Historical Development of the Clarinet with Special Emphasis on Technique and the Resolving of Technical Problems

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HISTORICAL DEVELOPMENT OF THE CLARINET WITH SPECIAL
EMPHASIS ON TECHNIQUE AND THE RESOLVING OF TECHNICAL PROBLEMS

A Thesis
Presented to
the Graduate Faculty
Central Washington State College

In Partial Fulfillment
of the Requirements for the Degree
Master of Music in Education

by
Virgil M. Kocher

June, 1969
CENTRAL WASHINGTON STATE COLLEGE
DEPARTMENT OF MUSIC

presents in

GRADUATE RECITAL

VIRGIL M. KOCHER, Clarinet
VIVIENNE ROWLEY, Piano

PROGRAM

I
Sonate fur Klarinette in B und Klavier .................................................. P. Hindemith
Massig bewegt
Lebhaft
Sehr langsam
Kleines Rondo, gemachlich

II
Concerto for Clarinet in B flat, Op. 107 ........................................... W. A. Mozart
Allegro moderato

III
Three Pieces for Clarinet Solo ............................................................... I. Stravinsky

IV
Sonate, Op. 167 ....................................................................................... C. Saint-Saens
Allegretto
Allegro animato
Lento
Molto allegro

HERTZ RECITAL HALL
JULY 2, 1969
8:15 P.M.
APPROVED FOR THE GRADUATE FACULTY

__________________________
A. Bert Christianson, COMMITTEE CHAIRMAN

__________________________
Herbert A. Bird

__________________________
Dean Stinson
ACKNOWLEDGEMENT

The author wishes to express his appreciation to Professor A. B. Christianson and Dr. Herbert Bird for their interest and helpful criticisms. Many thanks to Mr. Christianson for his time and musical advice in the preparation of the recital.

Lastly, he wants to express his gratitude to his wife, Gail, for all she did to make this paper possible.
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Chapter 1

INTRODUCTION

This paper was written for the purpose of discovering how the clarinet developed into the important instrument it is today. There have been many changes and additions to the mechanism and also in tonal characteristics since the first two-keyed clarinet was invented. These changes were the result of an effort to extend the range of the instrument, improve its tone, and to meet the demands of the composers of the day.

It will be noted that because of the poor tone the clarinet possessed, the instrument did not enjoy much popularity in the beginning. Few musicians wanted to play the instrument when the already-established oboe and flute were available. It wasn't until the 1780's and 90's that most orchestras employed the clarinet regularly.

The first chapter will deal with the technical development of the clarinet from the very ancient single-reed instrument known as the idioglot to the present-day clarinet. The appearance of each early clarinet will be described; beginning with the two-keyed clarinet, and moving to the modern clarinet. The importance, range, and capabilities of all these instruments will be explored.

The second chapter deals with the development of
good finger action and technique and their importance in good clarinet playing. Methods of practicing clarinet technique are explained; and, it is implied that without precise finger action, good tone cannot be acquired. Most clarinetists can develop fast and accurate technique through daily exercises to strengthen the fingers. Because of the differing force required to cover the holes and to operate the keys, the fingers have to be exercised so that they are all of equal strength.

Chapter three deals with the problems of the contrasting compositions performed on the recital. Since each composition on the program had to be played in a different style and practiced in a different manner, it was necessary to analyze each piece of music and determine such things as tempo, meter, articulation, the diatonic and chromatic passages, arpeggios, wide skips, trills, and other note patterns.

The Mozart Concerto must be played in a light, rhythmical style requiring a smooth finger action. The tone should be flowing with little emphasis on dynamic contrast.

The Hindemith Sonata requires a light tone and more deliberate finger action as does the Three Pieces for Solo Clarinet.

The Saint-Saens Sonata can be played with a richer, more somber tone, while the player takes more liberties with tempo and dynamics. Smoother and more even finger movement is also required.
Chapter 2

EARLY SINGLE-REED INSTRUMENTS

The first single-reed instrument is said to be of very ancient origin, possibly having originated in Egypt as early as the third millennium. In its most primitive form, a flexible tongue was cut from a piece of rush or cane and thinned down, either at its thin end or at its point of attachment, to facilitate its vibration (14:62). This early instrument was known as an idioglot. A later development which brought us closer to the modern clarinet was the Welsh hornpipe or pibgorn. This early fold instrument was an improvement over the earlier single-reed instrument in that it had a detachable resonator pierced with seven holes, including a thumb hole, and a definite bell (14:63).

There is evidence that throughout the Middle Ages and into the seventeenth century, the single-reed instrument was confined to the music making of peasants. There is no evidence that this instrument was ever used for more serious purposes (14:64). There were, at this time, also cylindrically-bored instruments, but they were sounded by a double reed. The lack of a key mechanism may be the main reason that the single-reed was so rarely favored.

The early eighteenth century was an important time in the development of the clarinet. Parts began to appear for a
single-reed instrument, made in various pitches, called the chalumeau, which is closely related to the clarinet and is believed to have derived from it.

In the seventeenth century, the French word chalumeau referred to either a bagpipe chanter or "pipe" in the general sense. In its simplest form, the chalumeau was a little cane pipe, eight to ten inches long, six holes and thumb hole, a reed tongue cut in the upper side of the cane at the top end, and a range from g' to g" (1:295-296).

Chalumeaux were found in Europe as early as the thirteenth century; but, were never popular instruments. Even the clarinet, into which the chalumeau developed, was one of the late-comers into the orchestra. Two factors contributed to the late discovery of the single-reed instrument and its slow development. First, the single-reed instrument was more difficult to make than the flute or oboe. The making of the mouthpiece was extremely complicated and required considerable skill. The second reason for the late appearance of the chalumeau in the orchestra was that it had acoustical principles which are different from all other wind instruments. On most instruments such as the flute, oboe, and trumpet, the player, by increasing the blowing pressure and lip pressure, could "overblow" the octave without changing the fingering. The chalumeau could not be "overblown" at the octave, giving it a small range; and, no doubt preventing composers from using it as freely as they did the other instruments (14:112-114).
In addition to the above-mentioned disadvantages, composers seemed to know little about the chalumeau and showed little interest in it as a musical instrument, being entirely ignored by such composers as Monteverde, Tully, Bach, and Handel (15:115).

A few composers did write parts for the chalumeau, which is one of the proofs of its existence. These parts were usually of short duration and were usually played on the chalumeau by the oboist to add different tone colors. The German composer, Keiser, and the Italian composer, Bonocini, were two of the most important composers who wrote chalumeau parts. Each of these composers included the chalumeau in one of their operas in 1710, giving the instrument considerable recognition.

Although it is not known when the designation "clarinet" was first used, many feel that as soon as Denner made his improved chalumeau, this instrument became known as the clarinet. Some think that parts in a score written after 1690 were meant for the clarinet, however, the parts written in 1710 by Keiser and Bonocini would then have been written for the clarinet and not the chalumeau. "It is more likely that when chalumeaux are indicated in various scores, actually Denner's clarinets were used, for no doubt the chalumeau as improved by Denner was for some time called the chalumeau" (15:121).

It is quite possible that the invention of the clarinet by J.C. Denner came about through his efforts to improve the chalumeau by giving the instrument a separate mouthpiece,
adding two keys, and also providing it with a bell. Histori-
ans generally credit Denner with this invention in 1690.  

For one hundred years, the clarinet, like the chalu-
meau from which it developed, was to take a place in the 
orchestra subordinate to that of the flute and oboe. Eventu-
ally, the clarinet became equally as important in the orchestra 
as these two instruments, and it has become the most important 
woodwind in the concert band of today (15:116-117).

**Two-Keyed Clarinet**

The two-keyed clarinet was introduced to France and 
England by Germans who played clarinet and horn duets. 
J. D. Denner was the inventor of this early instrument in 
1690. It resembles a recorder, of which Denner was also a 
noted maker. The big improvement was the speaker hole, making 
available the series of twelfths.

The two-keyed clarinet is in three pieces: a broad 
mouthpiece and a slender barrel in one, an undivided body-
joint with six holes in front and one behind, and, a short 
foot-joint pierced with two small holes side by side. Above 
the holes, for the first finger and thumb, are two closed keys 
covering holes bored diametrically opposite to each other. In 
Denner's instrument, the opening of either key singly gives 
a', or both together b' natural. The b' flat could only be 
obtained by manipulating the embouchure (8:34).

The seven holes in the two-keyed clarinet, six on top 
and a thumb hole, provided a primary scale g to g'. A twin
Two-keyed clarinet
hole for the right little finger near the lower end carried the scale down to f when it was closed, thus giving a fundamental scale from f to b'.

Range:

```
\hline
\text{f} & \text{c} & \text{g} & \text{d} & \text{e} & \text{a} & \text{b} \\
\hline
\end{array}
```

By 1720, Denner's son moved the thumb key closer to the mouthpiece and reduced its size so that it produced the pitch of b' flat instead of b' natural. Denner's son is also said to be responsible for adding a little tube of metal in the thumb key to keep moisture from collecting, for providing a flared bell of larger dimensions, and also, for reducing the size of the mouthpiece (18:145).

These two-keyed clarinets were generally made in the tonalities of d, e, and b flat. They lacked clarity of tone because of the poorly proportioned reed and mouthpiece, and narrow bore.

**Three-Keyed Clarinet**

The fault of the two-keyed clarinets was the lack of a hole to give a good b' natural. Before the middle of the eighteenth century, this was provided by lengthening the bell and putting a hole just above it. This did not affect the position of the other holes and the e/b' hole was covered by a long key manipulated by the left, little finger. Thus, e
replaced $f$ as the lowest note; and, along with this, a definite hand position was established.

**Five-Keyed Clarinet**

The five-keyed clarinet is generally known as the "classic" clarinet. It is supposed to have been the instrument for which Mozart wrote his major works. This model was well established by 1770; and, there is evidence it was very popular because of the large numbers surviving today (19:150). This instrument raised the clarinet to the rank of a solo instrument and enhanced its importance as a member of the orchestra. The $a$ clarinet was known, but the $b$ flat and $c$ clarinets were the most common.

The fourth and fifth keys to be added were the keys for the $f$ sharp/$c$ sharp to be played by the left little finger; and, the $a$ flat/$e$ flat key for the right little finger. Barthold Fritz, an organ maker of Brunswick, is given credit for these improvements (19:150).

It must be realized, however, that in spite of the gains the five-keyed clarinet made, it was still not received well by musicians because of its many imperfections. It was still inferior to the oboe or flute in tone, intonation, and agility, and musicians of the day were not particularly interested in new voices in the orchestra (14:75). Its range was still limited, and some notes were far out of tune.

The mouthpiece was made of ebony or boxwood, and it was small and pointed. The reed, small, narrow, and hard, was
Five-keyed clarinet
tied on with a string as it had been on the chalumeau. Most were thinned down at the tip, making it a small, hard version of the modern reed. Others were of equal thickness up to the tip, producing a more harsh tone.

**Six-Keyed Clarinet**

Before the end of the eighteenth century, a few odd keys, additional to the usual five, had begun to appear. However, the greatest growth of the key system took place in the first quarter of the nineteenth century. About 1791, Jean Xavier Lefever added a sixth key to the existing five for $g$ sharp/$g$ sharp, and the clarinet remained essentially at this stage of development until the improvements of Ivan Muller in 1812.

An intermediate stage was the eight-keyed clarinet. It had the usual six holes with an additional closed cross-key for the right hand, second finger, to improve the faulty $b$ natural. The other key was a closed cross-key for the left third finger which gave a better $e'$ flat than the forked note. A ninth key for $c'$ sharp was also added later (2:158).

The six keys of the eighteenth century clarinet, numbered in order of addition.

**Muller Clarinet**

The sixth key eased the task of clarinetists in many ways, but virtuosi and composers were still not satisfied with
Six-keyed clarinet
Eight-keyed clarinet
the technical possibilities and the purity and quality of tone. In 1812, Ivan Muller made the biggest improvement in the clarinet by inventing his thirteen-keyed clarinet. This instrument made possible uniform quality of tone and true tuning on a clarinet. At the same time, this increased the technical capabilities so that the player might play compositions of any tonality on one clarinet in b flat instead of a whole set of clarinets. In making his clarinet, he stressed the principle that holes must be placed acoustically in their correct position at all costs and that keys must be made to cover them. Thus, the sound and intonation changed greatly. Many experts did not, at first, like the idea of foregoing the various tone colors of the g, b flat, and a clarinets for one instrument; but, Muller was careful not to make too many fingering changes and his clarinet later became a great success (11:26).

Muller improved the pads by making them out of leather stuffed with wool. He also was one of the first to condemn the habit of controlling the reed by the pressure of the upper lip, which was common practice at the time. With these improvements, Muller's clarinets satisfied the needs of small orchestras for years.

The following illustrates the function and fingering of the thirteen keys of Muller's clarinet:

1. e/b' - - - - - - left little finger
2. f sharp/c" sharp - left little finger and right thumb
3. f/c" - - - - - - left little finger
4. g sharp/d" sharp - right little finger and right thumb
5. b flat/f" - - - 4th finger, right hand
6. b/f" sharp - - - - right little finger
7. c sharp/g" sharp - left little finger
8. e'b'/b" flat - - - 4th finger, left hand
9. f'/c" - - - - - 2nd finger, right hand
10. g' sharp - - - - 2nd finger, left hand

Additional seven keys on the Muller Thirteen-Keyed Clarinet.

Muller's reforms also produced various other inventions and improvements. The thumb-rest which was originally carved out of the tube itself, was later made of ivory or metal. The screw-ligature was also introduced about the same period.

Some improvements were also made in the mouthpiece. The reed was changed somewhat and the mouthpiece was enlarged, thus overcoming the main reason for the clarinet's poor tone. Warpage of the wood mouthpiece was not conquered until the 1870's when mouthpieces were first made of ebonite (11:28-29).

Many makers produced Muller's new model, some making additions of their own. Among the most famous names are those of Simiot, Sax, Mahillon, and Albert.

The thirteen-keyed clarinets of 1825-1835 were made of about the same materials and retained many of the old characteristics. A few improvements did, however, appear on the newer instruments: the joint between the lower middle-piece and the lower piece was abolished, and some keys had rollers to allow smoother and easier passage from one note to another.

The Boehm Clarinet

The next important improvement of the clarinet came
Thirteen-keyed clarinet
after Theobald Boehm introduced his invention of the Boehm flute. Several clarinetists recognized the possibility of adopting some of the details of the flute fingering to the clarinet. It was the close collaboration of the clarinetist, H.E. Klose, with the maker, L.A. Buffet, however, which produced what we know today as the Boehm clarinet (11:31).

The Buffet-Klose instrument represented an important advance not only in musical and technical terms, but in exterior appearance. It became more graceful looking with the disappearance of the block and collar bearings, and the keys themselves were designed more delicately. Klose and Buffet had two main goals: first to place the tone holes of the instrument where the laws of acoustics and not convenience of fingering demanded that they should be placed; and secondly, to change the mechanism for the purpose of improving the facility of fingering (17:161).

Many other inventions were made by French and Belgian makers and some enjoyed temporary popularity, but none stood the test of time like the original Buffet-Klose invention.

The original Boehm clarinet contained twenty-four holes, seventeen keys, and six rings. It solved immediately one of the problems left over by Muller—the freeing of the little fingers from having to slide from key to key. The keys controlling the three lowest tone-holes were duplicated and interlocked, making it possible to finger e/b', f/c', and f sharp/c' sharp with one finger alone on either side of the instrument. Trills which were formerly unplayable were now possible (14:102).
The use of the Boehm clarinet spread rapidly in France, but much less rapidly elsewhere. Several improvements were made on the thirteen-keyed clarinet to meet the challenge of the new model, and it was still not used extensively. It was not, in fact, until the 1890's that the Boehm clarinet came to be more commonly used. Many continued the use of the German clarinet even though, in ease of fingering, the French system was decidedly easier and the tone holes were spaced more comfortably. There is no great difference in tone between the two.

Although the Boehm system was not accepted immediately by everyone, the clarinets used today in Britain, France, and the United States are almost exclusively of the Boehm type. In Germany, Austria, and neighboring countries, the German system is still used. This model was produced by Oskar Oehler of Berlin on the basis of Ivan Muller's instrument. The German clarinetists' objection to the Boehm clarinet is based more on tone than on fingering. Most Boehm clarinets must be played with special mouthpieces which require lighter reeds. Thus, on the German clarinet, the player must adjust his fingering and his embouchure. The Boehm clarinet has a wide mouthpiece with an open lay and a light, wide reed, while the Oehler clarinet requires a close lay and a thick, narrow reed. The bore of the two clarinets is also often different. These differences produce a dark tone on the German clarinet and a brighter, thinner tone on the Boehm clarinet (11:35).

Romero Clarinet

An important modification which merits mentioning is
Antonio Romero's reconstruction of the Boehm clarinet in 1862. The Romero clarinet was an attempt to give more facility across the break and the result was very complicated in workmanship. The lower half is plain Boehm, but the upper half is different with the inventor attempting to give the left hand less work. The closed keys for $g'$ sharp and $a'$ worked by the first finger of the left hand were replaced by open keys. A similar key was provided for open $g'$. The $b'$ flat replaced $g'$ as the "open" note. The improvement in tone, and in facility of execution was marked and gained the inventor many medals; but, the radical changes of fingering and complicated keywork prevented its wide adoption (14:108 and 8:323).

The Present Day Clarinet

The modern Boehm clarinet differs very little from that of 1843. There have been some changes in the mechanism, but none in its basic construction or in sound or intonation improvement. Most of these changes in mechanism are in the form of conveniences to the instrumentalist. The touch-pieces of the keys are now larger and the tone-holes smaller. Some additional keys have been added from time to time. The more important are: on the lower joint, the low $e$ flat, and an additional level for $a$ flat/$e$ flat; on the upper joint, the articulated $g''$ sharp, and the forked $b''$ flat. The clarinet containing these additions is known as the "full Boehm". It is less popular now than it was, with many players preferring the plain Boehm.
Other Clarinets

Octave. The octave clarinet in $e$, $b$, and $a$ flat, one octave above the usual soprano clarinet, are rare today, even in military bands. Their small size gives them a tone which is extremely shrill and also makes them difficult to play because the finger-holes are very close together. The largest instrument of the group, the $a$ flat clarinet, plays an important part in Gypsy music (5:220).

Fourth Clarinets. The clarinets in this group are the $f$, $e$ flat, and $d$, these being a fourth higher than the principal clarinet in $c$, $b$ flat, and $a$. The extremely shrill $f$ clarinet has been restricted to military music and German dance music, but the $e$ flat clarinet has found its place in operatic and symphonic orchestras. Modern composers use it often with its clear, penetrating tones giving sharpness to the woodwind section. The $d$ clarinet has been employed in symphonic music only occasionally (5:221).

Soprano. Of the soprano clarinets in $c$, $b$ flat, and $a$, the highest is $c$. It is suitable for strong and brilliant effects and has been used sparingly in symphonic works. It had its place in military and dance bands. The standard instruments today are the $b$ flat and $a$ clarinet. Until late in the nineteenth century, the choice between them was made according to the easier way of fingering. The $a$ clarinet was usually used for the sharp keys, and the $b$ flat for the flat keys. The improvements in the key mechanism of today's clarinet, however,
have made it possible to play in all keys on either instrument. Thus, unless a richer, less powerful tone color is preferred, modern music is written for the b flat clarinet (5:221-222).

Early Use

The clarinet was used in military bands as early as 1720 through 1730, but did not assume a role in the orchestra until 1751, when Rameau produced his pastoral play, "Acante et Cephise" (3:56). Up until this time, the clarinet was not a popular instrument for orchestral use, possibly because of the imperfections of the new instrument. Its tone was inferior to that of the flute or oboe and thus its short parts were usually played by these instruments.

In 1757, several symphonies using the clarinet were heard; one, the Nova Tempesta, was by Filippo Ruggi. The clarinet also found a place in religious music. On Sundays, bands provided music for the Mass (2:78).

D and b flat clarinets were used by J.C. Bach in his Orcone in 1762. By this time, clarinets were well established in London and available when required. It is believed that in London in 1764, Mozart first heard the clarinet which was to become his favorite wind instrument (2:80 and 81).

The period of greatest development of the clarinet may be traced during a period of forty-eight years--1763 to 1811. It was with the works of Haydn, Mozart, Beethoven, and Weber, as well as others of this period that the clarinet attained an important role in the orchestra and as a solo instrument.
Haydn wrote for the clarinet very sparingly at first, but Mozart wrote parts for it in a large number of his works, sometimes probably only omitting it because no players were available. Beethoven and Mendelssohn also regularly employed the clarinet, but it was Weber who really loved the instrument and used it in a way that few composers have ever excelled. His two clarinet concertos with orchestra accompaniment, which display the capabilities of the instrument to perfection, are still performed. Since Weber, all composers have given the clarinet great importance in their works (31:50).

Mozart was the composer who showed the music world how to use the clarinet in the orchestra, although Haydn and Gluck and others had been using the instrument in their works for some time before him. Gluck was not certain how to handle this new voice in the orchestra, and like many others, considered the clarinet as a substitute for the oboe and flute, or at least only a supplement for them. He hesitated to use the clarinet as a solo instrument as he did the flute and oboe in his orchestra from 1776 to 1778. He did not understand the possibilities nor the great resources of the instrument then. In his e flat symphony, written in 1787, Mozart demonstrated the qualities of the clarinet and gave it particular prominence by omitting the oboe entirely. This was common practice for some time, but after 1800 both instruments found their place in the orchestra (15:121).

The period from 1800 to 1840 was an important time for the clarinet soloist and touring virtuoso. After this followed
an eclipse. Piano and violin concertos took the place of the woodwind solo works and even the orchestra musician in general lost prominence. Shortly after this time, the clarinet was again brought back to the concert room, but it is only within the last fifty years or so that the clarinet has really come into its own (2:124).
Chapter 3

FINGER ACTION AND TECHNIQUE

Finger action is most important for tone production and also for "clean" technical precision. Tones must be changed with the fingers, not with the breath, which should be as steady as possible. Finger movement should be precise and accurate.

In order to attain precision, it is very important that the placement of the fingers be done with definite assurance. The fingers should be placed on the keys with a "snap" and removed with the same spring-like feel. This technique can be easily demonstrated by fingering the clarinet without blowing it. When the fingers are placed on the keys and tone holes, it should be possible to hear a resonance developed in the instrument as it is fingered up and down the scale (18:216).

Fingers should be either depressing a key or held motionless above the key. They must never be almost on or almost off the keys, or moving evenly from one note to another will become impossible. The finger action from on to off must be quick enough to avoid the middle position. When the finger change involves several fingers, they must all move as one in the above manner so that all fingers arrive at their keys at the same time and allow the tone to respond instantly. If one finger is early or late, the tone will either stop or squeak.
It is also important to know that the finger movement between two allegro notes in rapid sequence and between two notes of an adagio passage is exactly the same. The only difference is that the action is delayed by holding the first notes longer than the first of the allegro notes. When the time comes to change from one note to another, the change is instantaneous in both cases. For this reason, the finger movement must be as quick and precise in the slower passage as it is in the more rapid one.

Beginning players must move fingers with extreme deliberation and in an aggressive manner in the earliest stages. This will insure correct finger movement when fingerings is no longer a learning problem. As the player advances, he should learn to place fingers on and off keys with a softer motion to avoid roughness in the tone; but, he must continue to place fingers on the keys quickly and evenly.

Anyone with normal fingers can develop a great deal of accurate, fast technique on the clarinet. The main obstacles to smooth playing is due to the varied natural strength and agility of the fingers and the differing force required to cover holes and to operate keys of all sizes. The smaller fingers must be strengthened by means of a well-planned calisthenics program to match the strength of the large fingers. This phase is often neglected by clarinet players. Appropriate daily exercises are simple (25:151).

For example, start with low e, fingering it with the left little finger, with the right little finger on f key. Raise
the left little finger high and hit it hard on the key, again and again at the rate of four to five notes a second, until it begins to tire. The notes produced are $e$ and $f$. Release right little finger and repeat the motion. This adds resistance, for the little finger will have more mechanism to propel in playing $e$ and $g$. Next, release the left little finger and hammer the right little finger on the $e$ key the same way until it tires. All nine fingers should be exercised in this manner until they feel very tired. Improved finger action will be noticeable in a short time.

Particular attention should be paid to the raising of the fingers. They cannot be raised as rapidly as they can be lowered so a player can benefit by practicing jumping the fingers off the holes as rapidly as possible and letting them go high in the air. If you have in mind to allow them to travel only a short distance, the difficulty of stopping them will most likely result in their moving more slowly at the start. This cuts down the number of notes which can be played per second and it allows a longer period of glissando between notes (25:151-152).

With evenly developed strength and control of the individual fingers, the next step is sure and rapid combinations. Scales and chords in all keys must be learned well so that little thought is given to fingering each note. The obvious result will be "cleaner", more precise playing. Music is composed of scales and chords. When a player has mastered them in all keys, he can play all music at nearly any speed.
Here is a list of the scales, chords, and arpeggios needed to play the clarinet parts in all music: (25:153-154)

Chromatic scale
Twelve major scales . . straight, and in thirds, sixths, and octaves

Twelve melodic minor scales . . . . . . straight, and in thirds, sixths, and octaves

Twelve harmonic minor scales . . . . . . straight, and in thirds, sixths, and octaves

Twelve major arpeggios
Twelve minor arpeggios
Twelve dominant seventh arpeggios
Three diminished seventh arpeggios
Two whole tone scales
Four arpeggios of augmented chords.

Clarinet technique is complicated by the uneven movement of fingers. Passing from one note to another may involve one finger or all nine. Awkward combinations are not confined to awkward keys. One of the clumsiest finger shifts on the clarinet, for instance, occurs in the key of c between notes a and b in the staff.

In general, but not always, transitions involving the greatest number of fingers need the most practice. When all the fingers of the same hand have to open or close together, there is no problem. Synchronizing some fingers of one hand with some of the other, all going up or down together is more difficult to do. The most difficult of all are changes requiring some fingers to be raised at the same instant that some other fingers are to be lowered. A perfect slur between two notes is impossible when this contrary motion of fingers is involved.
Probably the most difficult slur on the clarinet involving this type of finger movement is between \textit{b} and \textit{c} sharp (second space and second line above the staff). One left finger raises as two left and two right fingers descend. There is a definite noise in the tone because one is going from the second register to the third and changing the air column. It can be minimized by careful practice, but not completely eliminated. This is also the worst shift between two notes to "lie" in the entire range (25:155-156). The octave below is another bad shift because of the contrary motion of the little fingers.

The wide range of the clarinet also causes some difficult problems. One of them is the tonally and technically weak gap between \textit{g} (second line) and \textit{d} (fourth line). This is a very clumsy range to play because the left index finger is kept busy with two keys and one hole. It needs exercises to train it. The two little fingers also are kept busy bridging this gap and working the \textit{b} natural/\textit{c} sharp, and \textit{g} keys on the left side of the clarinet. Each finger has a minimum of four keys, three of which are duplicates. As a result, all technique in this range must be carefully planned to try to avoid use of the same finger on successive notes. In spite of planning, it is still sometimes necessary to slide a little finger from one key to another or switch from one finger to the other on the same note.

Slurring into the high register from the clarion register is also a problem. Even though the high register can be played well, most clarinetists find that high notes seem to
pop when they start. This is due to the acoustical properties of the instrument. One solution to the problem is to use a lesser amount of breath support in the high register than you do in the clarion register. The high notes require less breath support for the same dynamic level than do notes in the clarion register.

A second technique which is necessary for good slurs from the clarion register to high registers is the use of the half-hole with the first finger. Most high note fingerings require the first finger to be completely off of the first hole, but when slurring to the high register it is necessary to roll the first finger down toward the second finger so that half of the hole is opened. The finger should then be lifted entirely off the hole, following the half-hole, when the tempo is slow enough to permit this much movement.

There are alternate fingerings for many notes on the clarinet, and the selection and use of the best fingering is of the utmost importance if smooth and useful technique is to be acquired. The choice of fingering should be one which gives the smoothest progression from one note to another and the best intonation. The notes on the following staff indicate the standard alternate fingerings. Each quarter note indicates a fingering for that pitch. Special trill fingerings are not included.

Difficulty: uneven intervals ascending rapidly into the high register. This quick movement involving a wide range of notes, and uneven intervals is typical of Stravinsky's style. Precise fingering is required to play this measure as well as assistance from the embouchure. It is helpful to play B flat above the staff with the first finger of each hand. High G may be played with the second finger of the left hand, the lowest side key on the right and the right little finger.

2. Shostakovich Symphony No. 1.

Difficulty: breaking in the chromatic scale with very fast skips across the break. The F sharp in the second measure
should be fingered with the thumb and the two lowest side keys. The f sharp in the third measure should be played by using the "forked" f sharp fingering.

3. Prokofiev's Peter and the Wolf.

[Music notation]

**Difficulty:** unusual intervals with the sequence rising chromatically.

4. Caballini's Caprice No. 2. *½* hole

[Music notation]

**Difficulty:** wide skips requiring extremely rapid and precise finger movement and some adjustment of the embouchure. The notes must be coaxed out and the high notes half-holed. In the last measure, finger high f by covering all holes and adding the left g sharp key.

5. Caballini's Caprice No. 6.
Difficulty: difficult downward sequencial pattern, requiring large and consecutive finger movements. In the second measure there must be a smooth slide of the right little finger from $a$ flat to $g$, so that the $a$ flat following the $g$ can be fingered with the left little finger.

6. Manuel de Falla's Suite from the "Three Cornered Hat".

Difficulty: broken chromatics played at a very fast tempo. Because of the tempo, fingering and timing must be perfect. Use the forked-fingering for $g$ flat in the third measure.


Difficulty: a difficult left-hand study containing unusual note sequences and intervals.

Every individual has his own preferred method of practicing difficult passages. Each player would master the above
examples using different practice methods. The author suggests certain methods of practice that he would use in preparing the above examples. In numbers one, two, three, six, and seven, it is important to first use the proper fingerings as mentioned above. Slow practice is then necessary until the passage is memorized. Precise rhythm and clean execution of each note is not possible until this is done.

In number four, use the proper fingerings and half-hole where indicated. Another aid in playing these intervals is to place the tonal weight of both tones on the lower one. Once the change of interval is begun, make a fast switch, allowing no time-space to come between. Tongue position is also important in this section. It should be in a raised position when playing the high notes and in a lower position when playing the low notes.

To develop evenness in number five, it is helpful to play the sixteenth notes in uneven rhythms as well as playing them slowly with fast finger action. First, try to play a dotted sixteenth note on every other note with a thirty-second note between. Then go from a thirty-second note to a dotted sixteenth note. Finally, play the sixteenths evenly again.
Chapter 5

THE MOZART CONCERTO

As far as the art of writing for the instrument is concerned, Mozart may well be considered to have discovered the clarinet. His three compositions in which the clarinet is the leading wind instrument, namely the Clarinet Concerto, the Trio for piano, viola, and clarinet, and the Quintet for clarinet and strings are among his most beautiful works (20:52).

The Concerto in A major for clarinet and orchestra was composed not more than a month before Mozart's death and was his latest instrumental work. Mozart presumably began the first movement, intending it to be played on the basset horn. Two years later in 1791, he transposed it from G to A for the clarinet after deciding that the basset horn was not sufficiently flexible to be used in a concerto. The other two movements were also added at this time.

The concerto was written for Anton Stadler, a competent clarinetist and instrument maker. It is the style definitely established by Mozart in the 1780's, a typical three-movement concerto with greater length and weight given to the first movement. The orchestral accompaniment consists of a full symphonic ensemble with strings, woodwinds, horns, trumpets, and timpani. The first movement is, according to A. Einstein, characterized "by the closest relation between the soloist and the orchestra,
and by the utmost possible vitality in the orchestral portion itself" (4:285-286).

The Concerto is a display of simplicity in writing with every note being important. All of the registers of the clarinet are exploited, yet, without any display of virtuosity, as in some of the works of Carl Maria Von Weber. The difficulties lie in the fast running passages. It contains beautiful themes and shows Mozart's extra attention to detail and understanding of the clarinet (16:178).

**TECHNICAL PROBLEMS OF THE MOZART CONCERTO**

1. Measures 69 - 73, arpeggios

![Musical notation image]

Measure 83

![Musical notation image]

Measures 143 - 144, and 146 - 147

![Musical notation image]
To develop clarity in these arpeggios, it is helpful to emphasize the first sixteenth note of each group of four.


3. Measures 148 - 149, ascending thirds and crossing the register break, with a break in the pattern in both measures.


5. Measure 152, chromatic tonguing.

7. Measures 69, 73, 299, arpeggio tonguing.


Quick finger action is necessary along with assistance from the embouchure.


Begin these trills on the upper note.

10. Measure 199, difficult movement across the break.

The author prefers to play high d with no fingers down except the lower side-key to prepare for the following b flat. This fingering is smoother and produces an adequate tone at this fast tempo.
Chapter 6

THREE PIECES FOR SOLO CLARINET

The Three Pieces for unaccompanied clarinet was completed November 8, 1919, rather early in Stravinsky's career and at a time when his output was very small. It was written for Werner Reinhart, an amateur clarinetist who played in the Wintertur Orchestra. The last piece resembles the Ragtime of the Soldiers Tale, a work dedicated earlier to Reinhart. The Three Pieces exploits the virtuoso qualities of the clarinet, having three different melodies, each developing in a different way. The melody in the last movement demonstrates that melody can stand alone without a metrical or harmonic accompaniment. It moves within a narrow range and circles about a single note using many accents and syncopation to add excitement. The other two pieces are more melodic. The first exploits the lower range of the clarinet in a mood of tranquility. The second is written without barlines in an improvisatory vein with arpeggios and much ornamentation (15:243-244).

TECHNICAL PROBLEMS OF THE THREE PIECES FOR SOLO CLARINET

Second Movement

1. Next to the last line: wide skips to high register, an unusual interval.
It is important to half-hole the e and the f when playing the intervals c to e and b flat to f. The first finger of the left hand and the first finger of the right hand may be used for b flat in the indicated places.

2. Last line: wide skip between g above the staff and high g.

This is best fingered by half-holing the top hole and also using the two, top side keys.

Third Movement

1. Measures 1 - 6: uneven rhythm with the sixteenth note being the unit of beat.

2. Measure 4: when going from b to e sharp, finger e sharp by playing b and adding the next highest side key on the right side of the clarinet.

It is helpful to use the two bottom right side keys and thumb for c sharp when going from c sharp to a in measure twelve. Use the one and one fingering for b flat in measure thirteen. Some adjustment of the embouchure is necessary.

4. Measures 18 - 21: strong accents and irregular rhythm along with unusual intervals.

The accented notes must be strongly emphasized and the other notes played lightly--this section must keep moving.

5. Measures 33 - 34: the interval from b to a sharp is performed most easily by using the first finger of the left hand and the fifth finger of the right hand. This fingering allows fewer fingers to move at one time and also eliminates the use of the right side key which is not smooth in this spot.

6. Measures 37 - 40: the accents must be emphasized and the notes following played softer for the intended effect.

Push with the breath, rather than striking hard with the tongue, to achieve the proper accent. The player must station himself on the lowest or accented note, using that note as the one from which all others are derived. As the notes rise, stay mentally on the lowest tone, giving it your full attention as if the others didn't exist. No adjustment of the lips is necessary.
7. Measures 57 - 59: In Measure 57, use one and one fingering for a sharp. In measure 58, finger high f as you normally would but play d by fingering high f again and adding the fourth and fifth fingers of the right hand. In measure 59, when going from d flat to a flat, place the emphasis on the a flat for better response.
Chapter 7

SUMMARY

For many years the clarinet, like the chalumeau from which it developed, was of very little importance either in the orchestra or as a solo instrument. The two-keyed and the three-keyed clarinets were very awkward not only in appearance, but also in playing characteristics. They lacked clarity of tone because of their narrow bore and poorly proportioned reed and mouthpiece.

The five-keyed clarinet was generally known as the "classic" clarinet and was the first clarinet to enjoy any popularity. Although its range was still limited, this instrument raised the clarinet to the rank of a solo instrument.

It was during the nineteenth century that the clarinet became acoustically correct and acquired improved key systems. The Muller and the later Boehm clarinets contained additional keys which gave alternate fingerings, thus easing the playing of chromatic scales, diatonic scales with many sharps and flats, trills, tremolos, and arpeggios.

The clarinet music of the nineteenth century benefited greatly from the added effects made possible by these new models. Some music written in 1880, which created fingering and intonation problems, was playable in the ninetenth century on the improved instruments.

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The clarinet has since then gained an even more important place in the concert hall as a solo instrument. Today there is as much solo literature written for the clarinet as for any other wind instrument.

The clarinet has become even more important in the modern orchestra, with better performers and instruments available. It is also a most important member of the wind band. No other woodwind possesses a compass of more than three and one half octaves or a tone as incisive and diverse. The clarinet offers to the composer many technical possibilities that no other wind instrument can offer. Along with its flexible tone, the clarinet is also capable of all dynamic ranges from pianissimo to fortissimo.

The preparation and performance of a graduate recital provides many benefits to the performer. As a result of his graduate recital, the author acquired a greater knowledge of good clarinet literature. All of the compositions performed were a challenge as they incorporated most aspects of clarinet playing. Versatile finger technique and a controlled tone had to be mastered through many hours of careful practice in order to perform these numbers since each composition required a different type of tone and technique for the intended style.
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BIOGRAPHICAL INFORMATION

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