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DEVELOPMENT OF THE FRENCH HORN IN RELATION TO
ORCHESTRAL SCORING, WITH SPECIAL EMPHASIS
ON THE INFLUENCE OF THE VALVE

A THESIS
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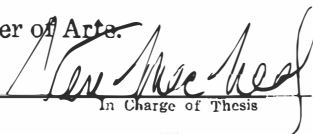
TEXAS STATE COLLEGE FOR WOMEN


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I hereby recommend that the thesis prepared
under my supervision by Marianna Pierce
entitled DEVELOPMENT OF THE FRENCH HORN IN RELATION
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be accepted as fulfilling this part of the requirements
for the Degree of Master of Arts.


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PREFACE

Today the possibilities of orchestration for the French horn are probably taken for granted by most orchestrators and composers. They are not hide-bound by restrictions and probably do not fully appreciate the many trials and struggles which brought about the invention of the valve, which in turn removed the many restrictions which had been existent before that time. At present the French horn is considered the most difficult of all valved instruments because of the great number of its harmonics and their nearness to each other in the upper register. Despite this handicap, the French horn is one of the most beautiful and poetic wind instruments in the orchestra. The horn in most frequent use is the F horn, which is about twelve feet in length.

From the time when the horn began to be used in ensembles, means were constantly being devised by which to increase the number of notes which could be played upon it. As these different devices were tried out, they all proved to have rather serious draw-backs which prevented them from being permanent. The valve is the only device ever used on the French horn which proved successful.

Specific examples will be given of these various inventions and improvements, and their respective weaknesses and points of advantage. Before the invention of the valve, the horn was used in instrumental groups as a harmonic or reinforcing part. Gradually the melodic possibilities grew, and with that enrichment there came an improvement in the flexibility of the horn and the diversity of its uses.

The period from 1700 to 1850 included most of the important physical changes in this instrument. Music of the composers during this period of transition for the French horn reflects the changes which took place in the instrument.

The French horn is well known for its beauty of tone. With the development of this instrument, the parts written for it in orchestrations show a change in aesthetic possibilities. As devices for improving the horn were added, the instrument came to have more artistic functions instead of being just a background for the other instruments. Today, with the exception of a few limitations, the valve horn can play almost any type of part. Examples of passages that can be played on the valve horn will be given in Chapter IV. Some composers failed to grasp the advantages of the new valve invention, while others saw the great possibilities and did their utmost to utilize them to full capacity. Today the valve horn takes its place in orchestral scores on an equal footing with the other instruments.

It is also the purpose of this thesis to show the relationship of the valve invention to the changing aesthetic trends, which were contingent on the horn parts in orchestration. To that end the writer will trace the physical development of the French horn and correlate with musical examples.

The writer wishes to express deep appreciation to Miss Vere MacNeal. Her kind efforts and constructive criticism have been an unending source of inspiration for this thesis.

TABLE OF CONTENTS

PREFACE	111
LIST OF TABLES	vi11
LIST OF ILLUSTRATIONS	vi111
CHAPTER	PAGE
I. PHYSICAL DEVELOPMENT OF THE HORN	1
II. DEVICES LEADING TO THE DEVELOPMENT OF VALVES.	42
III. THE VALVE	64
IV. CHANGING TRENDS IN ORCHESTRATION FOR THE HORN CULMINATING WITH THE VALVE	78
V. CONCLUSIONS	129
BIBLIOGRAPHY	132

LIST OF TABLES

TABLE	PAGE
I. Open-Hooped Horns Made Between 1680 and 1729	27

LIST OF ILLUSTRATIONS

TITLE	PAGE
Rotary and Piston Valves	69
Harmonic Series (Miller)	72
Harmonic Series (as Present on the French Horn)	72
Old German Hunting Calls for Horns	80
Hunting Fanfare	81
"Tallyho" (Hallali)	83
"March of the Scottish Archers"	85
"Nouvelle Retrait"	86
"Ernz Anton" Marsch	88
Typical Hunting Call	84
"Farewell" Symphony, Third Movement -- Haydn	100
"Farewell" Symphony, Fourth Movement -- Haydn	100
"Oxford" Symphony, Second Movement -- Haydn	100
"Oxford" Symphony, Third Movement -- Haydn	101
"Oxford " Symphony, Fourth Movement (2) -- Haydn	101
"Surprise" Symphony, Second Movement -- Haydn	101
Symphony No. 7, First Movement -- Haydn	102
"Haffner" Symphony, First Movement -- Mozart	103
"Linz" Symphony, Second Movement -- Mozart	103
"Linz" Symphony, Third Movement -- Mozart	103
"Linz" Symphony, Fourth Movement -- Mozart	104

TITLE	PAGE
"Prague" Symphony, First Movement -- Mozart . . .	104
"Jupiter" Symphony, First Movement -- Mozart . . .	104
"Jupiter" Symphony, First Movement -- Mozart . . .	104
"Jupiter" Symphony, Second Movement -- Mozart . . .	104
"Jupiter" Symphony, Third Movement -- Mozart . . .	105
Eroica Symphony, First Movement -- Beethoven . . .	108
"Cheron" Overture -- Von Weber	110
"Der Freischutz" Overture -- Von Weber	110
"Italian" Symphony, Third Movement -- Mendelssohn . . .	113
"Nocturne" from "Midsummer Night's Dream" -- Mendels- sohn	113
"Spring" Symphony, Fourth Movement -- Schumann . . .	117
"William Tell" -- Rossini	119
"Barber of Seville" Overture -- Rossini	120
"Die Bibische Elster" Overture -- Rossini	121
"Semiramis" Overture -- Rossini	121
"Tannhauser" Overture -- Wagner	124
"Lohengrin" Prelude to Act III -- Wagner	124
"Rienzi" Overture -- Wagner (2)	125
"Siegfried's Rhine Journey" from "Gotterdammerung" -- Wagner	126
"Die Meistersinger" Prelude to Act I -- Wagner . . .	126
"Siegfried Idyl" -- Wagner	127

CHAPTER I

PHYSICAL DEVELOPMENT OF THE HORN

Today the reference to "horn" usually implies the French horn, but in the earliest references the term is used in a very broad sence, as it was applied to almost all instruments in the wind-blown class. Due to this varied significance in different eras, it is therefore rather difficult to determine whether or not the references encountered in early works are to the ancestors of the modern French horn. Any mention of horns before the Biblical period is of a very general nature and represents much speculation and controversy on this subject.

The origin of horns, as well as of most brass instruments and some woodwinds, was with the usage of shells and the horns of animals as musical instruments. Daubeny says:

The horn is probably the most ancient of all wind instruments. Consisting originally of crude animal horns cut off square at the smaller end, it is common to most nations and must have been known thus to the ancestors of men at a very remote period.¹

Some horns were of a curved (spiral) shape while others were straight.

¹Ulrich Daubeny, Orchestral Wind Instruments (London: Wm. Reeves, n. d.), p. 71.

The horn was considerably louder and could be heard at a much greater distance than the human voice. People discovered therefore that the horn could be used to great advantage in calling to their neighbors and as a call to bring their animals in from the fields. Gradually, through the years, extensive experimentation was made as to the kinds of material, the shape, size, and other physical aspects of the horns in the search for means of producing more volume.

Horns seem to have been in use on all continents, in most countries and by most of the races. Often the primary uses of these horns was for military purposes, but sometimes they were used in pastoral capacities; such as were mentioned in the previous paragraph for signalling to neighbors or to bring the cattle or sheep home in the evenings. Materials used in making these horns varied with the natural substances available in the different climates or countries and varying with the topography: mountains, sea, or jungle. Size and shape differed according to the material used and the design of the instrument was made to suit the purpose the instrument was to fulfill.

The oldest type of horn of which there is any authentic record is the Hebrew shofar, which is an instrument made from the horn of a ram. The shofar is the instrument which is famous, in tradition, for having blown down the walls of Jericho, and it holds the distinction of still

being sounded for Jewish holidays, and festivals, and particularly for the Feast of the Atonement. It was supposed to have been also this same type of ram's horn which was used by Gideon's men.¹ Although the shofar was originally made from the horn of a ram, it was later made of metal. It has been described as a most unmusical instrument, since it was quite impossible to play any sort of organized melody on it.

In Asia and on many South Sea islands, many horns were made from shells. These shells were usually of a spiral shape, and were probably discovered as to musical possibility, by natives breaking off one part of the shell so that they could blow the animal out. When the animal was removed, the air column was then set in motion by the breath which in turn caused a sound to be emitted. No doubt the first native to discover a sound coming from the shell was very surprised and perhaps a bit frightened. Natives of New Caledonia also used shells for their horns, and with them these conch horns were used in many religious rituals. The Melanese blew their horns at midnight, and before festivals they sounded the horn three times a day.²

The horn used in India was farther advanced and more ingenious than those mentioned above. It was a large curved

¹Judges 7:15-23.

²Andre Schaeffner, Origine Des Instruments De Musiqu (Paris: Payot, 1936), p. 260.

horn which is known by the name of ranasrnaga, consisting of two curved sections of metal which, when put together, formed a crescent or an S. This instrument was used for such occasions as the sunset ceremonial.¹ The bug was the horn which was prevalent in Arabia. Consistent with the customary usage for horns in most countries, the bug was used for military purposes.²

The African tribes have not made a great amount of progress in developing horns. Present-day horns in use in South Africa differ very little from the ones which were used originally. Substitutions have been made in materials used in the construction of the various instruments but the general size and shape have changed very minutely.

In South Africa the Bantu peoples used instruments made from the horns of animals, which were sounded in the same manner as the European brass instruments. With two exceptions these instruments were all blown through an embouchure in the side of the tube. There were two general varieties of horns used in South Africa and they were those made from the horns of the larger antelopes, or when they had become scarce, from substitute materials; and the second type was made from the horns of smaller antelopes,

¹Curt Sachs, The History of Musical Instruments (New York: W. W. Norton and Company, 1940), p. 228.

²Henry George Farmer, A History of Arabian Music (London: Luzac and Company, 1929), p. 155.

or from substitute materials.¹

The sable antelope is the favorite horn used for the first type. In some of the areas this animal is no longer obtainable and ox-horns are used instead. Such horns as the large antelope type were called parapandas, and the sound was terrible and frightening. Many tribes of South Africa used this kind of horn.²

Another instrument is the phalaphala and the manner of making it is by first removing the interior tissues of the animal horn with hot water. Then the place for the embouchure is selected, which is the juncture at which the tip of the horn ceases to be solid and the bore of the tube begins. This embouchure is about one inch in length and half an inch in breadth, being rectangular in shape. In the early days the ridges of the animal horns were trimmed off so as to prevent the instrument from being so heavy. Often the natives notched the ends of the horns or added other types of decoration. Later the practice of stitching a band of leather around the flared end was used. This method was employed to prevent the instrument from splitting. To this leather covering, sometimes a string or cord was attached and the other end secured to the tip, which procedure provided a method of carrying the instrument over

¹Percival R. Kirby, The Musical Instruments of the Native Races of South Africa (London: Oxford University Press, 1934), p. 73.

²Ibid.

the arm or shoulder.¹

Each chieftain had his official signaller who blew the horn to summon the subjects to work, or to call the dancers to execute the national dance. In the very earliest times the horn was sounded as the call to battle, as with so many other primitive peoples. An interesting custom is connected with the phalaphala:

When the star Sirius appeared as the morning star, rising early in the winter mornings, they called it nanga (horn). Its first appearance as nanga was the signal for the commencement of harvesting, and the first man to notice it climbed up a high hill and blew the phalaphala horn to spread the news, and the chief rewarded him with the present of a cow.²

When the antelope horns became scarce, hardwood cut in a long tapering rod served as a substitute. The hardwood was split in two, and each half was hollowed out except at the extreme tip of the narrower end. The halves were then put together, and from time to time cylinders of the skin of animals, usually from an antelope leg, were drawn over the wood. This was allowed to dry and the result was that the horn was almost air tight at the joint. To make certain that the joint was well secured, ornamental weavings of brass and copper wire were bound on over the skins. The embouchure was added to the side and it was called kwatha or phalaphala, like the ones made from horn, and they were used also for the same purposes as those made

¹Ibid., p. 74.

²Ibid., p. 75.

from antelope horns. The length of these horns ranged from about six inches to two feet. As the inter-tribal wars began to decrease, the use of the horns began to decline and fewer horns were needed and made. Each clan member knew the sound of the phalaphala of his tribe and each had its own signals. In sounding the calls, the players did not aim toward a smooth sustained tone but rather employed a powerful vibrato which was often used in conjunction with repeated notes.¹

The tribe of Swaze had a horn called mpalampala, which was constructed from the horn of the sable antelope, also. It was considered a royal instrument which was used particularly for important ceremonies and for big hunts, and was blown only by men. Among the Zulus also was an antelope horn called by the same name. The Zulu ox-horn instruments were called upondo which simply meant "horn." The upondo was used for battle and hunting and at the present day it is still used for the latter. It was always blown by men and one interesting custom was the blowing of the upondo by a young man who had successfully courted a girl.² The Xhosa tribe also used an instrument of ox-horn which was named the isigidhlo, probably because it was the instrument which summoned the people to the chief's dwelling which was called the isigidhlo. This horn, too, was

¹Ibid., p. 76.

²Ibid., p. 79.

originally made from antelope and was used for purposes of war.¹

In Bechuanaland the horns are known as kwatha and tshihoho. They are made from horns of antelopes, from the hollowed-out stem of pumpkins, from wood, and are encased in like manner already described. The embouchure is almost identical with the phalaphala. The air-column of the tshihoho is very small and this causes the pitch of the fundamental tone to be very high and very difficult to produce. Because of the pitch of this fundamental, it was impossible to produce any harmonics on this instrument.² To add therefore to the fundamental, the boys who blew these horns made sounds by use of syllables, which procedure has been described by Kirby:

Actually the Venda use, in addition to the fundamental tone, a number of other "fictitious" sounds which with their lips they "force" the tube to yield. These sounds can be varied considerably in pitch, and they are used, so far as I have been able to discover the facts, to suggest the pitch distinctions which are characteristic of the syllables of Venda speech. By such verbal "suggestion" it is possible for boys to carry on simple conversations over a considerable distance, since they can clearly understand the inflections provided that the phrases or sentences are not too complex, and deal only with everyday matters.³

Another instrument used in South Africa is the icilongo, which is made of bamboo about an inch in diameter

¹Ibid.

²Ibid., p. 80.

³Ibid.

and varies in length from about two to four feet. The inside of the bamboo stalk is cleaned out and one end is sheared off at right angles while the other end fits into the end of an ox-horn of which the solid tip has been cut off. This instrument closely resembles the Roman lituus and the word icilongo is also the word used by these African tribes to signify European brass instruments. It is blown very much like an ordinary trumpet and several harmonics are possible. The harmonics are not very uniform, however, as the irregularity of the shape of the bell prevents a lack of conformity in sounds which it emits. Also calls are blown on the icilongo which resemble the bugle-calls used on the European horns. It is better known in Zululand than in any other part of Natal, and is still used by the young men of the tribe when they go on courting expeditions or to weddings. In this instance the practice and use of the icilongo closely resembles that of the mpalampala, which has been discussed previously.¹

In South America the use of horns must have been rather rare or else little research has been done in this region, for most books on instruments do not mention any others than the ones used in Peru, probably because of the fact that Peruvian culture was so decidedly the dominant one, before the Caucasian invasion of the Spanish. The

¹Ibid., p. 81.

Peruvians had instruments made of shells and also of clay modeled in the shape of animals. They amalgamated various materials to make different instruments. Experimentation was made so as to determine the kinds of materials which would serve as the best resonators. The primary motive seems to have been to increase the carrying power of these horns. At one stage of development, horns were joined together to produce one large instrument. The different shapes and materials used probably had a telling effect on the harmonic series, and it may be safely presumed that the larger instruments had many more harmonics.¹ Aztec and Peruvian tribes had two different kinds of instruments which they used as a means of signalling in time of war.

According to Sachs, ancient horns have been discovered in England that are made of either wood or bronze.² The wooden ones were made of willow or sallow wood and those of bronze were fashioned from thin pieces of the hammered metal riveted together. These bronze horns, dating from about 500 B. C., had the mouthpiece placed in the side of the instrument. It is thought that the Britons used these instruments to frighten their enemies. The Scots had a war horn which was approximately the height of a man, and it was supposed to have been audible for six miles. Dating even farther back in one of the Carchemish reliefs in the

¹Schaeffner, op. cit., p. 266.

²Sachs, op. cit., p. 73.

British Museum, there is a short, thick horn dating from 1250 B. C. Some of the Sumarians and Egyptians made their horns of gold as well as other metals. Sachs says, in reference to gold horns:

This does not necessarily mean solid gold; an inventory of the presents offered by King Tush-ratta to King Amenophis IV of Egypt, about 1400 B. C. contains a specified list of forty horns, all covered with gold and some studded with precious stones.¹

It was early discovered that the horn was much more effective for scaring the foe than was the drum. In fact, the only instruments used for military purposes in Europe, before the Crusades, were horns and trumpets, but during that movement the Crusaders found that the Saracens at war used trumpets, clarions, horns, pipes, drums, and cymbals. As can well be imagined, this combination created an unearthly clamor. The horn was first used in battle to frighten the foe and later came to be very useful as a means of signalling. Richard "Coeur de Lion" used horns to signal his soldiers at Messina.² In England the horn players went in front of the army in order to incite the soldiers to battle. The Britons also used their horns to great advantage to frighten the Roman legionaries. At first no distinct calls were used, but as calls did begin to develop, the differentiation was rhythmic rather than melodic.

¹Ibid.

²Henry George Farmer, The Rise and Development of Military Music (London: Wm. Reeves, n. d.), p. 10.

About the thirteenth century harmony was used. For instance, six trumpets, blown in harmony, constituted the signal for attack.¹

The quality of tone of these British horns was harsh and of a very unmusical nature. There was none of the charm of tone quality found in present-day horns, but what the early instruments lacked in this respect, they made up for in volume and carrying power. Some of the early horns were very powerful and could be heard for many miles. For instance, the horn blown by Roland to summon the aid of King Charles is said to have been thirty miles from the latter when he heard the blast.²

In England there have also been found many horns of the bugle type. These were sometimes called beme or byrne and were used chiefly for military purposes, hunting, and state occasions. Later on these bemes were used as a symbol of tenure of land and for the inheritance of land. Some were used for municipal purposes, and were called burgmote horns. These were blown to sound an alarm, to announce the arrival of guests of distinction, or to serve as a summons for members of the household and for guests at meal time; furthermore, they were often used as powder horns, or drinking horns. They also sounded the curfew,

¹Ibid.

²Edgar Stillman Kelley, Musical Instruments (Boston: Oliver Ditson Company, 1925), p. 46.

called the *mayor* and corporation to council meetings, and sometimes formed part of the night-watchman's equipment.¹ These English horns varied widely as to size, shape, and material, according to the uses made of them. The length of the burgmote horns was about twenty-eight inches, and they were of two different materials. The horns used by the lower classes were made from animal horns, usually ox, while the horns for the nobility were fashioned of silver or ivory. Still another English horn, the ripon, closely resembled the continental hunting horn.

Often horns were used for ceremonies and as symbols for various occasions. For instance, in Scotland three blasts blown on the horn by the king's messenger was used in the ceremony of proclaiming an outlaw.²

The hutchet, or hunting horn, was used by the French. Covered in leather, these hutchets were used to give signals to intimate the progress of the chase. Occasionally these instruments were made of wood.

Some ancient horns have been discovered in the peat bogs of Ireland and Denmark. These instruments were of several pieces joined with interlacing rivets. Some belonging to the bronze age were about thirty-three inches in length and contained various inscriptions.³ Other Celtic horns

¹A. J. Hipkins, Musical Instruments Historic, Rare, and Unique (London: A. and C. Black, Ltd., 1921), p. 15.

²A New English Dictionary on Historical Principles, V, p. 386.

³Daubeny, op. cit., p. 72.

vary in length from two to three feet, with the mouthpiece placed to the side rather than at the end. Not all of these instruments were of metal, for some were made of hollow pieces of wood, which were bound together by metal bands or by ropes made of twigs. It is thought that these were the horns which greeted the conquering Romans.¹ The Danes used their horns as a means of conveying property. Not only did they use the horns for purposes of sound, but they also served as drinking containers even in the monasteries.²

A metal horn called Hiftborn was used in Germany and its primary function was for the chase. For military purposes the instrument used was the Halbmond. Halbmond means "half-moon," and perhaps the name was got from the instrument being in the shape of a crescent. Of a similar type was the Hinschrufhorner used by the Flemish for purposes of signalling in the chase, and also employed by the watchmen of towns and villages in Flanders.³

The Swiss for centuries have had the Alphorn. This instrument was originally made of wood, spruce or fir, hollowed out and bound together with willow twigs, in something of the same manner as the aforementioned Celtic horns. At different times the Alphorn had different coverings. One

¹Ibid.

²Edmondstrune Duncan, The Story of Minstrelsy from The Music Story Series (London: Walter Scott Publishing Company, 1907), p. 27.

³Francis W. Galpin, A Textbook of European Musical Instruments (London: Williams and Norgate, Ltd., 1937), p. 222.

of the favorite types of casing consisted of bark, usually birch, but sometimes hemp yarn soaked in tar and pitch was wound around the horn. Later the roots of young fir trees were used to wrap the body of the instrument, and rattan cane also served in this same capacity. In Hungary the principal instrument used was the swineherd's horn. This is a simple horn and probably bore a close resemblance to the Swiss Alphorn.

The Russians had a rather unique horn which was known simply as the Russian horn. The characteristic which made it so different from most horns was that only two notes were possible on it. These were the fundamental and its octave. These Russian horns were originally straight, but in later years they were shaped with a right-angle turn at the smaller end. When, in about the seventeenth or eighteenth century, these horns began to be used in groups for ensemble music, the problem involved was great, since there had to be twelve different lengths of horns to cover the chromatic scale for one octave. Each player could play only one note of the twelve. A band composed of such horns was compared to the separate pipes of the organ.¹ These Russian horn bands will be discussed in more detail later.

¹J. A. Kappey, Military Music (London: Boosey and Company, n. d.), p. 63.

Other horns in the Baltic region are thought to have been first made from the tusks of the mammoth. After this animal became extinct, inhabitants of lands bordering on the Baltic made horns from metal as a substitute.¹ These Baltic horns were called lurer and they dated back as far as 1200 B. C. They were in the shape of an S and had a metal plate attached to the smaller end of the tube. This attachment rattled from the vibrations set up when the horn was blown.²

The Greeks and the Romans had several types of horns, both curved and straight, which varied in length from three to eleven feet. Their method of blowing the horns was very different from our present-day technique. The player's cheeks were distended so as to cause a bandage, or capistrum, to be worn over the lower part of the face. Even with this precaution blood vessels often burst, and the cheeks were occasionally rent. The upper harmonics of these instruments were not used, as it was impossible to produce them with this type of blowing.³

Of the ancient horn we know so little, as to be obliged to depend for our ideas of its form and tone, chiefly upon the inference drawn from its name. That it was invented by the Egyptians, and passed from them to the Greeks, we cannot doubt. It was the shawm of the former people, and the cheras of

¹Kelley, op. cit., pp. 43-44.

²Gustave Reese, Music in the Middle Ages (New York: W. W. Norton and Company, 1940), p. 52.

³Daubeney, op. cit., p. 72.

the latter. It has, at different times, been formed of the cornute protuberances of various animals; but chiefly from those of the wild goat. Its original construction, it is to be presumed, differed little from the form given it by nature, and that the scale of its sounds, as now, lay considerably beneath that of the flute. That with the Greeks, it was in very general use, the testimonies of a variety of ancient authors sufficiently prove. And that its power over the passions was great¹

Rusby gives the Grecian horns as the cheras or cornu.²

Perhaps the cheras was the same instrument as the keras mentioned by Ferguson, keras meaning literally an animal horn. The keras was used primarily as a military instrument, and it was later copied and employed by the Romans for a cavalry instrument. Under this specific Roman usage, it became known as the lituus. So fond were the Romans of these horns that every troop of cavalry or foot soldiers had either a trumpet or a horn. The Greeks also had several varieties of horns which were known by the general name of cornu. The latter term also applies to the actual horn of an animal. The cornu was used as a signal in battle. The invention of the cornu has been attributed to the Etruscans. This instrument was large and powerful, made in the shape of a C, originally of horn but later of brass. The player held the cornu under his arm with the broad end upwards over his shoulder.³

¹Thomas Rusby, A General History of Music (London: G. and W. B. Whittaker, 1819), p. 217.

²Ibid., p. 213.

³Donald N. Ferguson, A History of Musical Thought (New York: F. S. Crofts and Company, 1940), p. 136.

Sometimes, the flute had a horn joined to the end of it, by which it assumed the form of a lituus, or clarion. This curved termination was the characteristic of the Phrygian flute. Bartholinus exhibits two flutes of this kind, with plugs; one strait and the other curved, and tells us, from Aristotle's acoustics, that loudness and clearness were acquired by the addition of the horn. Some writers think, and apparently with great reason, that the horn rendered the flutes to which it was applied, an octave lower.¹

One of these types was a trumpet which was seven feet in length. The other was a horn of conch shell. The use of these instruments is mentioned in early accounts written immediately after the discovery of America.²

There are several types of horns which were used over a widespread territory and which do not necessarily fall into any nationalistic category. Some originated in one country or on one continent and then spread outward. Such types as the primitive conch or the cruder animal horns and tusks were a natural beginning for horns in almost every locality.

One of these types of horns is the oliphant. This instrument went westward in Byzantium and was in use for about two centuries beginning about 900.³ Short and thick, it was made of the tusk of an elephant, from which it received its name. There are two types of oliphants: the

¹Busby, op. cit., p. 217.

²Marion Bauer and Ethel R. Peyser, Music Through the Ages (New York: G. P. Putnam's Sons, 1932), p. 11.

³Sachs, The History of Musical Instruments, p. 280.

African type played by blowing across a side embouchure, and the European type blown through the end. Whether in Europe or Africa, these ivory instruments denoted royalty. The oliphant was famous for its volume, and was often intricately carved with all sorts of beautiful designs and figures. The primary purpose of the European oliphant was for use as a hunting horn, and as late as the sixteenth century the instrument remained in use in Portugal. One oliphant, which is in existence today, bears the coat of arms of Ferdinand and Isabella and this carving, it has been supposed, was done by Negroes of the West Coast of Africa.¹ This instrument may possibly have been one belonging to some African chief which was obtained by a Portuguese explorer in Africa and brought back to the King and Queen.

Another of these types of horns was the jegerhorn, which was sometimes given as jagdhorn, and this was used primarily as a hunting horn. This instrument was in use in the early part of the sixteenth century and throughout the seventeenth. It was distinguished from other contemporary horns in that it was longer and more tapered. The jagdhorn was coiled, often as many as twenty times; though its actual length was much greater than that of most of the previous horns, it never exceeded eight feet.² The shape of the

¹Hipkins, op. cit., p. 15.

²Adam Carse, Musical Wind Instruments (London: Macmillan and Company, Ltd., 1939), p. 211.

mouthpiece closely resembled that of the modern horn. Often this general type of instrument was called a jager trommet, as it resembled both a trumpet and a horn.¹ The coiled horns proved a convenience for use in the hunt as they afforded a loop by which they could be carried on the arm or shoulder of the player while riding horseback. The coils are still used on the modern French horn.

A widely used instrument in the time of Bach was the clarin or clarion. This, like the jagerhorn, was classified as both a horn and a trumpet. It was curved in the shape of horns of that day, but had a mouthpiece that was of the trumpet variety.² Most of the horn-type instruments before the eighteenth century can be classified either as horns or trumpets, since the instruments had not yet reached the stage of development in which definite differentiation was made between the two, and the characteristics of both present-day trumpets and horns were incorporated in the old clarion. Quite often the body of the instrument was horn-like, while the mouthpiece, as in the example cited above, was of the trumpet variety. Still another variety of hunting horn used in Bach's time was known as the Inventionshörner. It was usually small and wound several times, so that it closely resembled the shape of a snail shell.

¹Warner Menke, The History of the Trumpet of Bach and Handel (London: Wm. Reeves, n. d.), p. 121.

²Sachs, The History of Musical Instruments, p. 384.

The first of these wound horns were much larger and their bells were completely out of the reach of the player.

Down through the ages the horn has appeared often in lore. One story, in connection with Alexander the Great, is related by Duncan:

It need not be a matter of surprise that so ancient an instrument as the horn has been fabled by poets and writers from early times. Werton speaks of the Arabian books abounding with the most incredible fictions borrowed and improved from the Persians. He continues . . . "They call him Escander. If I recollect right, one of the miracles is our hero's horn. It is said that Alexander gave the signal to his whole army by a wonderful horn of immense magnitude, which might be heard at the distance of sixty miles, and that it was blown or sounded by sixty men at once. This is the horn Orlando won from the giant Jatmud, and which, as Turpin and Islandic bards report was endued with magical powers, and might be heard at the distance of twenty miles. Cervantes says that it was bigger than a massy beam. Bayardo Berni and Aristo have such a horn; and the fiction is here traced to its original source." (History of Poetry, Sect. 111.)¹

Horns were of no melodic or harmonic significance until the fourth octave of the harmonic series was reached. The open tones were not sufficiently close to allow much melody or harmony and the chief manner of sounding calls in hunting and in war was by playing the calls in rhythmic variety.² Harmonic series that would allow melody and harmony required a tube length of horn from nine to eighteen feet. The process of lengthening was very gradual, and it

¹Duncan, op. cit., p. 26.

²Carse, Musical Wind Instruments, p. 211.

took many years for the required series to be attained. Not only was this great length required, but a metal body fashioned by some kind of plan and proportion was also necessary to afford a uniformity of harmonic series. Some of the old English horns became so long that they had to be rested on a forked stand or prop because they were so heavy that it was impossible for the player to support them without aid.¹ As these instruments were used in hunting, it was necessary for them to be coiled or curved for the reason which has been mentioned before in connection with hunting horns used on the continent. Some of these horns reached a length of eighteen feet and one can readily understand the impossibility of carrying such a horn while on horseback. The circular type of horn dates from the fourteenth century. During the time of Louis XI (1423-1583) and Charles IX (1550-1574), the hunting horns were bent with but a single curve, and consequently very few tones could be procured on them. Louis XI was very interested in the horn and contrived several calls for use during the chase. One was used for the beginning of the hunt, another for the sighting of the fox, and still others to convey the progress of the chase. These hunting horns were called, in France, cor de chasse, which of course was simply the

¹Francis W. Galpen, Old English Instruments of Music (London: Methuen and Company, Ltd., 1932), p. 188.

equivalent of our English title. So fond was Louis of the horn that he requested that his statue, carrying a cor de chasse, be put on his tomb. The corresponding German name for these same instruments was Waldhorn.¹

In the Middle Ages plundering was very prevalent, and one of the municipal usages of the horn is linked with that custom. Special watchmen were employed in every town and were stationed in either the church steeples or in specially constructed watch-towers. These watchmen used a horn called the zinke which they blew every hour, and also employed as a signal to warn the people of danger, in case of fire or thievery. Sacred tunes were played on the zinke on feast days, and at noon a secular melody. After a time, bands were organized in which the zinke was employed along with several other instruments. The increasing popularity of these bands caused a greater demand for players of this instrument, so that often it resulted in the town zinke player becoming a teacher of several apprentices. This teacher, or master, soon began to rotate the watch duties among his apprentices in order that he might be relieved of his tiresome duties as watchman.²

One of the earliest references to horns in collections is to be found in the instruments of King Henry VIII

¹Grove's Dictionary of Music and Musicians, American Supplement, Revised (New York: Macmillan Company, 1928), p. 429.

²Kaprey, op. cit., p. 14.

of England, who left three hundred and eighty-one instruments, chiefly flutes, in his collection. Twenty-one horns were existent among his possessions in 1547.¹

In the seventeenth century the natural French horn appeared. The name "natural horn" was applied to those instruments with no valves. Before this time the horn had been restricted to the hunt and it had had very little musical value. The tone was considered harsh, and, as has been discussed previously, the early horns were not fitted for melody or harmony. During this century horns began to find their way into various ensemble groups, and the journey toward becoming an art instrument thus began. When these horns began to be used rather extensively, guilds were in vogue. Even this early there were restrictive laws concerning the playing of these instruments, and at one time the law forbade the playing of either the horn or the trumpet. This ban was no doubt lifted before the time of Bach, however, as he used trumpets in his music.

One of the first records of horns being used in ensembles was with the first German Singspiel. It was the comedy "Seelewig," by Staden, which appeared in 1644, and it was scored for three violins, three flutes, three reeds and one large horn, the bass being given by a theorbo. Just what type of horn this was or of what key is not known, but

¹Sachs, The History of Musical Instruments, p. 303.

its inclusion does prove that some instrument of the horn-type was used at this early date.¹

An important development of the horn occurred in the second half of the seventeenth century. During this period, the length of the tube was increased and reached as much as twelve feet, which length resulted in the F horn. The length of this F horn was sufficient to make available the consecutive notes of the harmonic series in the fourth octave. The availability of these consecutive notes brought with it many melodic possibilities previously unobtainable. Melodies became possible in the upper register, although they were not very pleasing to the ear because of the strident tone quality which was produced by the tones in this extreme register. Harmony could be played in the middle register in fourths, fifths, and sometimes in thirds and sixths. Not only was the length of the tube increased but also the diameter of the coils. The number of coils was decreased and was determined according to the length. Some horns had one coil, others two, or three. Along with the diameter of the coils, that of the bell-mouth also changed. The taper of the bore near the mouthpiece became still more pronounced, and the bells increased in size up to a maximum diameter of nine inches. With this we see the beginning of some consistency and stabilization of size

¹Bauer and Peyser, op. cit., p. 123.

not only in length of the tube, but also in diameter of the tube and of the bell of the instrument. With this consistency the keys could be determined, so as to obtain instruments of a definite pitch which would fit with the other instruments of the orchestra.¹

The large open-hooped horns probably came into use in France between the years 1650 and 1680, for the earliest surviving ones date from the last part of the seventeenth century. It may be supposed that these were modeled after the shape of the hunting horn which had the hoop by which it was carried. Some of the horns of this variety bear the name of either German or English manufacturers. Carse gives a table of the open-hooped types of horns made between 1680 and 1729, with their measurements. This table, shown on the following page, shows the general tendency to increase the size of the instrument.

There are many surviving instruments believed to be of this same period which, however, do not have a definite date inscribed. The horns of this time had a band around the rim of the bell and often the coils were wrapped with strips of cloth. This band usually bore the name of the manufacturer and the date in which the instrument was made.

During the time of Handel (1685-1759), the melodic use of the horn was decidedly negligible, but instead, its primary role was of a harmonic nature. The instruments were

¹Carse, Musical Wind Instruments, p. 212.

TABLE I
OPEN-HOOPED HORNS MADE BETWEEN 1680 AND 1729*

Date	Maker	Key	Width in Inches		No. of Coils
			Coils	Bell	
1682	J. W. Haas, Nurnberg	A	...	...	1
1689		Bb alto	...	...	...
1698	H. L. Ebe, Nurnberg	Bb alto	19 3/4	6 1/2	1
1699	W. Bull, London	F	14 1/2	6 3/4	3
1710		F	17 1/2	...	...
1713	M. Leichamschneider, Vienna	...	18 1/2	9 1/2	2
1713	"	F	...	...	...
1713	J. E. Muller, Roda	Db alto	9	6 1/8	2
1718	L. Leichamschneider, Vienna	F	16 1/2	...	3
1724	J. W. Haas, Nurnberg	F	16 1/2	9	...
1725	J. Leichamschneider, Vienna	F (pair)	18	9 1/2	2

*From Carse, Musical Wind Instruments, p. 213.

badly out of tune on most of the tones, so that it became imperative to restrict the orchestration for horns to a very few notes. The horns, as was the case with the other

brasses, were at a disadvantage with the strings and some of the woodwinds, because these latter instruments were at a much more advanced stage of development and had fewer restrictions; therefore, the intonation problems on them were not nearly so acute. The violins had already reached their high point of development under Stradivarius and Guarnerius before this period. In this same era, the horn was used frequently as a substitution for the trumpet, notably in some of the compositions of Bach. At other times the horn, trombone, and oboe were used for support to the other instruments of the orchestra. Often composers indicated horn or trumpet ad lib., and the conductor was thus at liberty to select either the horn or trumpet, or to use the combination of the two.¹

The present-day shape of the orchestral horn was designed in the early years of the eighteenth century. This was not an abrupt or drastic change but it was a culmination of centuries of evolution of the wound circular tube. This change had begun with a shell or animal horn and it had gradually developed until it was an instrument of some specified plan and design.

The eighteenth century is very important to the development of the French horn, as it came into considerably wider use about 1700, along with the clarinet. Horns became

¹Menke, op. cit., p. 163.

very popular in the military bands which began to spring up all over Europe about this period. Such bands usually patterned after the small town bands and had this general instrumentation:

2 flutes
2 oboes
2 horns
2 trumpets
2 bassoons
1 trombone¹

These horns were probably the natural horns without crooks or valves.

Before the middle of the eighteenth century the large-hooped hunting-horn, which has been mentioned previously, reached a length of about fourteen feet. This instrument, which was wound into two coils, and which had a diameter of about twenty inches, came into use. This was a horn in the key of D. Another variety of the D-horn with the same length of tubing was wound closely into coils and measured about eight inches across the coils. All of these horns achieved a more standardized shape in this period, beginning small at the mouthpiece end and gradually getting larger toward the bell.

The horn came into the orchestra in England later than on the continent. Schwartz thus describes the introduction of the horn there:

¹Kaprey, op. cit., p. 75.

To Bach's countryman and contemporary, Handel, goes the honor of introducing the horn into England, in 1715. This event is not as English as it might seem, for Handel, the English king and the horn were all three from Germany.¹

His first use of the horn in England was in his "Water music," and again five years later in the London performance of "Radamisto."

To further substantiate the fact that the horn had an established place by the middle of the eighteenth century there is Dr. Burney's account of an essay given to him by a resident of Florence, which was written "on the capacity and extent of the violoncello, in imitating the violin, flute, French horn, trumpet, oboe, and bassoon."² Although this essay was not of a nature to be valuable on the subject of the French horn, it nevertheless supplies evidence that the horn was then well-known. Also, on his continental travels Dr. Burney mentions having heard a band in which the horns were included and which he said were so out of tune that he wished them a hundred miles away.

Before the eighteenth century all of the horns were made in the key of F, and therefore, to get the best effect from them in the orchestra, they could be used only in compositions which were in the key of F. This century,

¹H. W. Schwartz, The Story of Musical Instruments (New York: Doubleday, Doran and Company, 1938), p. 190.

²Cedric Howard Glover, Charles Burney's Continental Travels (Glasgow: Blackie and Sons, Ltd., 1927), p. 47.

however, brought a decided change in horn playing, for it was then that the crook began to be widely used. Crooks were perfected which would put the instruments into any key, so that, upon inserting a specified crook, the instrument would automatically be changed to the key of that particular crook. The F horn had previously been about twelve feet long and had been wound in two or three coils, but by the addition of the crooks, the length was thereby shortened to about seven and a half feet.¹ These crooks were constructed in thirteen different lengths which varied from one and a half to ten and a half feet. In one end of the crook the mouthpiece was placed while the other end fitted into the horn. Later, a better design was introduced by Johan Werner, a second horn player in the Imperial Opera Orchestra at Vienna. This improvement was invented in 1754 and was called the Inventions-horn. The Inventions-horn provided for all the longer crooks to be "inserted into the center of the horn, by a double sliding tube. Thus the horn could be 'crooked,' or put into every chromatic interval from Bb alto to Bb basso."² One of these instruments had an inner slide by means of which the instrument could be put into any key. No doubt the players of these horns were appreciated because of the extra difficulty and skill

¹Kaprey, op. cit., p. 59.

²Farmer, The Rise and Development of Military Music, p. 57.

involved in playing their horns, as Farmer states in his book on military music that in the provisions for the Band of Musick, British Royal Regiment of Artillery, 1762, the horn players received extra pay.

Article V. So long as the artillery remains in Germany each musician is to have ten dollars per month, but the two French horns to have twelve dollars per month, out of which they must provide their own bread; but when they arrive in England, each musician to receive one shilling, the French horns one shilling and twopence per day; this payment to commence at their arrival in England

Article VIII. The two French horns will enter into pay, as soon as they sign their articles, the pay of the other six musicians, to commence as soon as they arrive at the corps.¹

In the use of the crooks, it was necessary for the player to change crooks every time there was a key change in the music. It was an inconvenience to use different horns or different crooks, for the bag containing extra crooks was cumbersome and heavy to carry.

A novel effect of a horn performance is recorded by Dr. Burney. Joachim Frederic Creta gave several concerts in London in 1729 in which he "blew the first and second treble on two French-horns, in the same manner as is usually done by two persons."² No doubt this was a kind of a comical effect and probably was not in common practice among horn players.

¹Kappey, op. cit., p. 59.

²Charles Burney, A General History of Music (New York: Harcourt, Brace and Company, n. d.), II, 999.

Horns came to be recognized for their importance in both bands and orchestras about this period. Before the eighteenth century a few instances may be found of the use of horns in ensembles, but it was the exception rather than the general practice. Composers began to realize the value of horns primarily for filling in a background for the other instruments in the orchestra, while in the bands, the horns had a more active part and added much to the volume and brassy sound of this old type of band. Some seventeenth and eighteenth century instrumentations are listed below.

Lully (1633-1687), operatic composer of France, wrote for the horn in one of the earliest opera orchestras. His orchestra was composed of:

violins
flutes
trumpets
kettle-drums
oboes
bassoons
trompes de chasse
guitars
bagpipes
tambourines, castanets
(in the ballet)¹

In Germany the military bands, which have been mentioned previously, were common in almost every town of any size. The typical band of this kind usually included the following instrumentation:

¹Wanda Landowska, Music of the Past (New York: Alfred A. Knopf, 1924), p. 64.

2 flutes
 2 oboes
 2 horns
 2 trumpets
 2 bassoons
 1 trombone¹

Although Bach used trumpets to a greater extent than horns, his favorite orchestra, as represented by his scorings, consisted of:

strings
 flutes
 oboes (also oboe d'amore, alto oboe, and oboe de caccia, tenor oboe)
 bassoons (also taille de basson, a tenor bassoon called tenoroon)
 trumpets (tromba)
 corno de caccia
 hunting horn
 clarino, cornetti and three trombones are often used to double the vocal parts.²

In 1715 the horns were again used in the opera orchestra by Scarlatti, who wrote for two horns in F in his opera "Tigrane."³ Loewenberg states that this was the first time in which horns were used in the opera orchestra,⁴ but Lully used them much earlier as has been cited previously.

The Strasbourg Academy of Music numbered, in 1730, twenty players, the distribution of instrumentation being:

¹Richard Franko Goldman, The Band's Music (New York: Pitman Publishing Corporation, 1938), p. 27.

²Bauer and Peyser, op. cit., p. 157.

³Schwartz, op. cit., p. 191.

⁴Alfred Loewenberg, Annals of Opera 1597-1940 (Cambridge: W. Reffer and Sons Ltd., 1943), p. 68.

6 violins
 1 viola
 2 violoncellos
 1 double-bass
 2 flutes
 2 oboes
 2 bassoons
 2 horns
 2 trumpets
 kettle-drums¹

"While visiting Baron von Farnberg in 1744 Haydn wrote of a series of works for an orchestra of strings, oboes and horns, which was in the employ of the Baron."² How many horns or what kind was not given in this reference.

Haydn's orchestra at Esterhaz consisted of:

strings
 1 flute
 oboes
 2 bassoons
 4 horns
 trumpets
 kettle-drums³

After 1778 the clarinet was added to the Haydn instrumentation. Another record lists Haydn's orchestra at Esterhazy's as embracing sixteen to twenty-two players:

4 to 6 violins
 2 violoncellos
 flutes
 oboes
 bassoons
 hunters horns (often 4)
 later clarinets⁴

¹Landowska, op. cit., p. 111.

²Bauer and Peyser, op. cit., p. 186.

³Ibid., p. 346.

⁴Landowska, op. cit., p. 109.

This list is almost identical with the previous one except for this specification that the horns were hunters' horns. Naturally Haydn's instrumentation varied somewhat while at Esterhazy as his residence there lasted thirty years, from 1761 to 1790.

Elson, in his Orchestral Instruments and Their Use, describes the entrance of the horn into the orchestra in Paris.

The introduction of the horn into the Paris orchestra is said to have been due to the composer Gossec. When the singer Sophie Arnould, afterwards so famous in Gluck's operas, made her Parisian debut, in 1757, the young Gossec composed two arias for her, in which he wrote obligato parts for two horns and two clarinets.¹

The instrumentation for the previously mentioned Band of Musick of the British Regiment of Artillery in 1762 was:

2 trumpets
2 French horns
2 bassoons
4 hautbois or clarinets²

In 1763 Frederick the Great issued an order which stated that the German bands were to consist of one set instrumentation, which was as follows:

2 oboes
2 clarinets
2 horns
2 bassoons.³

¹Arthur Elson, Orchestral Instruments and Their Use (Boston: Page Company, 1930), p. 211.

²Permer, Rise and Development of Military Music, p.143.

³ibid., p. 56.

This combination was a great favorite with composers and was known on the continent as "harmonic music."

In Vienna in 1781, a band which played before the Hofburg castle every evening consisted of:

2 shawms
2 clarinets
2 horns
1 trumpet
2 bassoons
side drum
bass drum¹

Frederick Nicolai visited Vienna in 1781 and was highly pleased with a military band, which appears to have been the same band mentioned by Kappey. This organization included:

2 shawms
2 clarinets
2 horns
1 trumpet
2 bassoons
side drum
bass drum²

In 1783 even an independent organization like the Honourable Artillery Company could only boast of this small band:

4 clarinets
2 horns
1 trumpet
2 bassoons³

The bands of the three Regiments of Guards consisted

¹Kappey, op. cit., p. 87.

²Ibid., p. 69.

³Farmer, Rise and Development of Military Music, p. 67.

in 1783 of only eight performers each, and these members were apportioned according to the following instrumentation:

2 oboes
2 clarinets
2 horns
2 bassoons¹

Twelve players comprised the band of attested soldiers for the Coldstream Guard, which was formed in 1785, and exists to the present day. They were as follows:

4 clarinets
2 oboes
1 trumpet
2 horns
2 bassoons
1 serpent²

In England in 1794, the Grenadier Guards had a band consisting of:

1 flute
6 clarinets
3 bassoons
2 serpents
1 trumpet
3 horns
drums³

The Corps d'Elite of France had the following instrumentation in 1795:

1 flute
6 clarinets
3 bassoons
1 serpent
1 trumpet
2 horns
drums⁴

¹Kaprey, op. cit., p. 87.

²Farmer, Rise and Development of Military Music, p. 69.

³Ibid., p. 84.

⁴Ibid.

The use of horns in various musical organizations seems to have been prevalent throughout the eighteenth century in most of the leading countries with the exception of Italy. Russia had a horn band in 1750 directed by J. A. Mares, who was a Bohemian virtuoso on the French horn. This band was composed entirely of horns which could produce only one note each. Thirty-seven players and horns comprised this band when it was first organized. Kappey gives an interesting comment on these bands:

The great requisite was that their embouchure for the one note should be of the very best, and their intelligence sufficient to learn the peculiar notation, in which their music was written, and be ready to sound the note when required. One very great result was achieved. The instruments being made as perfectly in tune as possible, and the sounding of its note being studied with great care and labour, it is said that the performances of that band, with regard to shading and purity of intonation, were the most perfect kind ever heard. The number of horns and performers was at last increased to 60, and their training was so careful that they performed pieces of much difficulty.¹

It might be supposed, using Farmer as a basis, that a knowledge of the French horn was desired for band-masters. He quotes an interesting advertisement in the Daily Advertiser in 1774:

WANTED, immediately, a person qualified as a master musician to a Military Band of Musick, who is a perfect Master of the French horn, and performs on other wind instruments, as great encouragement will be given. None need apply who is not a perfect master and can be well recommended as a person of great Sobriety and good conduct.²

¹Kappey, op. cit., p. 63.

²Farmer, Rise and Development of Military Music, p. 60.

As to actual study of the French horn, one reference shows that horn playing was taught at a conservatory in Italy in the latter half of the century. When Dr. Burney made his tour of the continent, he visited a conservatory in Italy in which he found students of the horn as well as of singing and other instruments, although the horn players did not fare as well as some of the others.

The violoncellos practise in another room; and the flutes, oboes, and other wind instruments in a third, except the trumpets and horns, which are obliged to fag, either on the stairs, or on the top of the house.¹

It would appear that the horn players were not very well respected, however, since they had no definite place provided for them in this conservatory.

Dr. Burney also mentions the horn in connection with religious events:

At 6 p. m. the same evening a splendid procession passed through the streets, in honor of some legendary saint: consisting of a prodigious number of priests, who sang psalms in *canto fermo* (i. e. in parts), all the way to the church, with wax tapers in their hands, accompanied by French horns, and serpents; a large crucifix, and a Madonna and child, as big as the life, of the same metal, decorated this solemnity.²

For many centuries the horns were considered unfit to be included in the orchestras with the more refined instruments, as the tone quality was so harsh and unmusical. Until the instruments were lengthened, it was impossible

¹Glover, op. cit., p. 65.

²Ibid., p. 96.

for them to be used widely in musical groups because many of them were unable to produce more than one tone. Gradually, however, the brass family began to be included in the operatic orchestra, the military bands, and various miscellaneous types of ensembles. The tone quality was often offensive to the ears of the listeners, however, and the parts written for them were very narrow in scope, especially when compared with the parts given to the instruments which were at a more advanced stage of development. The first role of the horn was to add picturesqueness and color, in the form of hunting calls and the like, to the music. Composers and players were irritated by these limitations of the horn, and the eighteenth century saw much change and experimentation along the lines of variations of tube length and novel methods used in an attempt to bring about more pleasing aesthetic results. The developments which occurred during this period will be discussed in the chapter to follow.

CHAPTER II

DEVICES LEADING TO THE DEVELOPMENT OF VALVES

The first horn used in the orchestra was the natural horn, which is thus described in detail by Arthur Elson in his Orchestral Instruments and Their Use:

The natural horn, without keys or valves, is a conical brass tube, curved upon itself, provided with a tapering mouthpiece at its smaller end, and a large bell, or expanded opening at the other extremity. The player's lips vibrate against the mouthpiece, at a speed governed by the length of the tube, the pressure of his breath, and the firmness which he uses in making his "embouchure." Firm lips and hard blowing produce the higher harmonics. The narrowness of the tube is another aid in the formation of these upper notes. The fundamental, or full-length tone of the horn is never sounded, but all of the harmonic series, even up to the twentieth, are possible.¹

This instrument was very restricted as to key and the number of notes possible, and soon some adjustment became necessary to alleviate these limitations.

Toward the end of the eighteenth century, two or four horns of different tonalities began to be used in order to obtain the complete chromatic scale. Sachs says: "Four horns, a semitone apart, would provide an uninterrupted

¹Elson, op. cit., pp. 211-213.

chromatic scale from the fourth harmonic on."¹ The use of these horns in different keys proved beneficial for producing a chromatic scale, as each horn had harmonics in a different key, therefore giving the composer a wider choice of tones. It must be kept in mind, however, that the entire chromatic scale could not be played by any single player on one instrument, but instead each player merely had certain notes which his instrument in turn could contribute to the scale. A complete chromatic scale thus involved relay in the matter of performance. Often composers scored for four horns but only in two keys, in which case the first and second horns were in one key and the third and fourth in the other. Obviously such usage was unsatisfactory, for a scale divided among four persons had many disadvantages. The execution of a scale-wise passage by four different performers would of a necessity be rather rough and uneven, as each person had a slightly different tone-quality and the connection in correct time values was difficult. Rapid passages and also those demanding a great amount of agility, such as those for the violins, were out of the question for this relay method of playing. One might also imagine the inconsistency in the relationship of the scale steps to one another when played in this manner, since the pitch of each

¹Sachs, The History of Musical Instruments, p. 424.

tone would be untrue when it came from a horn in another key.

One of the first experiments to remedy this unhappy situation is described by Sachs:

In 1788, an Englishman, Charles Clagget, obtained a British patent for "uniting two French horns in such a manner that the mouthpiece may be applied to either of them instantaneously as the music may require. One of the trumpets being of the tone D, and the other of the tone Eb, it is evident that by moving the mouthpiece to the suitable horn or trumpet any piece of music may be played, as it then contains an entire chromatic scale."¹

Before valves were invented, still another attempt was made to unite horns of different keys. This consisted of a cluster of tubes, grouped so they could be blown through a single mouthpiece -- by means of keys, the air stream could be directed through any tube at will. Each horn was of a different key so as to furnish all the tones in a chromatic scale. This invention proved an advantage over the natural horn, but it was very inconvenient and impractical, because the many horns constituting the cluster thereby caused the instrument to be very heavy.²

After further experimentation, it was discovered that, by putting in different lengths of tubing, the pitch of the instrument would be changed sufficiently to shift it into a different key. These pieces of tubing were called crooks, as they were usually of a curved or U-shape. The use of

¹Ibid.

²Kelley, op. cit., p. 185.

these crooks was the basis for the nomenclature persisting to the present time by which horns are designated as being F, Bb, Eb, and G. Carse gives a discussion of these horns, which is as follows:

Horn parts began to appear in orchestral scores soon after the beginning of the eighteenth century; the earliest of these suggest that F was the standard key at first, but a number of actual instruments and some contemporary parts written for horns in G, F, Eb, D, and C, show that further lengthening of the tube was in progress during the first half of the century. Eisel (1738) and Majer (1741) mention the F and C horns as the most common; the English instruction books, The Modern Music Master (1731), The Muses' Delight (1754) and the Complete Tutor (c. 1754) name horns in G, F, Bb, D and C, and contemporary parts suggest that the favourite instruments for orchestral use were those in F and in D.¹

It is interesting to note that horns in these keys, mentioned above, have remained the favorite ones. Composers have always preferred them to the others, and they have been used from the dates given above until the present day. The F and D horns have the best tone quality in their open tones, and this has been the basis for their long-time popularity. The method of crooking the horns was adopted by both German and French makers toward the end of the eighteenth century, and the instruments became known in Germany as the Inventionshörner, while in France the crooks were called tons de rechange.

An interesting piece of information concerning the horns in these various keys, with crooks, is that on the

¹Carse, Musical Wind Instruments, p. 214.

shorter, higher horns the low notes are easier to produce; whereas, the high notes are very difficult. The opposite is true of the low-pitches horns; the high notes are obtainable with more ease and the low tones are very difficult to produce.¹

According to Grove, the lengths of these various crooks are:

Bb crook (alto)	. . . .	16 inches	
A "	. . . .	22 $\frac{1}{2}$	"
Ab "	. . . .	29 $\frac{1}{2}$	"
G "	. . . .	36 $\frac{3}{4}$	"
F "	. . . .	52 $\frac{1}{2}$	"
E "	. . . .	61	"
Eb "	. . . .	70 $\frac{1}{2}$	"
D "	. . . .	80	"
C "	. . . .	101	"
Bb "	(basso). . . .	125	" 2

On rare occasions the number of crooks was increased to include A basso and Ab basso. As will be readily observed, the lower the pitch of the crooks the longer the tube length, which is in accordance with the normal acoustical law.

The hand-horn and Inventionshorn were both in use from about the late eighteenth century to the middle of the nineteenth. They seem to have been made in several of the leading countries of Europe, as evidenced by such a list as that below, furnished by Carse. Belgium, Germany, Italy, France and Austria figure most prominently in their contributions to these types of horns. According to Carse, the

¹Hector Berlioz, The Life of Hector Berlioz (London: I. M. Dent and Sons, Ltd., 1937), p. 129.

²Grove, op. cit., p. 430.

following are some of the makers of these instruments during this period:

Haltenhof	Hanau
Korn	Mayence
Schmidt	Leipzig
Gabler	Berlin
Eschenbach	Markneukirchen
Riedl	Vienna
Naumann	Vienna
Ripsoli	Pistoja
Pelliti	Milan
Cormery	Paris
Dufarier	Paris
Raoux	Paris
Lebbaye	Paris
Krause	Berlin
Sattler	Leipzig
Roth	Adorf
Duirraschmidt	Markneukirchen
Gambaro	Paris
Guichard	Paris
Kretschmann	Strausbourg
Dubois and Coutourier	Lyons
Bacher	Ghent
Devaster	Brussels
Tuerlinckx	Malines
van Engelen	Liege ¹

Galpin and Carse, two authorities on instruments, have described the function and characteristics of these horns with crooks. These descriptions also include some variations of this kind of instrument that grew out of the ordinary crooked horn which has been mentioned previously. Galpin reports:

When the Waldhorn entered the orchestra at the close of the seventeenth century, it was found necessary to alter its normal pitch to the key of the composition played in order to obtain as many of the harmonic notes as possible. This was effected by tons de rechange or crooks (Krumbugel), consisting of various lengths of tubing inserted into the small

¹Carse, Musical Wind Instruments, p. 218.

end of the instrument. Sax of Brussels, in his Cor Omnitonique, placed them all on the instrument, the required length being added by means of a graduated sliding-tube. It rendered the horn, however, very heavy.¹

Some of these horns were so constructed that all the crooks were fixed permanently to the instrument in order that any of them could be placed in the sounding-length of the tubing without the usual necessity of removing one crook and replacing it by another.²

Of the Viennese horns in use in the early eighteenth century, Carse makes the following statement:

Horns with six crooks were made in Vienna as early as 1718. These orchestral horns had a fixed tube-length of about 8 feet, twice coiled in a rather small hoop, and the addition of a circular crook, or combinations of two or even three crooks, inserted between the body of the horn and the mouthpiece, increasing the sounding-length so as to provide for almost all keys from C alto downwards.³

As mentioned earlier, the horn was first used in orchestras for the added color which it afforded for hunting scenes, military music, and noisy types of music in general. The horn had been in such use for about a century before any progress was made as to diversifying the type of music written for it. Composers seemed to be satisfied to keep the horns within the stereotyped capacity without making any attempt to widen the sphere of possibilities for them.

¹Galpin, A Textbook of European Musical Instruments, p. 223.

²Carse, Musical Wind Instruments, p. 215.

³Ibid., p. 219.

It was about the middle of the eighteenth century before any change was made in this connection. When the horn first began to be used in orchestras in Germany, there were many objections to it because of its harshness; therefore, it was suggested that a mute be put into the horn to soften the tone. Mutes had previously been used on the oboe and had proved very satisfactory. The method of muting the oboe was achieved by filling the globular bell with cotton-wool. The first mutes tried on the horn were made of wood, and some were made of cardboard. Joseph Hampel, a horn player at the court of Dresden just after the middle of the eighteenth century, tried the old device of muting which had been used on the oboe and discovered that, with the insertion of the cotton pad, the pitch was lowered a semitone. He was amazed with the result and hit upon the idea of placing his hand in the bell as a substitute for the cotton. Again the same change of pitch occurred as had been effected with the oboe mute. This chance discovery made a great change in the possibilities of horn playing.¹ The mute made it possible for the harsh open tones to be made softer and more satisfying to the ear, and at the same time the number of available notes was increased by more than twice the number originally obtainable. This method of muting was soon adopted by other horn players and was the

¹Grove, op. cit., p. 429.

first attempt that had ever been made to bridge over the gap between the harmonics. This method of muting was known as stopping; the instrument on which it was used received the designation of the hand-horn, and the notes obtained by this method constituted hand-notes.¹ Kappey says, in connection with the stopping process used on the horn:

"The 'open' notes of the horn are precisely the same as those of the trumpet, its shape allowing a convenient insertion of the right hand into the bell."² The natural shape of the horn afforded an advantage over the other instruments, as its curved tubing caused the bell to be in such a position as to make it easily reached. Not so in the case of the trumpet; the instrument was often so long that it was impossible to reach the bell. Hampel contributed greatly to the development of the horn, inasmuch as he is also credited with the idea, which has already been mentioned, of inserting the crooks into the middle of the horn.³

Descriptions of stopped and partially stopped notes have been given by most writers on the subject of instruments. Sachs substantiates the statement above, as to the inventor and to the date of his discovery. Stopping was

¹Ibid.

²Kappey, op. cit., p. 60.

³Carse, Musical Wind Instruments, p. 218.

done by inserting several fingers, held close together, into the bell. It was soon discovered that more variation than that represented by one semitone could be got by the use of stopping. The horn players gradually proceeded to distinguishing three degrees of stopping: half-stopping, three-quarter stopping, and whole-stopping. Authorities differ as to the exact rules and methods concerning each of these degrees of stopping, and Sachs comments:

The difference between half and three-quarter stopping is so vague that the methods of producing certain notes vary greatly. In certain cases the note can be raised instead of lowered by stopping. Thus, within the average range c to f3 most gaps between the harmonics can be bridged over.¹

On this same subject of stopping and its various degrees, Grove gives a more detailed and precise account of the different techniques applied. He states:

The method of stopping the horn is not by introducing the closed fist into the bell, but the open hand, with the fingers close together, some way up the bore. By drawing the fingers back, the natural sounds are again produced. The degree in which the horn is stopped is not the same for all stopped notes, there being half and whole stopping. In the first, by raising the hand the bell alone is, as it were, closed; in the second the hand is introduced as far as if it were intended almost to prevent the passage of air. (The "half-stop" is used to depress an open note by a semitone, and the "whole-stop" in like manner gives a tone; more than this in the ordinary way cannot be done by stopping.)²

Grove does not even mention the existence of the third degree of stopping, and it was possible that each

¹Sachs, The History of Musical Instruments, p. 424.

²Grove, op. cit., p. 429.

individual player had a method of his own by which he could procure the various alterations of pitch which were called for in the horn parts. The farther the hand was inserted into the bell the more muffled the tone became, and it was almost impossible for such tones to be heard. Players adopted the method of blowing very loudly in an attempt to make these indistinct tones more easily audible. The result was a "buzzy" tone. The contrast among the open tones of the harmonic series, the stopped muffled tones and the stopped "buzzy" tones was great, and composers were forced to exercise extreme care in writing for these artificial tones so as not to produce an effect which would be comical. Berlioz says that, contrary to the method employed by Beethoven of using mostly open tones with the wise dispersion of the stopped tones, the French and Italian composers used the same method of writing for horns as for bassoons or clarinets. They did not take into account the difference between the closed and open tones, or the difference in the degrees of stopping. One can well imagine the conglomerated effect produced by the scoring of some of the composers who wrote thus indiscriminately.¹

Despite the fact just mentioned that the brisk, open tones of the hunting horn were a drastic contrast to the muffled tones of the stopped horn, this method of playing

¹Berlioz, op. cit., p. 138.

proved a great improvement. Several attempts were made to change the shape of other instruments, notably the trumpet and others of the brass family, in order that the device of stopping might also be possible on them. Most of these attempts proved unsatisfactory, however.

Stopping served another use besides the resultant enlarging of the number of tones possible and the modification of the tone quality. Several of the tones of the natural harmonic series of the horn were badly out of tune, principally the seventh, eleventh, thirteenth and fourteenth. These tones are out of tune in the natural harmonic series, and they appear as untrue in pitch on stringed instruments, on carillon and all hung bells. Stopping of horns was used to a good advantage to put these tones in tune. Most of these had a pronounced tendency to be flat, and, by the process of a partial stoppage of the bell, the tones were lowered to the semitone below. Before, it had been necessary to avoid these faulty harmonics, as the resulting clash in intonation between the horns and the rest of the orchestra was very inharmonious.

Kappey goes into great detail to explain the various degrees of stopping, even to the pitches producible and the tone quality of each. He lists three degrees of pitch lowering:

. . . . its shape allowing a convenient insertion of right hand into the bell, it was easy to "stop" the tone, which means that by putting the palm of the right hand more or less completely against the mouth of the bell, the intermediate notes between the harmonics could be more or less perfectly sounded. But all these artificially produced notes had a "muffled" or dull sound; thus, take the note E upon the lowest line of the stave: by inserting the hand into the bell with what technically is called a "quarter-stop," the note Eb can be produced; but the tone is far less brilliant than the E \sharp ; if the hand is put deeper into the bell D can be sounded, but it is of a decidedly bad quality; by closing the aperture as far as it can be done with the hand (called a three-quarter-stop) a Db could be produced, but the sound is very bad and can scarcely be heard. Thus, no matter how excellent the player was, he could only produce a scale of very unequal quality.¹

According to this explanation, despite the differing and almost inaudible tone quality of the stopped tones, these three degrees of stopping would allow the bridging of every gap between the open tones except the first interval between harmonics 2 and 3, i. e., c to g on the horn. The notes written for horns of all keys were the same. The difference in the various keys of instruments lay in the fact that they were all transposing instruments. Therefore the first gap, for instance, on all the horns, whatever their key, was written c to g.

Furthermore, this discovery affected the position of the instrument in relation to the player's body and hands. Previous to this discovery, the horn had been held with the bell upturned, but of necessity, the stopped horn had to be

¹Kaprey, op. cit., p. 60.

turned so as to permit the hand entering the bell or "pocketwards" as is the term sometimes applied. This is the origin of the modern method of holding the horn.¹ From the time that stopping first began to be used, the horn player has made a practice of keeping his hand in the bell regardless of whether he is playing a stopped tone. The normal position of the hand in the bell for ordinary open notes is with the back of the hand against the side of the bell which is away from the player's body. This position of the hand decreases the rougher and sharper elements in tone quality of the horn and affords more pliancy and flexibility to the entire tonal-production. Occasionally composers will indicate that the horn player is to turn the bell upward when a special effect is desired. By the absence of the hand in the bell, the tone is sharper and sounds brassy. Such passages, with the bell upward, are entirely out of the realm of "musical" quality and Kling says: ". . . such tricks should be banished to the circus, where they would probably be more appropriate."²

The great difference in timbre between the sound of the stopped and the open tones caused quite a problem. The open tones were much louder, and it was therefore necessary for the performer to play much more softly in order to make

¹Sachs, The History of Musical Instruments, p. 424.

them more nearly coincide with the stopped tones. Obviously the problem of intonation was very serious and also absorbed a certain amount of time in execution. The hand-horn was, however, very effective in influencing the aesthetic quality of the horn at this stage of development. Grove states:

The tone-quality of the horn is full, but on the whole soft and mournful, and it blends well with the woodwinds. There is a great range of quality; however, from the mysterious mournfulness of the low "stopped" notes to the almost painful and despairing cry of the upper notes when sounded f.¹

When not overblown, the stopped tones could not be used except in soft passages. Often echo effects were obtained very satisfactorily by stopped tones. The combination of open and stopped tones in one group usually was not very satisfactory, however, as the difference of quality was too great to be combined in a passage of one dynamic marking.

Further commenting on the stopped tones and emphasizing their lack of steadiness and reliability, Andersen says:

Open tones are generally to be relied upon to produce the effect desired; but the stopped tones changed not only the color of tone, but were at times very shaky in pitch, thus creating variations not at all intended.²

Even with these disadvantages, the stopped horn did improve the scope of horn playing, and it also acted as a stimulus

¹Grove, op. cit., p. 429.

²Arthur Olaf Andersen, Practical Orchestration (New York: C. C. Birchard and Company, 1929), p. 127.

in the general contribution to musical literature for the horn. The stopped horn was the most significant and the most widely used device for enlarging the chromatic compass before the valve was invented.

Daubeney recognized and analyzed the defects of the stopped horn, while at the same time he gave it credit for the great contribution which it made to the future of all horn music and the horn itself. In his book, Orchestral Wind Instruments, he makes the following statement:

. . . . this discovery, which greatly increased the chromatic compass, together with the timely influence of Haydn, insured once and for all the popularity of the horn (or hand horn, as it was known in England) and secured for it a recognized place as the most important "brass" wind instrument in the orchestra.¹

The stopped horn was used primarily for solo purposes, since the average horn player in any orchestra was not expected to be an artist at stopping. A few instances have been given of soloists who performed skillfully on the stopped horn. An account of a hand-horn soloist who performed on this instrument very soon after its discovery is as follows:

Five years after this discovery (i. e. the stopped horn), the horn's beauty of timbre was demonstrated in Paris when Jean Joseph Rodolphe, a remarkable musician of his day, played the horn concertante part to the air "Amour dans ce riant bocage" by Pascal Boyer, as sung by the famous tenor, Joseph Legros.²

¹Daubeney, op. cit., p. 75.

²Jaroslav De Zielinski, "Russian Hunting Music," Musical Quarterly, January, 1917, p. 53.

Another performer later than Rodolphe was an artist named Spandau who played a concerto with the help of hand-notes in 1773, and as Grove quotes Sir John Hawkins' description, the process consisted of "attempering the sound by the application of his fingers in the different parts of the tube."¹ Pratt mentions several other horn players of this period who were well known in the field. The first of these is Johann Welzel Stich, to whom reference is sometimes made by his Italianized name of Punto; he was a Bohemian virtuoso and a composer of horn music, and he also wrote a method for this instrument. The height of his popularity was about 1775. Stich had a pupil whose name was Johann Andreas Amon, who shared his honors and who toured with Stich until the latter died in 1825. Another hornist of this period was Georg Abraham Schneider who performed in Prince Henry's orchestra at Rheinsberg in 1790 and was in the court service in Berlin in 1802. He was quite a prolific composer, and his works included operettas and sacred music. From 1790 to 1822 a hornist, Karl Jakob Wagner, was active at Dormstadt. He was in addition a composer of orchestral music, and five operas were also attributed to him.²

The stopped horn still was not the solution for the

¹Grove, op. cit., p. 429.

²Waldo Selden Pratt, The History of Music (New York: G. Schirmer, Inc., 1935), pp. 353 and 470.

chromatic problem, as the disadvantages were too many. Horn players were still searching for a more perfect method by which to attain chromatic and diatonic scales and still keep the tone-quality more on an even level. In 1812 Dikbuth of Mannheim made an interesting experiment, which consisted of attaching a slide to the orchestral horn. It is interesting to relate the progress of horns to the development of music in general at this date. By this time all of the Haydn and Mozart symphonies were in existence as were six of the nine symphonies of Beethoven. Music had reached quite a high point of development, but the horns still remained imperfect instruments which had to be handled with care so as not to damage the aesthetic effect in an orchestral scoring. Galpin describes the invention of Dikbuth:

The action was simple, the slide being actuated by a spring, so that when the right-hand thumb of the player released the little crook, the slide returned. It lowered the pitch of the instrument by a semitone, and also corrected some of the faulty harmonics. . . . Unfortunately it was not generally accepted, and the incoming of the valve system banished it.¹

This instrument appears to have had a slide which would compare, in length, to the second valve on the present-day instruments, as both lowered the pitch of the open tube by a semitone. This invention probably alleviated the false

¹Galpin, A Textbook of European Musical Instruments, p. 228.

tone quality of the stopped tones, for the addition of tubing would cause a tone which would more nearly coincide with the open tones. The primary drawback of this slide horn was, no doubt, the fact that the pitch of the natural harmonics could only be lowered by one semitone, which still left many gaps unfilled.

This slide-horn is not to be confused with the old Inventionshorn which had been introduced by Hampel. It is true that the Inventionshorn had slides, but they were merely substitutes for the crooks usually inserted into the small end of the instrument. Today the term "slide" is applied to the tuning crook, and to the crook connected with each valve and is not truly a slide as it is never put into motion while playing. These crooks are moved only for purposes of tuning the instrument in the case of slight problems in intonation, and they are never used as substitutes for the valves. The slide was not exclusively applied to the horn, for Wogel in 1748 had made a similar attachment on the trumpet.¹ Furthermore, Bach had scored some of his chorales for a certain slide horn which was also called the corneo da tirarsi.² This instrument no doubt was a kind of slide horn differing from the one discussed above and also from the one which was invented by Dikbuth, as this slide horn was considerably after the time of Bach. The only

¹Ibid.

²Sachs, The History of Musical Instruments, p. 385.

instrument upon which the slide proved successful was the trombone, which works in a slightly different manner from the mechanism by Dikbuth, inasmuch as it is not manipulated by means of keys. The slide trombone has a slide which is of a sufficient length to allow the pitch to be altered by six semitones, thus affording a complete chromatic scale. Each semitone is achieved by moving the slide out a certain portion of its length farther than for the notes above it in pitch. The lowest tone obtainable on the slide of the trombone is in seventh position which is as far as the slide may be lengthened.

The slides (crooks) have had a decided influence on the present-day horns, since they are, in a fashion, incorporated in the valve horns. The primary way in which the crooks influenced the valve horn was in the shape. In discussing the evolution of the shape of the modern horn, Carse says:

It was probably the introduction of sliding crooks that led to the addition of a U-shaped tuning-slide in the centre of the horn crooked by the more common method at the narrow end, and in order to accommodate these devices, the horns made toward the end of the eighteenth century, were coiled in a rather large circle measuring about twelve to thirteen inches across. The bell had by then reached its full dimension, namely, about eleven inches across the mouth.¹

On the valve horn the tuning slide compares to the old crook, as the length of the tuning-slide determines the key

¹Carse, Musical Wind Instruments, p. 217.

of the instrument. The length of the main tubing of the horn remains consistent, and only the length of the tuning slide or crook changes. The same general law prevails with these as with the old crooks: the lower the pitch of the instrument the longer the tuning slide must be.

Thus the progress of the horn has been traced, beginning with the natural horn, on which only about fourteen notes of the harmonic series were obtainable and of this number four were so poor in intonation that they were almost impossible to produce. Therefore, from a horn upon which there were present only about ten good tunes, the instrument progressed to the horn with crooks, which vastly increased the number of possibilities. These crooks made it possible to have horns which were in different keys, thereby lending a wider choice of harmonics, since the harmonics of any one key were now possible by the proper selection of a crook. Several of these horns in different keys could be alternated to produce a complete chromatic scale, although the disadvantages, which have already been discussed, were many. The next stage of improvement was through the addition of crooks of different lengths which were put on one instrument in an attempt to expedite the change of keys. Later a new device was discovered which widened the chromatic compass, and this was known as the stopped horn, which provided for the open tones to be

lowered by the introduction of the hand inside the bell of the instrument. The stoppered horn had the most profound influence on the aesthetics of horn music, of any device that had yet been tried, up until the time the valve was invented. Still further experimentation brought about the slide horn which was worked by means of a spring. In spite of the advantages brought about by these various devices, the disadvantages were still too great, and experimentation therefore continued until the satisfactory answer was found in the valve.

CHAPTER III

THE VALVE

The various contrivances, discussed in the previous chapter, were rather crude, and their many disadvantages have been made apparent. The search for a completely satisfactory chromatic device was not yet ended, but it was not until the early part of the nineteenth century that the desired invention came into being. Most musicologists who have written anything at all pertaining to instruments recognize the valve as a revolutionizing influence on music for all instruments in the brass class. Notable are these writers with their respective works: Kappey, Military Music; Galpin, A Textbook of European Musical Instruments and Old English Instruments of Music; Carse, Musical Wind Instruments and The Orchestra of the XVIIIth Century. When the valve did appear, Kappey says that "keys, slides, holes, stopping, and all such makeshifts, to improve brass instruments, were discarded upon the invention of the valve (1817)."¹ Most authorities have given a description of the invention of the valve, and these accounts very nearly coincide, as will be seen in some of the following

¹Kappey, op. cit., p. 61.

as no mention is given of any further use of it. The "machine" which he was to employ may or may not have been of the same general type as our valve which is now in use. No explanation is given of his proposed "machine."

Sachs attributes the invention of the valve to the above mentioned German makers, and he gives a more detailed description of the mechanism of this new addition to horns:

The needed invention was made about 1815 by two musicians, Bluhmel in Silesian and Heinrich Stölzel in Berlin. Additional crooks branched off and re-entered the main tube, their inlets and outlets lying close to one another; spring valves connected them when pressed down and automatically disconnected them when released. Thus, the action was as fast as that of any keyboard instrument.¹

The description just given by Sachs very nearly corresponds with the present-day mechanism of valves. The first instruments to use this device were no doubt very crude but the main features have remained constant to the present.

Still another authority has given a description of the change from the hand-horn to the valve horn. The account given by Carse is approached from a different angle than the viewpoint reflected in the quotations from other authorities on the subject.

Like the trumpet, the horn had to wait for the valve-system before the intervals between the sounds of the harmonic series were successfully filled up. It was in the second decade of the 19th century that the valve-system was invented and applied to the horn, but it was not until towards the middle of the century that the valved instrument began seriously to

¹Sachs, The History of Musical Instruments, p. 426.

undermine the position of the hand-horn in the orchestra. After a period, from about 1835 to 1865, during which both types were used concurrently, the hand-horn became obsolete during the third quarter of last century, leaving the valved horn in full possession of the field.¹

About the only real difference in the accounts just given lie in the matter of the date in which the valve was invented. Galpin gives it as 1818 and Sachs as 1815, while Carse merely mentions that it occurred in the second decade of the nineteenth century. The account by Kappey, which is to follow, gives no date. The crudeness of some of the very earliest instruments caused many composers and conductors to frown upon the invention of the valve and to feel that the addition of crooks in such a fashion damaged the tone quality of the old hand-horn.

Kappey gives a detailed discussion on the patent for the first practical valve horn, and he also gives his impression of the way in which the valves were constructed.

An oboe-player Bluhmel by name, designed a practicable valve for the horn and sold it to the horn-player Stolzel at Berlin, who took a patent out which secured to him the profit of the invention as it became known that it was recognized to be capable of application. . . . The principle consists of the addition of two or three little bent tubes of the same lengths, being fixed near its upper end. . . . A cylinder, perforated with someholes of the exact diameter of the wind passage, and kept in its natural position by a spring, opens, when compressed, the ends of these tubes thereby lengthening the air-passage, which lowers the pitch by semitones.²

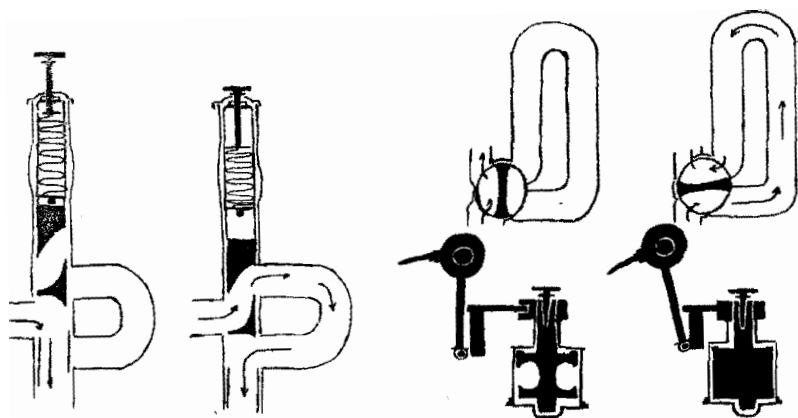
¹Carse, Musical Wind Instruments, p. 219.

²Kappey, op. cit., p. 61.

In this discussion Kappey says that the two or three bent tubes were of the same length. If this were true the instrument could not have bridged the gap between the harmonics, for the reason that if one of these tubes lowered the pitch of the harmonic by one semitone, the others of the same length would lower the pitch the same amount, and by combining three of them the pitch would be lowered three semitones which would not have been enough to fill the gap between the second and third open tones. The general rule for valve slide lengths is to have the first valve twice the length of the second, and the third three times as long as the second. The second valve slide is the shortest of the three valves and therefore lowers the pitch of the harmonic by one semitone.

Many further improvements have been devised to change valves but they all fall primarily into two general types, rotary and piston. A sketch from Sachs shows the way in which these two types of valves function, as it demonstrates the position of both the open and closed rotary and piston valves. This illustration will be found on the following page. The two kinds of valves produce the same effect on the pitch, and the primary difference lies only in the fact that one rotates while the other uses an up and down motion.

Sachs gives an interesting explanation of both the rotary and piston types of valves which will clarify the



Rotary and Piston Valves

illustration given of these types:

The piston has an up-and-down action. When in rest, the piston disconnects the additional crook and allows the wind to pass directly through the main tube. When the piston is pressed down, on the contrary, the direct passage is barred, and the wind is forced to make the detour through the additional crook before re-entering the main tube.

In rotary valves, connection and disconnection are effected by a revolving cylinder. The player, however, does not need to make a rotary movement; he presses a key, the vertical motion of which is transformed into rotation.¹

The generally accepted position of holding the valve horn is to place the right hand inside the bell and finger with the left. The rotary valve has been almost universally used for the French horn, through no particular inferiority of the piston, but probably due rather to the prevailing sidewise position of holding the instrument and perhaps also to afford more ease for left-hand fingering, since the rotary valves use levers instead of buttons.

Piston valves, however, are generally used for the mellophone, which is an instrument shaped similar to the horn but held in the opposite direction. The mellophone is fingered with the right hand while the left hand holds the rim of the bell. This instrument is rarely used as the tone quality and general make-up of it have not proven it to be as advantageous as the French horn. The mellophone has been used primarily in bands.

The most common number of valves is three and they

¹Sachs, The History of Musical Instruments, p. 426.

function according to the following rule, in order of change in pitch which each produces:

1. The second valve slide contains sufficient tubing to lower the pitch from an open tone, or harmonic, one semitone.

2. The first valve slide is longer (approximately twice as long as for second) and lowers the open tone by two semitones.

3. The third valve slide is approximately the combined length of slides one and two and this feature, therefore, provides for a lowering of three semitones. The third valve is an alternate for the combination of first and second valves.

4. The combination of valves two and three lowers the harmonic by four semitones.

5. The combination of valves one and three lowers the harmonic by five semitones.

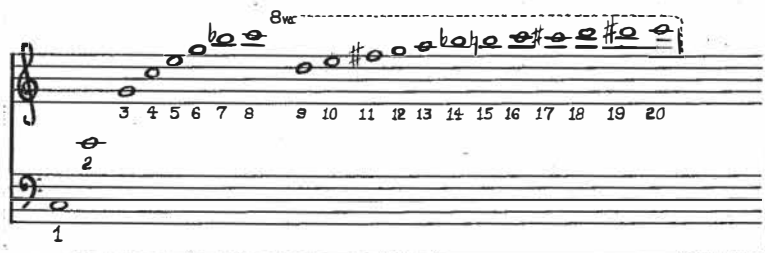
6. The combination of all three valves lowers the tone six semitones from the open tone or harmonic.

Some of the more modern horns are equipped with an extra valve, which causes the horn to be in B-flat and sounds one octave below the B-flat cornet. High notes and extreme notes are easier to obtain with the aid of this fourth valve.

As will readily be seen upon examining a table of the harmonic series, there is only one interval which is wider than six half-steps, namely, the first. This one

interval, however, produces no problem for the horn player; the fundamental is very difficult to obtain anyway and cannot, in fact, be reached at all by most players, and the range can be extended downward from the second harmonic, by means of the valve, by six half steps.

The following is the harmonic series with their respective numbers, as given by Dayton Miller in The Science of Musical Sounds¹:



This is the series given for a fundamental and its overtones which begins with c on the second space of the bass clef. The fundamental for the French horn is one octave lower and the following is the series used on the French horn



¹Dayton Clarence Miller, The Science of Musical Sounds (New York: Macmillan Company, 1916), p. 64.

in its usual practical range. It is to be kept in mind that number 1 is the fundamental and is not produced by most players. These tones correspond to the notes written for the horn and not to the actual sounds since, for example, the F horn sounds a perfect fifth below the written tones, being a transposing instrument.

With the use of the valves, the instrument is actually changed into a horn of a different key, and again citing the F horn as an example, we note that the second valve actually puts the instrument into the key of E, the first into Eb, the third into D, the combination of second and third into Db, the combination of first and third into C, and the combination of all three into Cb or B. The extra valve, as has been explained, ^{raises} ~~lowers~~ the key of the horn even farther into the key of Bb.

It will be remembered that Bluhmel and Stölzel invented the valve around 1818, and after the invention a ten years' patent was granted to them. This automatically prevented the extensive manufacture of horns, and the few which were made during this early period were both mechanically and acoustically defective. It was natural that players and composers, who were used to the hand-horn and slide-horn, were reluctant to discard an instrument which was so familiar and proven in performance, for one which was new and still imperfect. As late as the middle of the nineteenth century some composers were still writing for the

hand-horn, notably Berlioz and Wagner.¹ The number of valves on the first horn invented by Bluhmel and Stölzel is not established, nor is it known precisely what kind of valve was used on it. The new invention did not begin to be used consistently until about 1835, when parts began to be specified for "valve" horns in orchestral scores. The valve horn was first introduced into the orchestra by Halévy, in "La Juive" in 1835. The trumpet and horns began with a scale-wise passage but soon reverted to their usual C E G routine.²

In bands, however, valve horns were more readily accepted as they had already been used by such organizations between 1825 and 1830. By the time the valve was known in France, Melfred, a prominent horn player in Paris, had already adopted a three-valved instrument made for him by Labbaye. Viennese makers had also appropriated the idea, and were experimenting with more than one type of valve mechanism. Between 1830 and 1850, a variety of valved instruments, including horns, trumpets, cornets and trombones, was being produced in most European countries where brass instruments were made. A number of valve horns made during that period are preserved, and are presumably fair examples of the instruments which then were beginning to be used in orchestras and military bands.³

¹Carse, Musical Wind Instruments, p. 222.

²Ebenezer Prout, The Orchestra (London: Augener, Ltd., n. d.), p. 192.

³Carse, Musical Wind Instruments, p. 220.

In discussing the added benefits of the valves, Grove says:

On the introduction of valves, scale passages of even quality, both diatonic and chromatic, became possible, and this power is fully recognized by modern composers. At first, two valves only were used, but at the present day three valves are almost universal.¹

Chromatic brass instruments revolutionized many phases of orchestration. In the time of Bach, Haydn and Mozart, which embraced the entire eighteenth century, composers who wrote melodic parts for horns were restricted to the extreme upper register, the cause for this being the absence of diatonic or chromatic open tones except in the upper partials of the instrument. These upper tones were generally of an unpleasant sound, being strident and inclined to protrude above the rest of the orchestra. The possibility of chromatic tones in any register, brought about by valves, gave composers the choice of any register in which to write their melodies. Middle register notes blend well with almost any choir of the orchestra.² Specific examples of the horn parts written before and after the invention of valves will be cited later.

The following is a list of some of the valve horn manufacturers between 1830 and 1860, which has been compiled from the inscriptions found on horns made during this period:

¹Grove, op. cit., p. 431.

²Kelley, op. cit., p. 222.

Müller	Mayence
Kersten	Dresden
Moritz	Berlin
Schott	Mayence
Riedl	Vienna
Bauer	Prague
Key	London
Sax	Paris
Rinet	Lyons
Gautrot	Paris
Labbaye	Paris
Delfas	Brussels
Sax	Brussels ¹

The horns, listed above, were two and three valved models. According to Carse:

Nearly all the current types of mechanism are to be found on them, namely, the early tubular piston or Schubventil associated at that time with the name of Stolzel, an improved form of the same type as designed by Perinet, the double-tubed or Vienna-little valve, the short stout Berliner-pumpen and the rotary valve of Drehventil. Kastner (1848) depicts the valve-horn known in France just before the middle of the century; they include instruments with two or three valves of the slender Schubventil type, some with rotary valves, and some with three short valves of the Berliner-pumpen type; the latter were made by Ad. Sax, and the outfit included sets of seven or three (F, E, and Eb) crooks.²

The Adolphe Sax mentioned above was the inventor of the saxophone. His father was also an instrument maker in Brussels.³

Forsyth describes the present-day valve horn thus:

Our present-day valve-horn consists of a spirally-coiled tube of brass some 7 feet 4 inches long. The F-crook with which it is invariably played

¹Carse, Musical Wind Instruments, p. 222.

²Ibid.

³Grove, op. cit., p. 231.

in this country (England) adds another 4 feet $4\frac{1}{2}$ inches. The total length of the instrument is therefore 11 feet $8\frac{1}{2}$ inches.¹

At last the long awaited chromatic instrument had come into being and with it a complete change in the possibilities both aesthetic and technical. Technically, the horn came to be a chromatic instrument along with its fellows in the orchestra. Its long period of bondage was over. Not only could the chromatic compass be attained, but the quality of the tones of the scale were even, and no longer did the composers have to keep the muffled tones in mind when they wrote for the horns. Aesthetically, new melodic possibilities became available. The old style of melodic writing in the strident upper register was no longer necessary, and melodies were then easily played in almost any range. In short, the horn with valves could play almost anything which composers wished to score for it. An entirely new method of writing therefore was born, which will be discussed fully in the chapter to follow.

¹Cecil Forsyth, Orchestration (New York: Macmillan Company, 1936), p. 109.

CHAPTER IV

CHANGING TRENDS IN ORCHESTRATION FOR THE HORN CULMINATING WITH THE VALVE

In the preceding chapters the horn has been described in the various stages of its physical development, from the earliest instruments up until the modern valve horn. In this chapter the different stages of the horn will be connected with the music which was written for the horn during that particular period and also with the trends of the times. These trends were very important from an aesthetic standpoint as will be demonstrated.

As can readily be understood, after the valve mechanism became an accepted part of the horn, the style of writing for the French horn changed entirely from what it had been at the time the instrument first entered the orchestra. When the horn was first introduced into that group, it was hardly distinguished from the trumpet. Both of these instruments were continually associated with the drums, and their primary uses were for hunting calls and for military purposes. As far as any musical function was concerned, they served none, but rather were simply noise makers. The hunting calls which were incorporated in the

music reflected the interests of the times since the primary sport and pastime of the nobility was found in the hunt. The function of hunting calls has been discussed previously as to the connection with the progress of the chase. The calls were originated for purposes of signals and had nothing to do with any musical significance. These calls were built on chordal outlines and created a rather hollow sound due to the absence of any passing tones. The following are some of the typical horn or hunting calls used before the eighteenth century:

OLD GERMAN HUNTING CALLS FOR HORNS

Handwritten musical score for Old German Hunting Calls for Horns. The score is written on ten staves, organized into two systems of five staves each. The top system includes a key signature of one flat (B-flat) and a common time signature (C). The first staff of the top system is labeled "1st" and "2nd" for the first and second horns. The second staff is labeled "3rd" and "4th" for the third and fourth horns. The notation includes various musical symbols such as notes, rests, and accidentals. The bottom system continues the musical notation. The score is written in a clear, legible hand.

HUNTING FANFARE

1st
2nd

3rd
4th

The musical score is written for four staves, labeled 1st, 2nd, 3rd, and 4th. The key signature is one flat (B-flat) and the time signature is 6/8. The music is a hunting fanfare, characterized by its rhythmic patterns and melodic lines. The first staff (1st) features a melodic line with eighth and sixteenth notes, often beamed together. The second staff (2nd) provides a harmonic accompaniment with chords and single notes. The third staff (3rd) continues the melodic development with similar rhythmic motifs. The fourth staff (4th) provides a bass line with chords and single notes. The score is divided into measures by vertical bar lines, and the music concludes with a final double bar line.

HUNTING FANFARE (Continued)



TALLYHO (HALLALI)

1st

2nd

3rd

4th

5th

As horns began to be used in ensembles, these same general characteristics were true of parts scored for them as of the previous hunting calls. The limited tones prevented much of the pleasing variation which we now expect in melody and harmony. The calls or fanfares were built on chord lines, and the rhythmic variation was about as limited as the melodic and harmonic. The instrument had not changed drastically, and the demand for the themes remained rather consistent with the interest of the times, which continued to be dominated by hunting and military occupations. Some of the early ensembles, during the early eighteenth century, used the hunting horn and the general type of orchestration is illustrated in the examples shown on the following pages:

"MARCH OF THE SCOTTISH ARCHERS"

Oboes

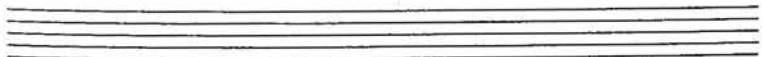
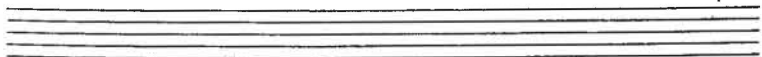
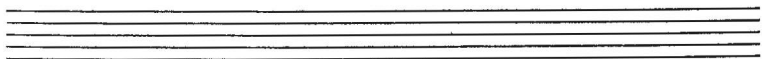
Clarinets

Trumpets in D

Horns in D

Bassoon

The musical score is written for five woodwind instruments: Oboes, Clarinets, Trumpets in D, Horns in D, and Bassoon. The music is in 2/4 time and D major. The Oboes and Clarinets play a melodic line with eighth and sixteenth notes. The Trumpets and Horns play a harmonic line with dotted rhythms. The Bassoon plays a supporting line with eighth notes. The score is divided into measures by vertical bar lines.



"NOUVELLE RETRAITE"

Clarineti
Toni F

Due Corni
Toni F

Due Fidi
Toni F

Trombi

"NOUVELLE RETRAITE" (Continued)

Handwritten musical score for the first system, measures 1 through 4. The system consists of four staves. The first two staves are treble clefs, and the last two are bass clefs. The music is written in a style that appears to be a simplified or early form of musical notation, possibly for a specific instrument or as a pedagogical exercise. The notation includes various note values, rests, and some accidentals. The first two staves show a series of notes, some grouped together, while the third staff has mostly rests. The fourth staff shows a more complex rhythmic pattern with many beamed notes.

Handwritten musical score for the second system, measures 5 through 8. The system consists of four staves. The first two staves are treble clefs, and the last two are bass clefs. The notation continues from the first system. The first two staves show notes and rests, with some notes beamed together. The third staff has rests and some notes. The fourth staff shows a complex rhythmic pattern with many beamed notes. The system ends with a double bar line.

"PRINZ ANTON" MARSCH

Handwritten musical score for "PRINZ ANTON" MARSCH, measures 134-139. The score is written for a band and includes the following parts:

- 134** (Measure number)
- 1st** (First Oboe)
- 2nd** (Second Oboe)
- Oboe**
- 1st** (First Clarinet)
- 2nd** (Second Clarinet)
- Clarinets**
- 1st** (First Trumpet)
- 2nd** (Second Trumpet)
- Trumpets**
- 2. Horns** (Second Horns)
- in D** (in D major)
- 2. Horns** (Second Horns)
- in A** (in A major)
- Fagott** (Bassoon)

The key signature is one sharp (F#) and the time signature is 2/4. The score is written in treble clef. The notation includes various musical symbols such as notes, rests, and accidentals. The score is handwritten and appears to be a working draft.

"FRINZ ANTON" MARSCH (Continued)



"PRINZ ANTON" MARSCH (Continued)

This musical score is for the "PRINZ ANTON" MARSCH, continued. It is written for a band or orchestra, featuring a key signature of one sharp (F#) and a common time signature (C). The score is arranged in five systems, each containing five staves. The first four staves of each system are in the treble clef, and the fifth staff is in the bass clef. The music is characterized by a steady, rhythmic march tempo. The notation includes various note values, rests, and dynamic markings. A prominent feature is a triplet of eighth notes in the third measure of the first system, marked with a '3' above it. The score concludes with a final double bar line and repeat dots.

"PRINZ ANTON" MARSCH (Continued)



"PRINZ ANTON" MARSCH (Continued)

Handwritten musical score for "PRINZ ANTON" MARSCH (Continued). The score is written on five staves. The first two staves contain complex rhythmic patterns with many beamed notes. The third and fourth staves are mostly empty, with only a few notes. The fifth staff contains a few notes and a key signature change to G major (one sharp).

Four empty musical staves at the bottom of the page.

"PRINZ ANTON" MARSCH (Continued)

This musical score is for the 'PRINZ ANTON' MARSCH, continued. It is written for a six-part ensemble, likely a brass band or woodwind ensemble, as indicated by the six staves. The key signature is one sharp (F#), and the time signature is 2/4. The score is divided into five measures. The first two staves (treble clef) contain complex melodic and harmonic lines with many beamed notes. The third and fourth staves (treble clef) are mostly empty, with only a few notes in the first measure. The fifth staff (treble clef) contains a few notes in the first measure. The sixth staff (bass clef) contains a complex melodic line with many beamed notes. The score is written in a standard musical notation style with a clear staff layout.

During the period from the time in which Lully (1633-1687) wrote up through the Handel (1685-1759) era, the horn was held bell upward, which has been previously mentioned. The harsh tone which was produced by horns held in this manner was very disagreeable and was unsuitable except for the out-of-door sports, and for inside music these instruments were only welcome to represent certain phases of these sports. Horns and trumpets were both classed in the same general category as noise makers. Often only one part was written, and it could be played by either or both.

Up through the time of Haydn, hunting calls were popular in orchestral music. Horn calls are to be found much later in works of Wagner and many others, but they are the exception rather than the general practice with the composers of the classic and romantic periods. A typical example of a hunting call used in orchestral music may be found in a call which was used by Philidor, Mehul, and Haydn.



Operas often had hunting scenes in which the horns were used to great advantage to depict the proper atmosphere. Horn calls were built on chord lines, as the original horns were able to produce only a few tones, and, as the tones were increased in proportion to the length of the horns, the melodic uses were still very narrow if not almost impossible. As may be seen from the quoted examples of hunting calls, there was little variety, for the rhythm was not complicated and the arrangement of notes was not varied much as can be well understood with the limitations under which the instrument laboured.

The period of polophonic music, during the time of Bach and Handel, was almost a death blow to the progress of the horn. Other instruments in the orchestra were capable of playing melodies, but the horn was confined almost entirely to chordal progressions. The extreme upper register could be used for melodic parts, but the tone was so painful to the listeners that composers wrote very sparingly in this manner. Allesandro Scarlatti was one of the first Italian composers to recognize the possibilities of the horn as having definite individuality. In 1715 he wrote parts for two horns in F for his opera Tigrane. These were scored in the high register, but later, as he became more familiar with the horn, he began to write in the harmonic style. Bach's scoring for the horn fell into the

category of the melodic, viewed of course from the contrapuntal angle. He rarely used any tone below the eighth harmonic.

As music developed and became of a more refined nature, and as culture began to demand more precise music, the horn was found to be a misfit. Noisy harsh playing was out of vogue and it was at this time in the classical period that stopping was initiated into horn playing. The practice of holding the hand in the bell all of the time, whether playing stopped notes or not, did almost as much, if not quite, for the change of aesthetics in horn music as did the stopping itself. The downward position of the horn combined with the slight dampening of the tone greatly enriched the quality of tone, and the horn then began to acquire the reputation which it holds today of being one of the most beautiful instruments from the point of view of tone quality. The mellowness which was thereby possible gave the horn a place with the other instruments in the orchestra. The technical difficulties which were still prevalent made the scope of the parts remain narrow, but composers with good and careful judgment made effective use of the new mellowness of tone.

On the whole, the orchestras of the eighteenth century usually had at least two horn players, although some of the larger ones boasted of four. Most of the scores called for only two horn parts, and the third and fourth

horn players were used merely for purposes of reinforcing the first and second. Occasionally, in order to play the parts as scored, the horns would require different crooks so as to increase the number of open tones available. During the second half of the eighteenth century horns were used only in the first and last movements of symphonies. Later, near the close of the century, they began to find their place in the minuets and slow movements. They were also accepted by that time as a permanent fixture in the operatic orchestra.

During the period of classicism all music was written according to strict rule and pattern. There was a marked absence of sensational effects, but composers adhered strictly to form and discipline. Orchestration made some progress during this period, but no drastic changes were made. The primary function of the horns was for harmonic purposes. They made a very satisfactory background and foundation for the other instruments. In the purely polyphonic compositions, horns were forced to play in the extreme upper register due to the lack of tones on that instrument. These upper notes were used only sparingly as they were too strident in nature and tone quality to blend with the other instruments of the orchestra. The tones of the middle register were much more pleasing to the ear, but the tones were farther apart in this register. The

parts written for horns and trumpets in the middle of this period were of the harmonic nature mentioned above and usually confined themselves to sustained notes or rhythmic patterns. Toward the later part of the classical period, the melodic use of horns was discarded almost entirely. However, in the symphonies the third movements often had horn melody. By the close of the classical period, the horn was no longer expected to be a noise maker but it assumed definite identity as a musical instrument.

It was at this stage of musical development that different persons began to search for something with which to remedy the horn's unfortunate condition. While crooks, stopping, and other devices mentioned in previous chapters had remedied the situation somewhat, and while composers had managed to produce a reasonably satisfactory result from the use of these devices, yet none of them gave complete satisfaction.

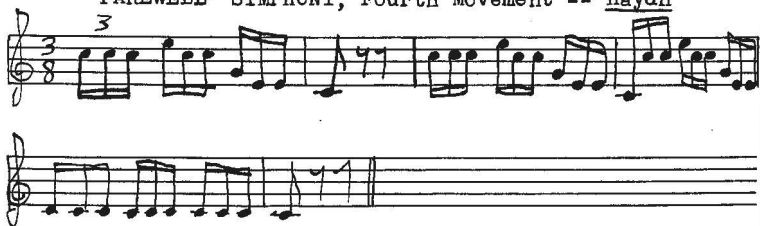
The compositions of Haydn and Mozart employed mostly octaves and sixths for the harmonic parts and occasionally thirds were used. The tonic and dominant chords prevailed almost entirely. Mozart was one of the first composers to write melodic parts for the horn, but his harmonic use of horns varied only slightly from that of Haydn, the primary difference being in the voicing of the chords. Even with this change of voicing, the brasses usually had

only three notes written for them. Mozart used the stopped horn on occasions, but he realized the many disadvantages and accordingly employed this device sparingly. While knowing all the limitations of the horns, Mozart nevertheless took every advantage of their good points. Representative examples of scoring for the horn by Haydn and Mozart are as follows:

"FAREWELL" SYMPHONY, Third Movement -- Haydn



"FAREWELL" SYMPHONY, Fourth Movement -- Haydn



"OXFORD" SYMPHONY, Second Movement -- Haydn



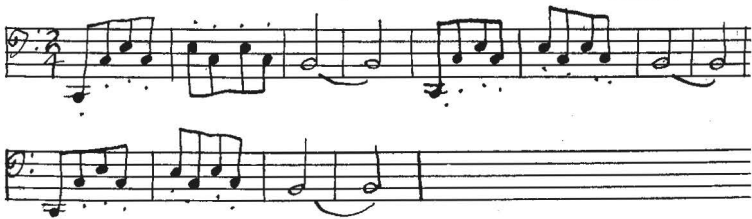
"OXFORD" SYMPHONY, Third Movement -- Haydn



"OXFORD" SYMPHONY, Fourth Movement -- Haydn



"OXFORD" SYMPHONY, Fourth Movement -- Haydn



"SURPRISE" SYMPHONY, Second Movement -- Haydn



SYMPHONY NO. 7, First Movement -- Haydn

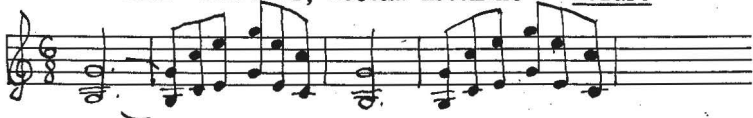
"HAFFNER" SYMPHONY, First Movement -- Mozart



"LINZ" SYMPHONY, First Movement -- Mozart



"LINZ" SYMPHONY, Second Movement -- Mozart



"LINZ" SYMPHONY, Third Movement -- Mozart



"LINZ" SYMPHONY, Fourth Movement -- Mozart



"PRAGUE" SYMPHONY, First Movement -- Mozart



"JUPITER" SYMPHONY, First Movement -- Mozart



"JUPITER" SYMPHONY, Second Movement -- Mozart



"JUPITER" SYMPHONY, Third Movement -- Mozart

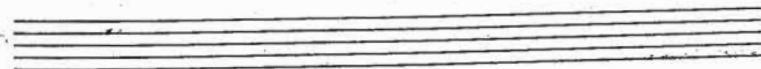
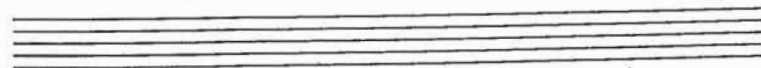
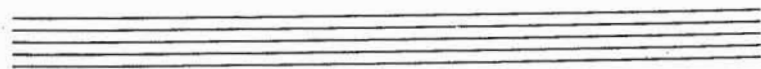


Beethoven, Schubert, and their contemporaries during this first portion of the nineteenth century wrote for the hand-horn. They relied primarily on the old harmonic style, but by the addition of some of the stopped tones a few melodic passages were written which were in the medium and lower registers. Beethoven contributed more to orchestration during this period than any other composer, but even with the changes and additions which he made the condition of the horn was not drastically improved. His contributions were significant. First, he was not content to let horns remain in their old position in the background, but he brought them out into decided prominence. The function of the horns as background was not entirely discarded, but Beethoven added to this function many others which had not previously existed. Because of his own great creative gifts and his vision, he used different melodic and harmonic progressions which brought variety and stimulated interest at the same time, all entirely within the bounds of the possibilities of the instrument. More stopped notes were used by Beethoven than by practically any of the composers before him. These were rarely used for the harmonic parts, but they were quite frequently called for in obligato sections. The C Major Symphony, Beethoven's first, is scored for two horns; the Eroica of five years later calls for three. "This was the first time that three horns had ever been used in the symphony. The fourth was added in symphony

in 1824 when he called for a quartet of horns in his Ninth Symphony."¹ This enlargement of the number of horns used in orchestras is a foreshadowing of what Wagner was to do a couple of decades later.

In reading the scores of the classical period, it must be remembered that the notation for all horn parts written in bass clef was one octave below the tone to be played. Also, all tones written are the notes for the horn and not the actual sounds, as all horns except the horn in C are transposing instruments.

¹Schwartz, The Story of Musical Instruments, p. 196.

EROICA SYMPHONY, First Movement -- Beethoven

Weber favored the horn decidedly, since he has surpassed all other composers before his time in his masterly use of this instrument. A famous horn passage is to be found in the opening notes of the "Oberon" Overture of 1825. The horn is a magic instrument, supposed to represent the horn of the fairy king Oberon. Another famous horn passage by Weber is to be found in "Der Freischutz." This passage is scored for a quartet of horns.

"OBERON" OVERTURE -- Von Weber



"DER FREISCHUTZ" OVERTURE -- Von Weber

Handwritten musical notation for the beginning of the "DER FREISCHUTZ" OVERTURE. The score is written for a full orchestra, including strings, woodwinds, and brass. The first staff is in treble clef with a key signature of one flat (B-flat). It begins with a half rest, followed by a quarter note G4, a quarter note A4, and a quarter note B4. The second staff is in treble clef and contains the woodwind part, starting with a half rest, followed by a quarter note G4, a quarter note A4, and a quarter note B4. The third staff is in treble clef and contains the brass part, starting with a half rest, followed by a quarter note G4, a quarter note A4, and a quarter note B4. The notation is handwritten and includes various musical symbols such as rests, notes, beams, and dynamic markings like *p* (piano) and *f* (forte).

"DER FREISCHUTZ" -- Von Weber (Continued)

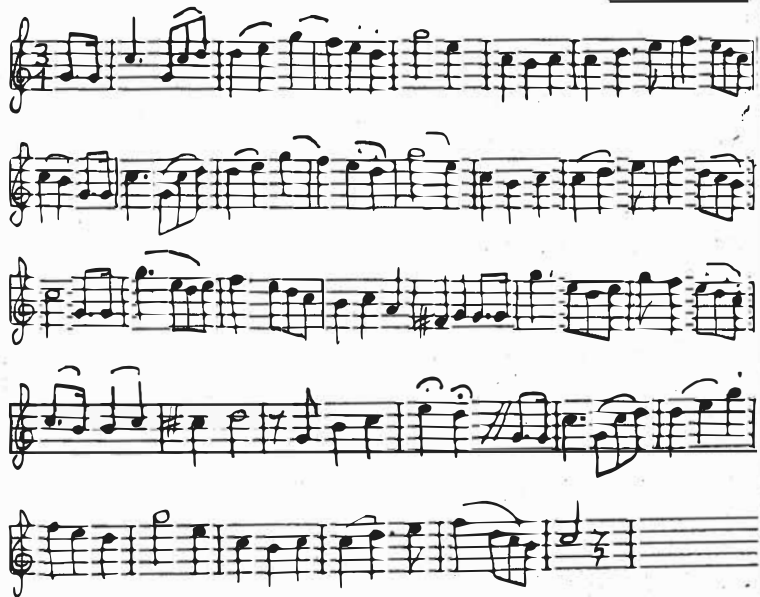


Mendelssohn, too, wrote many notable parts for horns in his scores, but he stayed rather closely within the bounds of the open tones. Two of the most famous horn passages by Mendelssohn may be seen in the excerpts from the third movement of the "Italian" Symphony and in the "Nocturne" from "Midsummer Night's Dream." The passage from the "Italian" Symphony gives an interesting effect through the use of a very few notes which are alternated several times at the beginning of each horn entrance.

"ITALIAN" SYMPHONY, Third Movement -- Mendelssohn



"NOCTURNE" from "MIDSUMMER NIGHT'S DREAM" -- Mendelssohn



The romantic composers had an adventurous spirit and, since instruments as a whole were beginning to reach a more advanced stage of development, they could write more freely. Romantic music was certainly built to some extent upon the old classic rules, but the composers of this period revolted against strict discipline and form. Some new forms came into being, notably the symphonic poem and the concert overture. Romantic music tended to emphasize emotional expression, rather than the formal side.

As romanticism began to appear, these makeshift devices which had been used on horns were not sufficient to produce the effects which were desired by the composers of this period. The melodies of the time were flowing and emotional. Such awkward crooks, slides, and keys as had been used previously were almost complete failures in assisting the horn to play such passages. The situation had come to an acute state in which something had to be done, for composers were hampered beyond endurance in their attempts at orchestration, on account of the limitations of the horn. They had at their command an instrument with a beautiful romantic tone in the middle register but this register could not be used successfully with the mechanism of the horn at that time.

After the invention of the valve, composers wrote all sorts of beautiful, flowing melodies for the horn. By

the use of the middle register they were able to utilize the mellow tones for which the French horn has become famous. The upper notes were not used in melody lines except for special purposes and effects. When valve horns first began to appear in orchestras, usually two valve horns were used plus two hand-horns, and the transition from the old to the new was therefore not immediate.

During this period of uncertainty for the valve horn, the primary objection seems to have been to the tone of the instrument. Many arguments have been given both for and against the tone of the valve horn. Some believe that the extra slides on the valve horn have greatly lessened the beauty of tone. Whether or not this view is correct, the horn does not seem to have suffered in its reputation for being able to emit a beautiful tone, and the advantages of the valve seem greatly to overshadow the disadvantages.

As romanticism progressed, the old method of using the horns in different keys with crooks was soon discontinued. With the coming of the chromatic horn, there was little need for the various crooks, the only use of which was for extreme high and low notes. Soon composers began to use the F horn almost exclusively. The tone of this F horn seems to have been the most satisfactory and the majority of the modern parts are written in that key.

On the hand-horn trills could be executed only on

the higher notes where the harmonics were close enough together to permit a trill. On the valve horn trills are possible upon almost any tone. The only exception is to be found in the extreme low notes, upon which the action is usually rather slow. This new agility was a very important addition as the music of this period stressed floridity. Coloratura soprano roles were very popular during this era and much orchestral scoring followed this same style of writing.

Composers can still write for the stopped horn, when special effects are desired. With the hand-horn, the stopped tones were always uncertain and out of tune, while at the present time a stopped tone can be produced with much more certainty with the aid of valves. The stopped tones are possible on almost every pitch, the only exception being the extreme low notes which do not sound out very well. Of course a mute can be used on the horn as it can be on other brass instruments. Such a device also gives a hushed soft tone. For the use of the mute the music is written as usual as there is no alteration of pitch, as with the stopped tones.

Although Beethoven, Weber and Mendelssohn wrote during the era of the valve horn, they wrote almost entirely for the hand-horn. Schumann was the first German composer to write for the valve horn, which he called for in the Third and Fourth Symphonies. Although Schumann was not as

artful with orchestration as either Schubert or Mendelssohn, it was to his credit that he saw, more clearly than they, the value of this new kind of instrument. In the "Spring" Symphony he scored for the horn, in one place, so that, by mistake, he included one of the ugly stopped tones. The effect would have been very comical, but at the first rehearsal, to cover up his error, Schumann excused himself by saying that he had intended writing it a third higher. To the present day that horn part remains a third higher than it was originally written.¹ This horn passage, to which reference has been made and which will be quoted below, occurs in the last movement. This fourth movement is supposed to represent the passing of spring time and the coming of summer and to depict the conflict of emotions between the sadness of the departing spring mingled with the joy of the summer which is just ahead. This movement is often called the "farewell to spring."

"SPRING" SYMPHONY, Fourth Movement -- Schumann



¹Elson, op. cit., p. 217.

The valve horn has naturally undergone various improvements and changes since the era of the instruments used by Schumann and his contemporaries, but the principle of the mechanism remains the same. By 1850 the valve was becoming very well established, and with Wagner's wide use of the entire brass section the valve horn became a permanent fixture in the orchestra.

The composer who probably did most to give the horn an assured position in the orchestra was Rossini. He had the decided advantage of being the son of a horn player, and he was also a fair horn player himself. Knowing the instrument as he did, he could and did develop its possibilities as a solo instrument. With the coming of the valve, it became possible to write florid passages and yet not use the extreme high register. Grove says:

With Rossini, the son of a horn player, and himself no mean performer on it, a new school may be said to begin. He used it freely for his bright and taking melodies, whether alone or in pairs; but the old method of Mozart is lost, and valves became essential for the execution of runs, turns, scales with which the part is abundantly strewn. In "William Tell" especially a favourite and recurring effect is that of the horn imitating the Alpenhorn, and echoing among the Swiss mountains.¹

¹Grove, op. cit., p. 433.

"WILLIAM TELL" -- Rossini

Coro
in F

sf >

sf >

tr. --- *tr.* --- *tr.* ---

A fine example of the kind of part which is possible on the valve horn may be found in the following excerpt from Rossini's "Barber of Seville" which in the opening beats employs a scale passage in the middle register. Previously this scale would have had to be written one octave higher, and even then some of the tones, such as the F, would have had to be stopped.

"BARBER OF SEVILLE" OVERTURE -- Rossini



Some other notable works of Rossini that contain interesting passages for horns are illustrated on the following pages:

"DIE DIBISCHE ELSTER" OVERTURE -- Rossini



"SEMIRAMIS" OVERTURE -- Rossini

Handwritten musical score for the Overture of "Semiramis" by Rossini. The score is written on four staves. The first two staves are in treble clef with a key signature of one sharp (F#) and a 3/4 time signature. The third and fourth staves are in treble clef with a key signature of one sharp (F#) and a 3/4 time signature. The score contains various musical notations, including notes, rests, and dynamic markings. There are some handwritten annotations, such as a '7' above a note and a '3' below a triplet.

"SEMIRAMIS" OVERTURE -- Rossini (Continued)

This page contains a handwritten musical score for the Overture to "Semiramis" by Gioacchino Rossini. The score is written on ten staves, organized into five systems of two staves each. The notation is in treble clef with a key signature of one sharp (F#). The music features a variety of rhythmic patterns, including eighth and sixteenth notes, as well as rests. Some measures contain handwritten annotations such as "77", "77 37", and "77 37 7". The score concludes with a double bar line on the final staff, followed by two empty staves at the bottom of the page.

In the development of all the brasses in orchestral scoring, Wagner stands out as the most important composer. He brought the brass family into its own on an equal basis with other orchestral choirs. Wagner and some of the other modern composers gave the valve horns new and beautiful themes which were built on the outline of the old style of horn playing and writing. One might say that Wagner called for a combination of the old and new styles. He began writing for two hand-horns and two valve horns but later discarded the former almost completely in favor of the valve instruments. Music in general was undergoing changes, and the hand-horn found itself quite outmoded. When Wagner wrote for both kinds of horns, he used valve horns for the first and second parts and the hand-horns for the third and fourth parts. In 1848, at the completion of "Lohengrin," he abandoned the hand-horn for the valve horn.

Wagner gave fuller harmony to the horns, and he used as many as eight horns in some of his orchestrations. His aim in the harmonic parts seemed to have been in the direction of attaining full, rich sonority, rather than just for filler purposes. Often he wrote chorale-like passages for horn choirs and also for mixed brass groups. Some of his most famous horn passages are:

"TANNHAUSER" OVERTURE -- Wagner



"LOHRENGRIN," Prelude to Act III -- Wagner



"RIENZI" OVERTURE -- Wagner



"RIENZI" OVERTURE -- Wagner



"SIEGFRIED'S RHINE JOURNEY" from "GOTTERDAMMERUNG" -- Wagner



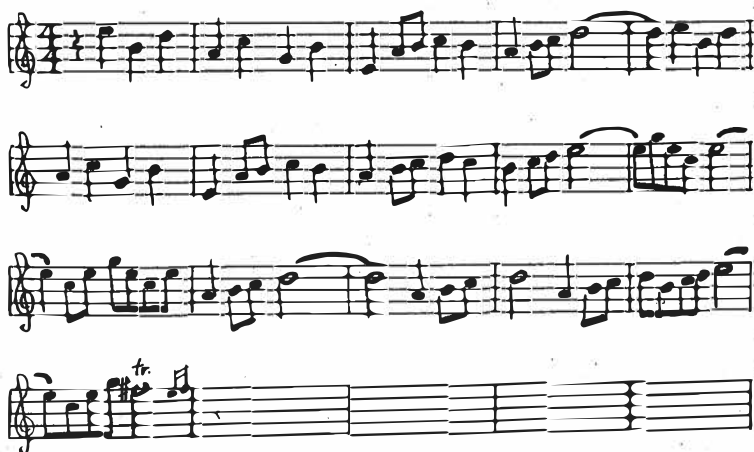
"DIE MEISTERSINGER," Prelude to Act I -- Wagner



"DIE MEISTERSINGER," Prelude to Act I -- Wagner
--(Continued)



"SIEGFRIED IDYL" -- Wagner



As can be seen from a study of the examples given, the music for the horn has undergone a great change. It has progressed from a limited kind of style to one which has thrown off the yoke of restrictions. As has been pointed out previously, the greatest advantages lie in the fact that an even and uniform volume may be achieved by the use of the valve. These things were impossible on the horns used before the invention of the valve. Although this study does not take up the writing for the horn beyond Wagner, yet it shows the definite trend toward a freer style and the beginning of the utilization of the many resources within the scope of the instrument.

CHAPTER V

CONCLUSIONS

The French horn of today is well-known as a poetic instrument and as being capable of playing almost any type of part which is scored for it. The change in aesthetic values of horn music has undergone a complete revolution since the earliest uses of the horn for noise effects. This thesis has shown the gradual development and evolution of the horn from the rude horns of uncivilized men up to the perfected instrument at the middle of the nineteenth century.

The opening chapter describes the various types of horns used in different localities during the earliest years of their usage. The discussion begins with the earliest records of any horn-like instruments long before Biblical times, and it traces these instruments up until actual dates appear as to the usage of given instruments. The last part of that chapter contains accounts of the specific kinds of instruments, the way in which they were used, and the early instrumentations of which the horn was a part.

Chapter II begins with the eighteenth century when experimentation in the form of various adjustments and

inventions began to be applied to the French horn. Such devices as crooks of various types, stopping by means of insertion of the hand into the bell of the instrument, slides, and keys are described as to their mechanism and function. Throughout the first two chapters the limitations of these various stages of the horn are brought to attention and emphasis has been laid on the way in which orchestral scoring was hampered.

It has been established that the alleviation of these difficulties came about with the invention of the valve in the early years of the nineteenth century. Since the first valve invention was under the protection of a patent held for about ten years, the universal use of this new device was notably retarded. Composers and conductors were reluctant to part with the old hand-horn which had been used for about two centuries previously, but gradually through the foresight of such composers as Schumann, Rossini, and Wagner the valve horn became established as a permanent fixture in the orchestra, and today it is an indispensable instrument to the full orchestral score.

The final chapter attempts to connect the instrument, in each of its important stages, with the music which was written for it during that particular time. The gradual enlarging of the possibilities in orchestration for the instrument is shown. Today the horns may be used as sonorous instruments for filling in background or for harmonic

purposes, for smooth song-like melodies, for florid types of passages, and for rapid, brilliant parts. Along with the new possibilities, the features which were considered as early advantages can still be employed on the modern instrument; for instance, different lengths of crooks may be added when desired. Also, stopping is still employed by some composers when special effects are desired. Wagner made conspicuous use of valve horns while at the same time he used many devices in writing for them which were previously called for by composers for the hand-horn. He made frequent use of stopped tones, and he also employed some hunting calls in his scores.

In conclusion, a great contribution has been made to orchestration down through the years by the labors of those interested in the improvement of the French horn. Today the instrument is on a level of artistic performance with any of the instruments of the orchestra. Without the varied tone colors and the general diversity of effects producible on the French horn, modern orchestration would be lacking one of its most beautiful and interesting constituents.

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