

When sitting, the body weight should be supported by the legs as well as the seat. Avoid placing both legs forward; the player should sit so that he can jump up from sitting to standing position without shifting his weight.

### Silent Left Hand Exercises

The question could be raised: why play silent exercises when it is more interesting to play with the bow? The fact is that in a class situation, silent exercises are of great help, as the class can engage in these while the instructor gives individual attention to any one member of the class. These activities not only help the students' technique, but also save the teacher a great deal of disciplinary trouble.

*Shoulder flex.* Stand or sit erect, grab right shoulder with left hand. Keep left shoulder relaxed and low and bounce left elbow up and down with a rolling motion of the upper arm. When tired, drop arm and relax.

*Palm-up.* Proceed as before, then swing hand out in front, in level with the forehead, maintaining the position of the elbow near the center of the chest. Hold until tired, then drop arm, shake hand.

*Silent shifting.* Establish violin position as before, then shift back and forth between first and fifth positions. Fingers off the string, relaxed and rounded; support the neck by the thumb in the area of the first joint from the tip and by the second phalanx from the tip. The base of the first finger will glide along the right side of the fingerboard, touching it gently, thus adding stability. Keep wrist straight and shuttle back and forth until tired, then drop hand and relax.

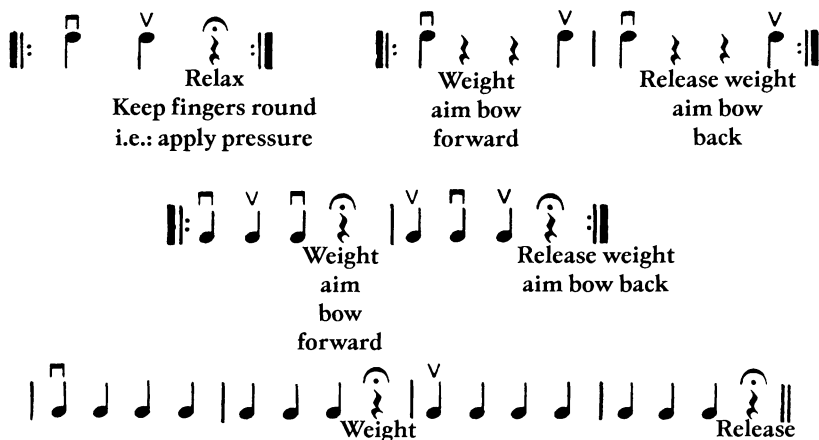
*Thumb flex.* Press fingers on string, then move thumb back and forth (horizontally) as far as it will go until tired, then relax. Move thumb up and down (vertically) until tired, then relax. Move thumb in circular motion until tired, then relax.

*Lift-drop.* Keep all four fingers on the string, then lift and drop back four times, each finger in turn. Swing fingers far back but do not straighten. The teacher may call out "lift—drop—rest" at a natural reciting speed.

### Straight Bowing

Place the bow at the balance point and check for correct hold. Keep fingers naturally rounded; lift and replace fingers that stiffen. Draw a few inches of bow first, then gradually increase length of bow used. Practice patterns on the D string first, then on the others as well.

It is a typical fault to draw the bow in a clockwise curve. To counteract this tendency strive to draw the bow in an opposite arch, i.e., push the bow well forward at the end of down-bows, forearm well-turned inward. At the conclusion of up-bows, pull frog in the opposite direction, back toward the player's chest, wrist slightly arched. As a result of this, the bow should be drawn straight, i.e., the hair at right angles to the string at all times.



It is a typical fault to draw the bow in a curve opposite to the bow-stick curve:



### Bow Balance

For an even tone, bow pressure and speed must be kept constant at any given contact point of bow and string. Since the bow weight is heavy at the frog and is very light at the tip, the applied bow pressure is constantly changing with the movement of the bow. In approaching the tip, the applied pressure gradually increases, and in approaching the frog the applied pressure gradually decreases. The rate of change is much higher at the lower third of the bow than in the upper two-thirds, this being one of the reasons for greater difficulties when playing at the frog.

To develop good tone production, the student should be encouraged to play with a full tone in the upper part of the bow (positive pressure), and to support the bow well when playing near the frog (negative pressure). In practicing the above bowing patterns, turn the forearm toward the strings, causing the first finger to press the stick when approaching the tip, then hold the stick down during the rest (positive pressure). Then reverse the stroke; beginning with an up-bow, shift the balance toward ring and little fingers, and release pressure from first finger; forearm turned slightly outward, ring finger gently pulling the bow toward the palm, little finger rounded (negative pressure).

## **Bow Pressure**

In dealing with pressure we should distinguish between pressure applied to the bow (human pressure) and that received by the string. For instance, if we lay the bow on the string at the balance point, approximately two ounces of natural weight will be received by the string. Now, if we move the bow to the tip without adding pressure upon the bow, the natural weight of the bow being transmitted to the string will be less than one ounce (the bow being supported in large part by the thumb). In order to supplement the lost bow pressure, human pressure should be applied to the bow. To regain the lost pressure (a little over one ounce), almost two pounds of human pressure must be applied upon the bow, because of the disadvantageous leverage that exists when playing at the tip.

In the following, only the pressure received by the string will be discussed, and not human pressure applied by the performer.

As mentioned above, enough pressure is required at the contact point to make the string adhere to the bow hair when drawing the bow. If the pressure is insufficient, the hair will pass over without taking hold of the string, and move it to the limit of its resiliency. This is the cause of a thin surface tone in which the overtones dominate without sufficient vibration of the string fundamental. On the other hand, if too much pressure is applied, the hair arrests the string and prevents it from vibrating freely, thus causing a dull, often scratchy tone. The over-pressed and under-pressed bow are pitfalls of tone production, and their peculiar sound effect should be immediately noticed and remedied by the player.

### *Bow Pressure and Dynamics*

Increased pressure has less effect upon the dynamics than is generally believed. It is the quality (timbre) of the tone that changes considerably with increased pressure and increased tension in the stroke. With increased pressure and closer contact point to the bridge, a richer, brighter tone can be produced, one that has the full spectrum of the upper partials. On the other hand, strokes with a minimum of bow pressure are played nearer the fingerboard and produce a sound in which the fundamental pitch dominates. This sound is mellow, flute-like, lacks strength and brilliance, and is somewhat similar in quality to harmonics.

In artistic performance both the brilliant and mellow qualities are employed and are desirable; even in a school orchestra, surprising tonal effects can be produced by purposeful deviation from the normal sounds.

### *Bow Pressure and Pitch Range*

The thicker strings require and tolerate greater bow pressure. The lower strings, being thicker, require more pressure than the upper strings. The E string, especially, sounds forced under a heavy bow. Metal strings require more pressure and produce a more hollow, less intense tone. It is unwise to combine metal-core D and G strings with a gut or aluminum-wound gut A

string. If metal strings are preferred, due to financial and climatic reasons, use only the best grades, those with flat wire ribbons. Metal strings, however, do not respond as well to a light touch of the bow and are much restricted in their timbre variations.

The bow pressure also varies with the string length. The shorter the string length, the less pressure will be tolerated. Therefore, when in the high positions, especially on the E string, play with relatively light pressure.

In playing double stops, only half of the total bow pressure is received by each string; therefore the pressure tolerance of the strings at a given contact point is doubled. If the pressure is not increased, the CP must be nearer to the fingerboard. The same is true in chord playing, only more so.

### *Changing Dynamics*

Greater bow speed and pressure and a contact point closer to the bridge will increase volume; their opposites will decrease it. Yet, if a satisfactory sound is achieved and then the pressure is increased in an effort to produce more volume, the tone will crack. Similarly, increasing the speed of the bow at the same contact point will result in a surface tone, as will moving the bow closer to the bridge.

The triumvirate of bow speed–pressure–contact point is such that a good tone will result only with a specific constellation of all three factors. A good tone is the evidence of correct proportions, and if we change one of these three factors, the tone will necessarily be spoiled. It is therefore erroneous to believe that a crescendo can be produced by increasing the pressure or the speed of the bow alone, or by simply moving the bow closer to the bridge.

*When changing dynamics, at least two of the three factors must be changed simultaneously to maintain a good tone quality.*

A crescendo may be obtained by the following formulas: (a) increase bow speed *and* bow pressure; (b) draw bow closer to the bridge *and* increase bow pressure; (c) increase bow speed, pressure and move contact point closer to bridge.

A diminuendo may be obtained the following ways: (a) move the bow toward fingerboard *and* decrease pressure; (b) slow down bow *and* decrease pressure; (c) slow down bow, decrease pressure, and move closer to fingerboard. Use (c) for maximum effect.

In playing the last note of a phrase it is natural to taper the tone. Beginners will enjoy the “finish” that comes to the playing with a nice diminuendo effect at the end of a phrase. This can best be done by slowing the bow as it approaches the tip, simultaneously shifting the balance of the hand from the first to the third and fourth fingers (supination), and by letting the bow drift toward the fingerboard.

### **Tension of the Stroke**

The tension of the stroke is not synonymous with loudness, nor does it mean stiffness. An intense *piano* can be played with a slowly moving bow