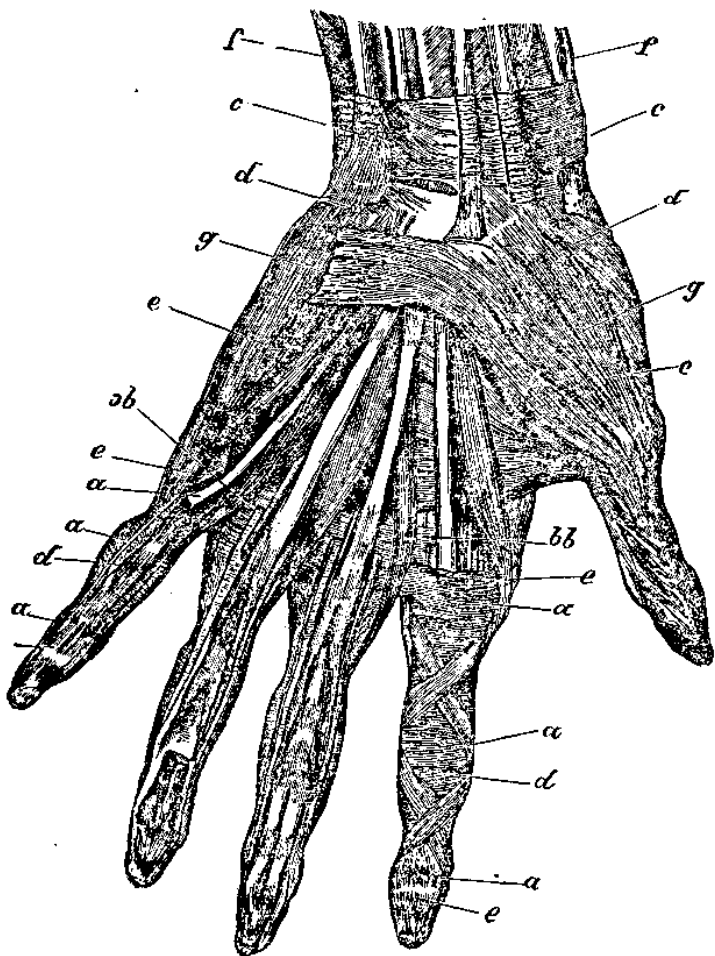


FIG. 3.



### 3. The Muscles of the Hand consist

I. Of muscles (four in number) emanating from the lower arm and by means of which the wrist is bent up and down, right and left. (Fig. 3cde).

II. Of muscles of the fingers. These are subdivided into:—*a*) Extensors of the fingers, being situated in the back part of the hand and emanating from the bones of the lower arm. (Fig. 4a). *b*) Benders of the fingers. Two muscles, the one for the second joints of the fingers (Fig. 3d), the other for the first joints of the fingers and the joints of the nails (Fig. 3e) also emanating from the bones of the lower arm. *c*) Contractors of the fingers, emanating from the hand itself between the bones of the middle-hand (Fig. 4b) and extending as far as the first finger-joint (Fig. 4b). *d*) Two muscles, also emanating from the cavity of the hand, making it possible to move the little finger towards the thumb (Fig. 3g).

Lubricales, or Flexores primi Internodii Digitorum are situated in the hollow of the hand and pass to their tendinous implantations with the interossei at the first joint of each finger, externally and laterally, next to the thumb (Fig. 4ab). These perform those minute motions of the fingers when the second and third internodes are curved by the muscles, and therefore are used in playing musical instruments, whence they are named Musculi Fiddle-muscles.

## CHAPTER III.

Effect upon the Muscles, Ligaments and Joints of the Fingers and the Hand  
by means of the Gymnastic Treatment.

After the foregoing explanation, it may readily be conceived what effects the placing of the cork cylinders between the fingers, and the use of the gymnastic staff will produce upon the joints and ligaments of the hands.

1. The ligaments connecting the bones of the middle-hand amongst themselves and with the fingers (Fig. 2a a) are extended and stretched (Fig. 3 bb) and thus those joints, so important in playing upon musical instruments, are rendered more flexible.

2. The connecting links between the bones of the middle-hand and those of the wrist are loosened. (Fig. 2 bb).

3. Almost all the ligaments of the palm of the hand are rendered flexible.

4. At the same time, all the muscles of the hand, and particularly the muscles situated between the bones (Fig. 4 b) generally exercised so little, are stirred into activity by the cork cylinders, the staff and the free exercises.

As shown in the diagrams (Fig. 2 and 3) the above mentioned fact will be plainly seen, viz: that the movement of the middle-hand and of the bones of the wrist in general is a very limited one unless specially practised; it can be easily realized that this limited movement of the bones will be rendered more easy through the gymnastics with cork cylinders as explained in this work. These same diagrams will also show, that if both the great and small *tight transversal ligaments* remain still and firm, they impede and render the free movements of the fingers in every direction more difficult; and as long as they are not specially trained and exercised these ligaments will always remain stiff and tight

For this reason the cork cylinder exercise just men-

tioned, is particularly intended to loosen the impeding *transversal ligaments*, as well as to exercise and strengthen all the muscles of the hands and fingers.

As a proof of the correctness of this opinion, the fingers should be extended for two minutes only with the cylin-

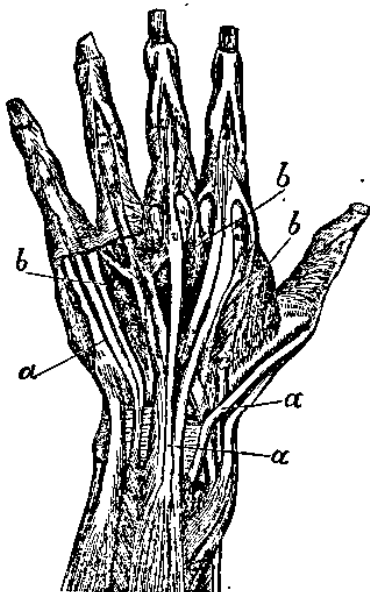


FIG. 4.

ders alluded to and it will be found that the fingers instantaneously move more easily and the muscles, liberated from their tight, stiff neighbors, act and move with much greater freedom.

In the same manner as with the cylinders, the greatest

advantage will be experienced through the use of the gymnastic staff or stick.

The principle upon which these movements are based is, that through them almost all the muscles of the hands and fingers—the smallest as well as the largest, bearing as they do the chief part in playing upon musical instruments and all other occupations—are stirred into action. At the same time the extraordinary effect of the free exercises upon the large finger joints, ligaments and tendons is increased. Furthermore, every portion of the hand and fingers, ligaments, tendons, joints and particularly the muscles are well exercised, strengthened and rendered flexible, owing to the fingers being stretched, pressed and exercised upon a solid body. Finally, while imparting greater strength and ease to the muscles of the fingers and hand, than the continued quick movements on a musical instrument is calculated to effect, all these exercises affect the *nerves* in a less degree, and prepare the fingers for all kinds of work.

These results, observed and tested by me countless times, are of the greatest importance to all those who are dependent upon the work of their fingers, but more particularly to those engaged in musical pursuits, and the latter instead of being overwhelmed with fatiguing work as before, will find that with the aid of these exercises their studies are facilitated and divested of much of their previous trouble and vexation.

### THE WRIST.

This joint, which is of such great importance to players upon the piano and other instruments, should also be exercised gymnastically (Fig. 2 c); by means of the gymnastic exercises recommended herein, strength and flexibility will be gained in a very short time, and a great deal of trouble saved. Nor ought it to be overlooked that, for all those who use their fingers in work as described above, a flexible pliant wrist is a great help and that through it all joints of the hand are brought to act together harmoniously.

## CHAPTER IV.

## Neglect of the Hand and Fingers.

Many books have been written on gymnastics, but I am not acquainted with one which treats of the gymnastical exercising of the *fingers*. Why these important members of the human body should, until now, have been so much overlooked and neglected, it is difficult to understand. For, as Professor Richter of Dresden says, "Next to the more powerful development of the brain, it is almost exclusively the structure and skill of the fingers and hand which raises man above the brute, and has made him ruler of the earth.

Therefore, in order to heighten the capacities of the human hand, the joints of the hand and fingers should, from early youth, be exercised gymnastically as much and in as many various ways as possible, partly by free exercises, partly by means of mechanical appliances.

Gymnastics, according to anatomists and physicians, is the stretching, extending, pressing, and training of the muscles, the ligaments, and the limbs of the body.\*

Flexibility, agility and strength can be acquired only by means of regular exercise of the muscles of the body.

\* The following quotations from the works of some of the leading authorities may be of interest to the reader:—

"Methodical gymnastic exercises of the hand and fingers afford the very best means of overcoming the technical difficulties."—SCHMIDT'S *Annals of Medicine*."

A gymnastic education is the best means for obtaining technical skill and muscular steadiness."—P. M. LINK.

"The gymnast exercises his limbs through preparatory exercises; how, therefore is it possible for the player of the piano and violin to dispense with this gymnastic preparation of the joints of the hand and fingers?"—PROF. RECTOR V. SCHMIDT, *President of the Royal Gymnasium*."

"La souplesse et l'étendue des poignets dépendent du développement gymnastique des forces. La gymnastique développe l'aisance et la grace."—DR. M. BALLY.

"For so great an art as piano or violin playing, the muscles of the fingers are weak; they ought to be prepared by proper gymnastic exercises."—FERGUSON.

Strength and power impart agility and quickness. This every physician and every sensible man knows.

A soldier only becomes fit for his work after the muscles of his body have been gymnastically attended to and developed. Any man, having to perform hard physical labor, must exercise his muscles gymnastically, and every one ought to exercise those particular limbs the use of which is most necessary in his profession.

And more than anyone else, the *teachers of music* have to experience the consequences of want of skill and strength in the hands of many students, and they know how greatly a systematic educational training of the fingers and hands for the execution of the more delicate movements is needed. Nevertheless there are many arts besides music for which the hand ought also to be trained from early youth, in order to become proficient in different kinds of handicraft, machine-work, needle-work, anatomy and surgery, writing and drawing and all fine manipulations.

An untrained hand will either remain clumsy in these branches of work, or it will soon fail through over-exertion, which causes a peculiar kind of paralysis connected with cramp, and well-known to writers (as the so-called writer's cramp), but which also affects musicians, artists, shoemakers, tailors, seamstresses and other working people. Certain it is, that if this matter had been inquired into before, and public attention directed to it, a great deal of trouble and vexation in learning music might have been saved; the labor of many working people of all classes, who are chiefly dependent upon the use of their fingers, might have been greatly facilitated; and moreover many diseases of the joints of the fingers and hand might have been prevented.

## CHAPTER V.

## The Finger-Joints are the Least Exercised and the Weakest.

To become a skillful musician is no small matter. There is no art which demands more labor, patience and especially more *time*, than for instance, piano or violin playing; and at least half of that time is required for years for the particular purpose of strengthening the muscles of the fingers, and rendering them flexible. And why so many years? Because the muscles, the ligaments and the tendons of the finger-joints and wrists have not been gymnastically exercised and trained beforehand.

In order to prove in a practical manner that it is particularly important to prepare the muscles and ligaments of the fingers and hand, I will cite a fact which may appear startling, but which nevertheless is true, viz., that the muscles and tendons of the fingers in spite of their great importance are, proportionately speaking, the least of all practised in daily life.

Take all sorts of people from the laboring classes, such as the smith, the joiner, the gardener, the bricklayer, the stone-mason, the husbandman, the day-laborer, etc., etc., they are at work all day and acquire arms like steel and muscles like giants'; but they very *rarely* use the *fingers*, which, therefore, remain unexercised. And it is the same with the educated classes, without difference of age or sex.

This is the reason why the learning of piano and violin playing is attended with such great difficulties and why the muscles and ligaments of the hand ought to be trained by proper gymnastic exercises. For their weakness, for physiological reasons, arises from the very fact of their inactivity.

I will prove this fact satisfactorily later on, as it forms the basis and key of all my researches and discoveries.

## CHAPTER VI.

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The Principal Difficulty does not consist in the Reading of Music, but in the Weakness of the Fingers.

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In the opinion of many, the chief difficulty to be overcome in studying music consists in learning to *read* it. But this is by no means the case. The reading of music is learned in the same manner as a child learns to read letters. The first difficulties having been mastered, the task is easy; as with a printed book, so with music.

Consequently the paramount difficulty is not in the *notes*, but in the weakness and *awkwardness of the fingers* and wrists. From this, again, it may be plainly seen how necessary it is to train the *fingers* before commencing the work of the *head*. In short, what is wanted is a regular gymnastic training for the muscles of the fingers, the joints and the wrists; and it will be found that the following exercises, being as desirable as they are applicable for every age, will strengthen and render them flexible in a most surprising manner; will materially shorten the time of study, and save much labor; but nevertheless, *the ordinary finger-practice scales and studies, should NOT be omitted.*

Let us suppose a boy of from 10 to 14 years old, who is strong and healthy, through gymnastics and other exercises, sets out to learn the piano or violin. His body is strong through the aid of gymnastic exercises, but his wrist and *fingers* are weak and awkward. How is he, with the method now in use, to succeed in playing an instrument well, without very long and wearying work? No wonder that the painful exertion almost makes him despair, and that finally he gives up the thing altogether. But if his fingers and joints have been gymnastically trained and exercised beforehand, he will get on easily and quickly, continuing his studies with pleasure.



Many teachers of the most celebrated gymnastic institutions have therefore determined to introduce these exercises into their establishments, in addition to the other branches of gymnastic training. Their practical utility for all those who work with their fingers, for anatomists, surgeons, sculptors, watchmakers, and many others, is as evident as their salutary effect (from a medical point of view, in curvature and paralysis of the hand and fore-arm, in weakness of the muscles and nerves writer's cramp and similar complaints), is undeniable.

## CHAPTER VII.

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Music is the Art which makes the Highest Demands upon the Muscles of the Fingers. Up and Down-Movement of the Fingers Insufficient.

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For persons engaged in musical pursuits these exercises can be dispensed with least of all, because music is the art which makes the highest demands upon the muscles of the fingers and wrists.

The most eminent physiologists say: "Gymnastic exercises for the fingers and joints ought to have been commenced 150 years ago; they form the real foundation of practical art."

It is indeed incredible that so great an art as piano and violin playing should have arrived at so high a stage of perfection without previous training of the muscles. Certain it is, that it has been brought about only through the incessant exertions and untiring, praiseworthy zeal of the teachers, and the unceasing diligence of the pupils. But how much easier this could all have been accomplished. The muscles, sinews and ligaments, consisting of soft elastic material, run partly in a longitudinal and partly in a transversal manner. This is a point which must not be overlooked. It is therefore a one-sided and totally wrong idea, that the best method of strengthening the muscles consists in simply raising the fingers and dropping them again. All one-sidedness is detrimental; and if the practising is brought about by simply moving the fingers up and down, it will prove very tiring work.

But if on the other hand, the muscles are moved and gymnastically exercised in all directions, and in accordance with anatomical principles, they will become strong and pliable in a short time,

## CHAPTER VIII.

## Artists and Teachers of Music.

If any one were to assert that he has diligently studied the piano and violin according to the methods used at present, and in course of time has learned and taught it with the greatest success without having found it necessary to trouble himself about any other system, my reply would be that music is one of the most beautiful and with respect to muscular work the most difficult of arts, and that all the arts and sciences, music not excepted, have made enormous advancing strides during the last century. But just because music has become such a universal boon to all classes of the civilized world, one ought to be so much the *less* disposed to *shut out* new ideas respecting it, no matter from which side they may emanate. The most highly honored are those who have made the greatest progress in theory and in practice, or who have readily and generously acknowledged such progress from all sides.

It is, therefore, the duty of all to assist teachers of music and proficients as much as possible in promoting this beautiful accomplishment; for this reason, encouraged by persons of the highest distinction and influenced by the love of art, I humbly venture to make known my

## GYMNASTICS FOR THE FINGERS AND THE WRISTS,

and to offer to all who work with their fingers in general, and to musicians in particular, a means which, based upon physiological principles, leads most surely to the attainment of artistic execution, and which in itself is so simple that any child may use it; a means too, which will effect a great saving of time, and facilitate the work of both teachers and students.

I have only to add that, as a matter of course, the following exercises, in order to have the desired effect, must be carried out *gymnastically* and *regularly*, according to

*the directions given and not otherwise; whilst on the other hand, they ought not to be carried to excess, nor are they intended to supersede the usual finger exercises, scales and studies.*

The importance of an intelligent performance of the various exercises is so great, and the necessity of impressing it upon the pupil's mind so imperative, that it may be well to sum up briefly, in the shape of a series of cautions, the conditions of success :

1. Each exercise has a definite object.
  2. All exercises must be performed thoughtfully and most of them slowly.
  3. They must be performed exactly the prescribed number of times.
  4. They should produce a feeling of warmth and of slight fatigue in the muscles exercised.
  5. If the least aching or pain is felt it is a sign that the exercise has been too vigorously performed.
  6. The exercises must be performed by one hand at a time, except where the contrary is expressly stated.
  7. The object being to thoroughly train all the muscles and to render the hand a perfect instrument, a great variety of exercises is essential.
  8. For the same reason the movements which differ most from those performed at the key-board will probably be found to be of greatest value.
  9. The mouth must be kept shut and the head erect.
  10. The best results are obtained by the oft-repeated performance of easy exercises, not by any strain or effort.
- These cautions must be constantly borne in mind both by teacher and pupil.

## CHAPTER IX.

## Exercises for the Arms.

## FIRST EXERCISE.

a) Stand upright, with the heels together and the toes turned outwards. Stretch out the arms in front of the body, with the palms of the hands facing one another.



FIG. 5A.

at the same moment let the hands be stretched and fingers separated as widely as possible. See that the distances between each pair of fingers are equal. As the arms and

hands are thrust forward count one ; retain the position while counting two, three, if possible increasing the stretch as shown in figure 5a.

*b)* Bring the elbows back to the side of the body, bend them, close the fist tightly and bring it in front of the shoulder, so that the knuckles touch the body. As the motion is performed count one ; retain the position while counting two, three, pressing the fingers always more and more tightly into the palm of the hand, as shown in the following illustration :



FIG. 5b.

*c)* From this position stretch the arms out sideways level with the shoulder, opening and stretching the hands and fingers as in the first position, keeping the palms in front. Count as before.

*d)* Return to the second position (*b*), still counting.

The actual motions should be rapid, but the rate of counting should be slow, about sixty to the minute, so that the whole exercise may be performed thoughtfully. Repeat the four movements, *a*, *b*, *c*, *d*, first with the palms downwards, then with the palms upwards, and, finally, with the backs of the hands together.

#### SECOND EXERCISE.

*a*) Stretch the right arm out sideways, as in the third position of Exercise 1, palms in front (Fig. 1, *a*).

*b*) Keeping the upper arm fixed, bend the elbow, half close the hand and bring it up level with the ear, letting it drop a little from the wrist, as shown in the following illustration :

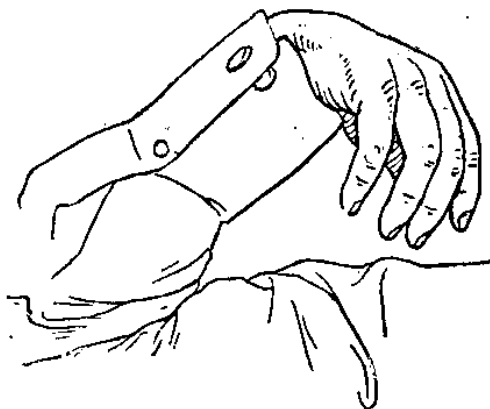


FIG. 6.

*c*) Stretch out the right arm three times, with the palms first up, then down, and finally behind; return after each movement of position *b*.

Go through the same motions with the left arm. In every case count one at the moment of performing the exercise, and count two at the moment of rest. Should

the exercise be carelessly or incorrectly performed, the period of rest must be doubled by counting three, as in Exercise 1. If performed properly this exercise is somewhat tiring; it will be well, therefore, to practise the arms separately, as recommended above.

#### VARIATION OF SECOND EXERCISE.

As a usual variation of this exercise close the fist when the arm is stretched out, knuckles downwards, and open it when the arm is bent; but in this case the hand must not be stretched out tightly, but hang loosely from the wrist.

#### THIRD EXERCISE.

Stretch the right arm out sideways, palm upwards. Keeping the upper arm still, let the hand describe a circle horizontally, with the elbow as centre, all the muscles being as relaxed as possible. When the hand is farthest from the body the palm will be upwards, when nearest the palm will be downwards. Repeat four times and then reverse the motion. Go through the same motions with the left arm.



## CHAPTER X.

## Free Gymnastic Exercises for the Wrist.

## FIRST EXERCISE.

Move the wrist vigorously up and down in a perpendicular direction, from 20 to 40 times, first slowly, then more quickly, and finally as quick as possible without moving the arm or elbow. In doing so, let the elbows rest close to the body, so as to bring both hands and wrists into the proper position. As soon as you are tired, leave off. These movements are shown in the following illustrations :

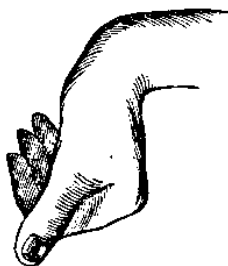


FIG. 7.

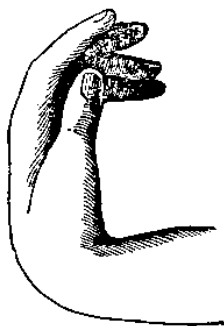


FIG. 8.

## SECOND EXERCISE.

Move the hand horizontally or vertically without moving the arm, as shown in figures 9 and 10.

To understand the practical utility of this exercise, it should be borne in mind, that the entire action of the wrist is effected by two principal joints, one of which, the smaller of the two, lies at the root of the hand and is called the "joint of the hand," by means of which it becomes possible to move the hand at its root, independently

of the arm. The other joint, the larger of the two, rises at the elbow and is called the rotatory joint of the fore-arm. Therefore, while holding all the five fingers close together,



FIG. 9.



FIG. 10.

move the smaller joint perpendicularly or horizontally, as you please, without moving the arm in the slightest manner and holding the elbow close to the body at the same time.

#### THIRD EXERCISE.

Move the wrist in a slanting direction right and left, as shown in the following illustrations, first slowly, then



FIG. 11.



FIG. 12.



FIG. 13.

quicker and quicker. Hold the elbows as before. Through this movement both of the above mentioned joints will be put into action.

Young violin players, who generally find the sideward movements of the wrist of the right hand so difficult, will derive great advantage from all these wrist exercises. While holding the arm perfectly quiet, the hand or fist is to be moved vigorously round in a circle, 20 times to the right and 20 times to the left, as shown in figure 13, first slowly, then more quickly. Through this exercise all the muscles of the hand and arm will be put into motion; and though the most difficult of all, this at the same time, is one of the most important and beneficial exercises.

All the various free movements of the hands and wrists may be repeated many times with advantage; still, by simply performing them, short though they may be, daily and regularly the prescribed time only, the desired end of strengthening the muscles of the fingers and wrists, and rendering them vigorous and flexible, will surely be attained.

#### FOURTH EXERCISE.

Hold the hands quite loosely, palm upwards with fingers and thumb bent, so as to form a hollow as shown in the following illustration:

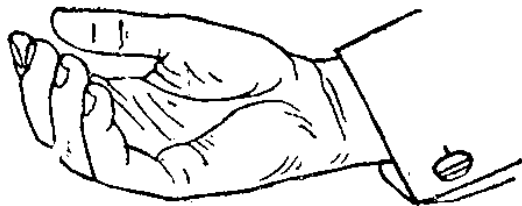


FIG. 14a.

Turn the hands round on the wrists, so that they will come palm downwards and with the thumbs together as shown in the next illustration:

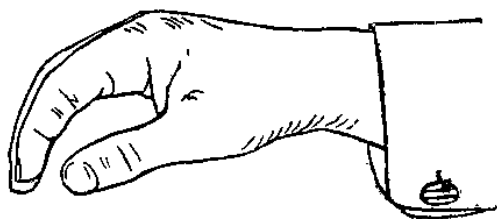


FIG. 14b.

Repeat four times slowly and eight times quickly.

#### FIFTH EXERCISE.

Clasp the hands loosely together with the fingers interlaced and the right hand outside the left; approach and retire the wrists twelve times in the manner as shown by the following illustrations:

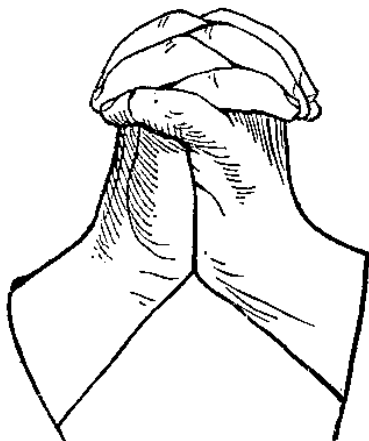


FIG. 15a.

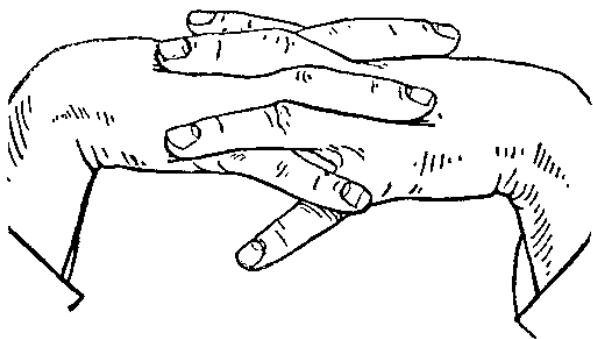


FIG. 15b.

Repeat exercise with left hand thumb outside.

#### SIXTH EXERCISE.

Hold the left hand straight out with the thumb at the top. With the right hand palm downwards, place the

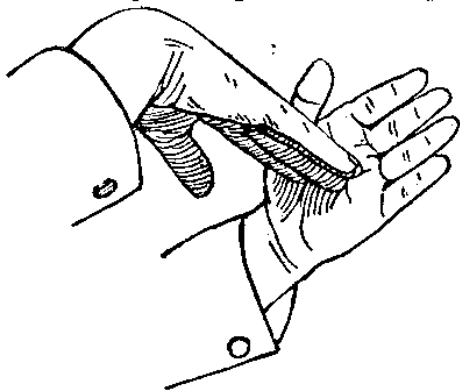


FIG. 16a.

end of the middle finger against the centre of the palm of the left hand, then keeping the left hand and consequently the end of the finger against it still, and also the right el-

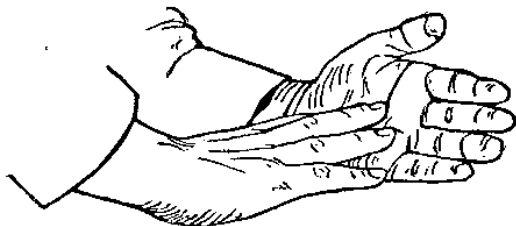


FIG. 16b.

bow still, alternately raise and depress the right wrist (as shown in figures 16a and 16b) four times very slowly and eight times quickly.

Repeat, reversing the hands—i. e. bending the left wrist. Where convenient this exercise may be done even more easily by resting the finger-tips on a table; care being taken that the table is at the same height as the elbow.

## SEVENTH EXERCISE.

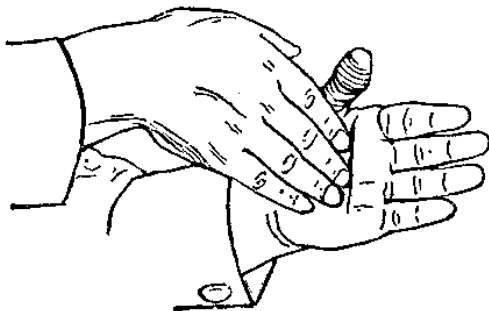


FIG. 17a.

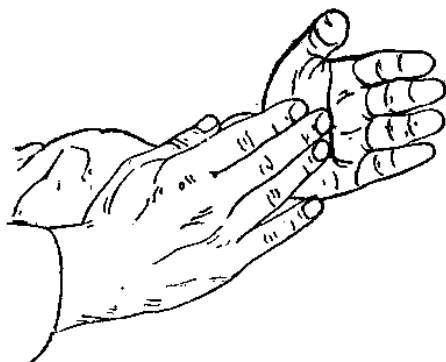


FIG. 17b.

The motion here is similar to that of the sixth exercise, but the hand is held sideways, and the wrist bent upwards and downwards in that position.



## CHAPTER XI.

## Exercises for Stretching the Hand.

## FIRST EXERCISE.

Close the left hand tightly, clasp it with the right hand; placing the right thumb over thumb, and letting the right hand fingers lie upon the fingers of the left hand, the small joints being bent round between the knuckles of the left hand. The right wrist will now be pressed forward against the left fingers, as shown below. (Fig. 18a).

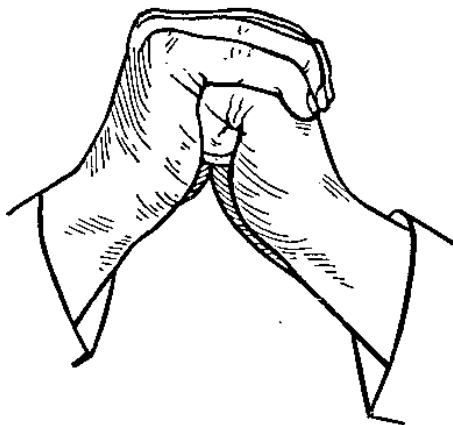


FIG. 18a.

After carefully placing the hands in this manner, relax the grasp, without letting go, and raise the right wrist, as shown in the following illustration. (Fig. 18b).

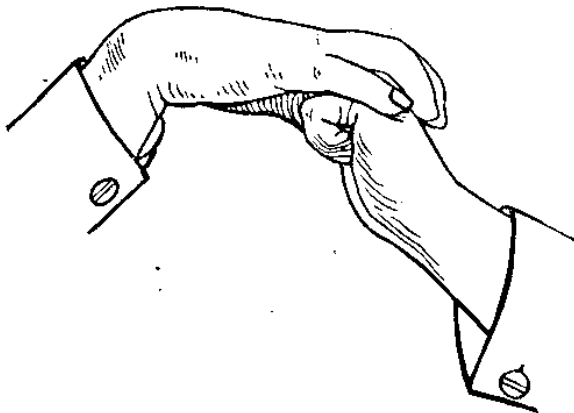


FIG. 18b.

Repeat ten times, rather quickly, taking care that the second-joint knuckles of the left hand press into the palm of the right. Repeat with the hands reversed.

#### SECOND EXERCISE.

Clasp the hands tightly, in the same way as in Fig. 15a, having the right thumb outside. Let the finger-tips press firmly into the back of the opposing hand. Straighten out the fingers, still keeping them interlaced and the thumbs bent. Alternately bend and straighten the fingers six times, taking special care that during both motions, the fingers press one another firmly at their roots (close to the large knuckles); this last is a very important point.

Repeat the motions with the left thumb outside.

#### THIRD EXERCISE.

Again clasp the hands tightly as in Fig. 15a, right thumb outside. Relax the grasp and throw the hands apart to a distance of about a foot. Alternately grasp and relax eight times, but let the grasp always be firm, pressing the fingers at the roots.

Repeat with left thumb outside.

## FOURTH EXERCISE.

Stretch the hands out perfectly flat, making the fingers even bend backwards a little, if possible. (Fig. 19).

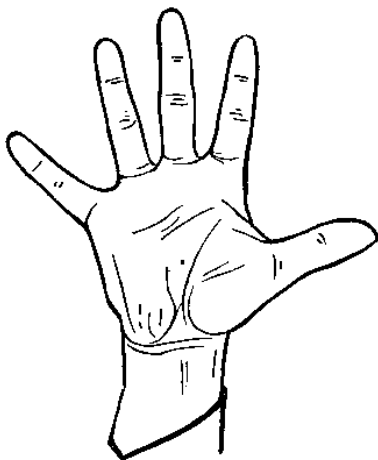


FIG. 19.

Widen the distance between the tip of the thumb and that of the little finger to the utmost extent, keeping the other fingers at equal distances one from another.

Repeat frequently, fixing the attention upon the stretch—first between the ring finger and thumb (the ring and little finger will then be close together); next between the middle finger and thumb (the middle, ring and little fingers close together); and lastly, between the index finger and thumb.

## FIFTH EXERCISE.

Stretch both hands out flat, with the fingers bent slightly backwards, left hand palm upwards, right hand palm

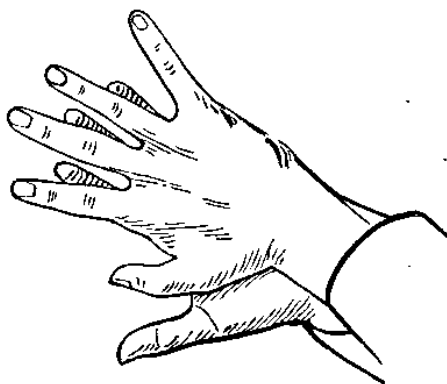


FIG. 20a.

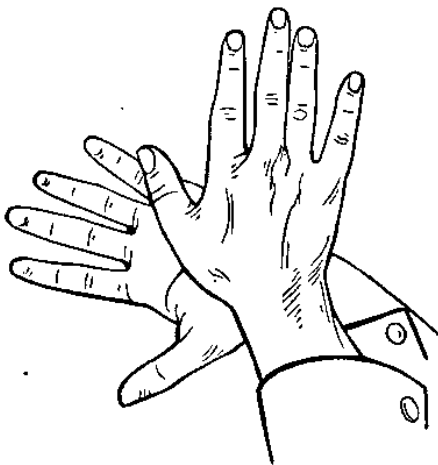


FIG. 20b.

downwards. Press the lump formed by the muscles at the root of the right thumb into the hollow of the left palm. (Fig. 20a).

Keeping the hands rather bent back at the wrist, twist them round, in opposite directions, through a quarter of a circle and then back again. (Fig. 20b).

Repeat six times. The same, with the position of the hands reversed.

## CHAPTER XII.

## Free Gymnastic Exercises for the Fingers

## FIRST EXERCISE.

Stretch the fingers as much as possible, one from the other (Fig. 21a), letting them fall upon the large muscle of the thumb (thumb-ball Fig. 21b), and pressing them firmly upon it :

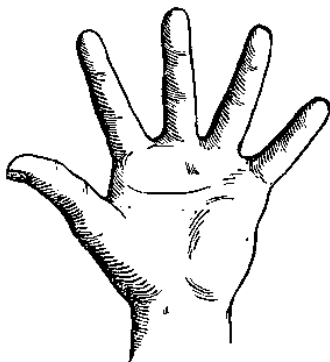


FIG. 21a.



FIG. 21b.

remain for a moment in this position, and bring the thumb against the fore-finger 40 times up and down.

This exercise, as well as several others, if vigorously continued for three minutes alone, will be found to be very fatiguing; a clear proof that the muscles of the fingers, although quite fit for ordinary daily occupations, are, nevertheless, very weak and incapable when anything exceptional is demanded of them, and it is needless to mention that without proper gymnastic training, they must remain so.

## SECOND EXERCISE.

The movement of the fingers, as shown in the following illustrations (Fig. 22a and 22b)

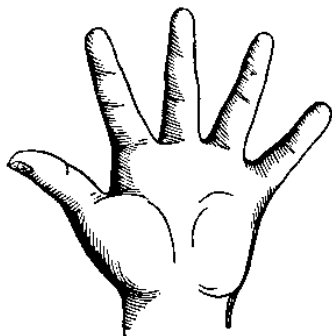


FIG. 22a.



FIG. 22b.

differs from the above described movements in so far that, instead of falling against the large muscle of the thumb, the finger tips must fall and press against the middle of the cavity of the hand. To be repeated forty times.

## THIRD EXERCISE.

The following exercise (Fig. 23a and 23b) is intended particularly for the small joints of the fingers. It is effective, but difficult.

The idea in this particular movement is not to stretch the fingers away from one another, but to hold them close together, as this brings about the particular effect to be produced. Bend the two first finger-joints of the four fingers closely together; move them vigorously up and down, and press them on firmly, without, however, moving the large joints. Repeat this movement until you are tired, which will not be long, thus affording another practical proof how weak the untrained finger-joints are. This is also an excellent exercise for the thumb, provided

it is made slowly and vigorously. It may also be made with outstretched fingers.

I again repeat that no one who has not already tried the above or similar exercises of the fingers, will be able to continue them vigorously for even so short a time as three minutes without experiencing painful fatigue. And why? Because as I have demonstrated before, the joints

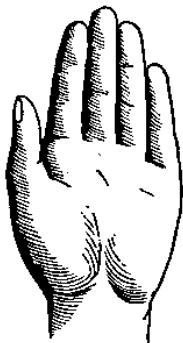


FIG. 23a.



FIG. 23b.

of the fingers and wrists are exercised the least in the ordinary occupations of life and are consequently the weakest.

In view of these experiences and demonstrations, it will certainly appeal to all that it is hardly advisable to teach and continue the exercise of an art like music (which, from a muscular point of view, is the most difficult of all), with weak and untrained muscles, without having prepared them previously by proper gymnastic exercises.

#### FOURTH EXERCISE.

Hold the hand upright with the fingers close together and bent backwards a little so as to exercise the extensor muscles. (Fig. 24a). Bring the fingers forward at right angles to their former position, bending only the knuckle-joints. (Fig. 24b).





FIG. 24a.



FIG. 24b.

Throughout this movement the thumb must retain a slightly bent position, so as to avoid any involuntary motion in sympathy with the fingers. Repeat four times, slowly and with both hands.

## FIFTH EXERCISE.



FIG. 25.

Hold the right hand upright as in the preceding exercise, but with the fingers not quite touching one another, and bend one finger at a time forward from the knuckle joint; the motion will now only be through about an eighth of a circle.

Be careful to avoid any sympathetic movement of the other fingers or of the thumb; move each finger six times and exercise with both hands.

#### SIXTH EXERCISE.

Holding the hand upright as in Fig. 24a, bend the fingers forward from the middle joints, as shown below:



FIG. 26.

It is impossible to avoid bending the end joints also, but the exercise must be done very slowly and thoughtfully so as to reduce the motion of these to a minimum. The large knuckle-joints must be kept straight. Repeat four times, with both hands.

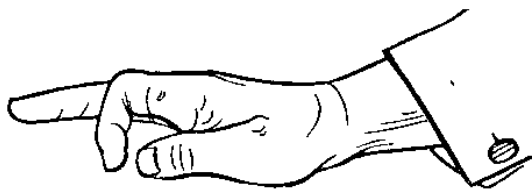


FIG. 27.

#### SEVENTH EXERCISE.

Again holding the hand as in Fig. 24a, bend the index finger forward from the middle joint, taking care that the other fingers and the thumb remain unmoved.

Repeat four times, and then do the same with the other fingers in succession. The ring finger will probably move only half as far as the others. Exercise the left hand in the same manner.

## EIGHTH EXERCISE.



FIG. 28a.



FIG. 28b.

Place the hands as in Fig. 28a, the left hand fingers projecting about an inch beyond those of the right hand. Bend the left-hand finger tips very slowly, using only the end joints (Fig. 16b).

Repeat six times, then reverse the hands.

## NINTH EXERCISE.

This is the same as the above exercise (No. 8), but each finger is to be moved separately, from the end joints, six times backwards and forwards.

## TENTH EXERCISE.

Stretch the hand out flat as in Fig. 24a. Separate as widely as possible the index and middle fingers, keeping the middle, ring and little fingers close together.

Do the same, having the space first between the middle and ring fingers (Fig. 29) the most difficult position; and then between the ring and little fingers.

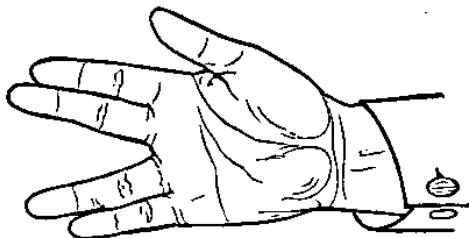


FIG. 29.

Separate the index and middle fingers simultaneously, and then the ring and little fingers, keeping the middle and ring fingers close together.

## ELEVENTH EXERCISE.

Hold the right hand with the fingers separated and bent at the middle and end joints, as shown below:

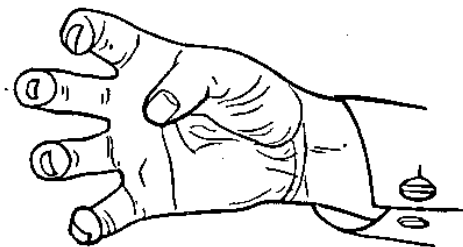


FIG 30.

Move the middle finger slowly from side to side six times so that it touches the index and ring fingers alternately. Then move the ring finger in the same way so that it touches the middle and little fingers alternately. The knuckle joints must be kept straight, the thumb muscles relaxed and all sympathetic motion of the thumb and of the index and little fingers avoided.

Exercise the same with the left hand.

#### TWELFTH EXERCISE.

Place the hands with the palms, fingers and thumbs firmly pressed together.



FIG. 31.

Bend the end joints of the fingers, keeping the palms together and the thumbs straight.

Repeat six times.

## THIRTEENTH EXERCISE.

Hold the right hand open but with the muscles slightly relaxed (Fig. 32a).

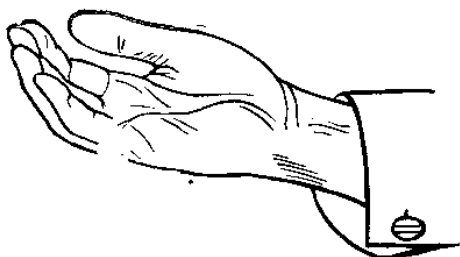


FIG. 32a.

Stretch out in such a manner that the fingers and thumb project slightly backward from the line of the hand (Fig. 32b) the fingers not quite close together. Repeat six times. The same with the left hand.

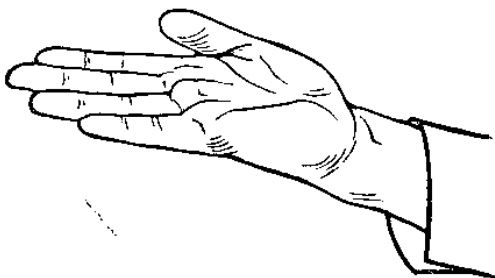


FIG. 32b.

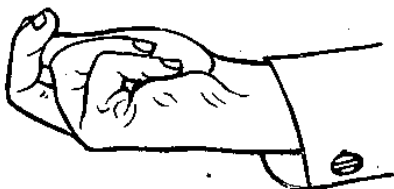
Where it is convenient this exercise should be done at a table; the palm of the hand being pressed firmly down, and then the fingers and thumb raised above the level of the table.

## FOURTEENTH EXERCISE.

The same as Exercise 13, but with each finger straightened separately. Special care is needed in order to keep the whole of the palm and the whole length of the fingers not being exercised, pressed flat upon the table.

## FIFTEENTH EXERCISE.

Stretch the little finger of the right hand so that it touches the palm, as near the wrist as possible. (Fig. 33a).



, FIG. 33a.

The other fingers will be more or less bent, but their tips must not touch the palm. Following this movement, draw the little finger tip along the hand until it is as close as possible to the root, as shown in the next illustration (Fig. 33b).

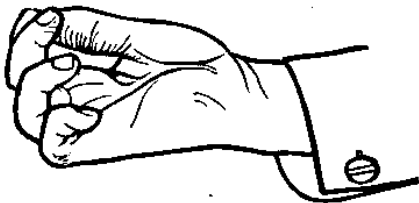


FIG. 33b.

Repeat this movement six times. Treat the other fingers similarly but naturally the tips of these will not approach their roots so closely as did the tip of the little finger. The same with the left hand.

## SIXTEENTH EXERCISE.

Hold the right hand as in Fig. 24a, but with the fingers slightly separated. Keeping the index finger straight, bend the other fingers from the second joints and also bend the thumb, as shown in the next illustration :

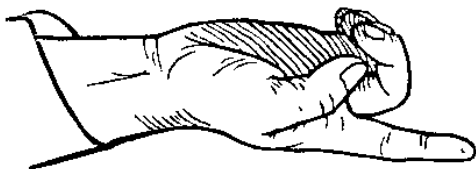


FIG. 34.

Repeat six times. Then keep the middle, ring and little fingers straight, in succession; when the ring finger is kept straight, the others must be only slightly bent. The same with the left hand.

## SEVENTEENTH EXERCISE.

Hold the right hand out so that the arm and the back of the hand form a straight line as far as the knuckle joints, the fingers separated and hanging loosely.

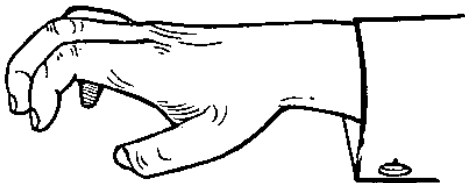


FIG. 35.

Raise the fingers so that the second joints are higher than the knuckle joints.

Repeat six times and the same with the left hand.

## EIGHTEENTH EXERCISE.

The same as exercise seventeen, but each finger lifted separately.



## NINETEENTH EXERCISE.

The last free exercise for the finger-joints which I will recommend here, consists in moving all the fingers and the thumb, one after the other, stretching them far away from one another like claws.



FIG. 36a.



FIG. 36b.

This movement of alternately bending and raising them can take place in whatever direction you please and as long as you feel inclined or are able, but always vigorously.

## CHAPTER XIII.

## Free Gymnastic Exercises for the Thumb.

Although it is not easy to prescribe complete gymnastic exercises for the thumb, the following, if vigorously pursued, will nevertheless prove very effective.

## FIRST EXERCISE.

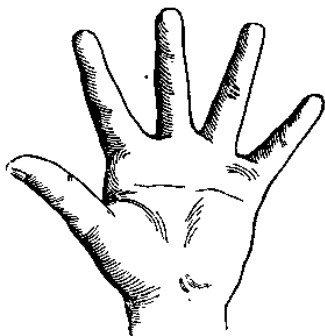


FIG. 37a.



FIG. 37b.

Stretch the fingers as far as possible away from one another, then press the hand firmly together, the thumb being held fast in the cavity of the hand; continue for a moment in this position, and then repeat the same movement, alternately opening and closing the hand.

## SECOND EXERCISE.

Hold the fingers close together, stretch out the thumb, and then perform a circular movement with the latter,

inside the hand, first 20 times to the right then 20 times to the left ; to be repeated again and again.



FIG. 38.

## THIRD EXERCISE.



FIG. 39.

Take hold of the thumb of the one hand with the fingers of the other, or with the whole hand, and shake it as bend it to its root, without, however, overdoing either.

## FOURTH EXERCISE.

Place the tip of the right hand thumb and that of the little finger together, as shown below.

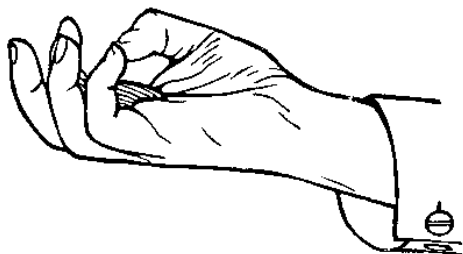


FIG. 40.

Move the former slowly backward and forward six times from the tip of the little finger to its root. Repeat with each finger in succession; but in the case of the index and middle fingers, the tip of the thumb must be brought down only as far as the second joint.

The same with the left hand.

## FIFTH EXERCISE.

Hold the right hand flat, palm in front, as below:

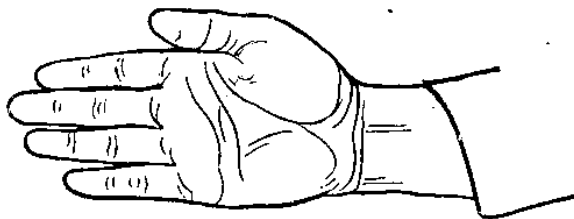


FIG. 41a.



FIG. 41b.

Keeping the fingers and the palm straight, move the mass of muscle which lies at the root of the thumb so that it may be completely over the palm. Repeat six times, stretching the mass of muscle so that it increases the breadth of the hand as much as possible (Fig. 41a). The same with the left hand.

## SIXTH EXERCISE.

Hold the right hand as in Fig. 41a. Then move the mass of thumb muscle forward, and slightly inward, so that it projects as much as possible (Fig. 42).

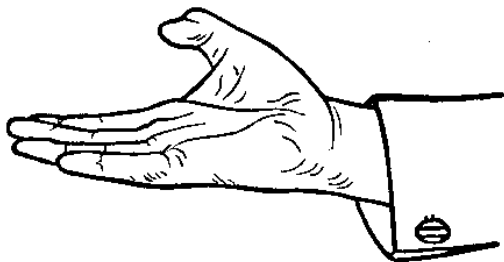


FIG. 42.

Repeat six times; the same with the left hand.

## CHAPTER XIV.

## Mechanical Finger-Exercises with the Aid of Implements.

## FIRST EXERCISE.

Take three cork cylinders for each hand, about three quarters of an inch long, and from one-half to one inch in diameter, according to the size of the fingers; place them between the upper ends of the fingers, and while gradually and conveniently extending the muscles, by bending the fingers, move the latter, as shown in the following illustrations, number 43 and 44.

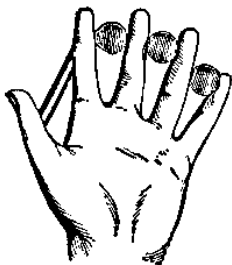


FIG. 43.

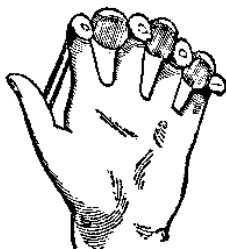


FIG. 44.

Move the cylinders further down, to the roots of the fingers, and perform the exercises according to the following illustrations, number 45 and 46.

In doing this, place a small round piece of wood between the thumb and the fore-finger, at a suitable distance, which will extend the former as much as possible.

Following this exercise, put a large cylinder between the thumb and the fore-finger, while leaving the other fingers as before, and place it in such a manner as to entirely fill up the intervening space. (Fig. 47 and 48).

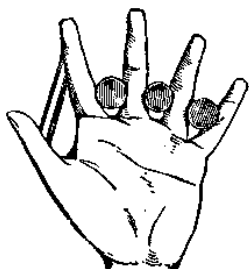


FIG. 45.

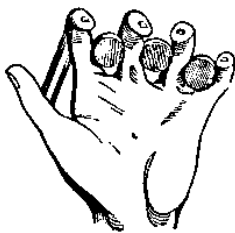


FIG. 46.



FIG. 47.

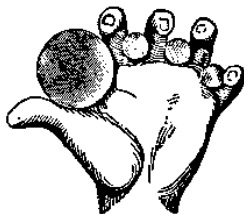


FIG. 48.

In doing this, be careful to extend the thumb as much as possible. In case the tension of the fingers is small, take smaller cylinders: or if the latter should be too hard for tender hands, cover them with some soft substance, such as velvet, or the like.

Perform all these exercises vigorously, and, if possible, just before practising the musical instrument, twice or three times daily, each time for a few minutes, especially in the morning, after arising. As a matter of course, after eight or ten hours' rest, the muscles of the fingers and wrist, like those of the rest of the body, are somewhat stiff, and ought to be prepared by proper gymnastic exercises, before beginning to play. Besides, *provided over*

*exertion be avoided*, there is not, according to the best medical authorities, the least danger to be apprehended from these exercises, for the joints and muscles of even the very smallest hands.

If players of the piano and violin should argue that, in the act of *playing*, the fingers need not be so much extended as prescribed here, or assert that the finger-exercises, scales, and *etudes* as used at present are perfectly sufficient, and that nothing more is wanted, I can only repeat, that the fingers must be *prepared* in order to render them strong and flexible; that, for this purpose, it is necessary to exercise them *gymnastically*, and that, as I have explained before, these preparatory exercises will save much time and trouble, and facilitate the work of both teachers and pupils; *further*—that, by the diligent practice of these gymnastics, the fingers become elastic and independent of each other; through continuous exercising of this kind the player will acquire complete control over them, and *when this has finally been accomplished*, they can be moved and employed entirely at will.

Another most effective mode of stretching and loosening the tendons and ligaments which encompass the large middle-hand bones, or “knuckles,” may be performed as follows:—

Place the fore-finger of each hand, up to the middle joint, firmly on the table and in that position press it up and down with a certain degree of force, for a few seconds; then withdraw it, and apply the next finger in a precisely similar manner; then the two other fingers in succession, each finger remaining on the table alone, unaccompanied by any other.

Afterwards, apply the 2nd and 4th together, exactly in the same way, for a few seconds; then the 3rd and 5th; lastly the thumb.

The pupil may do this many times a day with great advantage; for by this process the ligaments and tendons of the knuckles are stretched and loosened, and the muscles are set free.

Of course always with due moderation.

Another very important exercise, bearing chiefly on the tendons and ligaments of the large metacarpal joints or knuckles, is the following:—



Take hold of one finger of a hand with the thumb and fore-finger of the other, and bend it up and down vigorously, to its root, for one minute. Then exercise the other fingers in succession in like manner. To be applied equally to both hands, and to be done, especially with the 4th and 5th fingers, separately, as often as leisure permits.

To this category belongs also another exercise of the metacarpal joints or knuckles. Into the palm of one outstretched hand place the closed fingers or fist of the other; then open and close the *latter* as fast and as long a time as is agreeable, always continuing to press upon the palm. Change hands and repeat. It must always be remembered that the difficulties of bringing the fingers into order, lie, physiologically, almost all in the *middle-hand bones* or knuckles; and as the five preceding exercises,—and especially the three last—act in a very efficient and particular manner upon the ligaments, tendons and muscles of these joints, they *cannot be taken up and gone through too often*.

Owing to the entire inequality in strength and flexibility of the fingers, it is not sufficient by any means to develop them simply with the aid of ordinary finger-exercises and scales. As has been shown and proven in the opening chapters, and in the anatomical representations of the hands, all the fingers are not equally strong; for instance, the 4th and 5th fingers are, by nature, much weaker than the others, and it is necessary to remedy this inequality.

Each finger ought, therefore, to have gymnastic exercises *for itself*, and they ought to be performed on some solid body, which can be firmly grasped. For this purpose take a round staff, from 12 to 18 inches long, and one-half to three-quarters of an inch thick, on which, at a proper distance from one another, round indentations are made, and into which the fingers are to be placed after the manner illustrated in the following figures.

## DIRECTIONS.

Place the thumb of each hand on one side, and the four fingers *very firmly* fixed on the other side of the staff; *raise one finger as high as possible*, and let it fall down vigorously, like a hammer, twenty times in succession, while the three remaining fingers, *stretched out from one another*, like claws, remain immovable. In the same way exercise the other fingers; firmly, *slowly*, vigorously, and immediately after the cylinder exercises just described. Repeat this three times daily, each time for five minutes, altogether for fifteen minutes a day, *but the oftener it be done the better*.

Those playing the piano need not confine themselves to one particular exercise, but may make use of all the figures at pleasure.

FIG. 49.

FOR THE FINGERS AND WRIST.

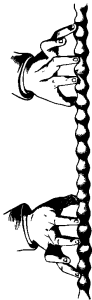


FIG. 50.

FIG. 51.



FIG. 53.

FIG. 54.

For violin playing, the fingers of the left hand may also be trained as shown in the following illustration.



FIG. 54.

Suggestions as to additional exercising in the above manner.

After the cylinder, by far the most effective of all means for imparting strength and flexibility together with evenness of vigor, individuality and independence to the fingers by means of gymnastic exercises, is to take the above named staff, or, indeed, a smooth round stick, 18 inches long and one-half to three-quarters of an inch thick or any ordinary walking stick and to perform on it daily, either in a room, or while walking, in the following manner:—With the four fingers of one or both hands firmly pressed and stretched upon it, raise one finger as high as possible, and, as above stated, let it fall down upon it vigorously, like a hammer, twenty or thirty times in succession, while the other fingers remain firmly pressed on the stick, then in couplets with the 5th and 4th fingers, then with the 4th and 3rd, then with the 3rd and 2nd, twenty times each, the two fingers, in all cases, as stated, lifted as high as possible, and the others remaining, *stretch-*

*ed at even distances, firm upon the staff; finally, with the four fingers of each hand, twelve times ascending and twelve times descending, but always slowly, energetically, with firm pressure, "and in time."*

You may *occasionally* practise a little faster, but it must be the exception. Slow moving, pressing, and stretching should form the chief gymnasting rule.\* This staff may be *perfectly plain or indented*.

In a similar manner all sorts of difficult muscular movements and passages upon the staff may be practised, *slowly and with energy*, with one or with both hands. For example:—

FIRST SERIES. In couplets twenty to thirty *times each in succession*, with the 2nd and 4th fingers, alternating, afterwards, with the 4th and 2nd; then with the 3rd and 5th fingers; alternating with the 5th and 3rd; in each case the two fingers stretched wide apart, and the other fingers pressed upon the staff.

SECOND SERIES. In couplets twenty to thirty *times each in succession*, with the 2nd and 3rd fingers, first close together, then wide apart, afterwards alternating, in the same way, with the 3rd and 2nd. With the 3rd and 4th fingers, first close together, then wide apart, afterwards alternating in the same way, with the 4th and 3rd. With the 4th and 5th fingers, first close together, then wide apart, afterwards alternating in the same way, with the 5th and 4th. In each case slowly, the two fingers lifted as high as is convenient, twenty to thirty times in succession, and the other fingers firmly fixed upon the staff. Lastly, all the four fingers together, in each of these varied and different directions.

The number of times of each movement, and the duration of time, also whether all should be gone through at the same time, or otherwise, is left to the discretion of the teacher and pupil. I would recommend, at first, the selection of three or four modes or exercises, for persistent practice, to last over a given period of time, then to change to others.

\*The late Mr. Clementi was celebrated for the perfect evenness and beauty of his touch in playing rapid passages on the piano. The means by which he attained this execution he was unwilling to disclose. It is now known that he effected it by playing his scales *very slowly* and with *great pressure* of each individual finger (see chapter XIX).

But the regular exercising of the whole or part of them, *daily*, will, in a comparatively short time, most surely impart immense strength to the muscles and joints of the fingers and render them flexible; if the directions are duly followed, it will enable perfectly equal and even fingering, and render the fingers entirely *independent of each other*. But let all be done with due moderation and not be driven to excess.

On no account, should this gymnastic staff, or walking stick exercise, however simple it may appear, be omitted for a single day. It produces a most surprising effect if carefully and vigorously made; an effect which will be the more remarkable in proportion as the fingers are pressed and stretched far away from one another. By this means all the various muscles, and even the tendons, joints and ligaments are put in motion, and both fingers and nerves are rendered strong and firm. Besides, no time need be lost; as in performing these exercises you may converse or engage in other occupations. \*

In this manner, also, *the 4th finger may have a special training*, and become equally strong with the others. This finger is, on physiological grounds, the weakest of all, and after a number of vain attempts at remedying its well-known weakness, some physiologists in Germany have gone so far as to suggest the idea whether it would not be well to cut the ligament joining the two fingers, in order to set the 4th finger free.

But it is unnecessary to have recourse to such rude and unnatural measures; the natural weakness of the 4th finger may be effectually remedied, and may be entirely overcome, by the above exercises.

These exercises may be *partially* performed on musical instruments; but they are *far more* effective if made as directed; because the fingers, in having a resting point, or lever; and having something firm to grasp, are enabled to perform them *gymnastically*.

Moreover, such admirable instruments as a piano, violin, as well as the other members of the string family, ought not to be used as purely gymnastic implements.

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\* It was often related by the celebrated violin-virtuoso Bernard Molique, that he had frequently gone through and practised a solo upon a stick shortly before performing it in public.

To do away with such improper usage the fingers and joints ought first to be gymnastically exercised before the playing proper is gone ahead with.

To achieve satisfactory results the mind and fingers should work together as one, but how is this possible if the latter are entirely neglected as regards preparatory training. The mind strives forward and the untrained fingers keep it back. There can be no reason why such an unsatisfactory state of affairs should be tolerated, and if only the fingers will first be properly trained, the mind and fingers will be found to act in a most simultaneous manner.

Another great advantage to be derived from the above exercises is, that the organs of hearing are spared. Many persons, who zealously and perseveringly perform finger exercises on musical instruments, injure their health, through the irritation of the auditory nerves, to such a degree as either to be prevented from continuing to practice or otherwise to be subjected to serious consequences; whereas, if the exercises are preceded by the *gymnastic* movements given above, the pupil's organ of hearing will be greatly spared and not injured in any way.

The greatest technical art consists in controlling alike the fingers, the joints and the nerves. Now, if the muscles and tendons are exercised and strengthened by proper physical work, the *nerves* will be invigorated at the same time. This is a well-known fact, and for those engaged in musical pursuits constitutes an advantage which it is impossible to overrate. Through this preparatory work the fingers will not be fatigued as easily as before, and the habit of completely controlling them is acquired at the same time.

Nor ought another advantage to be overlooked; viz., that in regard to musicians forced to travel, or who from any other causes are prevented from playing or practising for a length of time, they will be enabled, in the manner described above, to exercise their fingers and joints efficiently for a short time daily. Thus they will be prevented from getting stiff, and mastery over them will always be retained.

However, to attain this end, the exercises with the stick must not be performed carelessly, but *gymnastically*, and



*strictly according to the directions as given above.* Many of these exercises will be found very useful for violin players, by promoting the proper bending of the *fore-finger* of the left hand.

On the whole, all of the above shown exercises are equally fit for all persons playing the piano, the organ, the violin, violoncello and other instruments; and they will find that after having accustomed themselves to perform them vigorously for a short time every day, they will be able to manipulate upon their chosen instrument with such strength and individuality of fingers as will exceed their utmost expectations.

## CHAPTER XV.

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**Board for Stretching the Muscles, Especially Those of the Thumb  
and the Little Finger.**

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Take a board, about 22 inches long, 4 to 5 inches wide and three-quarters of an inch thick, and mark out on it four or five grooves, about half an inch deep. To fix this board on a table, have a little ledge glued on to one of its sides, as in Figs. 55 and 56.

Place the outstretched hand on the board; stretch the thumb and the little finger as far as possible away from one another, into one of the grooves, place the other fingers into one of the other grooves, set them in motion, while holding the thumb and little finger firmly in their places.



FIG. 55.



FIG. 56.

## CHAPTER XVI.

## On Stringed Instruments in Particular.—The Wrist of the Right Hand.

The following mechanical gymnastic exercises are intended for the *wrist of the right hand*, and are intended for players on stringed instruments. Their chief purpose is to render the wrist of the right hand and fore-arm strong and flexible. This all students find very difficult; it will soon be evident for what reason.

It is a fact acknowledged by the most celebrated musicians, that the principal bowing difficulties in playing the violin arise from the wrist. This is chiefly owing to the circumstance that, in playing the violin, the *side-ward* movement of the wrist is a peculiar one, being, in fact, totally different from any other movements taking place in the ordinary occupations of life. If, therefore, it be desired to diminish the painful work, as customary at present, it is indispensable to *prepare* the wrist and arm by exercises like those we are about to describe.

Take, three times daily, and particularly early in the morning, a *light stick or cane*, exceeding the length of a violin bow by 8—10 inches, holding it in your right hand the same as a bow; lay it on the left hand—which is to be raised to the same height as if playing the violin or violoncello—and move it *vigorously* up and down as follows:—

1. The entire length, thirty times.
2. The middle length; with the fore-arm and wrist only, without moving the upper arm, thirty to forty times.
3. At the nut; with the wrist alone—and especially the up-stroke—with energy; without in the least moving the arm, thirty to forty times.
4. At the extreme tip; with the wrist alone, and with pressure; without in the least moving the arm, thirty to forty times.

Move the cane alternately up and down, pressing it with

the thumb and fore-finger, and look at the direction of the wrist and the stick or cane. With this cane you may exercise gymnastically, at pleasure, up and down strokes, triplets, and all sorts of bow movements. The result, if properly and conscientiously practised, will be found a surprising one.

These exercises are particularly useful for the student. As a matter of course, they can also be *partially* made with the bow, but *not with the same results*.

There is another very effective gymnastic exercise for strengthening and rendering flexible the wrist of the right hand. A movement resembling it has already been described above, but to prevent any misconception, I think it well to give explicit directions respecting it here.

Take hold (with your *right* hand) of the end of a *long and rather heavy Apenstock*, and work it vigorously up and down, *like a bow* upon the *left* hand (upheld near the chin) in the following manner:

1. With the *whole arm* from the elbow, up and down, with the stick, thirty times.
2. With the *middle length* of the stick, up and down, twenty-five times.
3. With the stick as near as *possible* at the *lower* end, with the *wrist alone*, and *without* in any way *moving the arm*, thirty times.
4. Ditto at the *upper* end, with the *wrist alone*, especially for the *up-stroke*, without in any way moving the arm, thirty times.

## CHAPTER XVII.

## On Stringed Instruments in Particular.—The Wrist of the Right Hand.

This exercise, on anatomical grounds, produces a considerable effect on the muscles and sinews of the wrist and the fore-arm, in imparting to them the wished-for strength and flexibility.

Besides, it is a well-known fact that, having handled a heavy object, it is more easy to skillfully handle a light one.

If in any way objections should be raised as to the last-mentioned gymnastic exercises, they being of rather a rough kind, and tending to spoil the elegant stroke, it may be satisfactorily answered in so far that these so-called rough exercises only last a very short time every day and are undertaken for the *special* purpose of rendering the arm and wrist strong, easy, even and flexible. Indeed, if those right-hand exercises are made *carefully* and *according to directions given*, a short time every day, they will strengthen the wrist of the right hand, and render it pliant and flexible to such a degree, as to enable persons, in a comparatively short time, to play with the wrist almost as vigorously as with the arm.

There is, moreover, another advantage attending these exercises, viz., that if continued for *some weeks only* and for a *few minutes daily*, they will soon aid the student in acquiring the correct and proper position for the arm, necessary for the playing upon stringed instruments.

## CHAPTER XVIII.

## Continuation.—Staccato.

A famous German violinist once remarked to the author, "I find that staccato playing is the best exercise for bowing, but I can't say why." The reasons for this are easily apparent and lie in the fact that, by frequently playing with the end of the bow, or with staccato strokes, the muscles of the wrist are put in motion, and consequently subjected to *gymnastic* training, through which strength and flexibility are acquired.

It is *impossible* to perform the staccato stroke well unless the muscles of the wrist have become *strong and agile*; and the reason why the student finds this stroke in most cases so difficult is, that the wrist has *not* been specially trained and prepared, in consequence of which it remains weak and stiff.

It ought to be remembered that in almost all kinds of handiwork in daily life, the *whole* arm is active and in motion, and *very rarely* the *wrist alone*. With musical instruments, on the contrary, and particularly in playing the violin, it is necessary *always* to use the wrist, and it is *impossible* to play well unless the wrist has been rendered strong and elastic. It is, therefore, absolutely indispensable that proper gymnastic exercises should be gone through with the wrist, in order to properly *prepare* it.

In other words, the wrist ought to be *accustomed to move of itself*, and the student ought to perform all kinds of movements calculated to impart pliancy and strength to it. It will then soon become free and easy, and the student will, in the course of time, acquire the strongest, most elegant and artistic stroke.

Not a single one of these practical gymnastic exercises ought to be despised on account of its simplicity. Only try them, and they will be found very effective. All artists and teachers in favor of advancement, will favor

every practical means for technical improvement and consider it their duty to welcome any assistance calculated to diminish and render lighter the arduous toil, besides shortening the valuable time required for becoming proficient in music.



## CHAPTER XIX.

## Concluding Remarks.

In conclusion, it must be borne in mind, that it is not well to continue too long with the same gymnastic exercise, but to offer the muscles and joints a change through taking up different exercises; a change of this kind will be found both agreeable and advantageous, and if, therefore, the student be tired of one exercise, he should begin another.

Besides, if the fingers are fatigued or over-exerted by playing and the nerves irritated, an exercise of some of the different free or mechanical gymnastic appliances will refresh the muscles, by imparting to them a new and easier movement; for be it remembered, "these exercises are not irksome, but recreative."

To sum up: No student ought to begin to learn to play the piano, violin, or other musical instrument, or even to engage in any work or occupation requiring a strong and flexible hand, before having set the joints of his fingers and hands in order, by means of preparatory gymnastic exercises; and he ought to continue the same from day to day.

Let it ever be borne in mind that much rapid playing is injurious to the muscles and nerves, while, on the other hand, *slow exercises and studies* invigorate them.

To borrow an illustration from the animal world; take the race-horse, the fleetest animal which we use in this country, whose great task requires that his muscles should be brought to the highest point of strength and flexibility. Do you suppose that, in training and preparing him for the race—a process often extending over a considerable period—he is, in the course of it, subjected to much galloping? By no means! Galloping forms the exception, and, during this long interval, walking, trotting, and cantering, form his chief training paces

that is, four-fifths or seven-eighths of the time! galloping only one-fifth or one-eighth part! His skillful trainer knows that much rapid exertion, such as galloping, *long continued*, weakens and wears out his muscles. So, also, in the hunting field and on the road, it is "the pace that kills." Even so with the player upon a musical instrument; long continued, rapid movements wear out the muscles and shake the nerves, while slow exercises, however vigorously executed, invigorate and strengthen both. (*See Chapter XIV, note on CLEMENTI.*)

And here let me avail myself of this opportunity to raise a question for careful consideration as regards that part of the violin bow, against which the thumb of the right hand is brought to bear. Why, let me ask, should this little sharp projection be permitted to remain in every nut of the bow, preventing as it does the firm and steady placing of the thumb, when it could be improved to such a great extent by being *rounded off* and allowing the thumb to be placed entirely inside and obtaining a square and decided hold of the stick. Emil Kross, one of our representative modern authorities on violin playing, recommends and proves the excellence of this idea in his admirable work, "The Art of Violin Playing," demonstrating that not alone is the firm hold upon the bow doubled with it, but that on the other hand, more freedom is gained in using every particle of hair in the bow.

Finally, I repeat that, in performing any of these gymnastic exercises, the principal condition to be adhered to, is that they should always be gone through in the morning, also immediately before playing, and that while great vigor is imparted by strictly following out the given directions, any over-exertion should be avoided.

As to the claims of the author himself, they are limited to an earnest desire that his "Gymnastics of the Fingers and Wrist," founded as they are upon anatomical and physiological principles, may find favor with the public at large, and be instrumental in promoting the best interests of art.

THE END.