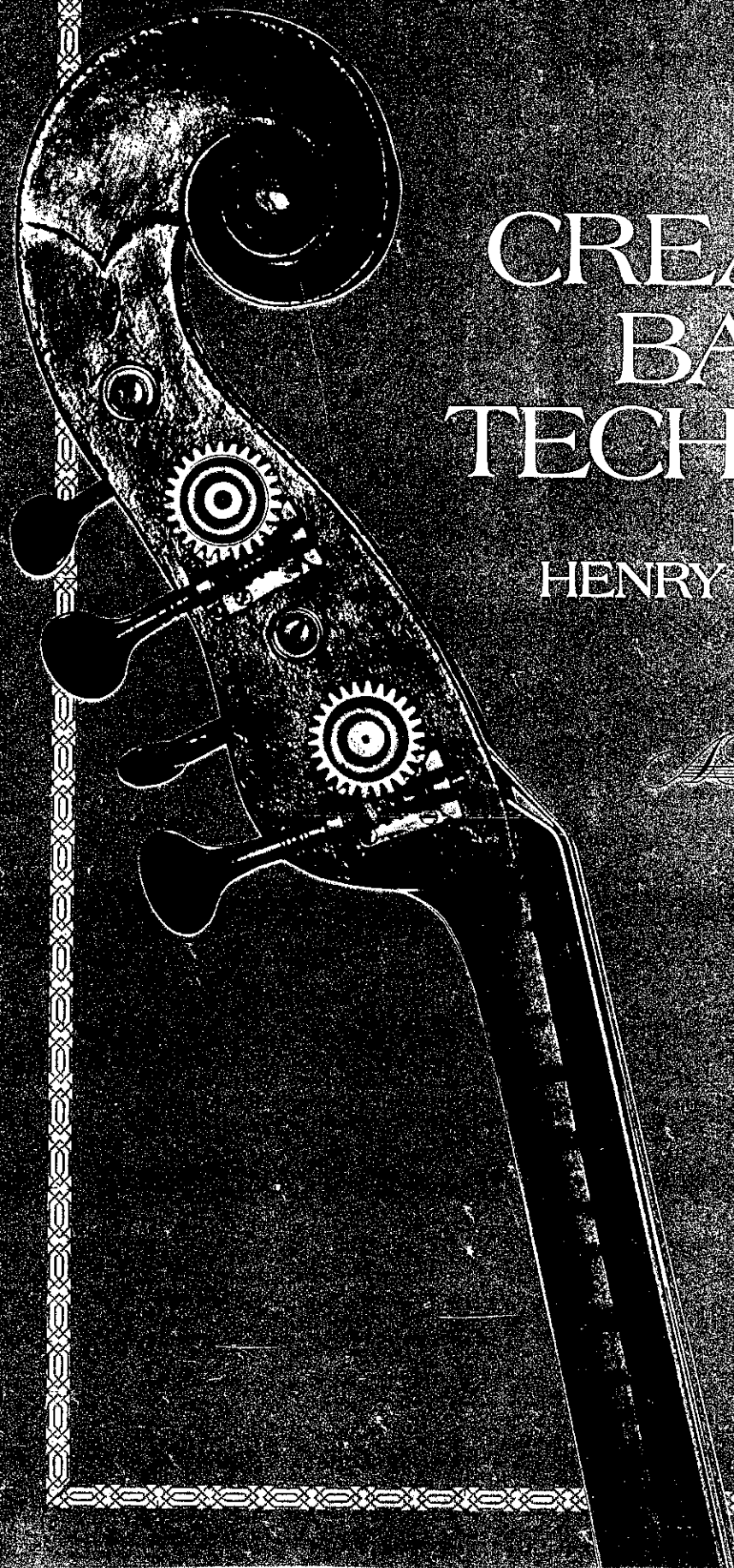


CREATIVE BASS TECHNIQUE by Henry Portnoi



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by
HENRY PORTNOI




CREATIVE BASS TECHNIQUE

ERRATA

Throughout the book when the notes of the open strings (A, D, G) occur in Positions I and/or II, the open (o) string is intended.

page

- 39 Position IV — 1st note should be G#.
- 41 1st paragraph under photos, last line — last parentheses should read (C#).
- 42 Exercise, 3rd line, 4th measure, over last note — "1", not "2".
- 45 Position III to V Étude, measure 9 — Notes of 2nd quarter should be G, E; not G, F.
- 45 Position III to V Étude, last line — add flat in key signature.
- 48 Position II and III Étude — last note should be E, not G.
- 74 Étude, 2nd line, 1st measure, 3rd quarter — "IX" should be under 3rd sixteenth G.
- 74 Étude, 3rd line, 1st measure, 2nd quarter "o" should be over E, not D.
- 85 Bottom of page — the two statements should be in reverse order.
- 86 B \flat minor, 2nd line, 1st scale — erase "II" under A \flat .
- 91 D minor, 2nd line, 2nd scale — last note should be D.
- 91 E \flat Major, 2nd line, 3rd arpeggio — descending "VIII" should be under B \flat .
- 93 7th line — erase "II" under 2nd C#.
- 94 8th line — erase "o" under last A.
- 94 F Major — add "o" over 4th space G.
- 96 1st line — erase "II" under 1st E.
- 100 5th line, last 4 doublestops insert Position numerals: 
- 100 7th line, 20th note — change "VII" to "V".
- 102 4th line, 1st arpeggio — erase "IV" under last note.
- 102 5th line, 12th note — change "XIII" to "XII".
- 108 Mendelssohn — erase "o" under 3rd note.
- 108 Mendelssohn, 3rd line, last measure — add "II" under B.
- 108 Mendelssohn, 4th line, 1st measure — add "III" under C#.
- 108 Bach, 2nd line, 3rd measure — add "o" over A.
- 109 Beethoven, 1st measure — add "o" over A.
- 67 Etude. 3rd line, last measure — A should be A#

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Henry Portnoi

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About the Author

In his long and distinguished career as performer, teacher and clinician, Henry Portnoi was a member of the Boston Symphony Orchestra for thirty-four years, including nine years as principal bassist. He was also principal bassist for the Boston Opera Company as well as solo bassist with the Zimmler Sinfonietta and the Boston Symphony Chamber Players.

American-born and trained, he was graduated in 1940 from the Curtis Institute of Music where he studied bass with Anton Torello. His other teachers included his predecessors as principal bassists of the Boston Symphony Orchestra, Max Kunze and George Moleux. His successor to the Boston Symphony's first chair is his former pupil, Edwin Barker. He has played under virtually every great conductor of the past four decades.

For nine years Henry Portnoi was a faculty member of the Berkshire Music Center at Tanglewood. He has been teaching at Boston University since 1950 and at New England Conservatory since 1967. Much in demand as a clinician, he has given seminars for the American String Teachers Association, the International Society of Bassists and others.

He was seen on P.B.S.'s Masterpiece Theatre in "Vienna — 1900" with the Boston Symphony Chamber Players and on the program, "The Violin", with Joseph Silverstein for N.E.T.

Henry Portnoi's recorded solo and chamber music performances include:

"Pieces and Songs"	by Charles Ives	Cambridge	CRM 804
"Variaciones Concertantes"	by Ginastera	RCA	LSC 3029
The "Trout" quintet and "Nonet"	by Schubert	RCA	
	by Matinu	album	LSC 6189
"String Quintet" — G major	by Dvorak	DGG	2530214
"L'Histoire Du Soldat"	by Stravinsky	DGG	2530609

N.M.P.

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CREATIVE BASS TECHNIQUE

Preface

In view of the number of competent bassists, past and present, it is reasonable to assume that good instructional material must have been available by which they gained their fluency on the instrument. Why, then, is yet another method of instruction necessary?

Creative Bass Technique and Teacher-Student Relationship

The great bass pedagogues of the past — Billé, Nanny, Simandl, for example — addressed themselves primarily to *what to do* and *how to do*. There is scant record, if any, of their philosophy dealing with the *why* of their technique. Apparently this was handed down from teacher to student by word of mouth. In this volume an attempt is made to put in writing the rationale for a given technique.

Most teachers agree that it would be an extraordinary student who could remember everything a teacher points out during a lesson. What is hoped will prove valuable here is the presentation of things to think about, to be aware of, and to remember while practicing. The intent is to remind the student *between* lessons of things requiring his constant attention.

It is fair to assume that a teacher could disagree with a concept or instruction offered here. Such disagreement, however, should produce a rationale in support of the differing view. The fact of the difference could also serve to emphasize the point at issue. Whether or not there is agreement, the text can serve the student between lessons as a ready reference to the points made by the teacher.

Attainment of skill is the product of diligent and intelligent work in the presence of talent. The most important adjunct to work and talent is *understanding*. The student needs (1) to understand the acoustical nature of the instrument; (2) to be aware of his mental processes as they affect his physical involvement with the instrument; and, (3) to grasp the musical intent of the written symbols as it affects his technique.

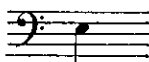
To serve these purposes, this text undertakes to describe and explain in fullest detail each facet of technique and the attendant problems. Graphic illustrations are used where words are inadequate. Suggestions are offered for the mental processes appropriate to the mechanics of the particular technique under study.

This book is divided into two major sections: THE BOW and THE FINGERBOARD. THE BOW offers only the instruction and rationale for tone production and for execution of each type of articulation. THE FINGERBOARD is intended not only to teach note-location and fingering, but also to provide the practice material for applying the information and skill acquired in THE BOW.

THE FINGERBOARD section makes two departures from the traditional method of teaching note-location. First, an identifying Roman numeral* is given to each position of the left hand on the fingerboard. For example, the position which places the first finger on the note a half-tone above the open string is identified as Position I; the first finger on the next higher half-tone is Position II, etc. The note one octave above the open string, when played with the fourth or third finger, is Position X.



* The argument in favor of the Roman numeral system (excluding the thumb positions) is that some notes can be played with the same finger on different strings. Example:



is available on the

D string with 1st or 2nd finger as well as on the A string with the same fingers. If it appears in print with "1" or "2", one must examine the context. The ambiguity is eliminated with "I" or "II". In written or spoken communication it is simpler to indicate "I" or "II" than to instruct "1st finger on D string."

Second, the section begins with Position V for the several reasons stated in the text itself.

Some of the possible fingerings for the various forms of scales are presented at the close of the book. The intent is to demonstrate a logical approach to efficient execution of scale-type passages found in the literature as well as to enhance familiarity with the fingerboard generally. The pitches are indicated only with note-heads. This permits adding flags and dots or rests to denote a choice of rhythmic patterns which may affect choice of fingering.

An attempt has been made to keep the amount of music to a minimum. It will be noted, for example, that the exercises of THE FINGERBOARD section are presented entirely in quarter-note values. By adding rests and/or dots and flags, etc., the whole gamut of complex rhythms as they affect fingerings, bowings and articulations becomes available. Thus any one or any number of positions can be studied in conjunction with any one or any number of bowings and articulations. It should be further noted that the tonal pattern is devoid of melodic structure. This was done to accomplish two things: first, to serve as material in the study of solfege, i.e., to learn note identification and interval distances; second, to avoid learning only "by ear".

How To Use *Creative Bass Technique*

The text is intended not merely for reading but for study. The goal is to convert an understanding of the concepts into performance. Therefore, the concepts must be MEMORIZED to the point that the student is *critically aware during performance*, especially while acquiring the necessary skills. To this end it would be helpful if the student made a list of one-word cues as reminders of the concepts.

LEFT HAND	RIGHT ARM
Arch fingers	Loose
Fingers down	Speed-Location-Pressure

Coordination of physical, aural and mental skills requires different lengths of time for different people. Some may take two weeks to learn spiccato, others may need two months. But it is possible that those who are slower to acquire bow skill may be much quicker to learn the fingerboard, or vice versa.

Therefore, the following recommendation is made. While working on Exercises No. 2 and/or No. 3 in "Bow Technique" (Pages 11-16), the student might be learning Positions V, IV, V & IV and III. A student who might need more time to absorb all the information in Position V should work on acquiring the skills in Exercises 2, 3, 4 and 5 in "Bow Technique". This is a matter of learning readiness.

The variations preceding Position V are based solely on the notes of Position V. The rhythms and bowings proceed from the simple to the complex. The intention is to adapt *whatever* variation is studied to *any* of the Positions being learned on the basis of learning readiness. Thus, Variation No. 1 could be used for Positions V and IV, or Variations Nos. 1, 2 and 3 could be applied to Position V. In like manner, Variations Nos. 4 and 8 could be used with Position IV. *Not all variations need be used.* What is essential is that there be coordination between the choice of bow technique and the choice of variation in conjunction with any position exercise.

The use of aids, i.e., symbols for fingers and positions should be eliminated, or at least reduced, at the earliest opportunity. They are dropped early in the exercises so that the student may insert only those symbols he may need. The same applies to bowing indications (\square ∇).

The student should acquire greater familiarity with note-string relationship where the suggestion is made to rewrite exercises for the other strings.

The section on Scales is intended to present a variety of fingerings for the same sequence of notes and to familiarize the student with the fingerboard.

Limitations

No text can replace the functions of a teacher. This one can serve only as an aid to the learning process. It cannot provide critical observation or amend misconceptions and misunderstandings, nor can it demonstrate sounds. It does not present the rudiments of music, nor does it include the thumb positions. It strives to be thorough in treatment, although limited in scope.

Photographs

Wherever it seems helpful, two photos of the same subject are presented. One is the player's view, the other, the teacher's.

INTRODUCTION

Music as a cultural art is usually perceived as an aesthetic means of expressing human feelings and thoughts through pitches and rhythms. "Listening to music for its own sake" does not mean that the sound is an end in itself. It is only a means to an end. The ultimate goal is expressiveness.

In contributing to this expressiveness, either as a member of a group or as a recitalist, the bassist ought to have a sense of musicality. Musicality must, therefore, be the premise on which technique is based. Such an interrelationship requires that the bassist understand the *why* of his instrumental behavior.

The bassist, like all other string instrumentalists, is constantly confronted with choices of fingering, of articulation, of bowing, etc. Only on the basis of certain acoustical, physiological and musical truths can the problem of choice be approached with intelligence.

In instrumental performance there are rules, variances of rules, and contradictions of rules. This means that it is necessary first to understand and to learn them, and then to determine how and why to deviate from or amend those rules.

Developing skill on a musical instrument is a cumulative process. The sophisticated, advanced level of performance is no better than the foundation upon which it is built. An accomplished technique is mostly a matter of *reflex behavior*; that is, the involved parts of the body must act almost automatically. This is achieved in three steps. First, there must be a *concept*, a mental image of the desired sound. Without such a mental image, practicing leads to dead ends. Second, it is necessary to have a complete *understanding* of the mechanics and acoustics involved in a given technique. Understanding refers to knowing beforehand which muscles are involved as well as how and why. The third step is the *doing*. This means training the involved muscles to act properly. This training, as in any other discipline, requires enough correct repetition over a long enough period of time to attain *reflex behavior*. To that end, it would pay dividends to refer to the text repeatedly. The degree of awareness of these concepts as exemplified in performance provides a true test of the success of their absorption.

One of the fascinating elements of being the student lies in playing the simultaneous roles of a quasi-scientist and a quasi-guinea pig. It is like being at the same time a foreman, a laborer, and an inspector of a building project. Another fascination in instrumental study is learning to distinguish between fact and fancy, between reality and illusion. It is commonplace for a student to be misled in what he hears himself doing. Frequently a student is amazed to learn that a note he knows he played was not heard. This is due to the influence exerted by the physical involvement combined with the tendency to assume that what was played was heard. It is here that the teacher serves one of his most important functions, i.e., training the student to hear objectively while being involved subjectively, physically and emotionally.

Practicing procedures, to be efficient, require not only the application of intelligence and ingenuity, but occasionally, consultation with the teacher.

POSTURE

Definition

As it is used in this text, the term "posture" refers to the physical attitude of the arms and fingers as well as the head, torso and legs. That proper posture looks dignified, graceful and elegant is a coincidental but desirable by-product of its function.

Function

It is proper posture that makes possible such things as accurate pitch, clean shifting, control of vibrato, clean sound, clear articulation, controlled nuances and speed of movement generally.

The greater the proficiency and range of technique desired, the more precisely correct the posture must be. Establishing proper posture to a great extent involves the retraining of certain muscles and nerves to do what does not necessarily come naturally. In the beginning it is not unusual that some discomfort be experienced. But this is well worth the effort since the importance of proper posture cannot be over-emphasized.

Instruction

Begin by standing normally erect, holding the bass upright with the left hand so that the strings face to the right. The Upper Bout is touching the abdomen. The Nut is slightly above the level of the eyebrow. After moving the right foot one-half step backward, the following condition should exist:

- (1) The angle of the bass should be such that the Nut is directly over the left shoulder and now at eyebrow level. (If needed, readjust the floor-pin.)
- (2) The bass should now be resting against the abdomen just enough to allow the release of the left hand. The bass should now remain in position without further support from either hand.
- (3) The inside of the left knee should be in light contact with the back of the bass. The left knee is used to turn the bass away from its basic position so that the E string may be bowed without the bow striking the right leg.
- (4) With the head normally erect, i.e., the chin is neither lowered nor raised, and the eyes straight forward, the Nut should be out of sight, i.e., beyond the circle of vision.

Beginning with this posture makes possible, with common sense, logical modifications needed at more advanced levels of playing as well as an appropriate seated position on a bass stool.

PART I

BOW TECHNIQUE

Introduction

Characteristics of Sound

The musical use of the human voice is called "singing". The double bass is in that family of musical instruments which is regarded as extensions of, or mechanical substitutes for, the human singing voice. In other words the bass can be made to emulate not the verbal aspect, but the musical qualities of the singing voice.

A logical beginning for learning to perform on any bowed instrument is the study of the right arm and the hand which holds the bow that produces the sound. The bow technique presented here is based on a conception of tone which has the following qualities:

Clean Sound. Producing sound with the bow involves the principle of *friction*. The friction present in drawing the bow across a string produces its own characteristic sound. When the sound of musical pitch is stronger than the sound of friction, the result may be regarded as clean sound.

Projective Power. Projection is that quality which permits the sound of the instrument to be conveyed beyond the immediate area of its source. At one extreme the sound may be characterized as soft, but not small, timid or weak, and at the other extreme as big or strong rather than loud, rough or coarse.

Singing. When this term is limited to the use of the bow, it refers to that quality which can be described as free-ringing, i.e., vibrating openly and freely, rather than choked, strained or forced.

Clear Articulation. Articulation may be defined as the manner in which a sound begins. The importance of articulation is comparable to diction in speech. A clearly articulated sound is one which begins free of extraneous or undesirable noises.

Timbre. In singing, a tenor and a baritone can sing the same pitch but the two will differ in timbre. Timbre is the characteristic which distinguishes the individual quality of one voice from another. It is, therefore, essential at the outset to be aware of the sound which is native to a particular instrument. The natural sound of the bass can be quickly and easily heard by causing a string to vibrate freely. A freely vibrating string is obtained by means of a properly executed pizzicato (pizz.). (Such a claim presumes the instrument to be physically healthy and properly adjusted.)*

Pizzicato

Definition: Plucking a string with a finger so as to cause the string to vibrate.

In a properly executed pizz. there is only *one* sound heard; whereas, in an improper pizz. there are *two*. In an

* The following features characterize a properly adjusted bass:

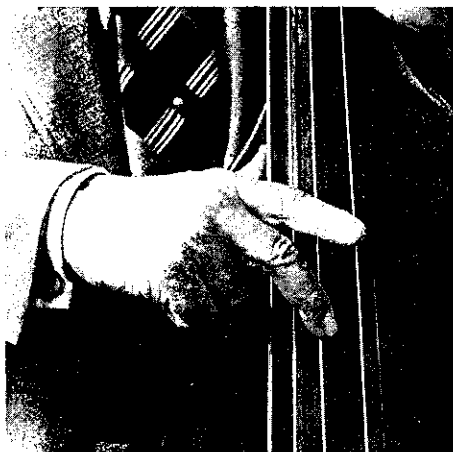
- 1) The fingerboard from the E side to the G side should be as *rounded* as possible — not flat under the G, D, A strings as it used to be in the days of gut strings.
- 2) A test of proper "scoop" (concave surface) in the length of the fingerboard is to press a string against both ends of the fingerboard. The string should not make contact with the fingerboard between these two points.
- 3) The bridge should be more or less centered on the *inside* notches of the f-holes and equidistant between them.
- 4) Bridge height should make possible the following measurements between the underside of the string and the end of the fingerboard: G — 8 mm., D — 9 mm., A — 10 mm., E — 11 mm., or 7, 8, 9, 10 respectively.
- 5) The bridge should stand either perpendicular to the top or lean slightly toward the tailpiece.
- 6) The feet of the bridge should make total contact with the top plate.
- 7) The sound-post should be located on the tailpiece side of the G-string leg of the bridge. The exact location is adjustable but it should be parallel with the bridge. Its distance away from the bridge can vary anywhere from half to slightly more than its diameter. This location is a matter of reconciling power of sound versus ease of response. Its distance in from the f-hole can vary from being directly in back of the leg to near the *outer* edge of the foot. This dimension is determined by balance of response among the four strings.
- 8) Both ends of the post should make not less than 75% contact with both back and top plates.

improperly executed pizz., when the string is pulled by the fingernail and released, there is first a ping or twang effect followed by the sound of the pitch. The quality characteristics of a properly executed pizz. may be listed as:

- 1) The sound occurs suddenly in relation to the preceding silence regardless of dynamics. It does not grow or emerge gradually from silence.
- 2) Unless it is interrupted, the sound fades or diminishes gradually to silence. It is not a sustained sound.
- 3) The tone is pure. There are no extraneous sounds or noises. Because the technique is described here in all its components, it is advisable to read the entire instruction and try to visualize the complete operation before attempting to execute the pizz.

To produce the sound being sought here, the pizz. should be executed on an open string.

Instruction: Place the fingerprint side of the first joint of the middle or index finger of the right hand at midpoint between the bridge and nut. Exert enough pressure to depress the string only *half-way* toward the fingerboard. While maintaining the pressure, slide the finger across the string toward the fingertip. Continue the momentum (speed of motion) until the hand is carried away from the bass. Although not essential, the thumb may rest against the near edge of the fingerboard at the time the finger is placed on the string.



Pizz. with middle finger immediately before it releases string. Thumb above fingers.



Pizz. with 1st finger just before releasing string. Thumb above fingers.

The sound thus produced is the one to be remembered while developing a bow technique. A more thorough study of pizz. and its application in music literature will appear later. The problem now is to produce the *free-ringing* sound in spite of the friction noises inherent in using the bow. The solution will be found by first understanding the relationship between bow-movement and string.

The Rules of Bow-Movement in Relation to the String

Whenever the bow is in contact with the string, five factors are *always* present and *interrelated*: (1) angle at which the bow moves across the string; (2) amount of hair in contact with the string; (3) speed of bow-movement; (4) location of bow on the string; and, (5) pressure of bow on the string.

Rule 1. *The bow must always be virtually "parallel" to the bridge regardless of distance from it.**

This is one of the very few rules in bass playing which is inviolable and invariable. Demonstration can show that, with all the other factors in ideal relationship, violation of this rule will produce friction noise

* See "Basic Bow and Arm Movement", P. 5

or buzz. The quality of clean sound begins with proper application of this rule.

Rule 2. *The more hair in contact with the string, the more full-bodied will be the sound.*

This can be demonstrated by drawing the bow across the string exactly the same way, first with 3 or 4 hairs in contact and then with the full surface of hair.

Rule 3. All other factors being equal, *the greater the speed of stroke, the louder will be the sound.*

Experiment will make this rule easily observable.

Rule 4. *The closer to the bridge the bow is located, the more freely the string will vibrate.**

A string vibrates throughout the length from the bridge to where it is stopped by Nut or finger, not to where the bow crosses the string. Merely setting the bow on the string constitutes an interference with the vibration of the string. The field of vibration is irregularly elliptical in shape, i.e., smaller at both ends and largest in the middle of the vibrating length. The further away from the bridge the bow is located, the greater will be its intrusion into the wider but weaker field of vibration. This is the second factor related to *clean* sound. It is also another factor related to *projection*.

Rule 5. *The less pressure used for producing a desired volume and/or tone color, the more successful the effort will be.*

Pressure is probably the most troublesome factor in bow technique. Improper use of pressure will produce not only a gritty or scratchy noise, but will inhibit the singing and projecting qualities because of its interference with *free* vibration of the string.

Bow-hold and the Right Arm

The function of the bow-hold and the right arm is to make possible the *controlled* movement of the bow with the most ideal combination of factors for the particular sound and articulation desired. The source of control over body movement is, obviously, the brain. With the object (the bow) to be controlled at the end of the arm in the fingers, it would seem logical to have the fewest possible intervening moving parts such as the wrist and elbow. Physical comfort is also an important consideration in obtaining and maintaining control. Therefore, it would appear desirable to establish a basic bow-hold and arm movement which is related as closely as possible to the natural disposition of the hand and arm posture and their movements. For example, when the arm hangs completely relaxed by the side, notice that the fingers are not straight. They curl or arch. Notice, also, that the arm is not ramrod straight. There is a slight bend at the elbow. Also, when one walks quickly with long strides, the arm swings obliquely forward in front of the body, not straight forward.

The following description of finger-placement on the bow should be regarded as a point of departure, a beginning, rather than as an inviolable rule. With experience modifications will occur.

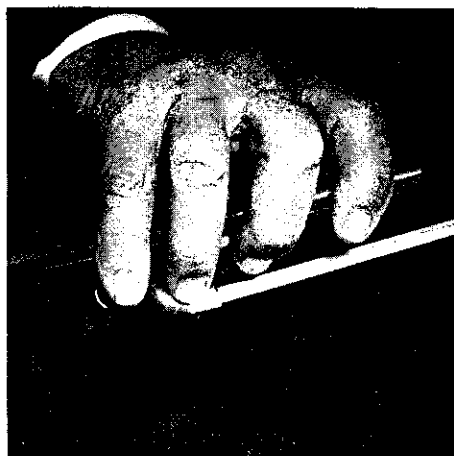
1. Hold the bow in the left hand with the point to the left, the frog to the right and (the hair nearest to you with the plane of the hair vertical) the bottom of the frog facing you.
2. Place the *tip* of the right thumb on the stick so that the side of the thumb is in contact with the left end of the frog.

* However, there is a limit as to how close to the bridge the bow can properly be located. If a false or "ponticello" effect is produced, the bow is too close to the bridge.



Thumb relative to frog and fingers.

3. Wrap the *right* forefinger and middlefinger around the stick so that the underside (as per instruction 1 above) of the stick rests in the first joints of these fingers. These two fingers should also be to the *left* of the thumb so that the bow could be balanced horizontally between thumb and fingers.

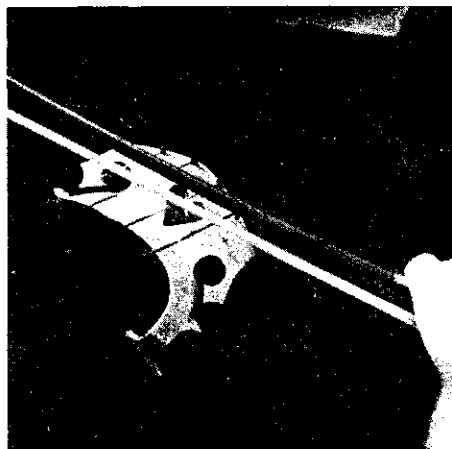


Fingers on stick.

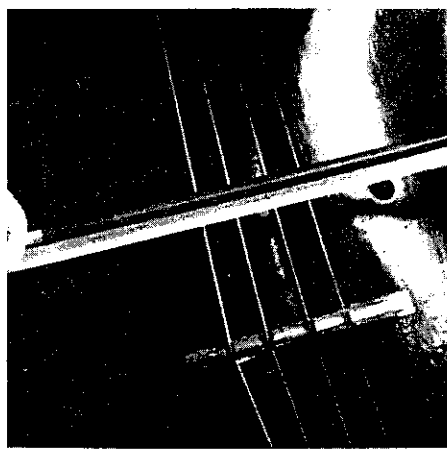
4. Place the ring-finger and the little finger on the stick to the *right* of the thumb so that the stick rests in the first joints. The "fingerprint" of the ring-finger should fit into the "U" cut-out of the frog.
5. Now turn the hand slightly counterclockwise so that the palm faces the screw and the knuckles are turned toward the point of the bow. (See illustrations in "Bow-movement.") This should result in a more or less straight line from the point of the bow to the elbow.
6. The wrist should appear exactly as it did when the arm was hanging relaxed at the side of the body.
7. The bow should be held firmly, that is, neither squeezed tightly nor held loosely. This will be subject to change in later development.
8. All this should result in a posture such that, if a wooden board were placed to touch the shoulder and the point of the bow, it would also make contact with the wrist and the side of the elbow.

Basic Bow and Arm Movement

1. Begin with the arm hanging relaxed at the side with the bow. Bring the bow around, moving the bow and arm as a *single unit*, so that the full hair surface at the *middle* of the bow makes contact with the D string. In this position, the bow should be *parallel* to the bridge.



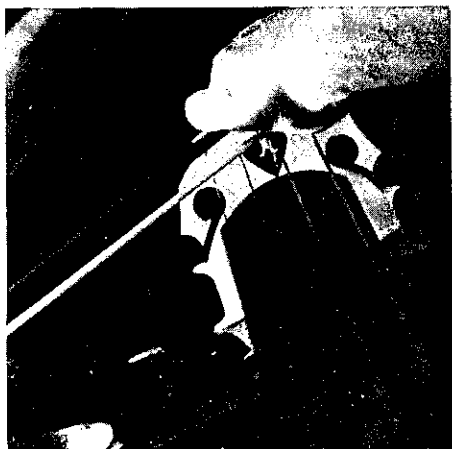
Player's view. Middle of bow on D string.



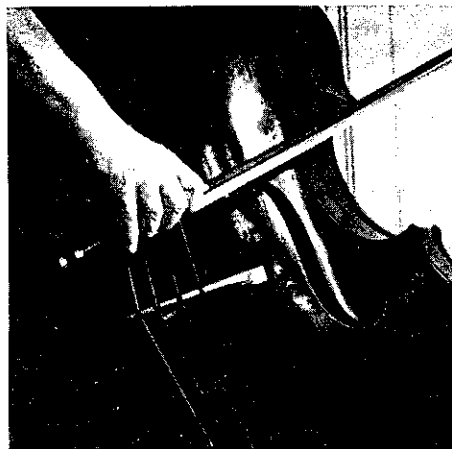
Observer's view. Middle of bow on D string.

The wrist and elbow should *not* have altered their relationship. Keep the forearm and upper arm relaxed.

2. Regard the shoulder as the fixed point of a pendulum and the arm as the rod. Move the bow across one place on the string to the frog. This is UPBOW (V). One of two things can now happen: (a) if the bow is to be kept parallel to the bridge, the wrist must be allowed to flex; or, (b) if the wrist is *not* allowed to flex, the bow will deviate from its parallel position and the point will be directed *upward*. It is this latter choice which is prescribed here. The angle of the bow to the bridge should be not greater than 10 degrees.

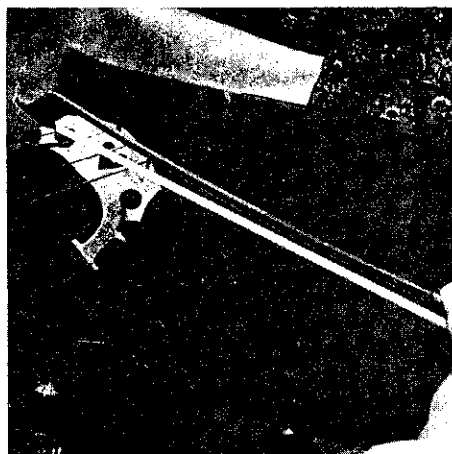


Player's view. Bow on string at frog.

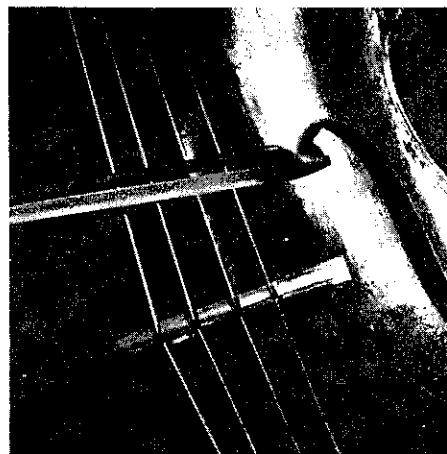


Observer's view. Bow on string at frog.

3. Now draw the bow across the same place on the string to the point. This is DOWNBOW (∩). This time the choice is between: (a) keeping the bow parallel to the bridge and distorting not just the wrist, but the arm and body posture; or, (b) deviating from the parallel relationship by *flexing* the wrist just enough to avoid that distortion. Now the *frog* is directed *upward*. Again, it is the latter choice which is prescribed here. With the point of the bow on the string, the angle of the bow to the bridge should not be greater than 10 degrees. In neither case has movement of the elbow as a joint been involved.



Player's view. Bow at point.



Observer's view. Bow at point.

In other words, the bow can and should be parallel to the bridge as the middle half crosses the string. Beyond this there should not be a deviation of more than 10 degrees. The slight wrist movement referred to occurs only as the bow moves through the outer quarters of the bow. Changing direction at either end of the bow should not require any wrist movement at all.

This is not to say that the bow must always cross the string at the same point on the string. It is frequently

necessary to change the location of the bow on the string within a bow-stroke. What has been described is only the basic pattern in which the bow should move and the manner of wrist and arm movement which makes it possible.

For the sake of convenience the term "parallel" will, in this text, henceforth mean the movement described in paragraphs 1, 2 and 3 above.

The above reference to "flexing" and "non-flexing" of the wrist does not apply to all articulations. The wrist is involved as an independently moving part in some articulations but not in others. The elbow is involved as an independently moving part in some but not in all articulations.

The Elbow

It is important to keep the elbow away from the body. The elbow and wrist should be maintained *on the same plane* with the bow regardless of which string is being used. It is this posture which contributes to the sensation of "everything hanging from the shoulder". This posture allows most efficiently the control of pressure on the string.



Stop-action photo illustrating posture of elbow in relation to bow in motion.

The Shoulder

The shoulder, along with the upper arm, is constantly involved in ALL articulations. The degree of pressure of the bow on the string is fundamentally governed at the shoulder. The line the bow must travel on any given string to prevent contact with a neighboring string is controlled at the shoulder. The important principle and function of *carrying the bow* originates at the shoulder. With certain exceptions, the bow never merely rests on the string. No matter how loudly one may play, the bow is carried in a firm hold by the arm. It is never dragged across the string. It is most important to be aware of the role of the shoulder.

Speed of Direction Change

Moving the arm from the shoulder alone must be considered a large movement. Being such, it is limited as to how fast it can move back and forth, upbow and downbow, in relation to the length of the bow-stroke. When the speed of direction change exceeds the point of efficiency for full arm use, it becomes necessary for the elbow to originate the movement of the bow. This, too, has its limitations. Then bow movement must originate at the wrist.

ARTICULATIONS

A musical sound has many traits such as pitch, time-value, dynamic value, timbre, quality, texture, color. Sound at its most elemental level has three parts: a beginning, an end, and a duration. The character and quality of these parts are subject to manipulation.

A sound can end either abruptly (this is called "sec", the French word for "dry"), or it can fade quickly or slowly. Duration can be short or long, can grow softer or louder, or fluctuate in volume.

Articulation refers to the manner in which a sound begins. In speech a word may begin with a soft articulation as in the word "we", with a hard articulation as in the word "keep", or with gradations between these extremes. The same is true of the beginning of a musical sound. The following range of musical articulations for the bass is categorized in the order of increasing sharpness.

Slur

When two or more notes are played on the same bow-stroke without interruption, the second and subsequent notes begin with the gentlest articulation as in the two syllables in the word "wayward". The first of a group of slurred notes may or may not begin gently.

Legato

"Legato" is the Italian word for "connected". The characteristic of legato is smoothness; i.e., to begin smoothly or to be connected smoothly. The reverberation of the first note is not quite stopped when the sound of the second note begins. Usually this refers to a series of notes played with a bow stroke for each note. A parallel in speech would be "minimum".

Détaché

"Détaché" is the French word for "detached". This is also called "non-legato". In this articulation the sound begins gently but is separated by the smallest of margins from the end of the preceding note. The separation is only enough to allow an awareness of reverberation after the bow is released from the string. In speech the parallel would be the word "dado".

Portato

In Italian it means "to carry over". Portato is designed to bridge the difference between legato and détaché. It is comprised of elements of both. The sound begins more abruptly than in legato, but less so than in détaché. This should not be confused with slurred détaché or slurred marcato. A parallel in speech would be "ha-ha".

Marcato

In Italian it means "marked". In music it means the sound begins abruptly — a sudden burst of sound in comparison to the gentle beginning of a détaché. This articulation is applicable at any dynamic level. In speech the parallel would be "tartar".

Spiccato

While the term refers specifically to technique, it produces its own characteristic articulation. It can be described as "lightly marcato". Since the sound is obtained by bouncing the bow a glancing blow at the string, there is no sustained duration of sound. In this sense it resembles pizzicato. In speech a parallel would be "Peter Piper".

Martelé

This is the French word for "hammer". Martelé is a hard, sharp attack produced by *striking* the string a hard, glancing blow. In speech a parallel would be "cocoa".

Sforzando

Sforzando is the hardest articulation. It means "to attack forcefully". In speech the parallel would be the sound of "K" uttered most forcefully.

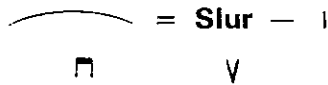
ON the String Articulations

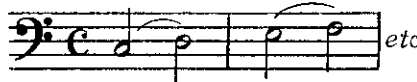
Slur, legato, portato, marcato, sforzando.

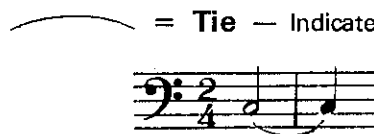
OFF the String Articulations

Détaché, spiccato, martelé.

SIGNS AND SYMBOLS

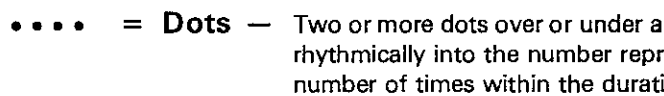
 = **Slur** — Indicates: (a) Notes of different pitches to be played on one bow-stroke, or (b) the notes of one phrase, or (c) simply "legato".



 = **Tie** — Indicates: Continuation of sound for the duration of time represented by two or more notes of the same pitch.

 = **Dot** —

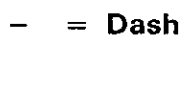
One dot over or under a note-head indicates "staccato" or "spiccato". The speed and character of the music would indicate which to use.

 = **Dots** — Two or more dots over or under a note-head indicate that the note is to be divided rhythmically into the number represented by the dots equally and articulated that number of times within the duration indicated by the time-value of the note itself.



 = **Inverted Triangle** — Indicates "martelé"



 = **Dash** — Indicates the note is to be sustained for its full time-value without allowing for the reverberation as in "détaché", and implies a slightly audible attack. It is known also as a "tenuto" (held) mark.



^ = **Inverted V** —

Indicates a sharp attack such as marcato or sforzando (sfz) and the note is sustained for its full time-value.



— — = **Portato** —

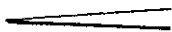
This means more separated than legato, but less than détaché.



DYNAMICS AND NUANCES

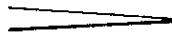
(Degrees of Loudness and Accent)

ppp	pianississimo	extremely soft
pp	pianissimo	very soft
p	piano	soft
mp	mezzo piano	moderately soft
mf	mezzo forte	moderately loud
f	forte	loud
ff	fortissimo	very loud
fff	fortississimo	extremely loud



or cresc. or crescendo

to grow louder



or dim. or diminuendo

to grow softer



(over or under the note-head)

accent (In effect, this is an extremely rapid diminuendo. The note begins louder than the notes without this symbol but the volume drops immediately down to the same level.)

sfz

sforzando

(Appearing over or under a note.) The sound begins with a very sharp attack.

BOW TECHNIQUE

Exercise No. 1 **Bow OFF the string**

Purposes

1. To adjust the spread of the fingers in the bow-hold for the greatest control and comfort.
2. To learn and become intimately familiar with the sensation of moving the bow and arm as a *single unit*.
3. To learn the sensation of moving the bow from frog to point to frog across any one given point in the bowing area of a string (between the bridge and the end of the fingerboard) while keeping it parallel (see page 7) to the bridge.
4. To learn to *carry* the bow while keeping arm muscles *loose*.

Instruction

Starting at the frog and holding the bow about 1/2 inch away from the string, not on the string, draw the bow downbow to the point.

1. Keep the bow parallel to the bridge.
2. Keep the bow above the same point on the string.
3. Change direction at the point (to upbow) *without stopping the movement of the bow*.
4. Repeat several times for each string.

Observe:

1. The tension in the bow-hold.
2. The line the bow and arm must travel to maintain the 1/2 inch away from a given string.
3. The degree of nerve and muscle control necessary.
4. The shoulder is the only joint in deliberate action.
5. The relationship between elbow and wrist should be the same as when they are hanging at the side — relaxed.
6. That the slight movement in the wrist is *not* deliberate as in the shoulder but is a spontaneous accommodation for keeping the bow parallel to the bridge and keeping the bow above the same point on the string.

Exercise No. 2 **Bow ON the string**

Purposes

1. To learn the acoustical effects of bow movement on the string.
2. To learn the results of adjustments and non-adjustments of bow movement in relation to dynamics and nuance changes. ("Adjustments" refers to changes or alterations in location, pressure and/or speed of bow-movement.)
3. To learn the physical sensations involved.

Instruction

1. *Hair*. The tension of the hair, adjustable with the screw, should be just tight enough to prevent the hair from making contact with the stick when used under the strongest pressure.
2. *Use of Rosin*. Rosin is applied to bow hair by drawing the bow across the edge of the cake in both directions. Only enough should be applied to make the hair *very slightly* tacky to the touch.

Bow Movement Without Adjustment (Instruction A)

1. At first, let selection of location on the string be determined by natural circumstance. Standing normally erect with the arm hanging relaxed at the side and the bow held properly, simply bring the arm around from the side, moving the arm from the shoulder and without changing the posture of the elbow or wrist.
2. Place the bow on the string at the frog (the last inch of hair at the frog and point should be ignored for the present), retaining the same weight-carrying sensation in the hold and arm as in Exercise No. 1, page 11.
3. Without distorting the body and arm posture, draw the bow (a) parallel to the bridge, and (b) at one location on the string without changing speed or pressure of bow. Remember to *carry* the bow.
4. Keep full surface of hair on the string.
5. Use full length of bow (minus inch at frog and point) throughout the exercise.
6. Change from downbow (▮) to upbow (▽) etc. without stopping the movement of the bow as in Exercise No. 1, page 11.
7. Change from string to adjacent string without lifting bow from string. Avoid extraneous notes or noises and don't stop bow movement.
8. Maintain the same tempo throughout the exercise, but use different tempi in subsequent practice of the exercise.

Observe:

1. The degree of change in dynamics as the bow moves from frog to point and from point to frog.
2. The line on which the arm must travel to prevent the bow from making unintended contact with other strings.

Bow Movement With Adjustment to Maintain Even Dynamics (Instruction B)

Follow the same procedures as in Instruction A above except for numbers 3 and 8.

3. Make adjustments in *location*, *speed* and *pressure* so as to sustain a predetermined dynamic level for each complete bow-stroke and for the exercise as a whole.
8. Maintain the same tempo and dynamic level throughout the exercise but pre-select a variety of tempi and dynamics. For example, go through the complete exercise in mf at 40* per quarter note, then in pp, then ff. Then use 60* per quarter note in mf or pp or ff.

Observe:

1. The degree of change necessary in each of the factors involved in order to maintain an even dynamic within a bow stroke.
2. The degree of difference in all factors as they affect moving from one string to another.
3. The physical sensations involved in adjusting the factors.
4. All the factors demanding simultaneous attention.

Acoustics

Remember the sound of previously described pizzicato. Try to duplicate and sustain it throughout the length of bow stroke. The sound should begin without scratch or whistle. Too much pressure or rosin will cause scratch. Not enough pressure or rosin will cause whistle or harmonic overtone. The proper pressure may be described as gentle. But gentle pressure is proper only in relation to speed and location. The *ear* is the sole judge as to the degree of adjustment. *All* adjustments should *originate at the shoulder*. Interruption of sound due to bow change should be almost unnoticeable.

* These numbers refer to settings on a metronome. A metronome is an adjustable device used for marking time.

Suggestions

1. When fatigue sets in, STOP! Do not sacrifice proper posture and movement. Each succeeding effort should extend the period of endurance.
2. To draw the bow on the E string without bumping it into the right thigh, turn the bass from its basic position with the left knee against the back of the bass by pivoting to the right on the ball of the left toe.

Symbols

▢ — Draw the bow toward the point regardless of where the stroke begins.

∇ — Draw the bow toward the frog regardless of where the stroke begins.

Tied Notes

Ex. 2 a

Ex. 2 a musical notation showing tied notes across three staves. The notation includes various bowing symbols (▢ and ∇) above the notes, indicating the direction of the bow stroke.

Slurred Notes

Ex. 2 b

Ex. 2 b musical notation showing slurred notes across three staves. The notation includes various bowing symbols (▢ and ∇) above the notes, indicating the direction of the bow stroke.

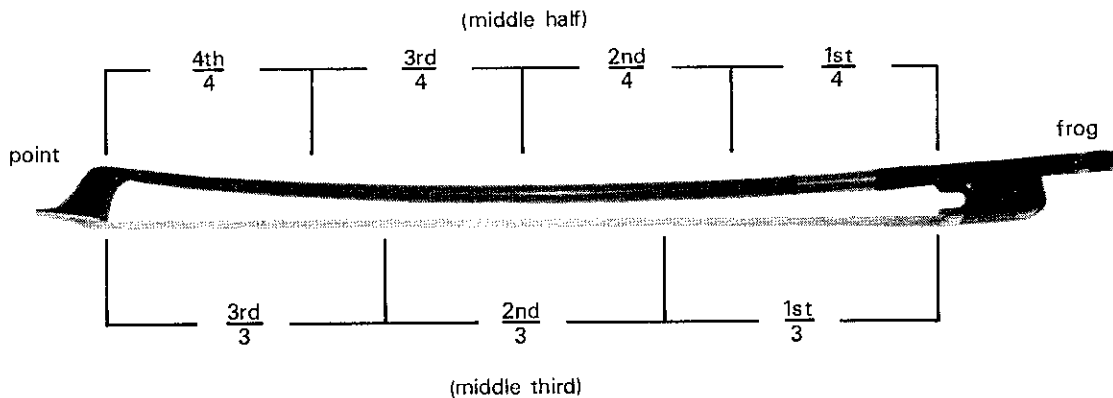
Exercise No. 3 Legato

Purpose

To develop facility in changing bow direction in *legato* while using different parts of the bow.

Symbols

F.B.	— full bow	1st/3	— the third of bow from frog
fr.	— at the frog	2nd/3	— the middle third
M	— at the middle	3rd/3	— the third of bow from point
pt.	— at the point	1st/4	— quarter of bow beginning at frog
1st/2	— half-bow from frog to middle	2nd/4	— quarter of bow adjacent to 1st/4
2nd/2	— half-bow from point to middle	3rd/4	— quarter of bow beginning at middle and adjacent to 4th/4
		4th/4	— quarter of bow beginning at point



Instruction

1. All movement of bow should originate and be controlled at the shoulder.
2. Vary tempi and nuances as in Exercise No. 2, but maintain the same tempo and nuance for a complete exercise.
3. Begin with either direction, downbow or upbow, but use both.
4. Use the full bow for whole notes and half notes, and use half bow for quarter notes and eighth notes.
5. Change from downbow to upbow etc., without stopping or lifting the bow as in Exercise No. 2, page 13.
6. Change from string to adjacent string. Avoid extraneous notes or noises and don't stop bow movement. Maintain contact with string.

The foregoing instructions for Legato are very rudimentary. A highly refined Legato requires great skill. Achieving that skill needs intense concentration in two areas, physical and acoustical. It is a relatively slow process because it is necessary to retrain muscles and nerves. One must therefore have the tenacity to work at it persistently and the patience to give it time to develop.

It may be helpful if the details of the forces involved are fully understood. Those forces are acoustical, mechanical, physical and mental.

Acoustical

The ideal Legato is one in which the sound continues *without interruption when the bow changes direction* ($\bar{\sim}$). There is neither a marcato-like attack nor a rest-like silence at the point of direction change. Also, the decibel level of sound does not change before, during or after the direction change unless it is intentional. All of this applies regardless of whether it is in pp or ff. The string vibration is disturbed so slightly that if the note changes at the same time as the direction change, the sound will be virtually the same as in a slur.

Mechanical

The bow must maintain the same rate of speed *during* the direction change as during the stroke. This would be analogous to a bicycle moving along at 5 miles per hour and making a U-turn at the same 5 mph. It must also maintain, within certain limits, the same pressure *during* direction change as before the actual change.

Physical

The foregoing requires that the right arm and hand behave in a very disciplined manner which calls for intense training of muscles and nerves over a period of time. It may be helpful to watch the right hand as it changes direction to prevent a quick jerk in motion. But stop watching as soon as the physical sensation is memorized. Meanwhile, learn the physical sensation of maintaining the same pressure on the bow *during* the direction change as during the stroke.

Mental

Besides coordinating all the above, one must be critically observant as to the quality of execution, analyzing causes for flaws and finding ways to eliminate them.

A most valuable exercise is to practice long tones.

A reasonable period of time should be measured in terms of months.

Developing a skillful Legato can take place while other learning is in progress.

Ex. 3 a

Legato with *partial* bow

Ex. 3 b

Slur with *partial* bow

Exercise No. 4 Bow Retrieval

Definition

A "normal" sequence of changing bow direction would mean not only an upbow (V) followed by a downbow (∩), or vice versa, but would also imply that the downbow would begin where the upbow ended — as intended in Exercises Nos. 2 and 3. But in Exercise No. 4 measures 10, 11, and 12 require a deviation from the "normal". Here it is necessary to play two successive upbows, but starting at the same part of the bow. The act of returning the bow for the 2nd upbow is known as "retrieving the bow" or, "bow retrieval".

In fact the bow is carried through the air. There are other circumstances when the bow is carried through the air for good musical and mechanical reasons such as: (a) to cause a strong articulation to occur on a downbow, or a weak articulation to occur on an upbow; (b) to have a more effective crescendo occur on an upbow, or a diminuendo to occur on a downbow; (c) to help maintain rhythmic security.

The following exercise will serve to introduce this new experience. It will also reaffirm the importance and the advantage of a firm, balanced bow-hold, and of *integrating bow and arm as a single unit*.

Ex. 4

Bow Retrieval

Exercise No. 5 Crescendo and Diminuendo

Purposes

1. To learn the physical sensation of controlling the gradual increase (cresc. = $\lt;$), and decrease (dim. = $\gt;$) of volume.
2. To test limitations of bow and bass for maximum and minimum volume of sound. The limit of maximum volume is exceeded when the sound becomes scratchy, scrubby or gritty. The limit of minimum volume is exceeded when there is either no sound at all in spite of bow movement, or when the fundamental tone is replaced by harmonic overtone or by other foreign sound.
3. To learn the role of *location* and *pressure* in relation to *speed* of bow movement in a given tempo.
4. To learn economic management of bow expenditure.
5. To learn the importance of *carrying* the bow under a variety of conditions and circumstances.
6. To develop further the concept of pitch over friction.

Instruction

1. Maintain firm hold on bow.
2. Keep bow parallel to the bridge.
3. To proceed from p to f (a) draw bow lightly and slowly near the fingerboard; (b) gradually move the bow toward the bridge while (c) at the same time gradually increasing the speed and, very slightly, the pressure. To proceed from f to p, reverse this procedure.

Problems and Solutions

1. If in a downbow crescendo the volume at the point is less than at the middle, it is because the 4th/4 of the bow is lighter than the 1st/4 of the bow and it is further away from the weight of the arm. This can be corrected by keeping the elbow in line with the bow so that leverage (weight) from the upper arm can be brought to bear on the 4th/4 of the bow. Then increase *weight* and *speed* while moving the bow closer to the bridge *gradually* during the stroke.
2. If in a downbow crescendo the sound becomes dirty or scratchy, it is because either the bow isn't moving fast enough in *relation* to pressure or there is too much pressure in *relation* to speed. A possible cause is that the elbow is too close to the body and not in line with the bow. The sensation needs to be that of *carrying* the bow *from above*, not that of being pushed up from below. In effect, everything is suspended from the shoulder.

3. If in an upbow crescendo the sound becomes dirty, scrubby or gritty, it is because the weight of the 1st/4 of bow and the weight of the arm are not being relieved from the string *at the shoulder*. Again, the pressure is too much as related to speed or speed is not enough as related to pressure.
4. If in a downbow diminuendo there is not enough bow for the necessary duration, there was too much speed at the beginning of the stroke. The same applies to upbow.
5. If in upbow diminuendo the bow gets stuck, there is either too much pressure in relation to speed, or the concept of carrying the bow from above, i.e., "everything suspended from the shoulder", is not being observed to help move the bow at a steady pace.
6. Moving the bow toward and away from the bridge will involve extending and retracting the arm. This can be accomplished and controlled at either the shoulder or the elbow but *not* at the wrist.

Ex. 5 a

Legato with crescendo and diminuendo

$\text{♩} = 40-80$
F.B. V

Crescendo and diminuendo with *partial* bow

Ex. 5 b

Exercise No. 6 Marcato/Staccato

By definition *staccato* means *short*. Traditionally, it means half the time-value, more or less, of the note itself. It is, therefore, not a kind of articulation. But, over a period of time, it has incorrectly come to mean a kind of articulation — namely, *marcato*, as defined under “Articulations”.

Technique

Mechanically, *marcato* consists of pulling the string to one side with the bow, then releasing the tension in such a way that the string snaps into vibration *without* removing the bow from contact with the string. The execution of *marcato* occurs in *two distinctly separate steps*:

1. Press the bow against the string in such manner that the string is both depressed and being pulled and held to one side. The bow is otherwise *not* in motion and there is not yet any sound. This pressure may be exerted in one of two ways: (a) by bringing the weight of the whole arm to bear through *all* the fingers, (being a large movement this choice is usually limited to very forceful attacks where enough time is available for execution) or (b) by twisting the forearm and fingers counter-clockwise, transmitting the pressure through the forefinger. This choice is usually applied where the attack desired is relatively light in character or too quick for using the full arm.
2. Let the string snap into vibration by releasing the holding pressure suddenly and simultaneously with the bow movement across the string. The beginning of bow movement should have the same effect on the string as the release of a stretched elastic band. Once the pressure is released, the movement of the bow is governed by the same factors as in *legato*.

Problems

If the sound does not begin suddenly and cleanly, it can be due to one of two causes. The bow does not grip the string strongly enough before moving or there is insufficient rosin. If there is too much rosin, or if the bow is moved before pressure is released, the sound will begin with a scratchy, gritty noise.

Observe:

The most important feature is the *simultaneous* action of *movement* and *release*.

The force of attack is variable from very light to very strong. It is determined by the relationship between the degree of pressure *before* bow movement and the speed of bow movement at the instant of release.

Instruction

- Ex. 6
1. Vary the tempo and nuance as in previous exercises.
 2. Lift the bow from the string gently at the end of each stroke.
 3. Lift the bow by raising the arm, not by twisting the wrist. The sound should not stop abruptly.

* The beginning of a bow-stroke need not necessarily begin precisely where the previous stroke ended.

Exercise No. 7

Spiccato

Definition

Spiccato is musically a non-sustained sound of relatively slight articulation. However, this does not mean absence of a definite and healthy sound.

Bow Movement in Spiccato

Spiccato requires that the bow be *bounced* against the string so as to produce a clean sound which will project. In spiccato there is a double movement of the bow; first, the up (V) or downbow (∩) which is a left-to-right-to-left motion (↔); and second, the thrown and rebound action which is a toward-and-away-from-the-string motion (↕). While both motions must occur simultaneously, the force or speed of each can be varied independently. It should be noted that the second without the first motion will produce no significant sound, and the first without the second motion will not produce spiccato. In other words, the bow must strike the string a *glancing blow* (↗↘).

Technique

Basically, the hold on the stick need not be as firm as for *marcato*. The firmness of the hold will be more or less determined by the dynamic level, i.e., the lighter the sound, the looser the hold and the stronger the sound, the tighter the hold. More importantly, the wrist should be relaxed but not too loose.

The part of the arm where movement is to originate will be determined by the speed at which the sequence of notes is to be executed. The most desirable point of origin, from the viewpoint of control and tone quality is the shoulder. Only when the speed exceeds the capability of the shoulder should the movement come from the elbow. Only when speed exceeds the capability of the elbow should the movement come from the wrist. The instruction at this point assumes that the movement will originate at the shoulder.

Instruction

1. To establish the place on the bow where movement will begin and the line in which it will travel, set the bow at the 1st/4 length from the frog on the D string.
2. Now raise the bow about 2 inches away from the string. This is where the movement in a downbow (∩) stroke will begin.
3. Now two movements must occur simultaneously: (a) the bow moves horizontally in a downbow direction (∩) and (b) the wrist is twisted in a counter-clockwise direction. This latter is regarded as the second motion. To be precise, both moves are literally horizontal (↔↗). Motion (a) is from side to side, and motion (b) is toward and away from the string. The bow, if permitted, should bounce off the string, and the stroke should end more or less at the midpoint of the bow.
4. The upbow (V) stroke should begin the same way with the same counter-clockwise twist of the wrist.

Beginning to learn the spiccato technique at this part of the bow makes use of the weight of the upper half of bow. With experience, spiccato becomes available over a much greater range of the bow. With experience, control over the range of dynamic levels and speed is also learned.

Dynamic level and quality of sound will result from the combination of (a) distance of bow from string at the beginning of the throw, (b) the speed and length of the upbow-downbow movement as part of the throw, and (c) the amount of force spent in the movement.

Suggestions

1. All elements involved should be executed as one action.
2. Execute slowly enough to study all aspects such as: quality of sound, projection and physical sensation.
3. Experiment using different parts of the bow on different parts of each string and at different speeds and dynamic levels.

Symbol

In written music there is no specific symbol to indicate spiccato. Most often it is indicated by the dot commonly associated with staccato. Sometimes there is no indication at all. In other words, the choice of using spiccato must be made, in many instances, on the basis of the context of the musical passage itself.

Ex. 7

Spiccato

The musical score for Exercise No. 8, Spiccato, is written in bass clef with a common time signature (C). It begins with a tempo marking of quarter note = 60 and a spiccato symbol (a square with a vertical line). The music consists of four staves of eighth and sixteenth notes, with various spiccato markings above the notes. The first staff has a tempo marking of quarter note = 60 and a spiccato symbol. The second and third staves continue the rhythmic pattern with various note values and spiccato markings. The fourth staff concludes the exercise with a final note and a double bar line.

Exercise No. 8 Martelé

Definition

Martelé is the French word meaning "hammered". It is more a description of technique than of sound. The sound is virtually the same as that of an extremely sharp marcato attack, i.e., explosive in character. The duration is the same as in spiccato.

Rationale

Swinging an axe into a tree trunk is quite different from swinging a hammer at a nail. If you ever noticed a carpenter when he drives a nail, the hammer seems to come away as part of the same motion which strikes the nail. Martelé is this latter kind of motion. The bow begins and ends its motion *off* the string. The bow actually strikes the string a glancing blow, but it strikes in such a way as to hook onto the string *before* it lets go and the string begins to vibrate.

The bow appears to move much the same as in spiccato. In spiccato the bow is *tossed* at the string and allowed to rebound. In martelé the bow is *jabbed* at the string. The jab involves the full arm. In martelé the arm is *rigid* — not relaxed as in spiccato. In martelé the grip is much tighter than in spiccato.

As with spiccato and détaché, the martelé stroke is comprised of a vertical (to and away from string) and a lateral (across the string) movement. Progressively, the détaché is mostly lateral; the spiccato is as much vertical as lateral, but the martelé is more vertical than lateral.

Instruction

The part of the bow used for martelé is usually in the vicinity of the 1st/4 point — between 3 to 6 inches from the frog. Begin with the bow held very tightly about 2 to 3 inches away from the string. Using the full length of the arm, very forcefully strike the string a glancing blow. There must be a slightly lateral direction in the motion. (It is the lateral direction which will initiate the vibration. A direct vertical blow will produce virtually no sound at all.) In striking the string there must be felt the actual catching or hooking into the string as in marcato. There is almost no lateral stroke on the string. At the instant the catch is felt, the full arm is raised from the string as forcefully as in the strike itself. This applies to upbow as well as downbow.

Problems

Scratch or scrape may be caused by:

1. Too much bow stroke on the string or
2. The bow failing to hook onto the string and the stroke being too slow in proportion to the pressure.

Non-explosive attack may be caused by:

1. Failure of the bow to catch onto the string or
2. Too much lateral and not enough vertical motion in the stroke.

Exercise No. 9 **Détaché**

Definition

Détaché is the French word for "detached". Musically, it means "smoothly detached". A note played détaché begins not quite as gently and is sustained not quite as long as in legato. The function of détaché is to provide, within the general characteristic of legato, a more clearly defined rhythmic quality.

Rationale

Détaché is probably the most commonly used articulation in this style of bass playing. It applies to those notes written without instruction as to type of attack except possibly "non-legato"; or, given the same notes for a stringed instrument in a higher range, they would be played one note per bow-stroke. Its meaning and technique differ from that of the other stringed instruments because the pitch is so much lower. In this low register the vibrations of the string are slower, bigger, and longer lasting. In many instances it is not possible for the bass to use the legato technique of the higher pitched instruments and get the same legato quality without losing rhythmic clarity. In such cases the bass alone must resort to détaché. On the other hand, the bassist can exploit this characteristic to great advantage. The long-lasting vibrations make it possible to obtain the same results as the higher pitched instruments by using different techniques. Détaché, in the technique described here, constitutes the key to the technique of tone production *in this school of bass playing*.

Technique

The term, détaché, refers not only to the beginning of the sound, but also to the end of the sound and the technique of both. It is the one instance where the sound ends almost the same way it begins. To accomplish this purpose the bow must behave in a particular manner which can best be described in the following analogies. If an airplane were to land so smoothly that the actual "touching down" was not noticeable, this would resemble the way the bow should make contact with the string. If an airplane were to take off so smoothly that the exact moment of becoming airborne was not noticeable, this would resemble the release of the bow from the string at the end of the stroke. Visually, if the full arm and bow resemble a carpenter's square, then the movement of arm and bow would resemble the square swinging from one end of it. In other words, the arm and bow move as a single unit swinging from the shoulder.

Another feature of détaché pertains to the sounds being smoothly detached as this bow movement affects a series of notes. Each note must be articulated at its rhythmically accurate time. It is the *duration* which is subject to modification. In détaché the bow is *not* held in contact with the string for the full duration of the indicated time-value, but only enough time is subtracted from the duration to permit changing bow-direction with the bow *slightly off* the string. Releasing the bow from the string should not be noticeable. When this is done quickly and skillfully, the effect is the same as when an instrument of higher pitch executes its détaché without the bow leaving the string.

Instruction

1. Grip: Hold the bow firmly. The principle of "carrying the bow" attains its ultimate realization in this articulation.
2. Arm: The arm should move only from the shoulder. Any movement in the elbow or wrist would defeat the purpose to be served here. Whatever pressure is exerted must originate in, and be limited to, the upper arm. Bow pressure must never derive from the dead weight of the arm or from pressure at the wrist by twisting (torque) the fingers on the stick.
3. Contact:
 - a. *Preliminary.* The part of the bow and the point on the string where contact will be made must be predetermined. Suppose contact is desired at a point one-quarter of the bow-length from the frog in a downbow stroke on the string one inch beyond the fingerboard. Place the bow, not at the 1/4 point, but 2 inches closer to the frog, on the part of the string already selected. Now raise the bow about 1 inch away from the string. This is where the stroke begins. The *speed* of movement should also be predetermined.
 - b. *Stroke.* Movement begins with the bow *not in contact* with the string. With the bow parallel to the bridge, begin the stroke and make contact at the predetermined point *without altering the speed*. The pressure of the bow should, until familiarity with the technique is developed, be gentle. In actual practice *détaché* has the same broad range of dynamics and nuances as all other articulations.
4. Release: The source of power for lifting the bow from the string is the shoulder, *not* the wrist or the elbow. The entire arm is raised. In raising the bow from the string, the momentum (rate of speed) should remain constant. If, in going from one note to another, a change of string is involved, the change of bow-position should occur *simultaneously* with changing bow-direction and *without stopping* bow movement. Changing bow-direction should be exactly like a pendulum swing.

Summary

The stroke for *détaché* begins with bow-movement *off* the string and ends with the bow *off* the string. All parts of the stroke (approach, contact, and release) should be regarded and treated as one motion. The sound should end much the same way as it begins. The sound during contact should be steady and even, i.e., without swelling or fading.

Problems

If the string does not respond (no pitch) or the sound begins with a squeak or whistle, the pressure on contact was insufficient. If the first sound is gritty or scratchy, the pressure was too great in relation to speed and/or location of the bow on the string.

Experimentation within the limits of the instruction presented here can be exploited to great advantage.

Exercise No. 10 Portato

Definition

According to the Harvard Dictionary of Music, "portato" is an articulation "half-way between 'legato' and 'marcato'". The term "portamento" is frequently misused where "portato" is intended. The sound effect of "portato" is that of a barely noticeable crescendo and diminuendo (< >) for the duration of a note. This effect is obtainable with separate strokes for each note. But most commonly, the term refers to this sound effect being executed as a *slurred* articulation for two or more notes.

Technique

Portato is an *on-the-string* articulation. (1) The bow is on the string and begins movement much the same as for legato. (2) There is a brief and quick speed-up and slow-down (acceleration-deceleration). This whole process could involve as little as two inches of bow space. (3) At the end of this short stroke, two things must happen simultaneously. The bow *almost* stops and *almost* leaves the string. This same procedure is repeated for as many notes on the same bowstroke as desired.

Jété

Definition

"Jété" is the French word for "thrown".

Technique

For stringed instruments jété is a slurred spiccato. In effect it is a controlled dribbling of the bow either upbow or downbow.

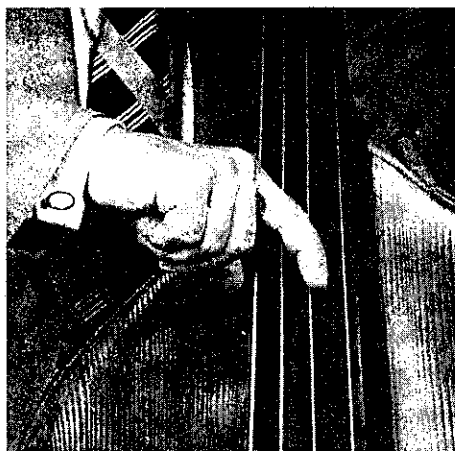
Pizzicato

Rationale

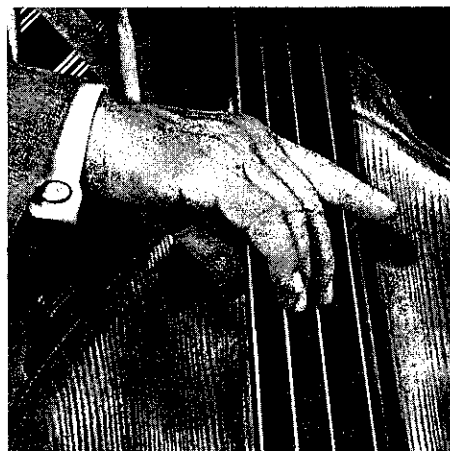
"Pizzicato" as a means of musical expression offers a range of color and character far greater than is commonly realized. Satisfying the demands made in existing orchestral literature requires a knowledge and technique of the whole gamut from the most gentle to the most explosively percussive quality.

Technique

The pizz. (pizzicato) described earlier can be regarded as a starting point. It assumed the right hand to be free of the bow. Without holding the bow it is possible to execute pizz. with all four fingers. This, however, has more value as a stunt than for practical application. This text will limit itself to pizz. with two fingers at the most advanced level. Most commonly, pizz. is executed with only one finger, and it matters little whether the index or the middle finger is used if the hand is free of the bow. But it is of prime importance that at *no time* should the fingernail make contact with the string.



Optional posture. Pizz. with 1st finger and thumb below fingers.



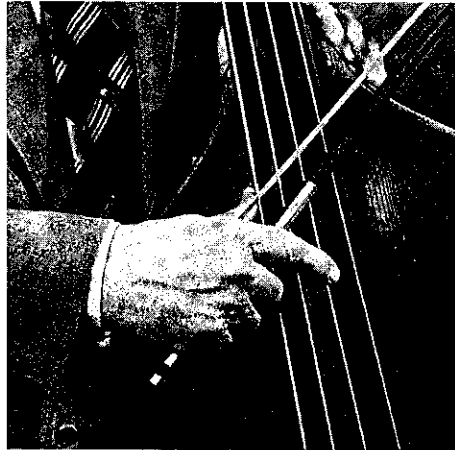
Optional posture. Pizz. with 2nd finger and thumb below fingers.

Instruction (Arco to Pizz. to Arco)

Holding the bow implies alternating between "arco" (using the bow on the strings) and "pizz". Beginning with the bow in the arco position, the procedure for changing the grip to pizz. position consists of removing the thumb from its place on the stick and wrapping it around the frog. To avoid dropping the bow the fingers are used for clasping the bow into the palm of the hand at the same moment the thumb is shifted. To return the bow to the arco position, simply release the clasp at the same time the thumb is returned to its position on the stick.

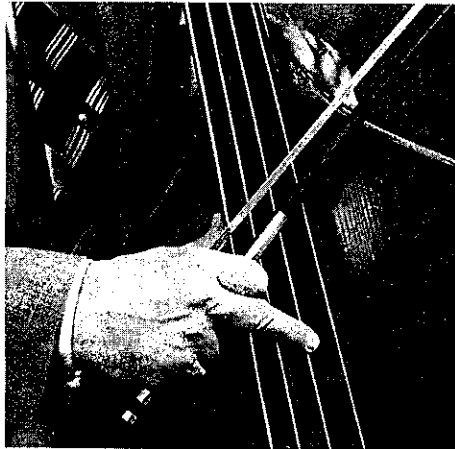
Choice of Finger(s)

1. If the index is to be the primary finger and the middle finger is to be the secondary and/or alternate, the same fingers will be used as when the bow is not held. However, a slightly greater strain is placed on the remaining two fingers (ring and little) for holding the bow due to the grasp being farther removed from the center of balance of the bow.



Pizz. with 1st finger while holding bow.

2. If the middle finger is primary with the ring finger as secondary and/or alternate, there is less strain in holding the bow with index and little fingers, and there is greater ease in manipulating the bow-change between arco and pizz. However, there is a different set of fingers (middle and ring) involved in the pizz. with the bow than without it. In either case, facility and command derive from practice and habit. The ultimate choice will result from experiment and experience. It should be based on comfort and a capacity for coordination. Of far greater importance is how and where the string is plucked.



Pizz. with 2nd finger holding bow.

How

In the "Introduction to Bow Technique" no mention was made of "pulling" the string. Nevertheless, close examination will reveal that the string was, in fact, pulled, although only slightly. Drawing the finger across the string while depressing it caused a very subtle pulling of the string. How the string is pulled or plucked concerns:

(1) *The degree of pull on the string at the moment of finger release.* The farther the string is pulled from its normal position, the greater the strain will be. The greater the strain at the point of release, the louder the sound will be.

(2) *The amount of finger-flesh which is drawn across the string as part of the releasing action.* The more flesh drawn across the string, the more mellow (softer) the texture of the sound will be. Conversely, the less flesh involved, the harder in texture the sound will be.

(3) *The direction in which the string is pulled.* If the string is pulled *up* from the fingerboard it will, when released, strike the fingerboard on the rebound. This is an effect called for occasionally in modern music and referred to as either "snap" or "slap". Normally, however, permitting the string to strike the fingerboard is to be avoided. Therefore, no matter how loud or rapid the execution, the string must be pulled *across* the fingerboard.

Where

There is practical application for plucking the string at almost any point of its length. When the string is plucked midpoint between the Bridge and node, (finger or Nut), it is set in motion at the point of widest vibration. This point has the least tension and is the least resistant. It will produce the weakest sound, but it will also be the purest. All else remaining constant, the farther from the center *in either direction* the string is plucked, the greater will be the change of color, character and quality of sound regardless of dynamic level. These traits will differ depending on which side of the center the string is plucked. The following broad generalizations may be made. The closer to the bridge (up to the bowing area), the bigger and boomer the sound will be. The closer to the node, the more cutting or piercing the sound will be, and, in the case of low dynamic level, the thinner the sound will be. Plucking the string on the node side of center is particularly noteworthy in the case of the two lower strings because it tends to project pitch more readily than plucking nearer to the bridge.

SPECIAL EFFECTS

Tremolo

Definition: Rapidly repeated and rhythmically even articulation on one tone.



Technique: The part of the bow used and the physical action involved depends on the dynamic level.

1. In the soft range of dynamics the bow is motivated by *wrist* action. In this instance the hand is turned slightly *counter-clockwise*, and the bow-hold must be relaxed enough to permit the fingers to move slightly back and forth on the stick as the wrist is flexed. The wrist flexes so that the hand moves back and forth in the same direction in which the bow is intended to move. The hand moves back and forth so rapidly and evenly as to amount to shaking. Beginning with the point, any part of the bow which can be fully controlled by wrist action may be used for tremolo. The louder the dynamic, the closer to the frog the part of the bow involved should be.
2. In the loud range, the bow is motivated by *elbow* action. It ought not to be necessary to turn the arm counter-clockwise because it should already be in a posture which would permit the *forearm* to move only from the elbow in the same direction in which the bow is intended to move. The bow-hold is *not* relaxed. Now it is the forearm which shakes from the elbow rapidly and evenly. The most desirable part of the bow for a loud dynamic is the first third (1st/3).

Ponticello

Definition: "Ponticello" is Italian for "little bridge". For stringed instruments it means "close to the bridge".

Technique: The bow is drawn across the string so close to the bridge that the fundamental tone with its attendant overtones is *not* heard. Instead, the pitch in a higher octave is obtained and the timbre is *glassy*, thin and shallow. It is usually, but not necessarily, associated with tremolo.

It is indicated simply by the word "ponticello" or words "sul ponticello" or, abbreviated "pont." Return to regular bowing area and true instrument timbre is indicated by the word "arco" or "natural".

Col Legno

Definition: "Col Legno" is Italian for "with the wood". For stringed instruments it means striking the string with only the stick of the bow.

Technique: The bow can be either (a) twisted in the fingers of the grip so that the hair is turned completely away from the string, or (b) the grip can be changed to the same as for pizz. with the frog completely in the hand-grasp. Only the wood makes contact with the string by striking the string without lateral motion.

It is indicated simply by the words "col legno". The "col legno" ends with a change of indication such as "arco", "pizz.", or "natural".

PART II THE FINGERBOARD

Introduction

Left Arm and Hand

It is the function of the left hand and fingers to produce the desired notes with accurate pitch and rhythm and to produce the effect known as vibrato.

Because the four strings are separated by an interval of only a fourth, there are many instances when a given pitch is available on more than one string. This creates both simple and complex situations. It is simple and desirable because each different place for a given note provides a different tone-color for that note. It is complex because a choice must sometimes be made between color and speed.

Added to this is the fact that many notes are playable with different fingers, thus resulting in further complexity. The challenge consists in reconciling the easy way out with the artistically musical but possibly more difficult solution. There are many schools of thought regarding choice of fingering. While it may be argued that one may be preferred, proving that one is right and the other wrong would be unrealistic.

The nature of the problem rests in the question, "Which fingering for a given series of notes will provide the most efficient movement from one to another and assure accuracy of pitch, accuracy of rhythm, definition of phrase, controlled vibrato, and, ultimately, the greatest aesthetic gratification?" (The guiding principle of the schooling offered here is *sound reasoning based on the needs of efficiency and musicality.*)

As with bowing technique, proper posture plays a most important role in the technique of the left hand. Because of the peculiar nature of the instrument, the posture prescribed for one area of the fingerboard will not necessarily apply to another. Modification will be required as the hand moves up and down the fingerboard.

The order in which the various facets of posture will be considered begin at the business end of the left hand, namely the fingers, and specifically that part of the finger in contact with the string. Often the tendency to focus strongly on arm posture may cause one to forget that it is not an end in itself but only a means to an end. Whatever is prescribed for any part of the arm should always be regarded only as ultimately serving the *needs of the fingers* on or over the strings.

Posture

1. The left hand must not help support the bass except when fingering the E string.
2. The fingers and thumb should be at right angles to strings.
3. Only the fingerprint of the thumb should be in contact with the neck of the bass.
4. All finger joints must be arched away from the fingerboard (as in grasping a round bottle) so that only the *finger-cushion* is in contact with the string. See photos on p. 33.

The term "hook" refers to the improper posture of the forefinger, that is, instead of the finger being arched away from the fingerboard, it is almost resting against the string.

This results from one or a combination of causes: (a) the elbow is too low forcing a sidewise bend in the wrist and/or (b) the palm of the hand is turned downward instead of facing the neck squarely. The pitch produced by the "hook" is usually sharp (too high).



Observer's view. "The Hook".

5. To establish the relationship between thumb and fingers, determine that: (a) the circumference of the neck and fingerboard form a quasi-circle; (b) the thumb-print is more or less opposite the 2nd finger with all fingers down on any one string; (c) therefore, the thumb, while moving around the neck, maintains the same relationship to the fingers. The function of the thumb is to support the hand and to resist the pressure of the fingers — not to support the bass. This applies to all neck Positions.

(In this text the fingerboard, for study purposes, is divided into three areas: (1) the *neck*, (2) the *lower block*, and (3) the *upper block*.)

6. The fingers, when they are all depressing any one string, must be clear of all the other strings. The greatest aid toward achieving this goal is to raise the elbow high enough and far enough away from the body to permit the wrist to retain the same appearance as when the arm hangs relaxed by the side, or as close to that appearance as possible.
7. In the neck Positions, *no other part of the hand should touch any part of the bass*.

In the beginning the restrictive nature of this posture may seem to be unnecessary. Among the more competent professional bass players, however, there is virtually no deviation from this posture. This is the posture which makes possible: (a) the accurate movement of the hand from Position to Position; (b) the necessary rapid movement of fingers; (c) the development of a satisfying vibrato; (d) the execution of doublestops which plays a most important role in developing technical facility.

Performance on a stringed instrument requires ultimately that the left hand function completely without visual guidance. Its operation must be based entirely on what is known as the "kinesthetic sense". The kinesthetic sense is what tells us such things as where to put our fingers if we want to touch our ears or our elbows, and when our foot will touch the floor when we walk, etc. It is a *learned* skill. It is the kinesthetic sense which will eventually tell us which part of the bow is on which string, how fast or slow the bow moves across the string, as well as countless other aspects of playing, all without visual aid.

As it pertains to the left hand, the kinesthetic sense tells where to place the fingers on the fingerboard. This, too, is a learned skill. Accuracy of intonation (finger placement) depends largely on the coordination between the preconceived pitch in the mind's ear and the kinesthetic sense as it is developed through practice. The sooner the student learns to rely on what is *heard* the sooner he will develop the necessary coordination between ear and finger. This is made easier by establishing at the outset an habitual and universally useful posture.

Symbols and Their Meaning for the Left Hand

1. Roman numerals — I to XII; identify *Position*.
2. Arabic numerals — 1 to 4; identify *finger*:
1 = forefinger. 2 = middle finger.
3 = ring finger. 4 = little finger.
3. real = actual pitch. All music for the bass is normally written one octave above the actual pitch unless otherwise indicated. Therefore, where the word "real" appears in conjunction with a note it will mean "as it sounds" and not "as it is played".
4. 8ve. = 1 octave above normal.
5. 8ve. b. (basso) = 1 octave below normal.
6. A diamond shaped note-head (◊) = harmonic.

Beginning With Position V

Rationale

In bass pedagogy the term "Position", as it relates to the left hand, refers to the location of the hand on the fingerboard. In many Positions there are two ways of fingering groups of notes. One is known as the "three-finger method", and the other as the "four-finger method". In the former, only three fingers are used for obtaining three different notes on each string without moving the hand up or down the fingerboard. In the latter, all four fingers are used for reaching four notes without moving the hand up or down the string beginning at a certain point on the fingerboard. This text deals only with the "three-finger method".

In either case it has been traditional to learn the fingerboard with the notes in the "half" Position first. This "half" Position* contains the three chromatic steps, or half-tones, up from the open string. For purposes of immediate application this is musically logical. There are, however, certain disadvantages.

First, it demands at the outset such a spread of the fingers that the stress is difficult to sustain. The possible consequence is that the eyes, rather than the ears, will be used to place the fingers accurately where they belong, or the accuracy of pitch will be sacrificed for the sake of being able to play anything at all. In either case, the standards of quality suffer. Second, the strain tends to stiffen the fingers to the point of making flexibility and facility slow and difficult to develop. Third, it tends to develop a reliance on the open strings for playing the notes G, D, A, E. This is not only restrictive but in many instances it is in bad aesthetic taste.

The plan here for learning the fingerboard begins with the fifth (V) Position. The advantages are:

1. The fingers can reach all the notes comfortably. This should make accurate intonation immediately available.
2. Those notes which are played by the 1st and 4th fingers can be verified for accuracy of pitch by comparison with open strings.
3. It makes available at the outset the *harmonics*** which are used for proper tuning of the instrument.
4. The posture of both the left hand and arm as well as the behavior of the bow may be observed simultaneously. Visual observation should be eliminated as soon as the physical sensation associated with proper posture is learned.

* Simandl, Book I

** A harmonic, for purposes of this text, is produced by depressing the string lightly with only one finger at the location indicated by the symbol, ◊. The other fingers must not touch the string involved. The bow should be moved lightly but rather quickly across the string and closer to the Bridge.

Example:



Tuning the Bass in Position V

1. There should be available a means of providing a fixed pitch of A above middle C such as a piano or tuning fork.

2. At precisely the midpoint on the D string between the Nut and Bridge the harmonic will sound D an octave above the open string. This is the first *overtone* of the *fundamental* tone which is the open D string.



3. At 1/3 the distance from this overtone to the Nut the second overtone A occurs. It sounds the interval of a fifth above the first overtone D. This is the A below middle C:

This is also the A with which tuning begins.

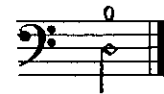


4. With the 4th finger on the A harmonic, the 1st finger can now comfortably reach the third harmonic which should sound D, two octaves above the open string:

This D is located midpoint between the first overtone and the Nut. That is to say, the 1st finger is now at 1/4 the distance from the Nut to the Bridge. *The hand is now in Position V.*



5. Without moving the hand, relocate the 1st finger at the same point on the A string:



This harmonic should sound 2 octaves above the open A string. When these two A's are exactly 1 octave below the A of a tuning fork, the D and A strings are tuned:



6. The G string may now be tuned by matching the harmonic of the 4th finger on the G string to the 1st finger on the D string:



7. The E string may now be tuned by matching the 1st finger harmonic on the E string to the 4th finger on the A string:



Tuning The Bass – Symbols

o = open string or harmonic
 1 = fingered notes
 2 = fingered notes
 4 = fingered notes
 1 = fingered harmonic
 2 = fingered harmonic
 4 = fingered harmonic

Open String	Position X 1st Overtone Play Sounds	Position V 2nd Overtone Play Sounds	Position V 3rd Overtone Play Sounds
1st String G			
2nd String D			
3rd String A			
4th String E			

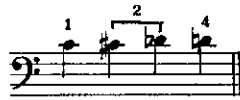
Rules and Principles

Using a finger to obtain a given note requires pressing the string against the fingerboard securely enough to prevent vibration of the string between the finger (s) and the Nut.

Location of 2nd and 3rd Fingers

As indicated in "Tuning the Bass", Position V, if the 1st finger securely depresses a string and then the 4th finger depresses the same string, the interval of a whole tone should result:

Thus, on the G string (Position V) the 1st finger plays C and the 4th finger plays D. The location of the 2nd finger should be precisely midway between the 1st and 4th fingers. When using the 1st, 2nd, and 4th fingers on any one string, the 2nd finger provides the half-step (half-tone) between the 1st and 4th fingers. On the G string this means C-sharp (C#) or D-flat (Db):



Observer's view. Position V. Notice elbow and wrist.



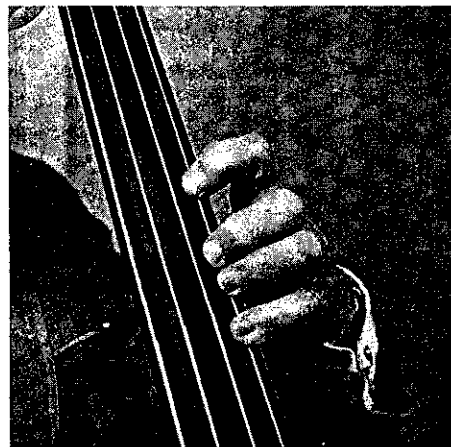
Player's view. Position V. Notice: 1. Round fingers 2. Back of hand 3. Palm away from and parallel to neck.

Until otherwise dealt with in this text the role of the 3rd finger is limited to assisting the weak 4th finger in firmly depressing the string. Logic might suggest that it should be located close to the 4th finger. With the 3rd finger close to the 4th, however, the 2nd finger tends to be sharp (too high). There is, therefore, the paradox of the 3rd finger being close to the 2nd finger but functioning exclusively with the 4th.

Fingers On or Over Their Assigned Notes

There is a tendency among beginners to slide the hand up or down the fingerboard in a given position to achieve accuracy of pitch as well as comfort of the fingers. But when the time comes for moving from one Position to another this habit will prove to be a great hindrance rather than a help. To combat this tendency and avoid subsequent problems, the practice of *keeping all fingers on the string* against the fingerboard should be required except when the fingers interfere with obtaining a desired pitch.

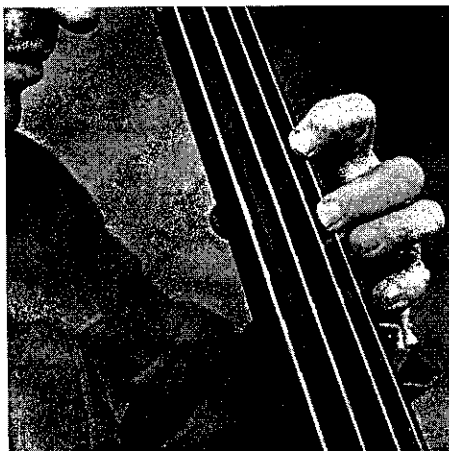
For example, on any one string in any given Position, if the first note to be played is with the 4th finger, all others should also depress the string in the location of their respective pitches:



Note played with 4th finger with all other fingers depressing assigned notes.



If the next note is to be played with the 2nd finger, then only the 4th and 3rd fingers need to be raised, and when raised, they should be held close to the string and in precisely the same location:



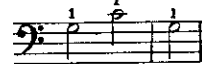
Note played with 2nd finger. 1st finger depressing assigned note. 4th finger over assigned note and close to string.

If the next note requires only the 1st finger, the 2nd, 3rd, and 4th fingers should be held close to the string and in the same location as the notes to which they are assigned:



Note played with 1st finger and all other fingers over assigned notes and close to string.

But what about moving fingers from one string to another? The basic rule is *“Keep fingers down until they get in the way of the next note.”* Using the same finger for two successive notes in the same location on two adjacent strings makes it possible and preferable to slide the finger across without lifting:



EXERCISES IN THE POSITIONS

The following exercises should be studied not only to the extent of being able to perform them, but to *absorb all the information contained therein*.

1. Memorize the names of notes, i.e.: A, B, C, or Do, Re, Me, etc.
2. Memorize the correlation of note-name, Position, finger, string, and the *interval between each two notes*.

Attend To:

1. Intonation of the 2nd finger.
2. Accuracy of intonation by comparing open strings with the stopped note (unison or octave). In the Position V exercise, the notes marked with * are either an octave above or in unison with an open string.
3. Practicing until the entire exercise can be played without error.

An Exercise for Improving Intonation

The kinesthetic sense, as it applies to the left arm, is extremely important in achieving accurate intonation. The following is a valuable exercise in establishing proper reflex behavior:

1. Place a finger accurately on a note.
2. Remove the hand completely from the instrument.
3. Replace the same finger on the same note in one motion.
4. Check for pitch and physical movement accuracy.

Reminders

1. Keep the hand set in any one Position. Don't move it up or down.
2. The left thumb makes contact with the neck with its print. Keep it on a plane more or less with the 2nd finger. The thumb should be opposite to fingers as 6 o'clock is to 12 o'clock.
3. *Do not* lift fingers unless absolutely necessary.
4. When raised, keep fingers *close* to string and *over the assigned notes*.
5. Avoid excessive or insufficient pressure to hold string against the fingerboard. Learn the amount of pressure that is just enough.

EXERCISES AND ÉTUDES IN POSITIONS I-XII

These few notes of Position V are used to illustrate a variety of rhythms, bowings and articulations to be applied at the teacher's discretion in conjunction with learning the Positions.

Variations for Exercises A and B in Each Position

legato



legato or détaché



slurred

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37

portato

slurred staccato

spiccato

accents and rests

38 39 40 41 42 43 44

F.B. Fr. F.B. Fr.

Variations for Exercise C in Each Position

1 2 3 4 5 6 7 8 9 10 11 12

Compound Rhythms

13 14 15 16 17 18 19 20 21 22 23

balzato/ jété

Position V

Memorize this line

A musical staff in bass clef showing a sequence of notes with fingerings (1, 2, 4) and asterisks above them. Below the staff, brackets indicate the notes E, A, D, G, D, A, E.

1 _____ 2 _____ 4 _____ = Hold finger (s) down till end of line

Ex. A

A musical staff in bass clef with a complex sequence of notes and fingerings (1, 2, 4, 1, 2, 4, 1, 2, 1, 4, 2, 4, 2, 1, 4, 1, 2, 4, 2, 4). Asterisks are placed below the notes. The word "etc." is written at the end of the staff.

* These notes are either in unison with or an octave above an open string and should be checked for accuracy.

A musical staff in bass clef showing a sequence of notes with asterisks below them.

A musical staff in bass clef showing a sequence of notes with asterisks below them.

Ex. B

A musical staff in bass clef showing a sequence of notes with asterisks below them.

A musical staff in bass clef showing a sequence of notes with asterisks below them.

Ex. C

A musical staff in bass clef with a 3/4 time signature, showing a sequence of notes with asterisks below them.

A musical staff in bass clef showing a sequence of notes with asterisks below them.

It is wonderfully rewarding for a bassist to be told, "I didn't know the bass could sound so beautiful" or "It sounds just like a cello". But these comments are not applicable to those who play a sequence of notes merely with a beautiful quality of sound. They are reactions to *expressive* music-making.

It is possible to play with accurate pitch and rhythm, with beautiful tonal quality, with proper articulations and still not make music *expressively*. To be expressive, instrumental performance requires, in addition to the above, the following factors:

1. *An awareness of the context of a total piece of music or a section of it.* Context refers to the mood and character which is meant to be conveyed.
2. *An awareness of phrase structure.* A phrase consists of a sequence of notes which can be grouped together musically on the basis of either harmonic inference or "breathing" as in singing. Such a group has: (a) a beginning; (b) a climax sometimes an anti-climax, and (c) an ending. These three aspects must be conveyed by means of subtle fluctuations of nuances.
3. *An awareness of note treatment.* A note has a beginning which is learned as articulation. It has duration which can be treated in one of four ways: (a) sustained at a constant dynamic level, or (b) increasing dynamics (growing louder), or (c) decreasing dynamics (growing softer), or (d) any combination of these. A note has an ending. This part is usually ignored by students. How the note ending is treated marks the difference between a good note player and a good music maker. It is probably the most difficult part of the note to hear critically. The player must be aware that a note may end abruptly. This is called "sec" (French, meaning "dry"). It can fade into silence, or it can connect smoothly with the next note.
4. *An awareness of movement.* By controlling the subtleties of nuance there must be conveyed the sense of movement toward both the climax and the end of a phrase.

Position V Étude

The musical notation for Position V Étude consists of two staves in bass clef, 4/4 time, with a key signature of one sharp (F#). The first staff contains the following notes and instructions: F.B. (first bow), 2nd/2 (second half), F.B. 1st/2 (first half), and F.B. 2nd/2 (second half). The second staff contains: 1st/2, F.B. 2nd/2, F.B. 1st/2, F.B., F.B. 1st/2, F.B., 1st/2, F.B., 1st/2, and F.B.

Position IV

Do not lift fingers from string until necessary.

Memorize this line.

The musical notation for Position IV shows a single staff in bass clef with a sequence of notes and fingerings: 1 2 4 1 2 4 1 2 4 1 2 4 1 2 4 2 1 4 2 1 4 2 1. Below the staff, the corresponding notes are labeled: E, A, D, G, D, A, E.

Ex. A

Exercise A consists of three staves of music in bass clef, common time (C). The first staff begins with a key signature of one sharp (F#) and contains a sequence of eighth and quarter notes. The second staff continues the melodic line with similar rhythmic values. The third staff concludes the exercise with a final cadence, marked with a double bar line and repeat dots.

Ex. B

Exercise B consists of two staves of music in bass clef, common time (C). The first staff starts with a key signature of one sharp (F#) and features a melodic line with eighth and quarter notes. The second staff continues the exercise, ending with a double bar line and repeat dots.

Ex. C

Exercise C consists of two staves of music in bass clef, 3/4 time. The first staff begins with a key signature of one sharp (F#) and contains a melodic line with quarter and eighth notes. The second staff continues the exercise, ending with a double bar line and repeat dots.

Position IV Étude

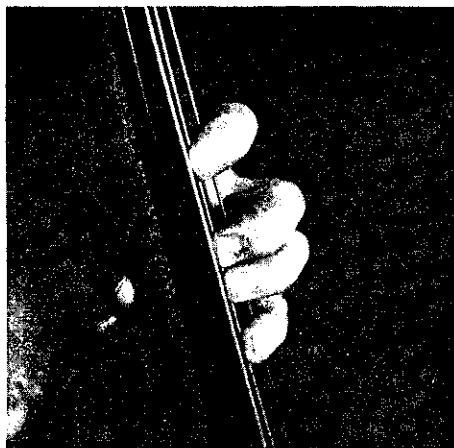
Position IV Étude consists of two staves of music in bass clef, 3/4 time. The first staff starts with a key signature of one sharp (F#) and features a melodic line with quarter and eighth notes. The second staff continues the exercise, ending with a double bar line and repeat dots.

Rocking

Moving back and forth between any two *adjacent* Positions is, in this text, called "Rocking". It is a modified form of shifting because it does *not* require movement of the thumb for each change of Position.

Technique

The specific location for the thumb will depend ultimately on the particular physique of the hand, but as a suggested point of departure, establish proper posture for the lower of the two Positions. For example, when rocking between Positions IV and V, move the fingers to the higher Position while the thumb swivels on the same point of the neck; this results in the *first* finger being opposite the thumb. The process of trial and error will quickly establish the most favorable location for the thumb and for getting the fingers efficiently from one Position to the other.



Rocking between Position IV and Position V.
Notice thumb to fingers in lower Position.



Rocking between Position IV and Position V.
Notice thumb to fingers in higher Position.

The important element to remember in moving between adjacent Positions is *finger replacement*. For example, Position V calls for the 1st finger on the G string to produce the note C. In Position IV, this note is produced by the 2nd finger (1st finger is on B). To go from note D (Position V) to note B in Position IV implies replacing the 1st finger (C) with the 2nd finger, or replacing the 2nd finger (C) with the 4th finger.

A rule which is considered *basic* (but not unbreakable) to efficient rocking movement may be stated as follows: In a *descending* sequence, avoid if possible using the 1st finger for two successive notes; in an ascending sequence, avoid if possible using the 4th finger for two successive notes. For example, in *descending* use 4, 4, 2, 1 not 4, 2, 1, 1.

The following exercises present some of the possible patterns of movement in Rocking between two adjacent Positions. Note especially the use of Rocking in the scales and arpeggios.

Positions IV and V

(Rocking)

Instructions

1. Hold the string against the fingerboard with the shifting-finger, i.e., the finger used for last note immediately preceding shift. The concept of finger replacement applies to this type of situation.
2. Reduce the time for shifting (or Rocking) by extending the finger to be used in the new Position while playing the last note in the current Position.

Positions IV and V Étude

1st/4 1st/2 2nd/4 1st/2 1st/4 1st/3 2nd/4 1st/2 1st/3 To Frog 1st/2

IV Y IV Y IV Y

1st/4 1st/2 1st/4 1st/2 1st/4 3rd/4 2nd/3

IV Y IV Y IV Y IV Y IV

Y IV Y IV Y IV Y IV Y IV Y IV Y IV Y IV Y

IV Y IV Y IV Y IV Y IV Y IV Y IV Y IV Y

Position III

Memorize this line.

1 2 4 1 2 4 1 2 4 2 1 4 2 1 4 2 1

E A D G D A E

Ex. A

Ex. B

Ex. C

HARMONICS

Play

Real sound

Positions III and IV
(Rocking Movements)

Memorize this line

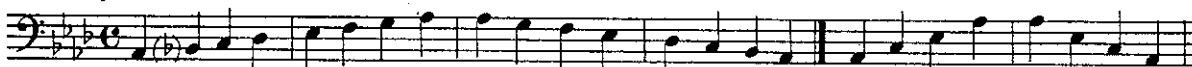
E A D G D A E

It might prove helpful to the student to pencil in fingerings lightly. These are to be erased when learned and the exercises performed later.

Scales

Arpeggio

A^b Major



G Minor



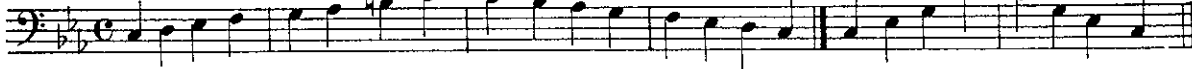
IV III IV III IV III IV III IV III IV III

D^b Major



IV III IV III IV III IV III IV III IV III

C Minor



III IV III IV III IV III IV III IV III

Positions III and IV Étude

(See symbols on Page 9)



III IV III IV III IV III IV III IV III IV III



III IV III IV III IV III IV III IV III



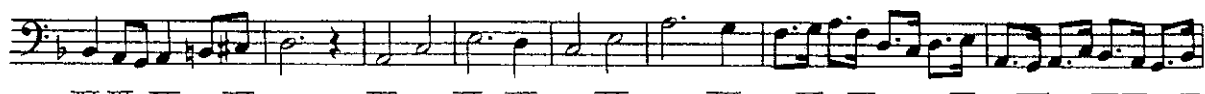
IV III IV III IV III IV III IV III IV III

Positions III to V Étude

Except for the indicated Positions, the manner of performance of the following etudes is left to the discretion of the instructor. The tempi, bowings and articulations should be selected on the basis of the student's learning readiness.



III V III V III V III IV III V III



IV III V IV III V III V III V III IV III V



III V III V IV V III V IV

Position II

Memorize this line.

Musical notation for Position II in C major, bass clef, 4/4 time. The line consists of 16 eighth notes: E4, A4, D4, G4, D4, A4, E4, E4, A4, D4, G4, D4, A4, E4, E4, A4. Fingerings are indicated above the notes: 1 2 4 1 2 4 1 2 4 1 2 4 2 1 4 2 1 4 2 1. Chord names E, A, D, G, D, A, E are written below the first seven notes.

Ex. A

Three staves of musical notation for Exercise A, bass clef, 4/4 time. The first staff contains 16 eighth notes: E4, A4, Bb4, Bb4, A4, G4, F4, E4, D4, C4, B3, A3, G3, F3, E3, D3, C3. The second and third staves continue the exercise with various rhythmic patterns and accidentals.

Ex. B

Two staves of musical notation for Exercise B, bass clef, 4/4 time. The first staff contains 16 eighth notes: E4, A4, Bb4, Bb4, A4, G4, F4, E4, D4, C4, B3, A3, G3, F3, E3, D3, C3. The second staff continues the exercise with various rhythmic patterns and accidentals.

Ex. C

Two staves of musical notation for Exercise C, bass clef, 4/4 time. The first staff contains 16 eighth notes: E4, A4, Bb4, Bb4, A4, G4, F4, E4, D4, C4, B3, A3, G3, F3, E3, D3, C3. The second staff continues the exercise with various rhythmic patterns and accidentals.

Positions II and III (Rocking Movements)

Memorize this line.

Musical notation for Positions II and III in C major, bass clef, 4/4 time. The line consists of 16 eighth notes: E4, A4, D4, G4, D4, A4, E4, E4, A4, D4, G4, D4, A4, E4, E4, A4. Fingerings are indicated above the notes: 1-1 2 4 1-1 2 4 1-1 2 4 1-1 2 4 4-4 2 1 4-4 2 1 4-4 2 1 4-4 2 1. Chord names E, A, D, G, D, A, E are written below the first seven notes.

III II III II III II III II III II III II III
 II III II III II III II III II III II III II III
 II III II III II III II III II III II III II III
 II III II III II III II III II III

Scales

These and all succeeding scales associated with "Rocking Movement" exercises have the same pattern of fingering as those on pages 42 and 45.

Scales

Arpeggios

C Major

B Minor

G Major

F# Minor

Positions II and III Étude

II III II III II III II III II
 III II III II III II III II III II III II III II
 II III II III III II III II III II III II III II

Positions II to V Étude

V II V IV II III V II IV V IV V
 IV V II IV II IV V II V IV V IV V III II
 III II III II III IV V IV II V

Position I

Memorize this line.

E A D G D A E

Ex. A

Ex. B

Ex. C

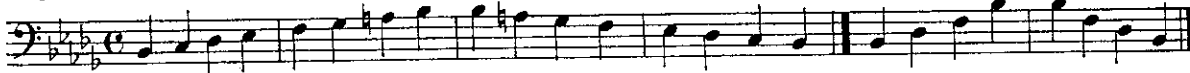
Positions I and II
(Rocking Movements)

Memorize this line.

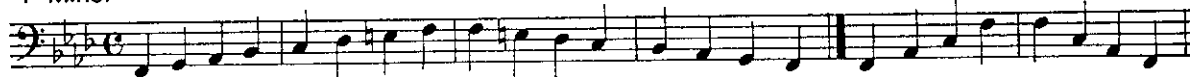
Scales

Arpeggios

Bb Minor



F Minor



Positions I and II Étude



SCALES WITH OPEN STRING (S)
Position I

F Major

Scales

Arpeggios



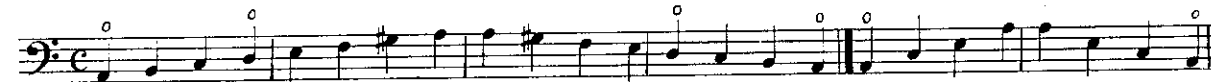
Bb Major



E Minor



A Minor

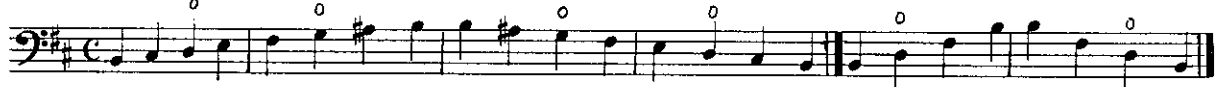


Position II

F# Minor



B Minor



Positions I and II (Rocking)

E Major



A Major



SHIFTING

The procedure of moving the left hand completely from one location on the fingerboard to another is known as shifting. There are three ways of shifting available to the stringed instrument player: the shift, the portamento, and the glissando.

The *shift* can be defined as movement without intervening sound.

Technique for the Shift on the Same String

1. Hold the string against the fingerboard with at least one finger during movement but with minimal pressure. If the bass is properly supported, the thumb pressure can be released. Releasing the thumb pressure permits the hand to shift smoothly and free of unwanted movement by the bass.
2. Make any needed finger change during movement without releasing the string from the fingerboard.
3. Move the entire hand.

Technique for Shifting from One String to Another

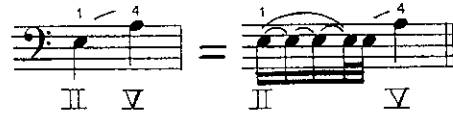
1. When the change is to an adjacent string, it is good practice to hold down the string from which the shift is being made until the position for the note on the new string is almost reached.
2. The depression of the new note should be simultaneous with the change of bow from the previous string to the new string.
3. To avoid portamento it may be necessary to release some, *but not all*, of the bow pressure during the shift and change-over.
4. Where the shift requires leaping over an intervening string, it is necessary to release the bow from the string completely. In this case the left hand can be released from the string as well but should coincide with release of the bow.

Finger Preparation for the Shift

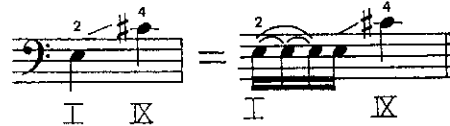
Prepare the finger to be used after the shift by either expanding or contracting the finger-spread as the case may require. This will reduce the time and distance involved for the shift. Simultaneously with arrival at the new Position, the fingers should resume their relationship appropriate to the new Position.

Timing When Shifting

The time involved in shifting is taken from the note preceding the shift. The amount of time should be a *rhythmic partial* of the note from which the time is taken, i.e., a specific fraction of the pre-shift note-value. This fractional part will be governed by the distance the hand must move and the tempo (pace of movement) of the music. For example, the note preceding the shift is a quarter note and the tempo is 60 per quarter note. The distance is from the II to the V Position. The time spent in shifting should be equal to a thirty-second note. In effect, it is possible to count the 1, 2, 3, 4 of the four sixteenths, make the shift immediately after the count of 4, and arrive at the new note on time:



If the shift is from the I to IX Position and the other conditions are the same, then the shift must begin on the count of 4. In other words, the shift requires the time equal to the sixteenth note:



When dealing with the problems of shifting, it is most important to bear in mind that a note (or rest) must begin precisely at the indicated point in time. Stability of pace depends largely on such accuracy.

Body Tension When Shifting

At all times the posture of the body must accommodate the needs of the fingers. As the left hand moves into the higher Positions, the torso must begin to lean forward. It must also be relaxed. If the torso is not relaxed, then most likely the arms are not either. This constitutes a hindrance to efficiency in shifting. An excessively tense arm results if the torso moves with a shift between relatively close positions. Only the arm should be involved in the exercises presented here.

Portamento can be defined as continuing sound from one note to another. It is a shift with a deliberately induced sound of finger-movement.

Technique for Portamento

There are two styles available in portamento. The great pedagogue, Demetrius C. Dounis, labeled them "classic" and "gypsy". They are otherwise referred to respectively as *mechanical* and *vocal*.

1. Classic/Mechanical

The slide is made away from the first note of the interval. For example, the interval is A to E on the G string. The A, in Position II, is held with the 1st finger. The 1st finger slides to D in Position VII, and then the 4th finger is placed on the E.

2. Gypsy/Vocal

Using the same two notes given above, the 1st finger is used as in shifting, but the 4th finger is brought gradually onto the string at approximately the D in Position V, and it slides into the E. In effect, the sound slides into the second note of the interval.

Glissando can be defined as a shift executed so slowly as to occupy the duration of the time-value of the note from which the shift is begun.

Shifting In Positions I – V

The student should re-write and practice these exercises on the other three strings.

Ex. 1

Meas. → (a) V (b) IV (c) V (d) III (e) V (f) II

(g) V (h) I (i) V (j) IV I (k) (l) IV

(m) II (n) IV (o) III IV (p) III (q) II (r) III

(s) I (t) III (u) II (v) I (w) II (x) I III

(y) I (z) IV I (aa) V (bb) III I (cc) (dd) II V

Ex. 2

ROCKING ROCKING SHIFTING (ETC.)

a b c d e f g h i j k l m n o p q r s t u v w x y z

Shifting With the Same Finger

Ex. 3

THE OPEN STRING

Music-making concerns itself with aesthetics. The use of the open string has a direct bearing on the beauty of bass playing. One needs merely to observe in the preceding scales the aesthetic effect of using the open string in both the ascending and descending scales.

The question is: When does one use which? The choice is based on several considerations. Among these are: (1) the presence or absence of vibrato; (2) consistency of tone-color with the sound of the open string; (3) tempo (duration of note); (4) articulation required; (5) demands of technique and, (6) level of development or limitations of the player.

As a beginning, consider its use in the following scales. The open string is indicated for the *ascending* scale but not the *descending* scale. From the aesthetic point of view, notice how much more readily the succeeding sound blends with the tone of the open string in the ascending scale. Notice also the blending of the stopped note with the succeeding note in the descending scale. Try the opposite use of the open string and notice that instead of blending it results in contrast. The order indicated in the following scales seems to be artistically more acceptable than the reverse order. However, this is not to say that the open string should *never* be used in a descending passage. Other situations will be treated as they are presented.

SCALES AND ARPEGGIOS WITH OPEN STRING(S)

Positions I – IV

C Major

G Major (finger as in C Major)

B \flat Major

1 4 0 1 4 0 1 2 2 1 4 1 4 2* 4 1 1 4 1 1 1 1 4 1

I II III IV I I III I

F Major

B Minor (melodic)

1 4 0 1 4 1 2 4 4 1 4 - 4 1 4 - 4 1 1** 4 2 2 2 2 4 1

II I II III II III II II III II

F# Minor (melodic) (finger as in B Minor)

* See "Shifting"

** Alternate choice of fingering to same arpeggio in "Scales With Open String (s)". Page 50.

Positions I to V

D Major

0 1 4 0 1 4 2 4 4 2 4 1 4 - 4 1 0 0 4 1 4 4 1 4 0

II V II III II II V V V IV

A Major

E Major

D Minor (melodic)

0 1 2 0 1 4 2 4 4 1 2 1 4 2 1 0 0 2 1 4 4 1 2 0

II V II III II II V V II

A Minor

E Minor

Étude
Positions I – V

The image shows a musical score for a bass clef instrument in 2/4 time, titled "Étude Positions I – V". The score consists of four staves of music. The first staff begins with a natural sign and a fermata over the first note, followed by a series of eighth notes with slurs and fingerings I, II, III, II, and II. The second staff continues with eighth notes and slurs, with fingerings III, II, V, IV, II, III, II, III, II, IV, and V. The third staff features eighth notes with slurs and fingerings IV, V, IV, V, II, II, III, I, II, III, I, and II. The fourth staff contains sixteenth-note runs with slurs and fingerings III, I, II, V, III, III, II, I, II, IV, and I. The piece concludes with a double bar line.

DOUBLESTOPS

Positions I – V

Exercise No. 1

Purposes

1. To train the ear to hear desired pitch *before* moving hand or fingers.
2. To move the hand and/or fingers accurately.
3. To maintain balance of tone of both notes.
4. To maintain steadiness of sound for full bow-stroke.

Practice Procedure

1. Check pitch as often as possible with the open strings. Octaves and fifths are easiest and most helpful.
2. Draw bow as slowly as compatible with a clean and even sound – the slower the better.
3. Practice both extremes of dynamic levels – ppp and fff.

Ex. 1

Exercise 1 consists of two staves of music in bass clef, 4/4 time. The first staff contains a sequence of double stops: G2-A2 (I), G2-B2 (III), G2-C3 (II), G2-D3 (I), G2-E3 (I), G2-F3 (I), G2-G3 (I), G2-A3 (I), G2-B3 (I), G2-C4 (I), G2-D4 (I), G2-E4 (I), G2-F4 (I), G2-G4 (I), G2-A4 (I), G2-B4 (I), G2-C5 (I). The second staff continues with: G2-A4 (I), G2-B4 (I), G2-C5 (I), G2-D5 (I), G2-E5 (I), G2-F5 (I), G2-G5 (I), G2-A5 (I), G2-B5 (I), G2-C6 (I), G2-D6 (I), G2-E6 (I), G2-F6 (I), G2-G6 (I), G2-A6 (I), G2-B6 (I), G2-C7 (I).

Exercises No. 2 and 3

Purposes

1. To train the eye to recognize double stop patterns.
2. To develop coordination of diverse bowing and articulation with finger movement.

Practice Procedure

1. Accelerate tempo as much as possible and develop both extremes of dynamic range (ppp and fff) without sacrificing tone quality and accuracy of pitch.

Ex. 2

Exercise 2 consists of four staves of music in bass clef, 3/4 time. The first staff starts with a double stop G2-A2 (II) and continues with a sequence of double stops: G2-A2 (II), G2-B2 (II), G2-C3 (II), G2-D3 (II), G2-E3 (II), G2-F3 (II), G2-G3 (II), G2-A3 (II), G2-B3 (II), G2-C4 (II), G2-D4 (II), G2-E4 (II), G2-F4 (II), G2-G4 (II), G2-A4 (II), G2-B4 (II), G2-C5 (II). The second staff continues with: G2-A4 (II), G2-B4 (II), G2-C5 (II), G2-D5 (II), G2-E5 (II), G2-F5 (II), G2-G5 (II), G2-A5 (II), G2-B5 (II), G2-C6 (II), G2-D6 (II), G2-E6 (II), G2-F6 (II), G2-G6 (II), G2-A6 (II), G2-B6 (II), G2-C7 (II). The third staff continues with: G2-A6 (II), G2-B6 (II), G2-C7 (II), G2-D7 (II), G2-E7 (II), G2-F7 (II), G2-G7 (II), G2-A7 (II), G2-B7 (II), G2-C8 (II), G2-D8 (II), G2-E8 (II), G2-F8 (II), G2-G8 (II), G2-A8 (II), G2-B8 (II), G2-C9 (II). The fourth staff continues with: G2-A8 (II), G2-B8 (II), G2-C9 (II), G2-D9 (II), G2-E9 (II), G2-F9 (II), G2-G9 (II), G2-A9 (II), G2-B9 (II), G2-C10 (II), G2-D10 (II), G2-E10 (II), G2-F10 (II), G2-G10 (II), G2-A10 (II), G2-B10 (II), G2-C11 (II).

Ex. 3



CHOOSING FINGERING

A system of fingering, like a system of bass playing, must be considered more a point of departure than a body of hard and fast rules. It is a foundation on which logical reasoning is based. As in all bass playing, there must be a valid reason for choices made.

Fingering should be based on musical needs tempered only by individual physical and technical limitations. It is not a question of right or wrong. It can only be judged as better or worse for achieving a desired result. Consideration must be given to results such as efficiency of movement, security of intonation and accuracy of rhythm. It must be governed by the needs of clear articulation, phrasing, tone color as well as rhythm. Therefore, the rules presented here should be regarded as guiding rather than binding.

To begin with, it is necessary to understand that note sequences in the literature usually occur in one of three patterns. The *Scale-type* has a minimum of *three* consecutive notes occurring as they would in either a diatonic or chromatic scale. (See "Patterns for Exercises Based on the Scale", P. 83) The *arpeggio-type* has a minimum of *three* consecutive notes occurring as they would in broken-chord fashion. (See "Patterns for Exercises Based on the Scale, P. 83). The *Doublestop-type* has a pattern which is more accurately called *broken doublestop*. This text uses it to mean not less than two consecutive notes which occur in the same Position but not on the same string. The definition is extended to include not only 3rds, 4ths, and 5ths, but also 7ths, 8ths, 10ths and 11ths. The doublestop pattern can also be treated as an *Interval-type* passage, but this is usually limited to intervals of the 3rd.

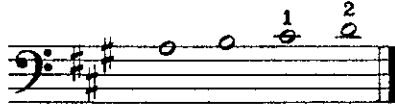
To The Teacher: Empirical observation tends to demonstrate that the fingering used in executing a scale or its various forms such as broken-chord and doublestops is the basis for choice of fingering. Deviation from this basis must find justification in terms of phrasing, timbre and/or rhythmic needs.

Rule 1. *Wherever possible, try to play at least two successive notes in the same position.*

Rationale: If there is a choice of playing two notes either in the same Position or in two different Positions, the former is usually preferable. The second note is more likely to be accurate in pitch if played in the same Position. Also it allows the hand and finger to establish a firmer base from which to measure the shift to a third note if necessary. It permits longer duration for more notes which affects such things as projection of tone, rhythmic accuracy, and clarity of diction (articulation). Rocking is a common exception.

Rule 2. *In full scales or scalar passages, finger the half-steps (half-tones) in the ascending sequence with 1-2, 1-2, etc., and in the descending sequence with 4-2, 4-2, etc.*

Rationale: It helps to avoid the impractical situation of ending an ascending scale-type passage with the 1st finger and a descending scale-type passage with the 4th finger. Also, it is more efficient to *pull* the hand than to *push* the hand in a given direction. For example, in the A Major scale beginning with the second octave on the G string, it is more practical to use 1 on C# and 2 on D, than 2-4 respectively ascending. It is better to use 4-2 descending than 2-1:



The same rationale would support another related rule: *It is better to shift sooner than later.* For example, this would apply to three successive semi-tones. It is more sensible to finger it in ascending order 1-1-2-4; rather than 1-2-4-4, but in descending order the more efficient sequence would be 4-4-2-1, rather than 4-2-1-1:



Rule 3. *In a sequence of long-short, long-short time values, make the shift after the long value and before the short value note.* (see page 60).

Rationale: Since the time for shifting must be taken from the note *preceding* the shift, when a choice is possible, it would make more sense to take that time from the long value rather than from the short value note.

Rule 4. *In slurred passages, a shift which coincides with bow-change is less audible than a shift during bow stroke.*

Rationale: In slurred passages, musical taste should govern the decision when to execute a portamento. If a portamento is to be avoided, there is the choice of (a) selecting a fingering and bowing which will permit the shift to occur simultaneously with change of bow-stroke or (b) releasing the bow pressure at the time of shift. This is a most important factor in dealing with the beginnings and endings of phrases. In the final analysis, all bowing and fingering is influenced by phrasing and/or musical aesthetics.

Preferred Fingering

In the following example, the choice of fingering *above* the notes is better than that *below* the notes. Here is why:

- A. If the G were a sustained tone, the open string would be less desirable than the closed. Since it is here a short sound, it not only blends in timbre with the succeeding A but allows for less effort in going to the A.
- B. The shift from IV to VII is shorter than from III to VII. It is therefore more efficient and more likely to allow greater accuracy of intonation.
- C. The shift VII to IV is smaller than VII to III. V and IV (A to F#) allows for three notes on the D string rather than two, thus making for a more unified tone-color.
- D. The pattern IV to V is a repeat of the previous measure and offers one additional note on the D string. The shift V to II is unavoidable — either C to B, or G to F#.
- E. Going to V avoids change of tone color which is not possible in the choice indicated below the notes.

F. Upper choice avoids shifting for two consecutive notes.

G. Position III avoids use of open string when followed by a note on a lower string.

Influence of Rhythm and Bowing on Choice of Fingering

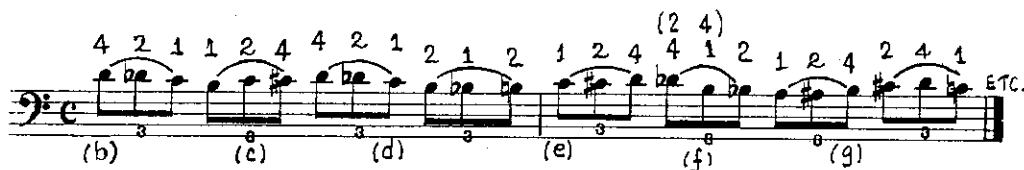
If the rhythm and bowing of the notes in measures "b" to "g", Ex. 1, page 53, were as follows, the indicated choice of fingering would be better because the time spent in shifting should be taken from the longer note so that the shorter one can have longer duration, and makes accurate rhythm easier to attain. See Rule 3 on page 59.

* This fingering makes the distance *shorter* and is reasonable, but the upper (above-the-note) choice eliminates one shift, which is usually preferred.

But if the same notes had the following rhythm the following fingerings would be preferred for the same reasons given above. See Rule 3 on page 59.

THE SAME NOTES AS SLURRED TRIPLETS

Shifting at the same time as bow-change avoids "portamento" (hearing the shift). Fingering in brackets is not recommended because the *distance* is too great, but the shift during the slur (at "f") is unavoidable. See Rule 4 on page 59.



VIBRATO

The word "vibrato" is Italian for "vibration". In music it refers to the deliberate and controlled oscillation (changing) of pitch. It is one of the characteristics associated with singing and is an important factor in producing a singing quality on a musical instrument. On a string bass it is produced by rocking the finger involved to *both sides* of the true pitch. The vibrato *must begin* on the true pitch of the note. The distance between the two extremes and the speed of oscillation will determine the quality and character of the vibrato.

It is important to remember that in each complete cycle the true pitch is heard two times: first, at the outset and second, when moving from one extreme to the other and back to the beginning of the next cycle. It is therefore obvious that vibrato will not conceal or camouflage inaccurate intonation.

Given the determination and patience to develop it, one can achieve a vibrato which will produce not only a beautiful and "live" sound, but also will reflect the musical personality of the player.

Technique

To obtain a successful vibrato requires, in varying degrees, the involvement of the entire left arm from fingertip to shoulder. The first essential is that the muscles in the whole arm be relaxed. The only real tension exists in pressing the string against the fingerboard.

The chief focus of attention should be directed to the fingers. Picture a see-saw. It consists of a board resting at its center on a base. This compares with the thumb acting as the base and the fingers acting as the board. The finger pressing the string compares with the point of the board resting on the base.

The proper movement of the hand in vibrato may also be compared to the see-saw. Suppose the 2nd finger is involved, i.e., playing a note with vibrato. Originally (P. 33) it was stated that when the 2nd finger is playing a note, the 1st finger should also be pressing the string in its proper location. For purposes of vibrato this principle may be set aside since it is easier to vibrate on one rather than on two fingers. Imagine the 1st and 4th fingers as the ends of the board. They would move up and down in a straight line. There would be *no* sidewise movement. In the same way, the finger vibrating should rock in line with the string from one side of the fingernail to the other while the 1st and 4th fingers rise and fall like the ends of the see-saw board.

It could be argued that vibrato is really a shaking movement. Actually it is a combination of both shaking and rocking, but primarily that of rocking.

Instruction

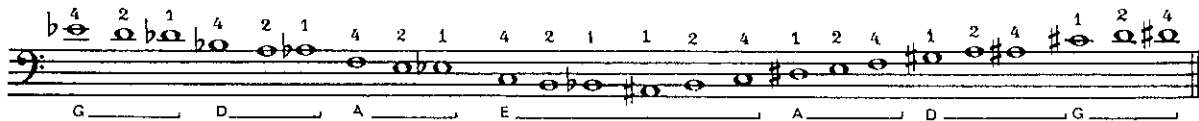
Achieving a desirable vibrato is a matter of patient, determined and intelligent practice. In this case intelligence refers to concentrated attention to the aural and kinesthetic aspects of action. Posture is of the utmost importance. At the outset, the left arm should assume the posture described earlier under "Introduction to Fingerboard", (P. 28).

1. Rock the finger rhythmically by moving the forearm straight up and down in line with the finger movement.
2. Begin slowly. Select a tempo for the oscillation of pitch which can be controlled after only a few minutes of experimentation. Use the sharp side of the pitch as the counting point for the beat. Rock the finger so that the sharp side is reached 2 or 4 times per beat, whichever is more comfortable. Stay with a given tempo until it feels comfortable and natural over a period of days. The sound at this stage should be a very obvious and distasteful wobble.
3. Draw the bow as slowly as possible, the slower the better. Take note of its speed and maintain this same pace of bow-movement through the following steps and stages:
 - a. Apply the above procedure separately for each finger (1, 2, 4) on a given string in a given Position, and for each string in each of the other Positions.
 - b. *Gradually* increase the speed of oscillation but *not* of the bow-movement. Select a tempo and stay with it until a feeling of naturalness is achieved.
 - c. Then try differing rhythms such as 3, 6 or 5 oscillating cycles per beat within a given tempo.

The section on "Shifting" described bow coordination. In developing vibrato the problem is to develop independence of bow movement. There is a tendency at the outset for the bow to be influenced by the activity of the left hand. The bow is likely to jerk or otherwise move erratically. The goal is to move the bow smoothly at any desired pace regardless of intensity of the vibrato.

The importance and advantage of following this instruction is derived from the fact that any single speed of oscillation is *not* appropriate to all musical situations. The vibrato which is appropriate in a sad song is not the same as that which is suitable to tensely dramatic music or to gay, humorous music. Nor will the vibrato, which may feel or sound natural on the G string in Position VIII, feel equally natural on the E string in Position II.

Position VI



Ex. A



Scales Arpeggios

E \flat Major

D Minor

B \flat Major

A Minor

Positions V and VI Étude

VI V VI V VI V VI V VI V VI V

VI V VI V VI V VI V VI V

VI Y VI Y VI Y VI Y VI Y VI Y

VI Y VI Y VI Y VI Y VI Y VI Y

The "Block" Positions

In the neck (lower) Positions (I to VI) the thumb is opposite the fingers and the finger-cushions are opposite the thumb-print. Now, as we move higher up the fingerboard, the fingers move *beyond* the thumb. They begin to point toward the bridge while the thumb begins to point toward the scroll.

Beginning with Position VII or VIII*, the left hand begins its departure from the posture maintained in the lower Positions. Also, the torso begins to lean forward from the erect posture maintained for the lower Positions. Positions VII through XII might well be labeled the "Block" Positions because the thumb is in contact with the Neck Block.

In these Block Positions the thumb is kept at the junction of the neck and block as long as possible because it provides a sense of security for the thumb which is the anchor and pivot for all finger movement.

"Lower Block" Positions

Definition: Those Positions which permit the thumb to remain *on* the block in back of the strings, will be called the "Lower Block Positions".

As the fingers reach Position X it becomes necessary to bring the thumb around to the far side of the Block and Fingerboard. Precisely where the thumb would be located must be determined individually on the basis of instrument structure and the physique of the left hand. The function of posture is to make all the notes of a given Position accessible with the least possible movement of the total hand. In the final analysis posture is determined by the efficiency with which it serves the needs of intonation, flexibility, facility and vibrato.

"Upper Block" Positions

Definition: Those Positions which require the thumb to rest on the far side of the Fingerboard.

Position VII

Ex. A

* This will be determined by the length of the neck. Bases are made with either D necks or with E \flat necks. On the D neck it will be Position VII, and on the E \flat neck it will be Position VIII. The note ob-

tained when the thumb is placed at the block end of the neck and the first finger directly opposite the thumb on the G string identifies the neck length.

Ex. B

E Major

Scales

Arpeggios

Musical notation for E Major Scales and Arpeggios. The scale is written in bass clef with a key signature of three sharps (F#, C#, G#) and a common time signature (C). The scale consists of eight eighth notes: E, F#, G#, A, B, C#, D, E. The arpeggio consists of four eighth notes: E, G#, B, A.

D# Minor

Musical notation for D# Minor Scales and Arpeggios. The scale is written in bass clef with a key signature of four sharps (F#, C#, G#, D#) and a common time signature (C). The scale consists of eight eighth notes: D#, E, F#, G, A, B, C, D#. The arpeggio consists of four eighth notes: D#, F#, A, G.

B Major

Musical notation for B Major Scales and Arpeggios. The scale is written in bass clef with a key signature of two sharps (F#, C#) and a common time signature (C). The scale consists of eight eighth notes: B, C#, D, E, F#, G, A, B. The arpeggio consists of four eighth notes: B, D, F#, E.

Bb Minor

Musical notation for Bb Minor Scales and Arpeggios. The scale is written in bass clef with a key signature of two flats (Bb, Eb) and a common time signature (C). The scale consists of eight eighth notes: Bb, C, D, Eb, F, G, Ab, Bb. The arpeggio consists of four eighth notes: Bb, D, F, Eb.

Positions VI and VII Étude

First line of musical notation for Positions VI and VII Étude. It features a sequence of notes with fingerings indicated by Roman numerals: VII, VI VII VI, VII VI, VII VI VII VI VII, VI VII.

Second line of musical notation for Positions VI and VII Étude. It features a sequence of notes with fingerings indicated by Roman numerals: VI, VI, VII, VI VII VI, VII VI, VII.

Third line of musical notation for Positions VI and VII Étude. It features a sequence of notes with fingerings indicated by Roman numerals: VI VII VI, VII VI VII, VI VII VI VII VI VII, VI VII.

Fourth line of musical notation for Positions VI and VII Étude. It features a sequence of notes with fingerings indicated by Roman numerals: VI VII, VI, VII VI, VII, VI VII VI VII.

Position VIII

Musical notation for Position VIII. It shows a sequence of notes with fingerings indicated by numbers 1, 2, 4. Below the notes are brackets indicating chord positions: G, D, A, E, A, D, G.

Ex. A

Exercise A consists of three staves of bass clef music in C major. The first staff contains 12 measures, the second 12 measures, and the third 12 measures. The notes are: Staff 1: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. Staff 2: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. Staff 3: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4.

Ex. B

Exercise B consists of two staves of bass clef music in C major. The first staff contains 12 measures, and the second 12 measures. The notes are: Staff 1: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. Staff 2: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4.

Ex. C

Exercise C consists of two staves of bass clef music in 9/4 time. The first staff contains 9 measures, and the second 9 measures. The notes are: Staff 1: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. Staff 2: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4.

Positions VII and VIII

Positions VII and VIII section includes a scale and two exercises. The scale is written on a bass clef staff with notes: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. Below the scale are the labels: VII VII, VII VII, VII VII, VII VII, VII, VII VII, VII VII, VII VII. The first exercise consists of two staves of bass clef music in C major, with 12 measures each. The notes are: Staff 1: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. Staff 2: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4.



F Major

Scales

Arpeggios



E Minor



C Major



B Minor



Positions VII and VIII Étude



VII VII VII VIII VII VIII VII VIII VII VIII VII VIII



VIII VII VII VII VIII VIII VII VIII VII VIII VII VIII VII VIII



VIII VII VII VII VIII VIII VII VIII VII VIII VII VIII VII VIII



VII VIII VII VIII VII VIII VIII VII VIII VII VIII VII VIII VII VIII

Five staves of musical notation in bass clef, C major, showing various scale and arpeggio exercises. The first staff shows a scale starting on C4. The second staff shows a scale starting on G3. The third staff shows a scale starting on F3. The fourth staff shows a scale starting on E3. The fifth staff shows a scale starting on D3. Each staff includes various accidentals and articulation marks.

F# Major

Scales

Arpeggios

Musical notation for F# Major Scales and Arpeggios. The scale section shows an ascending and descending scale starting on F#4. The arpeggio section shows a series of chords starting on F#4, each with its constituent notes written above the staff.

F Minor

Musical notation for F Minor Scales and Arpeggios. The scale section shows an ascending and descending scale starting on F4. The arpeggio section shows a series of chords starting on F4, each with its constituent notes written above the staff.

Db Major

Musical notation for Db Major Scales and Arpeggios. The scale section shows an ascending and descending scale starting on Db4. The arpeggio section shows a series of chords starting on Db4, each with its constituent notes written above the staff.

C Minor

Musical notation for C Minor Scales and Arpeggios. The scale section shows an ascending and descending scale starting on C4. The arpeggio section shows a series of chords starting on C4, each with its constituent notes written above the staff.

Positions VIII and IX Étude

The musical notation consists of three staves in a 2/4 time signature with a key signature of two sharps (F# and C#). The first staff begins with a 'V' marking above the first measure. Fingerings are indicated by Roman numerals VIII and IX below the notes. The second staff also begins with a 'V' marking. The third staff continues the sequence with various fingering combinations.

The Third Finger

Position X is a good point at which to introduce the use of the *third* finger. The palm of the hand is now beginning to face the bridge and the fingers are so distant from the thumb as to make the 4th finger impractical to use except for the *octave harmonic* as an extension from Position IX. Beginning with the Xth Position the 3rd finger will be used in place of the 4th for the stopped note.

Position X

Up to this point the fingers have been side by side in their relationship. The further the fingers move away from the thumb, the more the fingers assume a one-in-front-of-the-other line-up. The finger placement in these Positions may be regarded as *in transition*, preparatory to the Thumb Positions.

At a more advanced stage of development it will be possible to use all four fingers in certain exceptional situations in the Lower and Upper Block Positions.

Position X

(Using the 3rd Finger)

The notation shows a sequence of notes on a single staff. Fingerings are indicated by numbers 1, 2, and 3 above the notes. Below the staff, a series of brackets and letters (G, D, A, E, A, D, G) indicate the fret positions for each note.

Ex. A

Example A consists of three staves of music in a 2/4 time signature. The first staff starts with a treble clef and a key signature of one sharp (F#). The second and third staves use bass clefs. The music features a sequence of eighth and quarter notes with various accidentals.

Scales

Arpeggios

G Major

Musical notation for G Major scale and arpeggio in bass clef, C major signature.

F# Minor

Musical notation for F# Minor scale and arpeggio in bass clef, F# major signature.

D Major

Musical notation for D Major scale and arpeggio in bass clef, D major signature.

C# Minor

Musical notation for C# Minor scale and arpeggio in bass clef, C# major signature.

Positions IX and X Étude

Musical notation for Position IX and X Étude, first line.

X IX X IX X IX X IX X IX X IX X

Musical notation for Position IX and X Étude, second line.

X IX X IX X IX X IX X IX X

Musical notation for Position IX and X Étude, third line.

IXX IXX IX X IX XIXX IXX IX X IX

Musical notation for Position IX and X Étude, fourth line.

X IX X IX X IX X IX X IX X

Musical notation for Position IX and X Étude, fifth line.

IX XIXX IXX IX X XIXX IXX IX XIXX IXX IXX

Position XI

(Using the 3rd Finger)

A single bass clef staff containing a sequence of notes with fingerings (1-3) written above them. Below the staff, brackets indicate chord positions: G, D, A, D, G.

Ex. A

Three lines of a bass clef staff in common time (C). The first line contains a sequence of notes with accidentals. The second and third lines continue the sequence, ending with a double bar line.

Ex. B

Two lines of a bass clef staff in common time (C). The first line contains a sequence of notes with accidentals. The second line continues the sequence, ending with a double bar line.

Ex. C

Two lines of a bass clef staff in 3/4 time. The first line contains a sequence of notes with accidentals. The second line continues the sequence, ending with a double bar line.

Position XII

A musical staff in bass clef showing fingerings for various notes. Above the staff, fingerings are indicated: 3, b2, 1, 3, b2, 1, 3, b2, 1, 2, 3, 1, 2, 3, 1, 2, 3. Below the staff, chord diagrams are shown for G, D, A, D, and G, with brackets indicating the notes covered by each chord.

Ex. A

Exercise A consists of three staves of music in bass clef with a common time signature (C). The first staff contains a sequence of chords and notes. The second and third staves continue the exercise with various rhythmic patterns and accidentals.

Ex. B

Exercise B consists of two staves of music in bass clef with a common time signature (C). The first staff contains a sequence of chords and notes. The second staff continues the exercise with various rhythmic patterns and accidentals.

Ex. C

Exercise C consists of two staves of music in bass clef with a 3/4 time signature. The first staff contains a sequence of chords and notes. The second staff continues the exercise with various rhythmic patterns and accidentals.

Shifting in Positions VIII – XII

(Learning To Use 3rd or 4th Finger)

Ex. A

Exercise A consists of two staves of music in bass clef, common time. The first staff contains the following notes and fingerings: G2 (1), A2 (2), B2 (1), C3 (2), D3 (3), E3 (2), F3 (3), G3 (2), A3 (1-1), B3 (3-3), C4 (1-1), D4 (2), E4 (3), F4 (2), G4 (1), A4 (3), B4 (2), C5 (1), D5 (2), E5 (3), F5 (1). The second staff contains: G4 (2), A4 (3), B4 (1), C5 (2), D5 (1), E5 (2), F5 (3), G5 (2), A5 (3), B5 (2), C6 (1-1), D6 (3), E6 (1-1), F6 (2), G6 (3-3), A6 (1), B6 (3-3), C7 (2), D7 (1).

Position numbers written below the first staff: X, XII, X, XII, X, XII, XI, X, XI.
 Position numbers written below the second staff: XII, X, XII, X, XI, XII, XI, X.

Ex. B

Exercise B consists of two staves of music in bass clef, common time. The first staff contains the following notes and fingerings: G2 (3-3), A2 (1), B2 (3), C3 (1), D3 (4), E3 (2), F3 (1-1), G3 (4), A3 (1), B3 (2), C4 (3), D4 (1), E4 (4), F4 (2), G4 (1), A4 (4), B4 (1), C5 (2), D5 (3), E5 (2), F5 (3), G5 (1). The second staff contains: G5 (4), A5 (1), B5 (2), C6 (3), D6 (2-2), E6 (3), F6 (4), G6 (2), A6 (1-1), B6 (4), C7 (2), D7 (3), E7 (1), F7 (4), G7 (1), A7 (2), B7 (4), C8 (2), D8 (3).

Position numbers written below the first staff: XII, XI, VIII, IX, XII, VIII, XII, X, IX.
 Position numbers written below the second staff: VIII, X, XII, VIII, IX, XII, IX, XII.

Ex. C

Exercise C consists of two staves of music in bass clef, common time. The first staff contains the following notes and fingerings: G2 (1), A2 (4), B2 (2), C3 (4), D3 (1-3), E3 (2), F3 (3), G3 (1), A3 (2), B3 (3), C4 (2), D4 (1), E4 (2), F4 (3), G4 (1-1), A4 (4), B4 (1), C5 (2), D5 (3), E5 (4), F5 (1), G5 (4). The second staff contains: G5 (4), A5 (1), B5 (2), C6 (1), D6 (2), E6 (1), F6 (2), G6 (3), A6 (1), B6 (2), C7 (3), D7 (1), E7 (2), F7 (4-4), G7 (2), A7 (1), B7 (4), C8 (2), D8 (1), E8 (3), F8 (2), G8 (1), A8 (2), B8 (3).

Position numbers written below the first staff: VIII, X, VIII, X, XII, IX, X, VIII, IX, XII, IX, X.
 Position numbers written below the second staff: IX, VIII, XI, X, IX, VIII, IX, X, XII.

Extension

“Extension” is the term used here to label the technique of obtaining an interval of one and a half tones between the 1st and 4th fingers. Its use depends entirely on two factors: (a) the string length and (b) physical capability.

A string length (Nut to Bridge) of 40 inches makes the use of extension feasible for a medium-size hand at Position IV or V. A larger hand could manage “extension” at some lower Position.

A string length of 41 inches or longer would force a medium-size hand to begin extension at a higher Position, but a large hand could use extension at Position IV. Within these limitations it is also possible to obtain an interval of a whole tone between the 2nd and 4th fingers.

While it is possible to span the interval of a whole tone between the 1st and 3rd fingers, it presents disadvantages in Positions below IX or VIII. First, the 3rd finger is most cumbersome and almost as weak as the 4th finger. Second, using the 3rd finger in this way places a strain on it and the hand as a whole. This makes accurate intonation unreliable. Further, it may prohibit production of a satisfying vibrato.

Ornaments

In music, the term "ornament" refers to those notes which serve to embellish the melodic line or rhythmic pace. These embellishments are indicated by symbols or small notes which represent specific tone-patterns. The notes or note of the ornament are known as "auxiliary". The note with which it is associated is known as the "principal".

Appoggiatura, or Grace Notes

1. Long Grace Note

The long grace note or appoggiatura occurs primarily in music written before 1750 but is also found occasionally in music by Haydn, Mozart and Beethoven. It appears as a note smaller in size than the other notes. Its written time value is one-half that of the principal note. Grace notes are usually, but not necessarily, slurred to the principal note. In performance, the long grace note not only occurs on the part of the beat indicated by the principal note, but also indicates the duration of each of the two, except in the case of a principal of dotted note value.

Ex. 1 Written

The image shows two staves of music in bass clef with a common time signature. The top staff is labeled 'Written' and shows a sequence of notes: a quarter note, a half note, a dotted quarter note, and a dotted half note. Each of these notes has a smaller eighth note (the grace note) written above it, slurred to the principal note. The bottom staff is labeled 'Played' and shows the same sequence of notes, but the grace notes are slurred to the principal notes, and the principal notes are sustained for a longer duration than their written value, illustrating the performance practice.

When the grace note is associated with a principal of dotted note value, the grace note occurs also on the part of the beat indicated by the principal note but is sustained for *two-thirds* of the time of the principal.

Ex. 2 Written

The image shows two staves of music in bass clef with a common time signature. The top staff is labeled 'Written' and shows a sequence of notes: a quarter note, a half note, a dotted quarter note, and a dotted half note. Each of these notes has a smaller eighth note (the grace note) written above it, with a diagonal line across its stem. The bottom staff is labeled 'Played' and shows the same sequence of notes, but the grace notes are slurred to the principal notes, and the principal notes are sustained for a longer duration than their written value, illustrating the performance practice.

2. Short Grace Notes (sometimes inaccurately called "acciaccatura")

The short grace note is indicated by a diagonal line across its stem. In performance, the short grace note is subject to two interpretations. The duration, in both instances, is *half its indicated value*. Both occur in the music of Haydn, Mozart and Beethoven.

- a. The grace note occurs on the part of the beat indicated by, and takes its duration from, the principal note. This interpretation and use ceased after Beethoven.
- b. This grace note occurs *before* its principal note. Its duration is taken from the *preceding* note or rest if there is one.

Ex. 3 Written

The image shows two staves of musical notation in 3/4 time. The top staff is labeled 'Played'. It contains two measures. The first measure has a quarter note with a grace note on the downbeat, labeled 'a.'. The second measure has a quarter note with a grace note on the downbeat, labeled 'b.'. A vertical dashed line separates the two measures. The bottom staff contains the corresponding accompaniment for each measure.

3. Double Grace Notes

Double grace notes are two notes smaller in size than, and associated with, a principal note. In performance they always occur *before* the part of the beat indicated by their principal note. Their duration is one-half their indicated value or less. Only enough time for their execution is taken from the time of the *preceding* note or rest if there is one.

Ex. 4 Written

The image shows two staves of musical notation in 3/4 time. The top staff is labeled 'Played'. It contains two measures. The first measure has a quarter note with two eighth notes as double grace notes on the downbeat. The second measure has a quarter note with two eighth notes as double grace notes on the downbeat. The bottom staff contains the corresponding accompaniment for each measure.

4. Groupette

A Groupette is a group of three or more grace notes in a *scale-wise* progression leading to its principal note. In performance they are governed by the same rules which apply to the double grace note.

Ex. 5 Written

The image shows two staves of musical notation in 3/4 time. The top staff is labeled 'Played'. It contains two measures. The first measure has a quarter note with a groupette of three eighth notes on the downbeat. The second measure has a quarter note with a groupette of three eighth notes on the downbeat. The bottom staff contains the corresponding accompaniment for each measure, with some notes marked with '3', '5', '6', and '7'.

Embellishments

It is highly probable that no other aspect of written music is as confused or confusing as that of embellishments. The versions presented here come from *Grove's Dictionary of Music*.

1. *The Turn*

The turn is represented by the symbol: ∞. It consists of three auxiliary notes: (a) the diatonic tone *above* the principal; (b) the tone of the principal; (c) the diatonic tone *below* the principal.

Ex. 1

Written

Played

2. *The Inverted Turn*

The inverted turn is represented by the symbol: ∞. It consists of three auxiliary tones in the inverse order of the turn: (a) the diatonic tone *below* the principal; (b) the pitch of the principal; (c) the diatonic tone *above* the principal.

Ex. 2

Written

Played

3. *Variants of the Turns*

When the symbol appears *over* a note, the three notes are executed *during the first fourth of its time value*. (See Ex. 1 and 2). When the symbol appears *after* a note, the four notes are executed *during the last fourth of the note*.

Ex. 3

Written

Played

4. Alteration of Auxiliaries

If the pitch of either auxiliary is to be altered, the accidental affecting the *upper* auxiliary will appear *above* the symbol and when affecting the *lower* auxiliary will appear *below* the symbol.

Ex. 4 Written

The image shows two staves of music. The top staff is labeled 'Written' and contains seven notes with various accidentals (sharps, naturals, flats) placed above or below the notes. The bottom staff is labeled 'Played' and shows the corresponding musical notation with slurs and articulation marks, demonstrating how the accidentals affect the auxiliary notes.

The *Mordent* or *Inverted Mordent* consists of two auxiliary notes executed very rapidly during the first fraction of time value of the principal.

1. The Mordent

The mordent is represented by the symbol: ♯. The first note is the pitch of the principal. The second note is the diatonic tone *below* the principal.

Ex. 1 Written

The image shows two staves of music. The top staff is labeled 'Written' and contains seven notes with mordent symbols (two small vertical lines) placed above the notes. The bottom staff is labeled 'Played' and shows the corresponding musical notation with slurs and articulation marks, demonstrating how the mordent affects the principal note.

2. The Inverted Mordent

The inverted mordent is represented by the symbol: ♯. The first note is the pitch of the principal. The second note is the diatonic tone *above* the principal. Accidentals affecting the auxiliary may appear above or below the symbol.

Ex. 2 Written

The image shows two staves of music. The top staff is labeled 'Written' and contains seven notes with inverted mordent symbols (two small vertical lines) placed above the notes. The bottom staff is labeled 'Played' and shows the corresponding musical notation with slurs and articulation marks, demonstrating how the inverted mordent affects the principal note.

SCALES

Learning to play scales is a means to an end, not an end in itself. Actually, scale study should be regarded as a means of training the eye and mind. Notes, like letters or words, must be read in groups to make sense. It is quite common for notes to be grouped in pattern-type sequences such as scales, broken chords (arpeggios), double-stops or intervals. It is for the purpose of acquiring preliminary experience in recognizing such patterns as well as learning how to finger them that scales in their various forms must be studied.

Patterns for Exercises Based on the Scale

A. Scale-type

II III V VII IX X XII X VIII VII V III II III

B. Intervals-type

II III II V III VII V VIII VII X VIII V VII III V II III II III

3rds

II III V VII IX X XII X VIII VII V III II

4ths

III VI III II V III VII III II V IV VI V VIII VIII V VII IV V II III VII III V II III VI III

5ths

III VIII V II VII III VIII V II VII IV VIII V X X V VIII IV VII II V VII III VII II V VIII III

II III V III VII III VIII VIII VII V III II V II

Bowings:

1. SLUR each *two* notes:
 - (a) beginning with first
 - (b) beginning with second
2. SLUR each *three* notes.

C. Broken Chord or Arpeggio-type

II III II III II V II V VII V VI VII VI

II III IX X VIII III II III II

II III II III VII IX X VIII V III

II V IX X VIII VI III VII IX VIII VII

D. Doublestop-type

1 1 0 1 1 1 1 2 2 1 1 2 0 1 1

2 4 4 4 4 4 4 4 4 4 2 1 4 2

II III II — IV V VII VIII VII V III II — III II

III II V VIII V II III

III II III V VII IX X VIII VII V III II III

Sample Pattern for Scale Study in All Keys Modes

The musical score consists of eight staves, each representing a different mode in the key of D major (one sharp). The modes and their characteristics are as follows:

- Ionian:** Fingering: II, III, V, II, III, III. Performance: $1^{st}/4$ legato, $2^{nd}/4$ $2^{nd}/3$ détaché.
- Dorian:** Fingering: II, V, V, II, III, II. Performance: $4^{th}/4$ legato, $2^{nd}/4$ $2^{nd}/3$ détaché.
- Phrygian:** Fingering: II, IV, VII, V, V, II, III. Performance: $1^{st}/4$ legato, $2^{nd}/4$ $2^{nd}/3$ détaché.
- Lydian:** Fingering: V, II, V, VIII, V, V, II, III. Performance: $4^{th}/4$ legato, $2^{nd}/4$ $2^{nd}/3$ détaché.
- Mixolydian:** Fingering: II, IV, VII, X, V, VIII, V, II. Performance: *simile*.
- Aeolian:** Fingering: II, IV, VII, V, V, II, III, II. Performance: *simile*.
- Locrian:** Fingering: II, V, IX, V, V, II, III (II). Performance: *simile*.
- Ionian:** Fingering: V, II, IV, VII, X, IX, V, II. Performance: *simile*.

Continue bowing pattern as above.

Return to starting point by proceeding upward on the page.

One Octave Scales With Optional Choice of Fingering

B \flat Major



I IV III VI III IV I I V VIII XI VIII IV I



VI IX VIII XI VIII IX VI I III I I III VI III I




VI VIII XI VIII VI I III I III V VI V III I III I




I III IV I III V VII VIII X VIII VI V III I IV III I

B \flat Minor



VI IX VIII XI VIII IX VI I IV VIII XI VII IV I



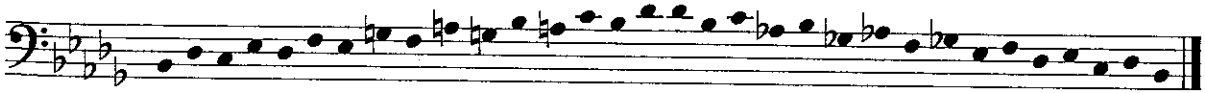
VI VII VI VII II IV I I IV VII XI VII IV I



I III VI II I IV VI IV VI VIII XI VII VI

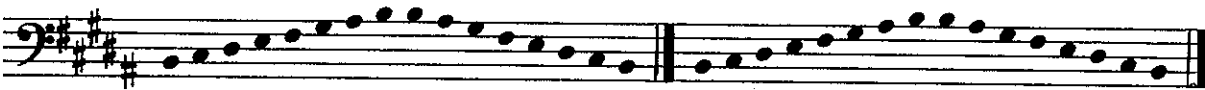


VI I II I III IV VI VII II IV II IV VII III IV III IV VI VII II IV

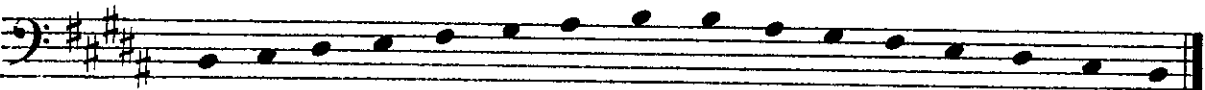


I III IV I III V VII VIII IX VIII VI IV II I IV II I

B Major



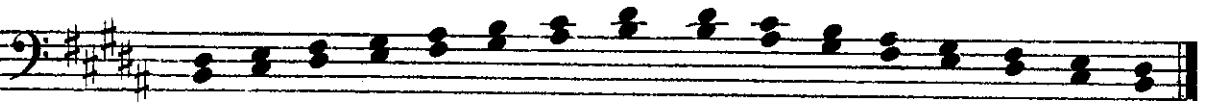
II I IV VII IV I II II VI IX XII IX V II



VII VI IX XII IX VI VII



II IV II II IV VII IV II VII IX XII IX VII



I II IV I III IV VI VII VI IV II I IV II I



II IV I II IV VI VIII IX XI IX VII VI IV II I IV II

B Minor



II V IX XIII VIII V II VII X IX XII IX X VII

II V VIII XII VII V II VII VII VII XII VIII VII VII VII

II IV VI III II V VI V VII IX XII VIII VII

II III I III IV VI VII V III II III II II III II IV VI VII VI III II III II

II IV V II IV VI VIII IX X IX VII V III II V III II

C Major

II V VIII V II III III VI V VIII V VI III

III V III III V VIII V III II III II IV V VI VII VIII VII V III II III II

II III V VII IX X XII X VIII VII V III II

C Minor

I V VIII IV I III VI V VIII IX VI III

I IV VIII IV III IV III III VI IX VI III

I III I III V VIII IV III VI VIII VI

I III IV II IV V VI VIII VI IV III I III I I III I IV VII VIII VII IV I III I

I III V VII IX X XI X VIII IV III I

D \flat Major

IV III VI IX VI III IV IV VII VI IX VI VII IV

IV VI IV IV VI IX VI IV III IV I III V VI VIII IX VII VI IV II I IV III

IV VI III IV I III V VI VII VI IV III I IV III VI IV

C \sharp Minor

II I II I IV I II I II IV VII VI IX VI VII IV

II I II V IV I II IV VII X VII IV

II IV II IV VI IX V IV VII IX VII

II IV I III V VI VII IX VII V IV II I IV II II IV I II V VI VII IX VIII V IV II I IV II

II I II IV VI VIII X XI XII XI IX VII V IV II I II

D Major

V IV VII X VII IV V V VIII VII X VII VIII V

V VII V V VI X VII V III II IV VI VII IX IX VII V III II III

II IV V II IV VI VII IX VII V IV II V III II

D Minor

V VII VI X VII VIII V II III VII X VIII V II

II III VI X VI III II V VIII XI VIII V

III V III V VII X VI V II V II

III II IV VI VII IX X VIII VI V III II III III II III VI VII IX X IX VI V III II III

II III V II IV VI VII VIII VI V III II V III II

E \flat Major

I V VIII IX VIII IV I VI IX VIII XI VIII IX VI

I III VI III I VI VIII VI VI VIII XI VIII VI

I III V VII VIII X XI X VIII VI IV III I

I III IV I III V VII VIII X VIII VI V III I IV III I

D# Minor

I IV VIII XI VII IV I VI IX VIII XI VIII IX VI

I IV VII XI VII IV I VI IX XII IX VI

I III VI II I IV VI IV VI VII XI VII VI

IV I III V VII VIII XI IX VII VI IV II I IV IV I III IV VII VIII XI X VI VI IV II I IV

I III IV I III V VII VIII IX VIII VI IV II I IV II I

Two Octave Scales Arranged Chromatically

Notes with Arabic numerals for fingering in succeeding scale studies may be used to introduce "Thumb Positions" or eliminated.

E Major

II I II I IV VII IV I II I II III II

II I II V IV VII IV V II III II III II

I II III VI III II III II I II III II

I II V VIII V II I II III II

II IV VII III II II V VI V II

II III I II IV II IV VI VIII IX XI XII X VIII VII V III II III II III II

II III I II IV II IV V VIII IX XI XII XI VIII VII V III II IV I III II

II III II IV I II III II IV VI VII

VII V III II III II III II III II III II

F Major

I II V VIII V II III II I

I II I II III VI V VIII V VI III IV I II I

I II I II I IV VIII IV I II I II I

I II I II III VI IX VI III II I II I

I III V VIII IV II I I III VI VIII VI II I

I II I II III I III V VII IX X XII³ XII IX VIII VI IV III I II I IV II I

I III IV II I III V VI IX X XII³ XII IX VIII VI IV III I II IV II I

I III IV I III V II III IV I III V VII VIII

VIII VI IV III I IV III I IV II I IV II I

F# Major

II I II I II I III VI IX VI II I II I II I II

II I II I IV VII VI IX VI VII IV I II I II

II I IV VII VI VII VI IX VI VII VI VII IV I II

II VI IX VIII IX VIII IX VIII IX VIII IX VIII IX V II

II I IV III VI IX 1 2 3 2 1 IX VI III IV I II

II IV VI IX VI IV II II IV VIII IX VII IV II

I II IV I III IV I III IV VI VIII X XI 3 2 3 XI IX VII VI IV II I IV II I IV II I

II IV I II IV I III IV I III IV VI VIII IX

IX VIII VI IV II I IV II I IV II I IV II

F# Minor

II I II I II II IX VII IV I II III II III II

II I IV VII VI IX VI VII IV V II III II

II I II V IX V II I II III II III II

II III IV VII X VII IV III II III II

II IV VI IX V III II II IV VII IX VII III II

II III I II IV I II IV VI VII X XI $\frac{1}{3} \frac{1}{3}$ XII X IX VII V IV II I III II III II

II III II III I II IV VI VII X XI $\frac{1}{3} \frac{1}{3} \frac{1}{3}$ X IX VII V IV II I III II III II

II IV V II IV I III IV I II IV VI VIII IX

IX VII V IV II I IV II III II III II

G Major

II IV VII X VII III II III II III II III

II Y IX X IX Y II III II III II III

II Y VIII VII X VII VII Y II III II III

II Y VIII VII VII VII X VII VIII VII VII Y II III

III VI Y IV Y IV VII X VII VIII VII VIII Y VI III

II IV VII X VII IV II III Y IX X VIII Y III

II III II III II IV Y VII IX XI XII $\frac{1}{3}$ $\frac{1}{2}$ $\frac{1}{3}$ XII X VIII VII Y III II III II III II

II III V II IV V II IV V VII IX X

X IX VII V III II III II III II

G Minor

I II Y IX X VIII Y II III IV III IV III

I II V VIII VII X VII VIII V VI III IV III

I II III VI X VI III II III I

I IV V VIII XI VIII V IV III IV III

I III VII VII III I III V VIII X VIII IV III

I III I II III II III V VII IX XI XII 3 3 2 XII X VIII VI V III I III

I III I III I II III V VII VIII XI XII 3 3 3 XI X VIII VI V III II I III I III I

I III V II IV V II III VII VII IX X

X VIII VI V III II V III I IV III I IV III

A \flat Major

II I II I V VIII XI VIII IV I II I II

II I II I IV III V VIII XI VIII Y VI III IV I II

IV III IV III VI IX VIII XI VIII IX VI III IV III IV

IV III VI Y VI Y VIII XI VIII Y VI Y VI III IV

IV III IV III IV III IV VIII XI VIII Y VI Y VI VII IV

II VI VIII XI VIII VI II IV VI X XI IX VI IV

II IV I II I III V VI VIII IX XI XII IX VIII VI IV III I II I IV III

IV VI III IV I III IV I III V VI VIII X XI

XI X VIII VI IV III I IV III I IV II II

G# Minor

II I II I IV VII IX VII IV I II I II I II

IV V IV III IV III IV VIII XI VII IX VI VII IV V IV

II I II I IV VII XI VII IV I II I II

IV V IV V VI IX VIII XII VIII IX VI V IV V IV

II IV VIII XI VII IV I IV IV VI IX XI IX V IV

II IV I II I III IV VI VIII X XII IX VII VI IV II I IV II I IV II

II IV I II I III IV VI VIII IX XII IX VII VI IV III I II I IV II

II I II IV I III IV I III IV VI VIII X XI

XI IX VII VI IV II I IV II I IV II I II

A Major

II I II VI IX XII IX V II I II III II

II V IV V IX XII IX V IV V II III II

II V IV VII VI IX XII IX VI VII IV V II

V VIII VII VI VII VI IX XII IX VI VII VI VII VIII V

II VI IX XII 1 2 3 3 2 1 XII IX V II III II

II VI VII XII VII VI II II VII IX XII IX VII II

III II III I II IV VI VII IX XI 1 2 3 3 2 1 1 1 3 3 2 X IX VII V IV II I III II III

II III II IV I II IV VI VII IX XI XII

XII XI IX VII V IV II I IV II III II

A Minor

II I II V IX XII VIII V II III II III II

Articulations As They Affect Samples of Orchestra Literature

Bach — Magnificat

Legato

$\text{♩} = 60$

mf I II IV V IV V IV V II III II

III IV II I II I II III II III II

I IV V IV V IV III IV II I II

I IV V IV V IV etc.

Bach — Brandenburg Concerto No. 4 — Gavotte

slur and legato

$\text{♩} = 88$

f II Y II Y II III II Y

II III II III V

mf II III I II I II III II

I II III II III II III III II III

Y II III II Y II III II III V

Bach — Brandenburg Concerto No. 1 — Allegro

$\text{♩} = 80$

f marcato *sempre*

sempre Pt. *p* *f*

Bach — Suite No. 2 — Polonaise

$\text{♩} = 58$ Moderato

marcato *p* *f* *p* *f*

Mozart — Eine Kleine Nacht Musik — Menuetto

$\text{♩} = 132$

f marcato *p* *cresc.* *f* *Fine*

Mendelssohn — Symphony No. 4 — Andante con moto

$\text{♩} = 63$ spiccato *p* *sempre stacc.*

III II III II I III II V III I III II III IV III

V IV III II V III I III II I

II III II V III I III II III IV III

V IV III II III II I III II IV III etc.

Bach — St. Matthew Passion — Vivace

$\text{♩} = 58$ spiccato *f*

III II III II V II V II V

II I II III II III II III II III II III

II III II III II etc.

Mendelssohn — Symphony No. 5 — Allegro con fuoco

$\text{♩} = 116$

slur *pp* I II I

p *cresc. poco* *a poco*

f II III II III *cresc.* *al* III II III *ff* etc.

Bach — Piano Concerto in D Minor — Adagio

$\text{♩} = 66$

portato

III IV V *mf* III V

V II III V II I *p* III I III

I IV II III I *p* etc.

Mozart — Eine Kleine Nacht Musik — Allegro

$\text{♩} = 132$ martelé



Brahms — Symphony No. 2 — Allegro con spirito

$\text{♩} = 100$ martelé



Beethoven — Symphony No. 6 — Allegro ma non troppo

$\text{♩} = 58$ martelé



Bach — Brandenburg Concerto No. 4 — Presto

$\text{♩} = 104$ détaché

III V IV II III II I
II III II III etc.

Bach — Suite No. 2 — Allegro

$\text{♩} = 116$ détaché

V IV V IV I III I II I II III V V V V II III I
III II III II III II III II III
I II p III II I IV III II
I II III II I II I III II III I III II I II etc.

Tschaikovsky — Symphony No. 5 — Allegro vivace

$\text{♩} = 104$ détaché

mf I II I II IV I II *f* I
poco cresc.