C O N T E N T S

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FOREWORD

A few years ago, I was privileged to receive a copy of "Brass Today" (published by Besson & Co.,Ltd.,London, England - 1957). a splendid collection of 27 articles by as many knowledgable writers. I was roundly challenged by a remark in Alex Mortimer's review concerning the low brasses: "One could write a volume about the advantages of the fourth valve and perhaps the time is opportune for such a volume to be written."

The challenge soon broadened -- why not a volume, an instruction book that would include many facets of brass playing not yet put into print? It has been my observation that most method books present the player with thousands upon thousands of notes; yet 'say' very little as to the know-how of playing an instrument; and to turn to another author's work is only to have a slightly modified arrangement of the same notes. Thus, this effort has been "in the making" for a long time.

No attempt will be made to tutor the beginning bandsman. Thus, no mention is made concerning playing position, embouchure problems, time values, signatures, notation, abbreviations, musical markings, etc. It is to be assumed that the performer has progressed through all these, and now has acquired considerable proficiency.

The purpose of this work is to aid in maturation.

the author

INSTRUCTIONAL NOTES

Throughout the British sphere of influence, performers on the euphonium are taught to read in the treble clef. In the United States the bass clef is generally taught the beginning students of the low brasses. However, since so many baritone players in this country are converted trumpet players, band arrangements usually include parts notated in both clefs. Indeed,the baritone is the only instrument of the band to be singled out in this manner. It was my original intention that a single volume would be published to include both clefs: that all left-hand pages would be notated in the treble clef; and all right-hand pages would be notated in the bass clef. This format would have encouraged and assisted any performer to become familiar with the opposite clef. However, it was found that publishers were reluctant to undertake a printing of so large a volume for so small a market. Therefore, this first printing is entirely in the bass clef. A sister publication is in the planning stage - in hopes that treble clef baritonists and euphoniumists might also be assisted by this material. This first printing is typewritten; and all music is my personal manuscript. I trust that you will not be retarded in your progress because of these two insufficiencies.

Tuba players using this method book will find it necessary to transpose all writings one octave lower.

To avoid confusion in numberings: all triplet signs are notated <u>above</u> the triplet; and all valve positions are numbered <u>beneath</u> the note.

Harold Brasch

Additional copies of "The Euphonium and 4-valve Brasses" can be ordered from the author -- price = $9.95

3 - V A L V E L O W B R A S S E S

Unquestionably, the largest fraternity of wind instrument players in the world is the American school band program. This group is still increasing in unprecedented numbers. The recent addition of junior high school band programs and grade school band programs have excited instrument manufacturers the world over, and caused the importation of horns from 7 or 8 European countries as well as from the Orient. So many different manufacturers have sold their musical wares here, that it is virtually impossible to keep abreast of the obscure brand-names stamped on the bells. It is unfortunate that the basic scale is also unrecognizable on some of these imports. This is due in a measure, to mass production, to cheap labor, to lack of interest in an aesthetic product and to a gullible market which must stay within the bounds of a limited budget.

The Bb baritone is a very important member of all bands. In the U.S.A., most of these are owned by the school, since the instrument is too large to be carried to school and back home; most are 3-valved, as an economy measure and also to duplicate all trumpet fingering; and most are bell-front models. These bell-front models of brass instruments are a distinctive feature of American manufacturers. Nowhere else in the world are these found - much less be prevalent. The original, basic design of the upright model is considered old-fashioned in the U.S. In the final analysis, a bit of playing experience will prove the upright horn to be much more practical in many respects:

a) uprights are more compactly constructed.
b) the instrument case is smaller.
c) the tone of an upright model with a one-piece bell is superior than any detachable-bell baritone or bass.
d) a section of upright horns looks more uniform.
e) there are no slots or screws in the bell collar to become worn (the author participated in an inauguration parade, 1941, while with the U.S.Navy Band of Washington, D.C. All baritone players were instructed to carry the instruments with the left arm around the bell. One of the older baritones was too shop-worn for this risky handling, and the body of the horn was dropped at 7th & Penna. Ave. Being young and having quick reflexes, the baritone player retrieved the body of the horn after but one bounce.The horn received dents, of course, but the embarrassment was far worse.)

The tone quality of a baritone is determined by several factors. One of the most important is the bore. In England, the 2,500 competing brass bands have persisted for many years in including two different conical Bb's at the 8' pitch in their instrumentation. The smaller of the two is called the baritone (see photo on page 10).In the early days of banding in the U.S.,this instrument was known as the Bb tenor-horn. The second of the British brass band instruments is the euphonium, a large bore, mellow toned horn, which has gained much favor in the U.S. since 1940. At the present time, the English-bore euphonium is used exclusively in all our major service bands. The American-built baritone is intended as an all-purpose horn, having it's bore diameter between the two brass band horns. It is very functional, and serves well in the brass section of the military or concert band where there are so many tone colors.

For adequate tone quality, a baritone must be built with reasonable care; having no spaces or solder drops at the joints. The inside bore should be clean, but patinated. The mouth-piece must fit properly into the mouthpiece receiver, and must be of a comparable size. (Needless to say, a trombone

or baritone mouth-piece will NOT suffice for a euphonium). For best results, there should be no major dents. Last but not least, the tone quality is highly dependent upon the ability of the player (see chapter on "Requisites of the Soloist").

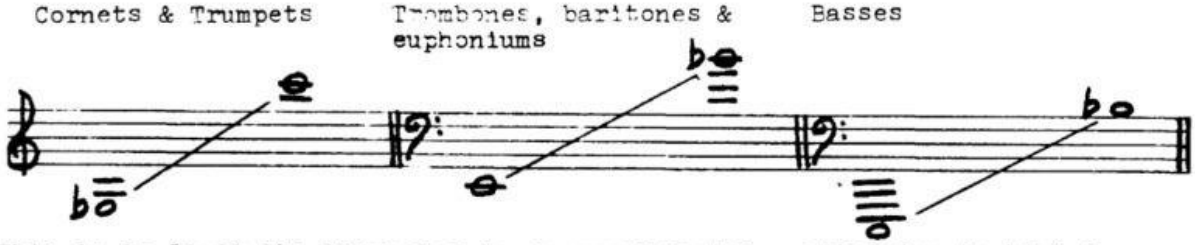
Baritones are either left-hand or right-hand, depending upon the direction to which the bell points. Thus, uprights are right-hand horns, necessitating vertical valves. The valves are depressed with the first three fingers of the right hand, and the weight of the instrument is chiefly held with the left arm, the horn resting on the upper part of the left leg.

Bell-front baritones are left-hand horns, necessitating horizontal valves. The valves are depressed with the first three fingers of the right hand, and the weight of the instrument is handled by the left hand, the horn resting on the upper part of the right leg.

Baritones, euphoniums and basses are described in our dictionaries as being bass instruments of the brass family. Since it is acknowledged by most performersof these instruments that the middle and low registers are all-important: it would be opportune to examine these registers with considerable emphasis. The low and middle registers are neglected in most instances, since the bulk of available study material concerns itself with the cornet, the trumpet and the trombone.

The instruments of the brass family are usually rated as having a range of 2½ octaves, as follows:

Ex.#1



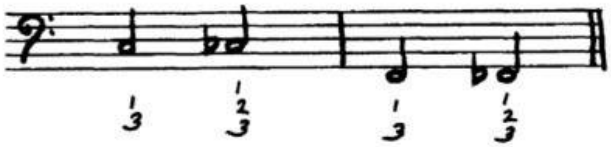
This is to limit the trumpeter to an upper register attaining to high-C; the trombonist to high-Bb; and the bass player to the Bb just above the bass-clef staff. In the low register, this 2½ octave limitation is to preclude the use of false tones and the pedal notes. Needless to say, proficient performers frequently exceed these limitations. The writer has personally heard the late Dr. Herbert L. Clarke produce a chromatic scale on the cornet from the low C downward to the pedal C. The writer also owns a recording of a cornet solo in which loud. clear tones are produced from the pedal C downward to the F (Eb concert). Long out-of-print, the disc is a 1908 Victor, #16088, "The Carnival of Venice", played by Bohumir Kryl.

Ex.#2 - Excerpt from Kryl's "Carnival of Venice".

The only correct evaluation as to range, therefore, would be that the brass instruments have no limit; but that each player is limited according to his ability. Also, since all of the brass instruments have a similar comparable range, identical valve positions, and all problems in common; it follows that all the attainments of the great cornetists or trumpeters can be emulated by artists of the euphonium or bass.

As to pitch, there are discrepancies which are readily noticed in the low register of all the large brass instruments having three valves, owing to the difficulty of forcing into pitch an air column of much greater length and mass, than is inherent on the cornet.

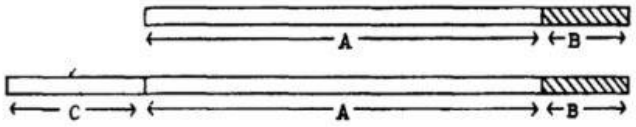
Ex.#3 - The four most faulty tones, as played with 3 valves:



In ordinary brass instruments the depression of the first, second or third piston respectively causes the natural air column to be lengthened sufficiently to flatten the pitch one tone, one semitone, and one tone and a half.

If the additional length "B", which represents the first valve, is sufficient to lower the pitch of the natural tube "A" one whole tone, then it is obvious that "B" will NOT be sufficient to lower the pitch of "A" PLUS "C" one tone. ("C" represents the third valve.)

Ex.#4



These sharp notes (Ex.#3 and Ex.#4), it is true, can be "lipped" into pitch, but the quality of tone suffers considerably. Because of this sharpness that results as the crooks are combined, manufacturers have sought for over a century to devise an adequate means of compensation.

An Early Compensating System.

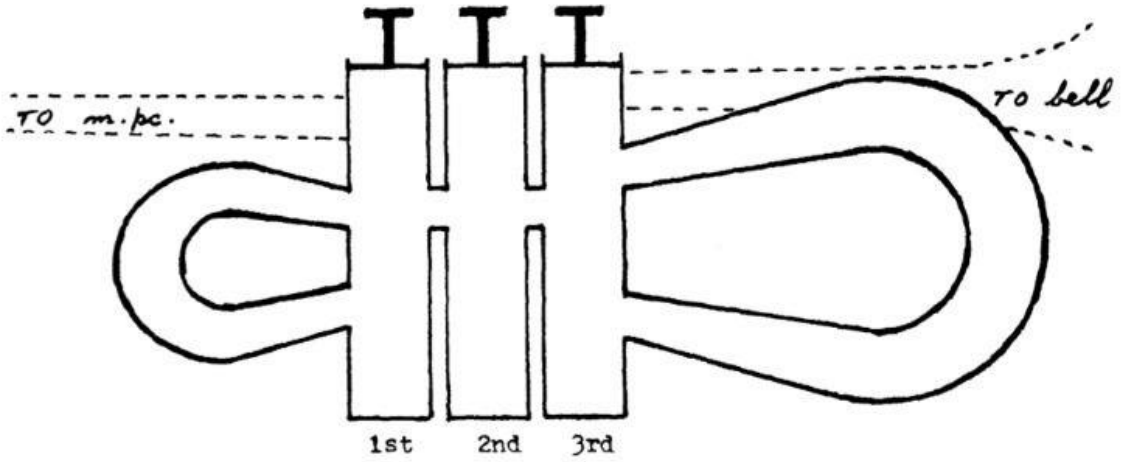
The diagram that follows is to illustrate an early model cornet of 1880 - 1910. The 1st valve crook and the 3rd valve crook are shown as having a slight flare at their extremities. This principle of pitch was well known to early manufacturers of brass instruments; that the 1st & 3rd combination would respond with a flatter pitch than the same length crooks of cylindrical tubing. The manufacture of early cornets using this system of compensation was discarded in favor of movable valve slides. Movable valve slides on the first crook, or on the third crook of cornets (occasionally on both) is still considered the most practical means of fine-tuning for the high brasses.

As late as the 1960's, a major manufacturing company, realizing the need for improved intonation in the low brasses, spent a fortune in the development of a baritone using this compensating system. Constructed according to known scientific principles, the instrument responded perfectly. It was not offered to the retail trade for several reasons:

a) manufacture of the instrument proved too expensive,
b) a water-key was necessary on each valve crook,
c) valve slides being non-existent, cleaning of crooks became impractical,
d) dents could not be removed by metal rods and balls.

The instrument was placed in the company museum, and this system of compensation was discarded in favor of the movable tuning slide.

Diagram #1



The Movable Tuning Slide.

The practicality of movable tuning slides on the low brasses was suggested by the acceptance of the movable valve slides on cornets and trumpets. There have been two styles available, depending upon the whim of the manufacturer.

The first, and obviously the most practical device, includes a flat handle firmly fastened to the cross-bar of the tuning slide. Since the slide moves freely and is spring-loaded to hold it in a neutral position - to push the handle downward is to extend the slide, flattening the pitch; to pull the handle upward is to shorten the slide, thus sharpening the pitch. The spring returns the slide to the neutral position automatically.

The alternate invention was designed to be a "short action system". The trigger mechanism is attached to a pivot or fulcrum - to push the trigger down shortens the slide length; to pull the trigger upward extends the main slide. This device is also spring-loaded and will automatically return to "neutral". Both devices are foolproof - it being easily understood that pitch is determined by the length uf the tube. The player must determine, however, whether to extend or shorten - and how far!

The Automatic Compensating System.

The basic principle of this ingenious system is additional short lengths of,

tubing which are automatically brought into operation when the first and/or second valves are used in conjunction with the third valve. This entails NO change of fingering, NO extra valves, NO extra work for the player - it is fully automatic. These extra lengths of tubing, attached to the first and second valves, form part of the additional length provided by the third or master valve. Thus they are inoperative when any valve is used singly, but are automatically thrown in when the first and/or second valves are combined with the master valve, three.

It is relatively simple to understand the function of a 1st valve: that to depress it is to add the length of the valve crook to the open horn. The 2nd valve, used independently, operates in a similar fashion. The accompanying diagrammatic pictures clearly show the air column when the third, or master valve, is depressed on a 3-valve compensator.

Diagram #2 -- 3rd valve depressed.

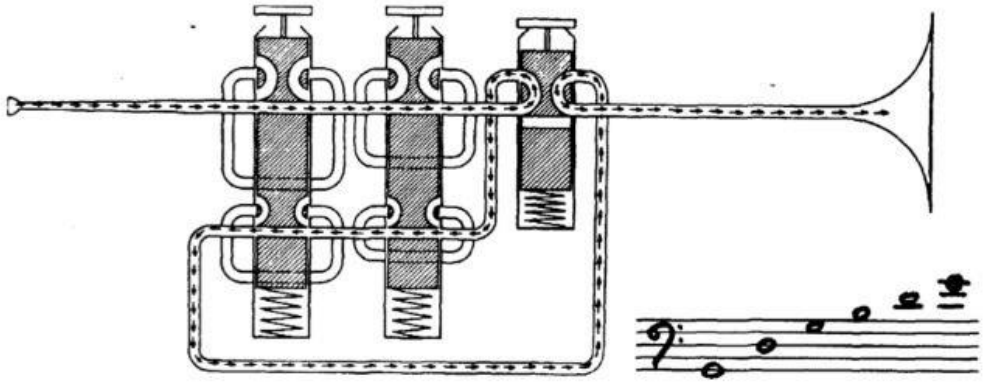
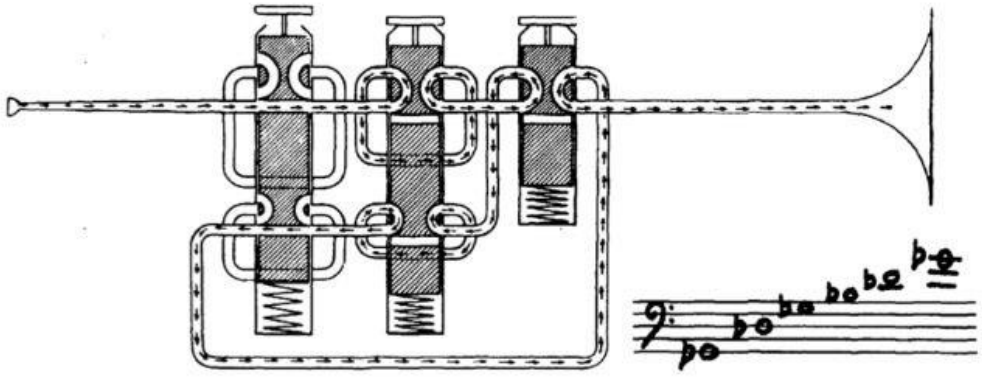


Diagram #3 -- 2nd & 3rd valves depressed.



It is apparent from these diagrams that to manufacture a valve with a compensating loop, the piston must necessarily have a greater length. However, this in no way increases the length of the <u>stroke</u>.

Diagram #4 -- 1st & 3rd valves depressed.

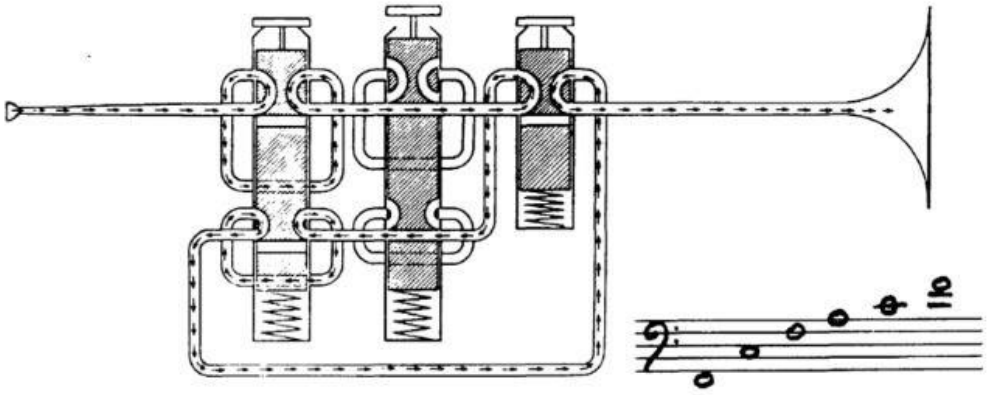
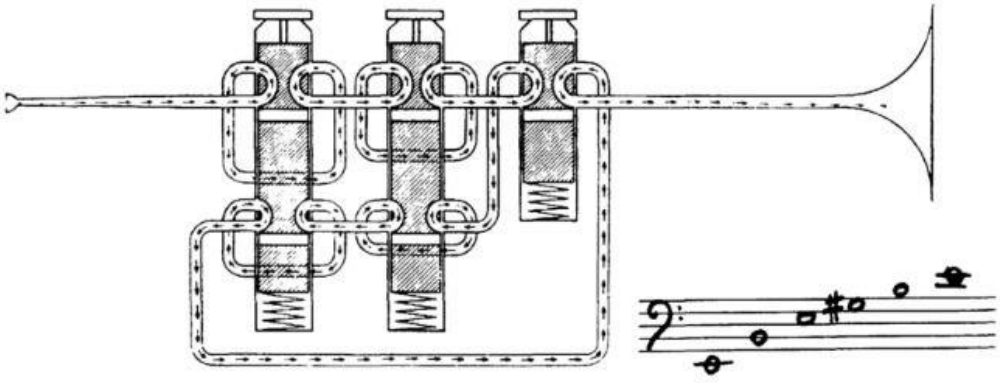


Diagram #5 -- 1st, 2nd & 3rd valves depressed.



Examination of the two photographs of 3 valve compensators, which appear on the next page, is now advantageous. These photographs clearly show the 3rd valve crook crossing over, and entering the 1st valve piston. In this way, the second passage through the valves is accomplished. The "double ports" between the valves is more clearly seen in the larger photographs that appear in a subsequent chapter.

Bb compensating baritone

3 valves

medium bore .515

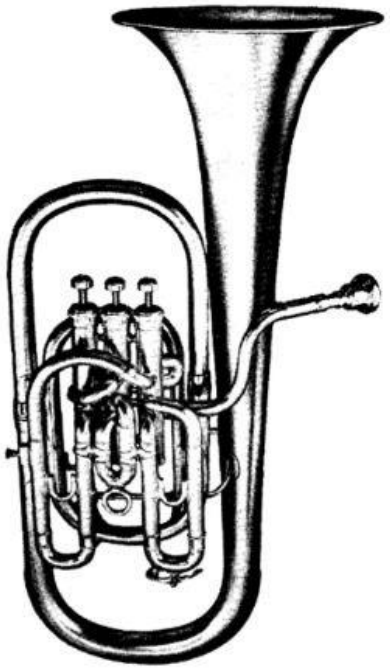
upright, one-piece bell

bell diameter 8 3/8"

weight 5lb. 6oz.

length of open horn 8'4"

(in the early days of banding in the U.S., this instrument was called a Bb tenor-horn)



BBb compensating tuba

3 valves

medium bore .7302

upright, one-piece bell

bell diameter 17"

weight 27lb. 8oz.

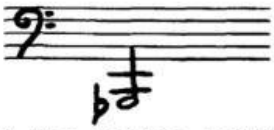
length of open horn 16' 8"

(also available as a 4 valve compensator)

FALSE TONES

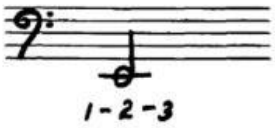
False tones are virtually non-existent to the average player. In many instances, the false tones are inadvertently sounded while attempting the first pedal notes; the student being unable to relax sufficiently to drop to the pedal register. Thus, the "in-between" sound is heard.

For the bass-clef baritone or euphonium, the pedal Bb is sounded with all valves open, and is known as the fundamental tone of the instrument.



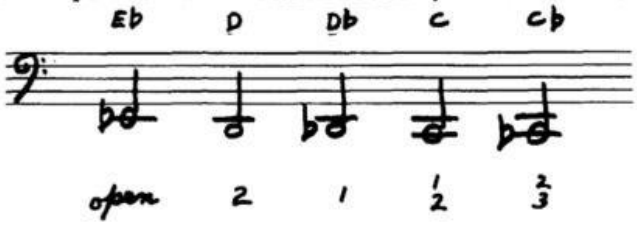
Pedal Bb

With the aid of all the tubing built into the horn (1st, 2nd and 3rd valves depressed), the next tone upward will be E.



Lowest tone of normal 2½ octave compass, E

The five chromatic steps between the aforementioned two tones appear to be entirely missing to most players, and are never considered to be a part of the normal range of 3-valved horns. However, they can be produced as FALSE TONES, as follows:

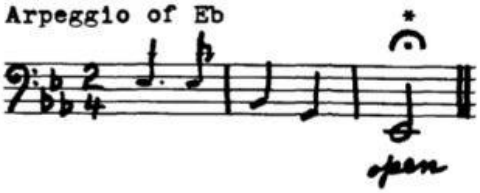


If these five false tones are sounded, the quality of tone will be weak, the intonation will suffer; and indeed, the sounds will seem to be without foundation. It must be emphasized that they are seldom used, except by the most able professionals. The writer has heard false tones produced on cornet, trombone, euphonium and bass; usually within cadenzas, or during practice periods.

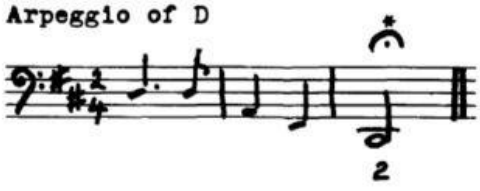
The following examples, arpeggios in the low range, illustrate the usage of these five tones. To avoid any risk of misinterpretation:

a) each false tone is designated with an asterisk (*),
b) each pedal note is so described,
c) all remaining notes, having neither designation, are within the normal range.

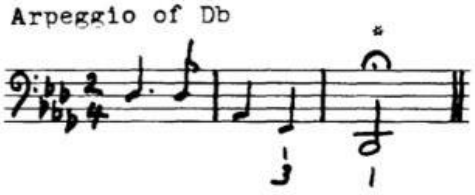
Arpeggio of Eb



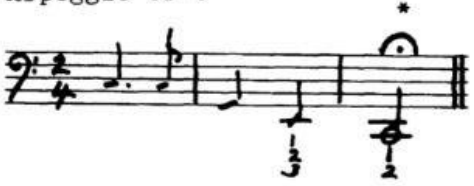
Arpeggio of D



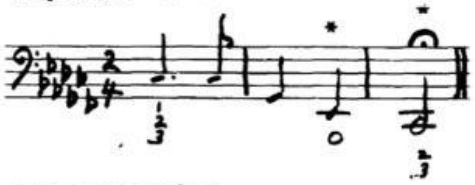
Arpeggio of Db



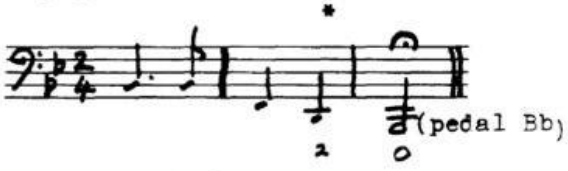
Arpeggio of C



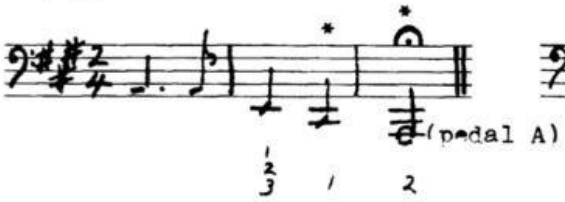
Arpeggio of Cb



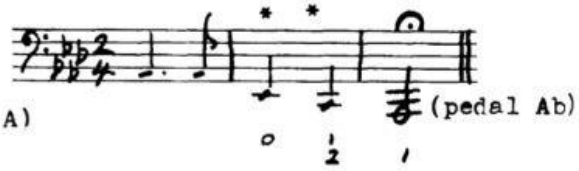
Arpeggio of Bb



Arpeggio of A



Arpeggio of Ab



The following etude includes false tones. It is applicable only to 3-valve baritones, euphoniums and basses. Students playing 4-valve instruments should NOT strive to master false tones, but should become proficient at playing these notes in the low register with the correct fingering.

Slowly and deliberately