

# THE TRUE FUNCTION OF RELAXATION IN PIANO PLAYING

*A Treatise on the Psycho-Physical Aspect  
of Piano Playing  
With Exercises for Acquiring Relaxation*

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*DEDICATED*  
*to my first four teachers*

*MY MOTHER AND FATHER,*  
*MRS. ELLA COCHRAN*  
*and*  
*MRS. GEORGIA CORNEN*

*four sources of much needed*  
*early inspiration*

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*"There is a principle which is a bar against all information, which is proof against all argument and which cannot fail to keep a man in everlasting ignorance!*

*That principle is condemnation before investigation."*

*—Spencer.*

### *What is Relaxation-Consciousness?*

Relaxation-Consciousness is that mental condition, natural or acquired, which enables the individual to choose just enough muscular action to accomplish an act and to inhibit all unnecessary muscular contraction.

### *What is "Weight" in Piano Playing?*

Weight in piano playing is the use under control of the power furnished by a falling body (the playing arm) instead of the power secured by forcible muscular action.





## FOREWORD

RELAXATION\* is heralded today by such eminent pianists and pedagogues as Gabrilovitch, Hofmann, Sherwood, Bauer, Mason, Godowsky, Levitzky, Hutcheson, and many others as the one factor above all others necessary to the acquiring of a good piano technic.

Many articles on the importance of relaxation, contributed to some of our leading musical journals by the above mentioned authorities (and by others) have appeared from time to time, but it is only comparatively recently that we have been able to read anything *definite* and *practical* on the subject.

A few specific quotations from some excellent authorities are given here:

"We of the Committee appointed to draw up examination questions to be used by the New York State Music Teachers' Association, as recognition of a candidate's qualifications to teach piano in New York State, place first and foremost, as one of the most essential requirements, a thorough knowledge of how to use, and how to teach the proper relaxation of the muscles employed in piano playing."

(Two of the gentlemen on this committee were Henry Holden Huss and Gustav Becker of New York City.)

James Huneker contributed his own opinion on relaxation in the May "Etude" 1915. "That complete relaxation, that absolute unstarching of the muscles, yes, and nerves also, *is the key* to the superb technique of a DePachmann."

Henry Holden Huss in the December "Etude," 1914, makes a decidedly strong statement in favor of relaxation:

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*\*The word relaxation is used in this work to express that mental grasp or consciousness by which we are able to direct the muscles to let go, or to make loose. A few years ago the term to devitalize was used in reference to making the muscles let go, but this word, although useful for certain purposes, has with reference to piano playing been practically dropped.*

*The author knows perfectly well the meaning of both words, but, to avoid confusion, has decided to use only the one term—relaxation. All piano teachers and students are at present using this word, and are using it with common understanding as to what the word means, even though some do not seem to understand its true function as applied to piano playing.*

"A curious instance of a great, analytical and highly intellectual pianist, whose touch was often harsh and unsympathetic, because he did not use his muscles in a relaxed manner, was that of the eminent pianist and still greater conductor, Dr. Hans von Bülow. I remember distinctly when he played *forte* passages, his whole frame became rigid. I find that cultivating a proper relaxed condition of the playing muscles of my pupils not only forms the proper touch and technic, but assists materially in abating and controlling nervousness."

Daniel Gregory Mason in the January "Étude," 1914, said:

"The habit of relaxation gives to the playing an elasticity, and to the tone produced an agreeable sonority without harshness or jingle, that can be produced in no other way."

Leopold Godowsky, perhaps the greatest living pianist, stated in a recent number of the "Musician":

"As to what I consider the principle assets for playing the piano today, I would say that the most modern view is, that only through weight playing and absolute relaxation can one attain to perfection in reference to mechanics and technic, and therefore aesthetics."

Relaxation as the basic principle of the modern epoch of piano playing has been ushered in by the great teachers, Godowsky, Matthey, Steinhausen, Breithaupt, Grabill, Jervis, Teichmüller, Schmitz, Henneman, Field, Lovette, and others.

It was not perhaps necessary to quote these strong witnesses for the advantages of relaxation, but what I wish to call attention to above all else is, that while artists and teachers have paid such glowing tributes to the great importance of relaxation in piano playing, very few have really told us of any tangible means of actually applying it to ourselves, or of teaching it to the student as he is struggling through his early years of piano study—the very time when he most needs this or other kind of help.

We may all affirm that relaxation is very important, but how shall the struggling student be surely and certainly benefited? Not by simply knowing that relaxation is important, but by having it shown to him, so that it enters materially and surely into his scheme of practice.

Many great pianists know that their possibilities for speed and agility as well as their beautiful tone, lie in the grasp and proper use of relaxation, but they often do not seem to be able to tell in a concrete way how to transfer this knowledge to a student so that

he can have this same aid in *his* work. These pianists, and teachers, write articles on the subject, but, my dear reader, can you, since your attention has been called to it, remember anything in these articles, save the statement that relaxation is important; can you put your finger, as it were, on real concrete advice which made direct application to your practice or made it possible for you to add this important asset to your playing mechanism?

Many writers who strive to tell us more than that "relaxation is important" seem to have only a vague and imperfect idea of the application of relaxation to piano playing. One well-known artist wrote: "The student when he plays should be absolutely relaxed from his shoulders to his finger-tips." This emphasizes again the *importance* of the idea of relaxation and that is all, for to be "absolutely relaxed" when you play, "from shoulder to finger tip," is an impossibility. This instruction is worse than none, since it is wrong. No one can even make a move when "absolutely relaxed"; there would be no stability; nothing would hold together. Therefore we do not, nor can we, play when completely relaxed. Every movement requires muscular activity, but the condition where the *least* muscular contraction is used will be most conducive to agility, speed, and free movement.

Some articles contain certain exercises to loosen up the joints, but even this is not the real point, however near they may come to accomplishing something of real value. Through twenty years of teaching and many study trips to Europe and elsewhere I have been investigating, studying, and experimenting to find out what *relaxation* is, and I feel that I have found not only a few facts that can be used by students, but also a manner of presenting the subject in such a way that the student can understand the real function of relaxation, and, best of all, some tangible exercises whereby he can grasp the benefits which are bound to accrue from having this factor in his own being.

My idea of relaxation is not "loose joints" or the condition of being "absolutely relaxed" when playing; according to my conception of relaxation, the student day by day develops feeling, consciousness, realization of looseness—as opposed to firmness, *in his brain*; and, as this feeling grows, becoming more and more a power for fine discrimination, he becomes able, by use of his own increased brain power, to mix firmness and looseness in the proper proportion for securing ideal playing motions. This "proper proportion" should be the *minimum of muscular contraction* in order

that the least amount of friction may exist in his playing mechanism. My idea is, therefore, one in which *the brain* is educated in this *feeling for relaxation*, and since all acts, all thoughts, all things performed or made by man come from the brain, it would seem that this principle is, at least, on the right track. The violinist, the vocalist, the organist, the baseball pitcher, the tennis player, the typist, the penman—in fact any one who uses his muscles in a complicated or intricate manner, needs a working knowledge and grasp of this subject of relaxation.

Can the brain be educated to consciously control this power of relaxation and to mete out the right balance of firmness and looseness consistent with easy movement, agility, and speed? I invite the careful attention of the reader to the unfolding of my plan—and await the answer. May I hope at least that he will understand the function of relaxation better than he ever has before, and, that with this advantage applied, his powers in realizing his pianistic ambitions will be materially increased.

Warren, Pennsylvania, 1921.

LEROY B. CAMPBELL.

PART I

CONSISTENCY IN THE USE OF THE  
PLAYING MECHANISM

*The ideal use of the playing members expressed in one short sentence would be this: "The minimum of muscular contraction with the maximum of controlled weight."*

*This ideal condition can be attained only by a mind properly balanced and highly developed along the lines of a mental consciousness keenly sensitive to both relaxation and contraction.*

*Emerson said, "Shall I tell you the secret of the true scholar? It is this: every man is my master in some point and in that point I learn of him."*

*An eminent scholar once said, "No one man has ever yet seen the whole of anything, but the further one looks the more he can see."*

*Tobias A. Matthay: "Every practice should be a lesson in ear training, for the ear is the seat of music."*

# CHAPTER I

## INTRODUCTORY

THE greatest problem of the mechanic has always been the problem of friction. Years of time and millions of dollars have been spent in attempts to reduce friction in machinery of all kinds. One automobile factory in Detroit spent in one year the major part of \$300,000 in its experimental station upon the perfecting of the finer running parts of its cars in order that friction might be reduced. Expert mechanics have devoted their lives to this problem of reducing friction, and every little advance has been eagerly picked up and applied. But still the search goes on for finer improvements, for the nearer we can come to the elimination of friction the easier a machine will run and, therefore, the less energy will be required.

But what has this to do with piano playing? Simply this: Our playing mechanism is governed by laws not unlike those of other machines, and friction is just as much an impediment in this mechanism as it is in any other machinery, and needs just as much attention. The causes and removal of the various frictions in machinery do not materially concern the piano teacher, but he can learn one valuable lesson from the mechanic. Should the belts of a machine be too tight, should the wheels rub or interfere, should heavy work be given to small running parts, or should wanton waste in motion and energy appear, the most ordinary mechanic would not add more and more fuel to keep the machinery running with the idea that the parts would adjust themselves. He would immediately set right each fault so that the machine would run with the minimum amount of fuel and the maximum of power.

But the ordinary piano teacher when he finds the student making unnecessary tensions and contractions in and about the fingers, hands, and forearms; or essaying to use one muscle and drawing several other unnecessary muscles into sympathetic activity; or giving to the finger muscles tasks which can be done much better by larger muscles, or by weight, or by rotary motion; instead of removing the individual faults and their causes, as the mechanic does, tries to adjust the difficulties by adding more fuel in the shape of longer practice, dumb repetitions, and added muscular force with the idea that the playing mechanism will gradually adjust itself. He acts on the old adage, "Practice makes perfect," forgetting that it is only practice of the *right kind* which will bring perfection. Any other sort of practice merely tends to establish the fault.

It is this right kind of practice which we wish to illustrate in the following pages—practice in which well-defined and tangible exercises take the place of the old “hit and miss” plan, practice which is designed to correct the individual errors of the playing mechanism, not to waste energy.

In the following four chapters we shall set forth a few laws and facts which have bearing upon the mechanical side of piano playing, because these must be thoroughly understood by the reader who would gain more than a superficial knowledge of the principle of relaxation and its vital relation to piano playing in the elimination of friction and the building up of a strong and fluent technique.

These laws and facts are for the most part only simple laws in physics or mechanics which insure the working of the piano playing mechanism as it should work, viz., along the line of least resistance, or with the minimum of muscular contraction to produce tone. The student should study and comprehend these laws, for a knowledge of them will help to overcome some of the grosser errors in the playing mechanism and prepare the way for the correction of more complicated errors and the final achievement of the important asset, relaxation.



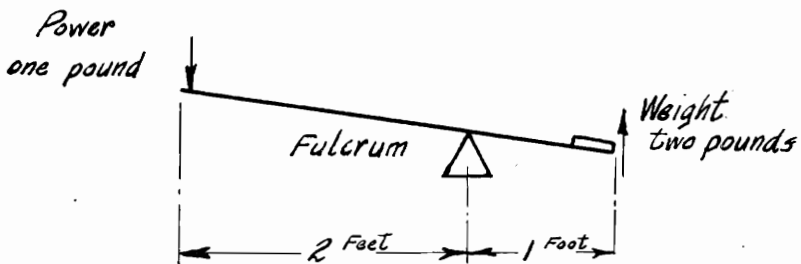
## CHAPTER II

## LEVERS

**S**INCE the piano playing mechanism is operated by levers, it is essential that the reader become acquainted with the action and effectiveness of the various levers which he uses in playing. Physics recognizes three types of lever, called the levers of the first, the second, and the third class. But as the lever of the second class is not used in piano playing we shall confine our attention to the levers of the first and third classes.

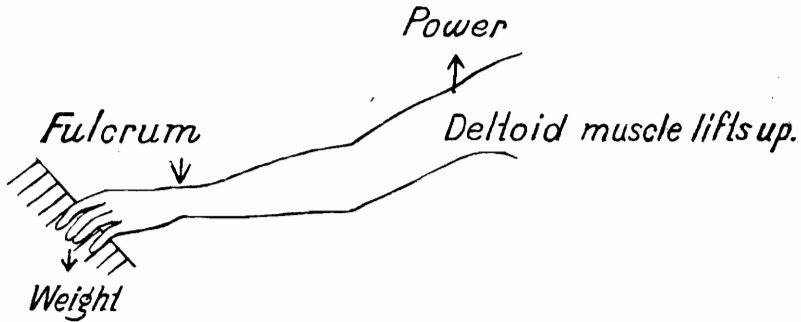
*The Lever of the First Class*

In levers of the first class the fulcrum, the support about which the lever turns, comes between the power and the weight to be moved. Physics calls this the most efficacious form of lever, since one pound of exertion will produce two pounds of working force. For example, if, with the idea of lifting a weight of two pounds, a bar three feet long is placed across some solid object used as a fulcrum in such fashion that it is two feet from the power to the fulcrum and one foot from the weight to the fulcrum, one pound of power applied at the long end of the bar will lift a weight of two pounds at the other end.

*Lever of the first class*

This lever is available in piano playing where heavier chords and octaves are used. The deltoid with the other shoulder muscles furnishes the power. As the wrist and forearm are dropped toward the keys, their downward momentum is suddenly intercepted, and a reverse movement is started. This downward momentum, together with the momentary holding of the forearm rather set at the wrist, furnishes the fulcrum, which, while in this case not a stationary fulcrum, is almost as effective. The lifting, then, of the arm across this fulcrum at the wrist pries the set fingers into the keys, and for

one pound of energy spent, approximately two pounds of playing force is obtained.



*Fulcrum is established by the sudden reversing of the arm's momentum downward, together with triceps muscle in case of heavier chords—resistance to be overcome according to the size of tone required*

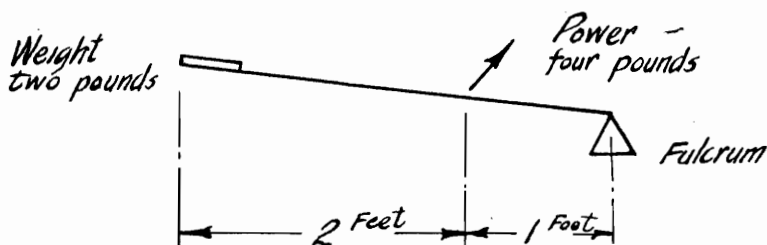
The motion is simply one of approaching the keys gradually with the playing mechanism and, when the set fingers are over their proper keys, of adding a sudden lifting impulse, which together with swinging weight (the whole arm from the shoulder) and the prying leverage of the first class lever throws the hands into the keys with good conditions and plenty of force for a large and a good tone. This is sometimes called the Leschetizky chord touch. It has the advantage that it makes no clatter or noisy percussion upon the key surface, and at the same time it enables the player always to have contact with the correct keys.\*

#### *The Lever of the Third Class*

In levers of the third class the power comes between the fulcrum and the weight to be moved, as in fire-tongs, sheep shears, or sewing machine treadles. For this reason this is the least advantageous of all levers. In fact one can lift more without this lever than with it. It is, however, good for lightness and speed, though not for power. To lift a weight of two pounds this third class lever requires four pounds of power instead of the one pound of power required by the first class lever. The first class lever is, therefore, four times as effective as the third class.

---

FOOTNOTE.—*Many chords and octaves, it is true, are played simply by lapsed or slightly swinging weight, but the heavier ones are effected practically by a first class lever assisted more or less, according to the volume of tone required, by the triceps, forearm muscles and by bodily impulse.*

*Lever of the third class*

*Note*—In the third class lever the power, no matter where applied, will always be more than the weight to be moved

The old method of playing octaves in which one holds the arm still and strikes with the hand by the use of the rather small muscles of the forearm, makes use of a lever of the third class, the keys being the weight to be moved, and the fixed still wrist being the fulcrum, the power being conveyed through the tendons fastened to the hand between the weight (keys) and the fulcrum (wrist).

A large third class lever like the whole arm with the shoulder as the fulcrum can operate without undue tension or stiffening contractions through the power of the larger muscles, if the work is not too heavy. But if the smaller muscles, where many are crowded together as in the forearm, are bidden to do a heavy task, the third class lever is inadequate and the result is stiffening contractions and harmful tensions.

The raised finger stroke is also a third class lever and being still smaller is still more unscientific and harmful when used for heavy tasks. The finger must in rapid playing use its own muscles to a slight extent, but only enough to give clear articulation to the work of the playing mechanism as it lapses or rolls or swings or impulses or in manifold other ways distributes weight into the keys. The delicate muscles of the fingers acting as a third class lever mechanism should be made to furnish only an ounce or two of power for the purpose of clear and crisp articulation. All heavy tones and accents should be furnished by impulsive weight. The fingers should, therefore, be trained for quickness, agility, nimbleness, and delicacy. Heavy tones and accents should always be produced by the longer and larger levers.

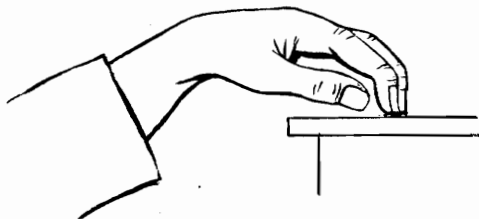
## CHAPTER III

## ACTION AND REACTION

PHYSICS tells us that "Action and reaction are equal and in opposite direction." That is to say, for every five or ten ounces of force exercised *downward* on the keyboard there are five or ten ounces exerted *upward*. Simply to push a key to the bottom on a modern piano without sounding any tone requires about  $2\frac{1}{4}$  ounces of power; to make a *pp* tone requires  $3\frac{1}{2}$  ounces; to make the usual *mf* tone requires from 5 to 8 ounces.

When I took my first lessons at the piano I was told to hold my arm and hand still and to strike "D" just above middle "C" with my second finger, keeping my wrist perfectly loose and producing a *mf* tone. Of course the 5 or 8 ounces of power which I exerted with my finger downward, according to the law of action and reaction, had to exert a corresponding action upward. One of two things was bound to occur: either my wrist would be pried up into the air by reaction, or it would be stiffened in order to hold the key down. A perfectly loose wrist was, therefore, impossible.

This difficulty can be well illustrated in another way by reverting once more to the old manner (still sometimes used) of teaching octaves. The student is told to hold his arm still and, by lifting or bending the wrist back as far as possible, to strike the keys. If a tone above "p" is elicited in this manner one of two things will inevitably happen: either a muscular contraction making the wrist rigid must take care of the reaction, or the wrist will be raised or forced up like this.



*Wrist pried up as a result of force from reaction*

Both of these conditions are unfavorable.

To avoid these undesirable conditions the forearm should be undulated up and down by the use of the larger upper-arm muscles. This motion of the forearm will swing the hands up and down, also furnishing power for all ordinary octaves from "p" to "f." In this manner of playing octaves the thrown hand furnishes the power to

elicit the required tone, while the rise and fall (or undulation) of the forearm furnishes ample force or moving weight with which to overcome the reaction. The hand motion now becomes an effect, not a cause; the hand is acted upon, not acting. The smaller muscles of the hand merely guide the swinging hand in its motion up and down. This places the heavy work on the large muscles, reduces fatigue to a minimum, looks more graceful, and makes possible a better tone.

Remember then, that "Every action has its reaction," and the problem is to supply a force which will take care of the reactions with the use of as little *muscular contraction* as possible, especially in the forearm among the labyrinth of smaller articulating (finger) muscles. Lapsed weight (that is, weight under control) and swinging weight (weight swung and controlled by the upper-arm and the shoulder muscles) offer us the best means for supplying this needed reaction power. With a moderate tone a lapse of weight at the wrist joint will take care of the reaction; with a louder tone a swinging weight is necessary; with a still louder tone (large chords) the swinging weight is supplemented by the triceps muscles which pull the wrist end of the forearm down and thus hold the wrist in position, or in other words take care of the larger reaction.

---

FOOTNOTE.--*The up and down pumping motion which the young child uses in playing a quarter tone melody illustrates swinging weight quite clearly. Of course the child's pumping motion is exaggerated and needs the guidance of an experienced teacher in order to graduate this crude movement until the impulse of weight lapses into the playing mechanism with scarcely any noticeable motion of the hand and arm. This refinement of the pumping motion is the identical movement used by the artist when playing a quarter note melody.*

## CHAPTER IV

CAUSES OF THE CONDITION KNOWN AS  
"SYMPATHETIC CONTRACTION OF THE MUSCLES"

WHEN a nerve impulse is sent from the brain to a large muscle, such as an upper arm muscle, commanding it to do a light task, the act is performed easily, is tossed off as it were. Even a small muscle can perform a very light task with no harmful muscular tensions or complications. When, however, an impulse is sent from the brain to a smaller muscle, such as a finger muscle, commanding it to perform a rather heavy task, in all probability the smaller muscle will not feel equal to the task. More nerve force will then be sent down from the brain, and in the anxiety to accomplish the task this nerve force will spread, with the result that several neighboring muscles will contract. In the early lessons, when the young pupil is asked to strike keys with a rather strenuous finger activity, this very thing happens, viz., the weak muscle calls for help and the nerve force spreads to the neighboring muscles. This is the condition known as "*Sympathetic Muscular Contraction.*"

Just what is it that takes place in this clogging up of the muscles? Let us examine muscles and nerves in action and see if we

can find out. A muscle looks like this



when re-

laxed, and like this when contracted.



Relaxed

muscle is supple and elastic; contracted muscle is stiff and unyielding. Here are any three muscles in the forearm out of a dozen or so used in piano playing.

A  
B  
C



Let us say that we should like to use (b). The brain sends down nerve force to secure b's contraction, but wrong habits have crept into the muscular and nervous system so that the nerve force spreads to the neighboring muscles (a) and (c). They contract.

A  
C



We really did not want to use (a) and (c); it was (b) we wanted.

But the room, as will be noted, that (b) should now have for contraction is all taken up by (a) and (c). We *will* have (b's) contraction at any cost, and so more energy is sent down until (b) finally forces (a) and (c) aside in making its required contractions.



Of course the whole movement under these circumstances is stiff and unwieldy. If (a) and (c) could have been made to lie quietly, no stiffness would have resulted, and the movement would have been easy and graceful.

The energy needed for the act that we wished from (b) was perhaps 6 ounces; but (a's) and (c's) contractions used up at least 4 ounces more each, while (b) had to spend at least 3 ounces each on (a) and (c) in order to push them aside for (b's) needed contraction. So we find that we have expended in this act 20 ounces of energy, 14 ounces of which were not only absolutely unnecessary but hindering. Under correct conditions 6 ounces was all the energy required for (b's) contraction.

Now these confusions often take place not only in the forearm muscles just cited, but among any three, four, or six muscles where muscular activity is needed. And this bad condition will continue as long as a wrong method of procedure in using nerve lines and levers is continued. By only a few months of such wrong practice, habits are formed which are very hard to eradicate. The pupil with this strained muscular condition can not secure agility or fluency. He becomes discouraged and drops off into that large class—90% of music students, publishers say—which never progresses further than the third grade. They do not lack musical talent; they lack correct nervous and muscular control.

To the downfall of the beginner still another element often contributes. That element is commented upon in Sully's *Psychology*, page 35: "How important to the wise control of children's movements is a knowledge of the fact that the nerve centers regulating the nearer joints, as shoulders and upper arms, should be developed before those regulating the further joints, as the fingers and hands." Not only, then, do wrong methods give the smaller muscles too much to do, but they also use these muscles in the wrong order of development.

Care should, therefore, be taken to see that the young pupil follows a correct order of development, using exercises in arm motion, rotary motion, up and down hand motion, and other graceful

motions. (See Chapter XIV.) All such exercises use the fingers to a certain extent, of course, but do not call on the finger muscles for strenuous or acute activity. When the fingers have been used as props, as it were, until the nerve lines become really alive, then the time comes to cultivate finger activity for articulation purposes—light, quick, exercises near the key.

For the older pupil who has been wrongly started, help can come in only two ways, either through luck or through the use of the exercises for which this book was written, exercises to acquire *feeling for Relaxation*. These exercises will appear when the reader has followed this discussion to the end and comprehended the necessity for them.



## CHAPTER V

## THE LAWS GOVERNING THE MAKING OF GOOD TONE

HELMHOLTZ says: "The timbre or quality of a tone depends upon the proportion of pure overtones or harmonics as they vibrate or are combined with the fundamental tone." And this statement is corroborated by such eminent men as Tyndall, Zahm, and others. The implication of this statement is that the tone given out by a vibrating body is likely to be affected by the manner in which that body is set in vibration. If a bell is struck a fair and clean blow, it will give forth a beautiful tone, but if it is struck a raking or a rough blow, it will not give a beautiful tone. In the first case the proper harmonics or overtones are present, because the conditions are perfect; while in the second case the overtones are interfered with, because the conditions are not perfect.

The case is somewhat the same with the piano string. If the hammer is made to start from its still position and move with gradually increasing speed until it strikes the string cleanly, the tone will be good because the lower harmonics and the overtones will all develop in the right proportion and combine beautifully with the fundamental tone. On the other hand, if the hammer be abruptly or roughly started from its still position, it will itself tremble and perhaps cause other parts of the action of the instrument to tremble also, thus interfering with the proper overtones of the vibrating string and causing a bad quality of tone.

I once heard MacDonald Smith in his London studio illustrate this point in the following manner. One of the laws of Physics is that of inertia, which states that any body at rest has a tendency to remain at rest unless overcome by some outside force, and any body in motion has a tendency to remain in motion unless overcome by some outside force. Now suppose a door is standing half way open. The door will stand thus unless overcome by some outside force. Suppose, then, we strike the door with a baseball bat. The door will tremble all over and will go partially shut, but not nearly so far as we might expect considering the force of the blow. The fact is that the door's inertia was so roughly and abruptly overcome, that the door trembled on its hinges as it went its short distance toward a closed position.

Again, suppose we take a piece of felt, one cubic inch in size, hold it between the thumb and forefinger against the door, and with a tack hammer strike a light blow against the felt. The door this time goes almost, if not entirely, shut with no trembling or shaking whatever. This time the door's inertia was overcome very gently by

the compression of the felt. The very second the hammer touched the felt, the felt began to compress, and this compression overcame the inertia of the door very gradually. By the time the full impact of the hammer reached the door through the felt, the door was well on its way, and, having received the full impact of the hammer, it went straight shut with a perfectly clean and free swing.

In a word, anything hard or unyielding like a ball bat will overcome the inertia of a body at rest roughly and abruptly and cause an unsteady movement of that body; while anything elastic or yielding will overcome the inertia of a body gently, gradually, and its movement will be direct and straightforward with no unsteadiness.

Although this is admittedly an exaggerated illustration, it will serve to show something of what occurs in the case of a piano string set in vibration with too much force. Like the door under the ball bat stroke, the hammer, having its inertia roughly overcome, shakes and trembles violently, thus striking the string not only a raking blow, but also slightly amiss of the exact node. This condition, of course, interferes with the pure development and proper combination of overtones with the fundamental, and the tone is consequently bad, for not only are the vibrations of the higher harmonics too strong and harsh for the fundamental, but many false harmonics are set in vibration also, quite overcoming the richness of the fundamental vibrations.

The person who uses the minimum of muscular contraction with a nice control of swinging weight will approach the key gradually, striking it with a mass that is yielding and elastic; hence the inertia of the key and hammer will be gently overcome, and the clean blow of the hammer will be free from shaking and trembling, so that the tones will have a correct development and balance of overtones with the fundamental. The result is a beautiful tone.

Anyone, therefore, who wishes to make a beautiful tone, particularly a loud tone, will endeavor to keep these simple principles in mind: Keep all unnecessary muscularity out of that part of the playing mechanism next to the keys. In place of muscle, use lapsed weight or swinging weight in approaching the keys, and gradually add intensity very near the keys. The muscles used in swinging the playing mechanism are, of course, the upper arm and shoulder muscles far removed from the keys, hence offering no hard or unyielding element on or near the key surface.

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FOOTNOTE.—*This manner of eliciting tone also obviates that unpleasant noise caused by rigidly set fingers as they strike the key surface. That this noise would actually enter into and impair the tone can easily be proved by striking a similar blow upon a desk and noting the volume and harshness of the noise produced.*

In bringing these four important chapters to a close it might be interesting for the student to test the statements made by a simple exercise upon the piano, played first in the old way with a still arm and with isolated muscular finger strokes, and second with the undulating and rolling forearm which lends weight to the small efforts of the fingers as they pass over the key.

With the arm still play (with fingers only) the broken chord



Continue playing this figure for some time, gradually increasing the speed and tone. The longer one plays the stiffer becomes the playing mechanism, because the small *third class levers* with their provision for taking care of *reactions* are not adequate to this rather heavy task, and, therefore, call in *sympathetic muscles*. The faster and louder one plays in this manner the poorer the quality of tone becomes, because this increase of muscular tension near the keys impairs the tone materially, as has just been explained.

Now play the same keys with the same speed and power, with weight from a rolling arm and very little finger activity. Note that since the greater part of the power is furnished by controlled arm weight, and the call on the small third class levers (the fingers) is reduced to a minimum, the sympathetic muscular contraction is not provoked, and the reactions, while always present in proportion to the size of the tone, are taken care of by the slight undulation and rolling of the six or eight pounds of arm. One can play for an indefinite period in this manner with no thought of fatigue, and, what is even more important, the tone never loses its excellent quality no matter how rapid the tempo or how large or how small the volume.

## CHAPTER VI

A COMPARISON OF OLD AND NEW CONDITIONS,  
SHOWING THE NECESSITY FOR RELAXATION

THE question might well be asked at this point, if this relaxation method of playing is so very important, holding, as is claimed, all mechanical values for easy and rapid progress in artistic piano playing, why was it not discovered before? Let us try to trace the coming of relaxation into the scheme of piano technic. Perhaps we will then understand its significance better.

The precursors of our modern piano, the clavichord and harpsichord, had very easy actions. The instruments weighed from 75 to 250 pounds. The largest string on them was about the size of the smallest on our modern pianos. The action consisted of a simple stick about 8 inches long, balanced on a pivot, which was pushed down at one end while the other end, which held a quill or piece of soft metal, scratched the string. The frail affair was so easily put out of tune that a key was always kept near in order to tune it. A heavy playing stroke was not needed, in fact was quite undesirable. Mozart complained because a friend of his once used arm motion in striking his clavichord, not only putting it out of tune but endangering the action. The action resistance of these old instruments ranged from about  $\frac{1}{4}$  to  $\frac{3}{4}$  of an ounce.

Let us consider the proportions and mechanism of the modern piano in comparison with these early instruments. The piano of today weighs from 900 to 1500 pounds. The lower register has heavy single strings, while the lower middle register has two strings for each tone, and the upper register has three. The action is very solid and has every device that might be conducive to strength with a minimum of friction. The frame is of iron or steel and stands a stress of from 20 to 40 tons. The tuning pegs are so solidly imbedded in the hard wood that the heaviest tones may be used for hours without putting the instrument out of tune. The action resistance is from 2 to 3 ounces or from 6 to 10 times that of the old instruments.

The texture of the old music was thin, mostly single notes, runs, arpeggios, contrapuntal writing, and the tone of the instruments was thin, frail, and metallic. The music of today, on the other hand, consists for the most part of solid chords, arpeggios, double notes, and octaves, and the tone of our instruments is round, full, and sonorous.

To play this delicate music on the frail old instruments the players arrived after years of experiment at a very logical method

perfectly in keeping with the light action and delicate tone. The arm was held very still, since arm motion to any extent was too heavy for the action and put the instrument out of tune. The fingers only were used like little hammers to strike the keys. All this was most suited to the delicacy of the instrument, and the finger stroke was so light that it provoked no muscular strain whatever. The small muscle of the finger, being called upon only to perform a task completely within its capacity, had no tendency to call other muscles into sympathy, and the playing mechanism remained independent and in perfect running order. In other words, the playing machinery was not provoked to over-tension, to over-contraction, to over-exertion, and naturally remained free from the baneful effects of sympathetic muscular contraction. Independence of the fingers was a thing very easy to acquire, and only those who were unmusical and brutal, striking the keys too hard, brought on themselves obstacles in the shape of too much tension in the finger muscles, and lost, as a consequence, their muscular independence.

The musical or otherwise sensitive person could soon acquire an easy flowing technique, since the instrument did not put any stumbling block in the way of his progress. The playing mechanism was perfectly suited to the instrument's demands. No laws of mechanics or muscular activity were broken, and, therefore, steady progress was insured to all who practiced carefully.

If the old instruments had continued, the technical problem would have offered no further trouble. But in the course of time the harpsichord and the clavichord gradually gave way to the modern piano with its completely changed mechanism and proportions. True, it had keys, and the keyboard did not look unlike the keyboard of the old instruments, except that an octave or two had been added. So the unthinking and custom-bound music teacher quite naturally kept right on teaching the same method of playing as had been used for centuries. For a time, as the piano was developing, a slightly heavier action, say, one ounce or an ounce and a half, did not materially block his methods. But as the effort to overcome the heavier action required more and more power, the inappropriateness of the third class levers, the isolated finger stroke, began to assert itself, and the accustomed progress seemed to come, if at all, by great labor. The playing did not run as easily or look as graceful as of old. Something was obviously the matter, but the teacher, blinded by custom, was slow to see the cause. For a couple of hundred years the teaching system had been going on beautifully, and as usual custom stepped in with its iron hand and put every teacher under its ban.

The new piano, with its infinitely better tone and mechanism,

however, made a strong appeal to the artist player, and men like Rubinstein and Liszt cut loose from customary methods of playing and really played these new instruments. Of course, they did not use their hands, fingers, and arms in the old established way, but as necessity demanded. They went fearlessly ahead and made easy, graceful movements which resulted in beautiful tone and artistic effects. The teachers shrugged their shoulders and said, "Yes, they play beautifully, but Oh, what methods!"

The authorities actually went so far in Leipzig as to forbid Liszt an appearance in that city for fear his "awful methods" of playing might influence the students in the Royal Conservatory. Of course, they also claimed that his music was not orthodox, but the things they really resented were his movements and methods. Not until Martin Krause came from Weimar to Leipzig and established the "Liszt Verein" did Leipzig hear Liszt play.

We see in all this simply a dumb, stubborn adherence to custom. The facts of the case were these: With the change from the light action to the heavy, the conditions and methods of playing *had* to undergo reform. While the still arm and a finger stroke from a lever of the third class proved perfectly suitable for the small task set by the light  $\frac{1}{2}$  ounce action, it was not at all suitable when the action developed several ounces of resistance. The heavier efforts required to elicit tone had their corresponding reactions, and these reactions had to be taken care of.

Since the finger lever alone was not adequate to deal with the heavier action and bring out the desired tone, necessity had to find another means. It was found in lapsed weight and swinging weight under control. Since some means also had to be found to take care of the new problem of reaction, necessity again came to the rescue with this same weight and swinging action in place of the old still arm. The still arm had to use muscle; therefore stiffness resulted. The swinging arm used weight, and hence kept the mechanism free from harmful contractions, and produced a round, mellow tone.

But while concert artists like Liszt recognized the necessity for the adoption of a technique suited to the new conditions, nearly all teachers still used the old still arm and finger stroke, and there developed the condition known as "sympathetic muscular contraction." Wherever the small muscles were sent alone to perform a heavy task, the neighboring muscles sprang to their assistance, and the sympathetic muscle crept into the playing mechanism. Wherever reactions were taken care of by a still arm, muscular contraction and stiffness had to be used.

And this faulty system of teaching has persisted largely even to the present time. It is only recently that serious and concen-

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trated attention has been given to the proper principle of piano playing. The one thing that will bring a new lease of life to those who have been victims of the old still arm and finger methods is *Relaxation*. And the one thing which will aid the student in managing and sensing weight, muscles, action, and reaction; the one thing which underlies all rational piano teaching, is *Relaxation-Consciousness*.

## CHAPTER VII

## WHO NEEDS RELAXATION.

IN the chapter on "Mechanics and Their Relation to the Piano Playing Mechanism" we saw that the best way to secure easy, free, and graceful running parts with the expenditure of the least amount of energy was by reducing the friction to a minimum. By using the playing members in accordance with the laws noted in the previous chapters, the grosser frictions will be materially lessened. But in order to gain control of the finer movements, control by which the student may progress uninterruptedly into the higher realms of agility, fluency, artistic tone production, and the beautiful pearling run, the presence of one other element is essential. And that element is a high degree of *mental feeling for or mental consciousness of Relaxation*. It is not enough that the player's joints seem to move easily and without friction or that his arms, hands, and fingers are seen to hang loosely. He must be *conscious of the source* of relaxation and of his ability to control it.

There has been a great deal of misspent energy expended by teachers, players, and students in studying the *effects* of relaxation. If this study had been devoted to its *source*, much more universal progress would have been made. What we are striving to do is to put all our attention upon the source of relaxation and upon the developing of this source, the brain, the seat of all muscular activity.

The young child, five to ten years old, has in nearly every case a well balanced feeling for relaxation, but as he grows up in the daily activities of carrying packages, holding an umbrella, washing the hands, holding knife and fork, opening and closing doors and drawers, he gradually comes to use too much muscle and too many muscular contractions, especially of the flexor muscles. If he were going to use muscles only in these ordinary activities, it would not matter much if the contractions were excessive. But in so complicated and finely adjusted an activity as piano playing such contractions are disastrous, for the chief problem here is one of agility, nimbleness, and fleetness of motion, all of which depend first and last upon the mental ability to choose exactly enough muscles and no more to perform each and every act; while of equal importance is the quickness of relaxation of the muscle the instant an act has been completed.

If, therefore, the wrong use of muscular efforts, the wrong use of levers, the wrong order of employing the playing mechanism have resulted in habitually wrong contractions, naturally a correct



functioning of the muscles in rapid motion must be restored. And it is for such students that this treatise and its exercises are written. Some students, either under guidance or by luck, will have arrived at a condition where "the minimum of muscular contraction and the maximum of controlled lapsed weight or swinging weight" is employed, and will, therefore, have the ideal conditions of relaxation. If this small class wished to do nothing further than play, they would scarcely need the analysis of this book. If, however, they wish to teach, it is essential that they understand completely the entire process by which they have arrived at their proficiency, for one can not convey to another what he can not himself intellectually formulate.

The question is sometimes argued whether it is well for a player to know anything of the analytical side of his playing. Of course it is not wise or expedient to try to perform rapid movements consciously. All such movements should be turned over to the proper function, the automatic. As William James says, any movement or act is at first *made*, perhaps with difficulty, but after a few repetitions it is performed semi-consciously, and with sufficient practice it is turned over to the *automatic*. Probably 999 out of every 1,000 acts are performed by this automatic faculty. An act which has become automatic can, however, at any time be performed consciously without destroying the automatic faculty. The expert typewriter can perform consciously the various steps or moves used in attaining his phenomenal speed without hindering his ability to write his record-breaking number of words a minute.

And so it is in piano playing. All our moves have been built up through slow, conscious power at first, and later turned over to the automatic. The acts governing the playing are made at first as consciously as we please, and this is right so long as we allow the automatic faculty to take control when it should. And we can stop at any time and analyze any act performed in playing, or bring it back to the conscious, without interfering with our skill. It is this fact that is the hope of the badly trained student and of the "lucky" performer who wishes to teach from his experience.

Of course it will not be understood that a cut-and-dried rule or adjustment should govern each and every fine shading or nuance of the finished artist, or that if any such rules were followed fine artists would always be produced. But it should be understood that the foundation (and a good foundation is 75% of the whole structure) for the pupil, the amateur, and the artist alike must be laid in compliance with the laws of sensible mechanics, that even in the artist's case this foundation must be correct before the finer

effects can be added. It is true that many might acquire these correct conditions and yet not become fine artists, for the really fine artist is marked not only by his technique, but by his reveling in things poetic, things beautiful, things spiritual, things richly imaginative. This spiritual asset of the real artist occupies only a small percentage of the whole structure, yet it is the final touch. It might have been possible of attainment by many who are only mechanically correct players, but these persons unfortunately did not grasp this richness of experience.

A certain kind of steel is desirable in making exquisite sword blades, but the one essential element that this particular steel possesses amounts to less than one per cent of the whole. Other steel is to all appearances just as good, but lacking this one per cent it is not of the kind required for these fine swords. In the case of ordinary steel this deficiency can not possibly be remedied, since steel has no power to will. But in the matter of fine piano artistry the small percentage, the necessary asset, may be added by many if they put forth honest and sincere effort.

But the important point to remember is not that one may possibly add to his artistic stature by honest effort; the important thing is that it matters not how much of poetry or beauty one may have, if his mechanical foundation is not sound the whole structure of his art will fail.

#### *Note to Chapter VII*

In speaking of the "wrong order" of employing the various members of the playing mechanism a word might be said about the order of presenting the legato and non-legato (not staccato) touches to a pupil in the early grades. I know perfectly well that the long established order is to stress *legato* first, last, and all the time throughout the whole course of the student's piano study. I do not wish to be thought a musical Bolshevik, but I should like to submit that it appears to me that the non-legato touch should receive more attention in early study than it formerly has received. I have given both ideas a long trial, and must state that by far the best results have followed the use of more non-legato in the earlier grade. Far be it from me to deprecate the idea of the beautiful singing legato and its consistent use in all piano literature. My point is, rather, that *both* legato and non-legato might be made more effective, more efficient, easier to acquire, and easier to retain.

May we reason together for a moment, and then if the idea does not commend itself to the reader he can simply check it off as taboo. First let us consider the nature of legato and of non-

legato, and then that of the young pupil who is to receive the training.

Physically, *legato* is produced by depressing a key and keeping it depressed until the next tone is sounded. The young will naturally over-muscularize the act. (Child psychology teaches that the child in doing almost any simple muscular act uses too much muscle, too many muscles, or falls into both errors.) This excess flexor muscular activity will become second nature and will prove, as it does in thousands of cases, a strong barrier in the way of securing later an easy velocity.

Mentally, *legato* is (as Josef Lehvinne tells us) "the most subtle, the most difficult factor musically of anything in piano study." On the other hand, *non-legato* is the open door to speed and nimbleness, since the flexor muscle is taught to relax instantly after tone is produced. This muscular act is not difficult for the young, since their flexor muscles are not yet handicapped by over-tension habits. The young readily imitate this simple percussion act so characteristic of the piano touch.

The mental act in *non-legato* is not subtle, nor is it deeply involved in any way. It is a simple, playful action requiring neither deep thinking nor great musical experience.

The third consideration is that of the young child himself. I have already mentioned his natural muscular inclinations. Mentally, the normal child is anything but a deep and discriminating musical thinker. He is a great imitator up to nine or ten. He can easily acquire conditions for nimbleness and agility. He is a creature of doing, but not of thinking; he does not see, nor even look for, those remote ends which the teacher may entertain in his own mind.

He will play his first little pieces best by using the swinging weight. In these pieces he will generally be instructed to make the piano *sing* the melody (*legato*), and this singing of the melody will always be kept before his attention. However, within a few months he will encounter running passages (such as in Kohler, Op. 157), and from then on much of this kind of work, requiring quick finger motion, will fill the pages of his music. The custom has been to make these running passages (sixteenth-notes) with *legato* playing conditions. My contention is that these rapid runs, wherever they are found, are best played by *non-legato* playing conditions.

*Legato*, as the child is very likely to learn it, is prolonged muscular tension; and when this touch, an acquired sensation, is applied to rapid runs the result is stickiness, friction, and logy motion.

The non-legato touch is, on the other hand, *interrupted* or *periodic* tension, perforated, as it were, with repose. This touch is capable of rapid movement. The old cone-bearing in machinery, which might be illustrated thus: (—————) is typical of the legato muscular conditions, viz., prolonged tension. The ball-bearing (. . . . .) is typical of the non-legato act of touch. It is hardly necessary to go into the question as to which of these mechanical types is conducive to the better speed conditions, since we see on every hand that rapid running machinery is always associated with ball-bearings.

It is easy to see where the idea to base all early practice upon the legato touch had its inception. The early players of keyed instruments were generally organists. The organ absolutely requires the clinging legato. Early instruction books for piano were written by these organists; hence the ever-present advice to "play legato" even down to the present day. Legato is truly appropriate for the organ, but not nearly so important for the piano, which is purely a percussion instrument.

The tone of a piano dies away 80 per cent immediately after it is sounded. If we play a series of tones rapidly on the piano—*evenly and rhythmically*—the effect is that of a *pearling legato* or the true piano legato for rapid work. The effect is bound to be such a legato when the tones follow in rapid succession, since every tone sounded has a short hang-over tone in spite of the dampers. The effect, therefore, is always a continuous, even, and pearling legato.

My contention is that the non-legato act of touch secures this pearling legato much easier and more consistently from the muscular mechanism involved than the use of the habituated legato act of touch. The non-legato touch, when used in early study, will tend to develop a very easy velocity.

It might be noted that he who runs fast can also run slowly, but he who can run slowly cannot necessarily run fast. It will be seen, therefore, that the development of non-legato touch is "inclusive," since the music student trained as I have indicated will possess both slow legato and speed. Legato is a real musical asset, and as the student advances in musical experience he will have very little trouble in playing legato; but if he neglects these nice non-legato conditions in the early days when his physical mechanism is plastic and easily moulded, he will have great difficulty later in life in acquiring the necessary conditions for speed.

## CHAPTER VIII

## A STUDENT OF THE NINETY PER CENT CLASS

LET us consider for a moment the case of a student in that large class which never passes beyond the third grade, the 90% class, we might call it. She comes to us the victim of *sympathetic muscular contraction*. Like nearly everyone she has, through inherited, acquired, or habitual muscular contractions, come to use too many muscles or else too much force with the muscle or muscles selected or, perhaps, both. This condition has gradually grown worse until it becomes a fixed habit, and her mind has grown so accustomed to the wrong conditions that the student is entirely unaware of the damaging tensions. Such a student comes to our studio for a lesson. We ask her to play something, and she plays a part of Sinding's "Rustle of Spring," plays until she winds up so tightly that she has to stop. We find her very accurate in the stereotyped scale and arpeggio passages, though she plays these with cold, unmusical precision and with a total ignorance of correct touch conditions. She tells us that she has practiced these scales and arpeggios from one to two hours daily.

We tell this student that she is lacking in independence of muscular action, that is, that she has what we call an obstinate case of sympathetic muscular contraction. She thinks it strange that her finger independence is poor, for she has practiced much on independence exercises in the use of five-finger studies. We ask her to try a five-finger exercise in this wise—to play the 3d and 5th fingers while the 1st, 2d, and 4th fingers remain quiet. She proceeds by holding 1, 2, and 4 firmly down, while with a hinge-like stroke and with high-raised and over-contracted fingers she plays 3 and 5 slowly in succession. We explain to her that though we do not consider this form of exercise a good one, either as a device for finger independence or as a test of independence, it does bring out certain glaring mistakes in the type of practicing she has been doing. We list these for her:

1. The habit or feeling for arm support should be established at the shoulder instead of on the keys, as she did when she held the keys down.
2. The heavy muscular stroke with the finger, a third class lever, is not consistent with good mechanics. This very act tends to provoke sympathetic muscular contraction instead of helping to abate it.
3. The firm finger stroke with a quiet arm makes no preparation to take care of the resulting reaction.

4. The resultant tone is of poor quality because too much muscle is used near the key.
5. The high finger raising, if repeated frequently, becomes habitual and impairs speed.
6. Even if the up-and-down stroke of the finger *could* be perfected, it would interfere with the sidewise movements of the fingers as they are used in spacing. Both the up-and-down stroke and the sidewise stroke are made at the knuckle; but as the up-and-down muscle is much stronger than the sidewise muscle it is easy to see that a strong up-and-down muscle would be continually pulling against and hindering the free movement of the weaker sidewise muscles, which make the spacing motions constantly going on in piano playing.
7. When the muscular stroke through a high-lifted finger is used against the key, there can be very little (if any) control over the key, the tool between the player and the string; consequently the tone is almost invariably bad.

The student acknowledges that, though these points have never before been brought to her attention, they seem to be true, and she asks if one can not gain independence in the way in which she has been practicing. We assure her that a certain kind of independence can be gained in this way, but it is the kind in which by adding more muscle one overcomes the sympathetic muscles, but in which the student still keeps the original muscular error. Those who work in this wise must continually keep up an abnormal muscular mechanism, for the moment their muscular development decreases, their technique diminishes. The cause of their mistake is always with them, preventing a free, fluent technique.

We then ask the student to try her independence by lightly placing her 1st, 2d, and 4th fingers on the surface of the keys c, d, and f, not holding them down, but keeping them free and easy, and then to play the notes e and g with the 3d and 5th fingers. This she tries to do, but her old habits of over-contraction and lack of real independence block her efforts. When this, the really practical way of supporting the playing mechanism is tried, her supposed independence is a failure.

We then tell her that the exercises she has been using are quite parallel to those of a bird which, getting its wings tangled in some yarn, tries day after day to work up extra muscle so that it can fly in spite of the yarn. The bird finally does fly by this procedure, but only in a most awkward and laborious manner. What the bird should do is to have the cause, the yarn, removed. Then the flying will be done easily, gracefully, naturally, with no addi-

tional muscular development. We explain further to the student that she too must find some method of practice by which she can drop the *cause* of her muscular difficulty. And this method is a careful course in *relaxation feeling*.

Upon further questioning we find that this student has been taught by the methods applicable to the clavichord of two hundred years ago. Her teacher has required her to hold her arms still and make acute muscular strokes with her fingers—a striving to add skillful finger movements at the end of two feet of awkward arm. This system is like putting on the shingles before erecting the frame, placing the complex before the simple, the part before the whole. In other words it breaks the rule established by psychologists that the joints nearer to the brain should receive attention before the joints more remote.

We next ask the student if she can relax her arm, that is, hang it loosely from the shoulder and at the elbow joint. She says, "I think I can." We call in one of the more experienced students who has studied with us some six months and ask her the same question. She answers, "Why, yes; certainly."

We then try the first student's arm. We take her right hand in our right hand and, telling her to suspend all muscular action, we lift the forearm until it bends at right angles with the upper arm, while with our left hand we lift and swing her elbow out and in. That is, we desire to swing her arm thus, but her poor feeling for relaxation will not allow her arm this freedom. We ask the experienced student to try the same test, which she performs with perfect ease.

We try the new student's wrist. We ask her to place her fingers upon the surface of any three or four keys. We place our index finger under her wrist, asking her to give up all muscular activity at the wrist joint and allow the wrist to be lifted up and down. Again her muscles oppose our moving her wrist. And again the relaxation of the experienced student is perfect.

We ask the new student if she can relax her fingers at will. She thinks that she can. We apply a rather complicated finger test. We ask the student to place her five fingers over any five keys, and, without exciting any other finger, to strike a key with her second finger. We tell her that as soon as this second finger sounds the tone, that is, forces the key to within one-sixteenth to one-eighth of an inch of the key bed, she is to relax her finger immediately, but to leave just enough loose weight on the key to hold it down. (To explain: Suppose the pupil plays the key with an 8-ounce stroke. When it reaches its near bed, she, by a fine sense of relaxation, releases 6 ounces of power, leaving 2 ounces

on the key—just enough to hold it down.) At the very moment when the key reaches its near bed we try suddenly to snap outward with our index finger the relaxed finger of the student, that is, knock the loose prop outward toward the board on which is inscribed the name of the piano. If in such a procedure the finger offers no resistance whatever, the student's mind may be said to have good control over muscular relaxation, and the condition of the stroke may be said to be good. Of course, the new student can not perform this act at all, though again it proves easy for the experienced student.

Our tests reveal the fact that while the new student *thought* she could relax her arm or wrist or fingers, yet she *could not*, and that the experienced student *thought* she could control her arm or wrist or fingers, and she *could*. In other words the new student has practically no mental realization, no feeling of fine control over her arm or finger muscles, and the other student, after six months' experience, has this fine control. One *knows in her mind* that she can, as we say, "make loose," that is, consciously relax; the other has *not* this consciousness.

The point to be brought out as strongly as possible is that the trained pupil has experienced a development of her *mental grasp of relaxation*. And this means that the growth is not one so much of long hours spent in repeating some thoughtless motion exercises; but is, on the contrary, a process of concentration of thought upon certain exercises, adding thereby, through perfected sensations, a little higher mental attitude each day toward the power of "making loose" wherever and whenever desired. When the student begins to gain this mental grasp, progress goes easily forward, because correct conditions can be utilized at the instant the pupil's will is exercised. Stiffness dissolves, as it were, at the mind's desire. Easy, elastic conditions come to the pupil's assistance, and all difficulties are surmounted in half the time required before.

We try to impress this simple reasoning on the new student: The fine player has levers, bones, muscles, and brain not unlike those of any student, but in the case of the good player the playing mechanism, through obedience, acquired either laboriously or by chance, works along the line of the "minimum of contraction with the maximum of controlled or swinging weight," or in other words, the muscular friction is reduced to a minimum. Since it is muscle that must assist in making any and all movements, the question of ease of movement depends upon the fineness with which the mind controls the *selection, time, and degree of contraction and relaxation* of the muscle or muscles employed.

The student, therefore, must bend every effort to approximate



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the condition possessed by the good player, and the principal asset in attaining such condition is the mental control of *relaxation*, since this more than all other factors combined tempers and assists in removing friction.

## CHAPTER IX

## THE ATTAINING OF RELAXATION-CONSCIOUSNESS

THE reader has by this time become aware of the fact that relaxation is a matter of the mind—a day-by-day growth in the mental consciousness of the power to “make loose.”

It has been noted that our piano-playing activities are accomplished by levers, worked by the motive power—muscle; that a muscle can do only two things in the world, viz., contract and relax; that the artist pianist, when playing, uses the minimum of contraction and the maximum of swinging and lapsed weight under control; that his movements are made easily because he makes them in accordance with laws which govern the perfectly running machine; that he mixes firmness and looseness of muscle in correct proportions so that his members may work easily and gracefully; and that, although he may have come by it by chance, he possesses a fine *feeling for relaxation*.

It has also been noted that ninety per cent of piano students never reach these ideal conditions. Their obvious error is nearly always a physical one. They possess muscles not unlike those of the artist, but while the artist has a working knowledge or consciousness of both powers by which a muscle can be controlled, viz., looseness and firmness, securely planted in his mind, the student has knowledge of only one of these factors—firmness. This knowledge is, moreover, only partial, since only with the full realization or consciousness of relaxation comes the possibility of a complete comprehension and control of positive motions.

While a few of these students may come eventually by chance into the possession of these ideal conditions, it is plain to be seen that if he is to be sure of making uniform and continuous progress he *must* possess this conscious control, because every movement depends upon his muscles, and he can not have real control of them unless he has a definite feeling of the two functions of a muscle—contraction and relaxation.

Dr. Anna Payson Call in “Power Through Repose,” a book every piano student should read, states the case clearly: “The

necessity for returning to a freedom of body before directing the will to a new part or move can not too often be impressed upon the student's mind; in a second we must be able to erase all previous impressions. Having once sensed a free body, we must be able to return to it instantly. And this is the rock, the foundation, upon which the whole structure rests." The artist does this; the student in the "ninety per cent" class does not. And there is the major difference between them.

Not a few of the readers who have read thus far may agree that the principles laid down in these chapters are tangible and true, that the theory of relaxation sounds well, that a stiff playing mechanism is the root of most error in piano playing, and that the theory of conscious control over both contraction and relaxation in all playing activities would undoubtedly solve the problem; but they still would like to be convinced that this relaxation feeling can be gained, and that these stiff and stubborn muscles can be melted, collapsed, or made to give way at will.

If the reader could see the various stages of development of relaxation-consciousness control among the writer's pupils, he would be satisfied, since all of these pupils except two came by their mental control through exercises which will be given in later chapters. But since this objective demonstration is impossible we shall have to use other means.

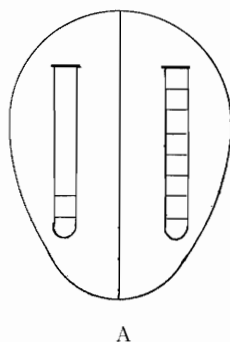
We have seen that the piano is played by the use of muscles, that these muscles are controlled by the brain, and that they can do only two things, relax and contract. The problem then becomes quite simple: The mind simply needs to control two functions of the muscles and develop this control to a high degree.

As has already been stated, the mind is quite expert in the contracting sense, since all daily activities, both fine and gross, have exercised and increased this capacity. The capacity for relaxing in any fine sense, however, receives very little attention. In the daily activities, nearly all of which are of a gross nature, there go into each act, of course, contraction in the beginning and during the continuation of any task, and relaxation when the task is finished. But the relaxing in this daily routine is always slow and lingering.

The piano playing activity, however, is one of nimbleness, agility, quickness, and such motions can not take place without forcing unless an exquisite sense for relaxation is established. One can not make delicate and rapid moves when the muscles are habituated, as they are in daily activities, to protracted and lingering contractions.

The average student comes to a lesson with a mind which might be graphically shown in this way (see Cut A). Through the development caused by the usual daily activities, the brain's reservoir for contraction is quite full, while the reservoir for relaxation is comparatively empty. The student with a mind as shown here plays an arpeggio, and as would be expected uses too much force and too many muscles. The playing is what would be characterized as stiff, though the student is not conscious of the fact. The ideal proportion of looseness and firmness necessary to produce a *mf* tone on the piano might be approximately stated as eight parts looseness and two parts firmness. How, then, is this ideal proportion to be realized by a mind showing the ill balance of that in the illustration?

*Gauge of the average mind relative to relaxation and contraction*



*Relaxation    Contraction*  
*2 parts        8 parts*

It is impossible to get water from a dry well. It is also impossible to have any two-part compound mixed satisfactorily if the chemist, druggist, or cook possesses a knowledge of only one of the ingredients necessary for the mixture. And it is quite impossible for such a student as we have mentioned to mix a proper proportion of muscular power for ideal piano playing, for one can not get eight parts of looseness from a brain that can realize but two parts. The remedy for such a situation is perfectly evident. The faculty which is deficient must be developed up to a capacity equal to the one already adequate. Can this be done?

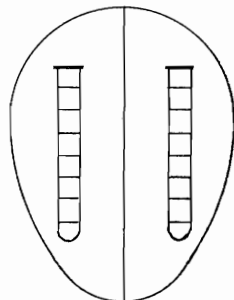
It is certainly no more difficult to develop the capacity for relaxation than it is to develop a fine sense of smell, as the expert perfume-tester does; a fine sense of taste, as the expert judge of coffee, butter, tea, or wine does; or an expert sense of touch, as the blind man does. The exercises presented in the next succeeding chapters, if given regular and attentive practice, will bring the desired mental capacities to the ideal balance, which will then appear thus (see Cut B). With such a mental balance any desired fineness of motion can be secured.

In adding to or developing this capacity for relaxation or looseness in the brain, another very important asset comes into the student's possession. Every day that adds more feeling for relaxation increases one's sensitiveness to the opposite of relaxation, stiffness. As long as the student remains insensitive to relaxation, he is in no wise sensitive to stiffness, but now that he has added this feeling opposite to stiffness, he will naturally become sensitive to any over-contraction.

The law of extremes or of opposites runs through everything in nature. Everything of which one can conceive has two sides, two extremes—hot and cold, sin and goodness. The more one becomes accustomed to a hot climate, the more keenly will he notice a cold day. Opposite extremes always reveal one another, and they reveal in proportion to the development of either extreme. The stiffness among the piano playing muscles, therefore, will be successfully attacked by developing the opposite to stiffness, relaxation feeling, and the further one develops the relaxation sense the better will he be able to notice the offending muscle and to relax it.

Once the student finds something that he can tie to, his hope goes up toward the top of the thermometer, and he bends every energy, adding each day more and more realization of relaxation. Each succeeding week finds his playing members more flexible and more managable. His contrary muscles begin to give way, and he comes into possession of a real independence of which he never before dreamed. He is alive to every little offending contraction

*Gauge showing proper balance of mind relative to relaxation and contraction*



B

*Relaxation    Contraction*  
*8 parts        8 parts*

and is able to dissolve it, so that he now learns one difficult passage after another with the utmost ease. Why should he not do so, when his playing machinery is freed from offending frictions? Practice becomes a pleasure, and the supreme joy of being able to give adequate musical expression to masterpieces is at last realized. The student has returned to his own inheritance.

If the reader wants further proof let him practice thoughtfully the first exercises of Chapter X, for relaxing the shoulders. In the first test, which calls in the aid of a second person, the student can not at first feel whether his muscles remain relaxed or not. After three or four weeks of mental practice, however, he will *know* whether they are relaxed or not. He will also know absolutely that mental realization for relaxation has been growing day by day. If, therefore, he can gain in the feeling for relaxation in this joint, he can by the same manner of practice gain in the feeling for relaxation in the elbow, the wrist, and the fingers also, attaining therefore higher and still higher efficiency by means of more practice.

## PART II

EXERCISES FOR ACQUIRING RELAXATION-  
CONSCIOUSNESS IN THE HIGHEST DEGREE





*"All of our motor education of arm, hand, and fingers is but the education of the grey matter of the brain and spinal cord."*—HANS SCHNEIDER.

*"As a matter of fact, we teachers cannot teach any pupil anything; that is, in the sense of lodging some of our knowledge into the pupil's mind. All we can do is to bring to the pupil's attention the things which it is desirable that he should learn. The other mind now must make the effort to learn, and unless that effort is made nothing will be learned."*—MATTHAY.

*"Constant reading, study, and research may not make a great teacher; but one thing sure, it will make a greater teacher than would have been made without such reading, study and research."*—

*"As a man thinketh, so plays he."*—



## CHAPTER X

EXERCISES FOR ACQUIRING A CONSCIOUSNESS OF  
RELAXATION—SHOULDER, ELBOW, AND  
WRIST STUDIES

THE student is cautioned to keep ever in mind the warning in a previous chapter, viz., that the following exercises *are not* to be done simply in order that he may see his joints swing loose, but on the contrary they are to be done with all the energy, all the mental effort he can muster in order to develop a *feeling for relaxation*. Attention, therefore, during the exercises must not lag, but must be ever on the alert. The *feeling* for looseness, or letting go, will under these conditions grow day by day. All of this feeling possible must be developed, for the more of relaxation-consciousness he adds, the finer discrimination will he have in regard to his contrary or offending muscular contractions. And then, too, the student must never forget that he is not adding this as a means to make his muscles *all* relaxed, as many articles lead us to think; he is adding this high degree of relaxation-feeling in order to be able to *mix understandingly* looseness and firmness in a proportion that will be adequate for bringing out on the piano the ideal expression in any masterpiece, be it in the form of a series of chords, a pearly run or arpeggio, or any of the various dramatic passages that are part and parcel of a finished work of art.

The student should remember also that *he who can "make loose" wherever and whenever he wishes can also "make firm" wherever, whenever, and in any degree he wishes*, for the individual who knows both functions of a muscle, knows both extremes. But *he who can "make firm" wherever and whenever he wishes cannot always "make loose" wherever and whenever he wishes*, for in most cases the student knows only how to "make firm," and knowing only one function of the muscle, will fail.

When I have been lecturing on the subject of Relaxation, many students have asked me how to apply the principle I have outlined, and, not having time to go into detail as I have in this work, I have given them this answer: "Do the Exercises. Think relaxation and talk relaxation, and a great light will come to you. In a short time you will begin to be sensitive to any over-tension. Your new asset, relaxation-consciousness, will begin to function automatically."

Of course, any practice, much or little, in the field of relaxation means just so much real advantage in making technical prog-

ress in piano playing. A 25 per cent or a 50 per cent gain in relaxation means a proportionate gain in muscular mastery at the keyboard. But, naturally, finer and farther-reaching results will follow the detailed and careful study of the Exercises to be found in the following chapters. These have been used by the writer and have invariably produced the desired results. The student, however, may also know of or invent other exercises which may prove helpful, if used with the correct mental attention and direction.

With this counsel of the correct way to practice and the reasons for it always ringing in our ears, let us proceed to the exercises.

**DIRECTIONS FOR PRACTICE:** Never practice any one exercise for more than one or two minutes. Some time go through all the exercises, using each one a few times only; but more often use a few at one time, and at another practice period during the day use others. Find the muscles which, in each individual case, are hardest to control, and use those exercises that touch most on these muscles. *Many short periods of practice are much better than one sustained period.* As a rule use one arm or hand at a time. Make all of the larger positive movements, i. e., the contractions which raise arm, hand, or finger, just previous to relaxation, slowly. It is a good plan to often close the eyes in practicing relaxation studies.

1—*Exercises for Relaxing the Upper Body and Shoulders, and for Acquiring a Mental Consciousness of the Same*

(A) Bending over at the waist,\* allow the arms to hang down.

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*\*Much importance should be attached to this sensing of the power at the central part of the body, together with the relaxing of the trunk, shoulders, and arms. Deep and steady breathing should be used not only in this exercise but in others also, as well as in playing difficult passages. Take a deep breath upon the up-beat and let it out steadily as the passage progresses. This deep breath should be a sign of optimism, not of pessimism. The body is the sensitive medium through which, and by means of which, the ideal expression of a composition is communicated to the piano. Therefore, the body must be not only free from all pessimistic thoughts, which invariably cause depression and consequently constricted muscles, but it must be ideally relaxed as well as charged with the most buoyant of thoughts. The body lever is used back of all tones and is used in proportion to the size of the tone desired. The mind should learn to sense this control at the center of the body and utilize it, especially in any difficult passage; firmness at the center gives freedom at the extremes. The body, shoulders, and arms should always be keenly alive and work harmoniously back of the smaller levers as an ever-ready support to each and every move. Not only does a beautiful tone result from these conditions, but it is a real pleasure to see such a person perform, as his body, arms and hands move rhythmically in absolute sympathy with the piece he is playing.*

Swing them about from side to side by means of power from the waist, finally letting them swing until "the old cat dies." Swing them parallel to each other, also toward each other. Lift the shoulders and let them fall. Shake the hanging arms as a dog shakes himself, always sensing the feeling of the loose condition.

(B) Stand erect; drop the arms to the sides. With the mind on the shoulder muscles, lift the shoulders up toward the ears. When the shoulders have been raised three or four inches make the feeling of contraction quite tense\* for three to five seconds, and then with a sudden mental effort let the whole burden drop to the normal position. Let all the muscular lifting effort take place in the shoulders, keeping the lower arm and hands hanging by the sides perfectly free from contraction.

(C) Again using the shoulder muscles, raise the arms out from the sides, say one foot, make firm, and suddenly relax, allowing the arms to fall dead at the sides once more.

(D) Raise the arms by the shoulder muscles directly in front pointing straight forward, make firm, and collapse, allowing the arms to swing to and fro until the momentum ceases.

(E) Pull the arms directly back parallel to the body as far as possible; then suddenly relax them.

*2—Exercises for the Forearm, from the Elbow Joint*

(A) Hang the arm once more at the side; and then, without disturbing or contracting the shoulder or wrist, lift the forearm at a right angle with the upper arm, make slightly firm, and suddenly drop it to the first position. In raising the forearm allow the hand to droop from the wrist joint; when it is in this position, shake the hand loosely.

(B) With the arm hanging at the side, the back of the hand in full view, turn the forearm around, thumb leading, until the palm of the hand is in full view; then of a sudden relax, and let it return to the former position. Reverse the Exercise.

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*\*In many of these exercises just previous to the sudden letting go or relaxing, make the muscular contraction rather tense in order to place firmness and looseness in as close juxtaposition to each other as possible, with the mind principally given to relaxation. The contrast in feeling will cause the impression of "letting go" to be more firmly set mentally than in any other manner of doing the exercise. Shake, swing, or turn the hand and forearm in Ex. b, c, and d, while the shoulder is contracted; this also helps to give a sense of looseness by contrast.*

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FOOTNOTE.—*The teacher (or other second person) should very frequently test the various joints; in such tests the student should be able to completely give up any member—arm, hand, or finger—to the teacher, offering no resistance whatever no matter how the teacher holds, lifts, or swings the relaxed member.*

### 3—Exercises for Wrist Joint

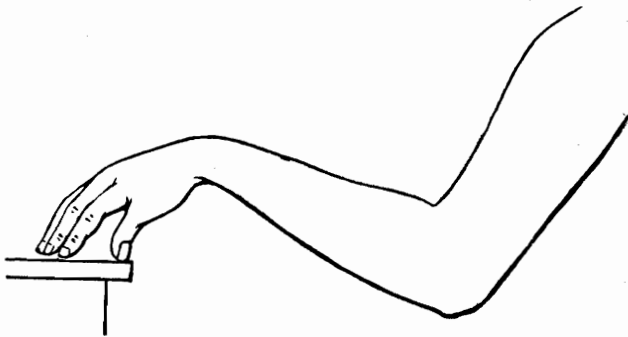
(A) Hold the forearm at right angles with the upper arm in front of the body. Now raise the hand back as far as it will go easily, hold firm, and drop relaxed to its lowest level.

(B) Seated at the keyboard, suspend the arm over the keys, like a suspension bridge cable, until just the tips of all the fingers touch the surface of the keys, and now, without contracting the fingers or disturbing the keys, raise the wrist up and down. With the same conditions, make the end of the forearm at the wrist describe a circle; first it will be above the keys, then as it continues the circle it will be below the keys.

### 4—Exercises Combining Shoulder, Forearm, and Wrist Joints

(A) Stand near a shelf, upright piano, or fireplace mantel about shoulder high; lay the arm (including the elbow) upon the shelf or support chosen; give the whole weight of the arm to the support. Now move gradually away until the arm is pulled off the shelf and falls relaxed to the side. The arm should remain like a wet rag in this exercise and, when pulled away, fall like a dead weight, bounding two or three times as it falls against the body before it comes to a dead stop.

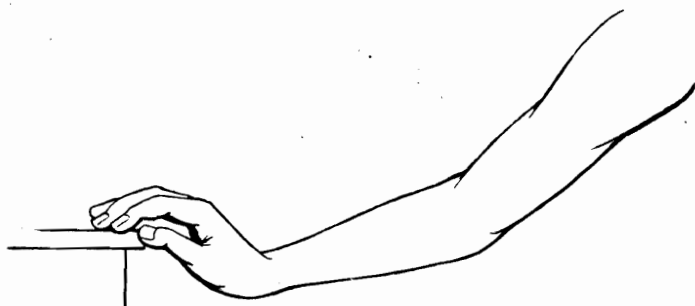
(B) Seated at the piano, take the position as at 3(B); now raise the wrist quite high and allow the weight of the arm to change from the shoulder to the arched hand and fingers which will depress the keys; count 1-2-3 and at count 3 let the wrist col-



A

*High position, before relaxing*

lapse, falling below the keys, still retaining the finger tips on the keys. [See cuts at (A) and (B).]



B

*Low position, after relaxing*

(C) Next, when the wrist is at the low level just described, place the unoccupied hand (say the right hand) under the left wrist joint, lifting it up and down; also, with a slight muscular impulse, swing the elbow out from the side and in again several times. It is a good idea for a second person or teacher to handle the wrist in the last two exercises and to move the elbow out and in with a swinging motion; the relaxed arm, forearm, and wrist being given entirely up to the second person.

(D) Raise the arm, hand, and fingers straight above the head as high as possible, hold slightly firm, and now relax first the fingers, allowing them to fall; next the hand, allowing it to fall at the wrist joint; next the elbow, allowing it to give way, falling over toward the head, and lastly the shoulder, allowing the whole mass to fall at the side completely loose. This is an excellent exercise, for the mind moves from one joint to another along the whole line.

(E) Seated in a chair, or on the piano stool, swing both arms out straight in front; hold them there firmly; then relax, as above, first the fingers, then the wrist, and then allow the whole mass to fall into the lap.

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FOOTNOTE.—*Many of the exercises, for instance, No. 1 d, No. 2 a, No. 3 a, and especially No. 4 d, may well be practiced when lying on a couch or on a bed. When the arm drops upon the couch, sense the feeling of giving up completely to the couch. When raising the arm at No. 1 d, use the shoulder muscles, keeping the remainder of the arm free from all unnecessary contraction. Allow the wrist to droop. Always raise the arm slowly.*

## CHAPTER XI

## SOME THOUGHTS PREPARATORY TO THE FINER STUDIES IN RELAXATION—FINGER STUDIES

WITH the exercises in Chapter X relaxation study in all other courses of which the writer knows ceases. Even the perfection of the few exercises thus far practiced, however, will make a wonderful improvement in one's playing and increase the possibility of progression, because of the fact that piano playing for the most part, on our modern instruments, is done by the larger movements. The student who has gained the feeling for relaxation thus far outlined may acquire naturally that finer relaxation in the fingers which is absolutely necessary to velocity, but only a very few will gain the complete feeling for finger relaxation without special and definite exercises for this particular phase of technique. Because of the fact that in the past relaxation study has been rather vaguely applied and not definitely carried into the feeling for the articulation of the smaller finger movements, the great value of this principle has, as yet, by no means come into its own.

The exercises for finger relaxation are much finer than those for the arm, and, therefore, should be learned and taught after the relaxing of the larger movements has become fairly well established. This order of precedence preserves the rule, "Attention to joints or muscles nearer the brain before those farther away."

This system of playing the piano is, as the reader is, of course, aware, known as the "weight system," i. e., the minimum of contraction with the maximum of controlled weight—lapsed, or swung, or a combination of both. The arm is suspended over the keys principally by the use of the shoulder muscles. The shoulder is made sensitive by relaxation to every shade of letting off various degrees of weight; in fact, it acts like a throttle which governs a flow of water according to the need.

In a run of five tones played according to the old system the finger muscles exerted, say, five ounces to each tone. Twenty-five ounces of force were, therefore, demanded of small muscles of a third class lever type. That is, twenty-five ounces of force were placed upon the keys to make a tone of certain size, but, in accordance with the law of third class levers, considerably more than twenty-five ounces of *muscular energy* were needed. The student who played in the old manner nearly always had the sympathetic muscular affliction which made it necessary to add more energy to overcome the muscular contraction which hindered the



muscle or muscles making the needed movement. And, moreover, such a student, through lack of the finer feelings which result from sensitive relaxation study, invariably spent on the key after it had struck bottom as much or more force (perfectly needless as well as detrimental) as was necessary to elicit the tone in the first place. Now let us add together approximately his total effort for one of the five tones played:

1. 5 ounces for each key to produce a *mf* tone.
2. 3 ounces extra at least, because of the use of a third class lever, which uses more energy than the weight to be moved.
3. 4 ounces for overcoming at least two sympathetic muscles, 2 ounces each.
4. 2 ounces—a very low estimate—spent on the key-bed after the tone had been made.

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Total—14 ounces for one key, or 70 ounces (5 times 14) of muscular energy consumed in playing one short five-finger exercise.

Approximately seventy ounces of effort used among the smaller muscles of the playing mechanism through the medium of third class levers! No wonder such a student's playing was sticky and lopy and his progress painfully slow! No wonder he got discouraged and never progressed beyond the third grade!

Now let us note the process and results when the action is performed by the weight system. With the arm balanced or suspended over the keyboard (suspended weight), the well-controlled large muscles of the shoulder will allow a weight or weight-impulse of about three or four ounces for each key, while the other one or two ounces will be provided by the finger muscles for the purpose of articulation or clearness.

Not only, therefore, must the throttle, as it were, at the shoulder be delicately controlled in order to let down just enough weight not to disturb the required steady movements of the arm side-wise, but the fingers at the end of this arm mass must also be even more delicately adjusted so that they exert just enough muscular activity to make clear articulation and no more. And this articulation stroke must be made from near the key, and muscular activity must cease even before the key reaches bottom, in order not to waste useless contractile force, and in order that freedom in *spacing* may not be hindered. That is to say, when one finger muscle has exerted its small articulating force on the key, the contraction that was used must cease immediately so as not to infringe in the smallest degree upon the absolute freedom which

should belong to the next finger; and each succeeding finger must be trained to obey the same rule. When the fingers work in this wise, friction has been reduced to a minimum, and when friction is eliminated as far as possible, near-perfection of movement will result.

Can we acquire this muscular control of the finger, which must act and cease to act at our will? We can, if we go about it "with great deliberation in the initial stage." As James tells us: "Anything done slowly at first is more easily done after a few repetitions, and after sufficient practice becomes automatic." In this manner these finer finger motions can be acquired. Begin slowly, practice carefully and attentively, and true muscular sensation, which will soon work automatically, will result.

The exercises themselves are not at all complicated, nor is there any mystery about them. They are quite simple. But this rather lengthy explanation leading up to them has been made so that the student may understand the mental and physical conditions which must be secured, and see that it is possible to secure these conditions. When a student understands his problem, nine times out of ten he will reach his goal.

#### RELAXATION EXERCISES FOR ACQUIRING MENTAL SENSITIVENESS IN FINGER MOVEMENTS

##### *First—An Exercise for General Finger Relaxation While the Larger Muscles Furnish a Slight Motive Power*

(a) Seated at the keyboard with the shoulder supporting the arm over the keys in playing position, suspended weight, place the five fingers over five keys; for example, the left hand over any five keys (the keys not held down) below middle C which are most comfortable to reach. Now, with the finger tips keenly alive and each finger feeling its key very delicately, begin to push the arm toward the fingers; *keep the finger tips on the same spots* all the time, but as the arm pushes forward allow the fingers to roll up just like a small roll of carpet. Do not allow the fingers to push the keys down in the least. The thumb, of course, will slide in and out upon its key. Feel the fingers perfectly "givable" and loose; push the arm out and in, first rolling up and then unrolling the fingers.

##### *Two Exercises for Sensing Hand and Finger Relaxation*

First—Lay the fleshy under-side of the forearm on the arm of a chair, or on a table near the edge, or on the knee, anywhere so that the hand projects beyond the support a little farther than the wrist joint. The hand can now be relaxed at the wrist joint and hang loosely on the end of the supported forearm. With

keenest attention to sensing the looseness, slowly lift the hand up as high as possible, and after holding firm a second, allow the contracted muscles to collapse, the hand falling to its first hanging position. Repeat several times. Now, while the hand is thus hanging relaxed, move each finger in turn slightly up and down without disturbing the others (except that when the 4th is used it is best for physical reasons to allow either the 5th or 3d to move with it).

Second—Again, with the arm lying on the same support, swing the hand up and down; while the hand is thus swinging contract the 2d finger extensor muscle, raising the finger about an inch or an inch and a half above the others without influencing them. After swinging in this manner seven to ten times with the 2d finger, use each of the other fingers, in turn one at a time. The effectiveness of this exercise, as well as that of all relaxation sensing exercises, depends upon the acuteness of the attention and of concentration.

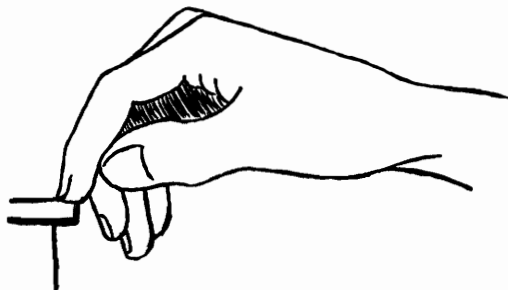
*Second—An Exercise for the Relaxation of the Finger Extensor, the Muscle Which Raises the Finger*

(a) Assuming a playing position at the keyboard with the five fingers touching the keys not held down, gradually raise each finger separately an inch or two above the surface of the key and now with the mind acutely alive to the feeling taking place, hold the finger four or five seconds suspended; suddenly allow it to fall dead upon the surface of its key. Do not disturb any other fingers, except that when the fourth finger is raised, allow the fifth or third to rise with it; but when the fourth is relaxed and drops do *not* allow the accompanying third or fifth to drop the entire distance; this focuses the mind upon the feeling for the 4th finger without the bad effects of trying to raise the fourth entirely alone which is physically impossible. Practice each finger of each hand five or six times, always listening for and feeling the dead fall upon the key surface. The slow raising of the finger helps to give a power of mental control over it and it also develops poise, deliberation and calmness.

Extensor muscles, as a rule, need but very little practice in relaxing, since these muscles do not contract to any extent in raising a finger nor are they habitually influenced to contraction as compared with the flexor muscles, which in all daily activities are almost continually under contraction.

*Third—Exercises for the Sensing of the Flexor Finger Muscle or the Muscle Which Causes the Finger to Strike the Key*

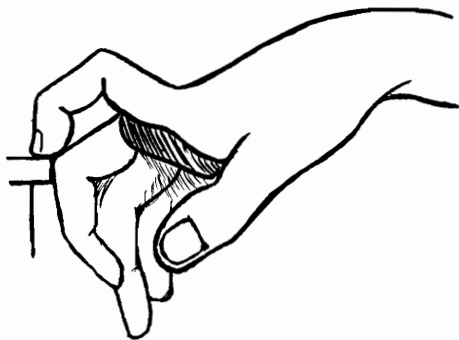
(a) With the hand in playing position, rest a trifle of weight on, say, the 2d finger of the left hand either on a key or any other



A

*Before relaxing*

support, with the knuckle joint high like this (see cut A). While the contracted flexor muscle is supporting the hand thus, count 1-2-3, and at the count 3 suddenly let the flexor muscle cease its



B

*After relaxing*

support, and the knuckle will collapse like this (see cut B). Try this four or five times with each finger of each hand, and if the mind is alert, a gain will soon be made in the realization of the relaxation of this flexor muscle.

(b) Seated at the piano as before with, say, the second finger (not too much curved) of the left hand in mind—let that finger,

with a slapping-like stroke, strike its key, and the instant the key reaches tone, cut loose instantly all flexor muscular activity, allowing enough relaxed weight of the hand back of the finger on the key to hold the key from coming up (exactly enough and no more).

Now quickly place the 2d finger of the right hand between the thumb and the second finger which has just struck its key down, and with a flipping motion of the right hand, knock the second finger of the left hand outward toward the front board of the piano where the name of the piano is inscribed (see cut A). This



## A

*The second finger of the L. H. has just struck its key into tone and has relaxed; the R. H. finger is applying the relaxation test as described in the text*

knocking of the finger prop out is a test for the relaxation of the finger, and the relaxation should occur the very instant that the tone is sounded. The mental realization of the looseness after the stroke should take place like a flash, and the finger that knocks the finger-prop out should find no resistance whatever from the muscles of the finger which has just struck its key. When practicing the 3d finger keep only the 3d, 4th, and 5th fingers on the surface of the keys; relax the thumb and 2d finger, allowing them to rest on or near the board which runs along the ends of the white keys, so that the 2d finger of the other hand may easily get at the 3d finger, which has just struck, in order to test its relaxation.

In practicing the 4th finger, place all the fingers except the 5th upon the key surface, and at the same time reach the right hand over the back of the left, inserting the 3d finger between the 4th and 5th of the left; as soon as the 4th finger strikes its key down and relaxes, apply the test with the already prepared 3d finger of the right hand (see cut B). When the 4th finger strikes, allow the 5th to swing passively with the 4th.



## B

*The fourth finger of the L. H. has just struck its key into tone; the 3rd finger of the R. H. is in the act of applying the relaxation test as described in the text*

In practicing the 5th, all fingers are on the key surface. Again reach the right hand over the back of the left hand, and the instant the 5th sounds tone use the 3d finger of the right to flip the 5th finger out toward the front board.

The fingers of the right hand should now strike the keys, while the left hand flips out the finger that has struck a key. In striking, do not draw other fingers into sympathy. Use for the most part finger flexor power in striking, for it is this muscle that we wish to relax quickly; the muscle itself must always contract before it can relax. Also practice this exercise by allowing each finger after its stroke to bound up loosely upon the rebounding key.

*Exercises for the Further Sensing of Relaxation in the Flexor and Extensor Muscles and Also for Securing Independence Between Any Two Fingers*

(a) Strike, say, the 2d and 3d fingers of the right hand both at the same time on the keys d and e, the stroke to be about *mf* or *f* and the tones of an equal degree of power. The instant the two fingers reach bottom, relax one of them, allowing the free finger to ride up, as it were, upon the rising key while the other finger remains on the depressed key with enough flexor muscle and weight to hold it down for a few seconds. Now reverse the exercise, allowing the finger that held the key to assume the rôle of the free finger. Carry this exercise through with each pair of fingers.

(b) A similar exercise can be applied to the extensor finger muscles by raising any two fingers at the same time and dropping one finger while the other remains held up an inch or inch and a half above the keys. These exercises teach each flexor and extensor muscle to relax instantly at the order of the mind. The act of using a flexor muscle and relaxing it the very instant that the key sounds the tone, thereby wasting no force uselessly on the keybeds, will become a habit. This returning of the flexor muscle quickly to freedom allows the extensor muscle to perform its work perfectly unhindered.\* The fact that both the extensor and flexor are trained to touch (to contract) and relax instantly will allow each muscle complete freedom for either striking or lifting; no "tug of war" will take place between flexor and extensor muscles, as is the case with the muscles of those of many a struggling student.

This slow practice should take place every day. Several short periods of careful mental control each day will soon cause the desired conditions to adjust themselves automatically. Then the law of muscular activity will be fulfilled, viz., that one must be able "to return to freedom of body before making a new motion."

This feeling, when correctly realized, soon becomes an automatic muscular sense, and easy speed and fluency are possible and will take place because conditions are favorable for such ease and velocity. Opposing and stubborn muscles, lingering contractions,

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*\*It might also be noted that when the up-and-down (flexor and extensor) motions function quickly, the sidewise motions (under the control of the weak abductor and adductor muscles) also have unhindered opportunity to function easily and move accurately. If the student will consider this point for a moment he will begin to realize new and far-reaching values in the sharpening of the relaxation sense. He should note that rapid and easy spacing motions cannot take place unless the stronger flexor muscles relax instantly.*

were the cause of any inability to reach this ideal condition in the first place.

Now that these barriers have been removed by a little simple, tangible, practice, and that each muscle functions correctly, there is no reason why fluency should not be the result, given a fair amount of practice.

Practice under this scheme is simply securing deliberately this perfect freedom of each muscle, a condition where there is no interference. The plan is tangible and any thinking, serious student can master it. The resulting easy velocity will certainly reward him if he is sincere. In the old way, students were told to practice slowly and velocity would come. Most of us know of a great many students who *did* practice slowly, and it *did not* come. And, let it be said right here, velocity *will not* come until the correct muscular adjustments are made according to the laws just set forth. *This plan is not one of practicing so many hours a day on scales, trusting that these fine, necessary adjustments will take place by chance. Sometimes they do so take place, but the plan herein set forth will make the result certain for those who might have acquired the conditions by chance, as well as for most of the "ninety per cent class"—those who never would otherwise have come into possession of the knowledge of correct adjustments. Just as long as the extensor or the flexor muscle does not relax at the right instant, there will always remain a stickiness, a pulling of one set of muscles against another, an impediment, a friction; and as long as this wrong condition exists, easy speed or velocity will never be reached.*

Let us further clinch the lesson with the following homely illustrations which will help to show the reader still more clearly just what is the matter with many a student's muscular condition when he practices day after day and yet seems to make no improvement in easy speed and a pearling legato velocity.

An employer has a mile of wooden boxes, two feet square, which are set just one foot from a solid brick wall; the task, for which he employs a boy, is to push the boxes one by one up to the wall. It takes just one pound of effort on the boy's part to push each box. As a rule the boy employed can push against the wall one row of this mile of boxes in one eight-hour day. A new boy comes to the task, and he works very steadily, wishing to please his boss; but at the end of the day he has only a little over half of a row of boxes pushed against the wall. The boss comes along and exclaims, "Well, my boy, what is the matter? You do not keep the pace set by former boys." The boy answers, "I do not know; I have worked steadily and hard all way." The boss says, "Let's



see, my son, how you handle a few; I neglected to instruct you this morning."

The boy goes to work again with a will, but is interrupted by the boss. "Oh, I see your error, which is the same that former boys made before they learned the secret. It is this: you not only push the box in against the wall, but you exert an extra pound or more of force against the solid wall, which is not only entirely useless, but is the very factor that dissipated your time and energy, causing you to accomplish but half of your task." The boss then continues, showing the boy by example how to push in a few boxes with the least amount of effort. "The extra pound that you push against the solid wall is the factor that hinders your speed, and it will always be an utter impossibility for you to accomplish your task in the allotted time until you cease to lose this energy used in pushing against the wall. When you learn to push the box just to the wall, using only the one pound of energy required, then your task of handling the row of boxes will be accomplished easily in the eight-hour day."

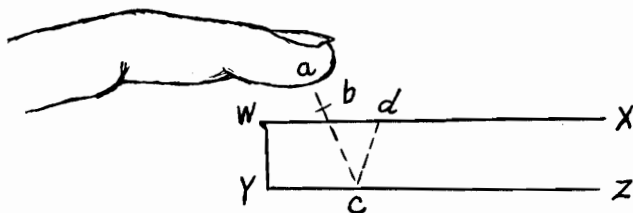
Let the reader note the truth of this illustration and profit thereby. No student can make progress in easy speed and fluency as long as he makes the mistake which the boy in the illustration made. He must cease his useless effort on the key-beds before he will get speed and ease, and our exercises for finger relaxation, if practiced attentively and carefully, will teach this very secret, viz., to touch the key to the tone, making the size of tone desired, and then instantly return to relaxation. If this operation is done with fine thinking, it will, like any other exercise that is repeated a sufficient number of times, become a habit, and a veritable muscular sensation will soon be felt, which will cause the motions to be made automatically.

This is, I think, the most important asset added to the piano teaching resources during the last century.

#### *Notes to Chapter XI*

For the purpose of giving the student practical direction we often use the statement "relax the instant the key sounds the tone." As a matter of scientific fact, recently brought to light by the most improved photographic apparatus, the finger in *rapid motion* is given by the flexor muscle an initial drive which lasts approximately one-fourth the distance of the finger's motion, while the resulting momentum sends the finger on its way over the remaining three-fourths of its course. This same condition obtains in rapid motion of all kinds—typewriting, batting a ball, pitching a ball, etc.

That the student may see most clearly what modern science has discovered relative to rapid motion the following drawing may be of some help:



(w-x) Top surface of key; (y-z) key depressed; (a, b, c, d) entire motion of finger in a rapid stroke; (a-b) one-fourth distance of finger stroke; (a-c) which is given a small muscular drive; (b-c) three-fourths distance of (a-c) which results from momentum received by drive (a-b). The key having been sent to the bottom (y-z) now bounds back to its original position (w-x), bringing the relaxed finger up with it. The movement of the finger through (b, c, d) is one, therefore, where relaxation prevails. This is naturally a very fine act, and hence requires a fine sense of relaxation in order mentally to direct the practice of this important touch.

**IMPORTANT:** It seems never to have occurred to many piano teachers that there are other muscles than flexors and extensors that need exercise in contracting and relaxing. The muscles that move the hand and fingers sideways (abductor and adductor muscles) should receive equal attention with the extensors and flexors, since all movements in spacing must precede the stroke. Therefore, the present practice scheme should include contracting and relaxing these abductor and adductor muscles.

**EXERCISE:** Raise the hand at the wrist (thumb side up), making a complete contraction of the abductor; then hold a second and relax instantly, letting the hand fall on any keys or on a table. Now turn the hand over (little finger side of hand up) and make the same exercise with the abductor muscle of the hand.

Next spread the fingers of each hand as far apart as possible, hold a second and then thoroughly relax.

Place the fourth finger of the right hand on (d) and tap with the fifth finger e, f, e, g; repeat those contractions and relaxations a few times. Invent a similar exercise for the left hand.

Next place the third finger of the right hand on (c) and the fifth finger on (g) and with the fourth play d, e, d, f. The left hand should do a similar exercise.

A moment's thought on this important idea of abductor and adductor contractions and expansions will cause one to realize the importance of using pieces as practical material, instead of excessive scale work. *Scale work involves only a small and nearly uniform contraction and expansion; pieces demand large, small, and varied types of contraction and expansion.* After the mind has sensed the various contractions and relaxations of the muscles just cited, nothing will bring results as rapidly as practical work on good pieces.

In the last event the whole plan as set forth in these pages is in perfect harmony with nature. Everything in nature is in vibration—sound, light, ether, electricity, etc. Analyze a vibration and it is found to consist of activity-rest, activity-rest. Our every exercise has been one absolutely in accord with this nature pulse, “activity-rest” or contraction-relaxation. We have been simply perfecting the human machinery, or in a word bringing it in tune with nature.

Bodily conditions, as we have noted, induce mental states.

In perfecting, therefore, contraction-relaxation, or “activity-rest,” we have been impressing, through use of man's keenest sense—that of touch—the unconscious mind with “activity-rest.”

All rapid motion must be turned over to the sub-conscious or unconscious mind; therefore, it is certainly very important that the unconscious mind becomes impressed with correct nature impressions. It might be noted that the conscious mind moves comparatively very slowly, its rate being about 97 to 102 feet per second—not nearly rapid enough for the controlling of rapid sixteenth notes.

It will be seen, therefore, that our method of developing or perfecting speed as studied in Chapters XI and XII is simply one of making correct bodily or muscular sensations which are impressed upon the unconscious mind, from which capacity it will and must ever be used. Our slogan, therefore, might well be the one heard not infrequently, “Back to Nature!”

## CHAPTER XII

PRACTICAL EXERCISES FOR SENSING THE  
VARIOUS TOUCHES

THE following exercises are for the student who has already acquired control of the larger muscles, and has a fairly good feeling for finger relaxation as well. Every student needs certain practice material whereby he can become really acquainted with the tool with which he essays to work, viz., the key. No one else tries to work with a tool without becoming perfectly acquainted with it in every form of resistance. As we have cautioned before, do not strike roughly at the tool; no good workman would do so. The carpenter reaches gradually toward the saw or plane before adding more effort. Move toward the key gradually and add a small effort (if necessary) as you approach the surface of the key.

Graceful motion for the purpose of making the required momentum is a necessity, not a luxury. The gilt on the edges of a fine book is not primarily for looks; it is to keep the dust from discoloring the choice paper. The baseball pitcher and batter, the billiard player, the croquet player, do not make use of motions before the real acts are performed simply for looks or to please the crowd; these motions are necessary for ease of movement. When the member is in motion and moving in the direction of its goal, only a small additional effort will be required to secure the desired end.

Practice the following exercises, therefore, with great attention not only to the feeling for the short muscular drive, but also to the feeling for the key's resistance, to its depression until tone is sounded, and to the sudden ceasing of all effort—or to a return to that absolute freedom which will allow the rebounding key to bring the finger up with it. In other words, always aim at, and sound, simply the tone desired, neither more nor less.

*Exercise for Feeling the Key's Resistance as It Is Depressed*

Seated properly at the keyboard, balance the right arm over the keys principally by means of the shoulder muscles, and with the utmost attention allow the arm mass to approach the key by means of the throttle at the shoulder, which can lapse the smallest or the largest amount of weight. With the 2d finger in a good arched position, depress the key, slowly and gently until tone is sounded, perhaps the faintest (*ppp*) tone. Play each key twice, in a scale of one octave in this manner.

Note the gradual lapse of controlled weight, the resistance the key offers, and the reaction as the key pushes against the finger;

note also that this reaction (see Chapter III, "Action and Reaction") is taken care of mostly at the knuckle and wrist joints, and that there is practically no activity in the lower arm until the key begins to offer its resistance. Practice this exercise with each finger of each hand; also try it with a chord, on each note of a scale of one octave, using the fingerings, 1, 3, 5, and 1, 2, 4, and 2, 4, 5 (c, e, g—d, f, a—e, g, b—f, a, c, and so on). Play each chord twice.

The instant tone begins, lift the arm mass for the next key or keys. The effort is so small in this *ppp* tone, that there is practically no muscular contraction from which to relax, as would be the case in a louder tone. This is a very fine, a very sensitive exercise, but so are all efforts in delicate piano playing; it is also a very practical means of making the student absolutely familiar with each and every shade of resistance connected with a key. One must possess such consciousness for the finest control of the key and for fine expression.

A FEW SIMPLE EXERCISES AS A BASIS FOR ALL STACCATO PLAYING

(a) *An Exercise for Full Arm Touch Which Is to Produce a Staccato Effect*

With the right arm suspended by the shoulder muscles eight inches above the keys, the hand rather drooping at the wrist, but with 2d finger prepared as a prop, allow the whole mass to drop gradually, the second finger striking middle C; shortly before the key sounds the tone, cut off all firmness instantly, relaxing all muscles that were used in forearm and hand in order to make a solid condition for contact with the keys; at the same time let the wrist give way to the extent that the heel of the hand falls until it touches the board below the keys, the finger tips remaining upon the surface of the rebounded keys. If all these muscles, except the first finger joint, instantly relax just before the key sounds the tones, there will be three forces which will tend to bound the hand and fingers upward again, viz., the slight rebound of the hand itself, the 2 or 2½ ounces of the key action, and the bound of the key from striking a felt bed. The whole mass drops always in a controlled manner, the prepared finger strikes the key, everything relaxes just before the key sounds (as described above), the hand and fingers rebound as high as the key, and the arm takes up the hand again right where the rebound left it (in a condition perfectly free from all muscular contraction) and raises the mass ready to drop on the next key (D). Proceed up the scale one octave with the 2d finger, and then use each finger of each hand in the same manner; also use the triad with the same conditions,

fingers, 1, 3, 5; 1, 2, 4; and 2, 4, 5, on c, e, g; d, f, a; e, g, b; f, a, c, and so on, for one octave.

*(b) Exercise for Hand Touch—Staccato*

Next use the hand touch in the same manner. In using hand touch (usually called wrist touch) the larger muscles throw the hand. The motion is like that of a whip cut in the wood—the tip end of the whip makes the most motion and this motion is a result of the heavier end being moved in a person's hands. In the same manner the hand should be acted upon: that is, the hand should move the most, but the movement should be an effect, not a cause. The hand muscle, a small muscle, formerly tried to furnish the power for this exercise in the student's practice. I say "in his practice," for he did not use this procedure when playing. In this plan the hand muscle simply furnishes a guiding force to the thrown hand.

In this exercise simply throw the hand on to the key, the prepared 2d finger, making this contact and relax immediately before the key sounds the tone, allowing the rebound to bring the hand back as far as the key goes. Keep the fingers in touch with the keys in this exercise, but do not allow the arm to fall when it takes the hand from that point and raises it for striking the next key (d). Proceed with the exercise for one octave, each hand alone. Also use the triads, with fingering 1, 3, 5; 1, 2, 4; 2, 4, 5, and in the same manner as in the last exercise.

*(c) Exercise for Finger Touch—Staccato \**

Each finger should now play each tone of a scale twice for one octave. In this exercise suspend the arm above the key to be played; but, for the sake of securing the feeling for finger muscle relaxation, cause the finger to strike each key lightly with its own short muscular drive, immediately relaxing and allowing the key to "bound" the finger up, always keeping the finger tip in contact with the key after the stroke is made. Be sure that the finger absolutely ceases all muscular effort immediately after the initial drive of about one-fourth the distance to the tone, and that it rides up, perfectly relaxed, on the rising key. The finger should strike the key from a height of about an inch; the finger then does not leave the key surface until it is raised for the next key (*d*). After this touch has been perfected a more vigorous stroke should be used

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*\*This is an ideal manner, as far as economy of muscular activity is concerned, of making a staccato tone on the piano, and also of developing a very fine coordination of mind and muscle. This condition once established the player will naturally use any form of staccato that will at the moment realize his aesthetic ends.*

for the purpose of sharpening the articulating powers of the fingers.

Use each finger in succession, playing each note of a scale twice for one octave—always one hand at a time. This touch is the basis for velocity in staccato, non-legato, and leggiero.

EXERCISE AS A BASIS FOR CORRECT LEGATO PLAYING \*

(a) *Arm Touch—Legato*

Strike a key with the "arm touch" in exactly the same manner as described for the staccato touch under (2a) up to the point where the key sounds the tone; at this point, instead of allowing the key's rebound to bring up the loose hand, allow just enough weight to keep the key depressed, i. e., to rest on its bed. For example, say the initial stroke on the key was 8 ounces; when the key reaches its bed, relax all but 2 ounces, just enough (and no more) to hold the key down. This will fulfill all conditions for legato; the tone can be made any size desired by use of more or of less controlled weight (lapsed or swung); but the moment the key sounds the tone, all downward force must cease, except the 2 ounces which will suffice to hold the damper off the string until the next tone is sounded. This makes a perfect legato—with none of the bad effects of muscular contraction remaining in the playing mechanism to clog up the next lateral move or to hinder the spacing moves of the fingers. It will tend to preserve the quick return to freedom, so necessary in velocity; it will allow the playing machinery to be completely poised for the next tone; in a word, after each tone is sounded the whole lower arm and hand will have returned to freedom of body, so that there will be absolutely no infringement upon the next necessary move.

Next, play the scale in triads, as in the previous exercises, using the principle for legato just described. All chords light or heavy should be treated in the above manner. After practicing this arm touch and partial release with each finger of both hands on the keys of one octave, then play a scale with the regular fingering, each hand alone, maintaining the legato by means of the relaxed condition just described.

(b) *Hand Touch—Legato*

Now practice this same legato principle with the *hand touch*. Strike the key in the same way as in the hand touch for staccato, except that when the key sounds the tone, allow just enough weight to keep the key from rising. Likewise, use each finger of each hand.

(c) *Finger Touch—Legato*

Use the *finger touch*, following the same principle. All these

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\**Legato is the basis for all slow or moderate melody playing and is most effective in or below the middle octave.*

finger touches tend to perfect the power for fine feeling in articulation, and make for conditions which will allow the ideal pearly legato in velocity as well as the most beautiful tone.

This last series of exercises for developing the finer feelings for relaxation run the gamut of the simple piano motions and touches. First, the student gains in sensitiveness toward a fine feeling for key control, a most necessary requisite. Second, he learns how to make a staccato with the least expenditure of effort in the arm, hand, and finger touches. He learns by actual experience and practice how the finger or member feels in rapid or slow movement, as well as how it feels to "return to freedom before making a new move." He is absolutely ready for a new move, in any direction, after each tone or triad. Third, he learns how to make, and use, an ideal legato that is muscularly correct, since it does not allow the effort used in making one tone or set of tones to interfere with the next move or action, thereby reducing friction to a minimum. Each finger has continually a free basis upon which to work.

These exercises should be practiced with the utmost attention so as to add materially from day to day to the *finer feeling* sense. They should be used twice or even three times a day; it really takes only a few moments to go through the series.

Some students, who do not like to think much between meals, have intimated that these exercises call for too fine a discrimination to be practical. They *are* rather fine, but so is the perfection required for speed, delicate shadings, and fluency.

These exercises and the feelings required to sense the conditions necessary for the ideal playing of rapid runs, etc., are not nearly as fine as those developed by the blind man who can tell when a person enters a room, when a tree or pole is in his way, when he is in danger of running into people, how high a step is, and a thousand and one other things. Helen Keller can tell what one says by placing her finger tips upon the lips of the speaker; she can enjoy music by touching the piano when it is being played. Even the expert billiard player or marksman develops a finer muscular sense than we ask for in the condition for fine piano playing. The superfine feelings just cited were not always present in these persons, but were developed in some day-by-day plan, such as we have suggested for the piano student. If these extra fine feelings *can* be acquired (and they *can* and *have been*), then the foregoing exercises which are not so very fine in comparison with those in other activities *can be gained* by any persevering student.



*Two Exercises Leading to the Practical Application of the Foregoing Principles in Studying Etudes or Pieces*

*First.*—Place the 1st and 2d fingers of the right hand over middle C and D. Let the arm mass be suspended from the shoulder so nicely that the two fingers mentioned touch the surface of C and D, but do not press them down. Now, with the 3d, 4th, and 5th fingers free (say  $\frac{1}{2}$  inch above the keys E, F, and G), with a whip-like motion strike E lightly with the 3d finger, allowing the key to “bound” the finger up. The relaxed finger will ride up, as it were, on the key. Play the key in this manner three times, then play the 4th and 5th fingers in the same way. Next play them one after the other—E, F, G, F, E, F, G, etc., being sure that each finger upon sounding the tone is relaxed and rides up on the rising key. Do not curve the finger too much; simply use the natural curve of the finger.

Next use the 5th and 4th fingers on F and G for pivots, and play the 1st, 2d, and 3d fingers in the same manner as the 3d, 4th, and 5th were used. Now practice the left hand an octave lower in exactly the same exercise.

*Second.*—Practice any scale, using the regular fingering, one hand at a time, by use of the finger staccato touch described under 2c, i. e., tap the key, always allowing the key to bring the relaxed finger up. This makes for “perfect freedom” between the muscular activities of each finger. The playing becomes perforated, as it were, with repose. Play on up the scale in the same manner. Use this on the chromatic scale or on any passage in which easy speed is desired. After a few weeks’ practice, or when the student can do this motion, he should try carefully the Etudes Nos. 6 and 7 in Czerny’s Op. 299. Try No. 6 with the right hand, at first practicing a few measures of it as directed in exercises Nos. 1 and 2 above. Then try the left-hand part of No. 7 in like manner. Later practice Czerny’s Op. 299, Nos. 11, 18, and 29 (611, 613, and 615 in the Progressive Series Library). Repeated note studies are also fine for quickness in key release; for example, Czerny’s Op. 636, No. 9, and Burgmüller’s Op. 105, No. 6 (Art Publication Society’s Library, Nos. 711 and 809).

If the preparation has been carefully made, these velocity studies, or any similar ones, will soon move in a beautiful pearly condition. They should be played not too rapidly at first, but with close attention to principle.

If scales be played with the correct touch, after familiarity with the fingering of all of them is acquired, they need not be rehearsed over and over again each day—any more than one needs

to say A, B, C, over and over each day, after one can pronounce them. *Studying carefully the act of touch will usually make a good scale, but playing hours of scales will not necessarily make a correct act of touch.* It must be remembered that the delicately suspended arm is always in sympathy with each and every finger. The arm, with its well-balanced control, always rotates gently toward every key to be played, furnishing its share of power in eliciting the required tone, i. e., adding more or less weight impulse, according to the size of the tone desired.

The throttle at the shoulder must be sensitive enough to let off the suspended weight for the softest tone, and from that on up to the tone that the full lapsed weight of the arm will give; and when lapsed weight (always under control) is not enough for dramatic purposes, muscular leverage must be brought into use in order to swing the weight with the required force upon the keys. The shoulder muscles are always acting; in the softer tones, where a trifle of weight is let off (which weight is articulated into clearness by the finger), the instant the finger sounds the tone and cuts off all effort (relaxes) that moment the shoulder takes back the support of the whole mass over the keys. The shoulder is thus ever ready, at the instant that effort ceases on the keys, to act as support to the suspended arm mass, and thus to keep it constantly in playing readiness.

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FOOTNOTE—*It is often a good plan to sense this easy swinging stroke of the finger by stroking each key a few times without making tone. The proper way to make the stroke is to give an initial drive of approximately one-fourth the distance to the key. It is only by experience with such true sensations that the student will make progress.*

## CHAPTER XIII

## SOME BY-PRODUCTS OF RELAXATION STUDY

**B**ESIDES making possible the ideal conditions referred to constantly throughout this work—the conditions whereby the student (through Relaxation) can use his playing mechanism with the minimum of contraction and with wonderful control over weight, and whereby friction is practically eliminated, good tone assured, and progress uninterrupted—there accrue to the student, in addition, a few more very valuable assets to which attention will be called in a few words.

## THE MENTAL SIDE

(1) *Real Technical Training*

On the mental side the student who has followed the directions given in these chapters has made *the great gain*, the “all in all,” which he would not have gained in any other manner. He has perfected his mental control, because throughout this work the mental side has been emphasized at every point. He has, therefore, exercised this faculty, and things *grow* that are properly exercised.

We are told by psychologists that “Technic is the developing of nerve-lines between nerve-centers, the chief center being the brain.” In order then to develop a nerve-line, or nerve-center, we must exercise it. Automatic movements do not develop nerve-lines to any great extent. Under old systems piano technic was worked for by thoughtless, positive practice—a mechanical substitute for mental activity—day after day and week after week. Many a time when the student supposed himself to be *practicing* by these positive exercises he was only putting in time, for his movements were generally automatic. Almost all such positive movements, if persistently repeated, are liable to become automatic. In gaining relaxation-feeling, however, day after day and week after week, the same nerve-lines are always being used with acute attention from the mind, and they therefore, become very highly developed. Because this process is not an ordinary, common, or usual one, intense thinking is required. In this system we *must* think, we *compel* attention. The idea of prime importance is that of “strengthening the mental feeling.” This is the reason that the practice period may be, yes, must be, lessened from the old régime of from 6 to 8 hours to one of from 2 to 4 hours daily. Under former systems hours were lost in automatic movements when they should have been used for practice with acute and concentrated attention. Movements are handed over to automatic control when the proper time arrives, but that time is not during the process of develop-

ment, nor is it during the initial stage of any difficult activity. The present system is of infinitely greater educational value, because more brain work is required, because memorizing is made easier, because the mind is more active, and because concentration (one of the "chiefest of chief" assets in all educational systems) is developed as much as (if not more than) by any other study.\*

Since this work is simply an exposition of relaxation principles for the purpose of perfecting motions in piano technique, it is not expected to go extensively into the great life values open to those who desire to explore the vast fields of subjective relaxation and its attendant powers. The effect of relaxation upon the present strenuous life and its relation to narcotics, drink, profanity, war, etc., will be left to specialists in those fields. The few relaxation studies given in these lessons, however, if followed earnestly, will bring the student not only an excellent piano technique, but a rich reward of a very far-reaching and beneficial nature in life.

William James says that "bodily conditions induce mental conditions as well as mental conditions inducing physical conditions." For example, one laughs because he is happy and he is happy because he laughs; one strikes because he is angry, and he is angry if he strikes.

The bodily condition perfected by relaxation will induce a like mental condition. That is, the muscles of the body, when free from tensions, over-contraction, tie-ups, and complexes, will induce a mind free from tensions, tie-ups, and complexes. In other words, the wonderfully valuable conditions of mind known as poise, repose, calmness, and deliberation will be the prevailing mental conditions. Such a mind is capable of great *concentration*, that is, controlled mental activity, the great source of mental power.

In order to gain powerful concentration three doors must be opened. And by normal human beings they must be opened in a definite order. One can not open the third door first, but as each door is successively opened the way becomes easier. The first door

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*\*The development of the mental asset of concentration means that the possessor will have power to keep his mind from wandering. He will have the desirable faculty of acquiring ideas and of learning lessons twice as quickly as one who cannot concentrate. In public playing, also, this power is a wonderfully strong ally since he who concentrates is able to hold his mind on the piece he is playing. When the mind is on one thing it cannot be on another. The reason many students break down is because disturbing ideas enter the mind, ideas foreign to the subject in hand. Concentration acts as a barrier to this undesirable and damaging mental condition.*

is that of bodily or muscular relaxation as prescribed in these studies; the second is passivity of mind, poise, calmness, and repose; the third is superior concentration, fixation of attention, or a high degree of subjective mentation.

In this advanced mental condition the possibilities for higher efficiency, both in the mental and in the physical world, have been greatly enhanced. In a word, relaxation with its attendant values brings physical freedom, good circulation, steady nerves, easy and spontaneous nerve transmission, free and copious inflow and equal distribution of life-giving energies, better powers of endurance, quick recuperation, health, sound sleep, and optimism.

(2) *Playing in Public*

The student possessing ideal relaxation-feeling will strengthen his ability to make public appearance to advantage. What do we often hear from students who fail to do themselves justice when playing in public? They tell us that either gradually or all at once they began to tighten up and their fingers do not move freely. Now suppose these students possessed a fine control over the power to relax wherever or whenever they wished, could they not materially modify their muscular tenseness?

That the body and mind react upon each other is a well-known fact. Therefore, if the body can be made at will to assume a calm, reposeful and relaxed state, the mind will have a decided tendency to do the same. Clear thinking and deliberate moves will then be the result.

For example, let a scale from zero to 100 (0 20 40 50 60 80 100) represent looseness and tightness. Zero or near zero is looseness; 100° or near 100° is tightness. 50° should, therefore, represent the average normal student who has no particular power over mental relaxation. It should be said that when a student goes before an audience his nervous thermometer goes up 40° above normal; this will bring it up to 90°, or directly into the realm of acute stiffness. On the other hand, the student who can relax at will is not a 50° person, but can lower his feelings for looseness, say to 20°. From this point let his nervous temperature go up 40°, the same as in the other case, and it will bring it up to 60°—which is not at all stiff; in fact, it is just far enough above normal to put an edge on his playing. It is very easy to see with which case lies the advantage.

## ON THE PHYSICAL SIDE

*(1) Elasticity*

The student will have a pliable, elastic, flexible, muscular system which, when used in the way we prescribe, will produce an ideal tone; he will forever be free from the baneful effects of pianist's cramp, weeping sinews, and similar afflictions caused by hard or overstrained muscular activity; he will possess a muscular system that will allow of fleetness and velocity, because the muscle with a predominance of elastic tissue possesses the qualities necessary for fineness, delicacy, and quickness, while the muscle with a predominance of fibrous tissue (the overstrong muscle) *does not* possess these qualities, but on the other hand, retards progress by its stubborn, unyielding properties.

*(2) Interference of Lateral Movements with Downward Tone-Producing Motions*

All movements at the piano are lateral, up and down, or spiral. For the most part they are lateral or sidewise across the keyboard—combined with up-and-down movements. If one uses the up-and-down movements with more contraction than is needed, there immediately arises a tug of war, or interference, with the lateral movements. This antagonism is one of the chief errors in the piano student's playing mechanism. Over-finger activity as used in striking the keys from a high raised finger, according to the old systems, naturally interferes with the more delicate spacing muscles which should ever be free in order to find quickly their manifold and various distances. Of course, the baneful condition mentioned some pages back, where the key is pressed after the tone is sounded, a perfectly useless procedure as far as either tone or touch is concerned, is one of the worst factors in this matter of interfering with spacing movements.

The downward force of the arm should be used with careful discrimination, always making actions in this direction extremely short, in order that the sidewise movements may have all possible freedom; for these larger movements are not as fine and intricate as those having to do with the smaller finger activities, and besides most of the larger forces downward move slowly and are made by weight—which has no bad effect on the muscles.

It might be noted also, in passing, that those muscles that make the up-and-down movements are much stronger than those which make the sidewise movements; this is true in the arm as well as in the smaller muscles of all the fingers. If there were no downward force needed the sidewise moves could be perfect, but since up-and-down movements are constantly needed we should try and do the

next best thing—to interfere *as little as possible* with these lateral movements. We do this when we relax the downward forces the instant they have accomplished their respective ends, and also when we make all such moves with no more contraction or friction than is necessary. Here again the person without relaxation feeling is at the mercy of luck in relation to these intricate and sensitive adjustments, but the person with a keen sense of conscious relaxation, with a complete knowledge of both functions of a muscle, viz., to contract and relax, has a conscious command, a sensitive control over these various activities, which will guide him safely and surely through the succeeding grades, and on even to Parnassus.

### (3) *New Movements Can Easily and Quickly Be Turned Into Habits*

A great part of the piano student's practice period is occupied with the formation of habits of movement, spacing, and various other adjustments. These habits are really formed in the brain, and, therefore, depend upon attention and concentration during the practice period; their efficiency will depend upon the muscular condition and coordination of the agents of the brain, viz., the arm, hand, and finger muscles. If these muscles are afflicted with the sympathetic muscular condition, or with over-contraction; or if the brain is insensitive to contrary or stubborn muscles, the process of forming habits will be a slow one.

Muscles in the above mentioned conditions possess no fixed or constant degree of resistance; their degree of firmness is always variable, sometimes more and sometimes less tense, and they are not in any fine discriminative sense under the control of the student's mind. Habit-making under these conditions is greatly handicapped, and many a student, after prolonged and regular effort, has become discouraged simply on account of lack of definite and tangible power to locate the *cause* of his failure.

On the other hand, a student who has developed a fine sense of *relaxation feeling*, who, after each chord or tone "returns to freedom of body," and who, therefore, can maintain at will a constant and uniform ease and looseness of all muscles not in use—such a student will have very little trouble in acquiring new habits. Having no opposing or contrary muscles in use, and maintaining at all times a uniform resistance, each new move or motion will, with a very few repetitions, become a habit.

Let us for a moment consider a very common phase of technic, in which the point in question is admirably illustrated.

A student without the relaxed feeling essays to practice the arpeggio



up and down rapidly. There should be an easy, graceful move sidewise through two octaves. The conditions need to be especially

free and flexible at the point (3 1 2) (g c e). The usual method asks the student to hold (g) hard until (c) is struck in order to keep the

legato between (g) and (c), never considering that while (g) is thus held, the second finger is kept at least six inches from its

next key (e); so while "an inch is gained" in legato between (g) and (c), "a mile is lost" in thus preventing the second finger from

getting near its next key (e). Nor is this the only bad effect produced by practicing the arpeggio in the old way. When the (g)

is thus held until the (c) is played, the whole hand is in a very strained condition, a condition which should never be felt in real playing, and which, therefore, is unnatural. The whole weight of

the hand rests on (g), although of all places during rapid movement sidewise it should be kept *off the fingers* and carefully balanced and *controlled at the shoulder* in order that the lateral movement may be free from all strain or tension. But perhaps the worst feature in the old system is the fact that the third finger held on (g) going up the arpeggio, or the thumb on (c) (although this is not nearly so bad) coming down, is held with various degrees of tension, sometimes with great rigidity, and at other times not so firmly. With this variable condition affecting the playing mechanism, the forming of habit for accurate finger spacing in the arpeggio is very difficult and will consume many hours of arduous practice.

However, this need no longer be the case, for with reform in



the manner of practicing the rapid arpeggio, good habits can readily be acquired. My suggestion is that it be practiced in the following manner. First of all, the student should have acquired a fine *relaxation sense*. Then he should proceed by balancing the arm

1 2 3

gracefully over the keys and playing c e g. When the third finger reaches (g), instead of holding this hard as is the usual custom, he should instantly relax the finger and hand;\* this gives perfect ease of the hand condition; the thumb being free has already started under, while the sidewise motion of the arm, which

(1)

is scarcely interrupted at all, brings the thumb over its key (c) in due time, making no perceptible break. (It must be remembered that *rapid arpeggio work* is being discussed.) And what is also of special importance, the second and third fingers are not held back, but being freed the very instant the third finger touches (g).

(2) (3)

are already over their two keys (e) (g) to the right of the thumb which has just played (c).

This manner of practice does not cause the tense contraction of the hand as in the case of the other method; nor will the sidewise motion be liable to develop a habit of moving by jerks. The best feature is, that this manner of practice causes the muscles to "return to freedom," to relax instantly when the third finger plays (g) preparatory to moving on, in order that the thumb may be brought over its key (c); it will be noted, too, that the most difficult and rather complicated set of motions at this point in the arpeggio is always made with *one feeling* possessing the playing mechanism, a feeling that is always the same, always constant; and therefore, that this set of motions may become a habit with but comparatively few repetitions.

Rapid arpeggio exercises should also be practiced without looking at the hands, for this accustoms the player to the common use of the arpeggio—an accompaniment to a melody; one should not look at the accompaniment hand, but rather at the hand with

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\*Some may object that this "letting go" would break the legato. It should be repeated that we are preparing to play a rapid arpeggio (anyone can play a slow legato arpeggio with or without relaxation if he is musically inclined) which requires very fine motions, and also attention to unnecessary friction. The rapid scale or arpeggio is played on the piano by a fine non-legato touch. An artist playing a series of evenly timed non-legato tones in rapid tempo will produce that fine "pearling" legato so much admired. This is accounted for by the fact that the piano is primarily a percussion instrument.

the real message—the melody. This method of practice is specially recommended for the rapid arpeggio, and after all, the arpeggio, wherever used, is a rapidly moving decorative device. The slow arpeggio, of course, should be made to sound quite legato (unless otherwise indicated), and is not nearly so difficult technically. In corroboration of this manner of arpeggio practice, it might be cited that this is exactly the way the artist-pianist plays a rapid arpeggio.

Every practice motion makes its resultant sensation which is conveyed to the brain; this accumulation of sensations is stored at headquarters, so to speak, from which the individual sends out his orders for a repetition of these technical motions, *and unless the incoming sensations are like the desired technical motions there will be made but painfully slow progress.*

COROLLARY: The nearer the sensations coming into the mind from practice are like those desired in real playing, the more and the quicker will progress take place.

What has been stated in regard to the movements in rapid arpeggio practice is applicable to all technical motions. The student should make himself able, by a fine sense of relaxation development, to return to freedom of body in his playing mechanism after any key, which is to be followed by some more or less complicated move, is played—in order that the feeling and the resistance of his muscles may always be of the same kind, never variable. Good habits can then, of course, be formed with but half the practice used under wrong and variable conditions of muscular tension.

#### *Note to Chapter XIII*

In practicing any arpeggio, broken chord or passage, which later is to be done rapidly, the vital issue is to correctly impress the sub-conscious mind, since the sub-conscious mind is most easily, surely, and permanently impressed by the touch sense. This is true since the touch sense is man's oldest and most deeply inherited nerve-pattern.

The life of the race may be observed in the life of a child. A child sees, but not clearly for some weeks; he hears, but not definitely; the touch sense is his chief and most accurate means of getting information; everything he gets in his hands immediately goes to his mouth, since his touch bulbs are the best developed at this point. The touch sense, therefore, is the best means of impressing the sub-conscious mind or gaining speed.

One would get a kind of impression by ear, that is, by hearing some one verbally rehearse the left-hand fingering formula for the broken chord and its inversions 5421, 5421, 5321, and 5421. The

student would also be somewhat impressed by the eye sense, that is, by visualizing the fingering, but no method is half as efficacious as that of the touch sense. Then, too, this manner is most practical, since the touch or muscular sense is to take charge of the arpeggio, broken chord or rapid passage in the finished playing of the piece. Touch sense practice is still more effective when done with closed eyes.

#### (4) *The Toning Up of the Muscles and Nerves*

In directing the studies for acquiring relaxation-consciousness it has been asked of the student that he make a rather firm contraction *immediately preceding* the relaxation in most of the exercises. This is for the direct purpose of placing looseness and firmness close together in order to better sense (through contrast) the neglected feeling—relaxation. The contracting factor, if practiced as follows, will confer yet another far-reaching benefit on the muscular part of the playing mechanism: The student is required to contract (from various angles) the muscles about the shoulders, the biceps and triceps, the rotary muscles which twist the arm, the up-and-down hand muscles, the sidewise hand muscles, the finger extensor and flexor muscles, and the small muscles which move the fingers in their lateral motions. In fact, every muscle in the playing machinery must be thoroughly contracted\* and relaxed, and although attention has in this work been largely focused upon the relaxation side of the question, yet the contracting element will be instrumental in sending a thrill of life and health over every muscle in the playing mechanism. Without such vital exercise many a student plods wearily along the technical road to Parnassus, his progress being provokingly slow, on account of feeble, weak, trembling, and impoverished muscles—especially those that make lateral movements and those that make the rotary motion on the little finger side of the arm.

Such a student is like a man chopping through a log with a dull axe. He may have clear thinking concerning chopping, may put in plenty of time, but with a dull axe he cannot make much headway nor does he find much pleasure in the chopping. What the man should really do is to stop chopping and sharpen his axe; then he will accomplish in twenty minutes what took him an hour before.

The making firm of the muscles before relaxing is a "full contraction" exercise. The full contraction squeezes all the blood

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\*These exercises are in agreement with the "Full Contraction Exercises" fully explained in MacDonald Smith's very interesting booklet, "Brain to Keyboard" (published by Ditson).

from the muscle in question, which upon relaxing is refilled with arterial blood charged with nutriment. A muscle is developed or toned by the nutriment brought to it.

In half-contractions the muscle is only half nourished, and in full contractions completely nourished. This is quite evident when one compares the half-contraction of the muscles in the calf of the leg in walking with the full-contraction of the same muscle which takes place in skating. The calf of the leg will develop more in five weeks of skating one hour a day than in five months of walking one hour a day.

While keyboard practice (which is mostly half-contractions) might tone up the muscles of the playing mechanism after months of weary practice, the student can save much time and labor by some careful attention to the full-contraction effort which it is advised should precede nearly all the relaxation exercises in this work.

Three students out of every five have cold hands and weak and awkward rotary and lateral motions, usually as a result of poor circulation. Progress will be discouragingly slow under such conditions. But these conditions need not exist if the student is willing to pay the daily tax of two or three minutes twice a day (morning and evening) in going carefully through the relaxation exercises with their attendant full-contractions, viz., those that are made just before each relaxation, as set forth in these Lessons.

#### (5) *Relaxation Makes Good Tone Possible*

In the last event, for what purpose is all this advice, this change in motions, this classifying of larger and smaller muscles for heavier and lighter tasks, this relaxing of the muscle until the whole mass is made elastic, flexible, cushion-like? If it is merely for the sake of a change of motions or simply to inject new mental and physical difficulties into piano playing, then all is in vain. But fortunately this is not the purpose. The *purpose* is one that affects the very heart of Music, viz., good tone. (See Chapter V, on "What Makes Good Tone.") These changes have, therefore, a most potent reason for being, for they absolutely *do* make for better tone—because they conform to the natural laws which govern the making of such tone. Good tone is the principal asset in producing good music, so any system that perfects the very soul of Music is worthy—yes, thrice worthy—and should receive the stamp of approval from every disciple of the muse.

## CHAPTER XIV

SUGGESTIONS FOR PRACTICE MATERIAL, WITH A  
VIEW TO THE PRESERVING OF IDEAL MENTAL,  
AND MUSCULAR CONDITIONS FROM  
THE BEGINNER'S STANDPOINT

THIS work would not be complete without some practical hints as to PRACTICE MATERIAL along the line of weight and relaxation principles at the piano, for players in the early grades as well as for those who desire to make a fresh start—practice material that will present things in logical order, and that (at least) will not throw obstacles in the way of the student's easy development.

The following Exercises comprise some preparatory material which will assist in giving the student practical and useful piano motions, motions that are graceful and therefore conducive to relaxation conditions. These Exercises are simply suggestions which a thinking teacher, who understands correct principles, may make use of; and which may help him to invent others perhaps just as applicable and efficacious.

It might be suggested that the older student, or even teacher, try the various Exercises that follow; and if the movements are not easily made, it would not be in the least amiss for him to practice these very Exercises, easy as they may seem, until they become quite clear. Some of these motions may be the very things that such a student needs in order to perfect, or perhaps improve, certain conditions in his playing. At least he ought to be sure he has easy control of the forearm rotation principle, which is so important in piano playing.

*Some Simple Studies for Applying the Principles of Weight and Relaxation at the Piano*

Suspend the arm in a gentle curve (like a suspension bridge cable) over the keys, and with a natural, whip-like motion of the whole arm (the hand, of course, moving most), whip the key (c) three times. The hand held in a natural position, just as one would use it when walking about the house; the knuckle-joints just a trifle high, so as to make a good arch. Use each finger in turn, playing three times on each key throughout one octave.

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NOTE.—Use one hand at a time in all these Exercises.

*Exercise 1*

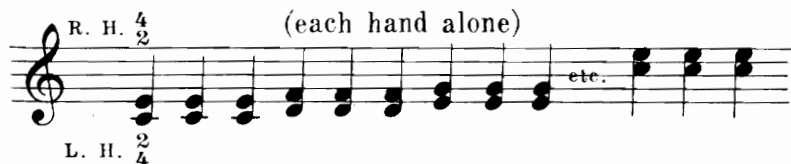
The action of the playing mechanism, all of which takes part, should be like that of a hickory whip; the back end or part nearest the shoulder moves the least, while the small end (the hand) with gently fixed finger, moves the most. Do not make tone beyond *mf* or *f*, but see that the utmost grace is used.

The finger in this exercise is called upon but slightly, certainly not for a strenuous movement which it cannot perform at this period of study without calling to its aid several other muscles (the sympathetic muscular condition). The finger is used for the most part as a support, and in this capacity the nerve-line gradually develops, while absolute perfection of relaxation can be maintained by the near-by muscles. The nerve transmission is direct; no tendency toward contraction, because there is no cause for calling into action neighboring nerve-lines.

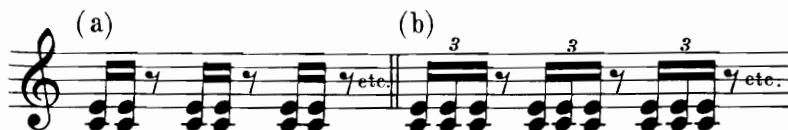
This very whip-like, undulating motion is used continually by every fine pianist; it is the correct and easy way of overcoming reaction, the stroke on the key being the action, the reaction of which in the case of a still arm would have to be overcome by a stiff muscle. The undulating action and use of weight in this arm motion is always pliant and graceful. The finger will actually gain more real independence in this way than by twice the amount of practice with the old still arm and high finger.

*The Up-and-Down Motion of the Hand*

Next use a Study of double notes for a free wrist. This Study is to be with the same action as Ex. 1—i. e., with the whip-like throw of the hand on the keys, the fourth and second fingers being held firm by enough muscle to give good form to the hand.

*Exercise 2*

Practice this slowly at first, noting that the muscular effort ceases the instant the initial throw of the hand has been given. The hand should bound up with (and on) the rebounding keys. Practice this exercise also by more rapid vibrations or bounds, playing up the entire scale as shown in (a) and (b).

*Exercise 3*

Let the first tone of any group employ a *longer* lever, i. e., more arm motion, and the tones after the accent more *hand* motion.

These bounds should be made close together. The hand, with fingers fixed, is thrown easily upon the keys by the impulse furnished by the forearm, whose motive power is in the upper arm. The hand is being acted upon, not acting; an effect, not a cause. This is the motion used by all artists, whether consciously or not, in passages requiring rapid repetition and also in octaves. It does away with the idea of a small muscle doing what a larger one can do much easier and better, and thus it comes nearer to Nature.

After sensing this up-and-down hand motion, the approach to finger quickness will be greatly aided, since the hand at the wrist is simply a larger finger; the hand being nearer the brain, the sensation will be clearer, and this sensation can readily be applied also to the finger. Repeated-note Exercises in 3ds, 6ths, and 8ths will greatly assist in developing this hand motion. For the beginner, short exercises like the "Wrist Studies" by Williams (Schirmer) are recommended. Later, "Wrist Studies" by Carl A. Preyer, Op. 53 (Ditson & Co.); also (for small hands) Nos. 409, 511, 512, 513, 526, and 815; and (for larger hands) Nos. 908, 922, and 1012 from the catalogue of the ART PUBLICATION SOCIETY, St. Louis.

When the various hand motions (up and down, rotary, and sidewise) have been well developed in grace, ease, and control, finger technic can be added with but half the practice formerly used. Any weak link in hand control or motion will greatly handicap the more delicate development of the fingers, which are directly attached to the hand. The better the hand control at each and every angle of motion, the better and quicker can the finger technic of the Studies set forth in Chapter XII be perfected.

Modern technic's greatest demand is the "rolling forearm" motion, which may be practiced by the use of the following Exercise:

*Exercise 4*

(a) (b)

(c) (d)



To perform this exercise, simply place the fifth finger (R. H.) gently on (a), twist or turn the forearm until the thumb is, say, three inches above the key, then stroke the key (c) as indicated; at first without tone, but after a few repetitions, use a little deeper stroke, eliciting a tone. Cease all muscular effort the moment the initial small muscular drive has been given. This is one of the many instances where the daily muscular activities have, in most cases, developed a habit of remaining contracted after an act has been accomplished. The above Exercise must be persisted in until this habit is broken, since the much-used arm-rotation will never function easily and freely as long as these hand-over contractions remain. The movement toward the thumb side is called *pronation* and toward the little finger side is *supination*.

When the supinator and the pronator muscles are each taught to cease contraction the instant tone is made, then the rotary motion will function with perfect ease. On the other hand, should each of these muscles be slow in relaxing, a constant tug-of-war will be ever present and the movement will be always sticky and slow. The fifth finger acts as a pivot, but very little weight should be upon it; let the shoulder muscles bear the weight of the arm, balancing it over the keys. Do not let the thumb move of itself.

Now try Example (b), which is simply an exercise for quickness of arm vibration; strike the two taps lightly, very closely together, slightly accenting the second of the two. Next try Examples (c) and (d) with the same rolling arm motion; in these Exercises, the thumb moves freely in a lateral motion.

It might be mentioned that the cleverer hand should be used first in doing any Exercise (usually the R. H.), since the resultant sensation impressing the brain will be of a finer type. The other hand will gain the more rapidly in this manner.

Use each Exercise first with one hand, and then with the other only a few moments each, but always with the utmost possible grace of motion.

The next set of Exercises uses the little-finger side of the hand in exactly the same manner as that prescribed for the thumb side.

*Exercise 5*

The musical score for Exercise 5 is presented in four parts, (a) through (d), each on a grand staff. Part (a) features a simple scale in both hands, with a fingering of 5 and 1 indicated. Part (b) introduces a rhythmic pattern of eighth notes with slurs, also with a fingering of 5 and 1. Part (c) shows a scale with a specific fingering (5, 1, 1, 5). Part (d) shows a scale with a specific fingering (5, 1, 1, 5, 5, 5, 5, 5).

Some students may not be able to roll the arm easily for the stroke on the fifth-finger side of the hand, since this motion is seldom used in daily activities. For such, a special Exercise can be used, viz.: With the arm straight in front of the body, thumb-side up, turn the arm briskly around until the thumb is on the extreme under-side; twist the arm in this wise for half a minute, repeating the Exercise several times a day; in a very short time the motion at the piano will be found to be much more easily done. A, B, C, and D of Exercise No. 5 can now be practiced with good results.

The next arm motion combines Ex. 4 and Ex. 5, and is as follows:

*Exercise 6*

Each hand alone: Continue this Exercise at some length until considerable speed is attained. Never work at the same Exercise after tiredness sets in.

If some students find that their ease of motion is slow in developing or if their muscles seem to be unstable and weak, they should read MacDonald Smith's work, "From Brain to Keyboard," on the benefits of the "Full Contraction Exercise" (published by Ditson).

Further Exercises similar to Ex. 4 and Ex. 5 for using a rolling motion, but with a radius only half as wide as from the first to the fifth fingers, should be used as soon as some degree of ease is attained in the former exercises. The arm motions should ever become more graceful, delicate, and quick.

Exercises with shorter radius distance—from first finger to third.

*Exercise 7*

In Ex. 7 rest the third finger on (e) as a pivot, not heavily, but always supporting the arm at the shoulder, so that it floats as it were over the keys. Now rock or roll the forearm gracefully so that it causes the thumb to play (c). Do not allow the thumb to move of itself; it is acted upon instead of acting. Practice (b), (c), (d), (e) and (f) some half a dozen times in exactly the same manner, always studying the ease of the motion. Fingers not employed should be relaxed as far as possible and may hang off the keyboard. Also, for finer and quicker arm motion, practice Ex. 7 in the following manner.

*Exercise 8*

Make the taps lightly and quite close together.

*Exercise 9*

In practicing this, the finger that is thrown gently must always remain close to the keys. The motion is really a series of short vibrations. Silent vibration of the arm should also be used.

Rest the fifth finger on any key in a comfortable position, and by arm vibration cause the other four fingers to whip on top of the keys without making tone. Start the vibration slowly and increase the speed until the hand fairly flutters. Next, pivot on 4 and 5, causing the vibration to throw 1, 2 and 3 up and down through a small arc. Now pivot on 3, 4 and 5 and vibrate 1 and 2. Now pivot on 1 and vibrate 2, 3, 4 and 5. Pivot on 1 and 2, vibrating 3, 4 and 5. Pivot on 1, 2 and 3, vibrating 4 and 5. More advanced students might try other combinations.

Another series of Exercises follows, where the rolling radius is made still smaller. The forearm roll is to be used exactly as in Ex. 7.

*Exercise 10*

Do not forget to relax the striking finger at the proper point in its movement toward the key bottom for tone production. Allow the rebound of the key to bring the relaxed finger up with it.

Place the third finger lightly on the key (e), weighing it partly or entirely down to its bed, but not resting heavily on it, and by use of the rolling forearm cause the second finger to play the key (d) as indicated. Relax all fingers not in use and let them hang off the keyboard. It will be noticed that the hand makes a slightly rotary movement in making the stroke.

This forearm rotary motion is, without doubt, the most useful of all technical acquisitions, and it should be the controlling factor in playing nearly every group of two, three or four note figures—and more especially all accented tones, broken chord passages, broken octaves, tremolo figures of all kinds, and even the trill.

(Older students may use such studies as Burgmüller, Op. 109, No. 8, and Cramer, Study No. 12, to develop this rotary movement—Nos. 511 and 820 in the ART PUBLICATION SOCIETY'S Catalogue.)

*The Lateral Motions of the Arm*

There yet remains one motion in which the arm should receive special practice—the lateral (or sidewise) motion. This is the motion which is used so much by both arms, but especially by the left in playing a deep bass note and then skipping to a chord in the middle of the keyboard.

The lateral or sidewise motions of the arm are very little used in daily activities, consequently the muscles controlling them are quite likely to be weak, impoverished, awkward, and in a trembling condition. A fine control of these muscles is very necessary in

piano playing, and therefore they should receive some specific exercises.

There is an old saying, "A chain is only as strong as its weakest link." So many a piano student acquires very good flexor and extensor muscles while the abductors and adductors remain weak and flabby. The whole technic remains unstable and undependable on account of the weak link of lateral muscular imperfection.

The following Exercises will furnish material for practice in lateral motion:

### Exercise 11



Practice the left hand for this (and also the following Exercises) in a similar manner, in the lower compass of the piano. Repeat each Exercise many times. Do not move the *wrist* side-wise, but move the *whole arm* from one key to another in a graceful sweep, with due care for accuracy of notes. Touch and move quickly over the next key.

The next Exercise requires a slightly finer consciousness of motion:

### Exercise 12



The last Exercise requires a still finer consciousness of side-wise motion:

*Exercise 13*

These lateral motion Exercises are as important as any other phase of piano technic; and yet in all books on piano practice this motion is left entirely to chance. It *may* be gained sooner or later (usually later), and the lack of it will have been a continual drawback—perhaps for months or years.

*Regarding Finger Activity*

As will be plainly seen, all these Exercises simply begin at the *known* and work toward the *unknown*; begin at the frame-work and get it ready for the shingles. In other words, the arm motions at the piano are first made gracefully, after which the smaller finger-motions are added, with but half the difficulties and half the appalling mistakes that would have been encountered by beginning in the old, illogical manner of trying to develop clever fingers on two feet of awkward arm.

Through all these Exercises, which should be continued until the teacher is satisfied that the movements are made in fairly good form (from two to five months), the nerve-lines running to the fingers have been exercised, although no strenuous, isolated, finger-motion has been used. The nerve transmission, however, has been direct, and at the same time the muscles not being employed at the moment in an act have been taught to relax, thereby developing and preserving the ideal conditions emphasized all through this work.

Now, everything is ready to add finger articulation; light, delicate, and sensitive taps close to the keys. All heavy tones, accents, etc., can be taken by the already prepared arm motions, or larger levers. The "weak fifth finger" idea is now obsolete, since a rolling forearm will take charge of nearly all loud tones on the fifth-finger



side of the hand. Many a student complains that his fourth and fifth fingers are weak, awkward and unstable; as a matter of fact it is the whole outer side of his arm to which his fourth and fifth fingers are attached, that is weak.

*Comparison of Conditions Resulting from the Old Awkward and Unstable Manner of Teaching—Two Methods Compared*

Just imagine, if you will, the state of a child's arms, muscles, and nerve tracks at the end of five months of the old manner of beginning piano lessons. No definite arm motions, a perfect chaos of nerve-lines, a deplorable mixture of the larger and smaller muscular efforts, a chronic condition of the sympathetic muscle, lack of relaxation, high muscular finger motions (which are as harmful as they are ugly), no fine discrimination between the work of the arm and that of the hands and fingers, and many other harmful conditions.

On the other hand, consider the condition of a pupil trained with such Exercises as have been set forth in this work: Well-defined, graceful arm movements, nerve tracks capable of direct transmission, an orderly use of the larger and smaller muscles (long and short levers), the sympathetic muscle practically eliminated, good conditions of relaxation, fingers evenly lined up and in excellent form, and a fine discrimination in the use of the body, arm, hand, and finger movements.

These Exercises have been thoroughly tried for a number of years, and in the last event it is the "greatest good to the greatest number" that determines the merit of a system of work; good results certainly have crowned the using of this manner of teaching pupils. Perhaps an average of two students out of a hundred will attain a relatively high proficiency either with or without the aid of any scientifically correct system of practice. Two out of every hundred will never arrive at any proficiency at all, no matter what system they use. But among the remaining ninety-six, a large majority, by means of a well-ordered scientific system based upon the natural use of proper levers, correct motions in practice, relaxation and weight, may reach heights which otherwise would have been forever closed to them.

A LIST OF COMPOSITIONS, SELECTED FROM THE ART  
PUBLICATION SOCIETY'S CATALOGUE, ESPE-  
CIALY ADAPTED TO THE TEACHING  
OF WEIGHT AND RELAXATION

The teacher and student will find suitable general Exercises for use in teaching and practicing the correct motions consistent with the principles of weight and relaxation in Exercises Nos. 5, 6, 7, 10, 11, 18, 19, 22, 23, 31, 50 and 51 from the above mentioned catalogue.

Excellent numbers for the beginner, from a musical point of view, will be found in many of the Studies and Preparatory pieces by Ernest R. Kroeger, especially Nos. 212, 308, 417, 419, 423 and 424; also in the easier pieces by Johnstone, Rogers, Smith, Weidig, Gaynor, and Campbell, all in the Progressive Series, published by the ART PUBLICATION SOCIETY, St. Louis. Other works for beginners might also be mentioned—such as "Zephyrs from Melody Land" by C. W. Krogman (B. F. Wood Co.), "Cinderella Suite" and "Musical Pastimes" by LeRoy B. Campbell (A. P. Schmidt), and the two books of "Pixie Pieces" by A. L. Brown (B. F. Wood Co.).

For the advanced pupil, the work may be divided into two groups: first, pieces where the larger movements predominate (hands and arms); second, pieces where the smaller movements predominate (fingers).

*Pieces in the First Group*

|                    |      |                                   |                |
|--------------------|------|-----------------------------------|----------------|
| Catalogue Number : | 715  | "Menuett" Op. 78.....             | Schubert       |
|                    | 804  | "Polish Dance".....               | Scharwenka     |
|                    | 708  | "Romance" Op. 44.....             | Rubinstein     |
|                    | 1106 | "Hark, hark! the Lark".....       | Schubert-Liszt |
|                    | 1013 | "If I Were a Bird".....           | Henselt        |
|                    | 706  | "Humoresque" .....                | Tschaikowsky   |
|                    | 716  | "Gavotte" .....                   | Gluck-Brahms   |
|                    | 1005 | "Military Polonaise".....         | Chopin         |
|                    | 528  | "Song Without Words," E min.—     | Mendelssohn    |
|                    | 529  | "Menuett" in E flat.....          | Beethoven      |
|                    | 614  | "Pas das Amphores".....           | Chaminade      |
|                    | 624  | "To Spring" .....                 | Grieg          |
|                    | 622  | "Reverie" .....                   | Strauss        |
|                    | 717  | "Trois Esquisses Melodiques"..... | Cui            |
|                    | 719  | "Nachtstuck" .....                | Schumann       |
|                    | 908  | "Pictorial Sketch".....           | Cyril Scott    |

- Studies: 1203 "Etude" Op. 10, No. 3.....Chopin  
 1306 "Etude" Op. 25, No. 9.....Chopin
- Pieces in the Second Group*
- 910 "Solfegietto".....C. P. E. Bach  
 522 "Six Variations" in G.....Beethoven  
 518 "La Coucou" .....Daquin  
 524 "Dance of the Dolls".....Poldini  
 601 "Waltz in D flat".....Chopin  
 725 "Spinning Song".....Mendelssohn  
 1001 "The Spinner" .....Raff  
 803 "Capriccio" .....Handel  
 729 "Butterfly" .....Lavallee  
 602 "Fantasie in D minor".....Mozart  
 802 "Sonata in E".....Scarlatti  
 1103 "Rondo Capriccioso".....Mendelssohn  
 1004 "Impromptu in A flat".....Chopin  
 Study: 1302 "Etude" Op. 10, No. 5.....Chopin

All these Compositions and Studies are in the Progressive Series Library, published by the ART PUBLICATION SOCIETY, St. Louis, Mo.

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