TEACHING THE FRENCH HORN

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By

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INTRODUCTION

Many persons, engaged in music activities, have been concerned with the history and development of the musical instrument known as the French horn. The title of this thesis indicates that the history of the French horn is not the principal subject of the work. The purpose of this thesis is to present technical detail concerning the construction of the double French horn, data concerning the literature written for this instrument, and, the problems related to the teaching of the French horn.

A clear understanding of how the French horn is constructed and why it has been combined into a double instrument should be of interest to the modern teacher and performer.

The horn has been developed to its present state to make possible the performance of complex music written by the modern composer. Over a period of nearly two hundred years the horn has had to progress with the trends of musical composition. The variety of styles and uses from Mozart's time through the innovations of Richard Wagner and including

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1. The French horn is commonly known as the "horn" and will be referred to by that name in this thesis.
the extraordinary demands of present-day composers gives a brief picture of the growth in complexity. Present-day composers are little concerned with the difficulty of performance. It is true, as examples cited will prove, that even today composers use particular devices which are typical of horn writing. Since the present-day performers have developed the art of horn playing to a high degree, aided by the valve mechanism and the construction of the double horn, the composer does not feel the strong limitations that may have been present in the past.

As the horn has grown in complexity, so have the problems of the teacher and the student. Chapter I is a discussion of the construction of the French horn. The mechanical structure and resulting pitch sounds available on various types of horns are discussed. In the second chapter compositional devices of several contemporary composers are referred to and serve as a basis on which to discuss certain typical uses of the horn.

The third chapter presents problems of teaching the horn which were determined by the results of a questionnaire answered by music directors of the public school system.

The final chapter draws certain conclusions which it is hoped will aid the horn teacher.
CHAPTER I

THE CONSTRUCTION OF THE FRENCH HORN

The double horn as we know it today is the result of the demand put upon the horn section by the composers of the last half of the previous century.

Until the invention of the valve system in 1815, the horn had functioned in the orchestra as an instrument with only one fundamental and the overtones available from that pitch. The "crooks" or extra slides that came into use in the early eighteenth century did permit the performer to play in all of the known keys, but did not allow for rapid shifts of key.

With the invention of the valve horn, it was possible for the performer to effect immediate changes. Composers were somewhat slow in adopting this innovation; but, by the middle of the nineteenth century, Richard Wagner was exploiting the full possibilities of the valved brass instruments. In the opera *Lohengrin*, Act II, scene I, Wagner has written passages for the horn which are impossible to perform except on an instrument with valves.
Among the many possibilities of un-keyed horns it was found that the medium horn pitched in F or G was the more suitable instrument for general orchestral performance. The horn generally used was a three-valve instrument pitched in F. Some players, however, felt the need of a shorter-tubed instrument that would eliminate the uncertainty in the playing of high pitches on this F horn.

Just before the beginning of the present century, some valve horns were constructed in Bb alto. This Bb horn was used for the purpose of producing tones in the upper register with greater ease. The objections to this horn were; first, the poor tone quality in the lower register and the fact that the music was commonly written for the F horn. A performer then had to transpose the written notes down a perfect fourth to execute the pitch desired.

Following this experiment was an attempt to combine the F horn and the Bb horn. This was an effort to maintain the good tone of the F horn in the middle register and make the upper register more available on the Bb horn. Dr. Birchard Coar has this information in his published book on the French horns.
"Available facts concerning the history of the double horn are scarce. Through the courtesy of Mr. Max Pottag, of the Chicago Symphony Orchestra, the following authentic and valuable information was obtained. 'In 1899, while studying with Gumbert in Leipzig, he told me that at that time his nephew (a Gumbert) was with the instrument maker Kruspe working with and completing the first double horn, which was put into production and marketed about 1900 or 1901.'"  

The majority of double horns in use in the United States are pitched in F and B♭. When these two horns are combined, it is only necessary to have one bell and one mouthpiece. The thumb key (or valve) that is present on the double horn makes possible a quick change to the desired tubing.

The manner in which the horn is constructed will give the following pitches on the open F horn. (Ex. I) (The pitches of the 11th and 13th partials are notated in brackets since neither are in tune.)

Example 1.  

2. Richard Coar, The French Horn, 1947, p-79
When the thumb is depressed on the double horn, the following pitches (notated in F transposition) are available to the open Bb horn.

Example 2.

In comparing Ex. 2. to Ex. 1, it is evident that the pitch difference is a perfect fourth above that of the open harmonic series of the F horn.

It is possible to see the outcome of the addition of three valves to the double horn. Each valve by itself or in combination with another valve will produce a new harmonic series. The effect that each valve will have upon the horn is in proportion to the additional tubing that is added by the depressing of a valve or combination of valves.

If all the harmonic series are notated upon the staff, it is possible to see the many different ways to produce a desired pitch on the double Bb and F horn. The following pitch can be produced in this manner. (Ex. 3)
Example 3.

F horn

On the F horn

Open (9th harmonic).
1st valve (10th harmonic).
1st and 3rd valves (12th harmonic).

On the Bb horn

1st and 2nd valves.
3rd valve (7th harmonic).

The first pitch given in Ex. 1, of the open F harmonic series, is C. By adding a valve or combination of valves, the pitch of the F horn is lowered in proportion to the amount of tubing that is added. The largest section of tubing that it is possible to add is the combination of all three valves. Since the second available pitch is the C octave above the 1st given pitch in Ex. 1, it is possible to apply each valve and valve combination until the lowest harmonic series is reached. This harmonic series begins on a written F♯. This F♯ is as far as the F horn or any three-valve mechanism can descend in a chromatic order. At this point, the Bb horn (with the use of its pedal tones) can provide the pitches that are necessary to the performer.
It may help one to remember that there is a distance of one octave between the fundamental and first overtone of a harmonic series. By having two horns built together and pitched a perfect fourth apart, it is possible to play the entire chromatic scale between the first two pitches of the open F horn harmonic series. This can only be done with the aid of the "pedal tones" of the Bb horn. Due to the size of the mouth-piece and tubing of the F horn, it is impossible to produce the pedal tones of the F horn. This may explain why there are pitches written for the fourth horn in the orchestra that the player would not be able to produce if he had a single F horn or a single Bb horn.

Example 4 shows these available low tones.

Example 4.

\[ \text{Pitches available on the F horn.} \]

\[ \text{Pitches available on the Bb horn. (Pedal tones)} \]
The material used in the construction of the horn is of great importance to the player. Many different types of horns are built today. The Conn Company in Elkhart, Indiana makes a silver horn (6D) and also a brass horn (6D). These horns are available either lacquered or unlaquered.

Mr. Ted Evans, horn instructor at the University of Michigan, has expressed himself on the subject of materials used to construct the horns.

"It is apparent that the metal used in making the instruments themselves has an effect on the tone quality and the ease with which the tone is produced. Instruments made exactly alike in bore and construction produce a different tone quality when made of yellow brass, red brass, or German silver. It even seems that a different sound results from the same alloy when it is smelted in different parts of the world."

One may compare the metal used for the mouthpiece with that of the horn itself. Mr. Evans states that of all the various metals used in the manufacture of mouthpieces, brass, sterling silver, and German silver are the most popular. He found a consensus of opinion that the German silver will form a better mouthpiece than any of the other metals; and also, that a rich and "less brassy" quality of tone is produced with the aid of this type metal.

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3 Ted Evans, "Materials for Mouthpieces", The Instrumentalist, November-December, 1952, p.40
The horn players in the modern symphony orchestra all have different ideas as to what type horn or mouthpiece should be used by the performer. Many of our leading horn performers will state that the finest tone is produced on "hand-Made" nonlacquered brass instruments, while others will prefer the German silver.

Before concluding this discussion, reference must be made to an existing experiment concerning the effect of material on the tone quality of brass instruments.

"Upon investigation, it was found that the metal [of a brass cornet] is actually forced to vibrate at the same frequency as the air column . . .

"The data show that in the cornet studied, the sound arising from the walls of the instrument is completely masked by the sound originating from the air column. This indicates that the shape of the walls is much more significant in the effect on the tone of a cornet than the material of which the instrument is made."Ja

Further proof for this conclusion was gained by constructing a pottery plaster cornet model where the walls of the tube were two to three inches thick thus eliminating the possibility of wall vibration.

CHAPTER II

CONTEMPORARY COMPOSERS' USE OF THE FRENCH HORN

The title of this chapter may suggest to the reader a number of incidents in his listening experience where the horn plays an entirely different role in the scores of different composers. A study of the scores of present-day composers show that they have made use of the horns in the following manner:

1. Horns as chordal instruments.
2. Horns as melodic instruments.
3. Horns used to produce special effects.

HORNS AS CHORDAL INSTRUMENTS

1. Horns placed between the trombones and trumpets in block chord formation.
2. Trumpets and trombones in octaves playing the melody, with horns playing a harmony part between.
3. Horns interlaced with trumpets and (or) trombones.
4. Horns interlaced with woodwinds or string ensemble.
5. One horn used as an inner voice of either the woodwind or string ensemble.
HORNS AS MELODIC INSTRUMENTS

1. One octave below the flute, oboe and clarinet. (The horn and oboe make a very effective blend. The horn will round out the tone of the oboe, and the oboe will strengthen the horn tone.)
2. One horn or horns in unison on a counter melody.
3. The horn doubling the melody with the first violins or 'celli.
4. Horns in unison or unison octave with other brass.

HORNS USED TO PRODUCE SPECIAL EFFECTS

1. The sustained tone that begins with an abrupt sound.
2. Horns used as rhythmic instruments. (after-beats)
3. Horns muted. (either one-half mute or full mute)
4. Horns used in conjunction with the saxophone or bassoon to produce a complete "horn section" effect. (This manner of writing is effective when only one or two horns are available.)
5. Composers tend to use only one horn if a strong "cutting" effect is desired. More than one horn will produce a more massive and less brilliant effect.

Anton Horner has an interesting statement regarding the present use of the double horn by modern composers:
"Contemporary music in my day was that of Sibelius and Strauss, both of whom wrote melodically and knew how to write for the horn. So much of the music being written today, and which is becoming an ever greater part of the repertoire, is written for horn as though it were the third finger of a pianist's left hand or a percussion mallet. I must admit that modern music is more difficult to play on the double horn, but then I don’t know how it can be called music either."

Before a comparison could be made of the present-day composers' use of the horn, it seems imperative to find a sufficient number of contemporary scores that will show how the horn is handled by each composer in attaining a similar effect. At this point some difficulties will arise. It is fairly easy to find a melodic horn passage by one composer and compare it to a similar passage by another writer, but the purpose for each composer's writing a particular melodic passage at that given time and for that particular composition may be entirely different.

To make a just comparison of how each composer may write for the horn, musical writings by ten contemporary composers whose intentions were the same have been chosen. Their original purpose will be explained by the following quotations:

"Eugene Goossens decided in 1942 to experiment at his Cincinnati concerts in the vein of patriotic fanfares. He had previously had success at his concerts of contemporary music at Queen's Hall, London, in 1921 with works of the same nature. The publishing of these fanfares by Boosey and Hawkes, Inc., is limited to those fanfares containing display of the brass and percussion section." 3

2. James Collie, "An Interview with Anton Horner", Symphony, November, 1951, pp. 7-8
3. Introduction, Ten Fanfares for Brass and Percussion, p. 2
PANFARE FOR THE MERCHANT MARINE

(*108*)

Eugene Gossens

meas. 1.5.

Giocoso

Solo

Horns 1.2.3.4.

simile

Vivace (*130*)

meas. 22-23.

FANFARE FOR THE SIGNAL CORPS

Allegro Moderato

Howard Hanson

Horns 1.2.

3.4.
FANFARE FOR THE FIGHTING FRENCH

(q = 88)

meas. 1-5

Walter Piston

Horns 1.2.

Horns 3.4.

etc.
A very noticeable difference exists in the treatment of the horns by these different composers. Henry Cowell, Anis Fuleihan and Dennis Taylor chose the melodic use of the horn section in comparison to the "fanfarish" notations of Paul Creston, Howard Hanson, Walter Piston and Eugene Goossens. Aaron Copland has written in a combination of these styles that may be considered both melodic and fanfare in nature. The common effect of four horns in unison is used by most of the composers, and the tradition of 1st and 3rd horns on the higher part is applied in most of the presented passages.

The invention of the double horn around the turn of the century has without doubt affected the writings of present-day composers. Igor Stravinsky has written horn passages in his "The Rite of Spring" and "The Fire Bird Suite" that might not have been notated in this manner if horn players had used only single F horns. It may prove interesting to the reader to see the actual use that was made of the horns in the "Fire Bird Suite" by Igor Stravinsky.
L'oiseau de Feu (The Fire Bird)
Igor Stravinsky

Solo
Horn 1.

Ronde des princesses

Example 2. meas. 11-14
Horns 3, 4

Danse infernale du roi Kastchei
Example 3. meas. 69-72

Example 4.

Allegro non-troppo
Horns 1.2.3.4.

Example 5. meas. 249-252

Horns 1.2.

Horns 3.4.

etc
L'oiseau de Feu (The Fire Bird)

Example 1. The 1st horn is used as a melodic instrument.

Example 2. Horns used in octaves. The notations for the 4th horn are rhythmic afterbeats on the same pitch as the second horn.

Example 3. The 1st horn part progresses to the extreme upper register.

Example 4. The horns are used in a scale-like manner. The tempo (\( \pi = 208 \)) of this passage makes the performance very difficult.

Example 5. The 1st and 3rd horns sustain the high pitch while the 2nd and 4th horns produce a trill on lower pitches.
It may be noticed that the writings for the horn in 1910 (The Fire Bird Suite) and today's use of the horn by contemporary composers may not be comparable since Stravinsky was considered to be in advance of the times.

One inference that the reader may draw from this material is that the development of the horn has been, to some extent, the result of the demands of composers. If the horn players of today still made use of the single F horn in our symphonic orchestras and bands, the composers of today might not be writing for the horn in the manner that they are now employing. One only needs to attend a good movie to hear effects that are very stirring. The horn is also used effectively in many of the leading dance bands of the present day. It is also probable that all of the aspects of the horn have not been explored.
CHAPTER III

TECHNIQUES OF TEACHING THE FRENCH HORN

There are many reasons why the horn is known as the most complicated of all the brass instruments. The student or performer is expected to function under more difficult conditions than those which exist for the other brass instruments. The necessity for transposing is one of those conditions. Publishers are still printing music in transpositions other than F. The player must transpose the written tones to compensate for the change of pitch that occurs when the instrument is muffed by hand. The player is expected to produce an acceptable tone on a very long and narrow-bore tubing that begins with a thin-rim mouthpiece. The player is also required to know the fingering of two instruments when performing on the double horn.

The results of a questionnaire that was presented to band and orchestra directors of the public school systems in Ohio and surrounding states will be found on the following page. This questionnaire was designed to cover the common situations that are faced by the instrumental music teacher in his instruction of horn students.
TEACHING THE FRENCH HORN

1. The change from the F section to the Bb section of double horn:
   a. depends upon the musical passage.  
      1
   b. should occur around the second line of the treble staff.  
      2
   c. is not understood by this teacher.  
      4
   d. should not occur at all.  
      1

2. The mouthpiece of the French horn should be placed:
   a. two-thirds on the upper lip and one-third on the lower lip.  
      4
   b. two-thirds on the lower lip and one-third on the upper lip.  
      2
   c. one-half on the upper lip and one-half on the lower lip.  
      2

3. The best way to remember the fingering of the double horn is to:
   a. think of the upper octave trumpet fingering.  
      5
   b. remember that the horn fingering is the same as baritone fingering.  
      2
   c. not relate this instrument to the fingering of the other brasses.  
      1

4. When the horn is completely muted, a student must transpose the written part:
   a. one-half step lower.  
      4
   b. one-half step higher.  
      3
   c. one whole step higher.  
      1
5. When a double horn is available to the beginner, it is best to start the instruction on:
   a. the Bb section.  
      1  
   b. the F section.  
      6  
   c. both sections concurrently.  
      1  

6. A simple description of the French horn embouchure is:
   a. the lips stretched to a "smile" position.  
      1  
   b. an extreme puckering of the lips.  
      7  
   c. the combination of the "pucker" and "smile" position.  
      0  

7. When French horns are not available, the most satisfactory pre-horn instrument is the:
   a. alto horn or mellophone.  
      4  
   b. trumpet.  
      3  
   c. baritone.  
      1  

8. The correct way to attack this pitch on the French horn is to place the tongue:
   F horn  
   a. against the teeth.  
      3  
   b. in back of the teeth.  
      2  
   c. between the teeth.  
      3
THE CHANGE FROM THE F SECTION TO THE Bb SECTION OF THE DOUBLE HORN

A glance at the first question and the difference of opinion exhibited by the answers of these teachers justifies the need to investigate the data available in the literature about the horn. Mr. Max Pottag, faculty member of the Northwestern University School of Music, has stated the following:

"The player can switch from one horn to the other anywhere in this range.

horn in F

Most players, however, when ascending change at G♯ or A, provided the tone quality of the Bb horn matches that of the F horn. If there is a noticeable difference, it is advisable to delay the change until the G♯." 6

Dr. Birchard Coar7 recommends the change in horns to be made in this manner as the performer plays this passage from the Strauss Horn Concerto:

horn in F

6. Max Pottag, "Development of Good French Horn Players", The Instrumentalist, March-April, 1953, pp. 64-65

At the tempo required for this particular passage of the Strauss Horn Concerto, a student at any level of training will have difficulty in making the recommended horn change in the second measure of this passage. Anton Horner has the following to say on this subject:

"In the old days, we thought entirely in terms of tone, I used the Bb horn only in the upper register and insisted that my pupils do the same for the sole reason that the tone is not as mellow and of as good quality in the middle and lower registers." 8

Dr. Coar has more to say concerning the change from one horn to the other:

"Some who have had much experience with this particular instrument may prefer at times to play down as low as

\[
\begin{align*}
\text{horn in } F
\end{align*}
\]

or even lower on the Bb horn. In the playing of certain arpeggio passages this practice is justified since a change back to the F horn might entail a certain awkwardness in fingerings which would lead to inartistic playing." 9

The answers received to the questionnaire presented to the music teachers show that one half are not sure of the correct place to make the change from one horn to the other and the remaining half are divided in their opinion.

9. Birchard Coar, op. cit., p. 81
MOUTHPIECE PLACEMENT

Mr. Pottag has the following to say concerning mouthpiece placement:

"The mouthpiece should rest on the lip so that it is two-thirds on the upper lip and one-third on the lower." 10

Mr. Pottag also states:

"To produce a free open and beautiful tone quality, blow a steady stream of air straight through the horn, holding the note as long as possible." 11

The objection to this theory is that once the embouchure is covered by a mouthpiece that is located two-thirds upon the upper lip, a player will find it impossible to blow a stream of air straight through the horn. Several artist teachers agree to this method of placement of the mouthpiece. They also agree that nothing must interrupt this stream of air as it flows into the mouthpiece.

It is common knowledge among fine brass players that when the surface of the mouthpiece is unevenly distributed upon the lips, the range of the performer will be affected.

10. Max Pottag, op. cit., p. 26
11. Ibid., p. 27
To quote again from Dr. Coar:

"It is generally agreed among teachers of the horn that about two-thirds of the mouthpiece should be covered up by the upper lip and the remaining third by the lower, which is the most sensible and practical procedure. There are some who prefer to bring the rim of the mouthpiece into the red of the upper lip, claiming that it makes the low notes come more easily but artist-teachers do not at present recommend this method." 12

The statements that are made in the following chapter will show the importance of the embouchure as an element of preparing the student to play successfully in all registers. In the results obtained by the questionnaire, there is not a common agreement on this problem. It is interesting to note, however, that half of the group questioned preferred the method reported by Dr. Coar.

FINGERING THE DOUBLE HORN

A method of remembering the fingering of the double horn is not as important as the actual conflicts in mouthpiece placement and changing from one horn to the other. The questionnaire results show that the public school band director may try to connect the fingering of the horn to the trumpet or some other brass instrument.

12. Birchard Coar, op. cit., p. 34
Mr. Traugott Rohner has this suggestion to make as a sure basis of remembering the horn fingering:

"The pitch of the Bb horn is the same as that of the Bb baritone or trombone, and the harmonic series are identical. This places the second harmonic or open tone as Bb (second line bass clef). Thus one can think of the Bb horn fingerings as the same as those of the baritone." 13

The problems encountered by the professional horn player may differ from those experienced by the public school band director. The professional horn player is definitely set on the methods that will work best for him and function properly on his own particular instrument. The band director or music director of the public schools is faced with the varieties of horns constructed by different manufacturers. This may result in the teacher finding certain problems on one horn that may not be present on another.

Such problems as: muting, tongue placement for attack, embouchure position, or the problem of deciding what instrument will function best as a pre-horn instrument. These are not major problems to the performer who is participating in a band or orchestra.

13. Traugott Rohner, "Fingering the Brasses", The Instrumentalist, March-April, 1953, p. 36
The answers received from the music teachers' questionnaire show a variety of opinion, and sometimes opposed beliefs among the teachers themselves.

MUTING THE HORN

The professional horn player has access to a system of muting that will satisfy the orchestral or band director. Muting as a rule becomes a problem when placed in the hands of performers who do not understand the effect the hand has on the fundamental pitch of the horn. If the hand is small the bell opening of the horn cannot be closed sufficiently to produce a true "stopped-horn" tone quality. This is one of the misleading steps in the development of the theory that the horn pitch is lowered when the hand is placed in the bell in a full-mute position.

Further study of the results of the questionnaire that was presented to the public school music teacher, will show that there is not a great variety of opinion concerning the register in which preliminary teaching of the double horn should be started. The average practice is to start the student on the F section, according to the beliefs of the questioned music teachers.
There seems to be a common agreement as to the type of embouchure required for the playing of the horn. The public school band director believes that the contracted position of the lips is the proper arrangement of the embouchure.

PRE-HORN INSTRUMENT STUDY

Question seven of the questionnaire was included to determine which instrument had proven satisfactory for study previous to beginning study of the French horn. It is known that some horn players do not begin their instrumental study playing the horn. Max Pottag says:

"Although a beginner can be started on the horn, a cornet or trumpet student can usually progress more rapidly, for he has already acquired basic knowledge of music and of the brass family."\(^4\)

A similar view is expressed by Dr. Bircher Coar:

"Some advocate the starting of beginners on the common Alto horn in F since it is a much simpler instrument. It is the same pitch and voice as the French horn in F, but being an instrument of the single tube variety it lacks the complete lower octave of the horn. Several years of experience has taught the writer that this approach is practical and much can be said in its favor if good teaching has been accomplished on the Alto in F.\(^5\)

\(^4\) Max Pottag, op. cit., p. 26
\(^5\) Bircher Coar, op. cit., p. 83
The results obtained in the answers to question seven indicate that public school music teachers are in agreement that, more often, students who have played alto or mellophones are switched to French horn.

**TONGUE PLACEMENT FOR ATTACK**

A specific pitch (second line 0) was entered in the question that deals with tongue placement. Again we have a difference of ideas among the music teachers that may not exist in the professional world. In the middle register, the professional horn teachers advise a constant reminder to the student that the tongue does not touch the teeth on attack. The controversy that exists in the public school may be related to the fact that many teachers try to associate the tongue movement used when playing the horn with the tongue movement used when playing other brass instruments.

In conclusion, this chapter has presented some of the problems of horn teaching as they exist in both the professional world and in the public schools.
CHAPTER IV

SOLUTIONS TO THE PROBLEMS RELATED TO
TEACHING THE FRENCH HORN

The Bb section of the double horn may be used successfully by the player throughout the entire register. When a player states that he is using the Bb section for the performance of most of the horn literature, he will immediately be accused of performing on the horn in an unmusical manner.

Many teachers, conductors and players believe that the tone of the Bb section of the double horn is not acceptable in the middle and lower registers. The horn player is aware of the intonation difficulties that exist in the middle and low registers of the Bb section of the double horn.

For the Brass Pedagogy class, School of Music, Ohio State University, summer of 1952, the various double and single horns were demonstrated. Thirty band directors of the public school systems in and around Ohio were in attendance. The object of this class demonstration was to exhibit the difference in the tone quality of horns of different construction. The French horns represented were a Bb single (American manufactured), a double French horn
pitched in Bb and F (American manufactured), a single F horn (German manufactured), a single F horn (American manufactured), and a single horn pitched in Bb and A (German manufactured). 16

All of the previous mentioned horns were played by the same player and the melody employed covered the middle register of the instrument.

horn in F

The outcome of this demonstration was of surprise to all the members of the class.

The participants were not asked to determine which horn was being played by the performer but they were asked to vote for the tone most likely to be accepted as a "true horn sound".

<table>
<thead>
<tr>
<th>HORN PLAYED</th>
<th>VOTES RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bb Single (American)</td>
<td>0</td>
</tr>
<tr>
<td>Bb and A (German)</td>
<td>2</td>
</tr>
<tr>
<td>F Single (American)</td>
<td>3</td>
</tr>
</tbody>
</table>

16. Many teachers and professional performers will admit that French horns made in Europe have a slightly different tone quality due to the metal used in their construction.
F Single (German) 7
Bb and F (American) 18
(Bb section only)

As it can readily be seen, the Bb section of the double horn was chosen by the class as a "true horn sound". It should be stated that the performer tried to produce an acceptable tone on all horns employed and was familiar with the problems that each horn presented. From playing and teaching experience of the author the Bb section of the double horn has been successfully employed throughout the complete register.

TONE QUALITY

One of the main objections to the use of the Bb section of the double horn is that the tone quality in the middle and lower register is more coarse in sound. It is more difficult to produce the round mellow tone that is possible on the F horn section in this same register.

To the performer who is accustomed to playing the F horn in the middle and lower registers and the Bb in the upper, the first attempt at producing an acceptable tone on the Bb section in the middle register will probably be very disappointing. One of the requirements for the production of an acceptable tone on the horn is equal distribution of lip surface on the mouthpiece.
MOUTHPIECE PLACEMENT

In the previous chapter, it was stated that professional horn teachers or performers recommend two-thirds of the mouthpiece rim to be placed on the upper lip. The lips of the horn player serve the same purpose as the reed of the oboe. The reed of the oboe would not respond correctly if the lower half were not in proportion to the upper half. A similar situation exists in the embouchure of the horn. This writer has had students who did not possess an acceptable tone but were willing to make a slight adjustment of the mouthpiece upon the lips. As the vibrating surface of the lips becomes more equal in distribution within the mouthpiece, the tone approaches the stage of being pure in sound and less disturbed by the quality (buzz-like) that may have existed previously.

CONTROL OF EMBouchure

It has been found that the control of the middle and lower register becomes much easier with the prescribed lip-distribution. As a student plays the pitch $G_\#$ the teacher may play a corresponding chord on the piano with the pedal depressed. This will give harmonic support to the tone and give the student a chance to experiment with tone quality.
The student will find that by contracting and expanding the corners of the mouth, a different sound is heard from the horn. As the "smile" or "stretch" is applied, the tone will become thin in quality. The opposite is obtained by the contracting of the lips into a near "pucker" position. The opening of the lips that permits the escape of the air stream is closer to a round position. The tone quality becomes very round and the intonation becomes more flexible. The student can feel that the tone seems to absorb the entire space of the average room. The student can experiment with tone quality until the best position of contraction or expansion is located. The concept of tone will enter at this point because the performer must be able to recognize an acceptable tone.

This system of acquiring an acceptable tone will differ with the pitch desired by the performer. Brass players will admit the fact that it is impossible to play octave slurs without some physical change of the embouchure. As the player descends from the upper register into the lower, in a scale-like manner, contraction of the embouchure will be in proportion to the lowering of pitch. Regardless of what section, (F or Bb) of the double horn the student is playing or what musical passage is being performed, the ear is the guide to both tone quality and intonation.
The instrument which the performer is using will have a great effect upon the performance. This writer has found that horn players of today are gradually getting away from the old European hand-made horns. The young professional of today prefers an American-made horn which has been scientifically designed to overcome many of the intonation problems.

THE F HORN SECTION OF THE DOUBLE HORN

The F horn section of the double horn is not to be put aside because of the recommended over-all playing of the Bb section. The F horn plays a very important part in its addition of resonance to the double horn. One may take a single Bb horn and add plain tubing in a fixed manner that will vibrate with the remainder of the horn. As each new section of tubing is added to the single horn, the tone quality becomes more round and mellow in quality. An experiment of the same nature may be conducted by the horn player by removing all of the slides of the F horn and then observing the difference in tone quality.

MUTING

A second need of the F horn occurs in the muting of the double horn. If the "full mute", with the use of the
hand, is attempted in the middle register, the player will find the Bb section very sharp in reference to a standard pitch. The F horn section is much closer to the pitch desired in the middle register. In reference to the controversy concerning muting which is described in the previous chapter, a suggestion can be made which will eliminate the confusion of transposition while attempting the full "hand mute". When the hand is placed firmly in the opening of the bell of the horn, we find that the length of horn tubing has been shortened by approximately six inches. The pitch of the horn will be approximately one semitone higher and will necessitate the performers transposing down a semitone to produce the desired pitch.

The third role that the F horn must play for the double horn player is to provide the lower tones which are not available on the Bb horn. As can be seen from the fingering chart below, the Bb horn cannot produce the tones between low F and B. These tones are available on the F horn and are necessary to the performance of many compositions today.

(See chart on next page.)
FINGERING OF THE DOUBLE HORN

F Horn: \[ \frac{1}{3} 3 2 1 \]
Bb Horn: \[ \frac{1}{3} 3 2 1 2 0\]

F Horn: \[ \frac{1}{3} 3 2 1 2 0 1 \]
Bb Horn: \[ \frac{1}{3} 3 2 1 2 0 1 2 0\]
FINGERING

If a brass teacher understands the overtone series of any of the members of the brass family, he can work out the fingerings for the horn or any of the valved brass instruments. The fingering chart that is presented for the horn may vary on some tones due to the construction of the instrument. The student may find that a particular pitch may be produced with more ease and better intonation by the use of alternate, sometimes called "false", fingerings.

One of the services performed by the F horn is the excellent training that it provides the beginner. Even though the beginning student finds that the tone quality of the F horn is pleasant in sound, he is faced with the same problem that is common to the professional performer, "the attack". This problem has been of great importance to the performer in the past. Due to the length of tubing of the F horn, considerable care must be given to the attack of all pitches on this instrument. Horn players will admit the fact that a more secure attack can be produced on the Eb horn.

It was stated in the previous chapter that the tongue should not touch the teeth in preparation for the attack. There are many players who start the attack with the tongue
placed between the teeth. The placement of the tongue against the teeth for the attack is also practiced by horn players. This writer is under the belief that the most satisfactory attack is produced with the tongue placed behind the teeth. The embouchure that is required for the horn forces the lips into a contracted position. The most natural sound that is produced when the lips are in this position is the syllable "too". As the player produces this syllable, he will note that the tongue does not touch the teeth.

As the beginner progresses on the F section of the double horn or on the single F horn, the ear may become adjusted to the horn tone. The beginner should have the basic training on the F horn and should use the Bb horn only in the upper register. As the embouchure adjusts to a permanent position and the student has a good concept of tone quality and intonation, a student may begin the use of the Bb section of the double horn in both the middle and lower registers.

The development of a good "musical ear" is considered very important to the player. The pitch that the performer wishes to produce should be heard before the attack is made. For this reason, the alto horn, pitched in F or Eb, becomes
an excellent pre-horn instrument. The student can adjust
to the horn with less pitch difficulties than the student
who changes from the trumpet to the horn.

In conclusion, the author wishes to present to the
reader a summary of the solutions that have been discussed
in this chapter.

1. With the proper training, the player can produce
an acceptable tone throughout the complete register
of the Bb section of the double horn.

2. The mouthpiece of the horn should be placed on
the lips in this manner: one-half of the rim
surface of the mouthpiece should be against the
upper lip and the remaining half should be placed
against the lower lip.

3. The correct fingering, of the valve mechanism of
the double horn, is more available to the teacher
who understands the construction and harmonic series
of the brass family.

4. When the horn is completely hand-muted, the player
must transpose the written pitch one semi-tone lower.

5. The F section of the double horn should be used by
the student until an acceptable tone quality is
produced.

6. The player can obtain the proper horn embouchure
by experimentation. The contraction and expansion
of the lips should be practiced by the player until
the proper tone quality and range flexibility is
obtained.

7. The most satisfactory pre-horn instrument is the
alto horn or mellophone.

8. The tongue of the player should not touch the teeth
in preparation for the attack.
The foregoing beliefs have been applied by the author in his playing and teaching experience. It is hoped that, on the basis of the data, the problems related to teaching the French horn will be minimized in both the professional world and in the public schools.
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