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THE DEVELOPMENT OF A BEGINNING METHOD OF TRANSPOSITION FOR THE ORCHESTRAL HORN

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

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degree of

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BY

MELVIN LEWIS LEE

Norman, Oklahoma

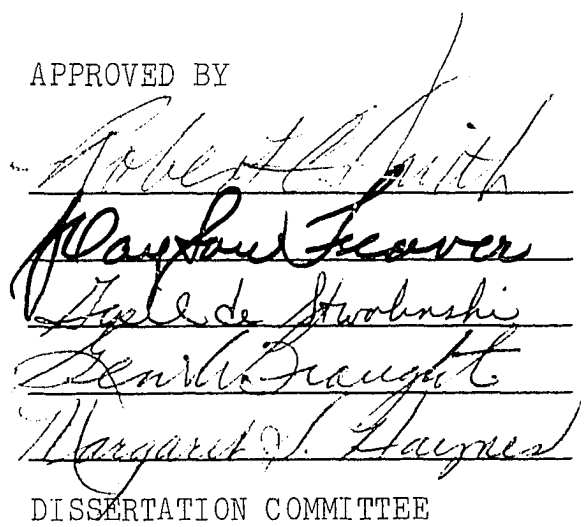
1969

THE DEVELOPMENT OF A BEGINNING METHOD

OF TRANSPOSITION FOR THE

ORCHESTRAL HORN

APPROVED BY



DISSERTATION COMMITTEE

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THE DEVELOPMENT OF A BEGINNING METHOD OF TRANSPOSITION FOR THE ORCHESTRAL HORN

CHAPTER I

INTRODUCTION

The ability to transpose should be part of the orchestral horn player's technique. In fact, Farkas says:

> The ability to transpose is absolutely necessary for the horn player. All brass instruments are called upon to play transpositions occasionally, but the orchestra horn player must use four or five different transpositions at nearly every symphony concert.[1]

Most of the parts that require transposing were written for the natural horn from around 1700 to 1850. Valve horn parts in different keys first appeared in the orchestral score in 1835.[2] The key of F became the standard key for horns around 1900. Parts written for the natural horn were in all keys ranging from low B flat to high B flat. The modern player uses one instrument in the key of F to play the various

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[1]Philip Farkas, The Art of French Horn Playing (Evanston: Summy-Birchard Publishing Company, 1956), p. 70.

[2]Cecil Forsyth, Orchestration (2d ed.; New York: Macmillan Company, 1947), p. 125.

parts written in different keys. Consequently a transposition is necessary for any part that is in a key other than F. The older horn player used a different horn or crook for each key. In an effort to eliminate the problem of transposing, some publishers have included transposed versions of the original horn parts to the key of F in their reprints of early orchestral works. This, however, is an impractical solution, since many orchestras have thousands of dollars invested in their music libraries and it would be too expensive to replace all the horn parts not in the key of F with transposed versions.

The Need for a Beginning Transposition Method

There are no published "Beginning Transposition Method" books for the student interested in learning to transpose. There are three types of materials currently being used to teach transposition: (1) the complete method books, (2) etude books, and (3) orchestral excerpt collections.

In most "complete methods" for horn, there is usually a lesson devoted to transposition. The extent of the lesson usually includes an explanation of a system of transposition advocated by the author and a limited number of studies. Most of the studies are not written in the characteristic style of the natural horn part ordinarily encountered in the orchestra. The studies are written

instead, in the modern chromatic style. Some books include a limited number of orchestral excerpts as material for study, but usually they are too difficult for the beginner. The method of transposition advocated in these books is primarily concerned with the chromatic horn part. Chromatic horn parts are more difficult to transpose than natural horn parts; therefore, they are not the most practical material for the beginner.

The etude books were written primarily to develop the technical and musical skill of the student. Most of the studies tax the student's technical ability when played in the original key, and therefore they are impractical as beginning material.

Orchestral excerpt books are often used to teach transposition. These books are not practical because there is no explanation of transposition and most of the excerpts are too difficult for the beginner. The primary purpose of the excerpt book is to acquaint the student with orchestral literature. They are, however, excellent for supplementary material.

There is a definite need for a beginning transposition method which presents the material in an organized manner with numerous studies that thoroughly cover the principles of the orchestral horn.

The Purpose of the Study

It was the purpose of this study to develop a beginning method of transposition for the horn, with studies in the style of the parts found in the orchestral score prior to the development of the modern chromatic horn. In order to develop a method of transposition which thoroughly covers the principles of the orchestral horn, it will be necessary to follow this procedure: (1) determine the capabilities and limitations of the instrument used in the orchestra from the time of its first appearance in the orchestral score to the present day, (2) show the development of the playing technique and its influence of the composers of orchestral music, (3) examine the horn parts in the symphonies of early outstanding composers for a delineation of the natural horn style, and (4) extract examples of natural horn writing from the scores of orchestral composers to be used in this method.

Chapter II will cover the development of the orchestral horn and the playing technique. Chapter III is an examination of horn parts from the symphonies of Haydn, Mozart, and Beethoven. The specific procedures used in the construction of the beginning transposition method are explained in Chapter IV. The last part of the study is the actual beginning transposition method for the horn.

The beginning transposition method will be written for the experienced horn player. The studies in the book

will be based on the assumption that the student has already acquired the basic fundamentals of music. The book may be used by any experienced player who is just beginning the study of orchestral transpositions.

CHAPTER II

A STUDY OF THE HORN USED IN THE ORCHESTRA

Several considerations regarding the horn are necessary in order to understand the basic characteristics of the orchestral horn parts written before the advent of the modern horn. Foremost is the necessity of understanding the capabilities and limitations of the horn used to play the parts. Also relevant is the method of notation used by composers, a knowledge of the playing technique used in the performance of the parts, and a general description of orchestral horn parts.

From its earliest appearance in the orchestra till the present day, the technique of writing for the horn has passed through three major phases. The first phase of horn writing was for the natural horn, the second was the hand horn, and the third was the valve horn.

The Natural Horn

Morley-Pegge, in his book, The French Horn, says:

> It certainly looks as though helical horns must have been used for the performance of the horn parts in Cavalli's opera Le Nozze di Teti e di Pelo given in

> Venice in 1639, and in Lully's divertissement-ballet La Princesse d'Elide produced in May 1664, . . .[1]

This horn was capable of producing only a few harmonics and bore little resemblance to the orchestral horn into which it eventually developed. The horn was of little value as an orchestral instrument except for local color in operatic hunting scenes. Gradually the tube length was increased and its taper became more pronounced. This larger horn became known as the waldhorn or natural horn toward the end of the seventeenth century. It was, at first, only tolerated in the orchestra. The first quarter of the century was the probation period for the horn in the orchestra. After that time they were used regularly.

The first use of horns as an integral part of the score was in the opera Octavia (Hamburg 1705) by Keiser. Horns were also added to the orchestras of the opera houses at Dresden in 1711 and Vienna in 1712. Horn parts appeared in the scores of Scarlatti's Trigrane (Naples 1715), Handel's Water Music (1720) and Rameu's Hippolyte et Aricie (Paris 1733).[2]

Natural horns were made in various sizes so that they could be used in different keys. Compositions modulating to different keys required a separate horn for each

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[1]R. Morley-Pegge, The French Horn (London: Ernest Benn Limited, 1960), p. 13.

[2]Adam Carse, The History of Orchestration (New York: Dover Publications, Inc., 1964), p. 113.

key. To eliminate the necessity of having several instruments, a system was devised whereby horns were made incomplete in themselves, to be completed by the addition of extra lengths of tubing. These extra lengths of tubing known as Vienna crooks were placed between the mouthpiece and the instrument itself. The use of these crooks, first devised in about 1718, made it possible for one instrument to be put into a number of different keys. The crooks were usually made up in sets of six, two master crooks and four couplers. Only a master crook would take the mouthpiece and could be used singly or in combinations of two or even three, to obtain the desired key. Most horn parts written before 1740 were in C, D, F, or G. After 1750 horn parts could be found in low B flat, C, D, E flat, E, F, G, A, and high B flat.[1]

The Harmonic Series

The natural horn was able to produce a limited series of tones known as the harmonic series. The length of the tubing in the horn determined the pitch of the harmonic series. The horn was able to produce only the tones of one harmonic series. A different harmonic series could be produced if the player inserted a different sized crook into the main length of tubing. The following is an example of a harmonic series with a fundamental C and fifteen harmonics:

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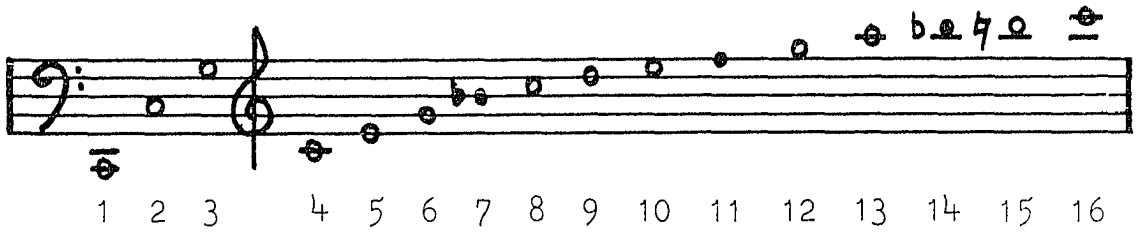
[1] Ibid.



The notes in the above harmonic series are numbered starting with the lowest note as number one. The lowest note is called the fundamental or the first partial. In the future the notes in the series will be referred to as harmonics and identified by number. If reference is made to the seventh note in the series, it will be identified as the seventh harmonic. The fundamental could be produced only in high keys. In the low keys, such as B flat and C, it was not possible to produce a tone lower than the second harmonic. Consequently the fundamental was never used in natural horn parts.

Some of the notes in the harmonic series do not exactly correspond with our equally tempered scale. The black notes in the above illustration of the harmonic series can only be approximately identified with tones in our system of tuning and notation. The seventh, thirteenth, and fourteenth harmonics are flat and the eleventh lies between F natural and F sharp, but is actually closer to F natural.[1]

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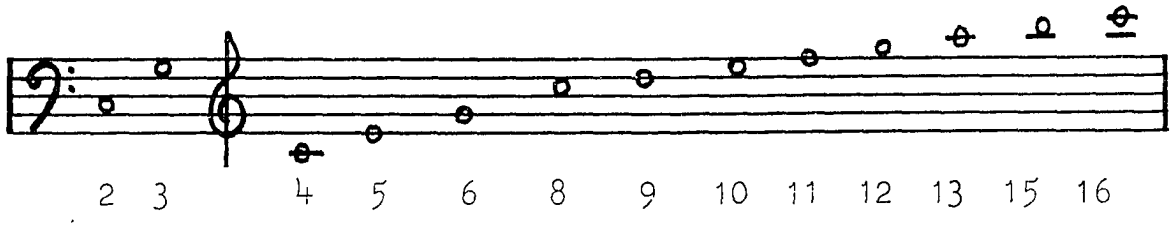
[1]Willi Apel, Harvard Dictionary of Music (Cambridge: Harvard University Press, 1956), p. 13.

F natural was used for the eleventh harmonic most of the time, but occasionally it appeared as F sharp.[1]

The horn was capable of producing all the tones in the harmonic series. There is a difference of opinion among musicians regarding the notation of the eleventh and thirteenth harmonics. The eleventh harmonic is often represented as F sharp rather than F natural. Occasionally the thirteenth harmonic is represented as A flat rather than A natural. From an examination of natural horn parts it was determined that for the eleventh and thirteenth harmonics, F natural and A natural were used most of the time.

For the purpose of this study it was necessary to select the notes used most often in natural horn parts and establish them as the series of notes that best represented the true natural horn part. The studies and excerpts used in the beginning transposition method were based on this series of tones. Any note foreign to this series was assumed to be an out-of-tune harmonic or a stopped note. Below are the notes most commonly used in natural horn parts.



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[1]Carse, op. cit., p. 112.

Notation

Composers wrote the horn parts using the notes of the C harmonic series and indicated the horn or crook to be used. The composer had only to select the horn key most suitable for his composition, write the horn part using the notes in the C harmonic series and indicate "Horn in E," "Horn in D," or whatever the key might be.

The lower notes of the horn are often written in the bass clef. The second harmonic was written in the bass clef most of the time. The third and fourth harmonics were occasionally written in the bass clef. When the notes appeared in the bass clef, they were written an octave too low. No logical reason for this practice is known, as illustrated by the following statement by Gregory: "usage in this respect has until recently been illogical, since by custom for which it is difficult to find any compelling reason notes in bass clef were written an octave too low."[1] This practice, used almost without exception by the classical composers, was called "old notation."

Orchestral Horn Parts

In orchestral music, horn parts were seldom written higher than the sixteenth harmonic and, since the fundamental was so difficult to produce, it was never used. The

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[1]Robin Gregory, The Horn (London: Faber and Faber, 1961), p. 144.

range most used was from the third to the twelfth harmonic. The best part of the range for solos was between the sixth and twelfth harmonics.

There were usually two horn parts in the orchestral score. According to Forsyth, "Mozart (in Idomeneo) and Cherubini (in Lodoiska) were actually the first composers to use four horns."[1] Haydn used four horns in his Symphony No. 31 which was written in 1765.[2] The first horn covered the upper notes of the horn's compass and the second horn covered the lower notes. Each part had its own particular problems and required players that specialized in high horn or low horn. Since it was difficult for a player to cover the extremes of the range, horn players were segregated into categories known as first or second horns. The label of second horn did not imply any inferiority on the part of the player, and many times the second player had solos as important and more difficult than the first player.

The first horn part was more melodic and had fewer large intervals than the second part. The first part was more difficult in the extreme high register because of the closeness of the harmonics.

The most-used range of the second horn part was from the second to the tenth harmonic. Due to the wider spacing

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[1]Forsyth, op. cit., p. 121.

[2]Symphony No. 31 (1765) was written before either Idomeneo (1780) or Lodoiska (1791).

of harmonics in the lower range, large intervals were frequently written for the second horn. The second part often had leaps of a twelfth from the third to the ninth harmonic. The lowest notes in the second part were frequently written in the bass clef.

Composers wrote for pairs of natural horns in octaves, in unison, or in horn fifths. Horn fifths are probably the most familiar sounds associated with the horn. Many of the well known two part excerpts from orchestral music are written in horn fifths.

The Hand Horn

The hand horn period generally covers the period from 1750 to 1850. Around 1760 Anton Joseph Hampel, the second horn in the King of Ploand's orchestra at Dresden, discovered that by closing the bell by various degrees with the hand, it was possible to fill in many of the gaps between the notes of the harmonic series. The natural horn played in this manner was called stopped or hand horn. There was a great inequality of tone between the natural and stopped tones; however, a chromatic scale between the fourth and twelfth harmonics could be played with almost even tone quality. The presence of the hand in the bell also refined the instrument's coarse tone and won it a permanent place in the orchestra.

Even though the technique of hand stopping appeared around 1760, orchestral composers continued writing for the

horn in the basic natural horn style using few notes that required stopping until the beginning of the nineteenth century.[1] The use of occasional stopped notes in the early nineteenth century compositions gave the horn parts more harmonic and melodic possibilities than was possible when only open notes were used. One reason why the technique of hand stopping spread slowly might have been because the system was handed down by word of mouth from teacher to pupil. An explanation of the hand stopping technique appeared in print for the first time in 1808. An account of the situation is given by Morley-Pegge:

> The only detailed account we possess of the origin of the hand horn stopping, which credits the whole discovery to Hampel, is to be found in the historical notice at the beginning of Domnich's Methode de Premier et de Second Cor. Henrich Domnich, a native of Wurtzburg and the son of the Elector of Bavaria, probably got his information in part from local hearsay--he was only born in 1767--and in part from Hampel's most brilliant student, Punto, under whom he studied.[2]

Hand Horn Technique

Hampel discovered that natural tones of the horn could be lowered a half-step to a whole-step by inserting the hand in the bell. Partial stopping lowered a natural tone a half-step and full stopping lowered a tone a whole-step. Notes that appeared in horn parts that were not one of the ones included in natural notation had to be produced

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[1] See the analysis of the symphonies of Haydn, Mozart, and Beethoven in Chapter III.

[2] Morley-Pegge, op. cit., p. 89.

by using this technique. Notes played in this manner were called stopped notes. The stopped notes had a decidedly different sound from that of the open tones and consequently never became part of the orchestral technique with the classical composers. The hand was also used to humor notes in the harmonic series that were out of tune. The best register for hand stopping was between the fourth and twelfth harmonics. The largest interval between natural tones in this register is the major third from the fourth to the fifth harmonic. Stopped notes below the fourth harmonic are not too desirable, with the exception of the ones a half-step below the second, third, and fourth harmonics.

Influence of the Hand Horn Artists

Horn players using the hand technique became extremely proficient and eventually influenced the major composers of their period. This was the period of the virtuoso duetist and soloist. Morley-Pegge gives this account of their popularity:

> During the last quarter of the eighteenth century and the first third or so of the nineteenth a galaxy of virtuoso horn soloists bestrode the musical firmament, their names as familiar to the contemporary concert-goer as those of the leading keyboard and string instrumentalists.[1]

Two well known horn soloists were Jan Vaclav Stich, better known as Giovanni Punto (1748-1803) and Ignaz Leitgeb (1745-1811). Punto met Mozart in 1778 and Beethoven in 1799.

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[1]Morley-Pegge, op. cit., p. 151.

Compositions written for Punto include a symphony concertante by Mozart and Sonata in F by Beethoven. Mozart wrote four concertos, Concert-Rondo, and many other compositions for Leitgeb.

The Valve Horn

The evolution of the valve horn consisted of three main stages of development: (1) the two valve horn in conjunction with the hand technique, (2) the three valve horn, and (3) the modern double horn in B flat and F.

The Two Valve Horn

In the first stage of development, valve horns were equipped with only two valves. These valves were essentially a quick and easy way of changing crooks. The hand technique was retained for the most part and the valves used only when a note required too much stopping to be effective. The first appearance of the valve horn in the orchestral score was in Halevy's La Juive (1835). The valve horns were at first always scored with a pair of natural horns in the same or other keys.

The Three Valve Horn

The next stage in the development of the valve horn starts around 1850 with the appearance of the three valve horn. The valves were first used for instantaneous crook changes. With the horn crooked in F, it was possible to change to Horn in E by depressing the second valve and

playing natural horn in E. Horn in E flat could be played by depressing the first valve and Horn in D by depressing third valve or valves one and two in combination.

There was much opposition to the three valve horn because of the added weight, which effected the tone of the instrument. It was also opposed because of the inferior tone quality and faulty intonation of the notes played using the valves. Piston makes the following remarks in regard to the transition from natural horns to valve horns:

> The stage of transition from natural horns to valve horns was longer for the composers than for the players. The new instrument had to prove its value and overcome much prejudice and nostalgic feeling for the natural horn, as well as general mistrust as to the future of valved instruments. The horn without valves was used, at least occasionally, up to the beginning of the twentieth century; on the other hand, many composers wrote as though for natural horns even when they knew the valve horn would be employed.[1]

Donizetti, Berlioz, Schumann, and Wagner all helped to bring the valve horn into the orchestra just before the middle of the nineteenth century. After the middle of the century composers such as Tschaikovsky, Verdi, and Dvorak wrote horn parts that no longer had the characteristics of the natural horn style. During the last twenty years of the nineteenth century, the valve horn was so completely accepted that it was not necessary for the composer to indicate "valve," or "piston" in the score or in the parts.[2]

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[1]Walter Piston, Orchestration (New York: W. W. Norton and Co., 1955), p. 231.

[2]Carse, op. cit., pp. 212-13.

Once the valve system had been accepted, players began to discard to longer crooks and eventually settled on those in F, E, and E flat. Before the end of the century, the F horn was the standard instrument for orchestral use.

By the end of the nineteenth century, horn parts were becoming more complex and physically demanding, especially in the range they covered. The technical problems encountered in the works of Richard Strauss caused many first and third chair players to exchange their F horn for one in B flat alto. Many players were reluctant to give up the F horn entirely due to its greater power and superior tone quality in the lower register. Although there were problems of intonation in the lower register, the higher parts on the B flat horn could be played with much more assurance and ease. The solution to the problem was a double horn that combined the two horns.

The B Flat/F Double Horn

The last stage in the development of the valve horn took place in 1898 when the first B flat/F double horn was first put on the market by the firm of A. F. Kruspe of Germany. Most modern players use an instrument pitched in F or B flat, or the B flat/F double horn. The modern horn part is almost always written for horn in F--a perfect fifth higher than the sound desired. Because of the shorter tubing, the B flat horn can be played with more facility than the F horn. Since the modern B flat horn player plays

mostly F parts, he considers his instrument to be an F horn with different fingerings. The B flat side of the double horn is used as alternate fingerings for the F horn.

The next chapter is an analysis of horn parts from the symphonies of Haydn, Mozart, and Beethoven. The analysis shows the gradual increase in the use of stopped notes from the early symphonies of Haydn to the ninth symphony of Beethoven, and the ranges of horns in different keys.

CHAPTER III

AN ANALYSIS OF ORCHESTRAL HORN PARTS

The horn parts in the symphonies of Haydn (1732-1807), Mozart (1756-91), and Beethoven (1777-1827), are excellent examples of natural horn writing in the late eighteenth and early nineteenth centuries. The information obtained from the analysis of the general characteristics of these horn parts provided an authentic format for the transposition method. The information needed from the analysis included the following: (1) the general range of the first and second horn parts, (2) the highest and lowest harmonics used in different keys, (3) the use of notes that required hand stopping, and (4) the use of out-of-tune harmonics.

The information concerning the general range of the first and second horn parts was needed in order to select excerpts that illustrated the typical first and second parts. The information regarding the highest and lowest harmonics used in different keys was needed in order to establish the range limitations in each transposition included in the method. From the information obtained in the

portion of the analysis pertaining to the use of stopped notes, it was possible to determine the approximate date these composers started freely embodying stopped notes in their parts. The horn parts written before this date are, for all practical purposes, natural horn parts. The transposition method was concerned only with natural horn parts. In order to determine whether the horn parts were written in the natural or the hand horn style, it was necessary to observe the number of stopped notes used in each symphony. As was explained in Chapter II, the harmonics that are usually considered out-of-tune are the seventh, eleventh, thirteenth, and fourteenth. The thirteenth harmonic was written so frequently that for the purpose of this study it was considered to be one of the notes ordinarily encountered in natural horn parts. The pitch of the eleventh harmonic was between F natural and F sharp. In this study the eleventh harmonic was considered to be F natural. The eleventh (F natural) and thirteenth harmonics were used in the studies and excerpts in the transposition method. The information concerning the out-of-tune harmonics was needed in order to determine which notes best represented the true natural horn parts. The seventh, eleventh (F sharp), and fourteenth harmonics were not used in the transposition method because they seldom appeared in true natural horn parts. The information from the analysis was also used as a guide in the selection of excerpts for the transposition method.

Haydn Symphonies

Symphony No. 31 ("Horn Signal") (1765)

This symphony is in the key of D major. There are four horn parts in D in the first, third, and fourth movements. The second movement was written for a pair of horns in D and a pair in G. The highest harmonic in D is the twentieth[1] and the highest in G is the thirteenth. The lowest harmonic in D is the second and the lowest in G is the fourth. A stopped note third line B natural is used in this symphony as well as the out-of-tune eleventh harmonic (F sharp).

Symphony No. 45 ("Farewell") (1772)

This symphony is in the key of F sharp minor. In the first and fourth movements the first horn part is written in A and the second horn part is written in E. In the second movement both parts are in A and in the third movement both parts are in F sharp.[2] The highest harmonic in A is the tenth, in F sharp is the twelfth, and in E is the eleventh. The lowest harmonic in all three keys is the third.

Symphony No. 74 (1780)

This symphony is in E flat major and has two horn parts. The horn parts in the first, third, and fourth

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[1]The twentieth harmonic is unusually high for orchestral horns.

[2]This is a rare key for horns.

movements are in E flat. The horn parts in the second movement are in B flat alto. The highest harmonic in both keys is the twelfth and the lowest in both keys is the second.

Symphony No. 75 (1780)

This symphony is in D major and has two horn parts. The horn parts in the first, third, and fourth movements are in D. The horn parts in the second movement are in G. The highest harmonic in D is the twelfth and the highest in G is the eleventh. The lowest harmonic in both keys is the third.

Symphony No. 76 (1782)

This symphony is in E flat major and has two horn parts. The horn parts in the first, third, and fourth movements are in E flat. The horn parts in the second movement are in B flat alto. The highest harmonic in E flat is the thirteenth and the highest in B flat is the tenth. The lowest harmonic in both keys is the third.

Symphony No. 77 (1782)

This symphony is in B flat major and has two horn parts. The horn parts in the first, third, and fourth movements are in B flat alto. The horn parts in the second movement are in F. The highest harmonic in B flat is the eleventh and the highest in F is the tenth. The lowest harmonic in B flat is the third and the lowest in F is the

fourth. The out-of-tune seventh harmonic is used in this symphony.

Symphony No. 78 (1782)

This symphony is in C minor and has two horn parts. The horn parts in the first and second movements are in E flat. The horn parts are in C in the third and fourth movements. The highest harmonic in E flat is the eleventh and the highest in C is the tenth. The lowest harmonic in both keys is the third.

Symphony No. 79 (1784)

This symphony is in F major and has two horn parts. The horn parts in the first, third, and fourth movements are in F. The horn parts in the second movement are in B flat alto. The highest harmonic in F is the tenth and the highest in B flat alto is the twelfth. The lowest harmonic in F is the third and the lowest in B flat is the second. The following stopped notes are used: B natural below the fourth harmonic and F natural[1] below the third harmonic.

Symphony No. 80 (1784)

This symphony is in D minor and has two horn parts. The two horn parts in the first, third, and fourth movements are in D. The horn parts in the second movement are in B flat alto. The highest harmonic in D is the twelfth and the

[1] This stopped note is rare.

highest in B flat is the tenth. The lowest harmonic in D is the second and the lowest in B flat is the third.

Symphony No. 88 (1787)

This symphony is in G major and has two horn parts. The horn parts in the first, third, and fourth movements are in G. The horn parts in the second movement are in D. The highest harmonic in G is the twelfth and the highest in D is the thirteenth. The lowest harmonic in both keys is the second.

Symphony No. 92 ("Oxford") (1788)

This symphony is in the key of G major and has two horn parts. The horn parts in the first, third, and fourth movements are in G. The horn parts in the second movement are in D. The highest harmonic in G is the twelfth and the highest in D is the sixteenth. The lowest harmonic in G is the third and the lowest in D is the second. The following stopped notes are used: third line B natural, second space A natural, and B natural below the fourth harmonic. The out-of-tune seventh harmonic is used in this symphony.

Symphony No. 99 (1793)

This symphony is in the key of E flat major and has two horn parts. The horn parts in the first, third, and fourth movements are in E flat. The horn parts in the second movement are in G. The highest harmonic in E flat is the twentieth and the highest in G is the tenth The lowest

harmonic in E flat is the second and the lowest in G is the fourth. The stopped note E flat in the fourth space is used in this symphony.

Symphony No. 100 ("Military") (1794)

This symphony is in the key of G major and has two horn parts. The horn parts in the first, third, and fourth movements are in G. The horn parts in the second movement are in C. The highest harmonic C and G is the twelfth. The lowest harmonic in both keys is the third.

Symphony No. 101 ("Clock") (1794)

This symphony is in the key of D major and has two horn parts. The horn parts in the first, third, and fourth movements are in D. The horn parts in the second are in G. The highest harmonic in D is the thirteenth and the highest in G is the twelfth. The lowest harmonic in D is the second and the lowest in G is the third.

Symphony No. 102 (1795)

This symphony is in B flat major and has two horn parts. The horn parts in the first, third, and fourth movements are in B flat alto. The horn parts in the second movement are in F. The highest harmonic in B flat is the twelfth and the highest in F is the tenth. The lowest harmonic in B flat and F is the second.

Symphony No. 103 ("Drum Roll") (1795)

This symphony is in the key of E flat major and has two horn parts. The horn parts in the first, third, and fourth movements are in E flat. The horn parts in the second movement are in C. The highest harmonic in E flat and C is the twelfth. The lowest harmonic in E flat is the third and the lowest in C is the second. The stopped note E flat in the fourth space is used in this symphony.

Symphony No. 104 ("London") (1795)

This symphony is in the key of D major and has two horn parts. The horn parts in the first, third, and fourth movements are in D. The horn parts in the second movement are in G. The highest harmonic in D is the sixteenth and the highest in G is the eleventh. The lowest harmonic in both keys is the second.

Mozart Symphonies

Symphony No. 29, K. 201 (1774)

This symphony is in the key of A major and has two horn parts. The horn parts in the first, third, and fourth movements are in A. The horn parts in the second movement are in D. The highest harmonic in A is the twelfth and the highest in D is the thirteenth. The lowest harmonic in both keys is the third.

Symphony No. 35, K. 385
("Haffner") (1782)

This symphony is in the key of D major and has two horn parts. The horn parts in the first, third, and fourth movements are in D. The horn parts in the second movement are in G. The highest harmonic in D is the twelfth and the highest in G is the tenth. The lowest harmonic in both keys is the third.

Symphony No. 36, K. 425 ("Linz") (1783)

This symphony is in the key of C major and has two horn parts. The horn parts in the first, third, and fourth movements are in C. The horn parts in the second movement are in F. The highest harmonic in C and F is the twelfth. The lowest harmonic in both keys is the third.

Symphony No. 38, K. 504
("Prague") (1786)

This symphony is in the key of D major and has two horn parts. The horn parts in the first, third, and fourth movements are in D. The horn parts in the second movement are in G. The highest harmonic in D and G is the twelfth. The lowest harmonic in both keys is the third. The following stopped notes are used: fourth space E flat, third line B natural, and fourth line D flat. The out-of-tune harmonics used are: the eleventh (F sharp), and the seventh (B flat).

Symphony No. 39, K. 543 (1788)

This symphony is in E flat major and has two horn parts. The horn parts in all four movements are in E flat. The highest harmonic is the twelfth and the lowest is the second. The following stopped notes are used: fourth line D sharp, fourth line D flat, fourth space E flat, and third space C sharp. The out-of-tune eleventh (F sharp) is used in this symphony.

Symphony No. 40, K. 550 (1788)

This symphony is in the key of G minor and has two horn parts. In the first and fourth movements the first horn part is in B flat alto and the second part is in G. The horn parts in the second movement are in E flat and in the third movement they are in G. The highest harmonic in B flat is the tenth and the highest in E flat and G is the twelfth. The lowest harmonic in all three keys is the second. The following stopped notes are used: fourth line D flat and fourth space E flat.

Symphony No. 41, K. 551 ("Jupiter") (1788)

This symphony is in the key of C major and has two horn parts. The horn parts in the first, third, and fourth movements are in C. The horn parts in the second movement are in F. The highest harmonic in C and F is the twelfth. The lowest harmonic in C is the second and the lowest in F is the third.

Beethoven Symphonies

Symphony No. 1 (1799)

This symphony is in C major and has two horn parts. The horn parts in the first, third, and fourth movements are in C. The horn parts in the second movement are in F. The highest harmonic in C is the sixteenth and the highest in F is the twelfth. The lowest harmonic in both keys is the third.

Symphony No. 2 (1802)

This symphony is in D major and has two horn parts. The horn parts in the first, third, and fourth movements are in D. The horn parts in the second movement are in D and later change to A. The highest harmonic in D and E is the sixteenth and the highest in A is the twelfth. The lowest harmonic in D and A is the second and the lowest in E is the third. The stopped note B natural below the fourth harmonic is the only one used in this symphony.

Symphony No. 3 ("Eroica") (1803)

This symphony is in the key of E flat major. The first, third, and fourth movements are written for three horns in E flat. For a short period in the first movement, the first part switches from E flat to F and then returns to E flat. In the second movement, the first and second parts are in C and the third part is in E flat. The highest harmonic in E flat is the sixteenth and the highest in C is the

twelfth. The lowest harmonic in E flat and C is the second. The following stopped notes are used: fourth space E flat, fourth line D flat, second space A natural, fourth line D sharp, first line E flat, second space below the staff B natural, first line above the staff A flat, third line B natural, third space below the staff A flat, and first space F sharp. The out-of-tune harmonics used are the seventh and eleventh (F sharp).

Symphony No. 4 (1806)

This symphony is in the key of B flat major and has two horn parts. The horn parts in the first, third, and fourth movements are in B flat basso. The horn parts in the second movement are in E flat. The highest harmonic in B flat basso is the twelfth and the highest in E flat is the sixteenth. The lowest harmonic in B flat and E flat is the second. The only stopped notes used are fourth space E flat and second space A. The only out-of-tune harmonic used in this symphony is the seventh.

Symphony No. 5 (1808)

This symphony is in the key of C minor and has two horn parts. The horn parts in the first and third movements are in E flat and in the second and fourth movements they are in C. The highest harmonic in E flat is the twelfth and the highest in C is the sixteenth. The lowest harmonic in E flat and C is the third. The following stopped notes are

used: fourth space E flat, and fourth line D sharp. The out-of-tune harmonics used are the seventh and eleventh (F sharp).

Symphony No. 6 ("Pastoral") (1808)

This symphony is in the key of F major and has two horn parts. The horn parts in the first, third, and fourth movements are in F. The horn parts in the second movement are in B flat basso. The highest harmonic in F and B flat basso is the thirteenth. The lowest harmonic in F is the second and the lowest in B flat basso is the third. The only stopped note used is B natural on the third line. The only out-of-tune harmonic used is the eleventh (F sharp).

Symphony No. 7 (1812)

This symphony is in the key of A major and has two horn parts. The horn parts in the first and fourth movements are in the key of A. The horn parts in the second movement are in E and in the third movement they are in D. The highest harmonic in A, E, and D, is the twelfth. The lowest note in A is the facticious tone G below the second harmonic. The lowest tone in D is the F sharp below the third harmonic. The lowest harmonic in E is the third. The following stopped notes are used: fourth space E flat, third line B natural, second space A, and F sharp below the third harmonic. The seventh harmonic is used in the symphony.

Symphony No. 8 (1812)

This symphony is in the key of F major and has two horn parts. The horn parts in the first, third, and fourth movements are in F. The horn parts in the second movement are in B flat basso. The highest harmonic in F and B flat basso is the twelfth. The lowest harmonic in F is the second and the lowest in B flat basso is the third. The following stopped notes are used: third line B natural, fourth space E flat, second space A flat, second space A natural, and first space F sharp. The seventh and eleventh (F sharp) out-of-tune harmonics are used.

Symphony No. 9 ("Chorale") (1823)

This symphony is in the key of D minor. The first, second, and fourth movements are written for two pairs of horns in D and B flat basso. The two pairs of horns in the third movement are in B flat basso and E flat. The highest harmonic in D is the sixteenth. The highest note in E flat is an A flat on the first line above the staff. The lowest harmonic in D is the second, and the lowest in B flat basso is the third. The lowest note in E flat is the factitious note G below the second harmonic. The following stopped notes are used: fourth space E flat, first line E flat, F sharp below the third harmonic, second space below the staff B natural, fourth line D flat, A flat above the staff, second space A flat, and the first space F sharp. The seventh and eleventh (F sharp) harmonics are used in this symphony.

Summary

The range of the horn parts in the symphonies of Haydn and Mozart extended from the second to the twelfth harmonics. In keys below F, Haydn occasionally wrote a sixteenth harmonic but Mozart avoided the high register. The D horn parts in Haydn's Symphonies No. 92 and 104 included the sixteenth harmonic. The D horn part of Haydn's Symphony No. 31 and the E flat part in Symphony No. 99 were written to the twentieth harmonic. In keys above E flat, Mozart seldom wrote a twelfth or even an eleventh harmonic. Three of Mozart's symphonies and ten of Haydn's symphonies included the second harmonic.

Beethoven used the sixteenth harmonic in all his symphonies except the sixth, seventh, and eighth. The second harmonic was written in each symphony except the first and fifth. The sixteenth harmonic was used only in keys above E natural. In the seventh and ninth symphonies, a factitious tone[1] a fourth below the second harmonic was written.

The general range of the first and second horn parts was the same in the symphonies of all three composers. The most common range of the first part was from the sixth to the twelfth harmonic and the second part was from the third to the tenth harmonic.

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[1] A note that lies a major second or more below the second harmonic, which may be produced by employing a very loose embouchure.

Haydn and Mozart wrote very few notes in their symphonies that required hand stopping. The fact that they wrote stopped notes indicated that they were familiar with Hampel's technique for lowering the pitch of the open tones but they obviously preferred the natural horn style of writing. In Symphony No. 99 Haydn wrote a B natural in the second space below the staff and an F natural on the third line below the staff. In Symphony No. 92 Haydn wrote a second space A natural and a third line B natural. Haydn wrote an E flat in the fourth space in Symphonies No. 99 and 103. Stopped notes were used in Mozart's Prague Symphony (K. 504) and the Symphonies in E flat (K. 543) and G minor (K. 550). The Prague Symphony uses the out-of-tune seventh and eleventh harmonics.

Beethoven's first two symphonies were in the traditional natural horn style. There were no stopped notes in the first symphony (1799). The only stopped note used in the second symphony (1823) was a B natural in the second space below the staff. Starting with the third symphony (1803) Beethoven increased his use of stopped notes. The third symphony had ten different stopped notes as well as the seventh and eleventh harmonics. The third symphony contained more stopped notes than any of the symphonies analyzed. Each of Beethoven's symphonies following the third contained stopped notes. There was an E flat in the fourth and fifth symphonies and a B natural in the sixth. The

seventh symphony included four different stopped notes and the eighth symphony included five. The ninth symphony contained eight different stopped notes. The stopped notes used most often were the fourth space E flat and first space F sharp. The development of Beethoven's horn parts can be observed by comparing the conservative parts in his early symphonies to the near chromatic parts in the ninth.

Beethoven's horn parts differed from those of Haydn and Mozart in the following ways: (1) Beethoven wrote more stopped notes. He wrote stopped notes mainly when the horns were brought to the front as solo or obligato instruments. He avoided stopped notes in the accompanying passages. (2) Beethoven used the horns in the general melodic scheme as well as for solo passages. Haydn and Mozart rarely used the horn in the general melodic scheme. (3) The first horn was occasionally very high in Beethoven's symphonies but not in those of Haydn and Mozart.

The horn parts in the symphonies of Haydn, Mozart, and Beethoven were usually written in pairs. The scoring of two horns in octaves, unison, or horn fifths was common and characteristic. Exceptions to this practice were found in Haydn's Symphony No. 45 and Mozart's G minor (K. 550). There were two horn parts in these symphonies but they were written in different keys. In the first and fourth movements of Symphony No. 45, Haydn wrote the first horn part in A and the second horn part in E. In the first and fourth

movements of the G minor, Mozart wrote the first horn part in B flat alto and the second horn part in G. The first and second parts in these two symphonies were different from the usual parts written for a pair of horns. Neither part could be classified as a first or second part but rather like two solo parts in different keys. The two parts played together only when the available notes in both keys could be used.

Beethoven wrote three horn parts in his third symphony. All three parts were in E flat in every movement except the second. In the second movement the first and second parts were in C and the third was in E flat. In his ninth symphony Beethoven wrote parts for two pairs of horns in different keys. Haydn wrote for four horns instead of the usual two in his Symphony No. 31. All four parts were in the key of D with the exception of the second movement which was for two pairs of horns in G and D. The symphony is one of the first examples of a quartet of horns.

The next chapter will explain in detail how the information in this chapter was incorporated into the transposition method.

CHAPTER IV

SPECIFIC PROCEDURES

The format of the Beginning Transposition Method book is based on the information in Chapters II and III concerning the orchestral horn and the analysis of orchestral horn parts.

Natural horns were built in different sizes. Each size was able to produce a different pitched harmonic series. A system was devised whereby the fundamental pitch of the horn could be changed by adding additional lengths of tubing. These lengths of tubing were known as crooks. The natural horn was able to produce a different pitched harmonic series with each crook. The horn part, regardless of the key of the composition, was always written in C. The player had only to choose the horn in the key of the composition, or insert the proper crook and play the part as if in the key of C. The system of transposition in this book was based on the above principles. The procedure in this book for transposing natural horn parts is as follows: (1) The student learns the notes and the corresponding harmonic series number of each note used in writing natural horn parts,

(2) he determines the harmonic series to be used in the key to be transposed, (3) he learns the notes and the corresponding numbers of the harmonic series used in the key to be transposed, (4) the harmonic series used in a transposition is then substituted for the natural horn part in C. This is accomplished by substituting each note in the transposed key for the one with the corresponding harmonic series number in the natural horn part.

The transposition method begins with a brief introduction that covers the following subjects: (1) the restricted tones of the natural horn, (2) the C harmonic series as it applies to natural horn notation, (3) the method of determining the harmonic series to use when transposing to a key, and (4) the transposing procedure used in this book. Further explanations and instructions to the student are kept as brief as possible and used only when necessary.

The book is written so that each transposition can be studied as a separate and complete unit. There is no particular sequence in which the transpositions should be studied. The choice of transposition to be studied is left to the student. An outline indicating the order and location of studies included in each transposition is placed immediately following the introduction.

The book is divided into four sections. Section I consists of harmonic series studies in C. Section II consists of the eight different harmonic series used in the

transpositions covered in the book. Section III consists of natural horn studies to be transposed to different keys. Section IV consists of orchestral excerpts to be transposed to different keys.

The C harmonic series studies in Section I are the prerequisites for all transpositions. The notes in the harmonic series are presented in small groups. The studies in each group begin simply and progressively become more difficult. The harmonic series numbers are written beneath the notes in the first few studies of each group. The notes in the harmonic series are grouped as follows: (1) four, five, six, and eight; (2) eight through twelve; (3) two, three, and four; and (4) twelve, thirteen, fifteen, and sixteen. At the conclusion of each group of studies, there is a short test consisting of a set of harmonic series numbers. The student is requested to play the tones represented by these numbers.

Section II consists of eight different harmonic series studies. The eight harmonic series are the ones used in the transpositions to E, E flat, D, C, B flat basso, G, A, and B flat alto. In each key preceding the studies, there is a brief explanation of the procedure used in transposing to that key. The organization of the studies in each key is similar to that used for the C harmonic series in Section I. The information obtained from the analysis of orchestral horn parts in Chapter III regarding

range is incorporated into the studies. In the keys of C and B flat basso, very few second harmonics are used. In the keys of G, A, and B flat alto, the highest harmonic written is the twelfth. A few exercises in natural horn notation are placed at the conclusion of each harmonic series study. The student is requested to transpose these exercises to the key just completed.

The studies in Section III are written in natural horn notation for use in transpositions to all keys. These studies are more interesting than those in Section I, and the notes of the series are not restricted to small groups of harmonics. The studies that include harmonics three through ten may be transposed to any key, but the ones with harmonics above the twelfth should be omitted in the keys of A and B flat alto. Studies that include the second harmonic should be omitted in the keys of C and B flat basso.

The orchestral excerpts in Section IV are mostly from the symphonies of Haydn, Mozart, and Beethoven. They are to be transposed to all keys. The excerpts, grouped according to range, illustrate the characteristics of the natural horn style. They are divided into first horn parts, second horn parts, and parts for two horns. The three sections of first horn parts are: (1) excerpts using harmonics six through twelve, (2) four through twelve, and (3) four through sixteen. The student is instructed to omit the excerpts that include harmonics higher than the tenth in the

keys of A and B flat alto, and to omit the excerpts with harmonics higher than the twelfth, in the key of G.

There are also three sections of second horn parts. The three sections are: (1) excerpts using harmonics three through ten, (2) excerpts with large leaps, and (3) excerpts that include notes in the bass clef. With the exception of the excerpts that extend down to the second harmonic, these studies can be played in all keys. Those excerpts that include the second harmonic may be omitted in the keys of C and B flat basso.

The excerpts for two horns were selected primarily to illustrate horn fifths. Preceding these excerpts is an illustration of horn fifths. The range of these excerpts is from the third through the tenth harmonics. This range makes it possible for the excerpts to be transposed to all keys.

CHAPTER V

SUMMARY

It is the purpose of this study to write a beginning method of transposition for the orchestral horn. It is the opinion of this writer that there should be a transposition method devoted solely to the technique of transposing orchestral horn parts, and that the studies should be in the style of horn parts encountered in the orchestral score.

By examining the existing materials currently used in teaching transposition, it was determined that a method of this type does not exist. The transposition studies in the existing materials are extremely limited and written with little, if any, regard for the natural horn style. Orchestral excerpts are often used for transposition studies but there are many disadvantages to this system for the beginner. Most passages found in the excerpt books are chosen because of their difficulty; hence, they are not appropriate for the beginner. Excerpts are ordinarily transposed to only one key, thus limiting the student to the key of the excerpts in the book.

The transposition studies in the writer's method are written in the style of the early natural horn so that the beginning student need be concerned only with the limited tones the early horn was able to produce. A study of the orchestral horn, the playing technique, and the style of horn writing used by outstanding orchestral composers, determined the format used in the method. The transposition studies are written and presented in an organized manner so as to enable the student, by using this method, to learn the natural horn style as well as the technique of transposition. Orchestral excerpts from outstanding composers of the period were used to illustrate the characteristics of the natural horn style.

It is the belief of the writer that, if the student studies this method of transposition, he will be able to transpose orchestral parts written in the natural horn style and will have the necessary background for advanced training in transposition. For further study there is a need for an advanced transposition method that includes transposing notes in the natural horn parts that required hand stopping, out-of-tune harmonics, and early valve horn parts. An advanced transposition method of this type would complete the course of study for orchestral horn transpositions and enable the student to transpose any part he might encounter.

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APPENDIX A

THE DEVELOPMENT OF A BEGINNING METHOD OF TRANSPOSITION FOR THE ORCHESTRAL HORN

A

BEGINNING ORCHESTRAL TRANSPOSITION METHOD

for the

FRENCH HORN

TRANSPOSITION STUDIES AND EXCERPTS

FOR HORN IN

E, Eb, D, C, Bb Basso,

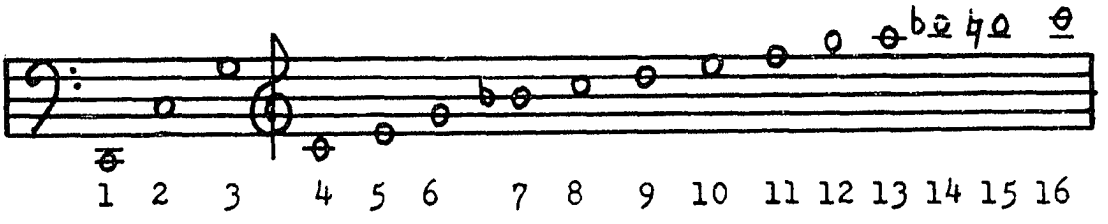
G, A, and Bb Alto

by

MELVIN LEE

INTRODUCTION

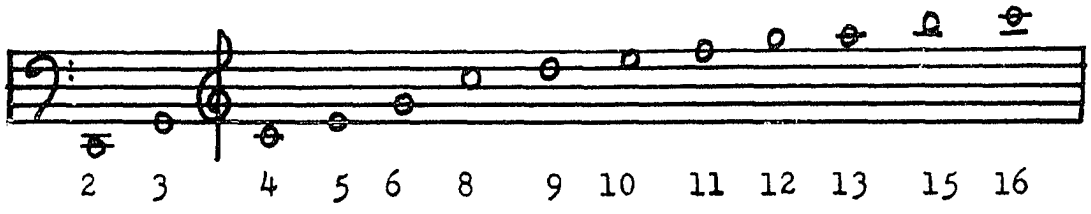
This transposition method deals only with transpositions of natural horn parts. The natural horn, predecessor of the valve-horn in current use, was limited to the following series of tones:



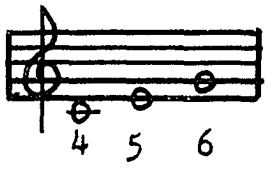
This series of tones is known as the harmonic series. The note C, which is the lowest note, is called the fundamental. A series with the fundamental C is called the C harmonic series. The notes in the series have been numbered starting with the fundamental as number one. In the future, the notes in the series will be referred to as harmonics and identified by number.

All the notes in the harmonic series were not used in natural horn parts. The seventh and fourteenth harmonics were seldom used because they were out of tune, and the fundamental was never used because it was too difficult to produce. The second and third harmonics, and occasionally the fourth, were written in the bass clef. When the notes

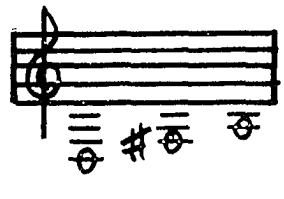
appeared in the bass clef they were written an octave lower. The following are the notes used in natural horn parts:



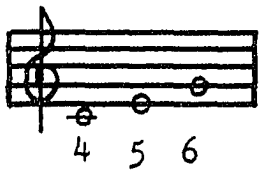
Composers used only the notes shown above, regardless of the key of the composition. There were different sizes of horns that produced a high or lower series of tones. The player also had a selection of crooks of various lengths that he could insert into the main tubing of the horn. With each crook, a harmonic series of different pitch could be produced. The composer wrote the horn part using the above notes and indicated the key of the horn. The actual sounds were governed by the key of the horn indicated by the composer. For example: If the composer wrote the notes C-E-G, which are the fourth, fifth, and sixth harmonics, and indicated Horn in D, the player would insert his D crook and play the fourth, fifth, and sixth harmonics. The notes that he played would sound D-F sharp-A.



represented the following sounds in D Horn:



The same harmonics would sound F-A-C if the composer wrote for Horn in F.

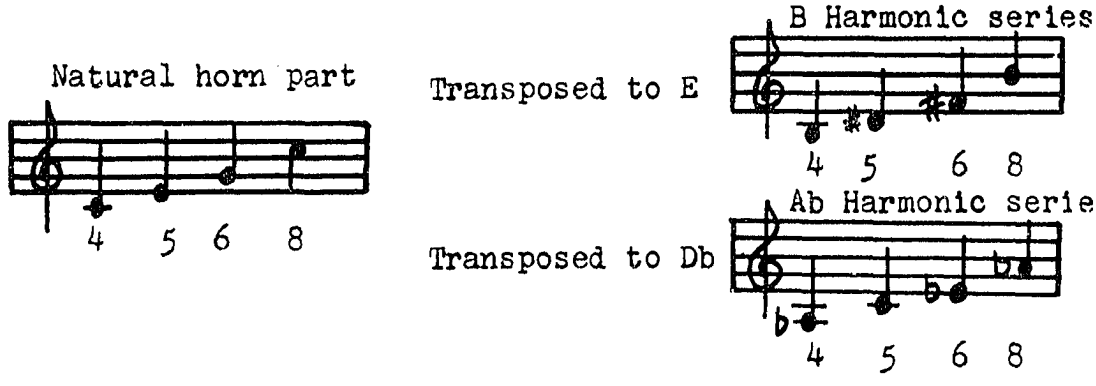


represented the following sounds in F Horn:

The notes used by the composers were no longer pitch-notes, but simply directions to the player to play harmonics four, five, and six.

Most horn players today use one horn in the key of F to play all the parts encountered. A part in a key other than F must be transposed. A horn player today finds the interval to be transposed by determining the distance from his key of F to the key of the part to be transposed. Once the interval has been determined, the player then raises or lowers each note that appears in the natural horn part the required distance. In effect, the entire C harmonic series, which is used in the natural horn part, is raised or lowered the required interval. Raising or lowering the notes in the C series any interval creates a different harmonic series. A different harmonic series will be required in each transposition. To find the harmonic series to use in a transposition, the player has to: (1) determine the interval between the key of F and the key of the part to be

transposed, and (2) raise or lower the C series that interval. For example: Horn in E, which is one half-step lower than Horn in F, will use the B harmonic series which is one half-step lower than the C series in the natural horn part. Horn in D flat, which is two steps lower than Horn in F, will use the A flat series which is two steps lower than the original part in C.



TRANSPOSING PROCEDURE

The following procedure is used for transposing to any key: (1) Learn the notes and the harmonic series numbers used in writing natural horn parts, (2) determine the interval to be transposed, (3) determine the harmonic series to be used in the transposition, (4) learn the notes and the numbers of the harmonic series used in the transposition, and (5) substitute the notes in that series for the C harmonic series. The notes in the transposed harmonic series are substituted for the ones in the natural horn part with the corresponding number.

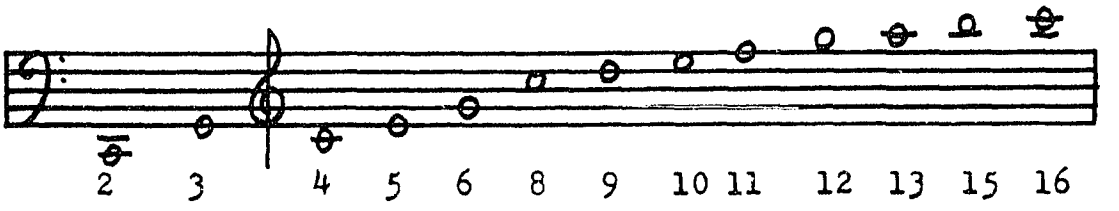
LESSON OUTLINE
for
ALL TRANSPOSITIONS

Key	Introduction	C Harmonic Series	Harmonic Series used in the Transposition		Natural Horn Studies	Orchestral Excerpts
E	50	55	B	66	169	184
Eb	50	55	Bb	80	169	184
D	50	55	A	94	169	184
C	50	55	G	108	169	184
Bb Basso	50	55	F	122	169	184
G	50	55	D	136	169	184
A	50	55	E	149	169	184
Bb Alto	50	55	F	159	169	184

SECTION I

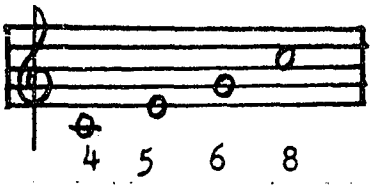
C HARMONIC SERIES STUDIES

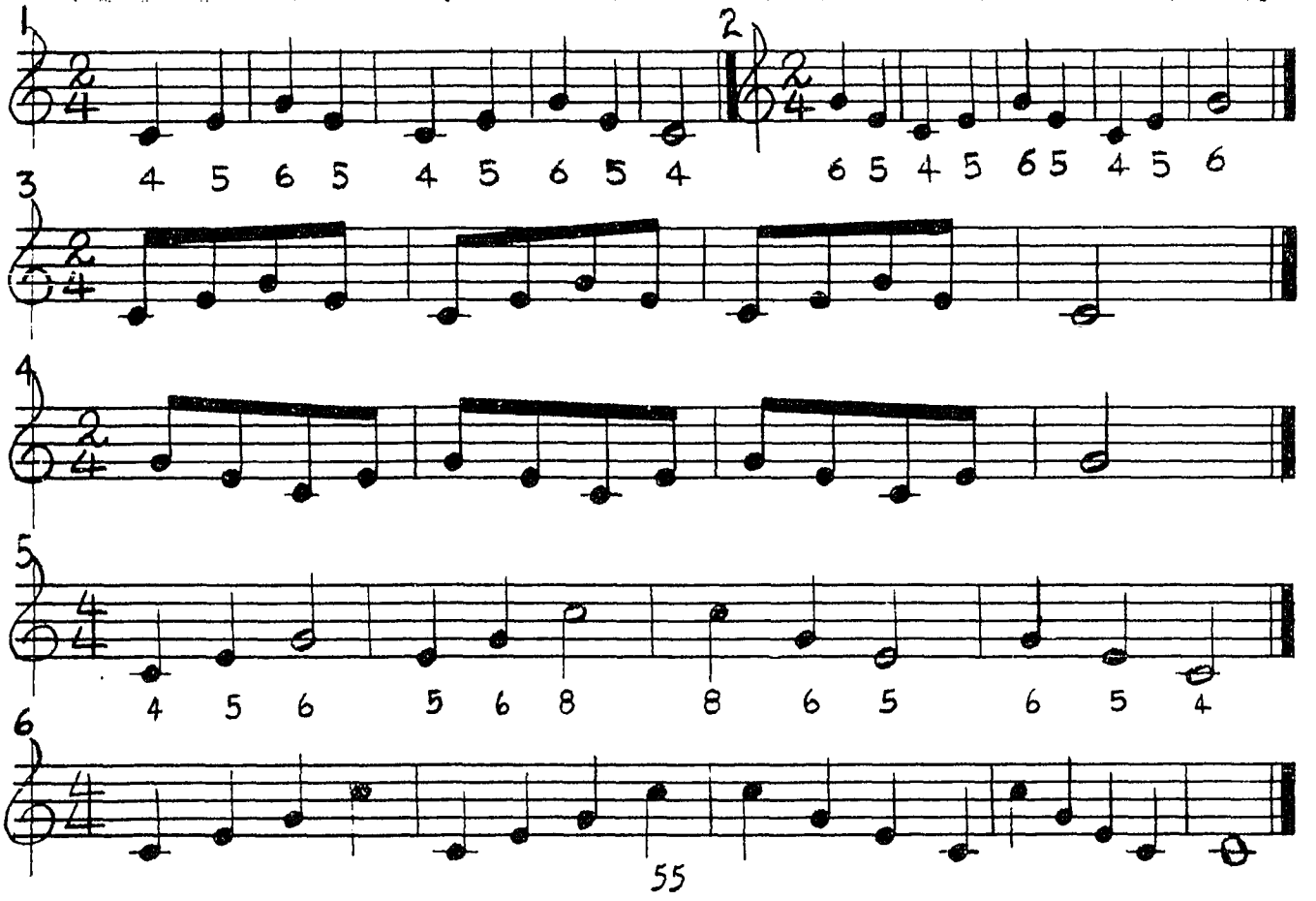
Composers used only the following notes when writing natural horn parts.

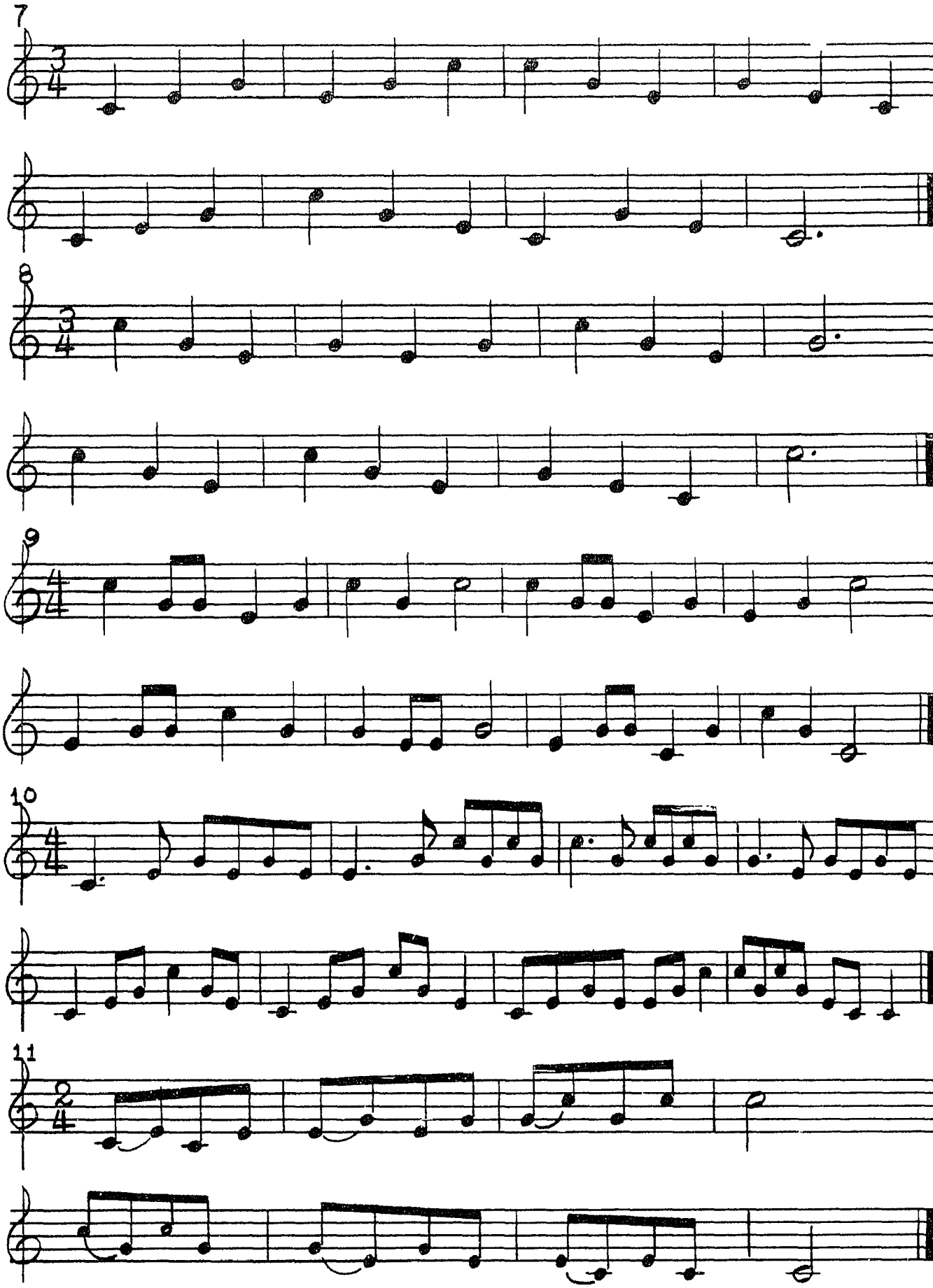


The numbers beneath the notes are called harmonic series numbers. It is necessary to learn the notes and the harmonic series numbers in this system of transposition.

HARMONICS 4-5-6-8



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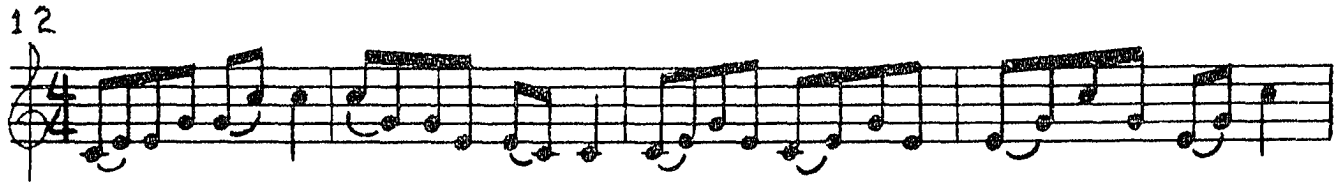

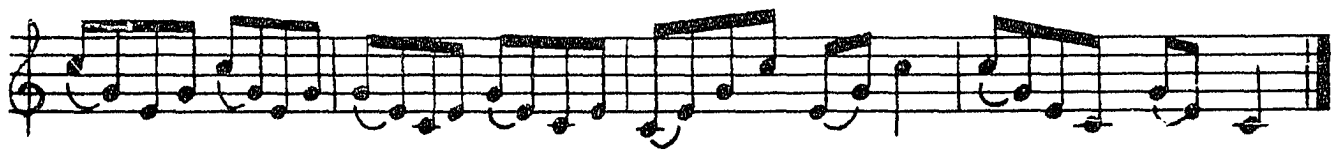

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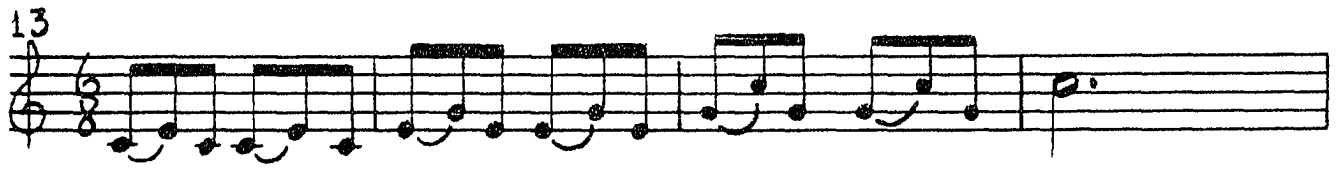

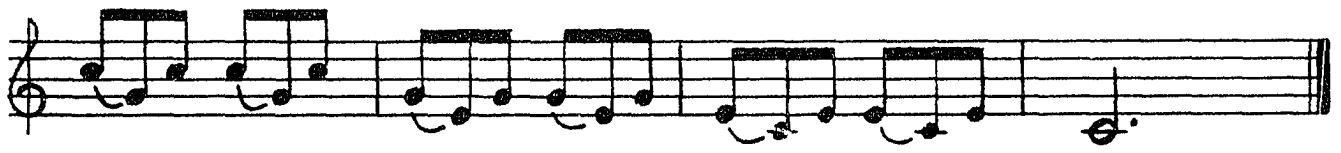

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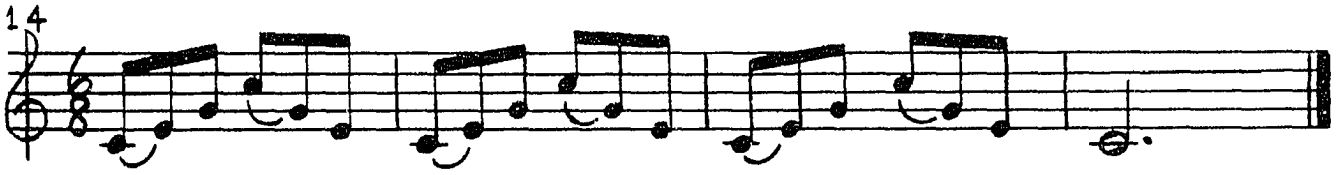

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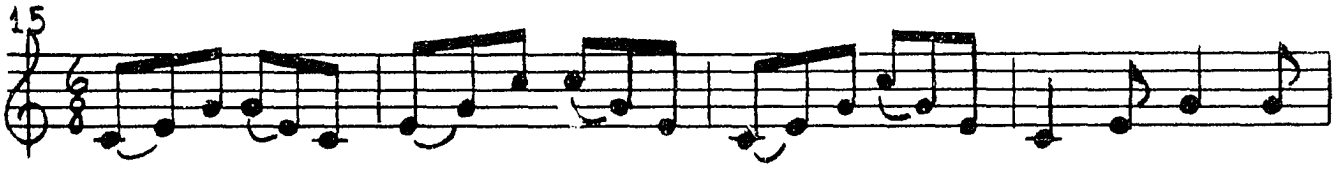


Play the tones represented by the following harmonic series numbers.

A. 4 - 5 - 6 - 8 - 6 - 5 - 4

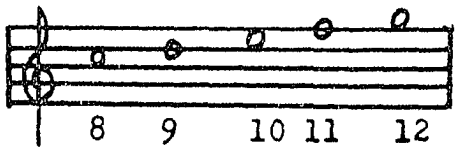
B. 8 - 4 - 6 - 5 - 8 - 6 - 4

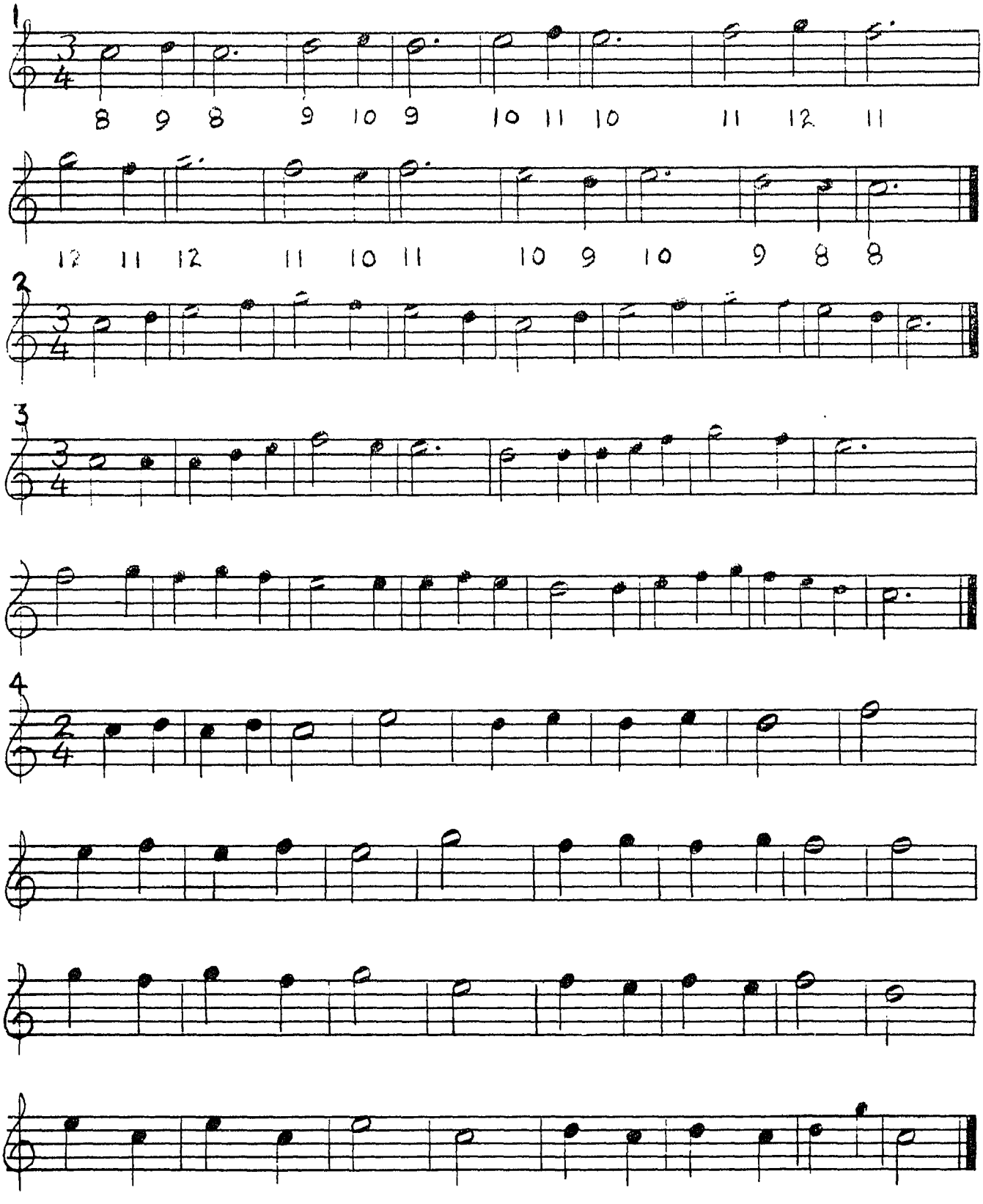
C. 6 - 5 - 4 - 8 - 5 - 6 - 8

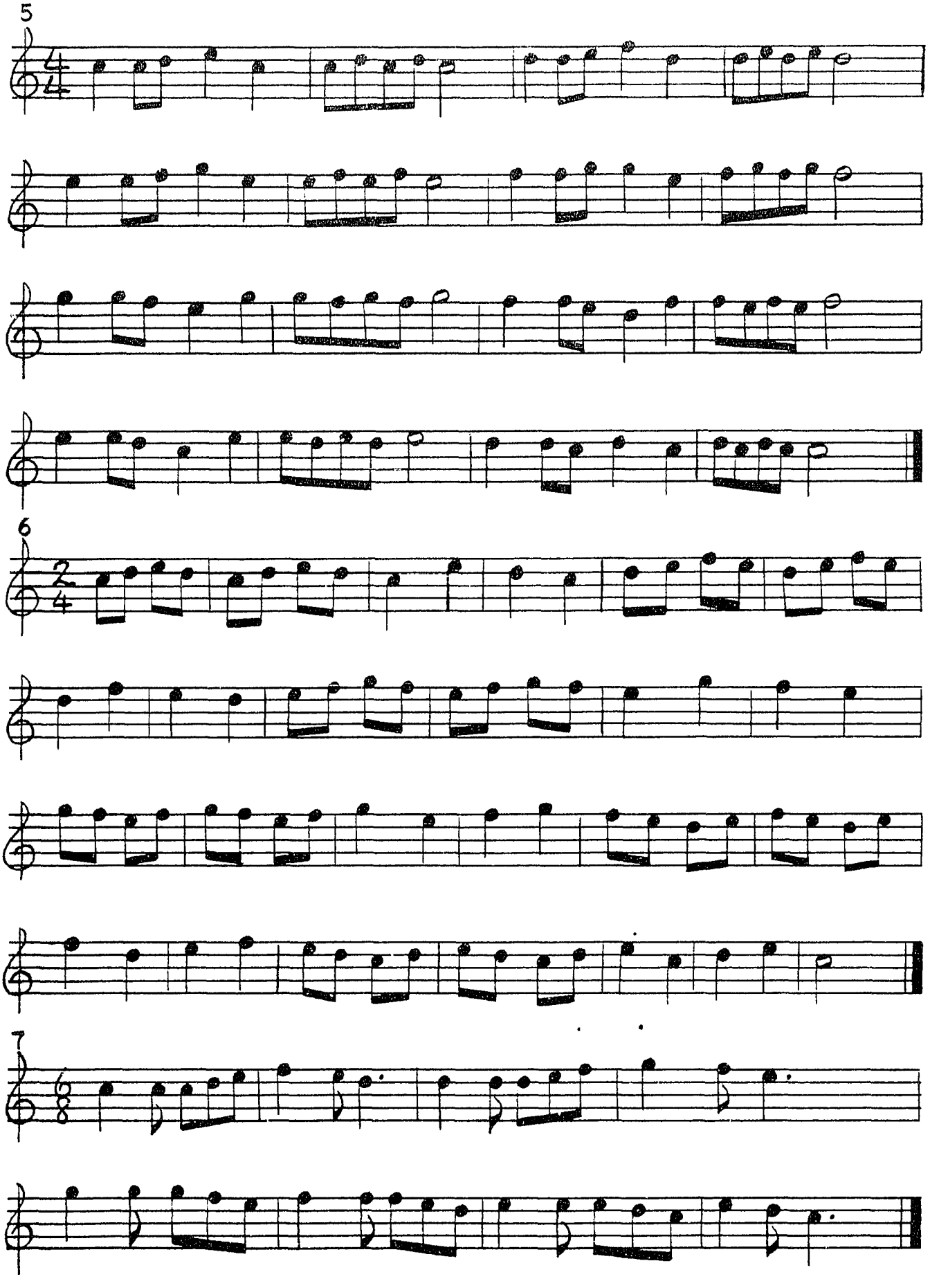
D. 8 - 5 - 6 - 4 - 8 - 6 - 5

E. 4 - 6 - 5 - 8 - 5 - 4 - 6

HARMONICS 8-9-10-11-12



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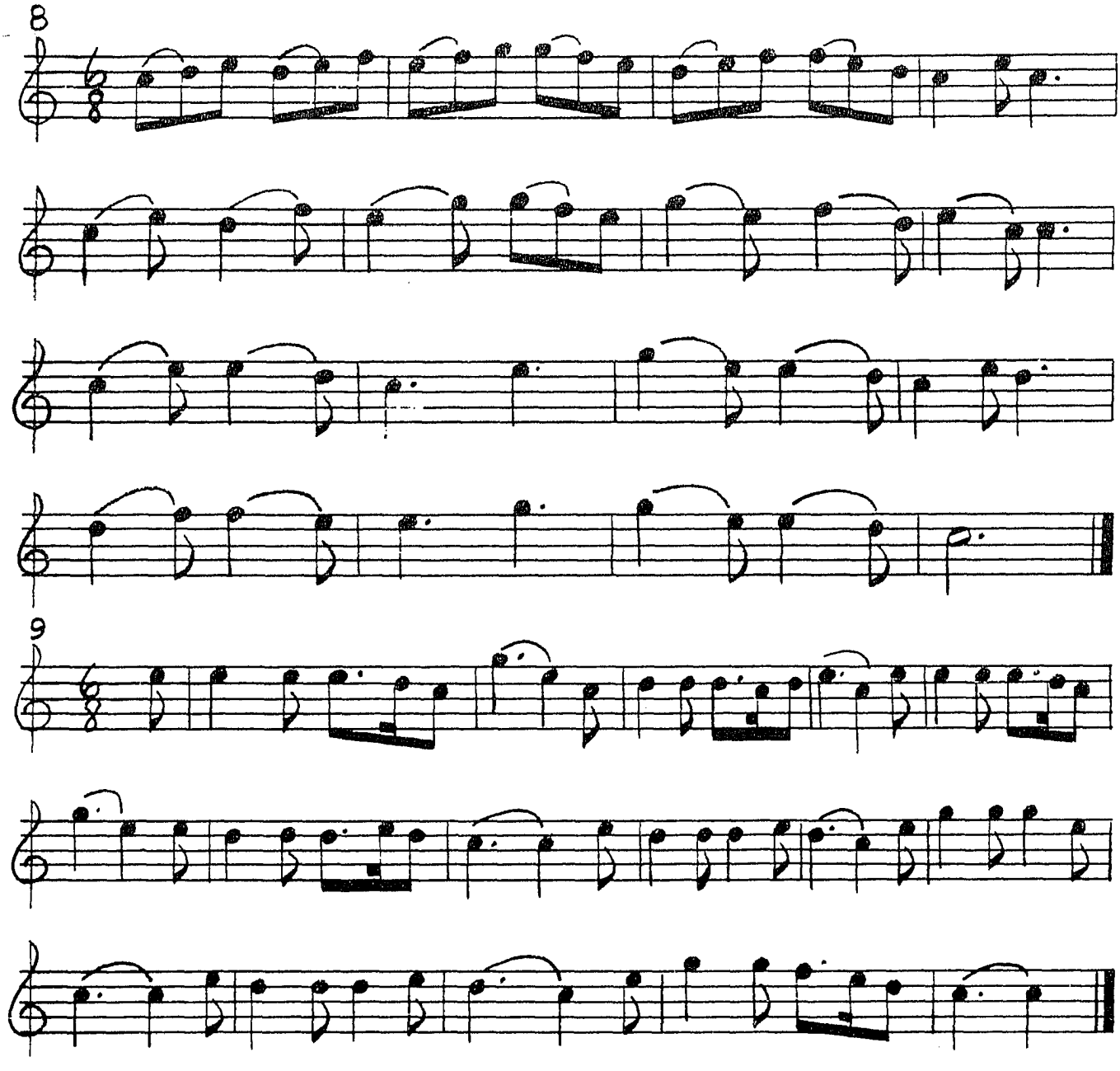


Play the tones represented by the following harmonic series numbers.

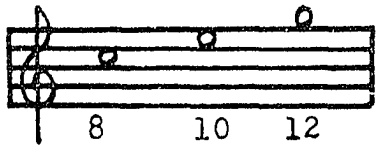
A. 8 - 10 - 9 - 11 - 10 - 12 - 11

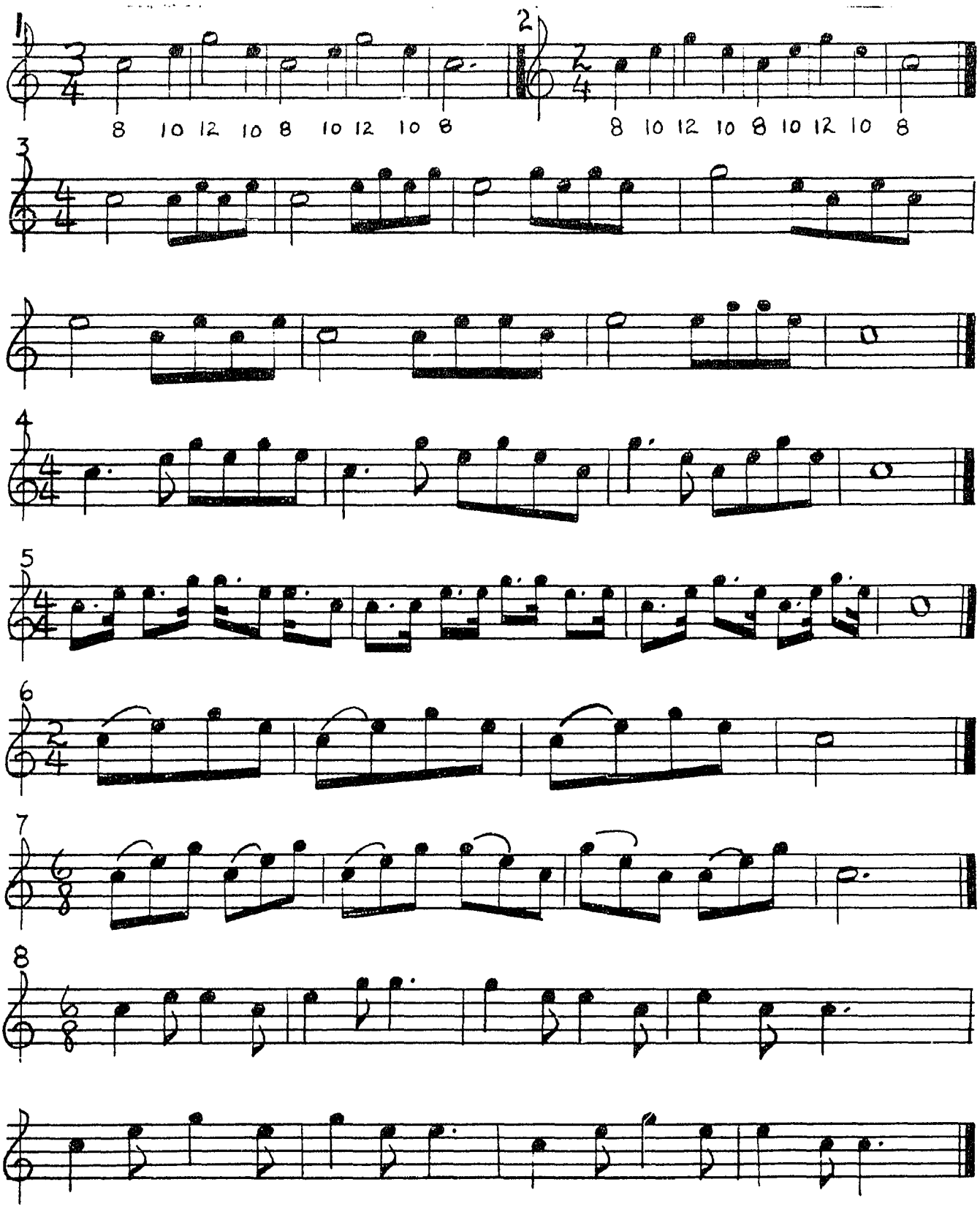
B. 10 - 11 - 12 - 10 - 8 - 9 - 10

C. 8 - 10 - 12 - 10 - 8 - 12 - 10

D. 12 - 10 - 11 - 9 - 8 - 11 - 10

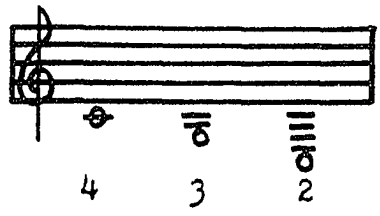
HARMONICS 8-10-12



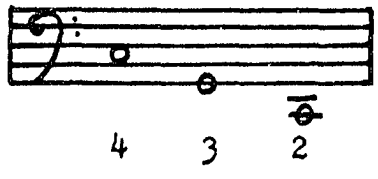


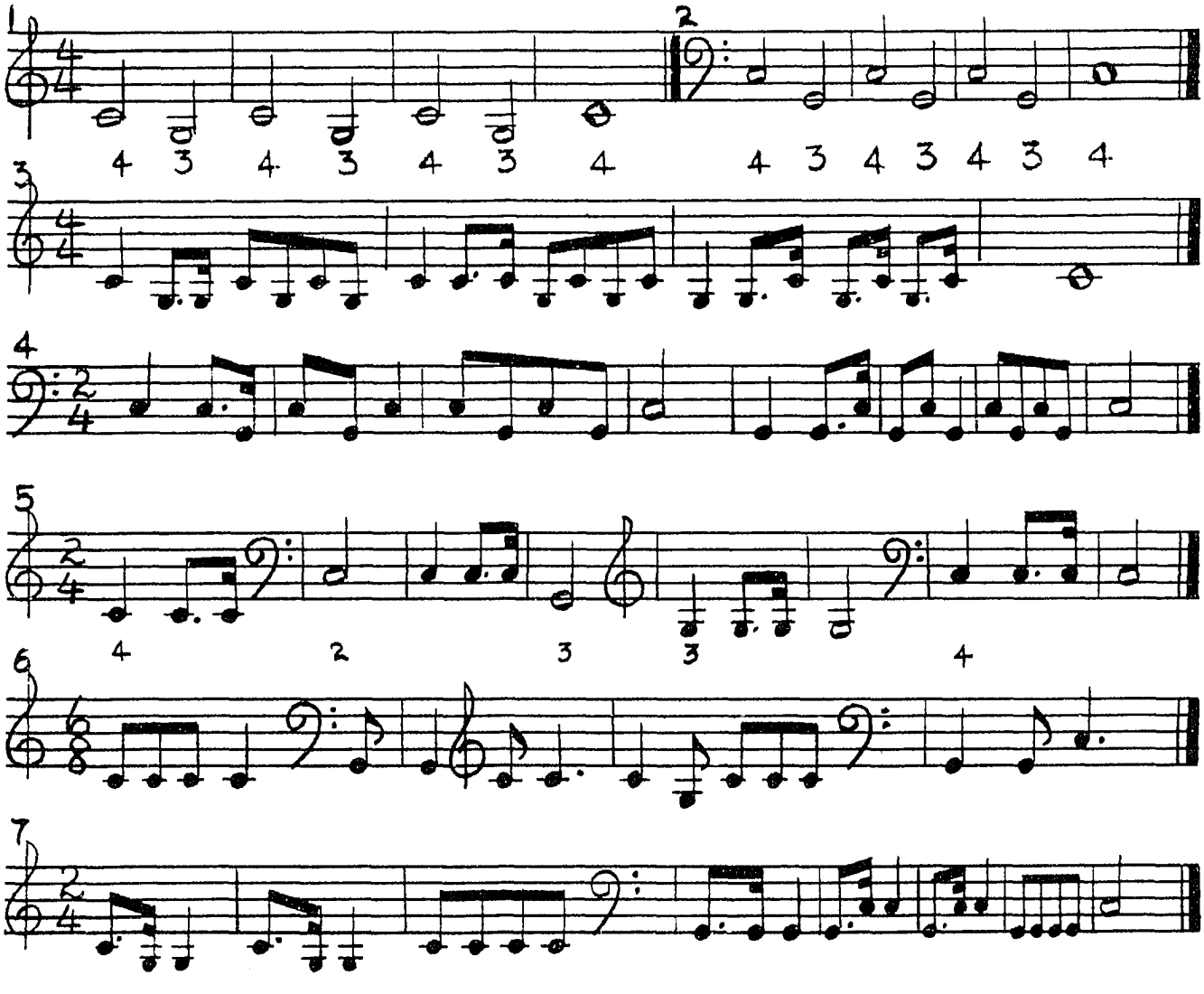
HARMONICS 2-3-4

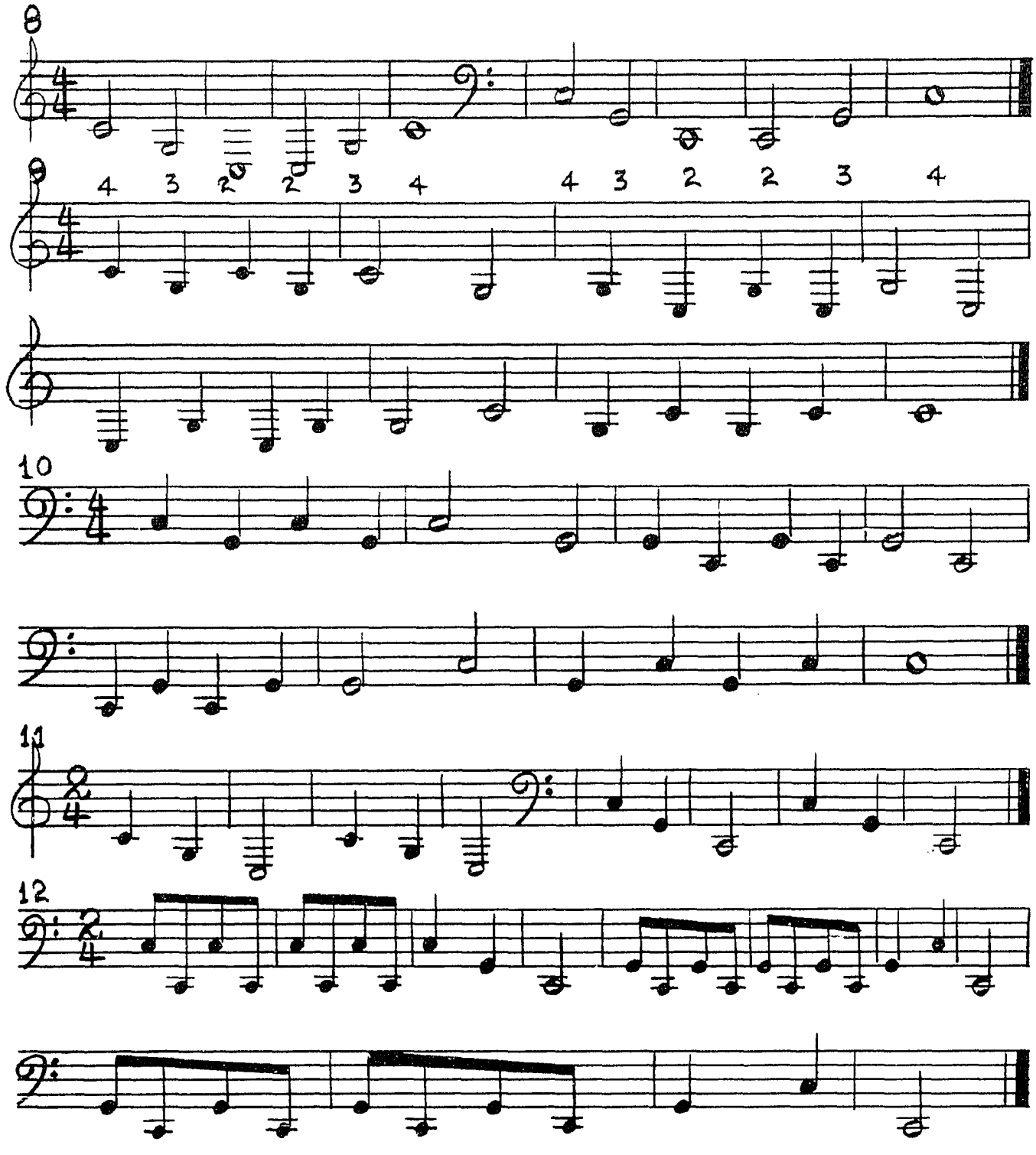
The 2nd and 3rd harmonics are the only natural tones below middle C.



The 2nd, 3rd, and 4th harmonics were often written in the bass clef in natural horn parts. When the notes appeared in the bass clef they were written an octave lower.





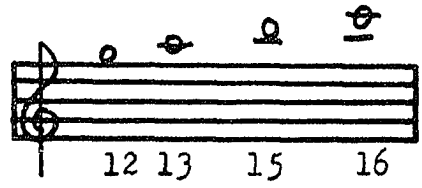


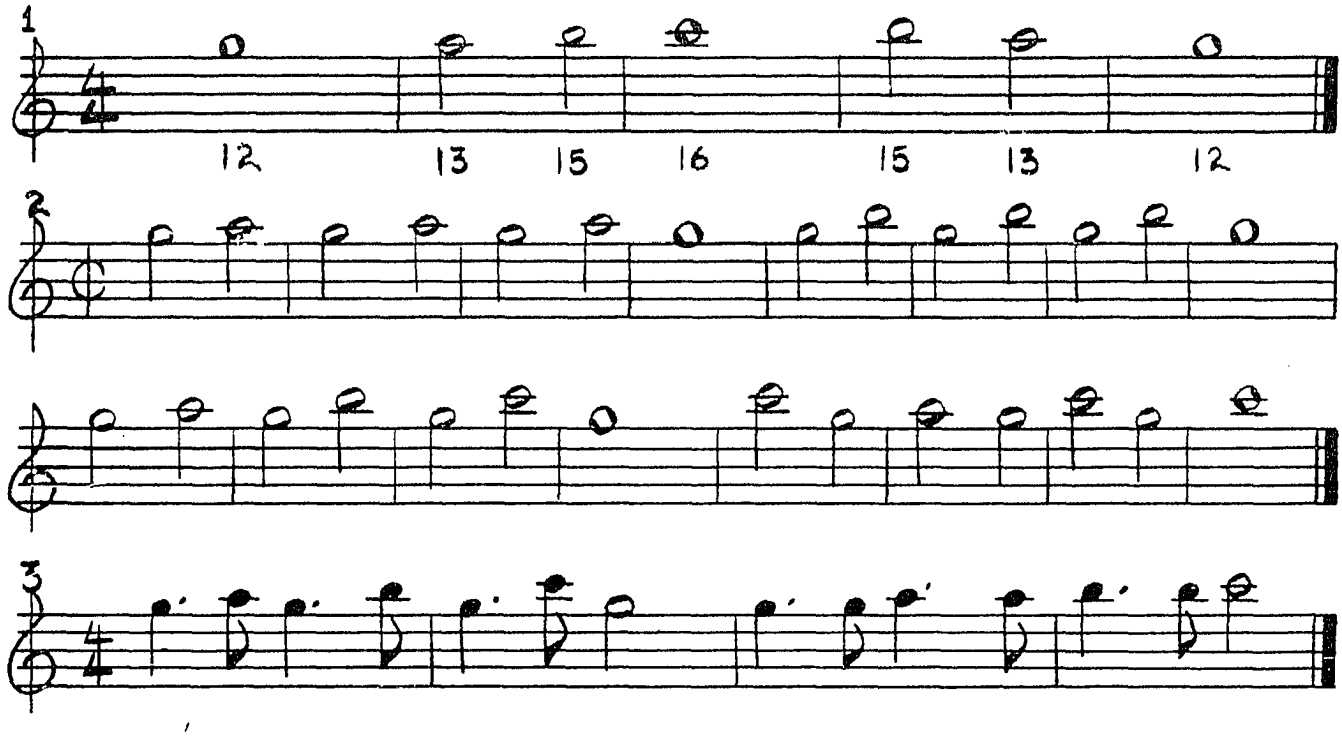
Play the tones represented by the following harmonic series numbers.

A. 3 - 4 - 2 - 4

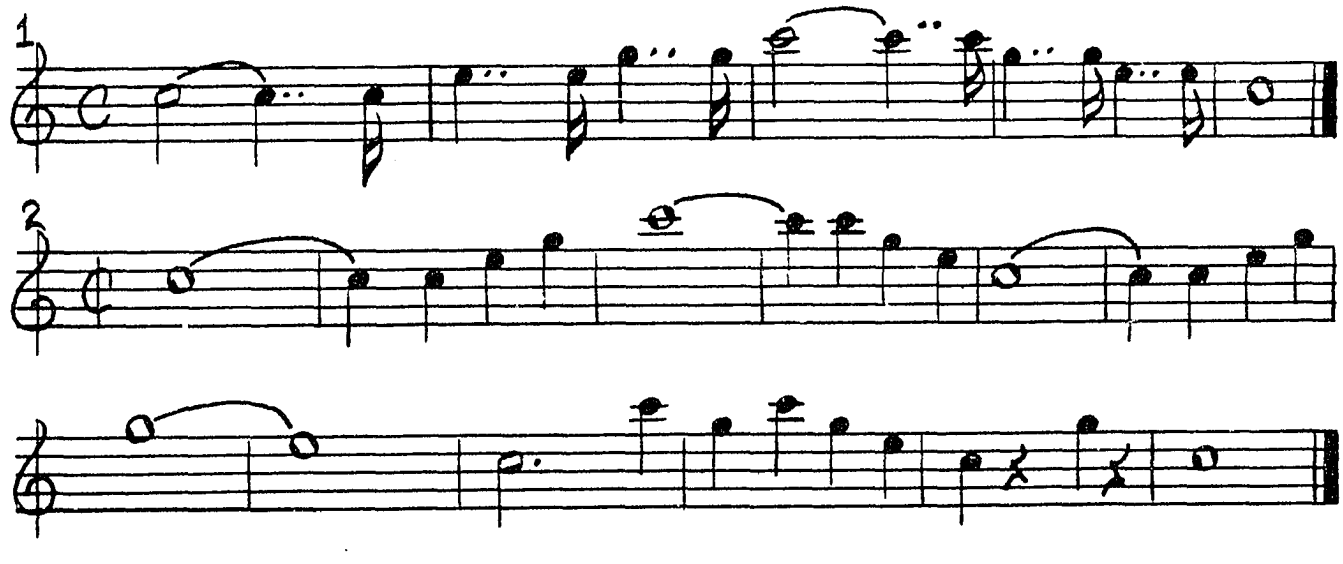
B. 4 - 3 - 4 - 2

HARMONICS 12-13-15-16





HARMONICS 8-10-12-16



SECTION II

HARMONIC SERIES STUDIES

E Transposition - B Harmonic Series - Page 66

Eb Transposition - Bb Harmonic Series - Page 80

D Transposition - A Harmonic Series - Page 94

C Transposition - G Harmonic Series - Page 108

Bb Basso Transposition - F Harmonic Series - Page 122

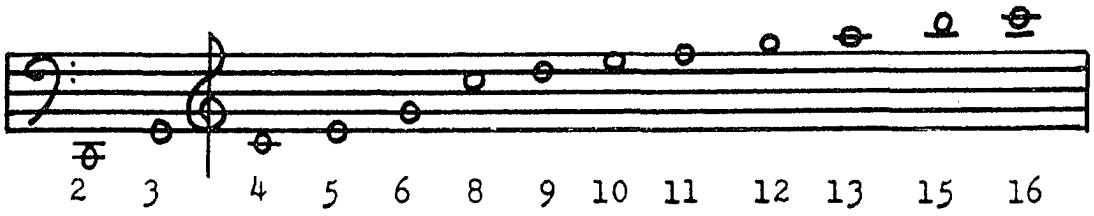
G Transposition - D Harmonic Series - Page 136

A Transposition - E Harmonic Series - Page 149

Bb Alto Transposition - F Harmonic Series - Page 159

TRANSPOSITION TO E

The natural horn part included only the tones of the C harmonic series. The following are the tones used in natural horn parts:



The system of transposition in this method was based on the fact that composers always wrote the natural horn parts using the above notes and indicated the key of the horn. With the use of various crooks, the horn produced a different harmonic series in each key. In this book, the proper harmonic series is chosen for each key and then substituted for the C series in the natural horn part.

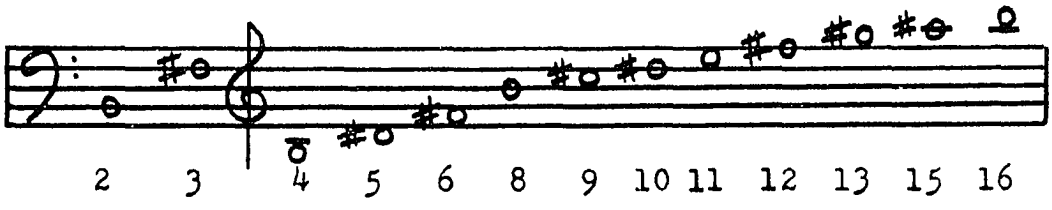
The following steps are necessary to transpose to any key: (1) Learn the notes and the harmonic series numbers used in writing natural horn parts, (2) determine the interval to be transposed, (3) determine the harmonic series to be used in the transposition, (4) learn the notes and the numbers of the harmonic series used in the transposition, and (5) substitute the notes in that series for the C harmonic series.

STEPS IN THE E TRANSPOSITION

STEP I - Learn the notes and the harmonic series numbers used in writing natural horn parts.

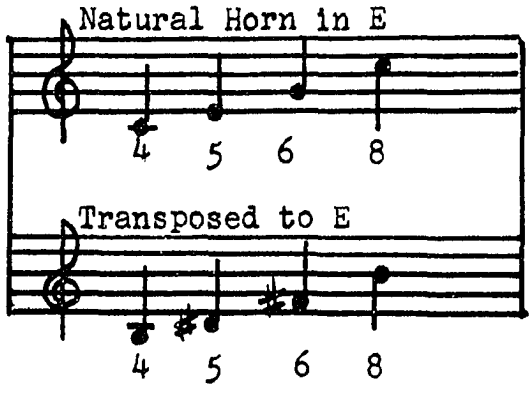
STEP II - Determine the interval between the key of F and horn in E. The interval is one half-step down.

STEP III - Determine the harmonic series used in horn in E. Each note of the C harmonic series used in writing the natural horn part must be lowered one half-step. The result of lowering each note of the C series one half-step is the B harmonic series. The following are the notes used in the B harmonic series.



STEP IV - Learn the notes and the harmonic series numbers of the B series.

STEP V - Substitute the B harmonic series for the C harmonic series. For each note in the C series, substitute the note with the corresponding number in the B series.



LESSON PLAN FOR E TRANSPOSITION

1. C Harmonic Series Studies
   Section I - Page 55

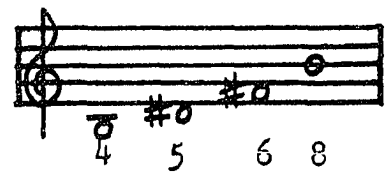
2. B Harmonic Series Studies
   Section II - Page 66

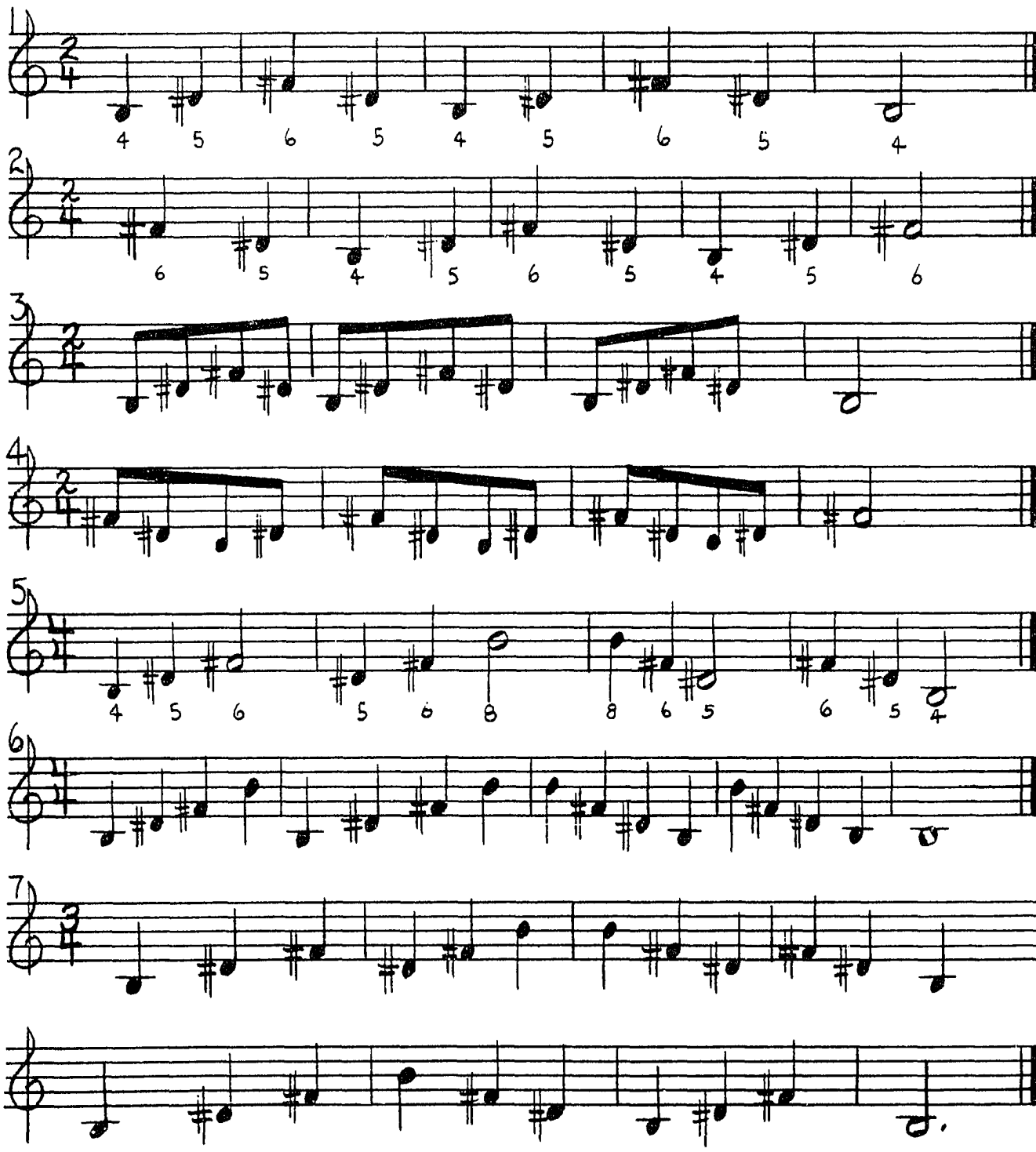
3. Natural Horn Studies
   Section III - Page 169

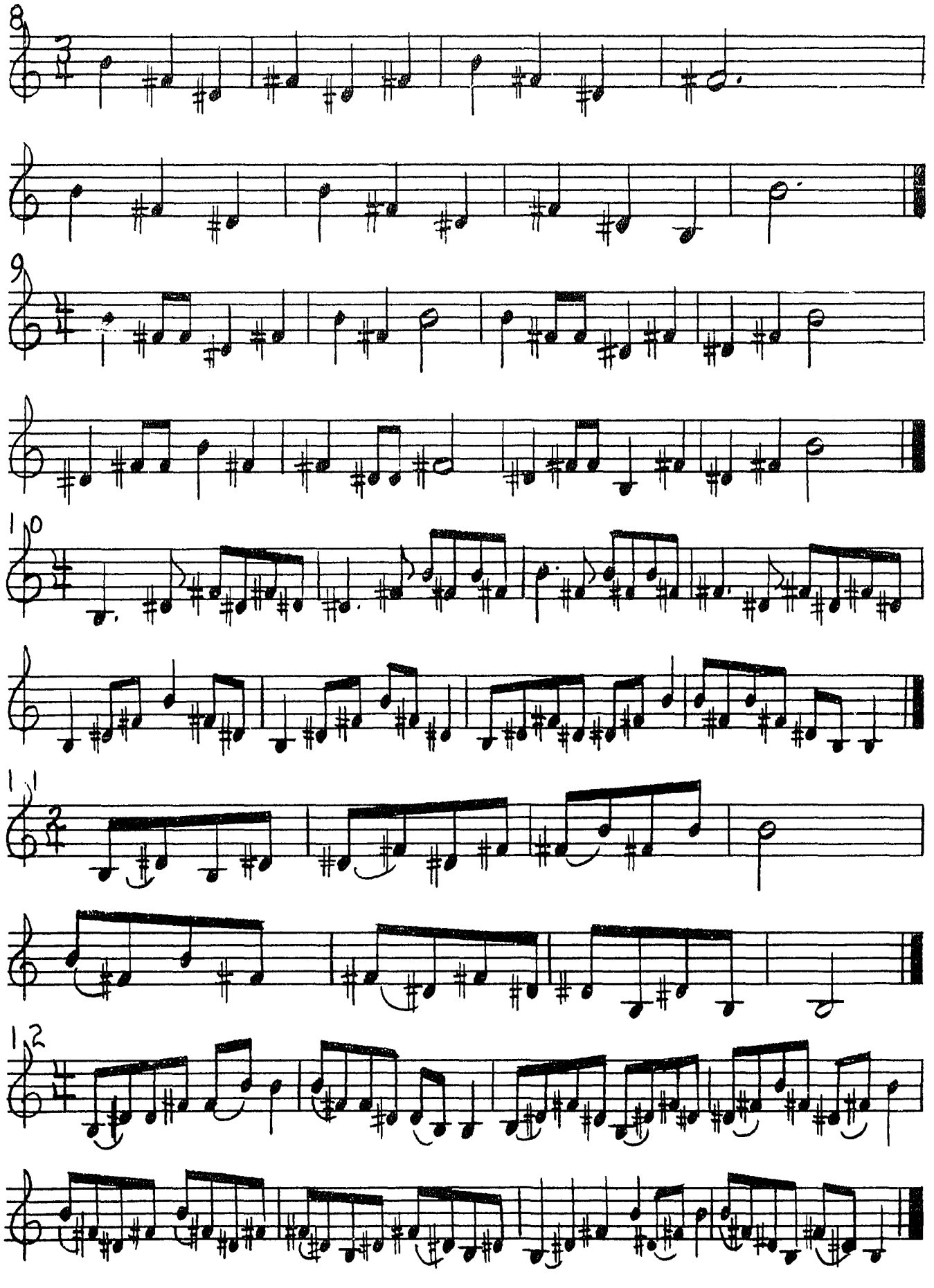
4. Orchestral Excerpts
   Section IV - Page 184

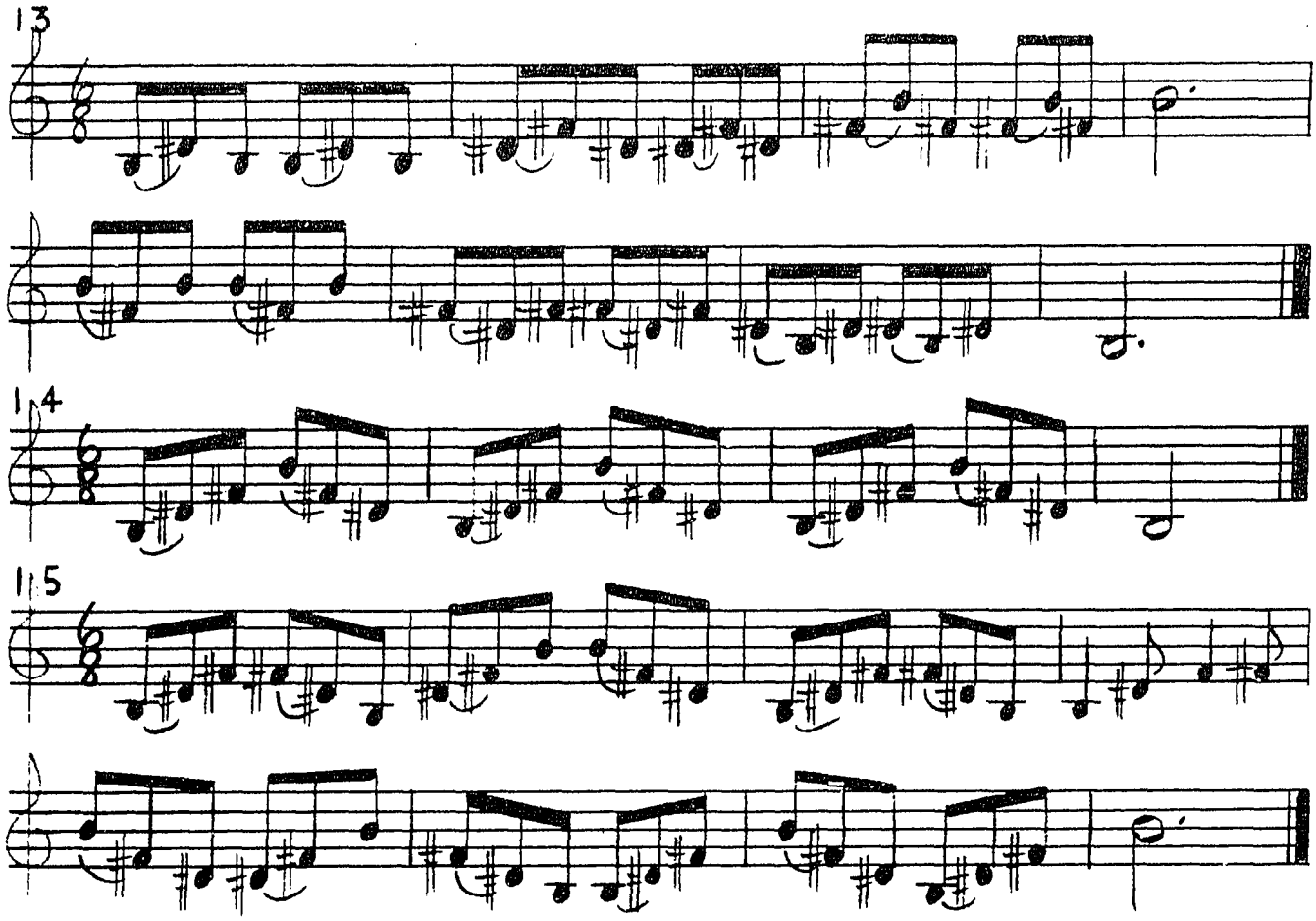
B HARMONIC SERIES STUDIES

HARMONICS 4-5-6-8









Play the tones represented by the following harmonic series numbers.

A. 4 - 5 - 6 - 8 - 6 - 5 - 4

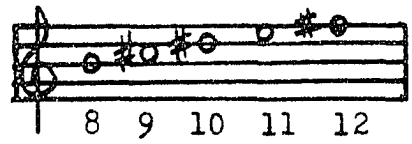
B. 8 - 4 - 6 - 5 - 8 - 6 - 4

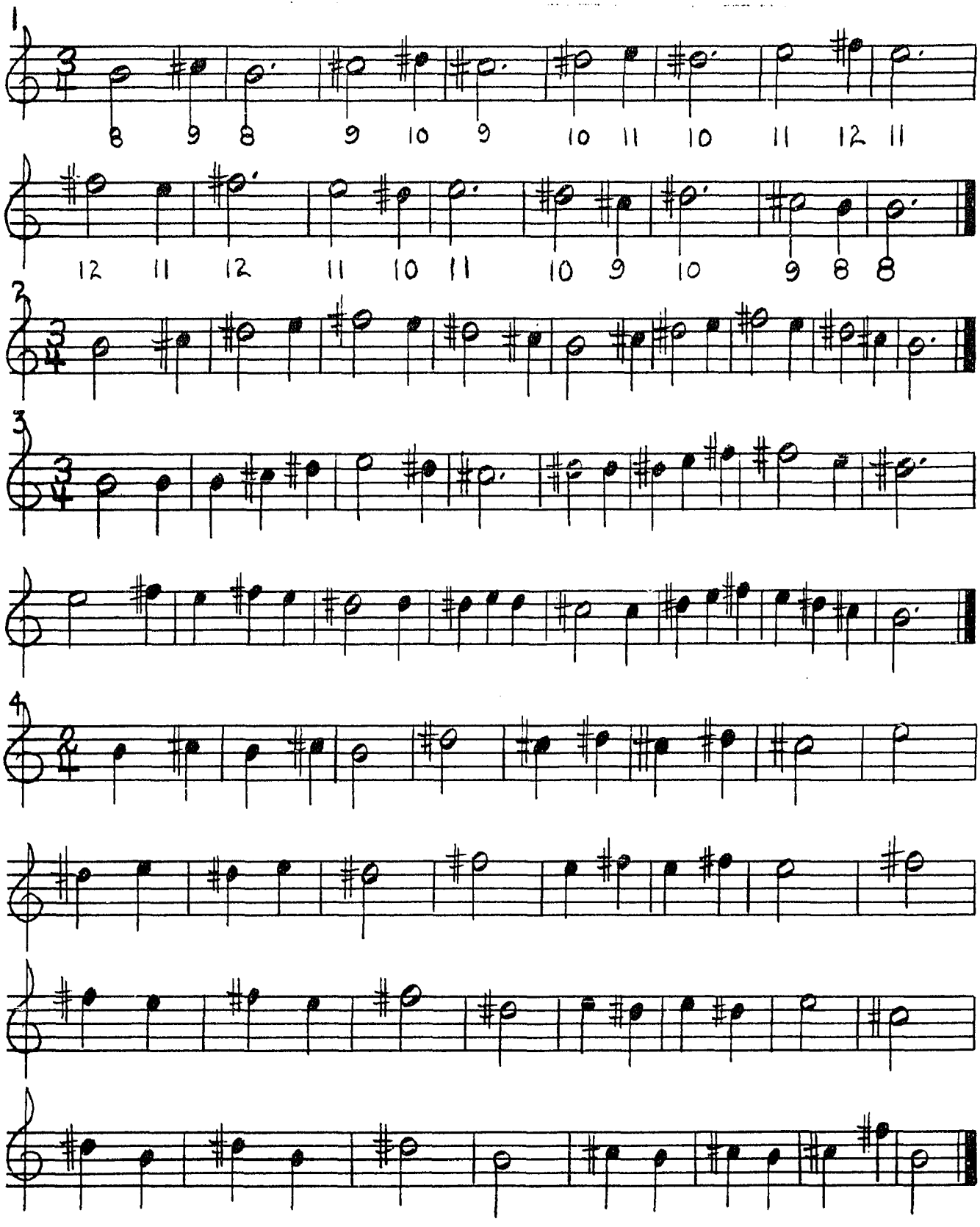
C. 6 - 5 - 4 - 8 - 5 - 6 - 8

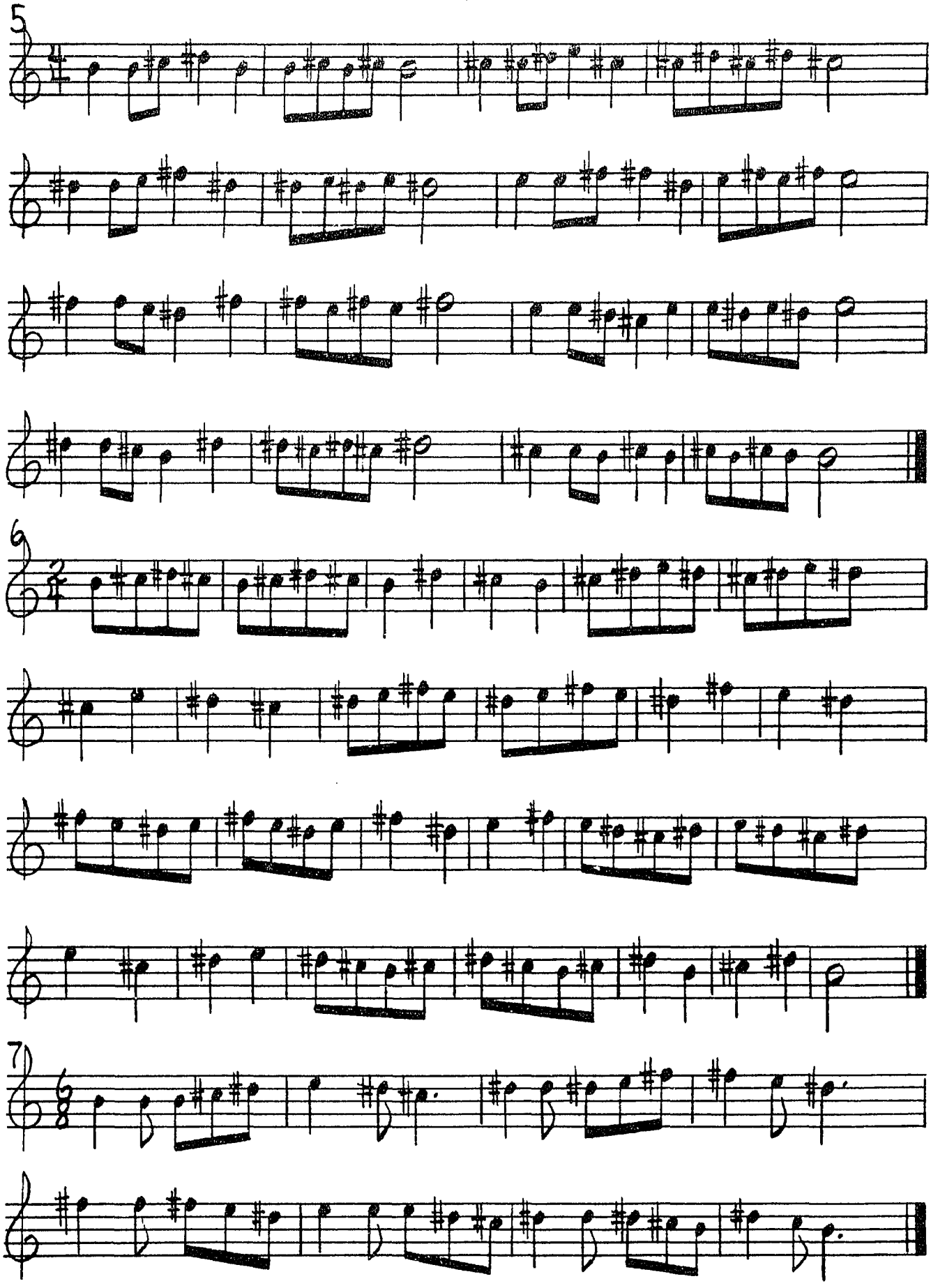
D. 8 - 5 - 6 - 4 - 8 - 6 - 5

E. 4 - 6 - 5 - 8 - 5 - 4 - 6

HARMONICS 8-9-10-11-12



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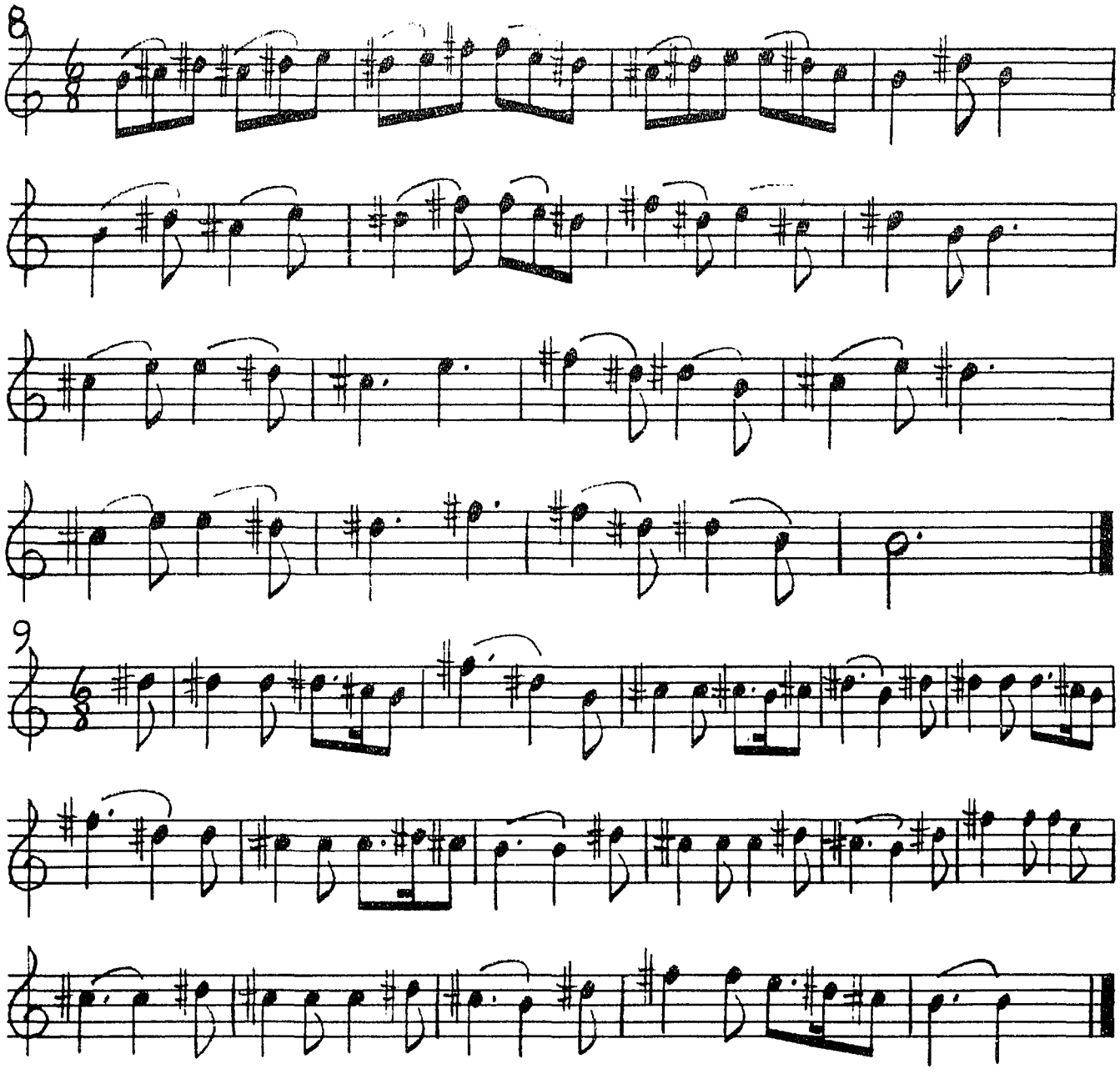


Play the tones represented by the following harmonic series numbers.

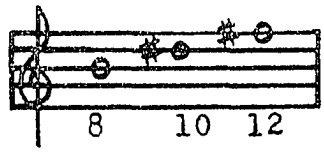
A. 8 - 10 - 9 - 11 - 10 - 12 - 11

B. 10 - 11 - 12 - 10 - 8 - 9 - 10

C. 8 - 10 - 12 - 10 - 8 - 12 - 10

D. 12 - 10 - 11 - 9 - 8 - 11 - 10

HARMONICS 8-10-12



1 8 10 12 10 8 10 12 10 8

2 8 10 12 10 8 10 12 10 8

3

4

5

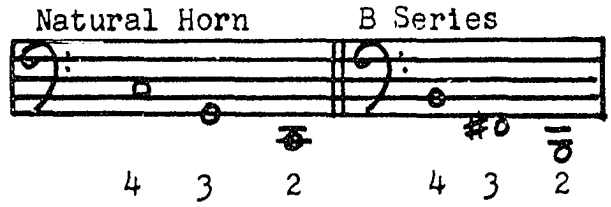
6

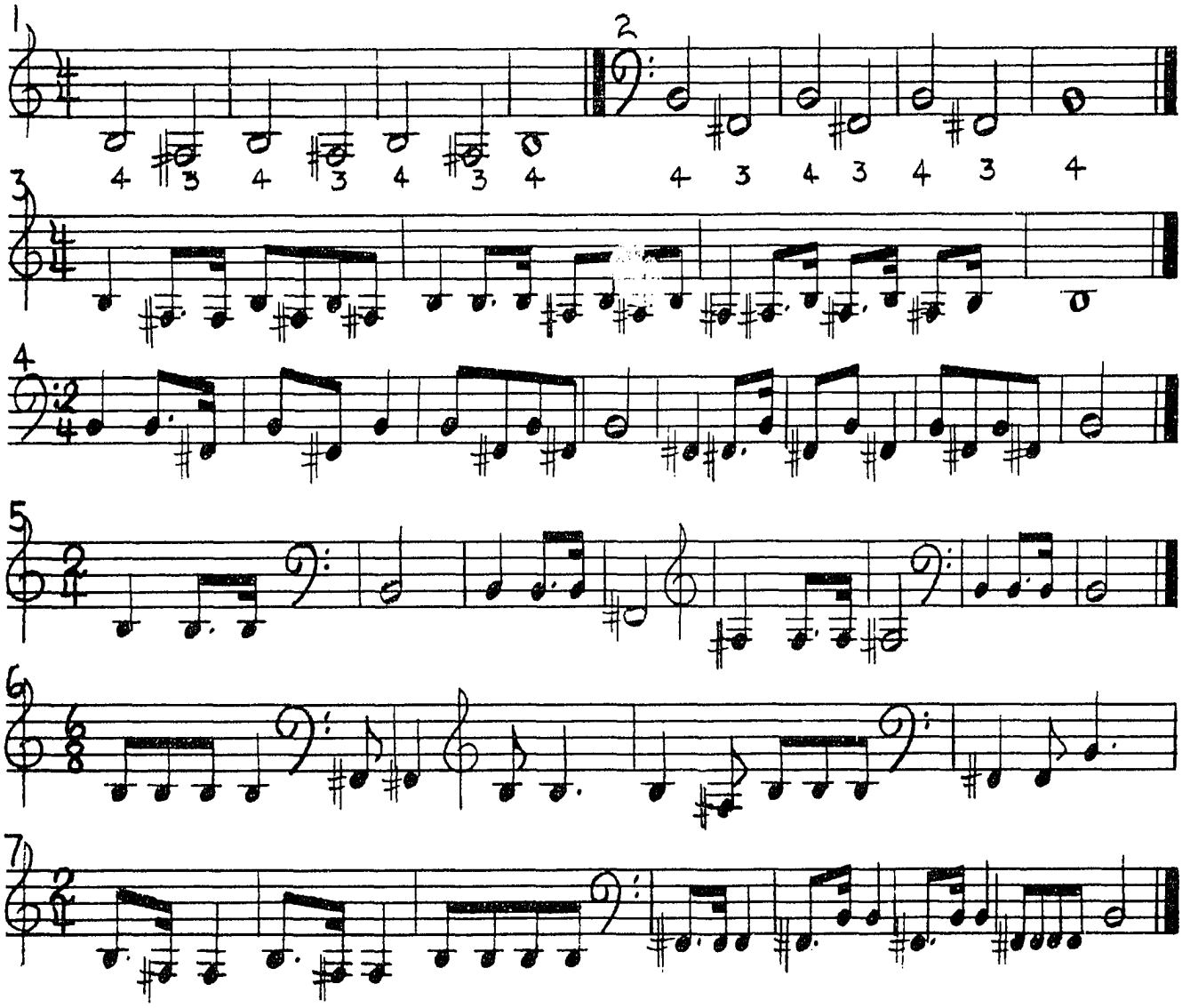
7

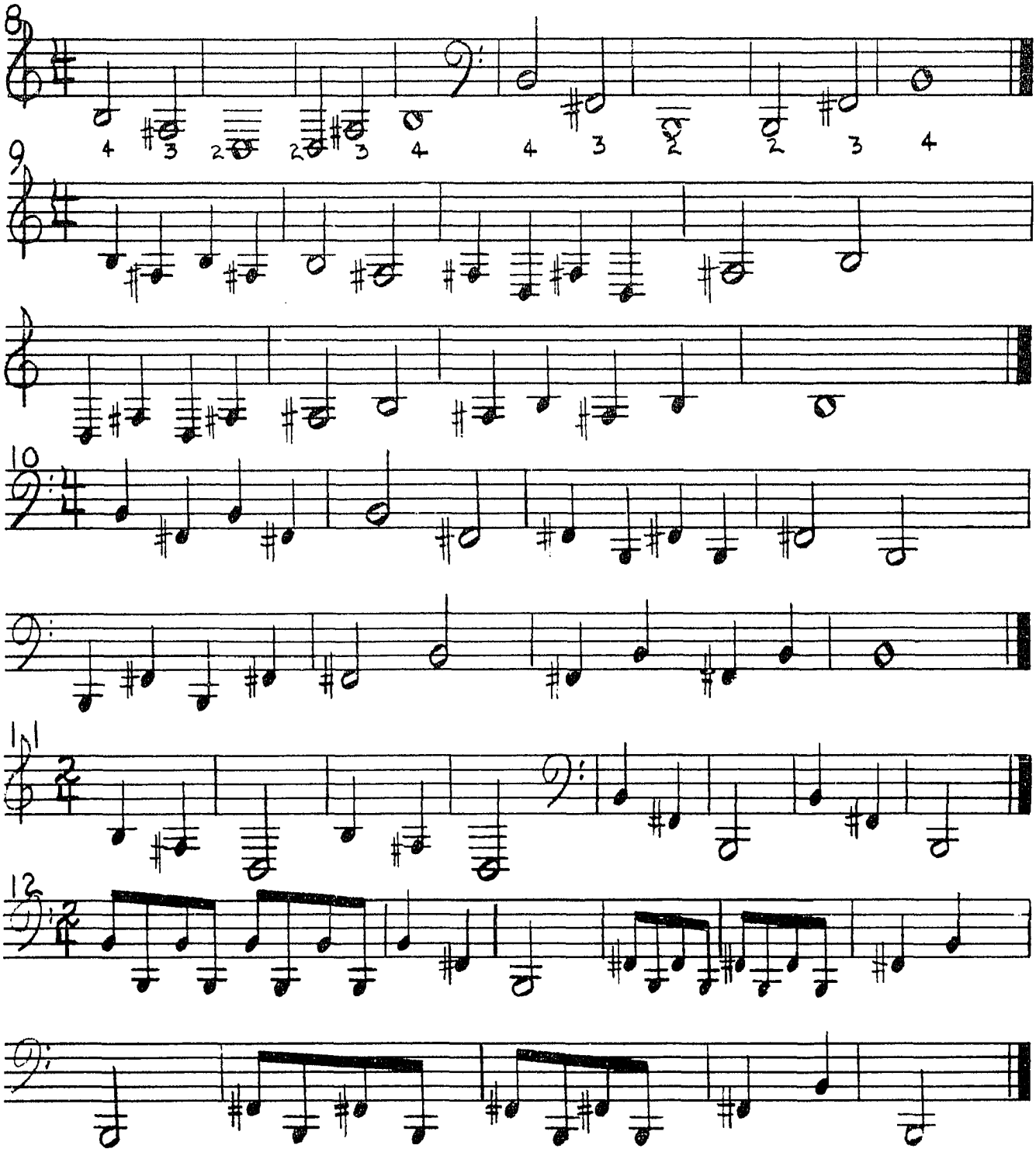
8

HARMONICS 2-3-4

The 2nd, 3rd, and 4th harmonics were often written in the bass clef in the natural horn part. When the notes appeared in the bass clef they were written an octave lower. The 2nd, 3rd, and 4th harmonics of the B series are written an octave lower in this method when they appear in the bass clef.





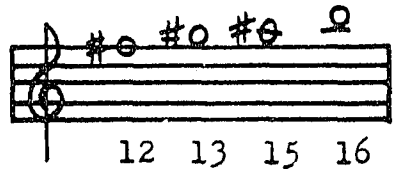


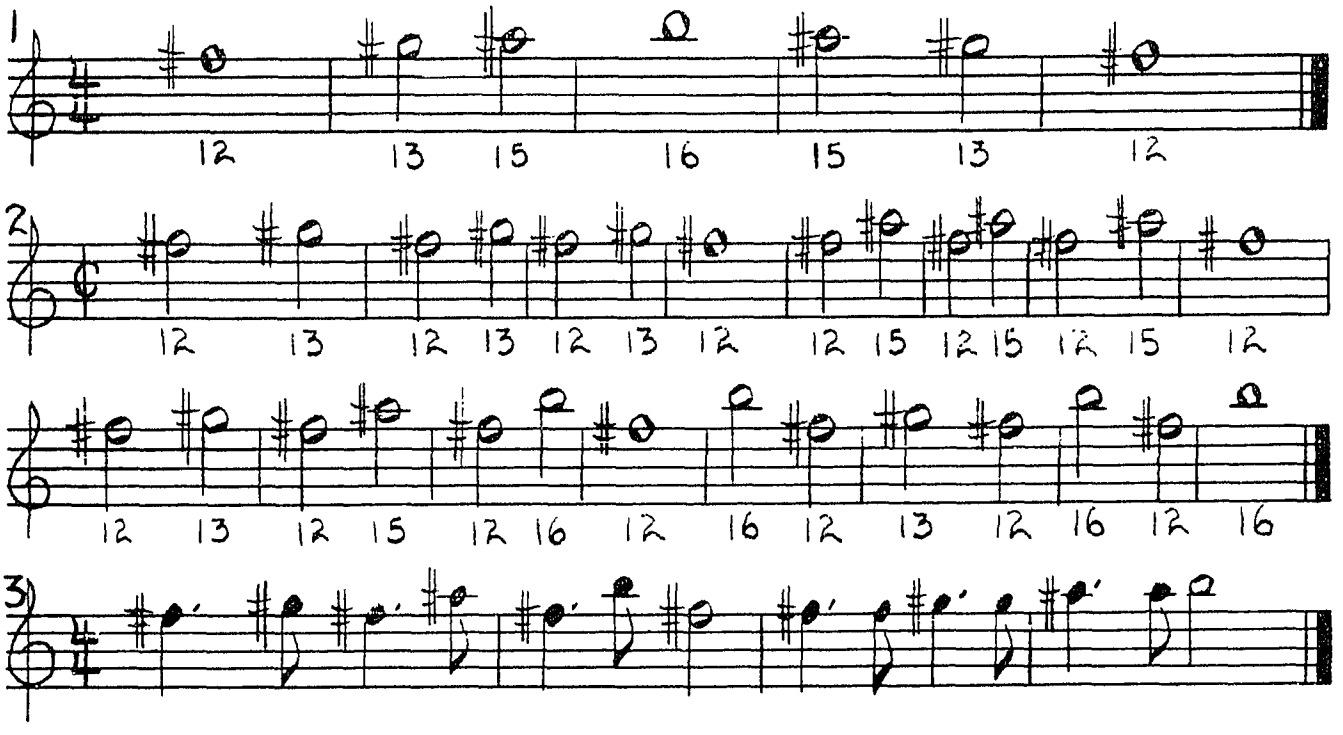
Play the tones represented by the following harmonic series numbers.

A. 3 - 4 - 2 - 4

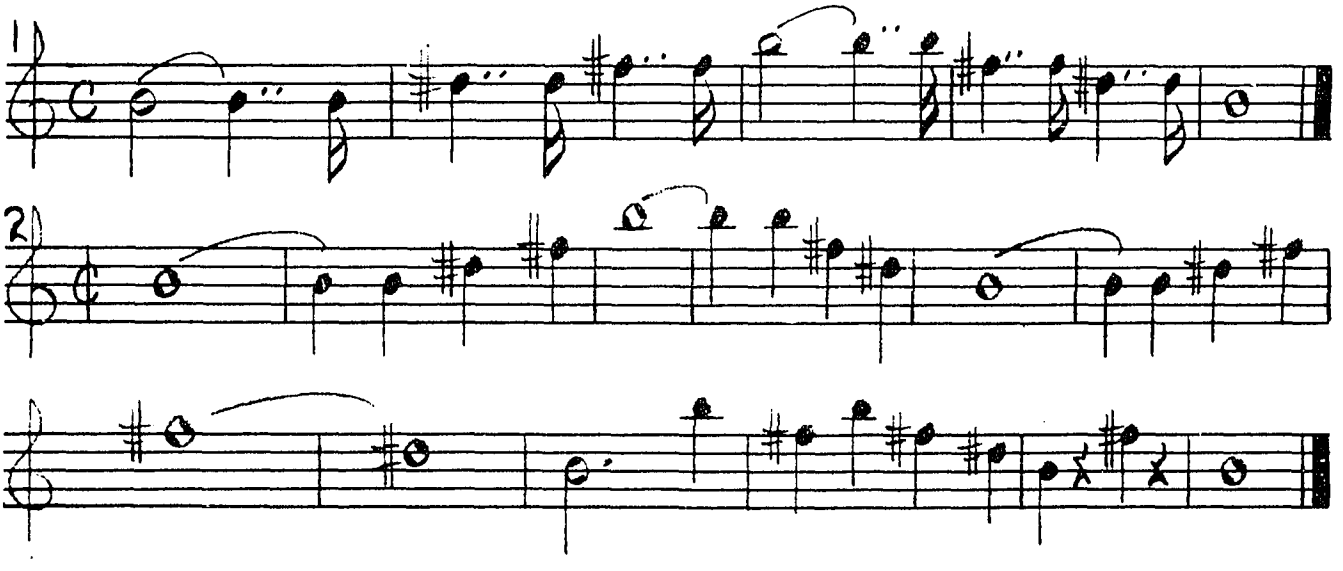
B. 4 - 3 - 4 - 2

HARMONICS 12-13-15-16





HARMONICS 8-10-12-16



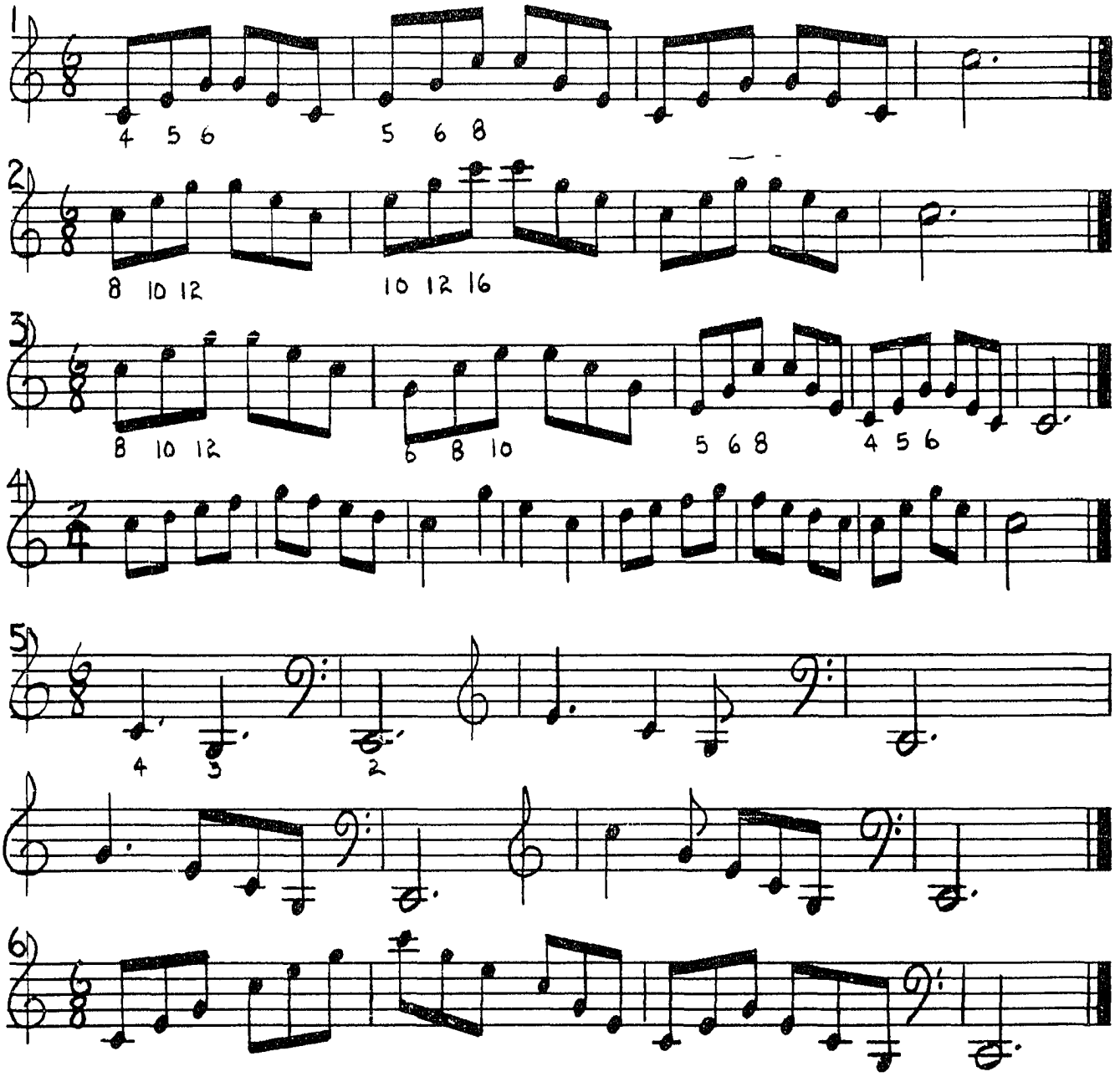
Play the tones represented by the following harmonic series numbers.

A. 12 - 13 - 15 - 16

B. 13 - 15 - 12 - 16

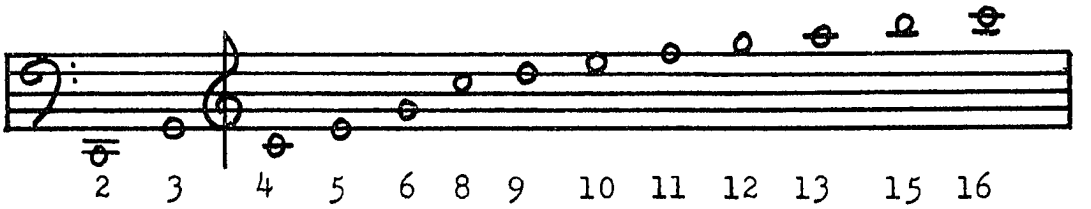
For each note in the natural horn part in E, substitute the note in the B series with the corresponding harmonic series number.

Natural Horn in E



TRANSPOSITION TO E FLAT

The natural horn part included only the tones of the C harmonic series. The following are the tones used in natural horn parts:



The system of transposition in this method was based on the fact that composers always wrote the natural horn parts using the above notes and indicated the key of the horn. With the use of various crooks, the horn produced a different harmonic series in each key. In this book, the proper harmonic series is chosen for each key and then substituted for the C series in the natural horn part.

The following steps are necessary to transpose to any key: (1) Learn the notes and the harmonic series numbers used in writing natural horn parts, (2) determine the interval to be transposed, (3) determine the harmonic series to be used in the transposition, (4) learn the notes and the numbers of the harmonic series used in the transposition,

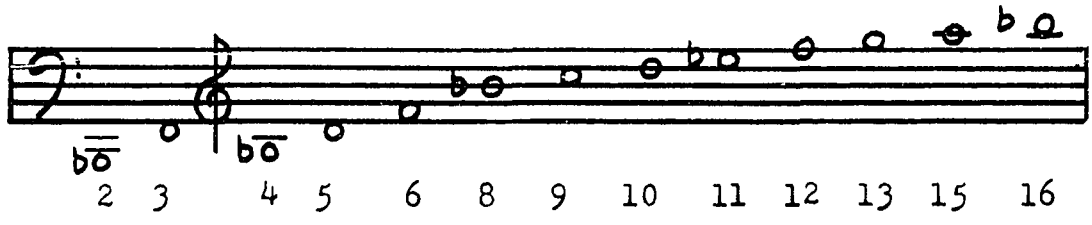
and (5) substitute the notes in that series for the C harmonic series.

STEPS IN THE E FLAT TRANSPOSITION

STEP I - Learn the notes and the harmonic series numbers used in writing natural horn parts.

STEP II - Determine the interval between the key of F and horn in E flat. The interval is one whole-step down.

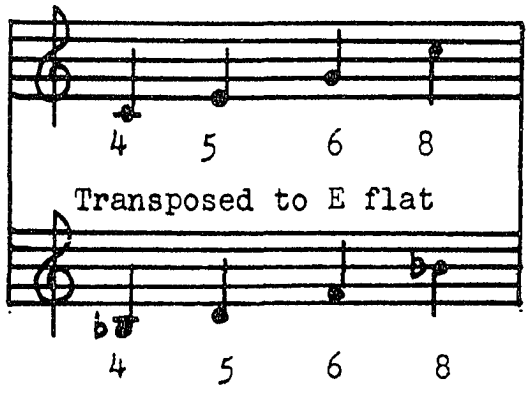
STEP III - Determine the harmonic series used in horn in E flat. Each note of the C harmonic series used in writing the natural horn part must be lowered one whole-step. The result of lowering each note of the C series one whole-step is the B flat harmonic series. The following are the notes used in the B flat harmonic series:



STEP IV - Learn the notes and the harmonic series numbers of the B flat series.

STEP V - Substitute the B flat harmonic series for the C harmonic series. For each note in the C series, substitute the note with the corresponding number in the B flat series.

Natural Horn in E flat



LESSON PLAN FOR E FLAT TRANSPOSITION

1. C Harmonic Series Studies

   Section I - Page 55

2. B flat Harmonic Series Studies

   Section II - Page 80

3. Natural Horn Studies

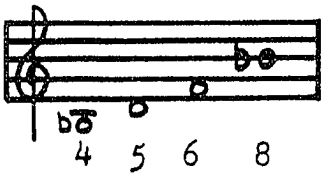
   Section III - Page 169

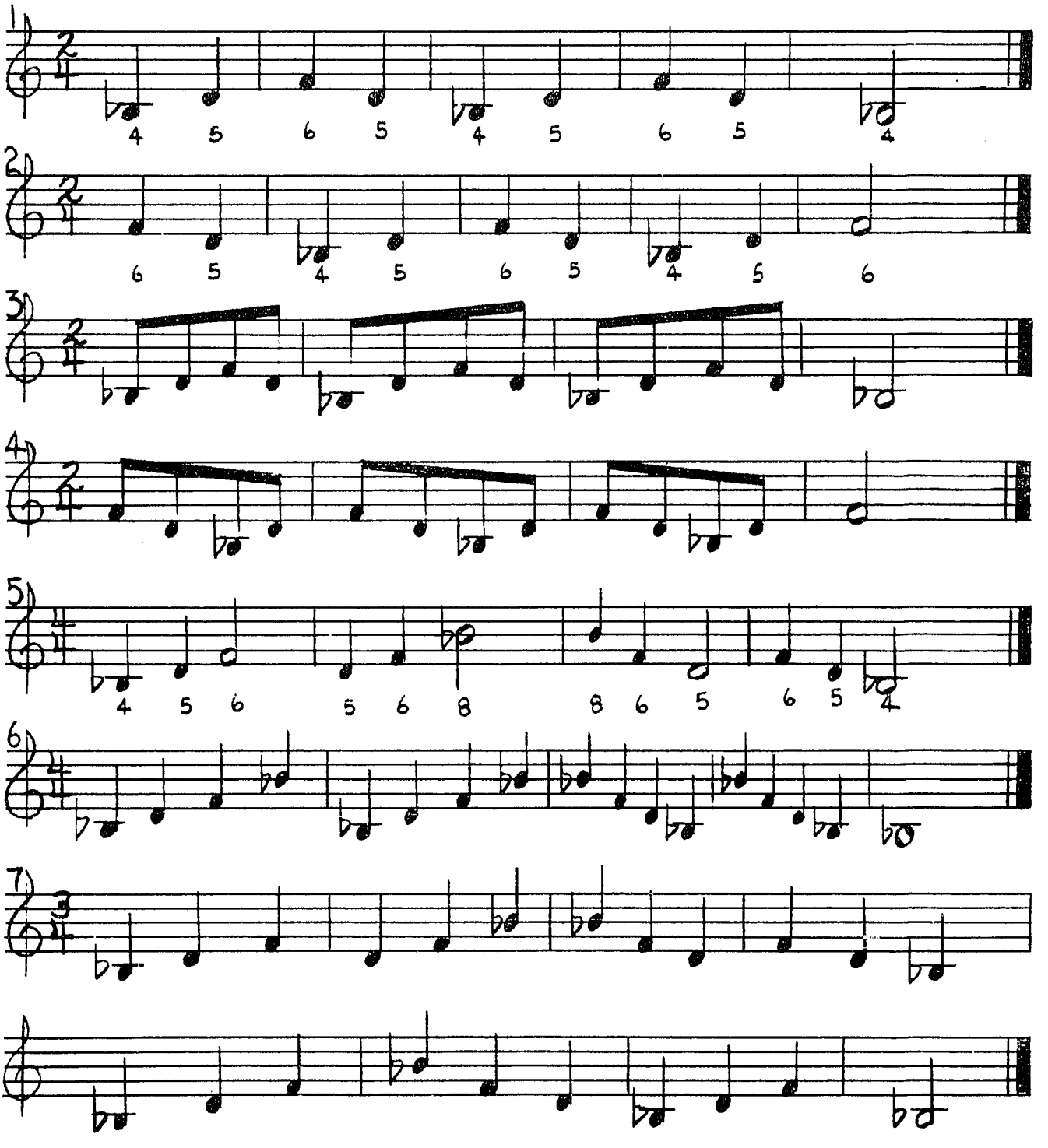
4. Orchestral Excerpts

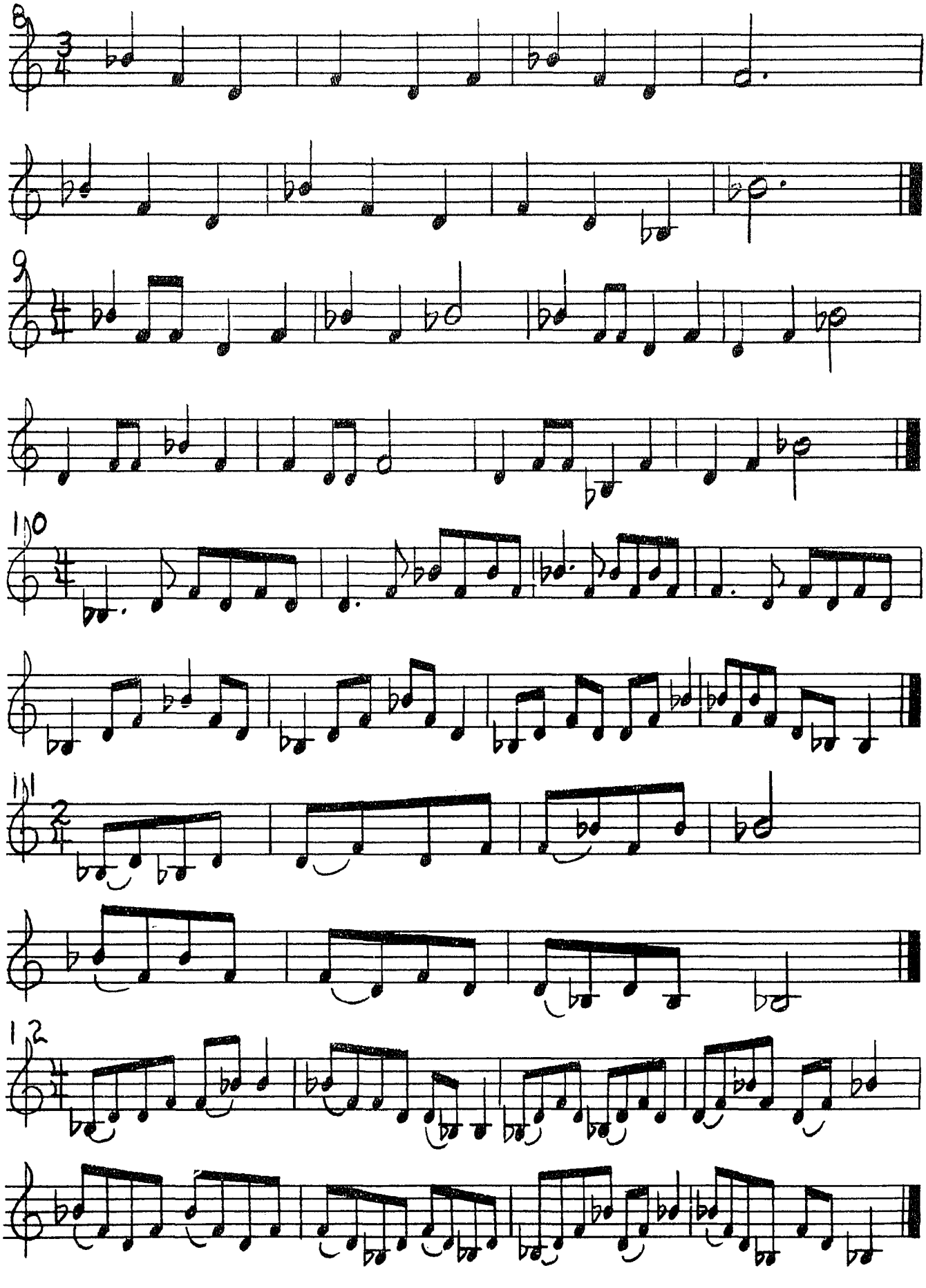
   Section IV - Page 184

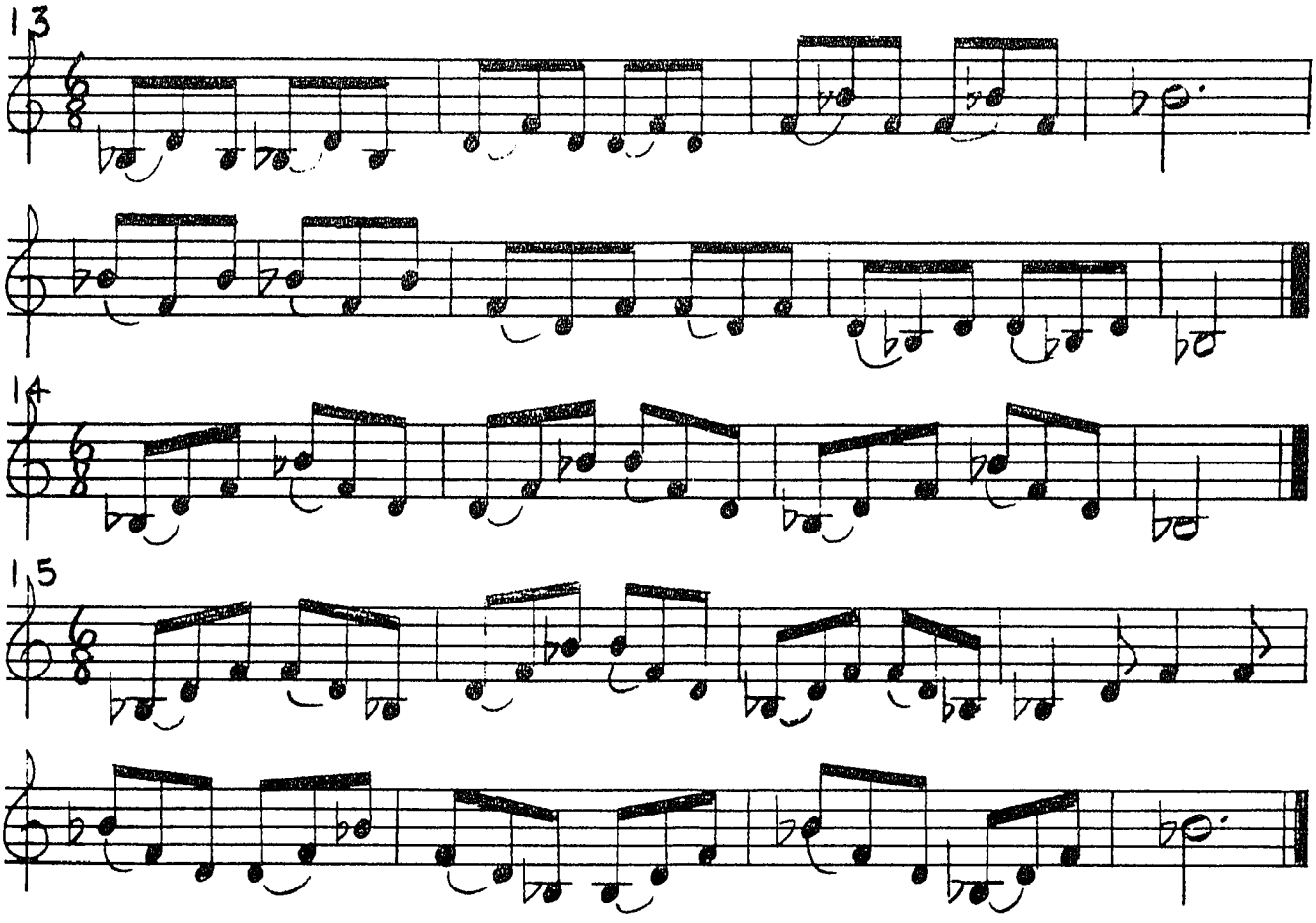
Bb HARMONIC SERIES STUDIES

HARMONICS 4-5-6-8









Play the tones represented by the following harmonic series numbers.

A. 4 - 5 - 6 - 8 - 6 - 5 - 4

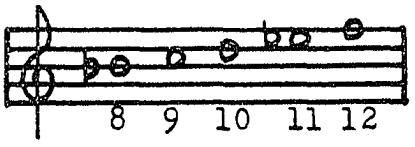
B. 8 - 4 - 6 - 5 - 8 - 6 - 4

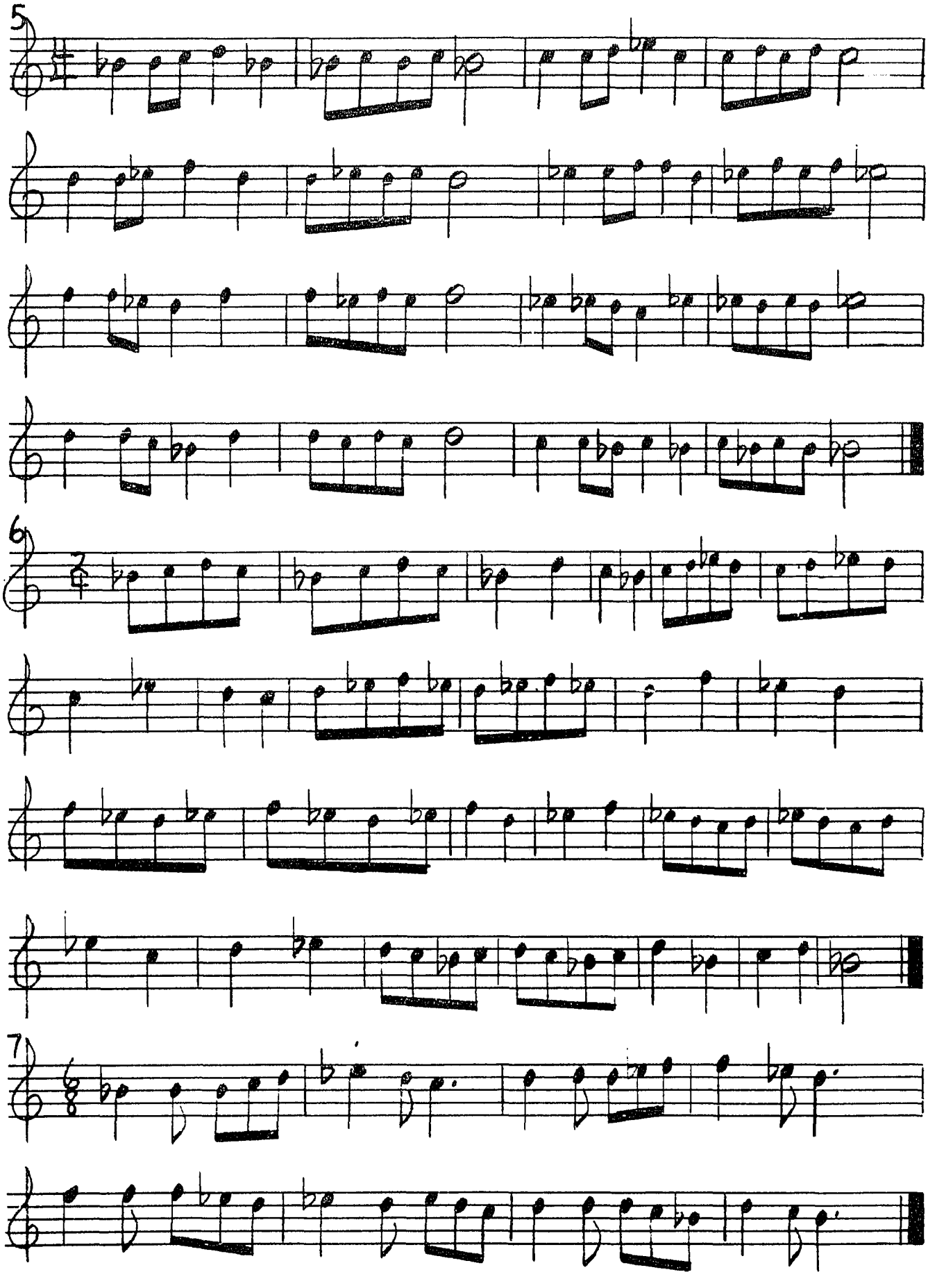
C. 6 - 5 - 4 - 8 - 5 - 6 - 8

D. 8 - 5 - 6 - 4 - 8 - 6 - 5

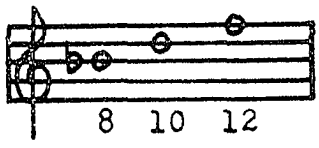
E. 4 - 6 - 5 - 8 - 5 - 4 - 6

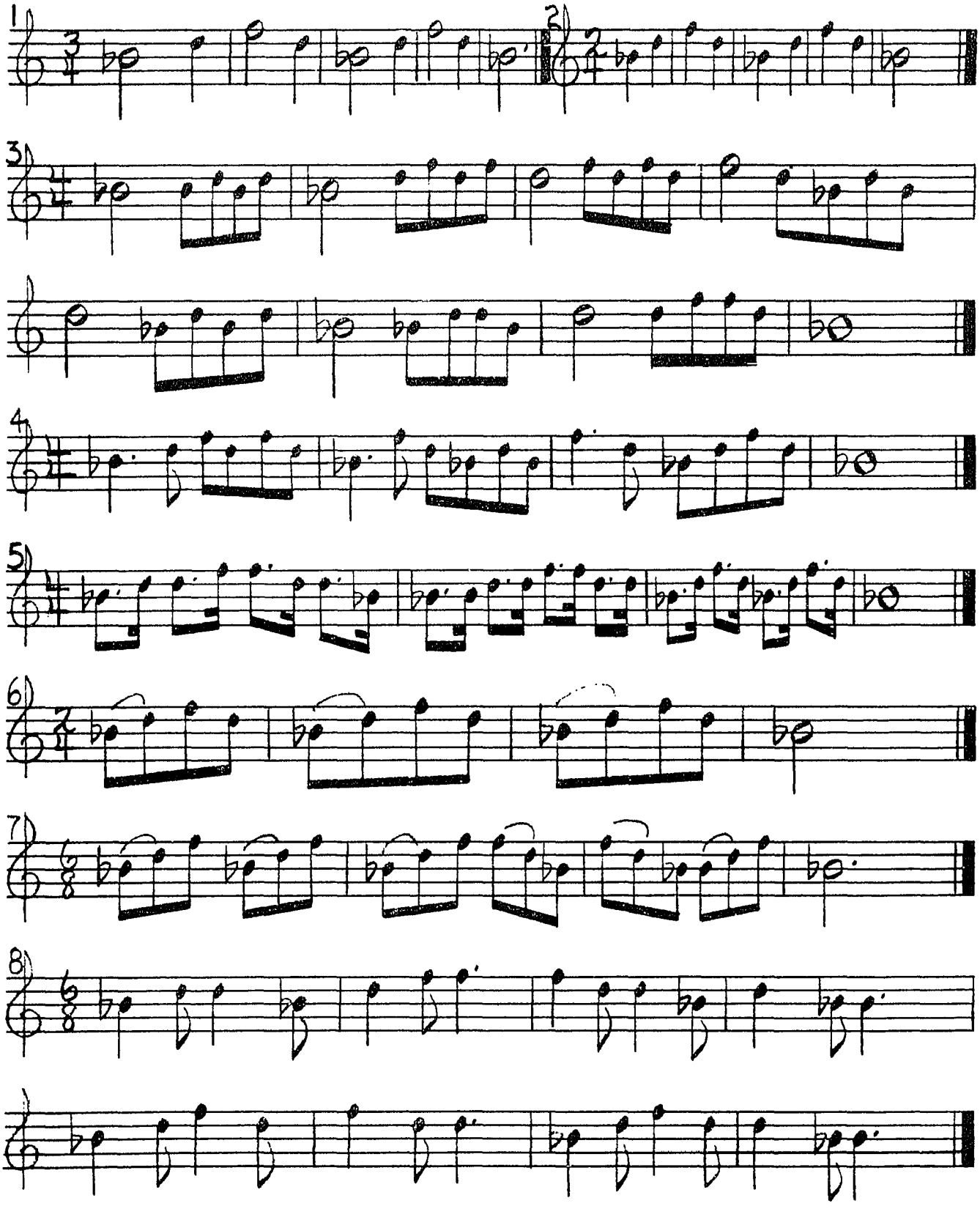
HARMONICS 8-9-10-11-12

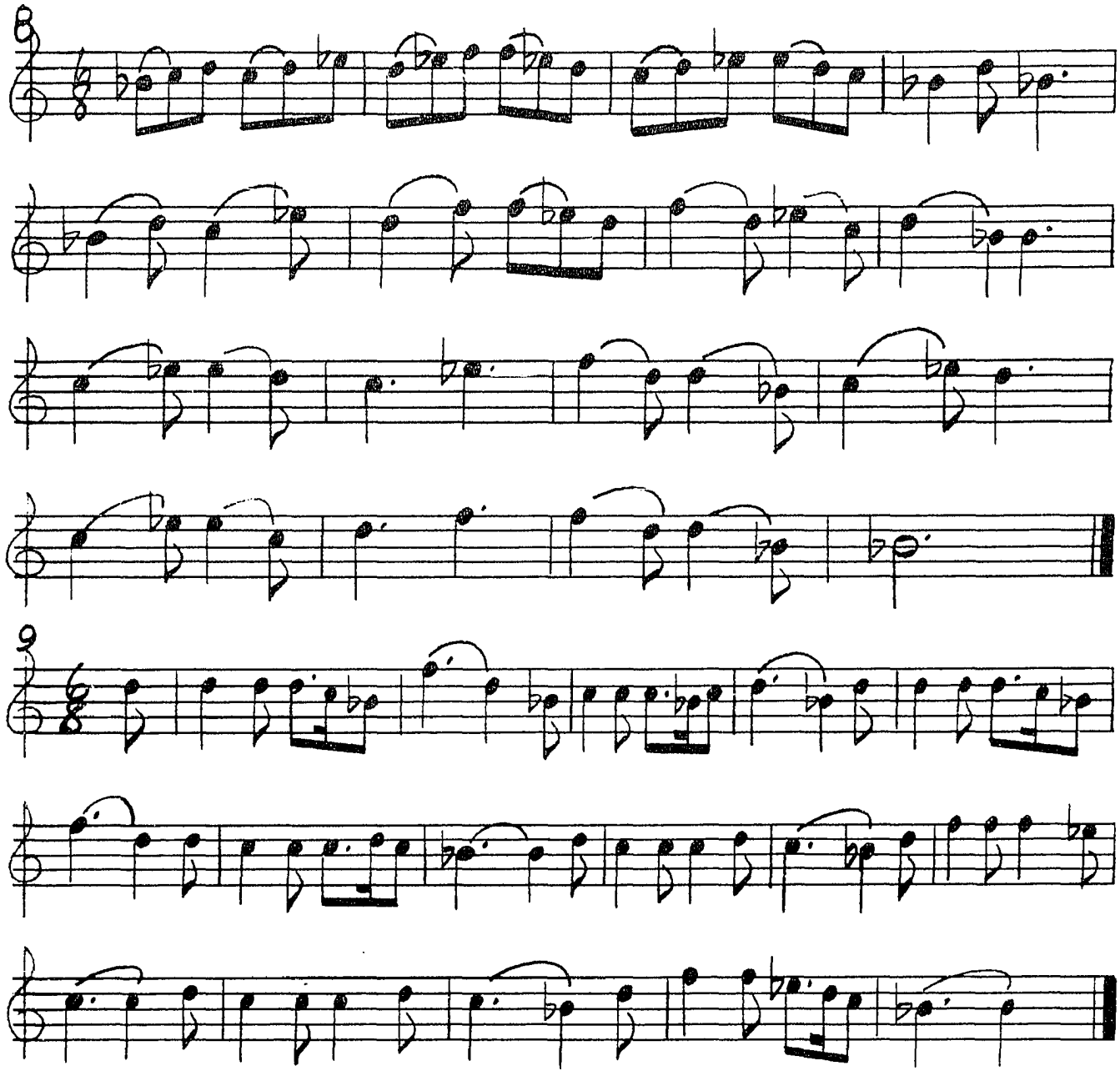




HARMONICS 8-10-12







Play the tones represented by the following harmonic series numbers.

A. 8 - 10 - 9 - 11 - 10 - 12 - 11

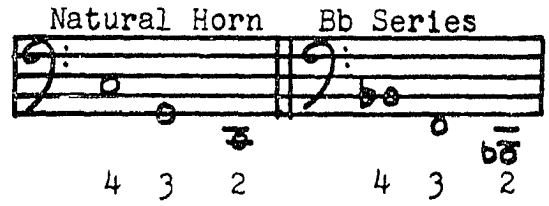
B. 10 - 11 - 12 - 10 - 8 - 9 - 10

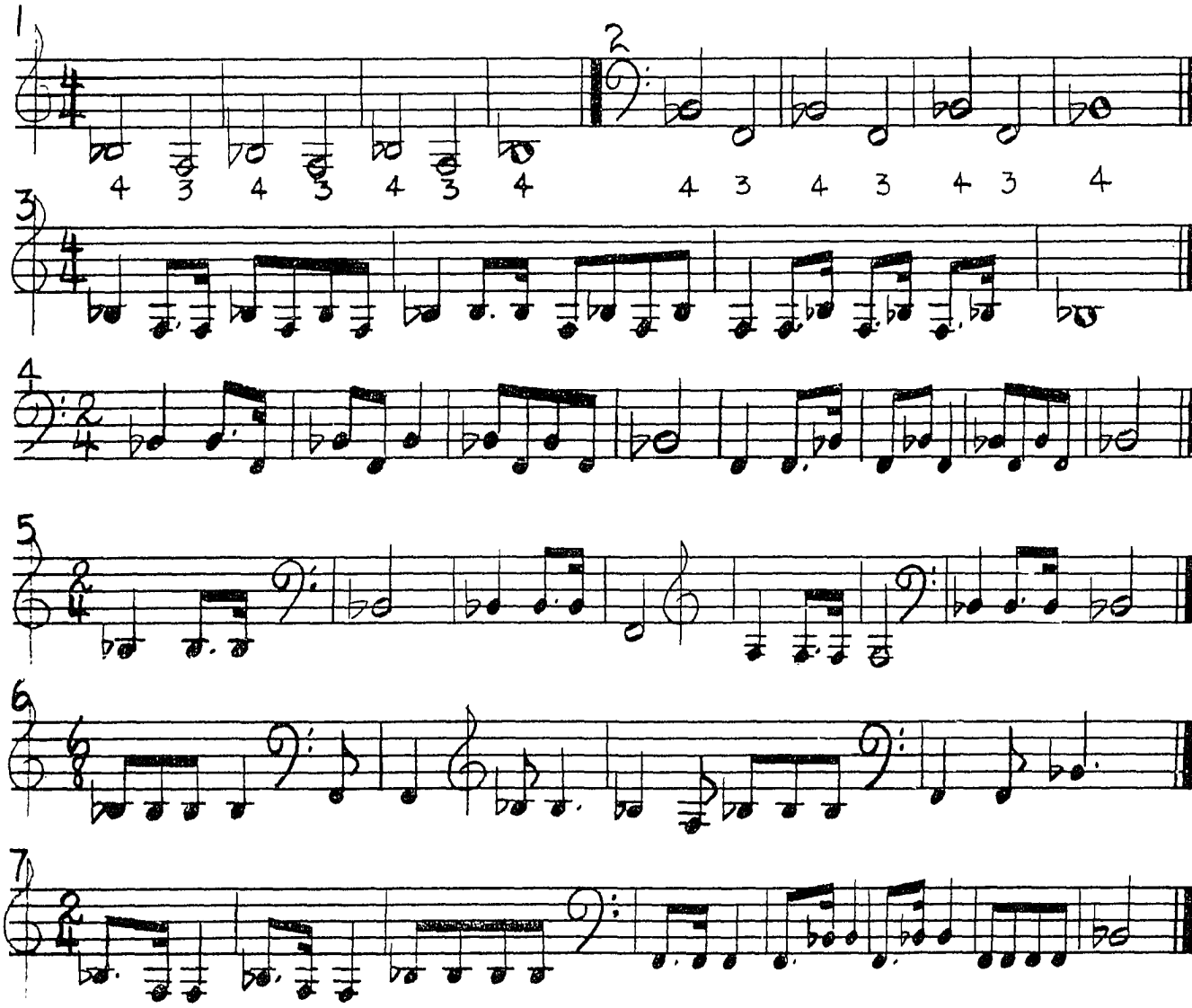
C. 8 - 10 - 12 - 10 - 8 - 12 - 10

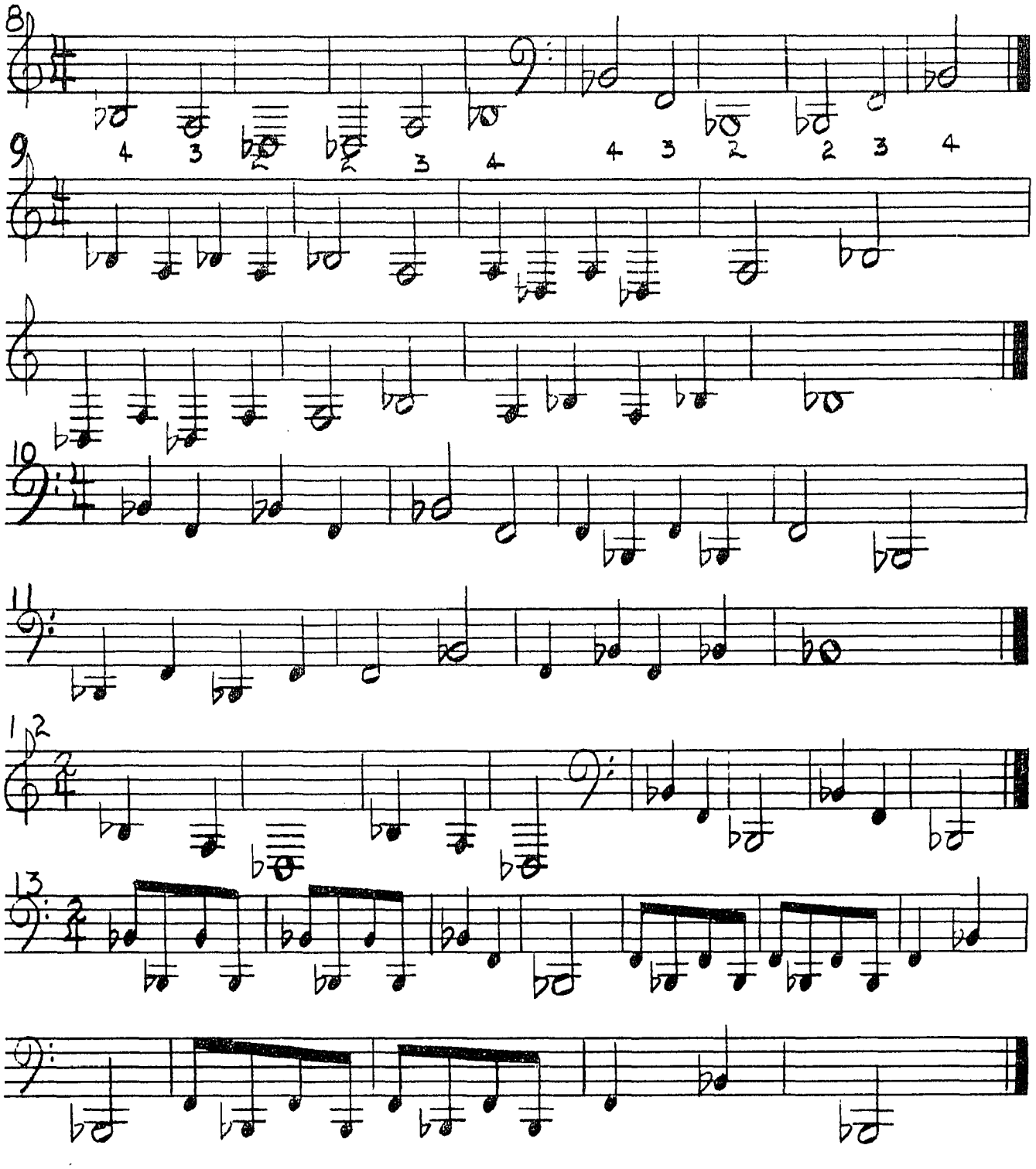
D. 12 - 10 - 11 - 9 - 8 - 11 - 10

HARMONICS 2-3-4

The 2nd, 3rd, and 4th harmonics were often written in the bass clef in the natural horn part. When the notes appeared in the bass clef they were written an octave lower. The 2nd, 3rd, and 4th harmonics of the Bb series are written an octave lower in this method when they appear in the bass clef.





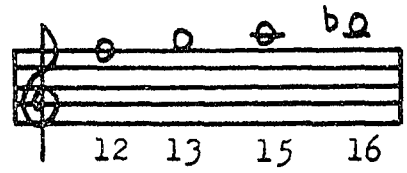


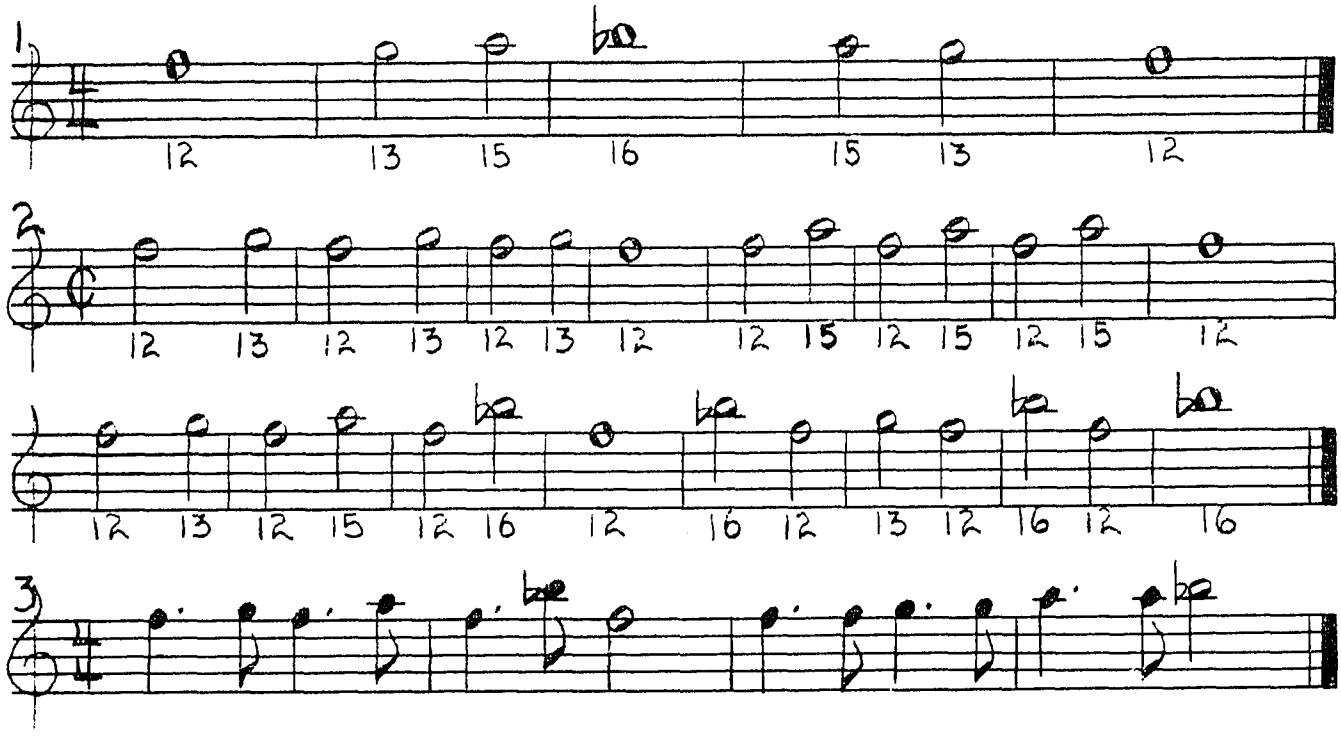
Play the tones represented by the following harmonic series numbers.

A. 3 - 4 - 2 - 4

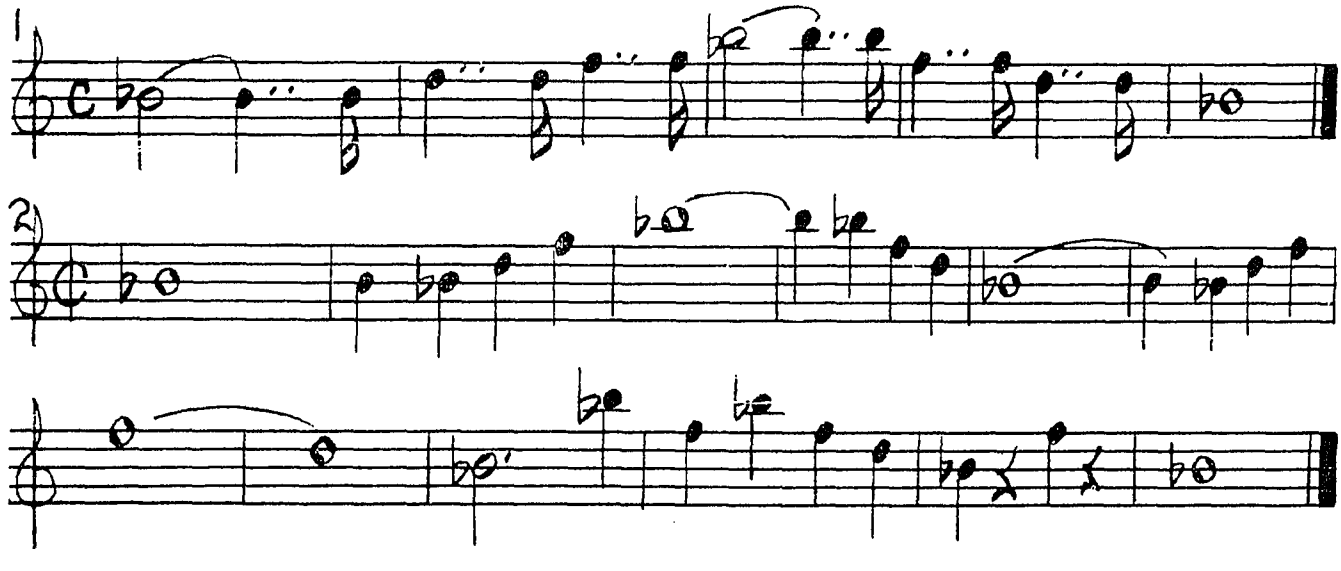
B. 4 - 3 - 4 - 2

HARMONICS 12-13-15-16





HARMONICS 8-10-12-16



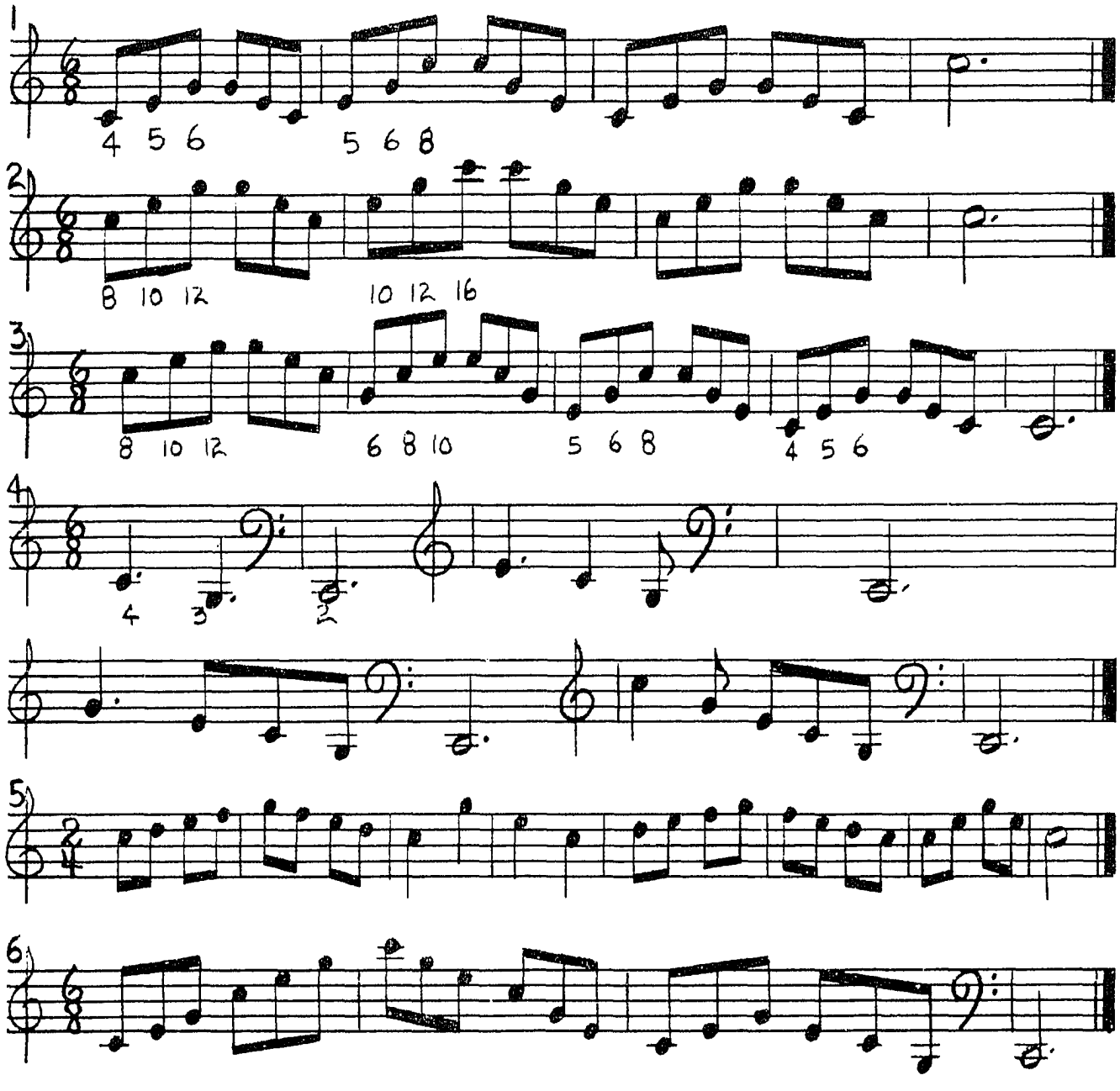
Play the tones represented by the following harmonic series numbers.

A. 12 - 13 - 15 - 16

B. 13 - 15 - 12 - 16

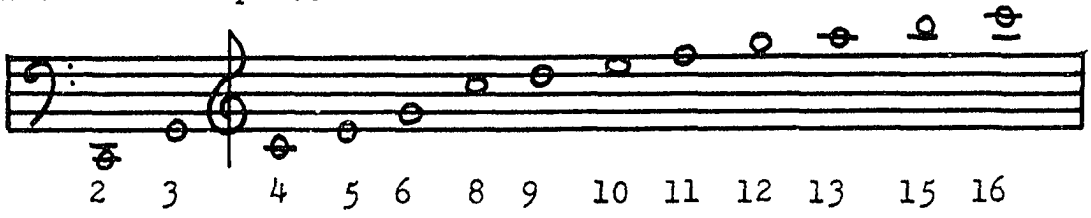
For each note in the natural horn part in Eb, substitute the note in the Bb series with the corresponding harmonic series number.

Natural Horn in Eb



TRANSPOSITION TO D

The natural horn part included only the tones of the C harmonic series. The following are the tones used in natural horn parts:



The system of transposition in this method was based on the fact that composers always wrote natural horn parts using the above notes and indicated the key of the horn. With the use of various crooks, the horn produced a different harmonic series in each key. In this book, the proper harmonic series is chosen for each key and then substituted for the C series in the natural horn part.

The following steps are necessary to transpose to any key: (1) Learn the notes and the harmonic series numbers used in writing natural horn parts, (2) determine the interval to be transposed, (3) determine the harmonic series to be used in the transposition, (4) learn the notes and the numbers of the harmonic series used in the transposition,

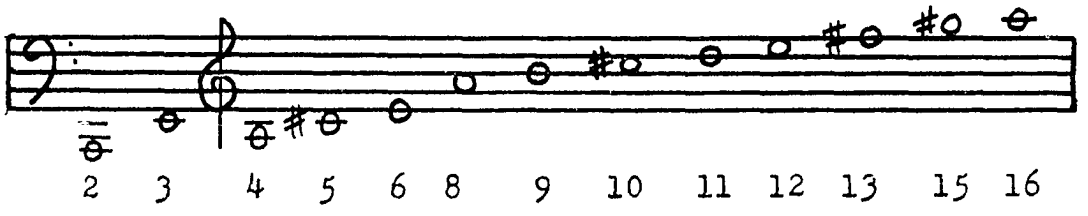
and (5) substitute the notes in that series for the C harmonic series.

STEPS IN THE D TRANSPOSITION

STEP I - Learn the notes and the harmonic series numbers used in writing natural horn parts.

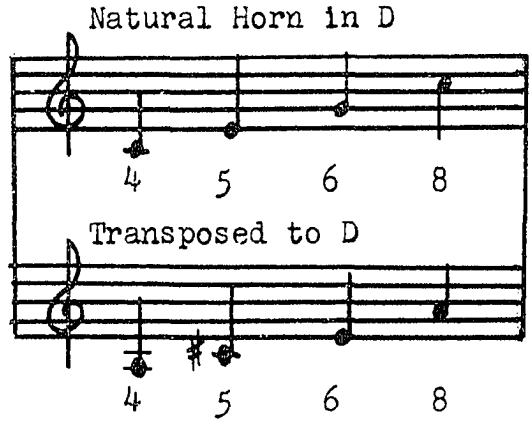
STEP II - Determine the interval between the key of F and horn in D. The interval is one and one-half steps down.

STEP III - Determine the harmonic series used in horn in D. Each note of the C harmonic series used in writing the natural horn part must be lowered one and one-half steps. The result of lowering each note of the C series one and one-half steps is the A harmonic series. The following are the notes used in the A harmonic series:



STEP IV - Learn the notes and the harmonic series numbers of the A series.

STEP V - Substitute the A harmonic series for the C harmonic series. For each note in the C series, substitute the note with the corresponding number in the A series.



LESSON PLAN FOR D TRANSPOSITION

1. C Harmonic Series Studies
   Section I - Page 55

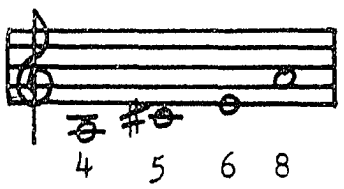
2. A Harmonic Series Studies
   Section II - Page 94

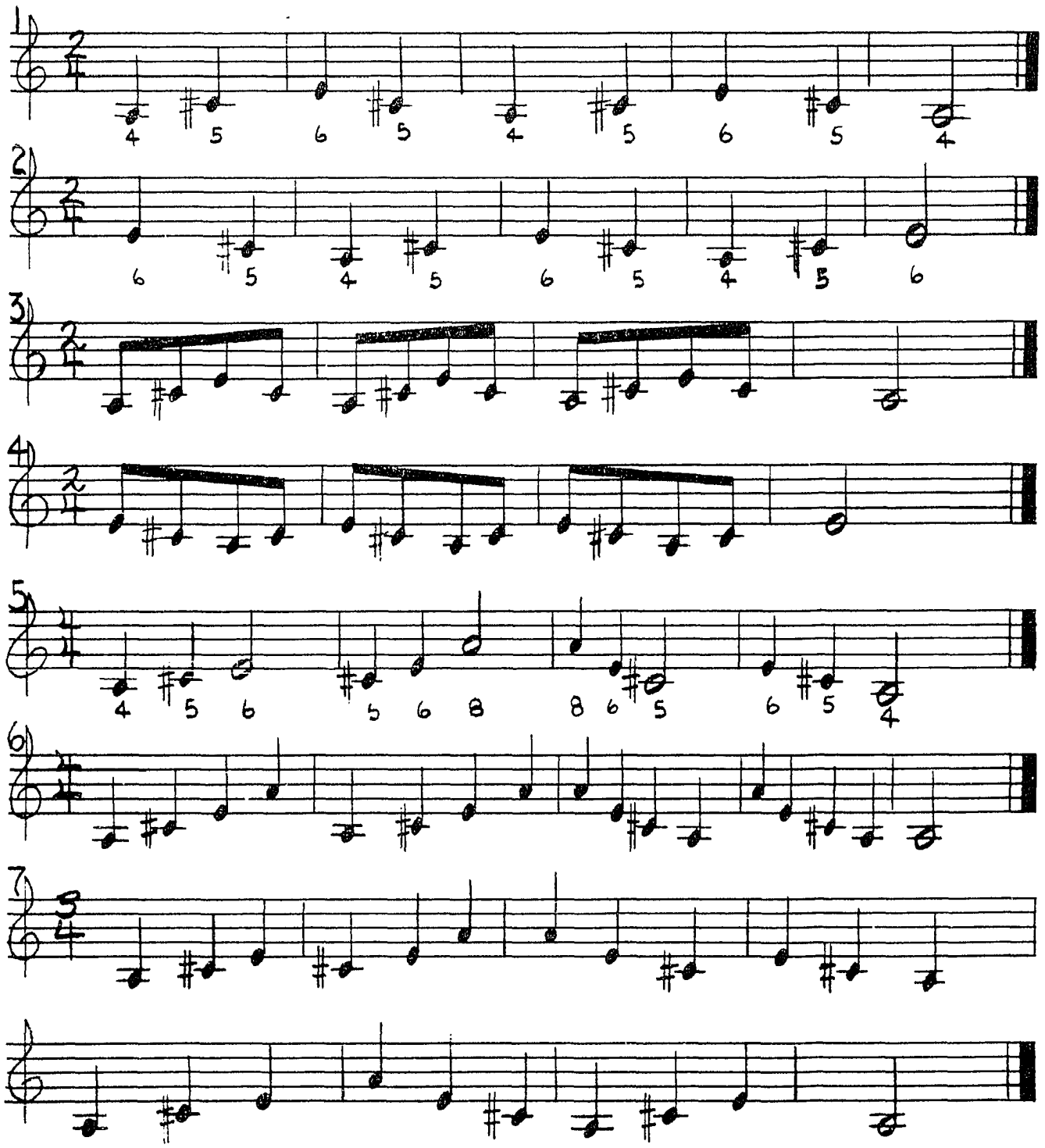
3. Natural Horn Studies
   Section III - Page 169

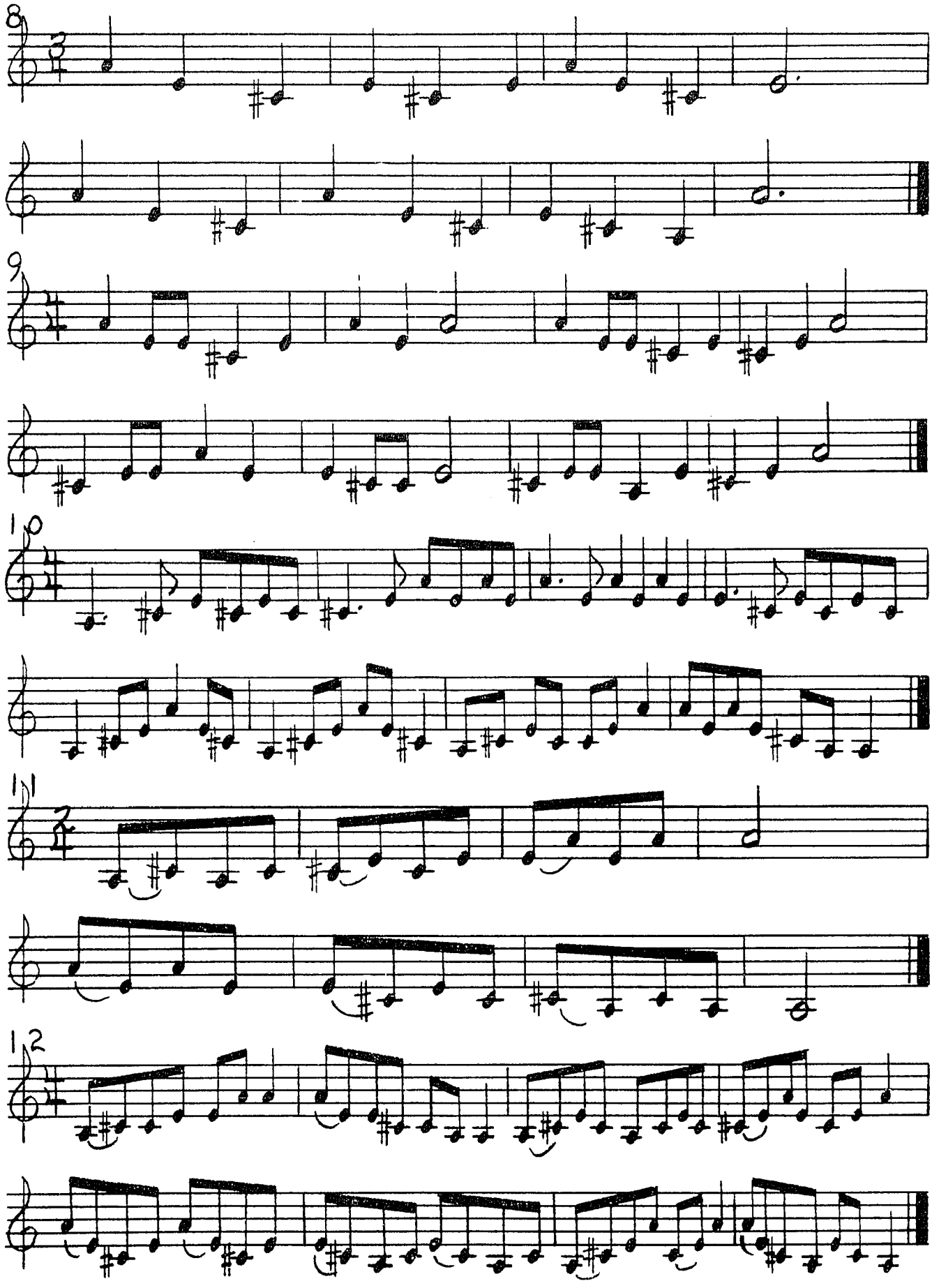
4. Orchestral Excerpts
   Section IV - Page 184

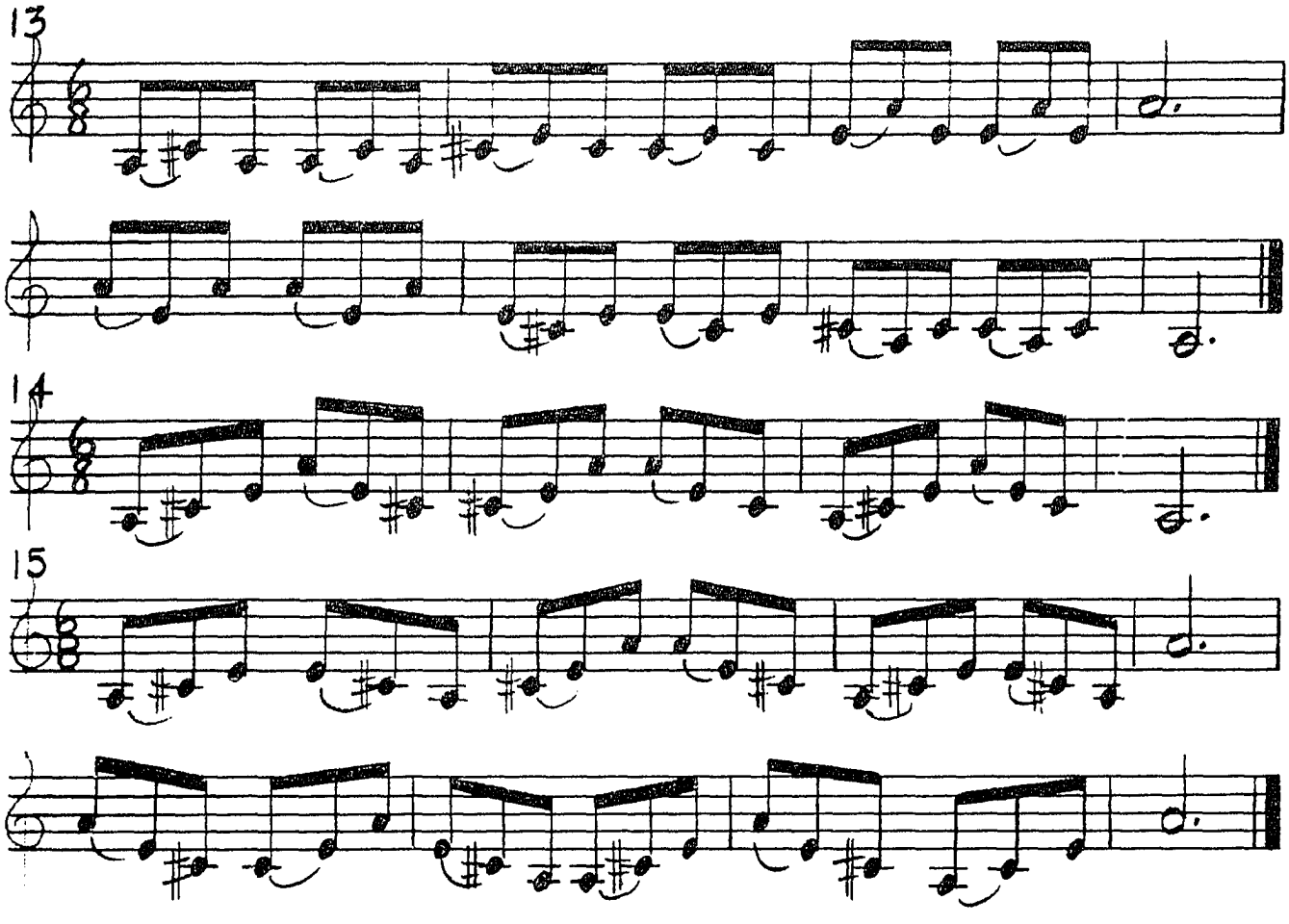
A HARMONIC SERIES STUDIES

HARMONICS 4-5-6-8






8
9
10
11
12



Play the tones represented by the following harmonic series numbers.

A. 4 - 5 - 6 - 8 - 6 - 5 - 4

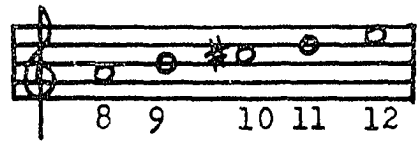
B. 8 - 4 - 6 - 5 - 8 - 6 - 4

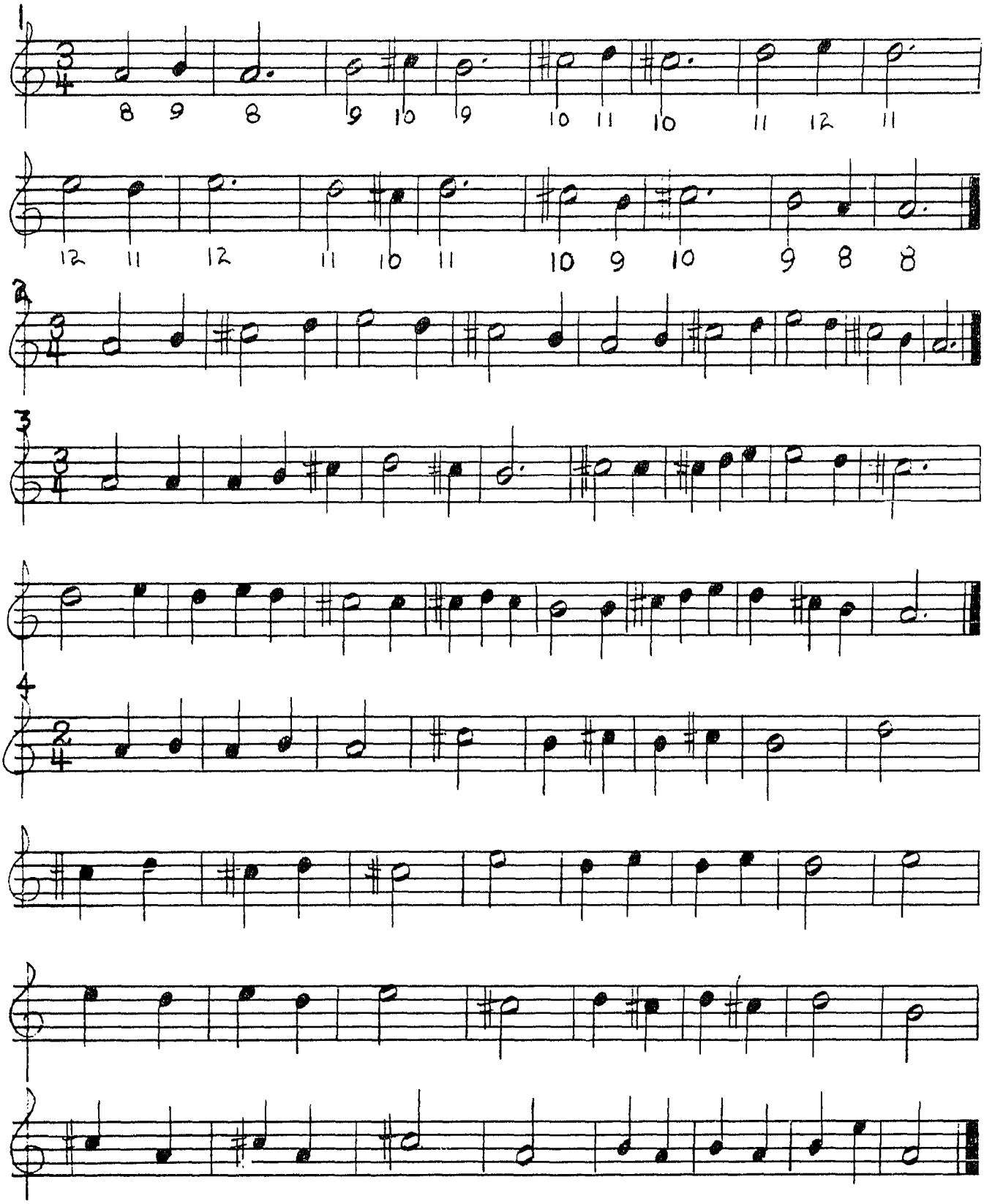
C. 6 - 5 - 4 - 8 - 5 - 6 - 8

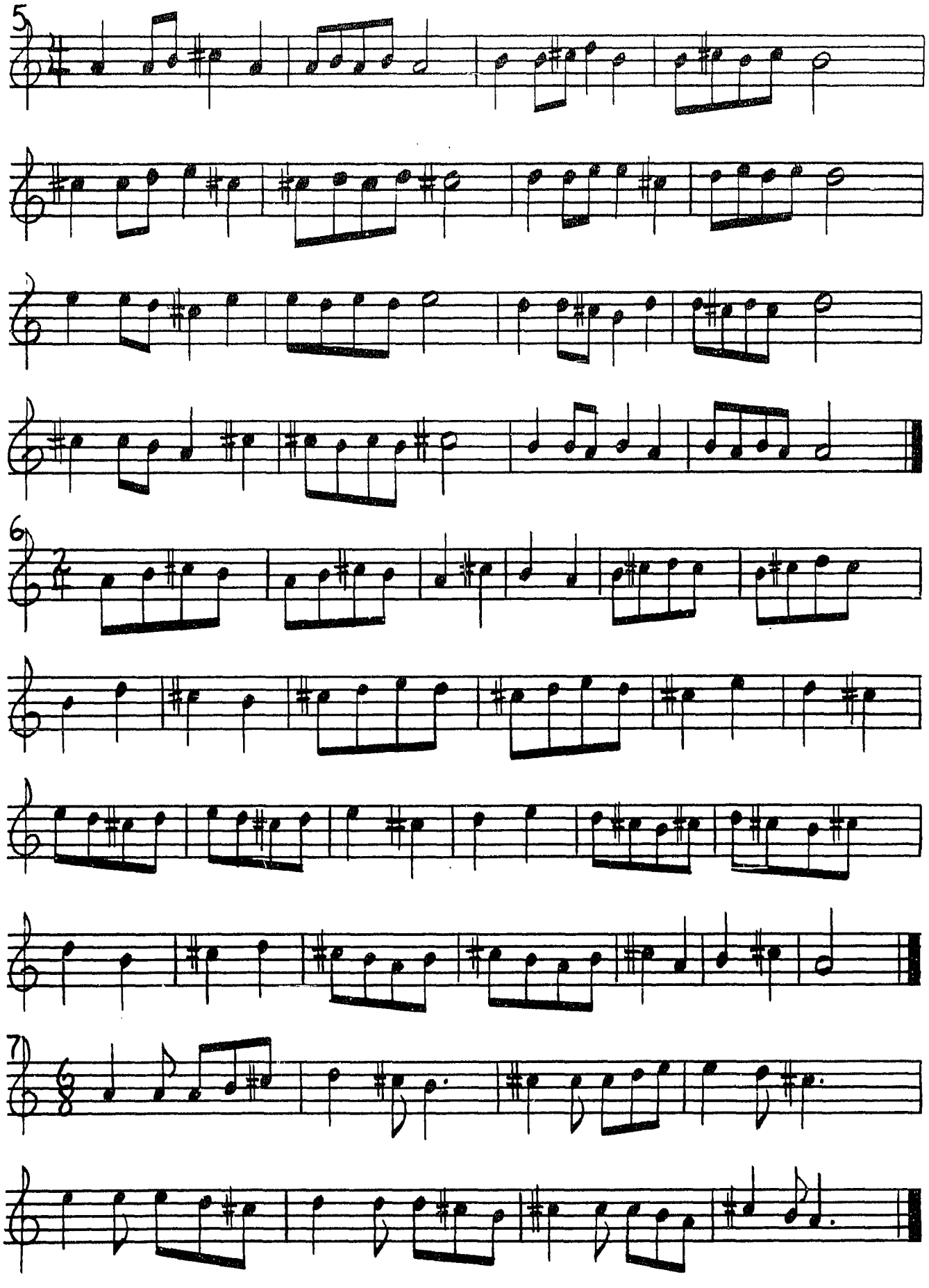
D. 8 - 5 - 6 - 4 - 8 - 6 - 5

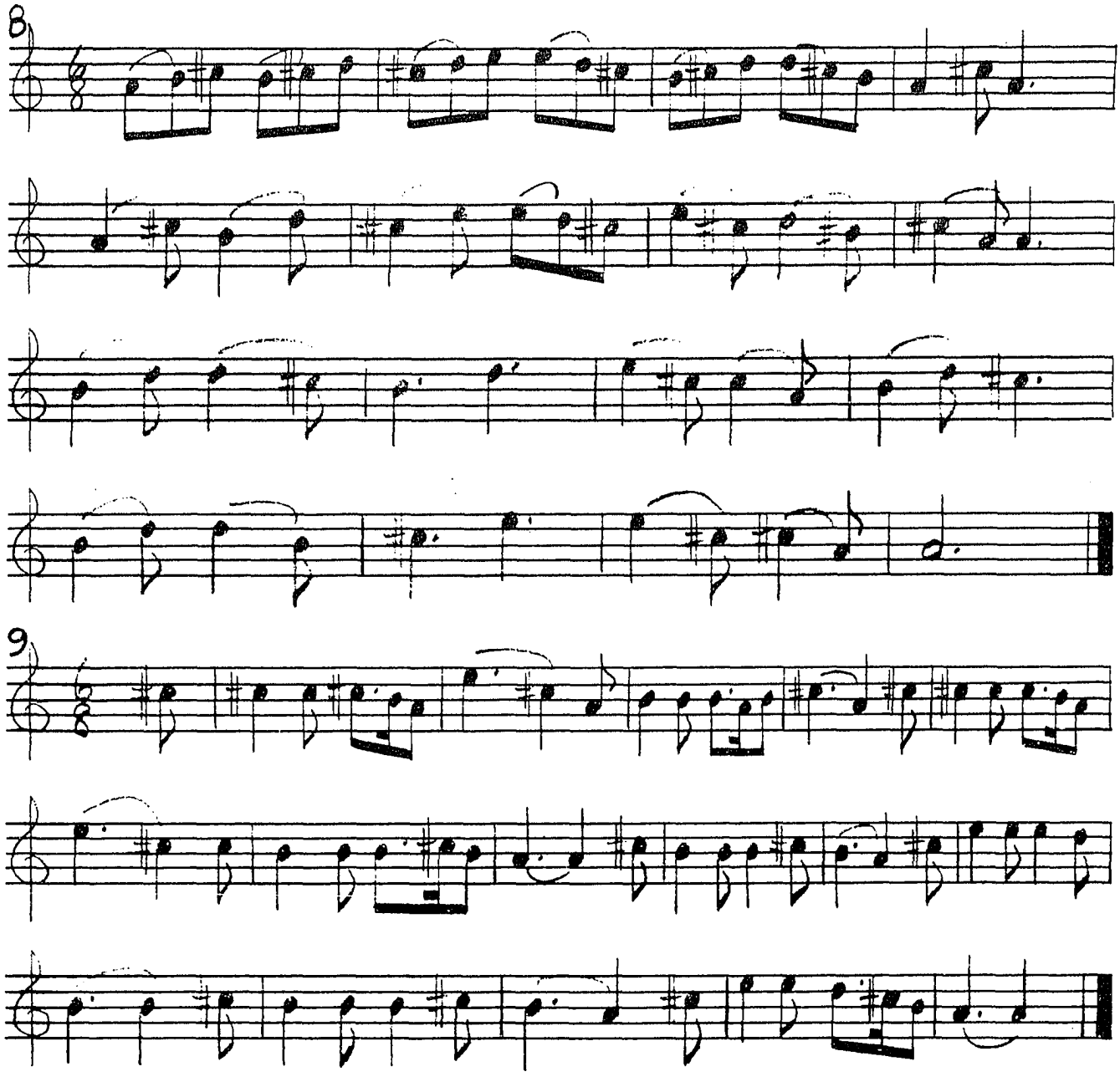
E. 4 - 6 - 5 - 8 - 5 - 4 - 6

HARMONICS 8-9-10-11-12









Play the tones represented by the following harmonic series numbers.

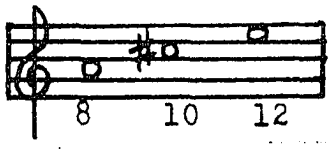
A. 8 - 10 - 9 - 11 - 10 - 12 - 11

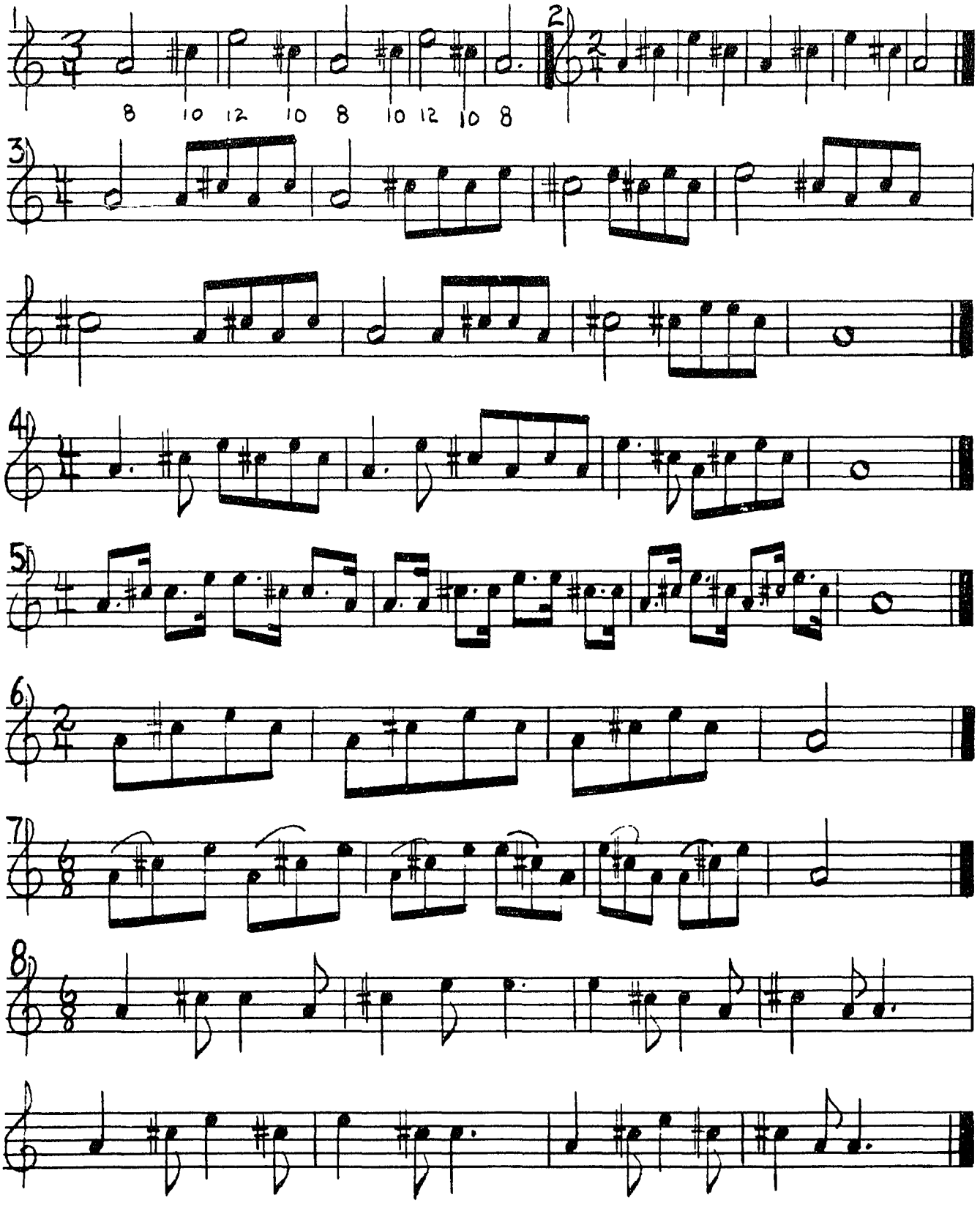
B. 10 - 11 - 12 - 10 - 8 - 9 - 10

C. 8 - 10 - 12 - 10 - 8 - 12 - 10

D. 12 - 10 - 11 - 9 - 8 - 11 - 10

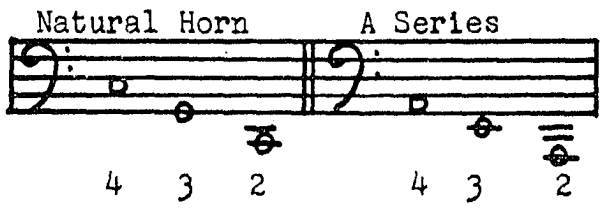
HARMONICS 8-10-12

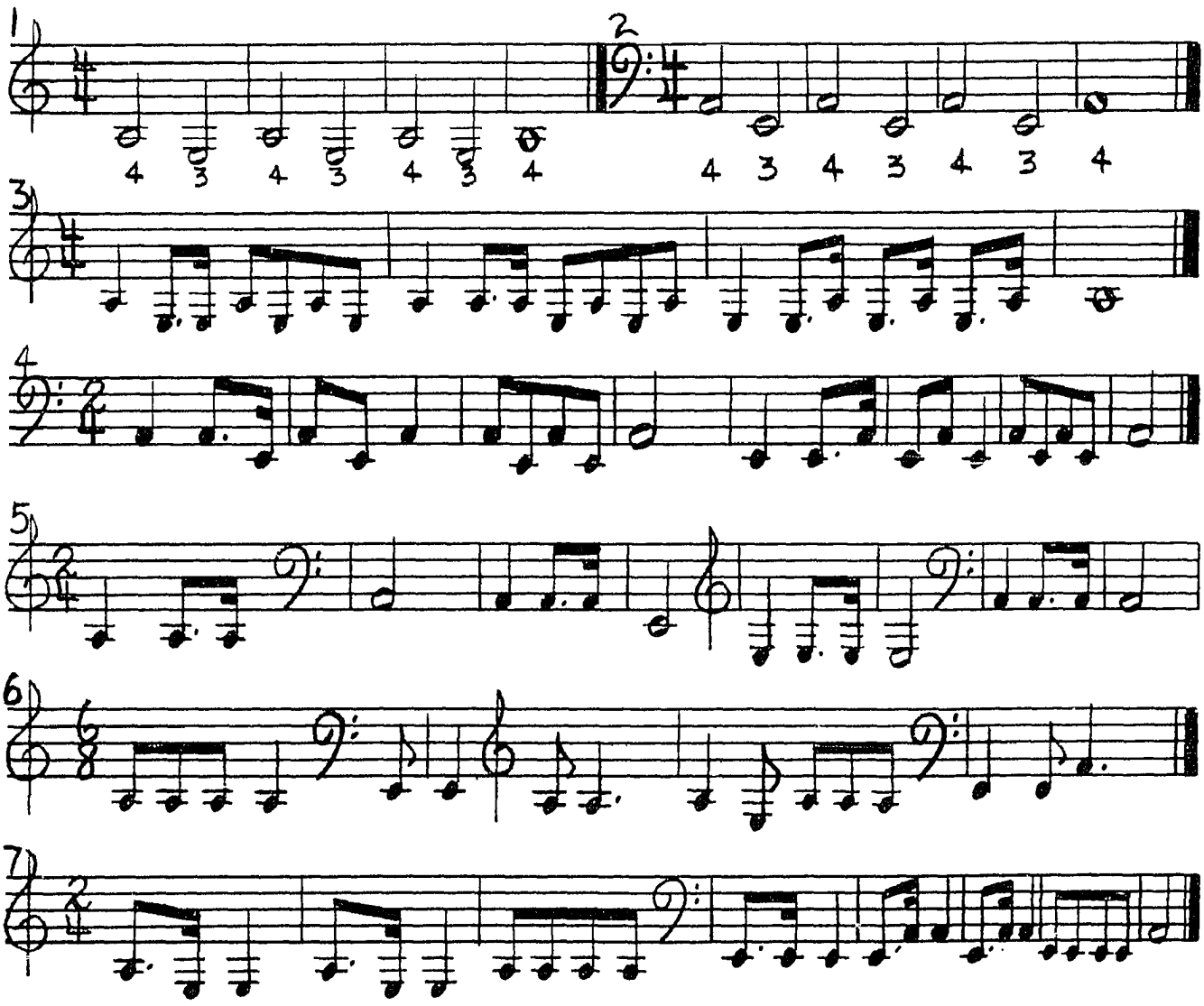


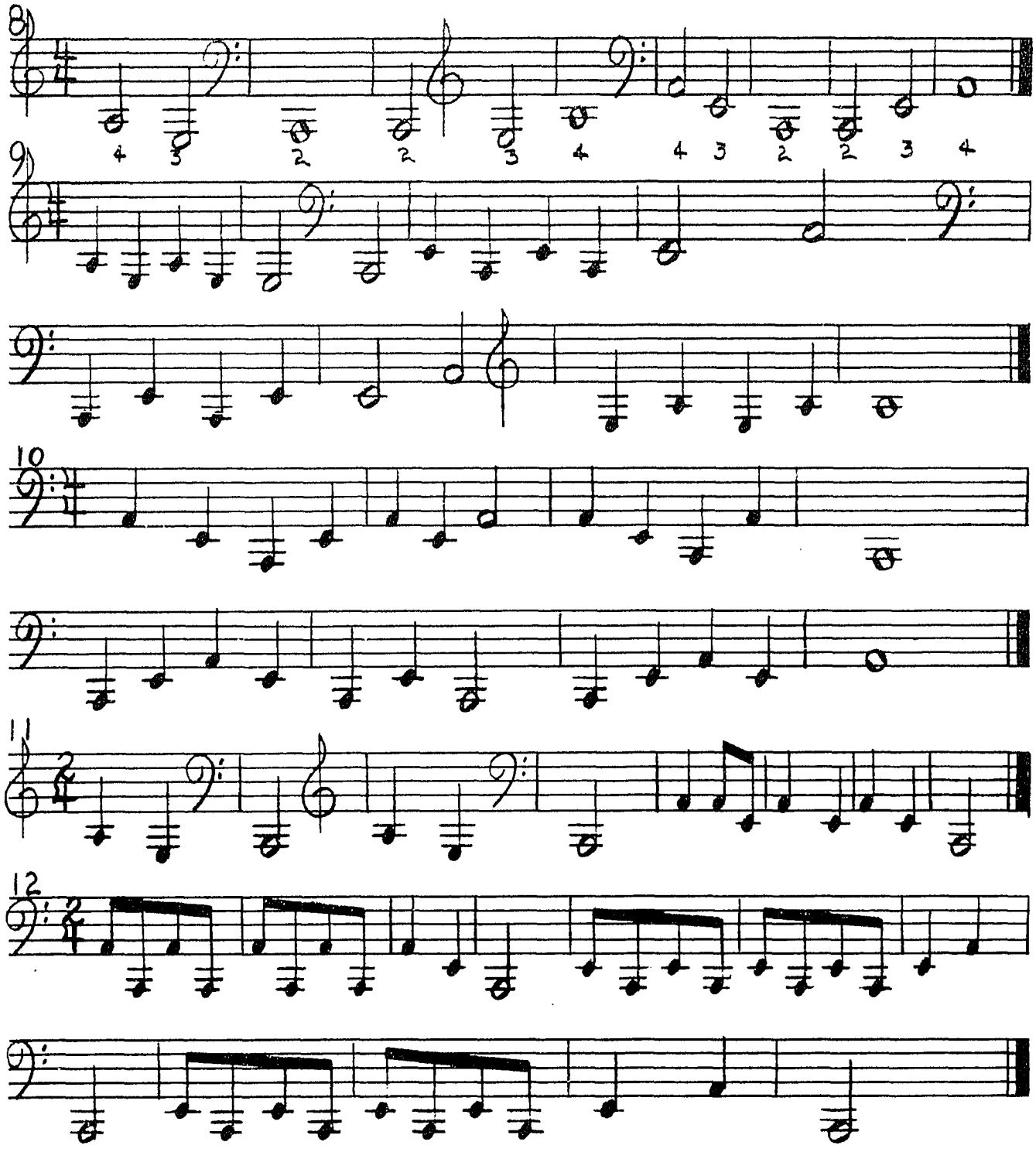


HARMONICS 2-3-4

The 2nd, 3rd, and 4th harmonics were often written in the bass clef in natural horn parts. Whwn the notes appeared in the bass clef they were written an octave lower. The 2nd, 3rd, and 4th harmonics of the A series are written an octave lower in this method when they appear in the bass clef.





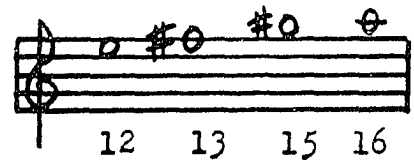


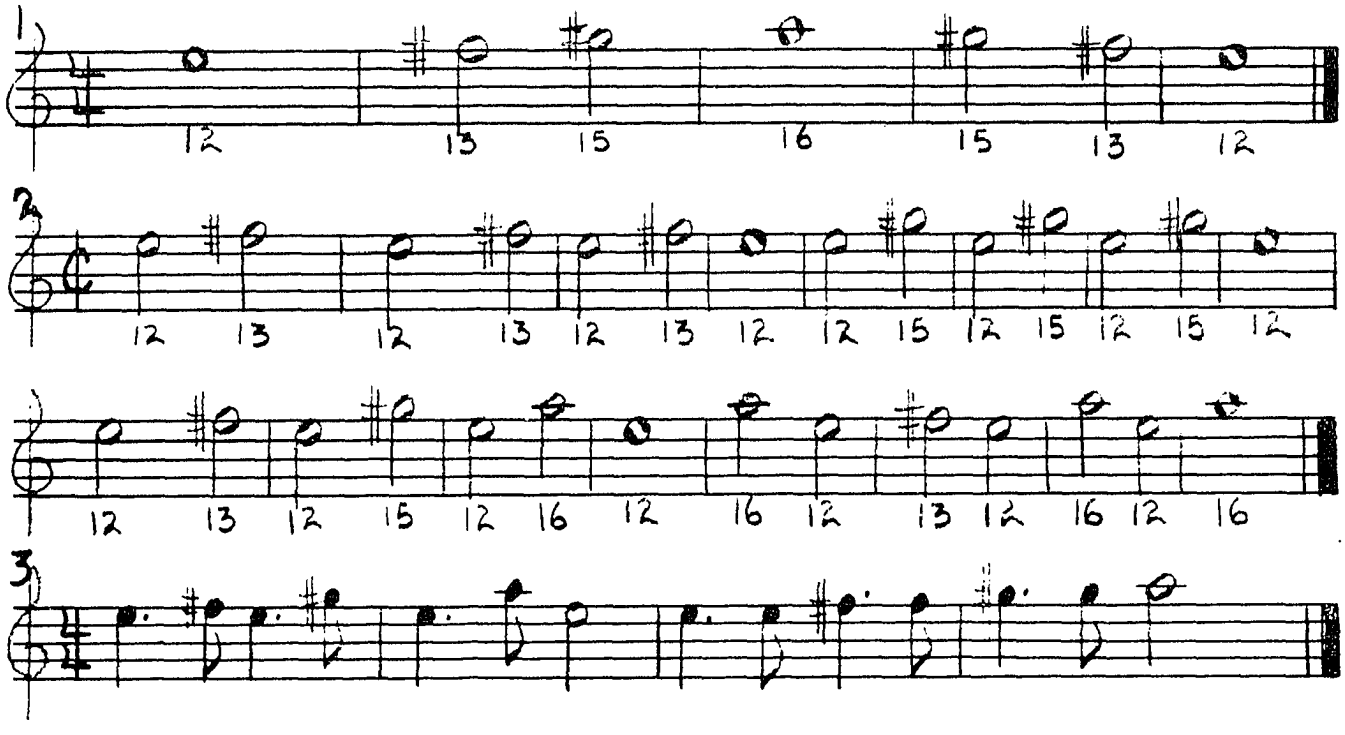
Play the tones represented by the following harmonic series numbers.

A. 3 - 4 - 2 - 4

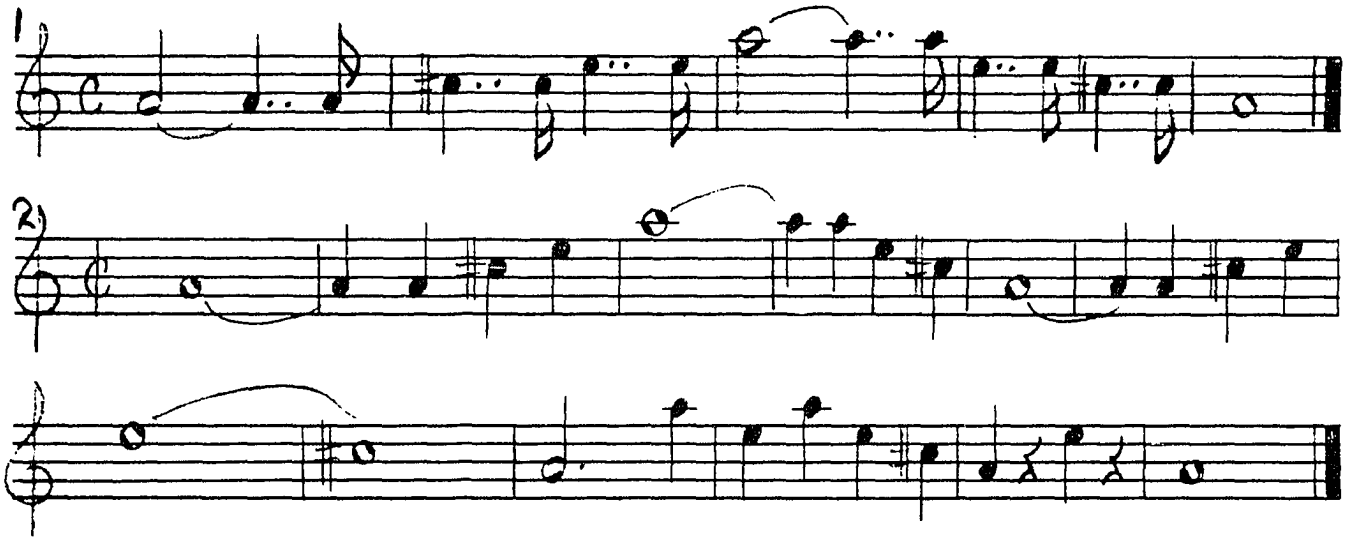
B. 4 - 3 - 4 - 2

HARMONICS 12-13-15-16





HARMONICS 8-10-12-16



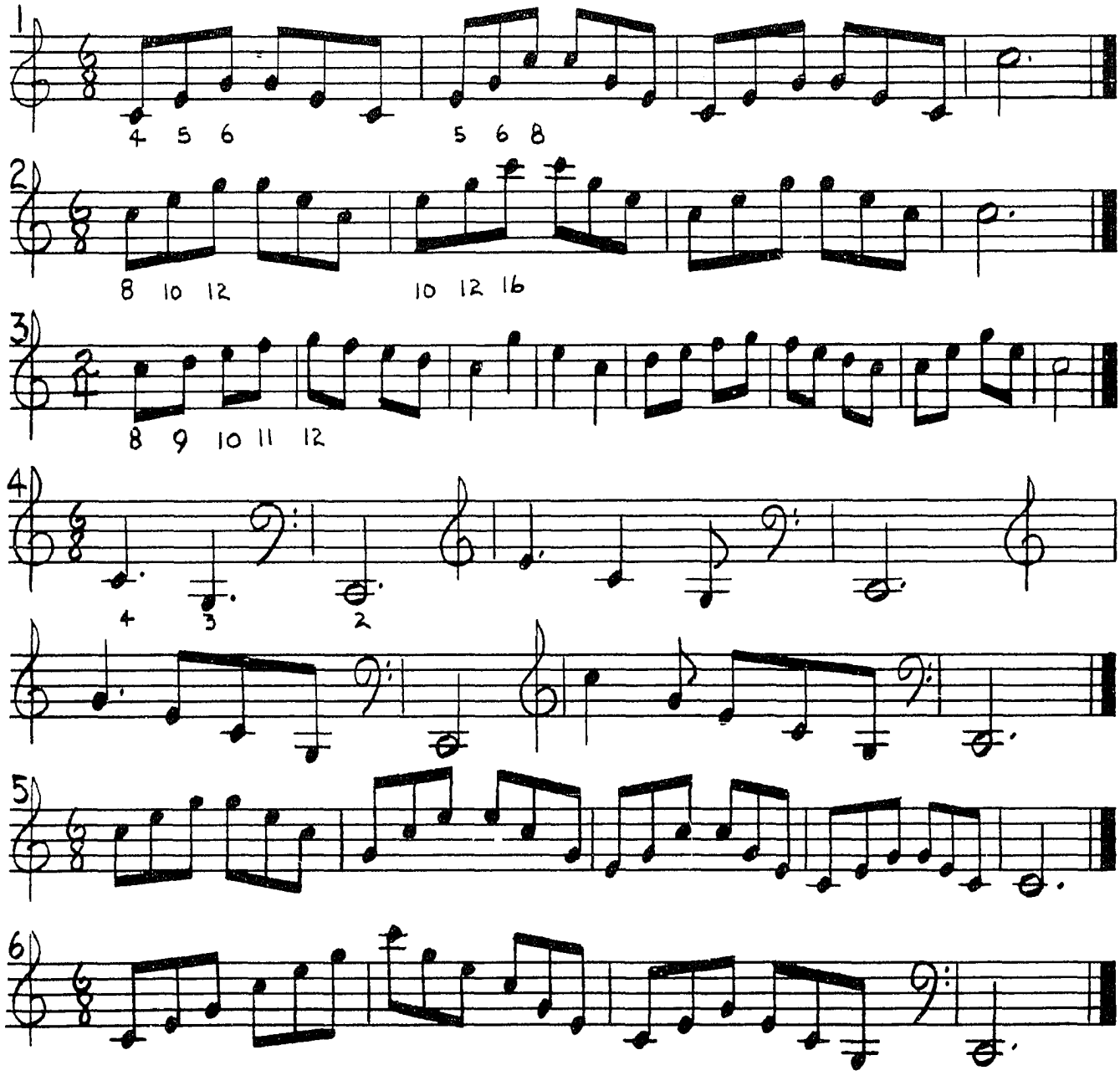
Play the tones represented by the following harmonic series numbers.

A. 12 - 13 - 15 - 16

B. 13 - 15 - 12 - 16

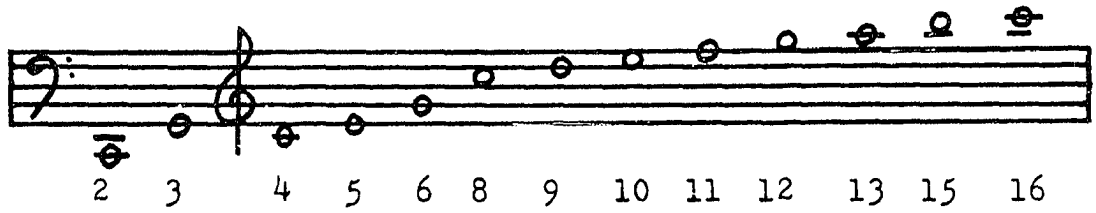
For each note in the natural horn part in D, substitute the note in the A series with the corresponding harmonic series number.

Natural Horn in D



TRANSPOSITION TO C

The natural horn part included only the tones of the C harmonic series. The following are the tones used in natural horn parts:



The system of transposition in this method was based on the fact that composers always wrote natural horn parts using the above notes and indicated the key of the horn. With the use of various crooks, the horn produced a different harmonic series in each key. In this book, the proper harmonic series is chosen for each key and then substituted for the C series in the natural horn part.

The following steps are necessary to transpose to any key: (1) Learn the notes and the harmonic series numbers used in writing natural horn parts, (2) determine the interval to be transposed, (3) determine the harmonic series to be used in the transposition, (4) learn the notes and the numbers of the harmonic series used in the transposition,

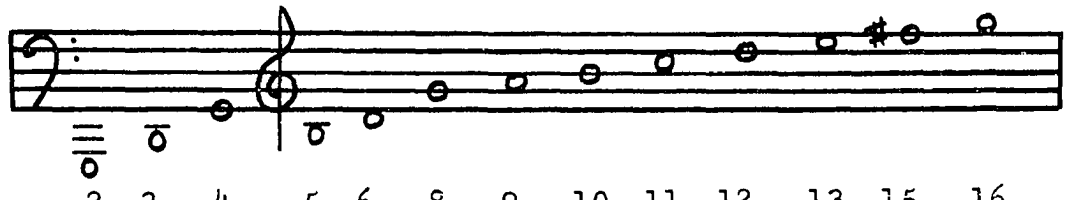
and (5) substitute the notes in that series for the C harmonic series.

STEPS IN THE C TRANSPOSITION

STEP I - Learn the notes and the harmonic series numbers used in writing natural horn parts.

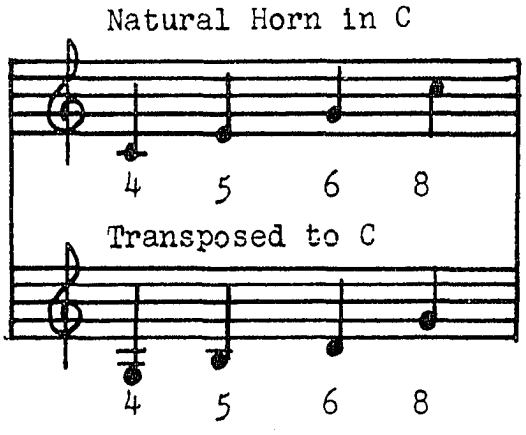
STEP II - Determine the interval between the key of F and horn in C. The interval is two and one-half steps--a perfect fourth--down.

STEP III - Determine the harmonic series used in horn in C. Each note of the C harmonic series used in writing the natural horn part must be lowered two and one-half steps. The result of lowering each note of the C series two and one-half steps is the G harmonic series. The following are the notes used in the G harmonic series:



STEP IV - Learn the notes and the harmonic series numbers of the G series.

STEP V - Substitute the G harmonic series for the C harmonic series. For each note in the C series, substitute the note with the corresponding number in the G series.



LESSON PLAN FOR C TRANSPOSITION

1. C Harmonic Series Studies
   Section I - Page 55

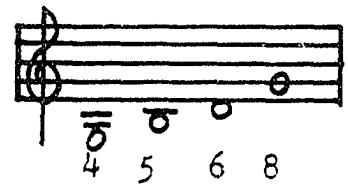
2. G Harmonic Series Studies
   Section II - Page 108

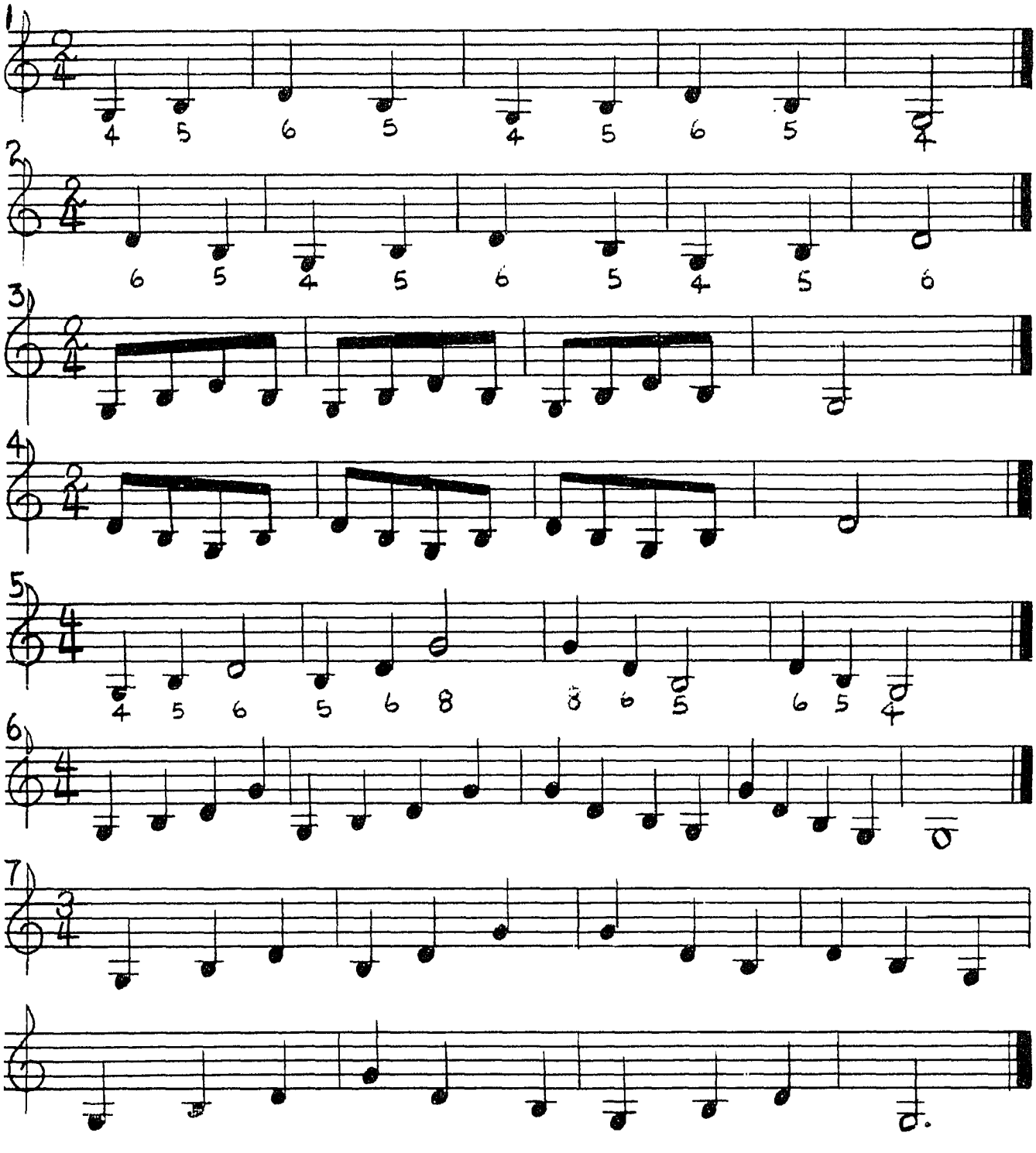
3. Natural Horn Studies
   Section III - Page 169

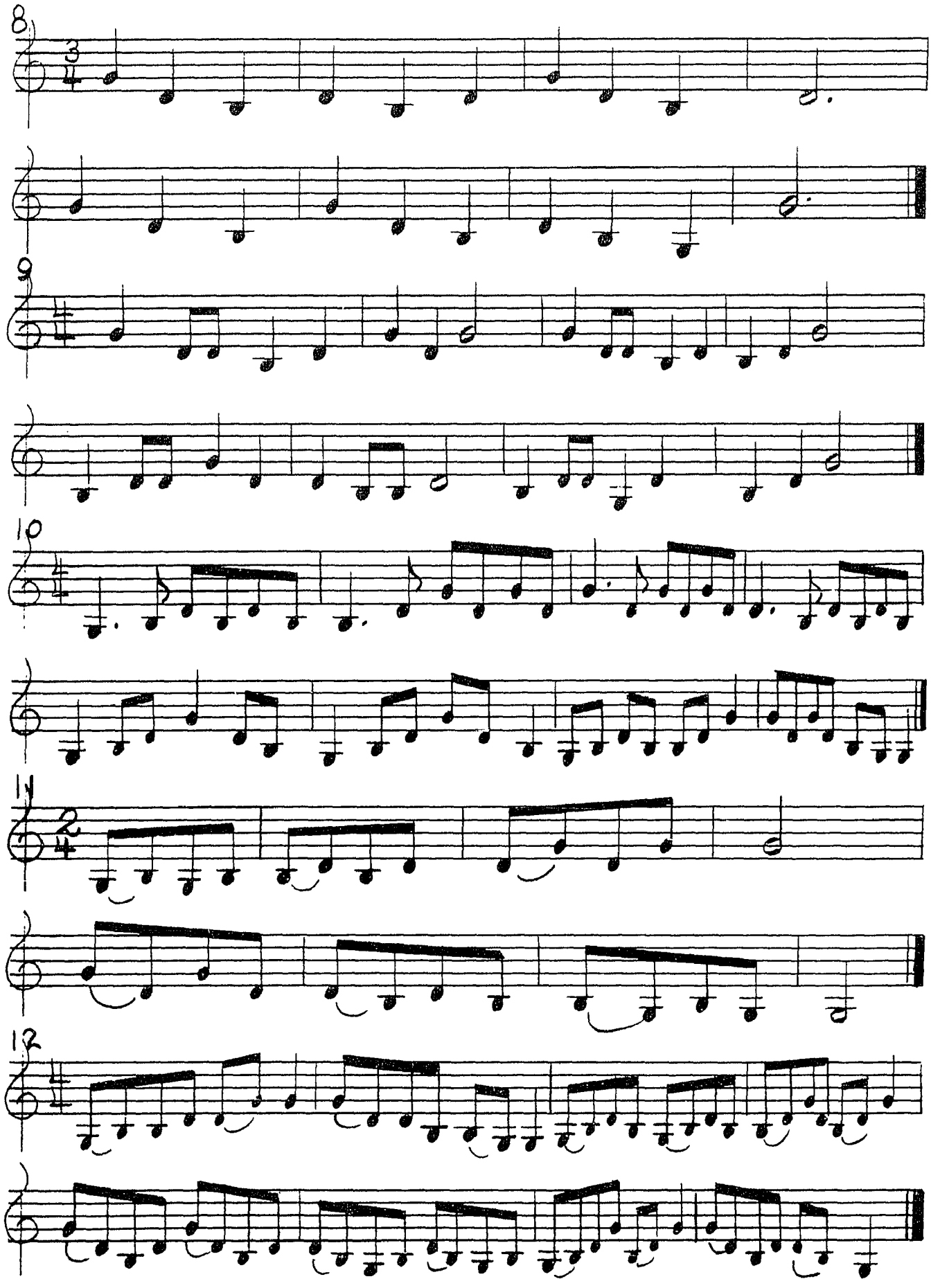
4. Orchestral Excerpts
   Section IV - Page 184

G HARMONIC SERIES STUDIES

HARMONICS 4-5-6-8



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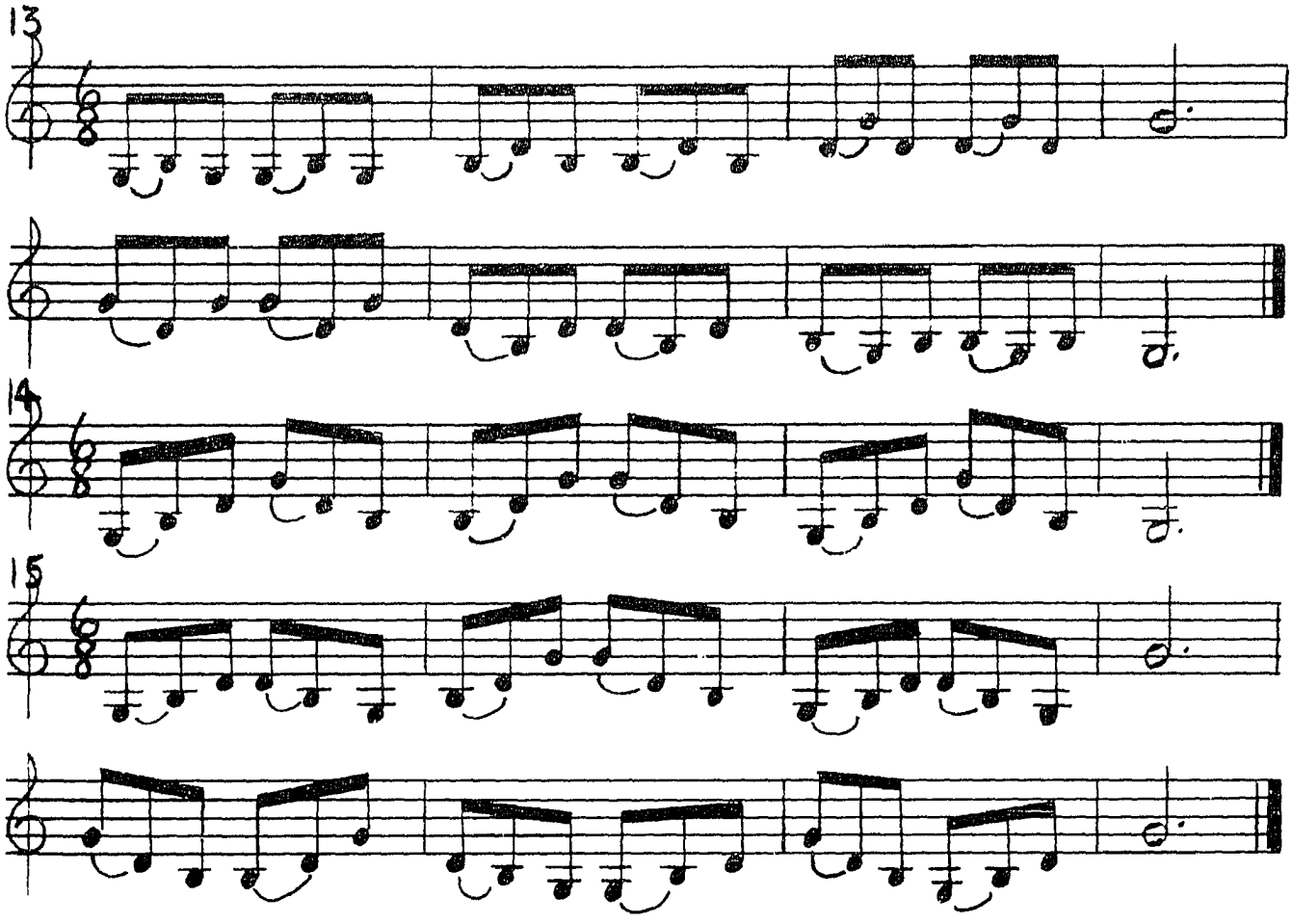


Play the tones represented by the following harmonic series numbers.

A. 4 - 5 - 6 - 8 - 6 - 5 - 4

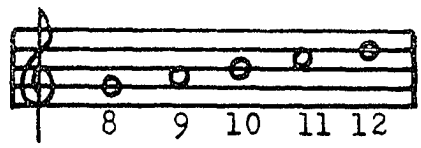
B. 8 - 4 - 6 - 5 - 8 - 6 - 4

C. 6 - 5 - 4 - 8 - 5 - 6 - 8

D. 8 - 5 - 6 - 4 - 8 - 6 - 5

E. 4 - 6 - 5 - 8 - 5 - 4 - 6

HARMONICS 8-9-10-11-12



1

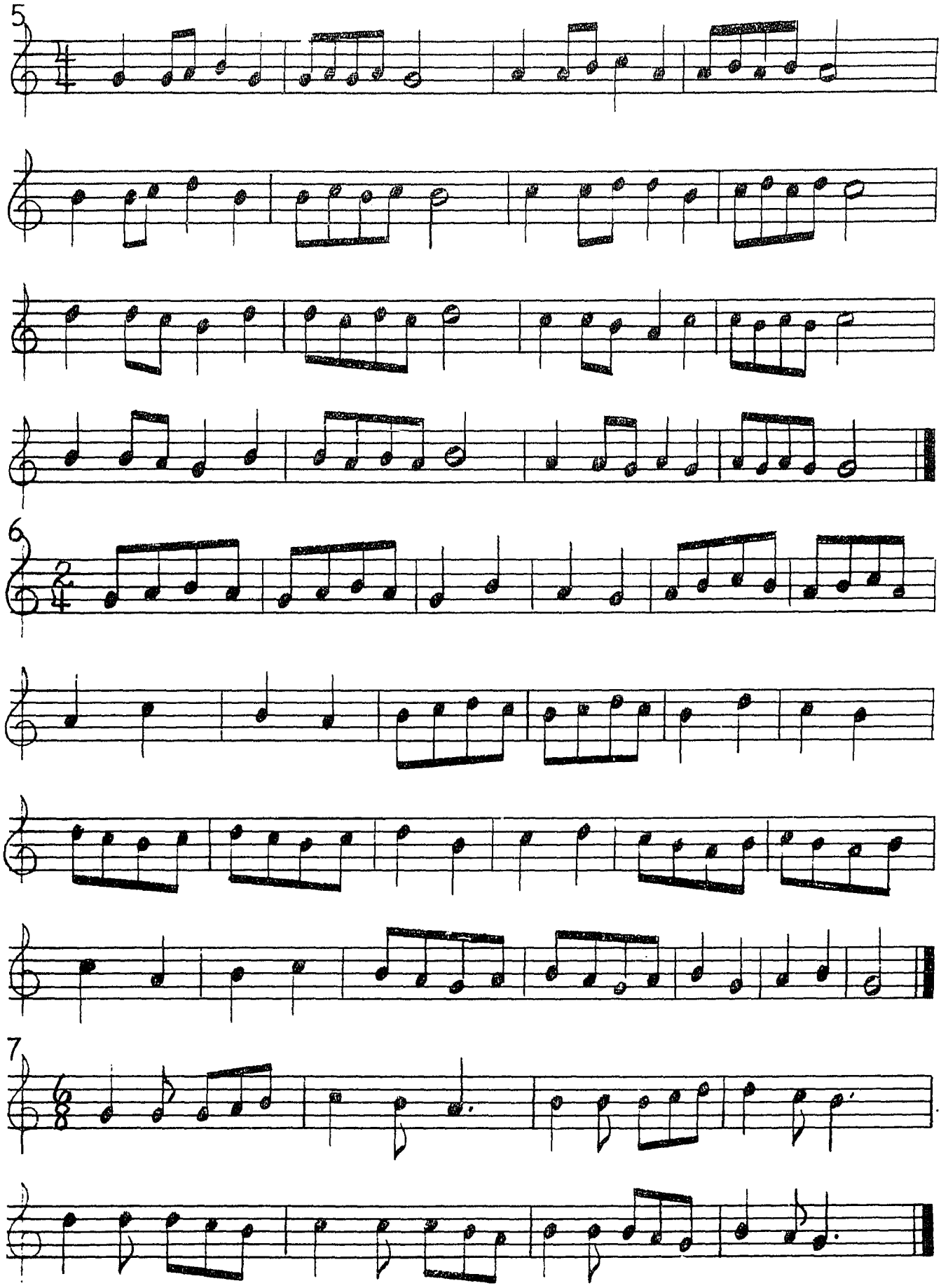
8 9 8 9 10 9 10 11 10 11 12 11

12 11 12 11 10 11 10 9 10 9 8 8

2

3

4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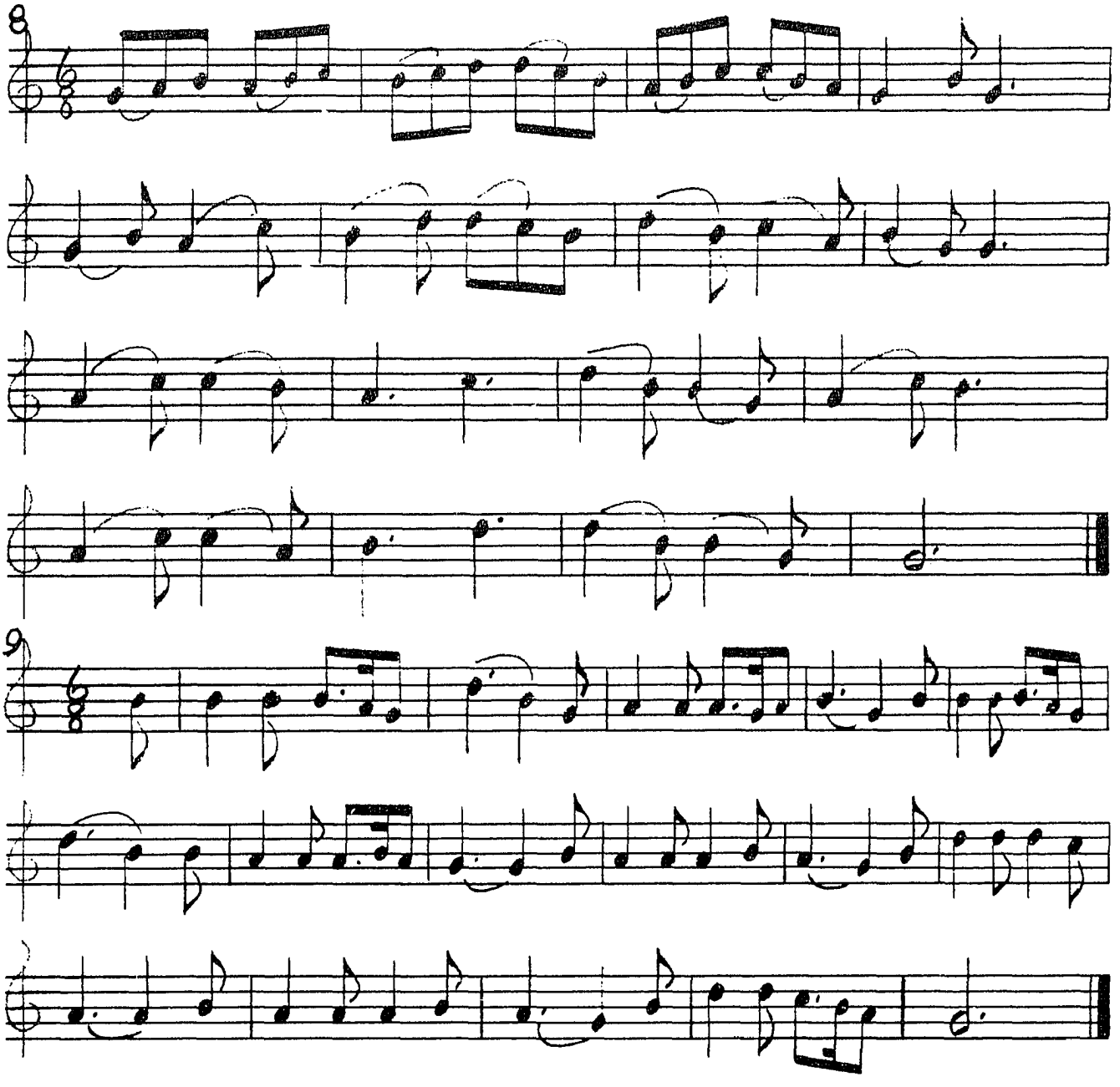


Play the tones represented by the following harmonic series numbers.

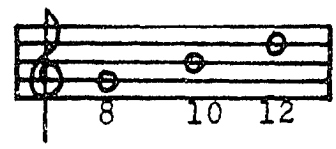
A. 8 - 10 - 9 - 11 - 10 - 12 - 11

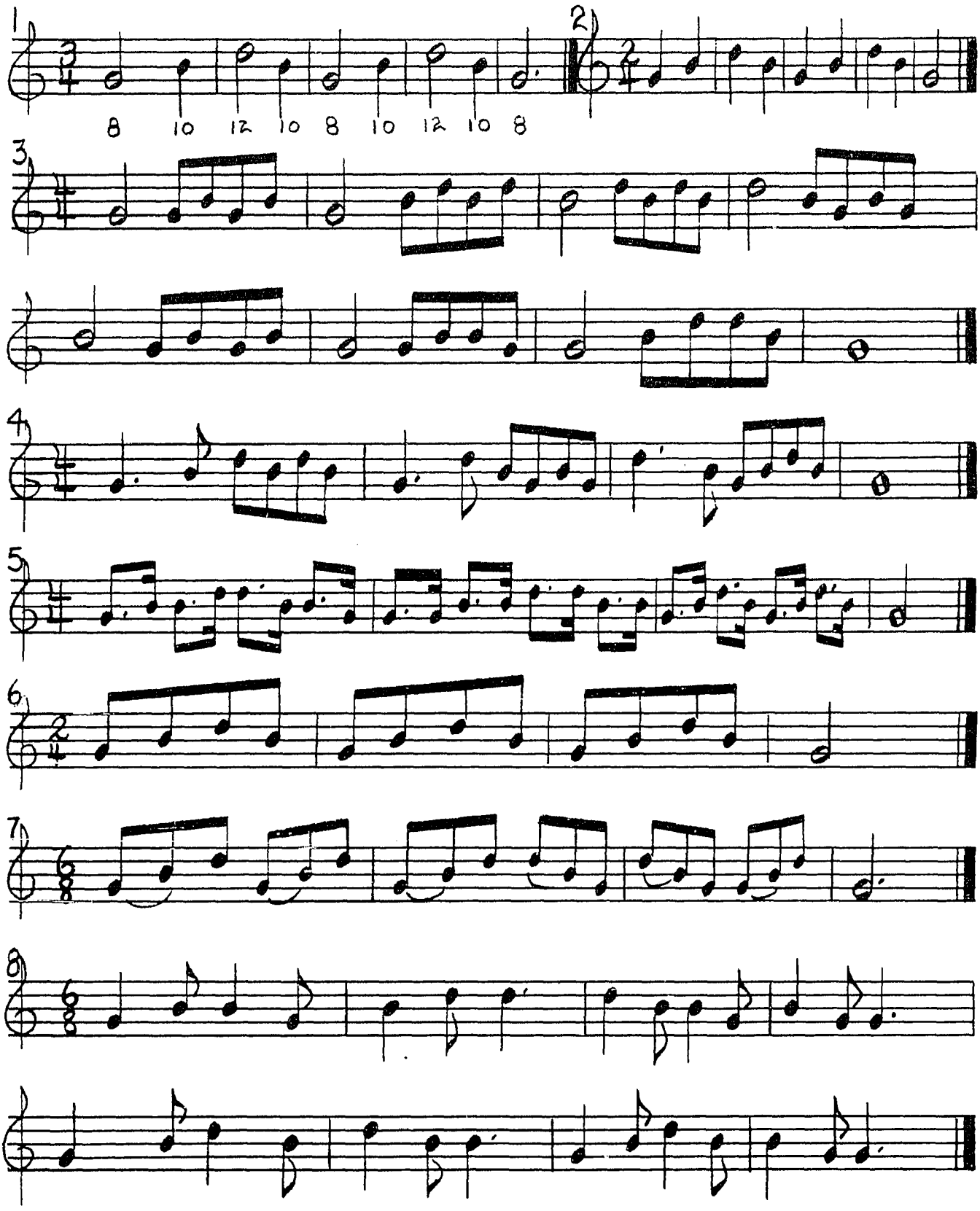
B. 10 - 11 - 12 - 10 - 8 - 9 - 10

C. 8 - 10 - 12 - 10 - 8 - 12 - 10

D. 12 - 10 - 11 - 9 - 8 - 11 - 10

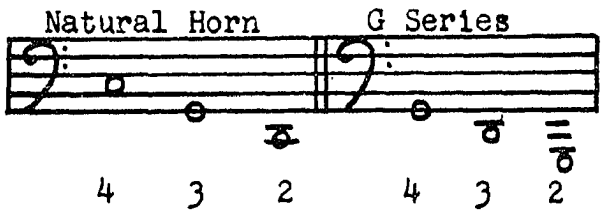
HARMONICS 8-10-12

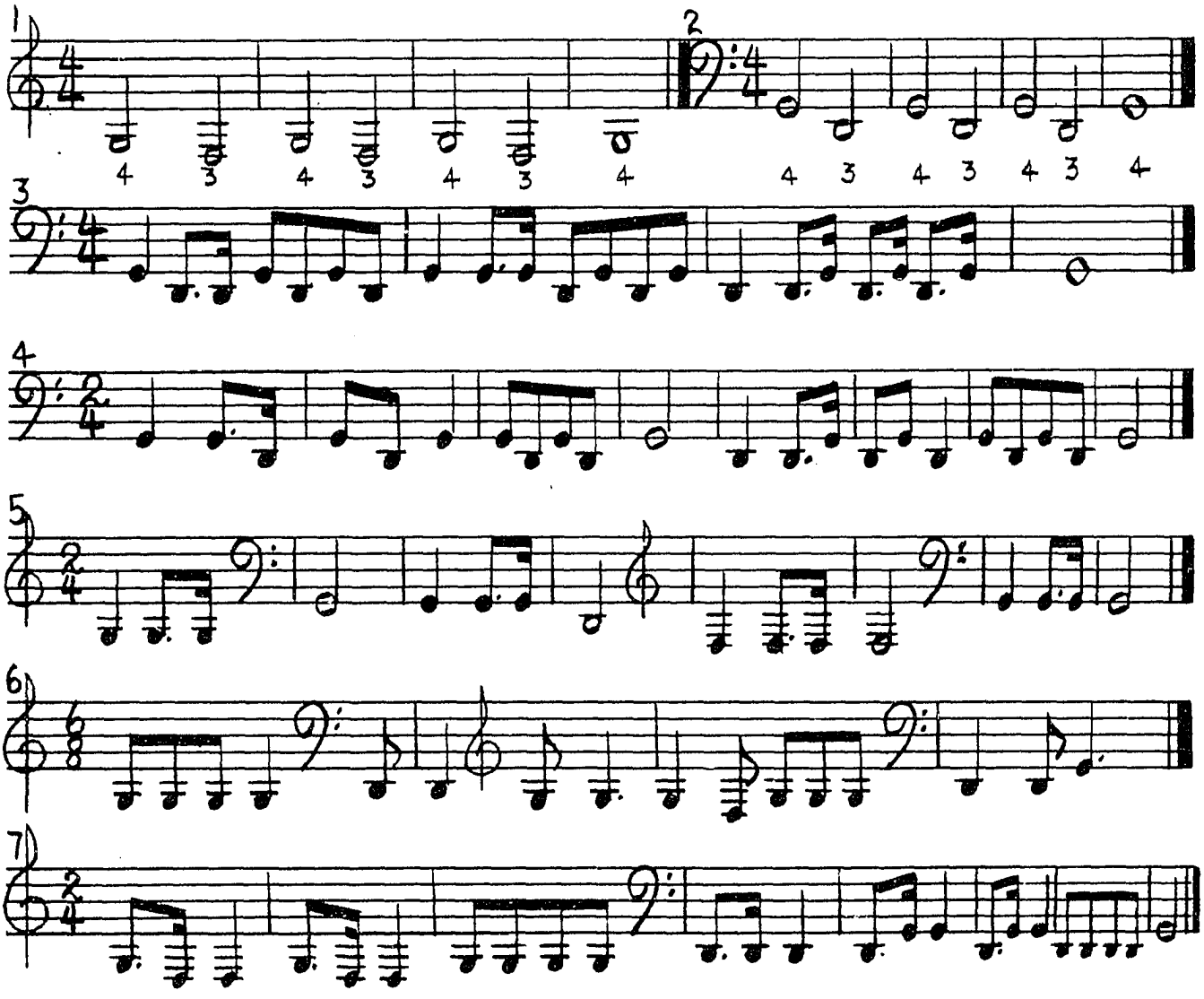


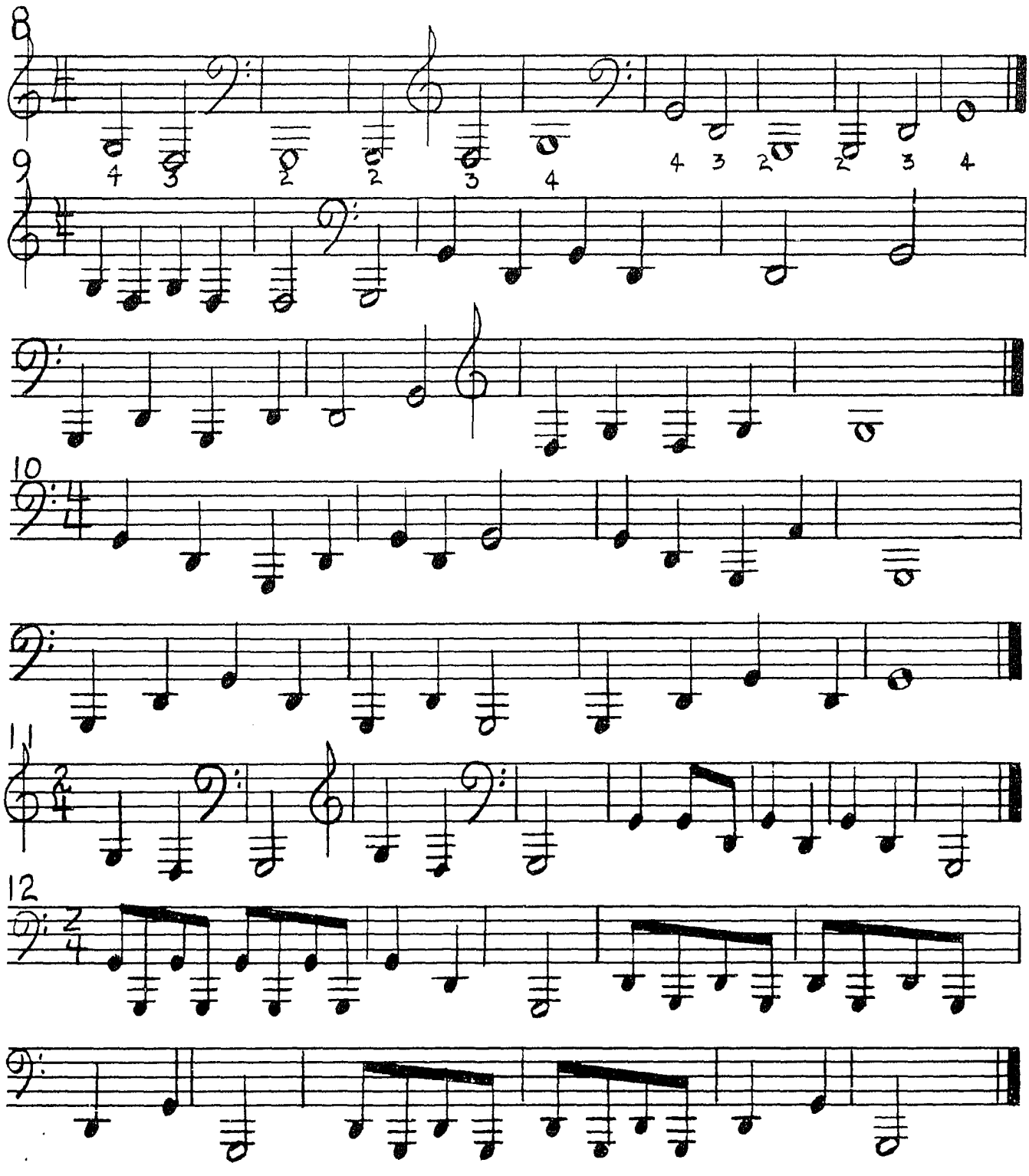


HARMONICS 2-3-4

The 2nd, 3rd, and 4th harmonics were often written in the bass clef in natural horn parts. When the notes appeared in the bass clef they were written an octave lower. The 2nd, 3rd, and 4th harmonics of the G series are written an octave lower in this method when they appear in the bass clef.





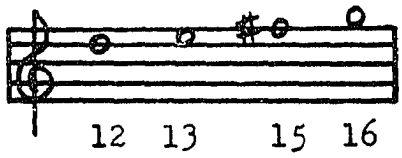


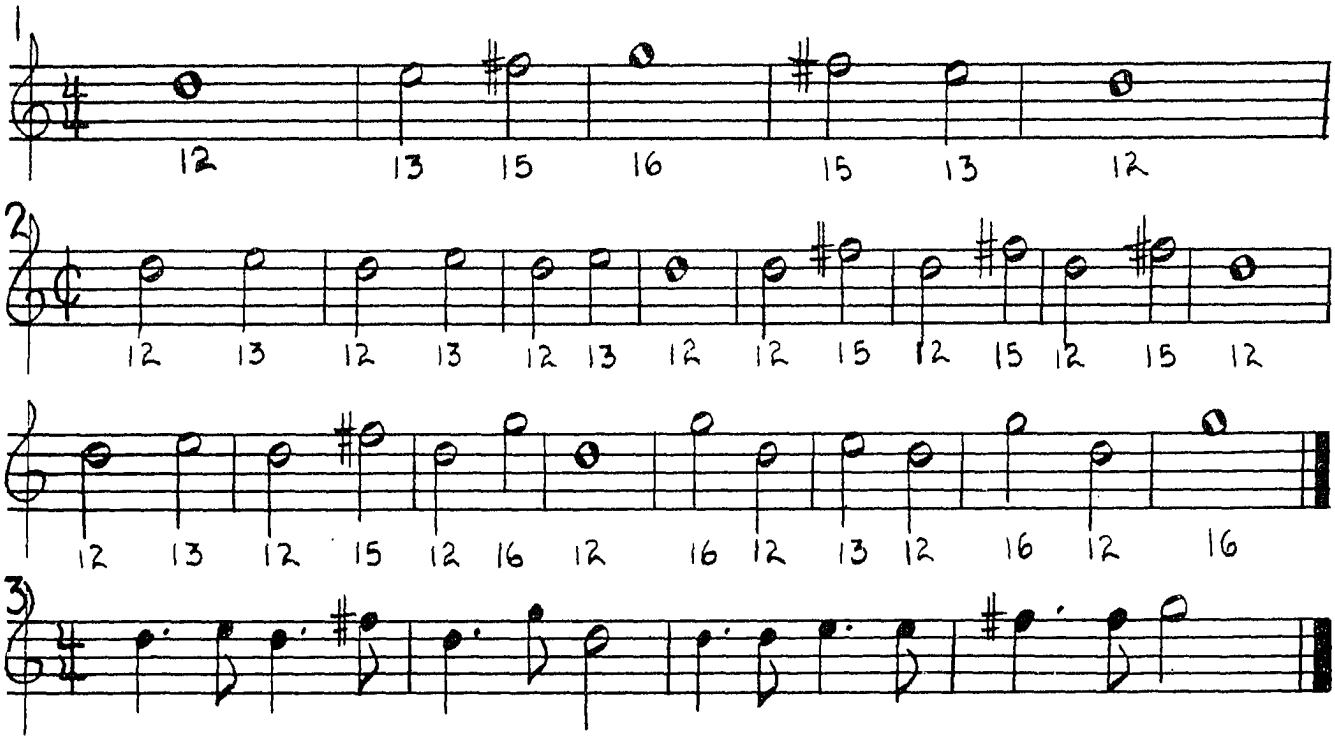
Play the tones represented by the following harmonic series numbers.

A. 3 - 4 - 2 - 4

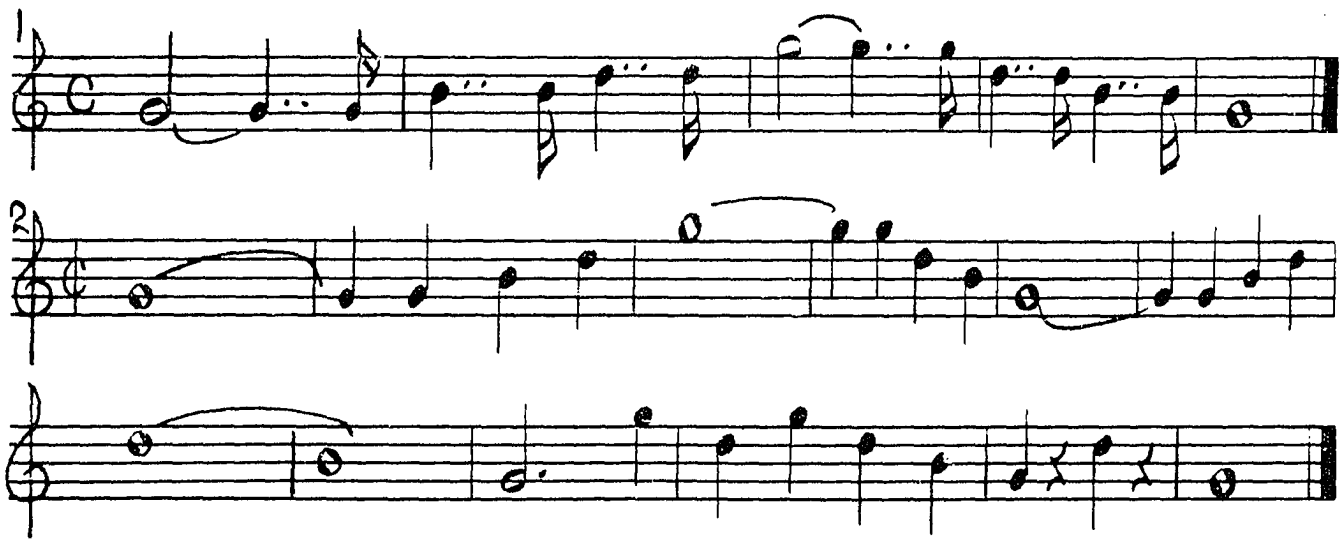
B. 4 - 3 - 4 - 2

HARMONICS 12-13-15-16





HARMONICS 8-10-12-16



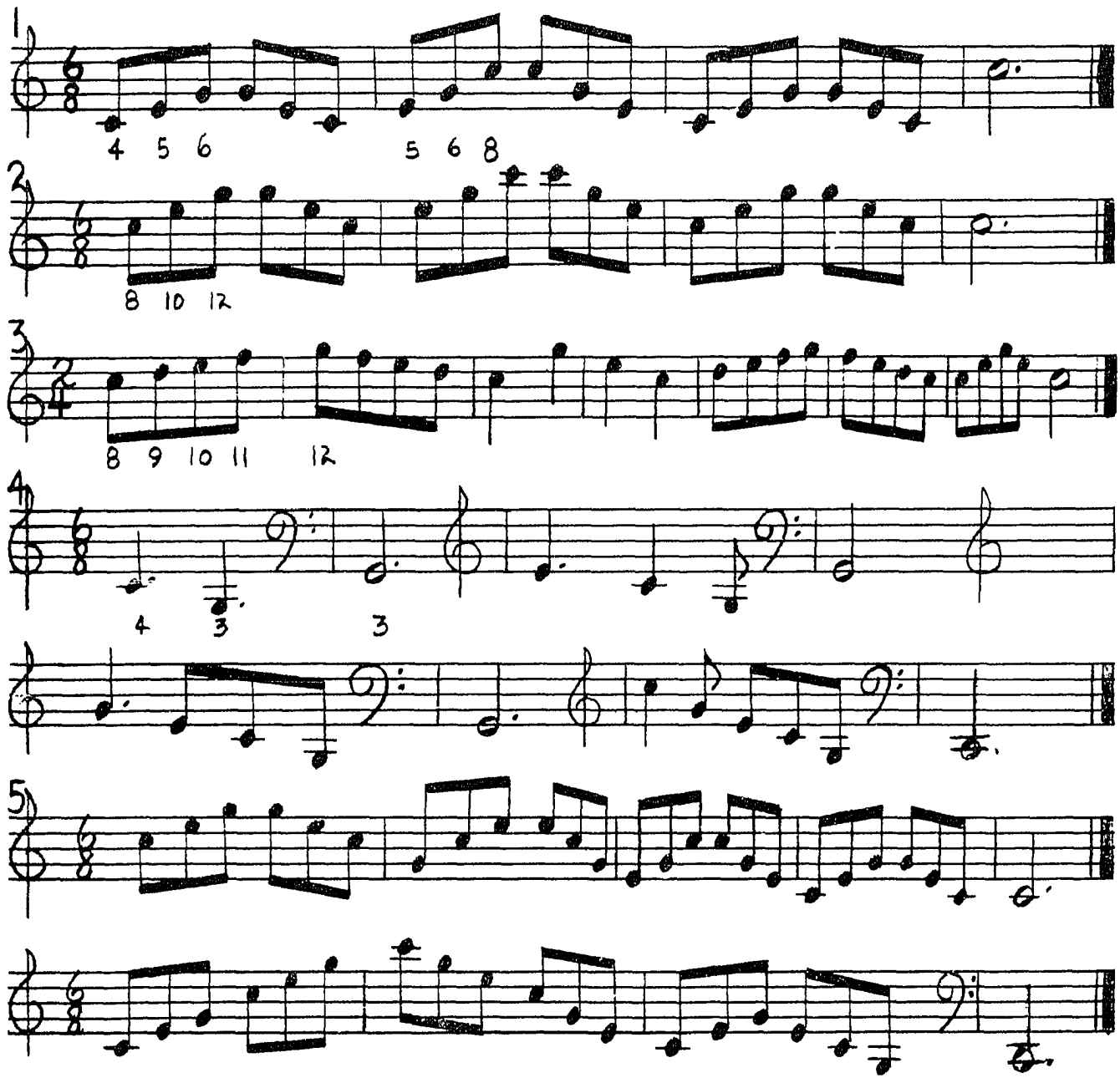
Play the tones represented by the following harmonic series numbers.

A. 12 - 13 - 15 - 16

B. 13 - 15 - 12 - 16

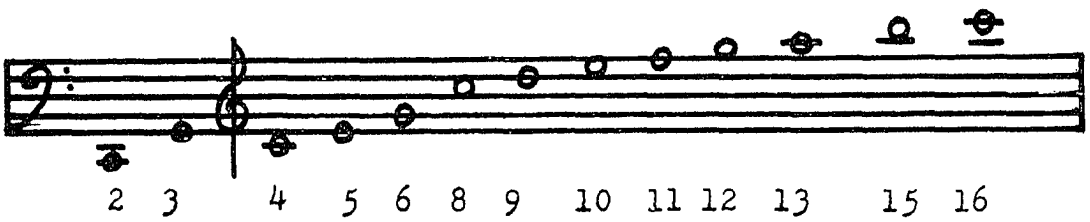
For each note in the natural horn part in C, substitute the note in the G series with the corresponding harmonic series number.

Natural Horn in C



TRANSPOSITION TO B FLAT BASSO

The natural horn part included only the notes of the C harmonic series. The following are the notes used in natural horn parts:



The system of transposition in this method was based on the fact that composers always wrote natural horn parts using the above notes and indicated the key of the horn. With the use of various crooks, the horn produced a different harmonic series in each key. In this book, the proper harmonic series is chosen for each key and then substituted for the C series in the natural horn part.

The following steps are necessary to transpose to any key: (1) Learn the notes and the harmonic series numbers used in writing natural horn parts, (2) determine the interval to be transposed, (3) determine the harmonic series to be used in the transposition, (4) learn the notes and the numbers of the harmonic series used in the transposition,

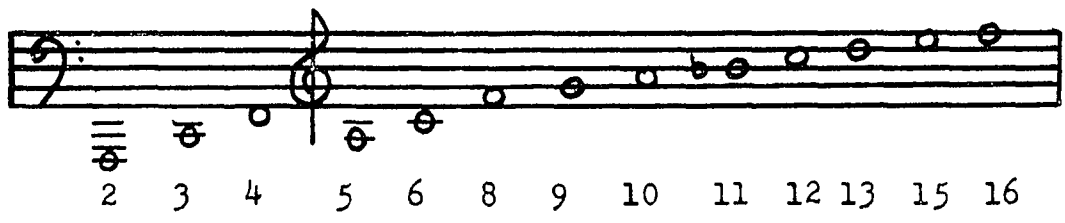
and (5) substitute the notes in that series for the C harmonic series.

STEPS IN THE B FLAT BASSO TRANSPOSITION

STEP I - Learn the notes and the harmonic series numbers used in writing natural horn parts.

STEP II - Determine the interval between the key of F and horn in B flat basso. The interval is three and one-half steps--a perfect fifth--down.

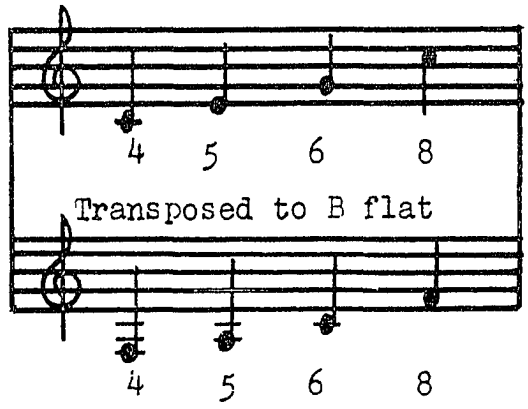
STEP III - Determine the harmonic series used in horn in C. Each note of the C harmonic series used in writing the natural horn part must be lowered three and one-half steps. The result of lowering each note of the C series three and one-half steps is the F harmonic series. The following are the notes used in the F harmonic series:



STEP IV - Learn the notes and the harmonic series numbers of the F series.

STEP V - Substitute the F harmonic series for the C harmonic series. For each note in the C series, substitute the note with the corresponding number in the F series.

Natural Horn in B flat basso



LESSON PLAN FOR B FLAT BASSO TRANSPOSITION

1. C Harmonic Series Studies
   Section I - Page 55

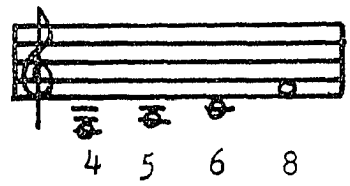
2. F Harmonic Series Studies
   Section II - Page 122

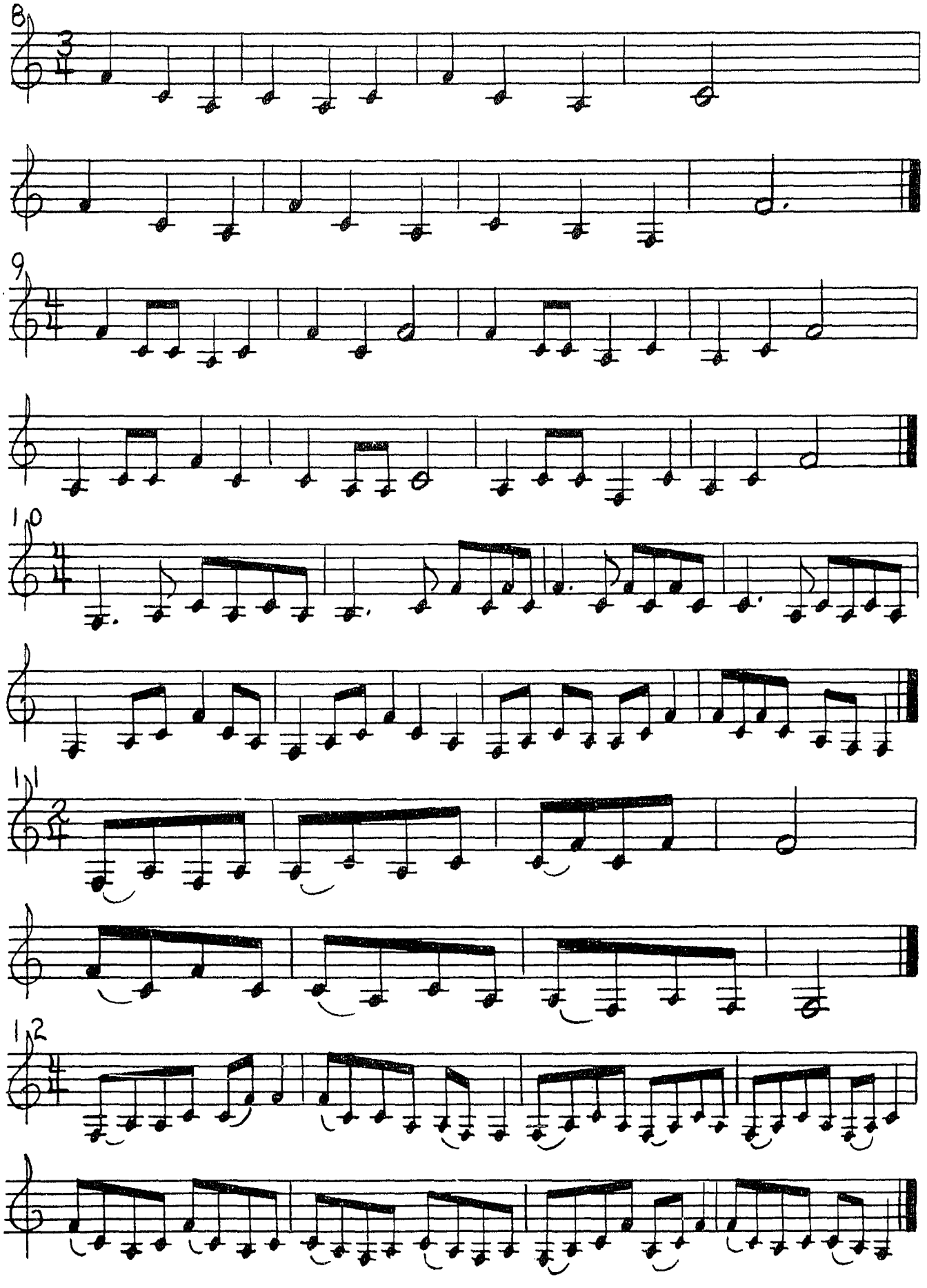
3. Natural Horn Studies
   Section III - Page 169

4. Orchestral Excerpts
   Section IV - Page 184

F HARMONIC SERIES STUDIES

HARMONICS 4-5-6-8

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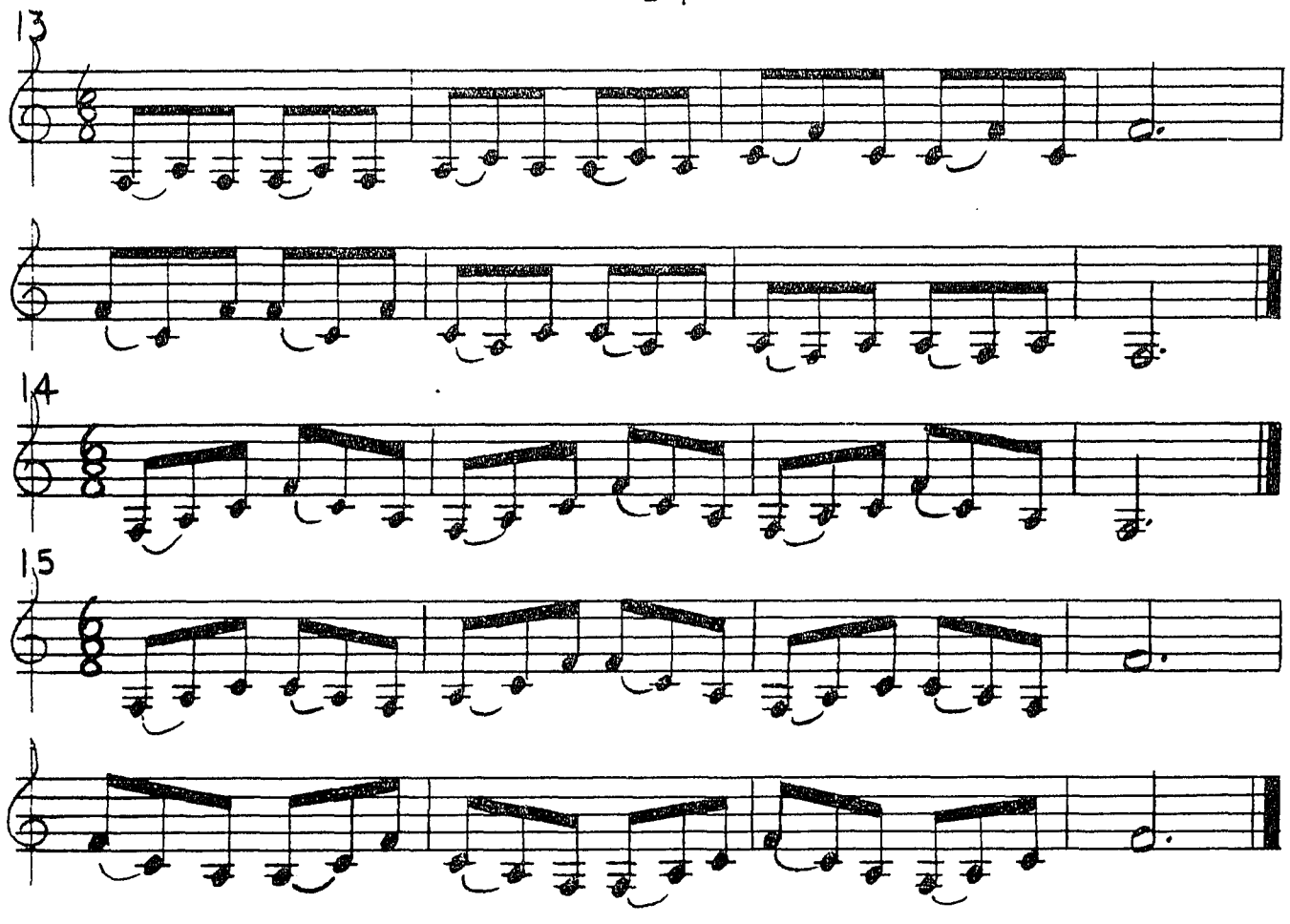


Play the tones represented by the following harmonic series numbers.

A. 4 - 5 - 6 - 8 - 6 - 5 - 4

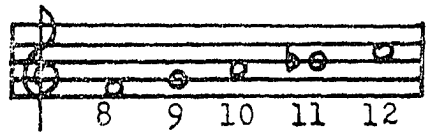
B. 8 - 4 - 6 - 5 - 8 - 6 - 4

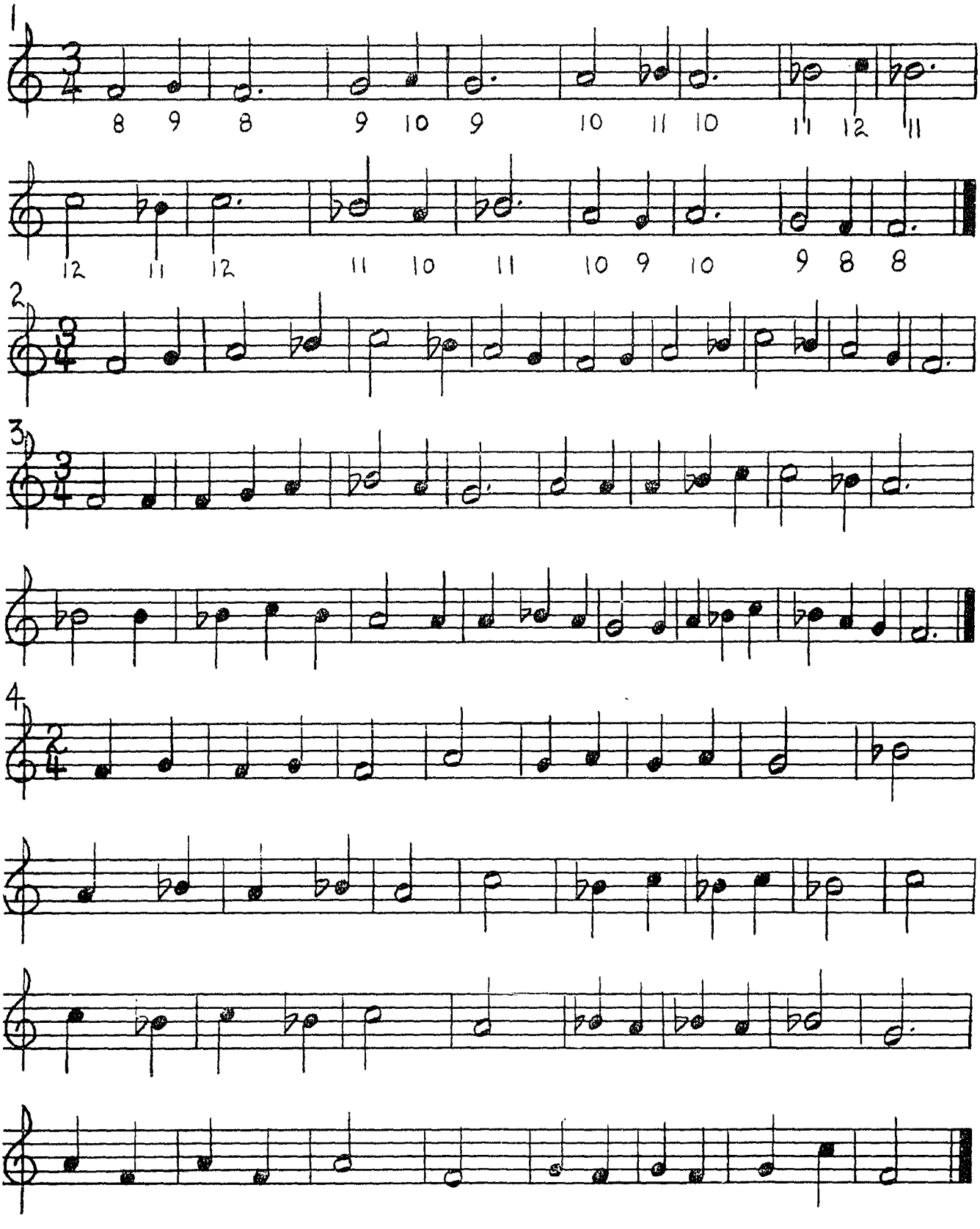
C. 6 - 5 - 4 - 8 - 5 - 6 - 8

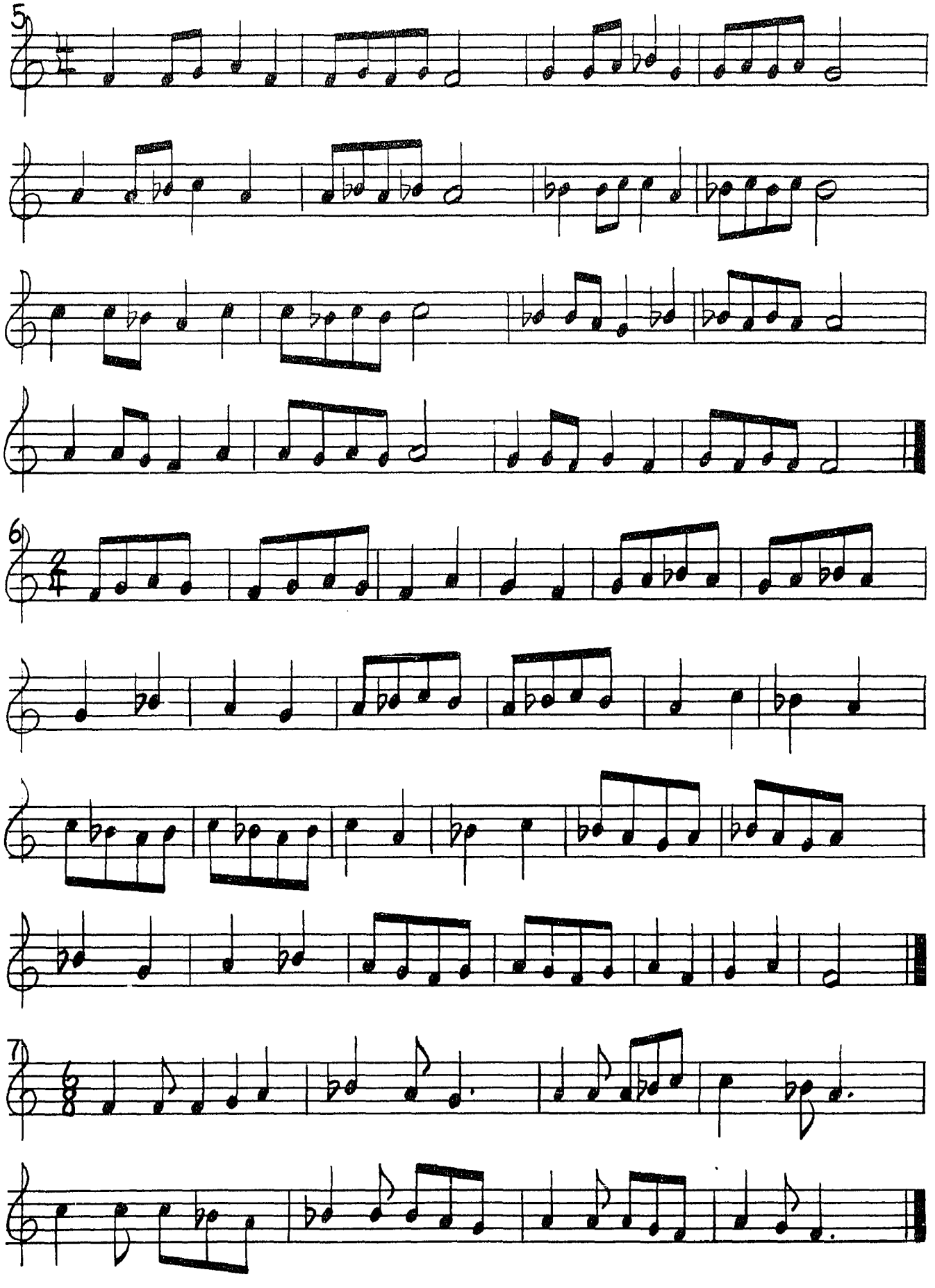
D. 8 - 5 - 6 - 4 - 8 - 6 - 5

E. 4 - 6 - 5 - 8 - 5 - 4 - 6

HARMONICS 8-9-10-11-12



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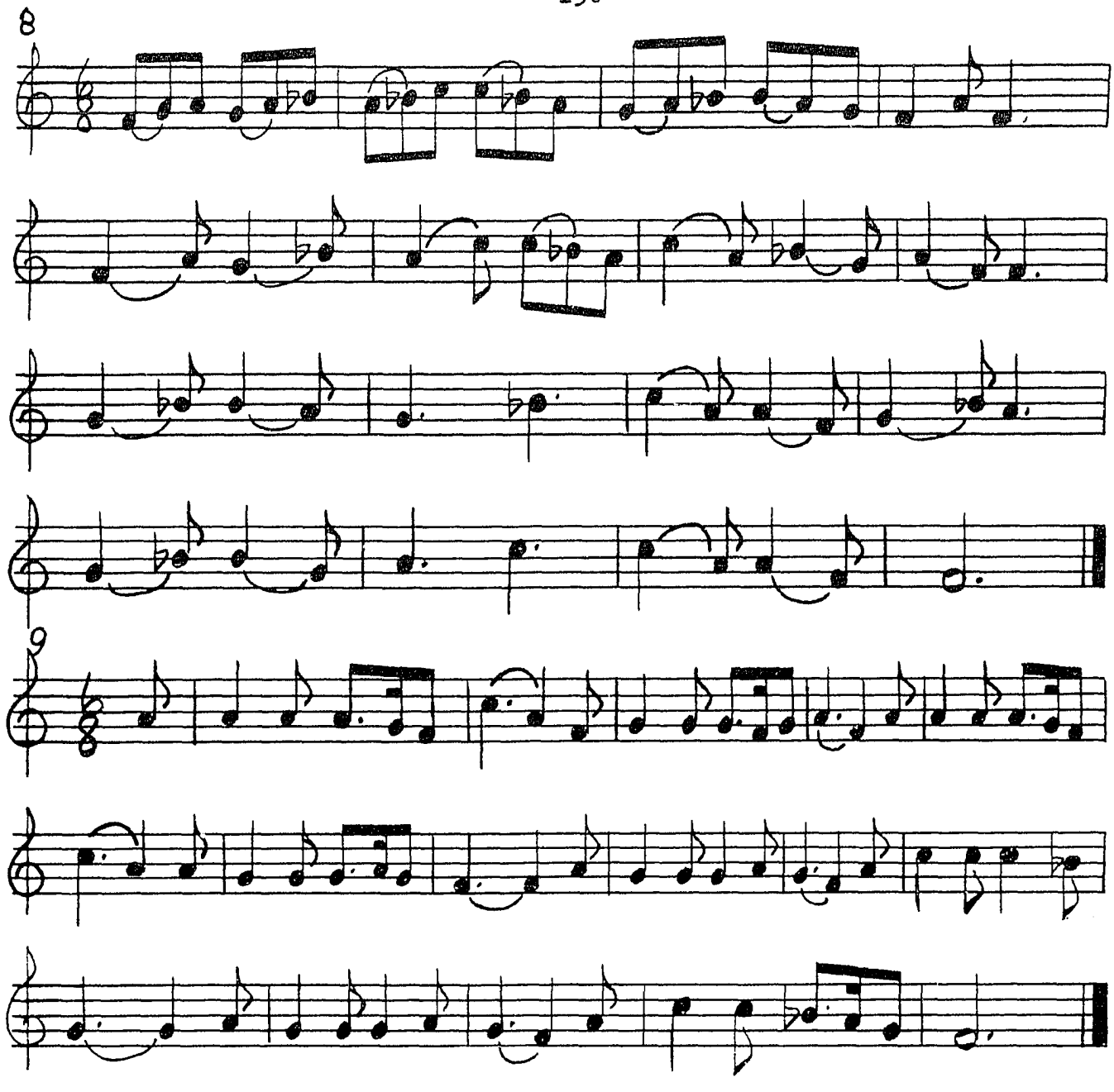


Play the tones represented by the following harmonic series numbers.

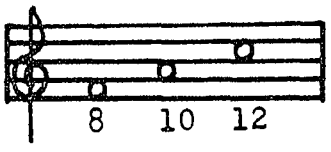
A. 8 - 10 - 9 - 11 - 10 - 12 - 11

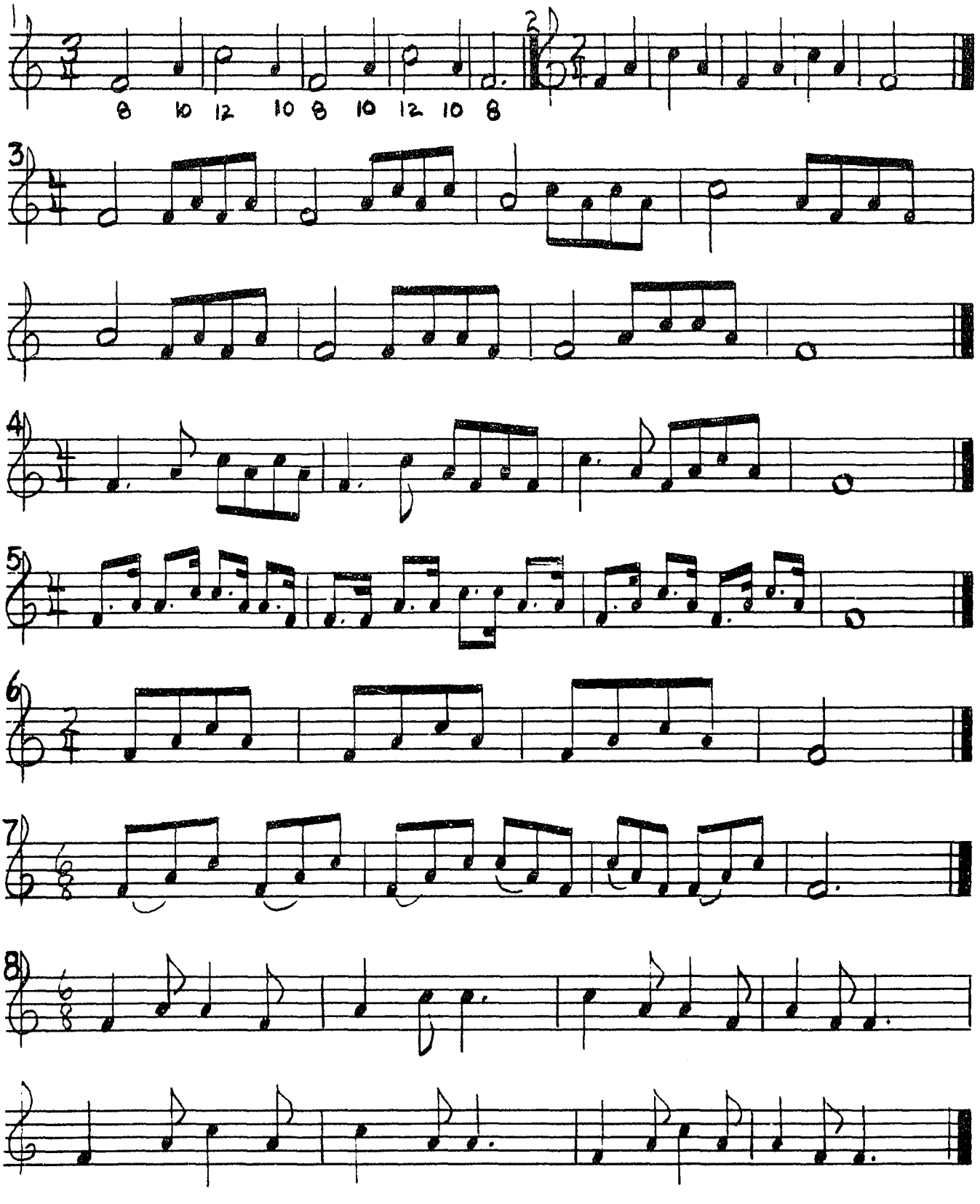
B. 10 - 11 - 12 - 10 - 8 - 9 - 10

C. 8 - 10 - 12 - 10 - 8 - 12 - 10

D. 12 - 10 - 11 - 9 - 8 - 11 - 10

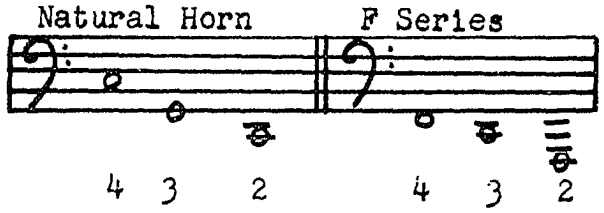
HARMONICS 8-10-12

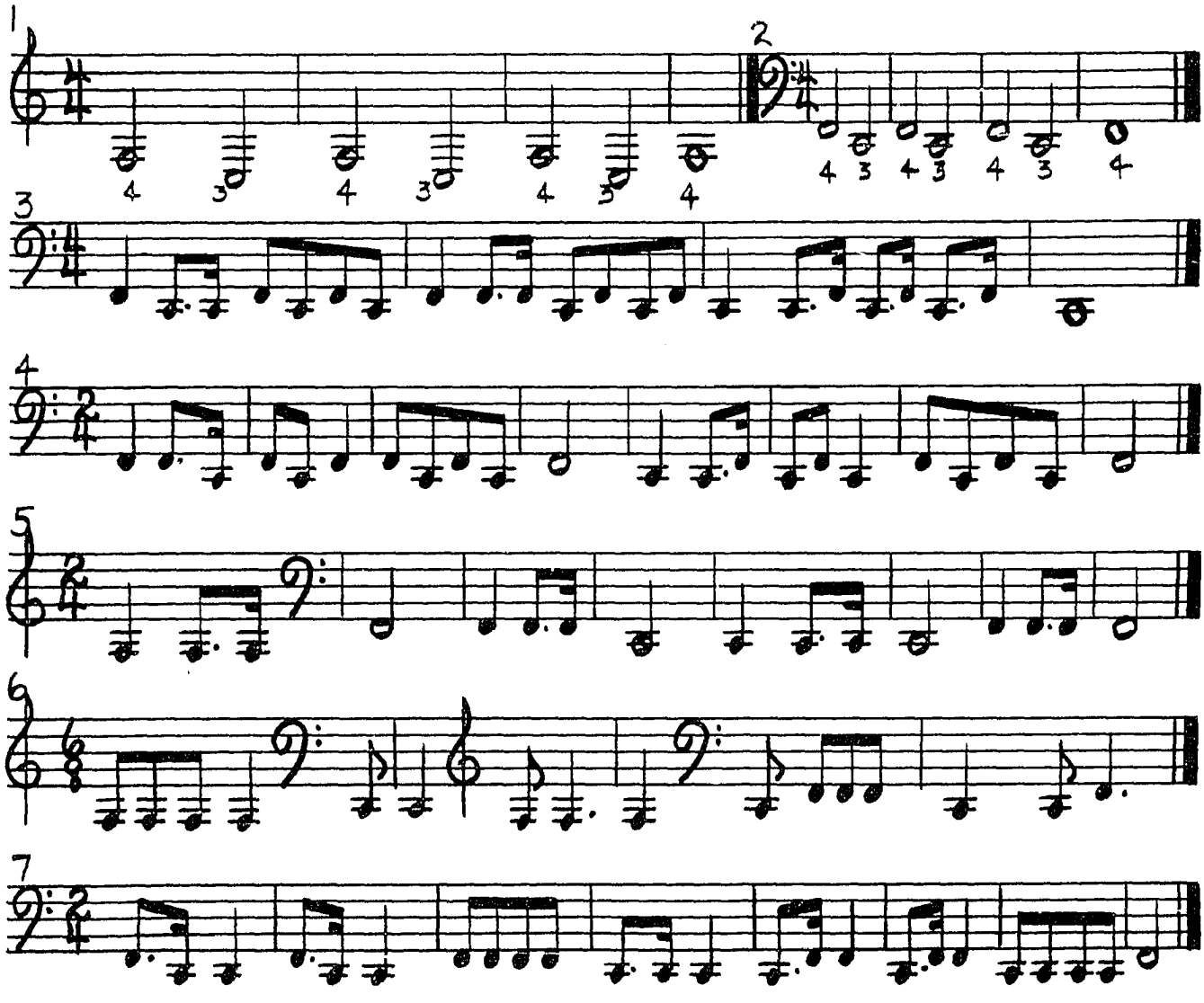


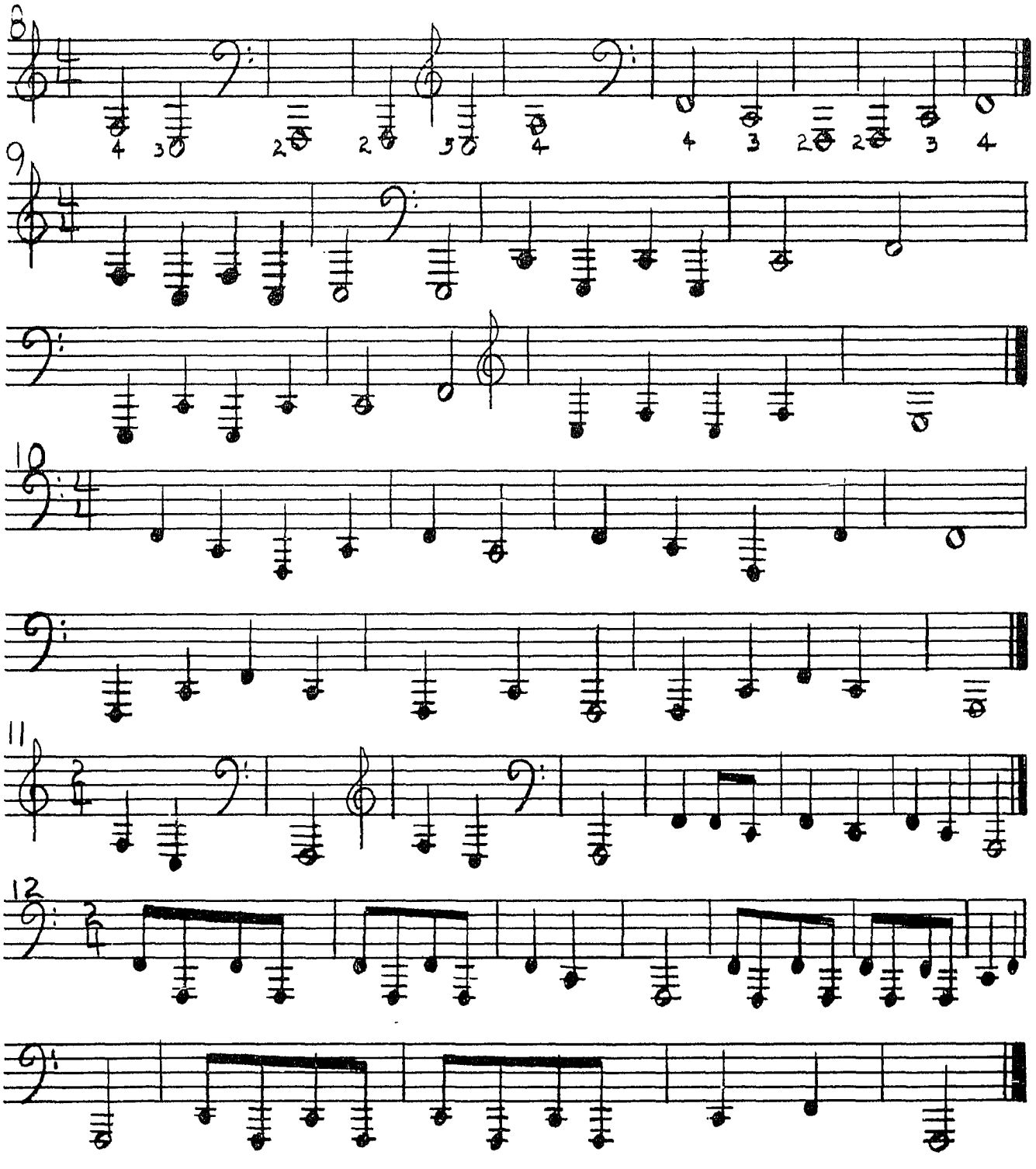


HARMONICS 2-3-4

The 2nd, 3rd, and 4th harmonics were often written in the bass clef in natural horn parts. When the notes appeared in the bass clef they were written an octave lower. The 2nd, 3rd, and 4th harmonics of the F series are written an octave lower in this method when they appear in the bass clef.





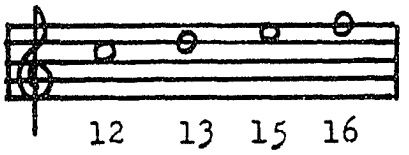


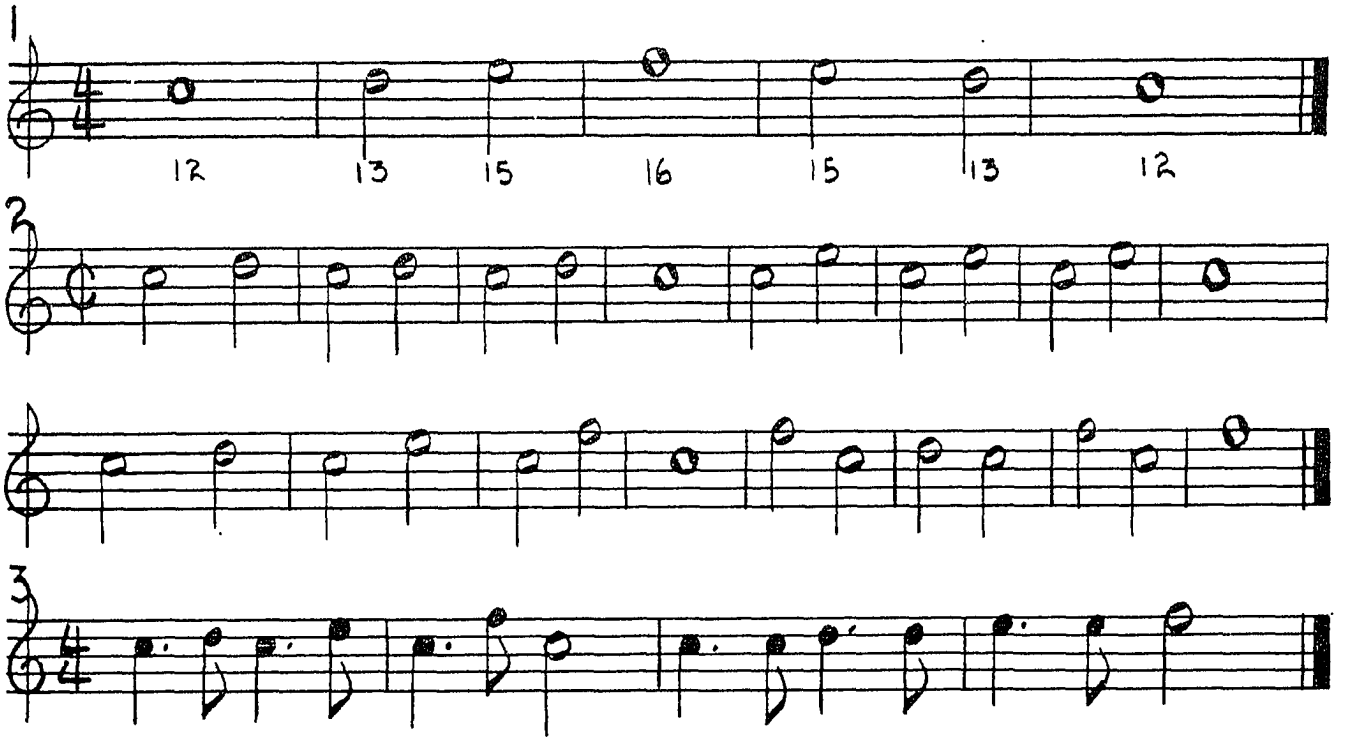
Play the tones represented by the following harmonic series numbers.

A. 3 - 4 - 2 - 4

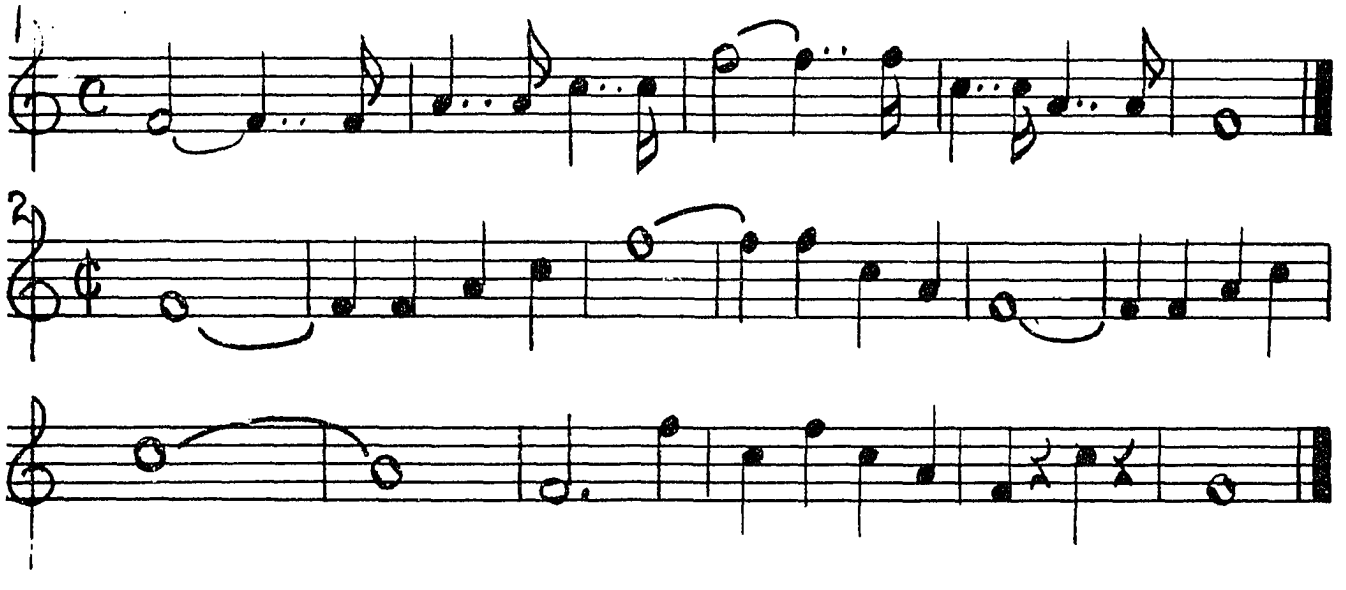
B. 4 - 3 - 4 - 2

HARMONICS 12-13-15-16





HARMONICS 8-10-12-16



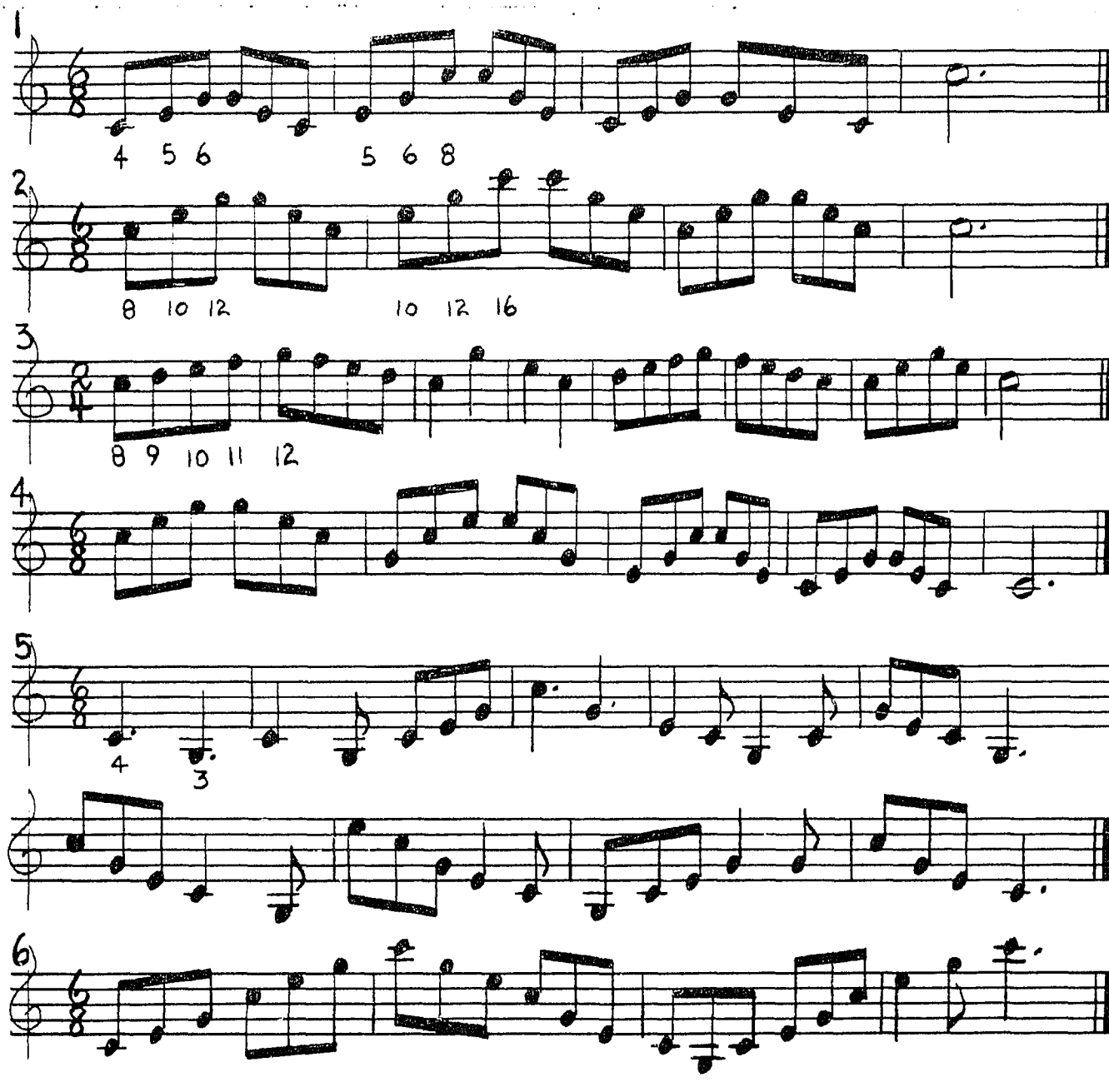
Play the tones represented by the following harmonic numbers.

A. 12 - 13 - 15 - 16

B. 13 - 15 - 12 - 16

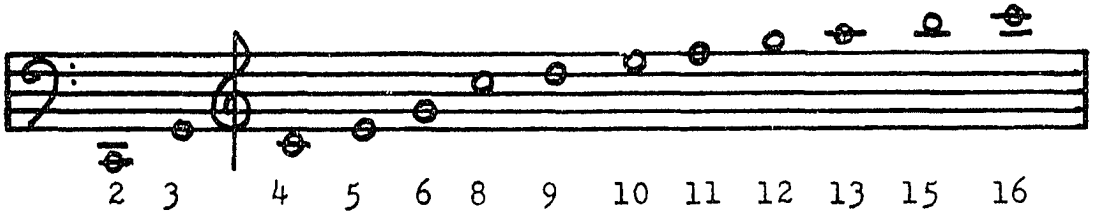
For each note in the natural horn part in Bb basso, substitute the note in the F series with the corresponding harmonic series number.

Natural Horn in Bb Basso



TRANSPOSITION TO G

The natural horn part included only the notes of the C harmonic series. The following are the notes used in natural horn parts:



The system of transposition in this method was based on the fact that composers always wrote natural horn parts using the above notes and indicated the key of the horn. With the use of various crooks, the horn produced a different harmonic series in each key. In this book, the proper harmonic series is chosen for each key and then substituted for the C series in the natural horn part.

The following steps are necessary to transpose to any key: (1) Learn the notes and the harmonic series numbers used in writing natural horn parts, (2) determine the interval to be transposed, (3) determine the harmonic series to be used in the transposition, (4) learn the notes and the numbers of the harmonic series used in the transposition,

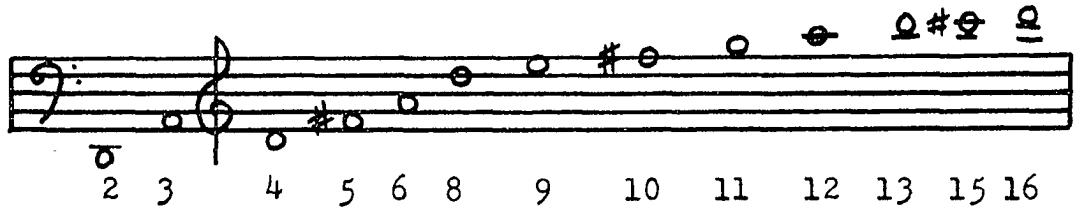
and (5) substitute the notes in that series for the C harmonic series.

STEPS IN THE G TRANSPOSITION

STEP I - Learn the notes and the harmonic series numbers used in writing natural horn parts.

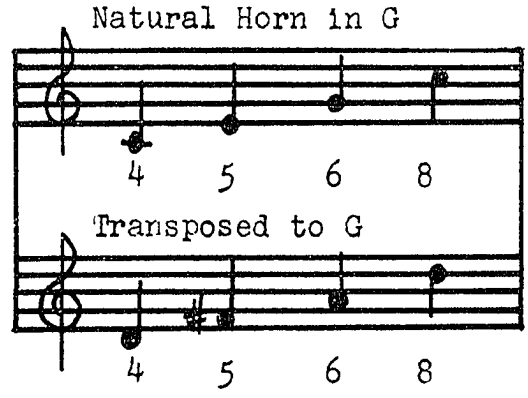
STEP II - Determine the interval between the key of F and horn in G. The interval is one whole-step up.

STEP III - Determine the harmonic series used in horn in G. Each note of the C harmonic series used in writing the natural horn part must be raised one whole-step. The result of raising each note of the C series one whole-step is the D harmonic series. The following are the notes used in the D harmonic series:



STEP IV - Learn the notes and the harmonic series numbers of the D series.

STEP V - Substitute the D harmonic series for the C harmonic series. For each note in the C series, substitute the note with the corresponding number in the D series.



LESSON PLAN FOR G TRANSPOSITION

1. C Harmonic Series Studies
   Section I - Page 55

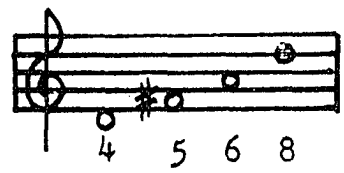
2. D Harmonic Series Studies
   Section II - Page 136

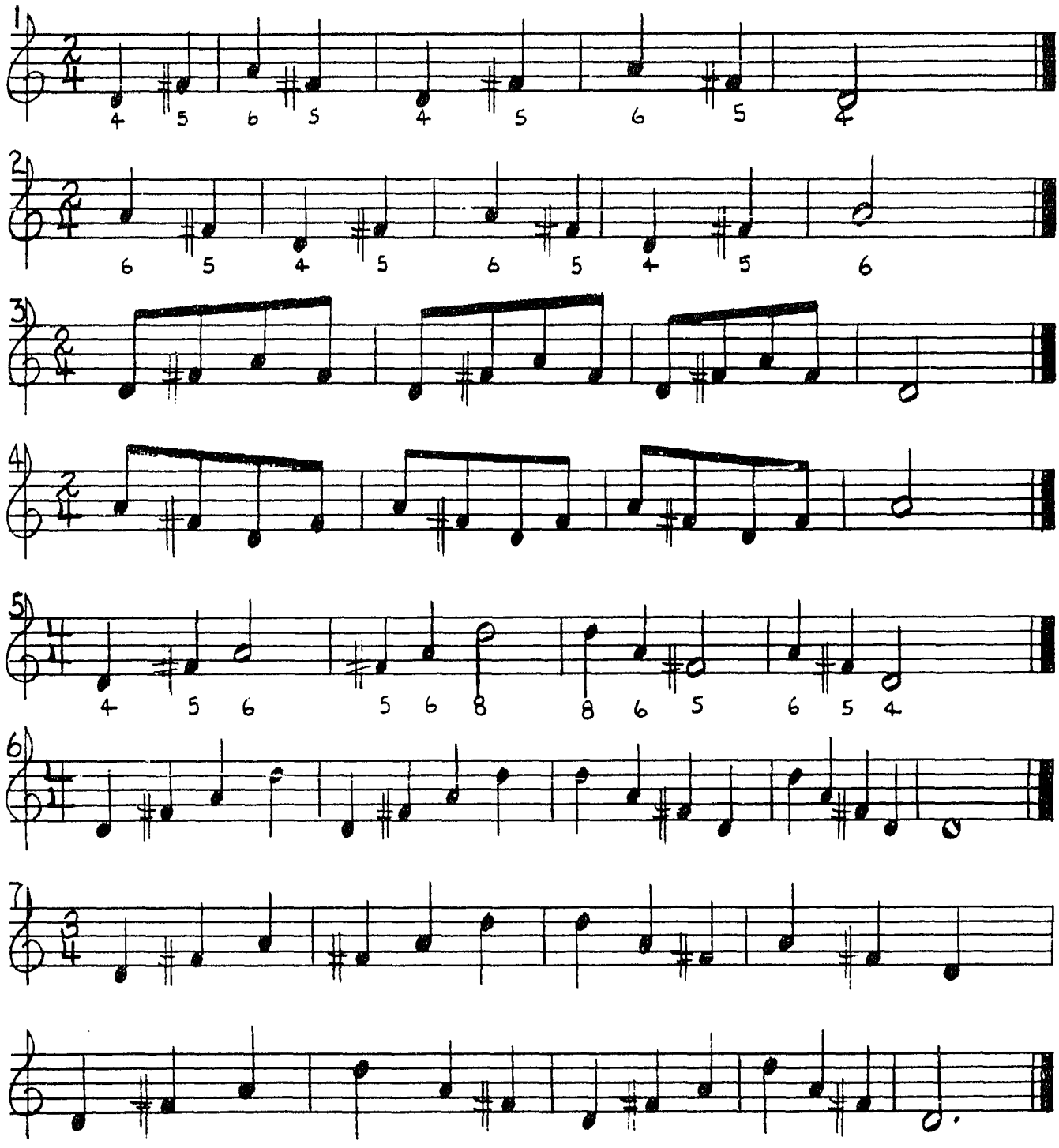
3. Natural Horn Studies
   Section III - Page 169

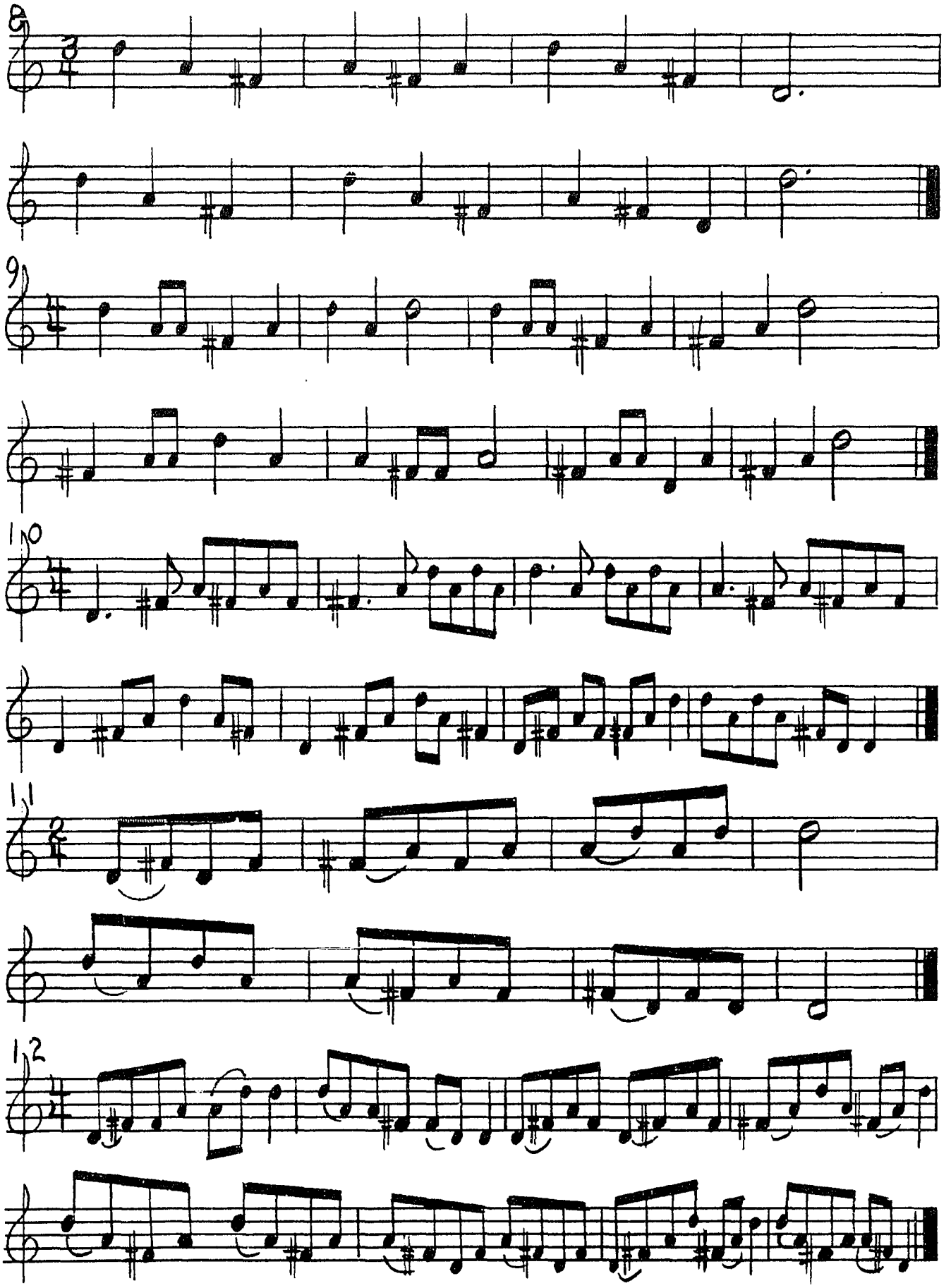
4. Orchestral Excerpts
   Section IV - Page 184

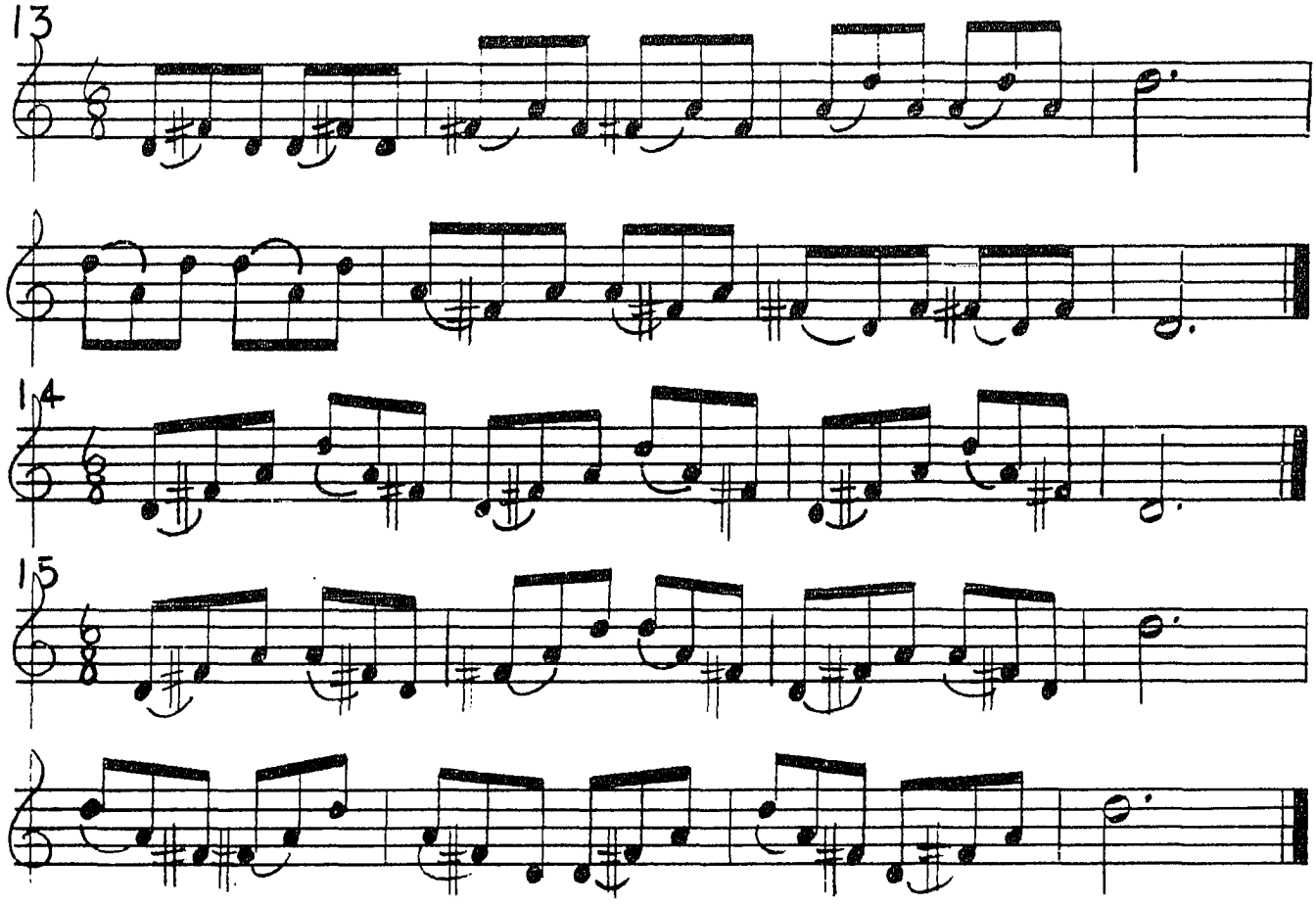
D HARMONIC SERIES STUDIES

HARMONICS 4-5-6-8









Play the tones represented by the following harmonic series numbers.

A. 4 - 5 - 6 - 8 - 6 - 5 - 4

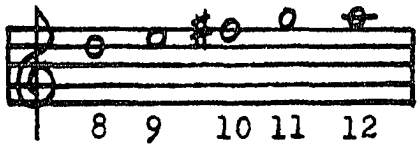
B. 8 - 4 - 6 - 5 - 8 - 6 - 4

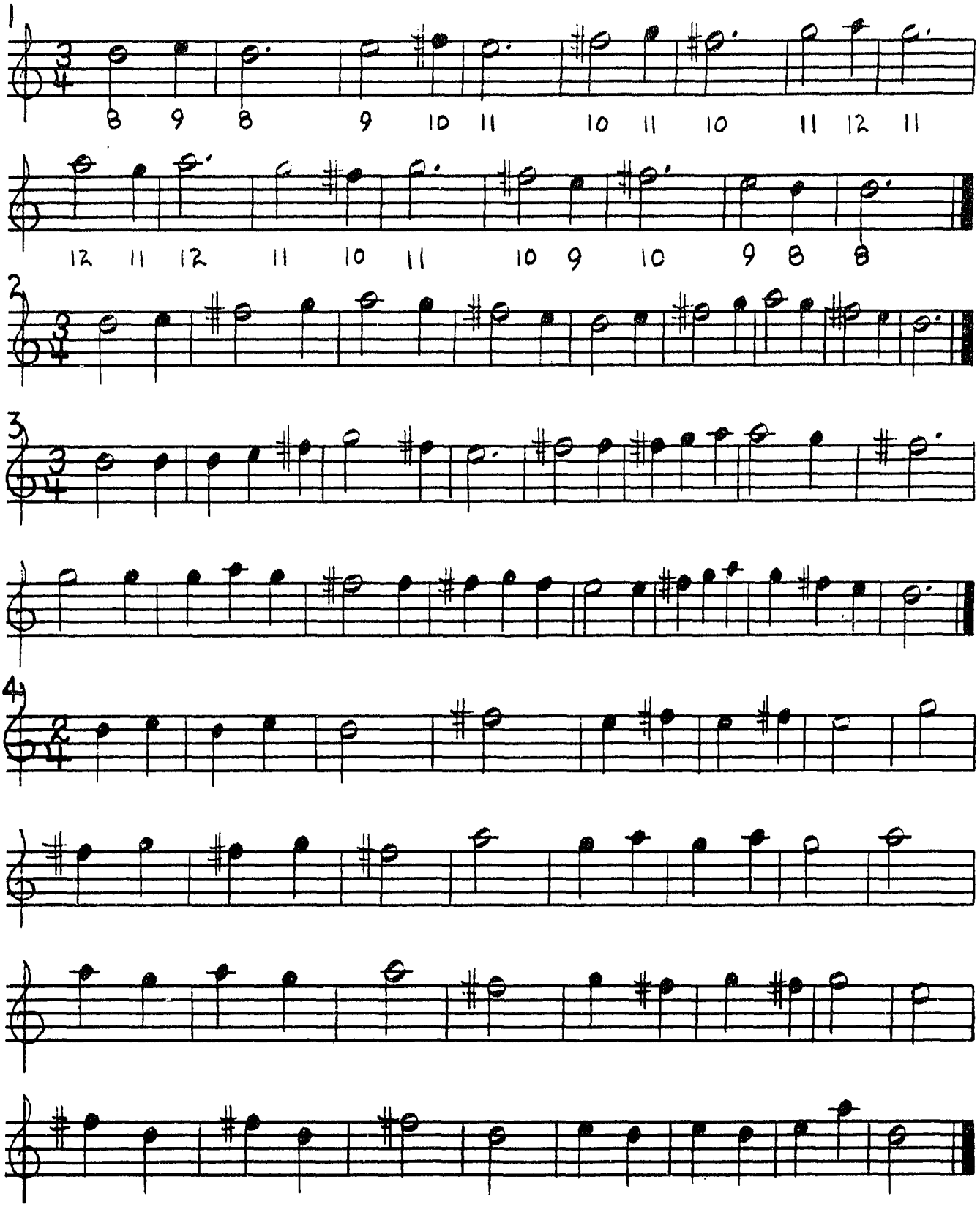
C. 6 - 5 - 4 - 8 - 5 - 6 - 8

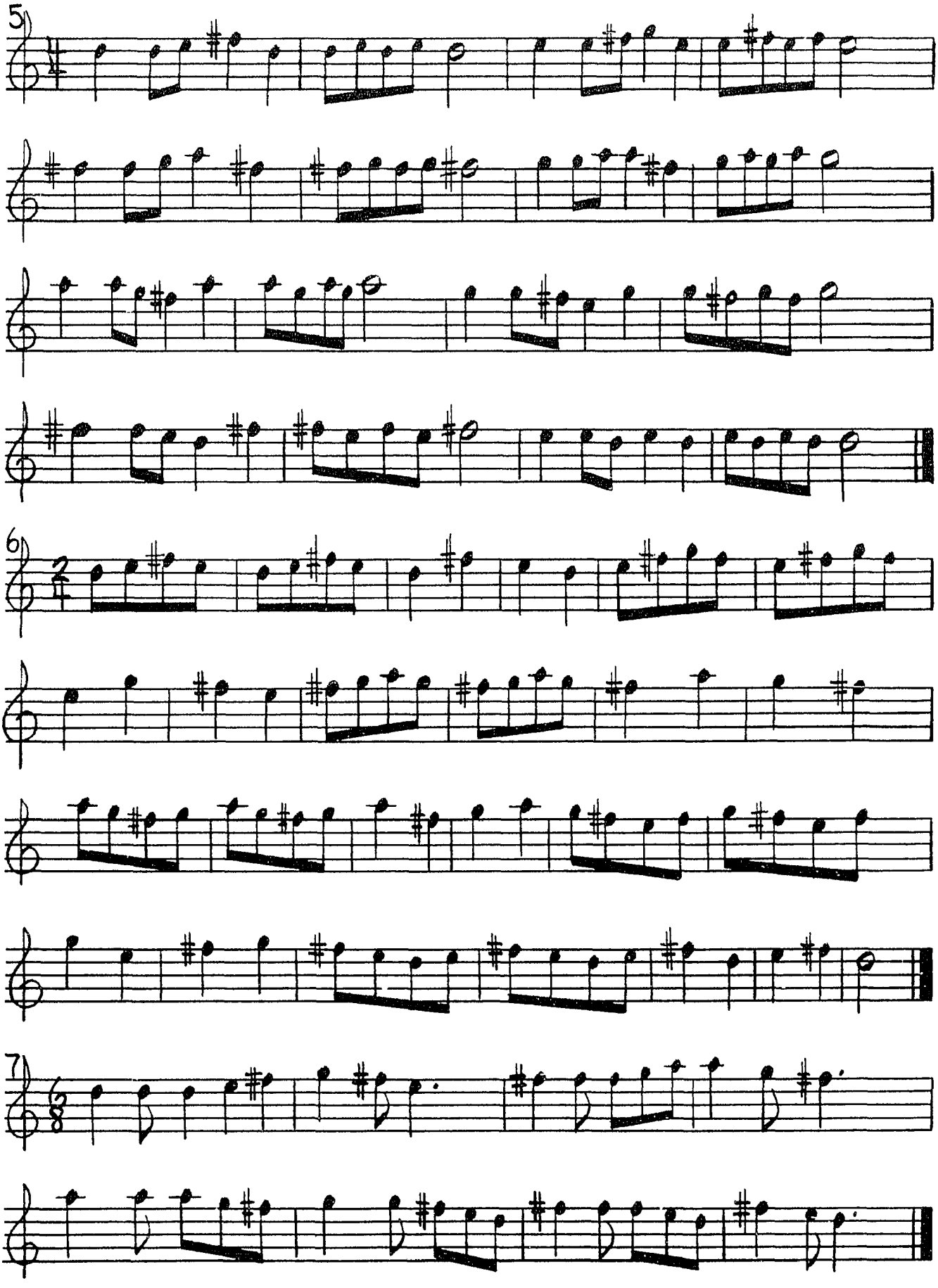
D. 8 - 5 - 6 - 4 - 8 - 6 - 5

E. 4 - 6 - 5 - 8 - 5 - 4 - 6

HARMONICS 8-9-10-11-12



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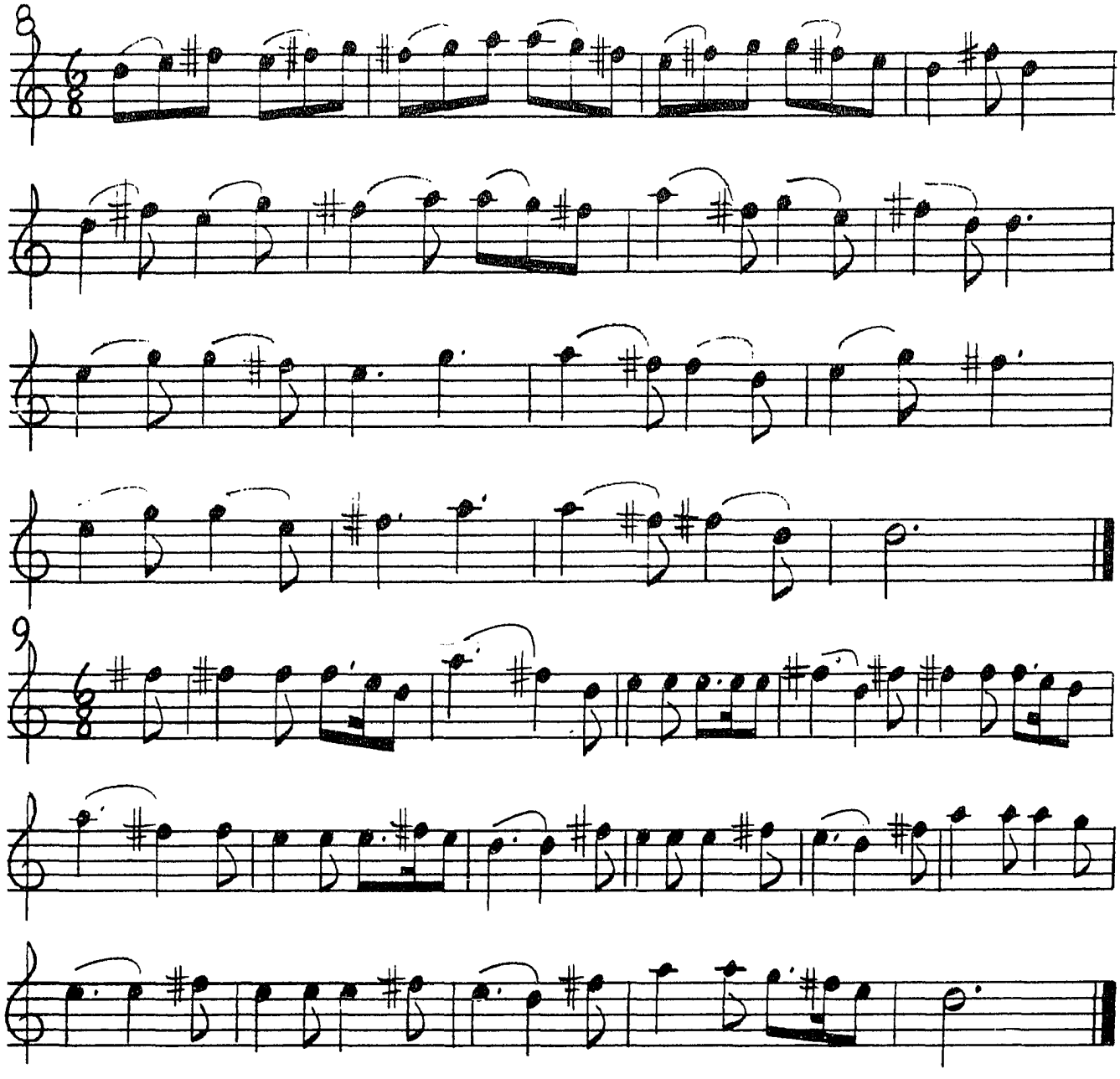


Play the tones represented by the following harmonic series numbers.

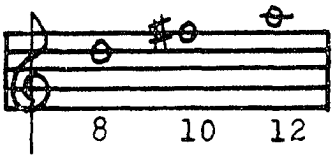
A. 8 - 10 - 9 - 11 - 10 - 12 - 11

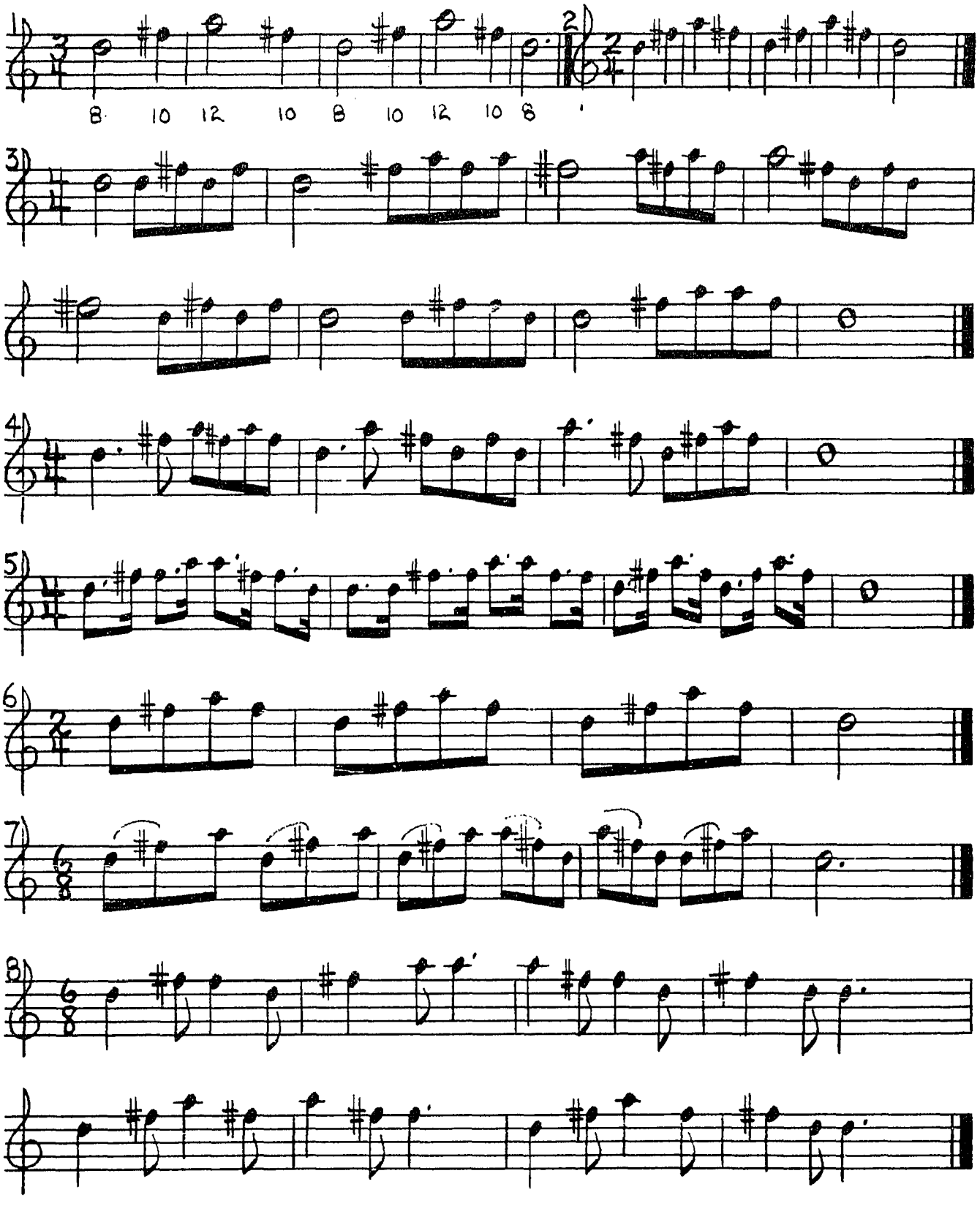
B. 10 - 11 - 12 - 10 - 8 - 9 - 10

C. 8 - 10 - 12 - 10 - 8 - 12 - 10

D. 12 - 10 - 11 - 9 - 8 - 11 - 10

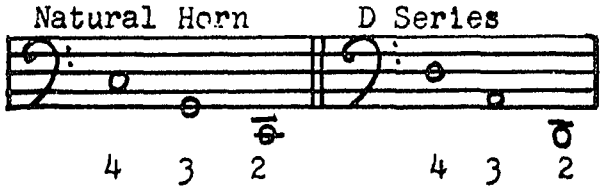
HARMONICS 8-10-12

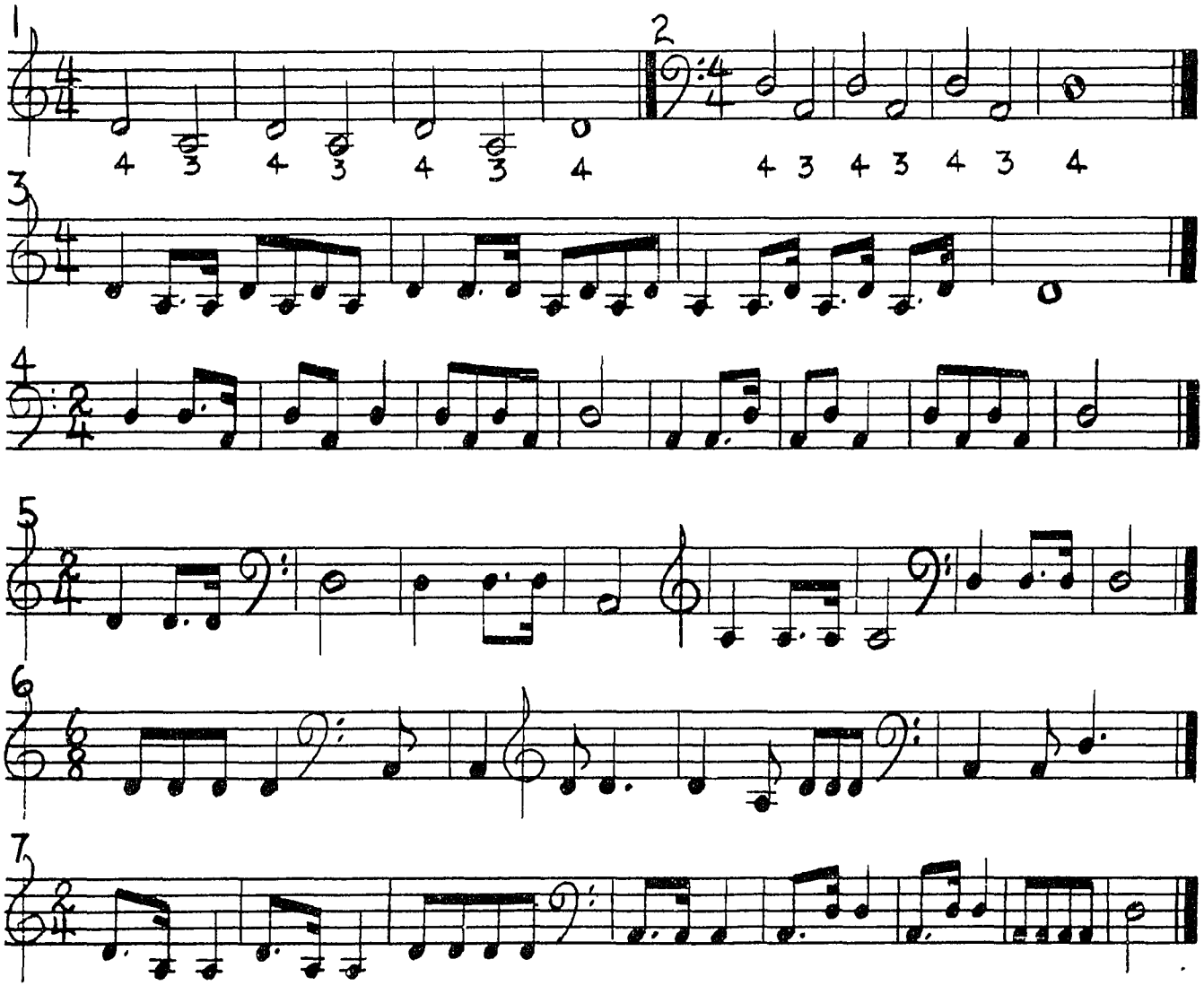


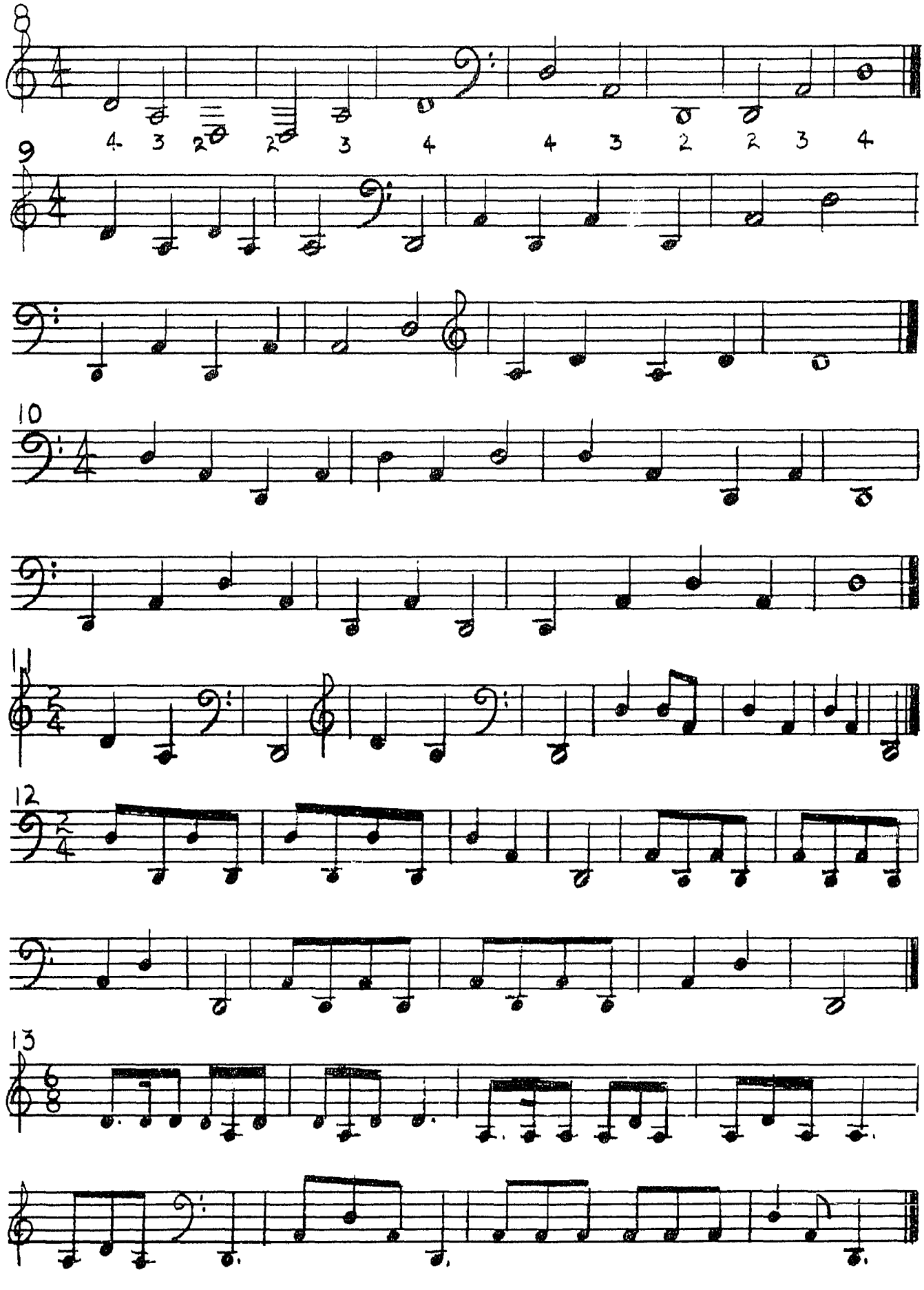


HARMONICS 2-3-4

The 2nd, 3rd, and 4th harmonics were often written in the bass clef in natural horn parts. When the notes appeared in the bass clef they were written an octave lower. The 2nd, 3rd, and 4th harmonics of the D series are written an octave lower in this method when they appear in the bass clef.






8
4 3 2 2 3 4 4 3 2 2 3 4
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12
13

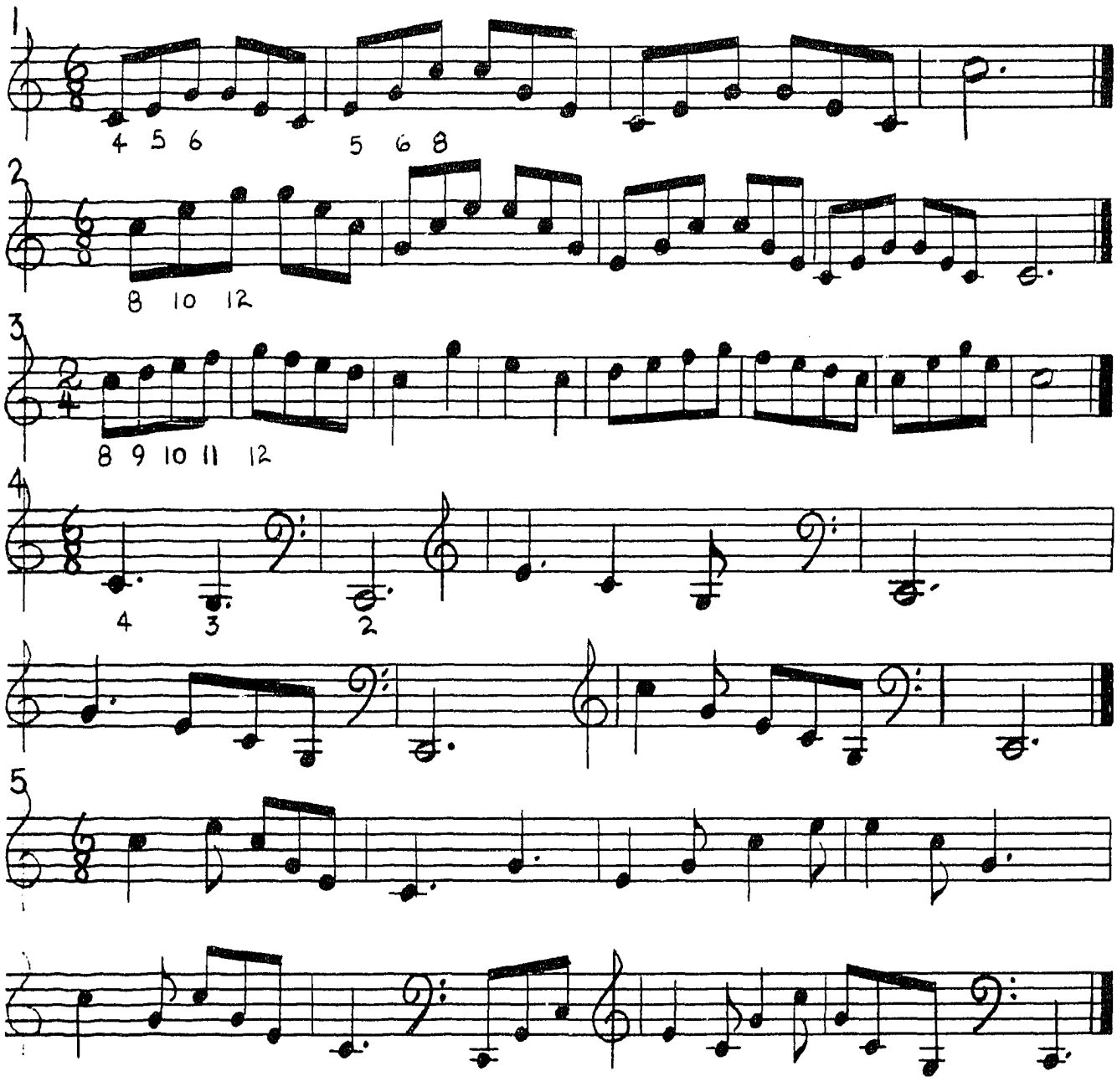
Play the tones represented by the following harmonic series numbers.

A. 3 - 4 - 2 - 4

B. 4 - 3 - 4 - 2

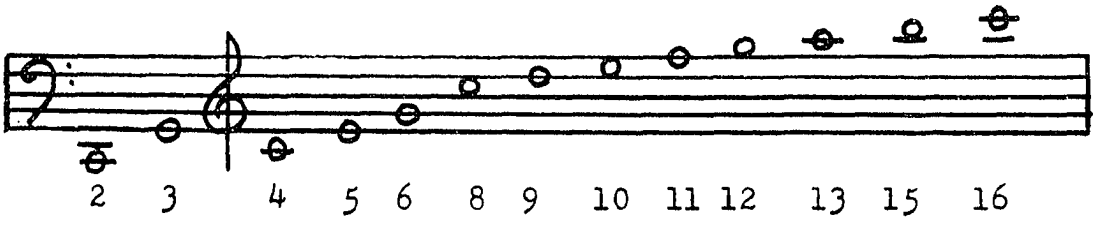
For each note in the natural horn part in G, substitute the note in the D series with the corresponding harmonic series number.

Natural Horn in G.



TRANSPOSITION TO A

The natural horn part included only the notes of the C harmonic series. The following are the notes used in natural horn parts:



The system of transposition in this method was based on the fact that composers always wrote natural horn parts using the above notes and indicated the key of the horn. With the use of various crooks, the horn produced a different harmonic series in each key. In this book, the proper harmonic series is chosen for each key and then substituted for the C series in the natural horn part.

The following steps are necessary to transpose to any key: (1) Learn the notes and the harmonic series numbers used in writing natural horn parts, (2) determine the interval to be transposed, (3) determine the harmonic series to be used in the transposition, (4) learn the notes and the numbers of the harmonic series used in the transposition,

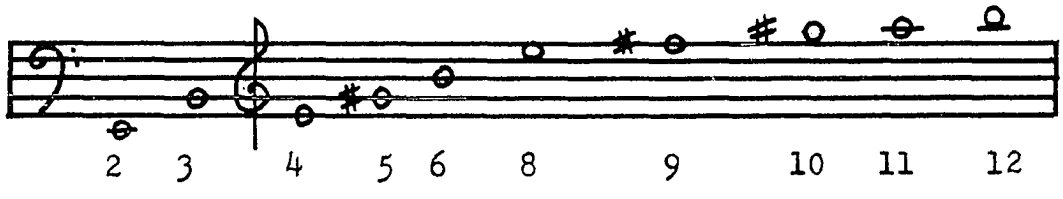
and (5) substitute the notes in that series for the C harmonic series.

STEPS IN THE A TRANSPOSITION

STEP I - Learn the notes and the harmonic series numbers used in writing natural horn parts.

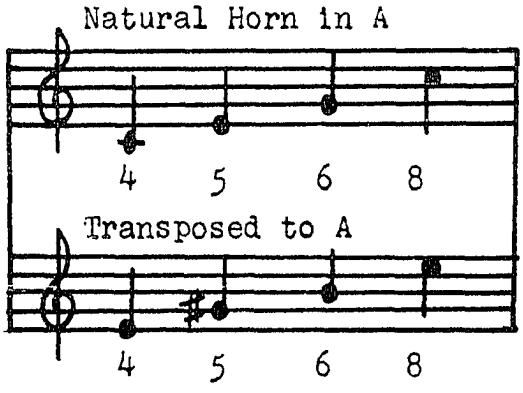
STEP II - Determine the interval between the key of F and horn in A. The interval is two whole-steps up.

STEP III - Determine the harmonic series used in horn in A. Each note of the C harmonic series used in writing the natural horn part must be raised two whole-steps. The result of raising each note of the C series two whole-steps is the E harmonic series. The following are the notes used in the E harmonic series:



STEP IV - Learn the notes and the harmonic series numbers of the E series.

STEP V - Substitute the E harmonic series for the C harmonic series. For each note in the C series, substitute the note with the corresponding number in the E series.



LESSON PLAN FOR A TRANSPOSITION

1. C Harmonic Series Studies
   Section I - Page 55

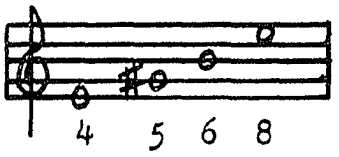
2. E Harmonic Series Studies
   Section II - Page 149

3. Natural Horn Studies
   Section III - Page 169

4. Orchestral Excerpts
   Section IV - Page 184

E HARMONIC SERIES STUDIES

HARMONICS 4-5-6-8



1
4 5 6 5 4 5 6 5 4

2
6 5 4 5 6 5 4 5 6

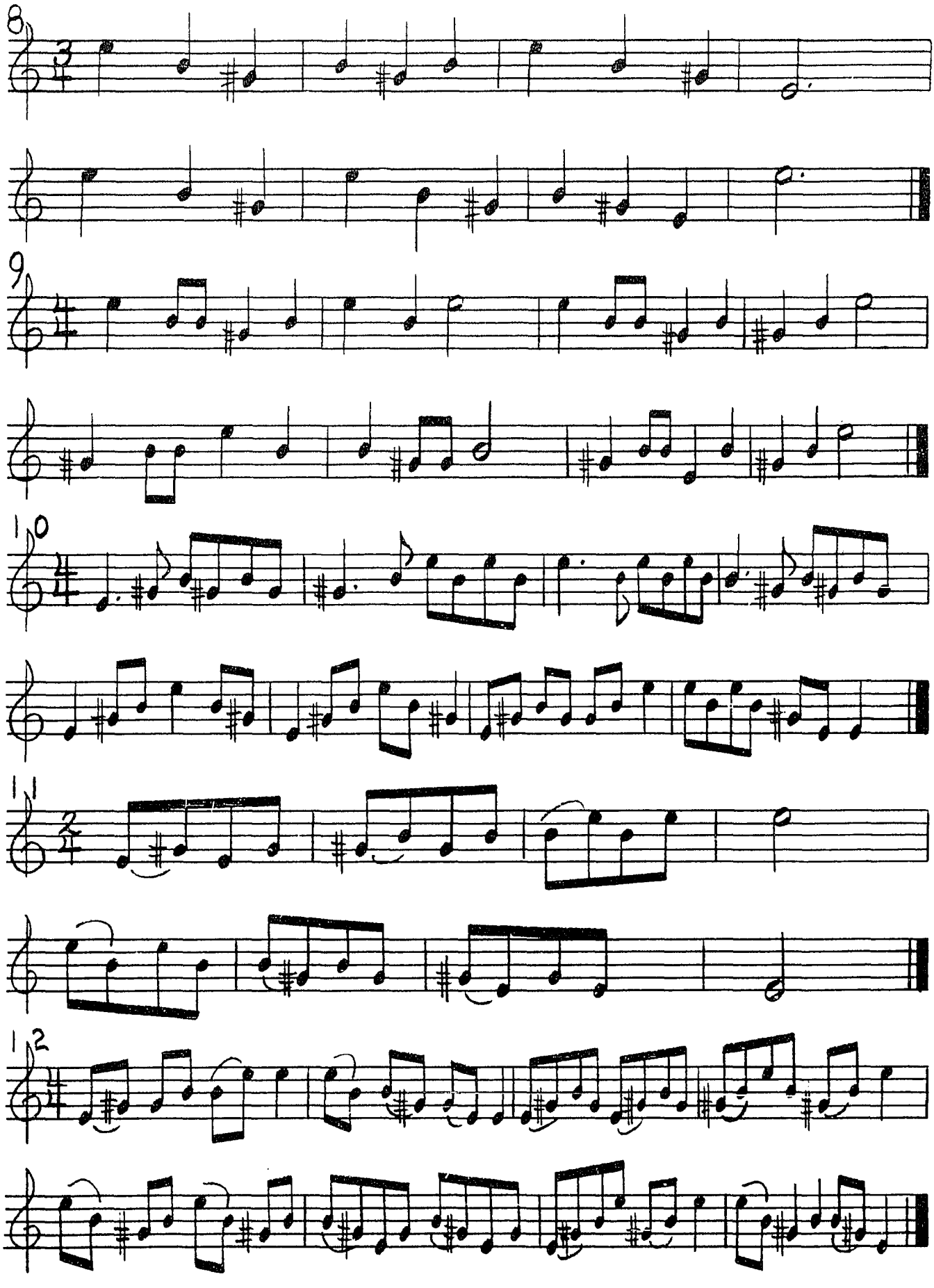
3

4

5
4 5 6 5 6 8 8 6 5 6 5 4

6

7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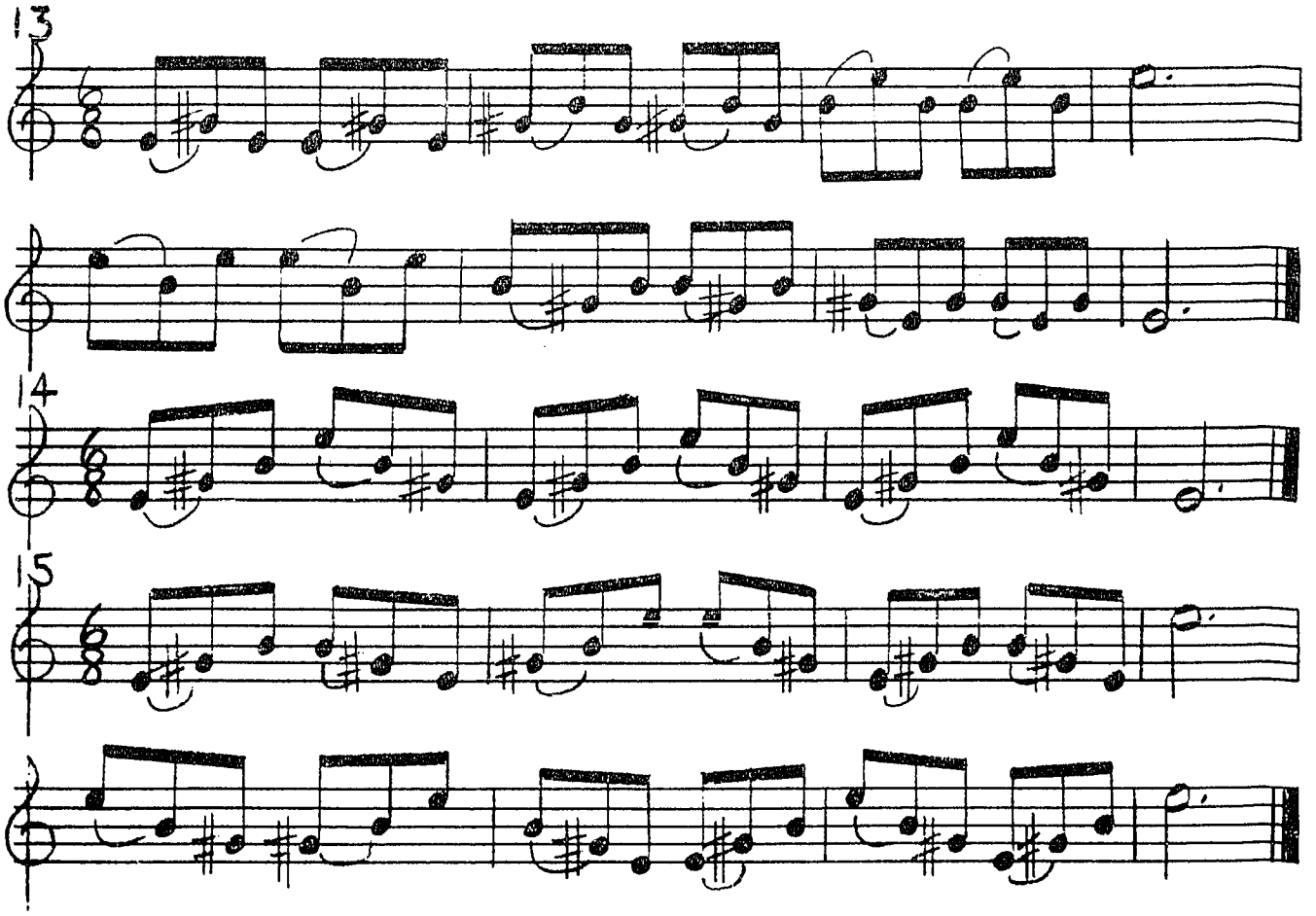


Play the tones represented by the following harmonic series numbers.

A. 4 - 5 - 6 - 8 - 6 - 5 - 4

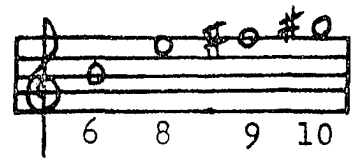
B. 8 - 4 - 6 - 5 - 8 - 6 - 4

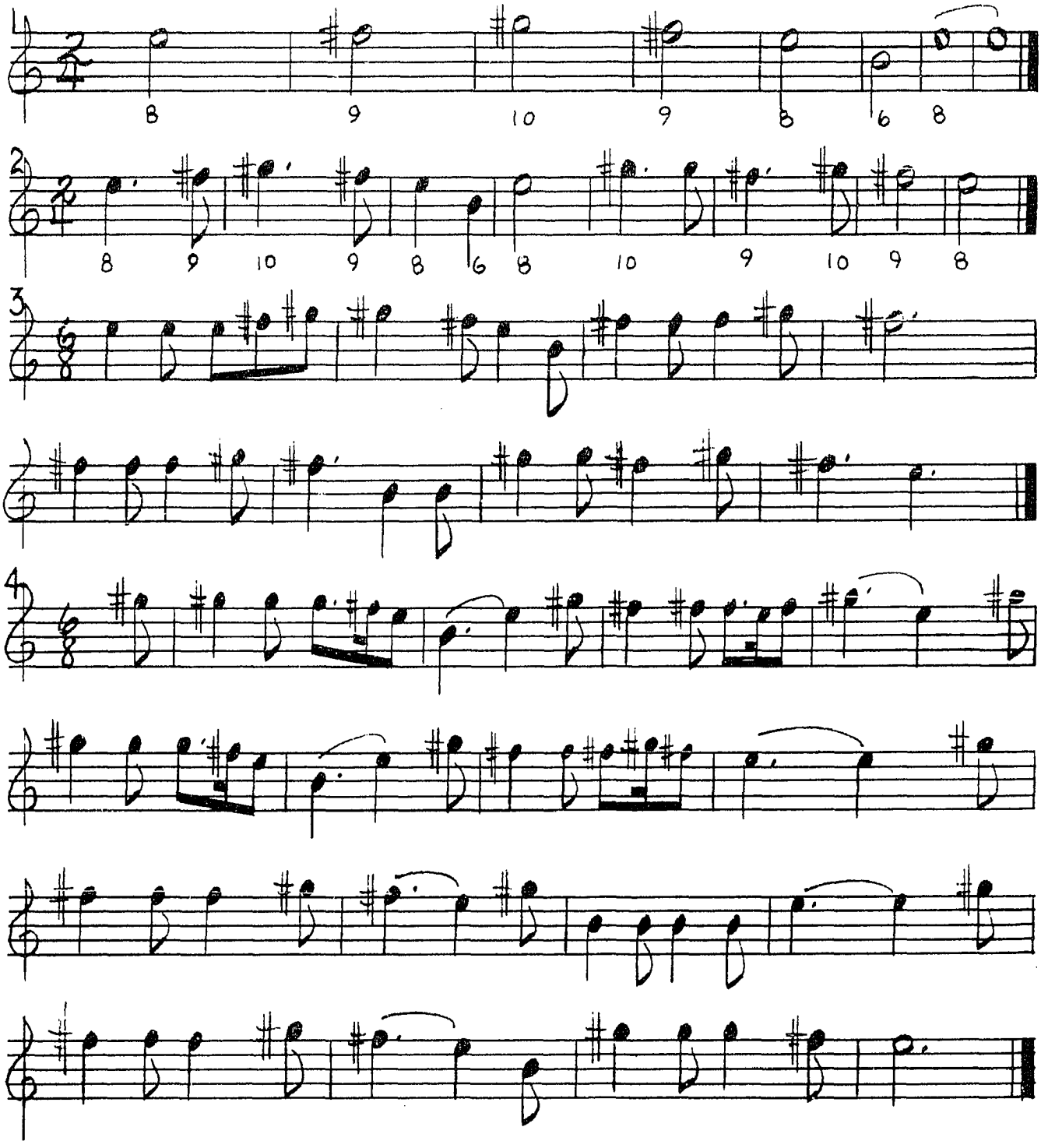
C. 6 - 5 - 4 - 8 - 5 - 6 - 8

D. 8 - 5 - 6 - 4 - 8 - 6 - 5

E. 4 - 6 - 5 - 8 - 5 - 4 - 6

HARMONICS 6-8-9-10



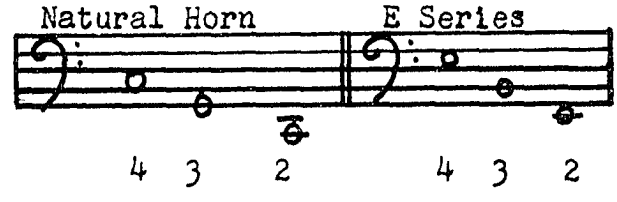


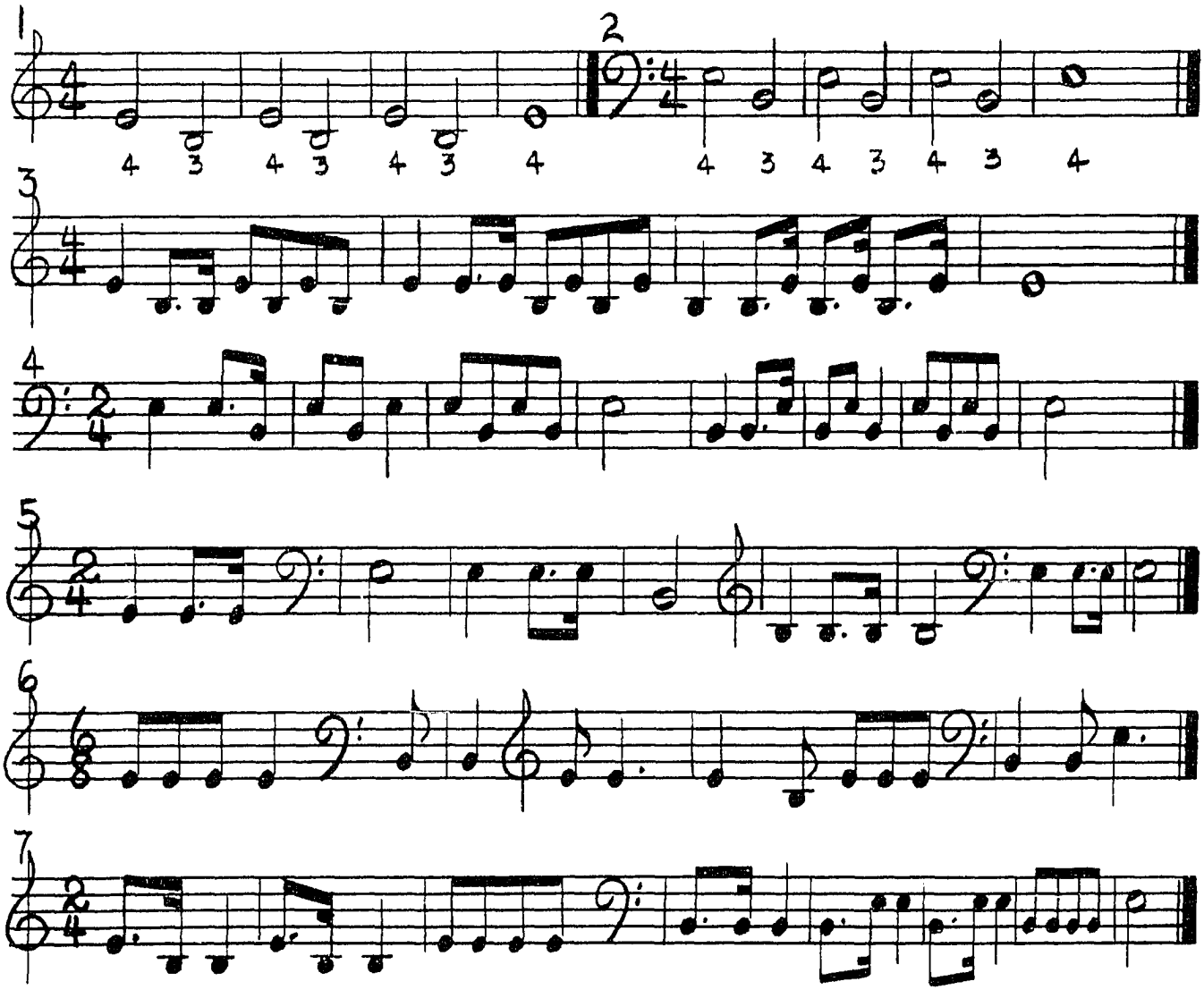
Play the tones represented by the following harmonic series numbers.

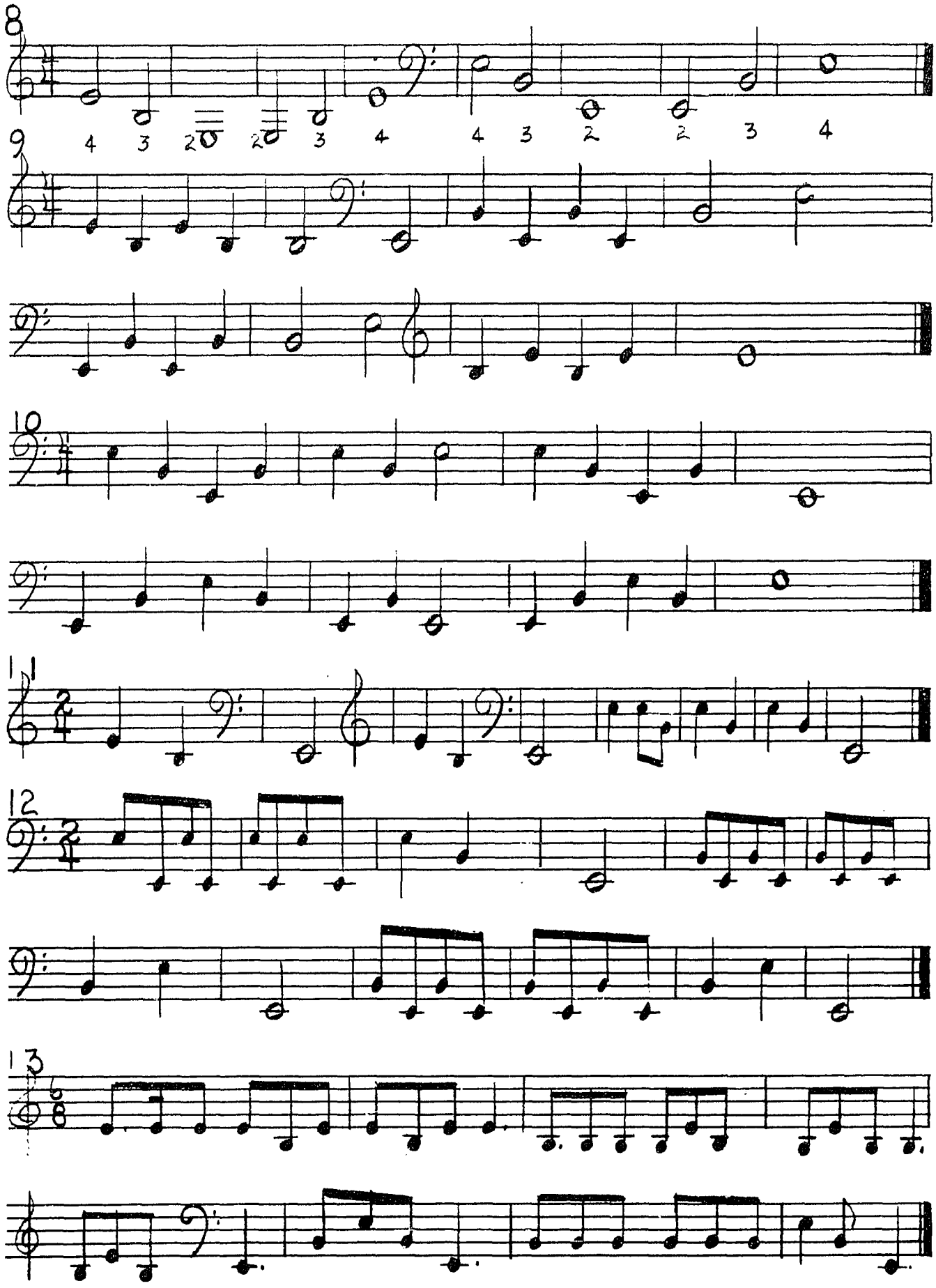
A. 6 - 8 - 9 - 10

HARMONICS 2-3-4

The 2nd, 3rd, and 4th harmonics were often written in the bass clef in natural horn parts. When the notes appeared in the bass clef they were written an octave lower. The 2nd, 3rd, and 4th harmonics of the E series are written an octave lower in this method when they appear in the bass clef.






8
9
4 3 2 2 3 4 4 3 2 2 3 4
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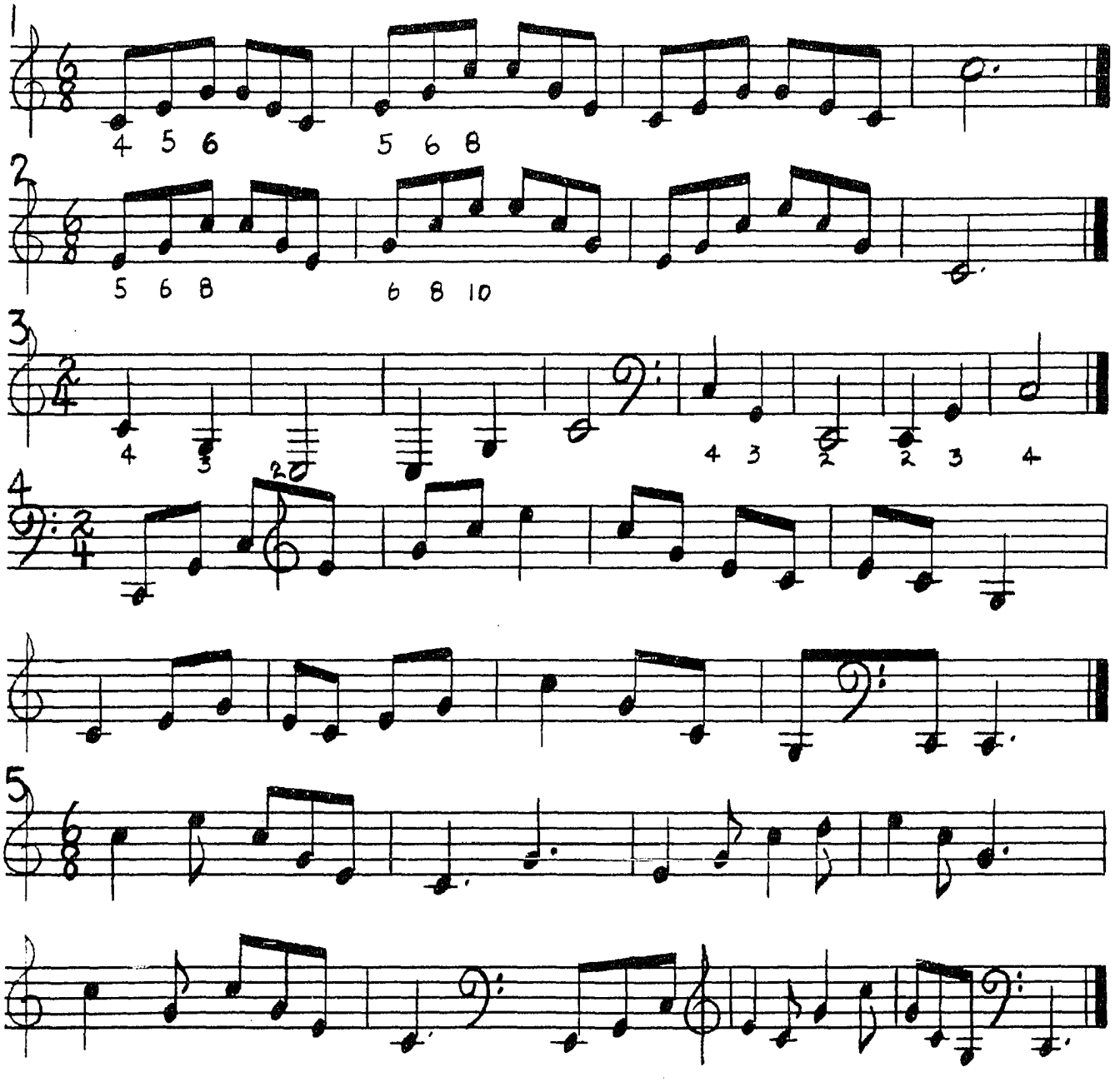
Play the tones represented by the following harmonic series numbers.

A. 3 - 4 - 2 - 4

B. 4 - 3 - 4 - 2

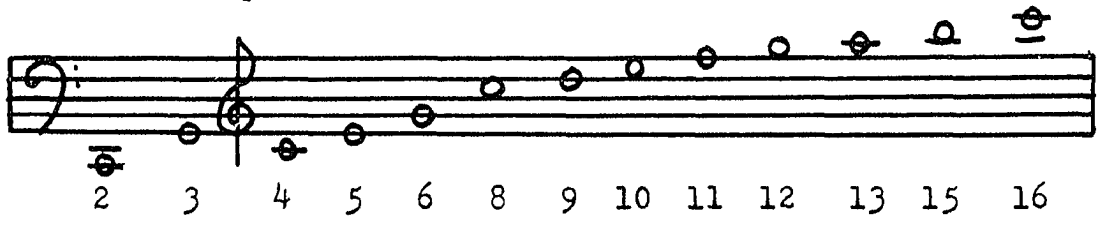
For each note in the natural horn part in A, substitute the note in the E series with the corresponding harmonic series number.

Natural Horn in A



TRANSPOSITION TO B FLAT ALTO

The natural horn part included only the notes of the C harmonic series. The following are the notes used in natural horn parts:



The system of transposition in this method was based on the fact that composers always wrote natural horn parts using the above notes and indicated the key of the horn. With the use of various crooks, the horn produced a different harmonic series in each key. In this book, the proper harmonic series is chosen for each key and then substituted for the C series in the natural horn part.

The following steps are necessary to transpose to any key: (1) Learn the notes and the harmonic series numbers used in writing natural horn parts, (2) determine the interval to be transposed, (3) determine the harmonic series to be used in the transposition, (4) learn the notes and the numbers of the harmonic series used in the transposition,

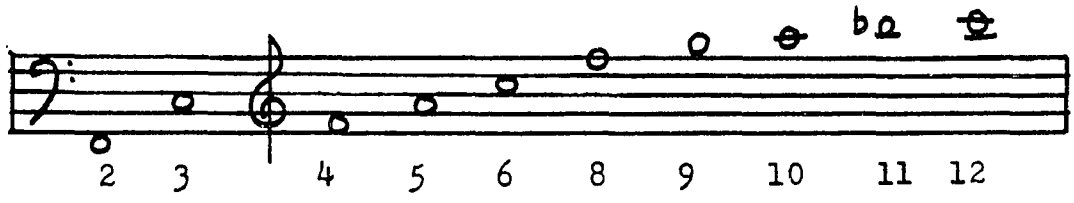
and (5) substitute the notes in that series for the C harmonic series.

STEPS IN THE B FLAT ALTO TRANSPOSITION

STEP I - Learn the notes and the harmonic series numbers used in writing natural horn parts.

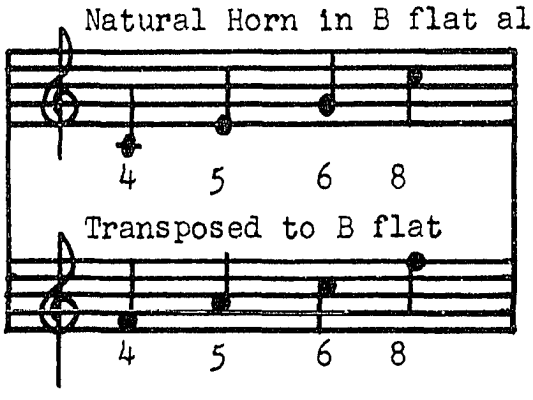
STEP II - Determine the interval between the key of F and horn in B flat alto. The interval is two and one half steps up.

STEP III - Determine the harmonic series used in horn in B flat alto. Each note of the C harmonic series used in writing the natural horn part must be raised two and one half steps. The result of raising each note of the C series two and one half steps is the F harmonic series. The following are the notes used in the F harmonic series:



STEP IV - Lean the notes and the harmonic series numbers of the F series.

STEP V - Substitute the F harmonic series for the C harmonic series. For each note in the C series, substitute the note with the corresponding number in the F series.



LESSON PLAN FOR B FLAT ALTO TRANSPOSITION

1. C Harmonic Series Studies

   Section I - Page 55

2. F Harmonic Series Studies

   Section II - Page 159

3. Natural Horn Studies

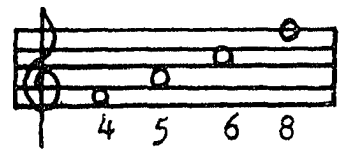
   Section III - Page 169

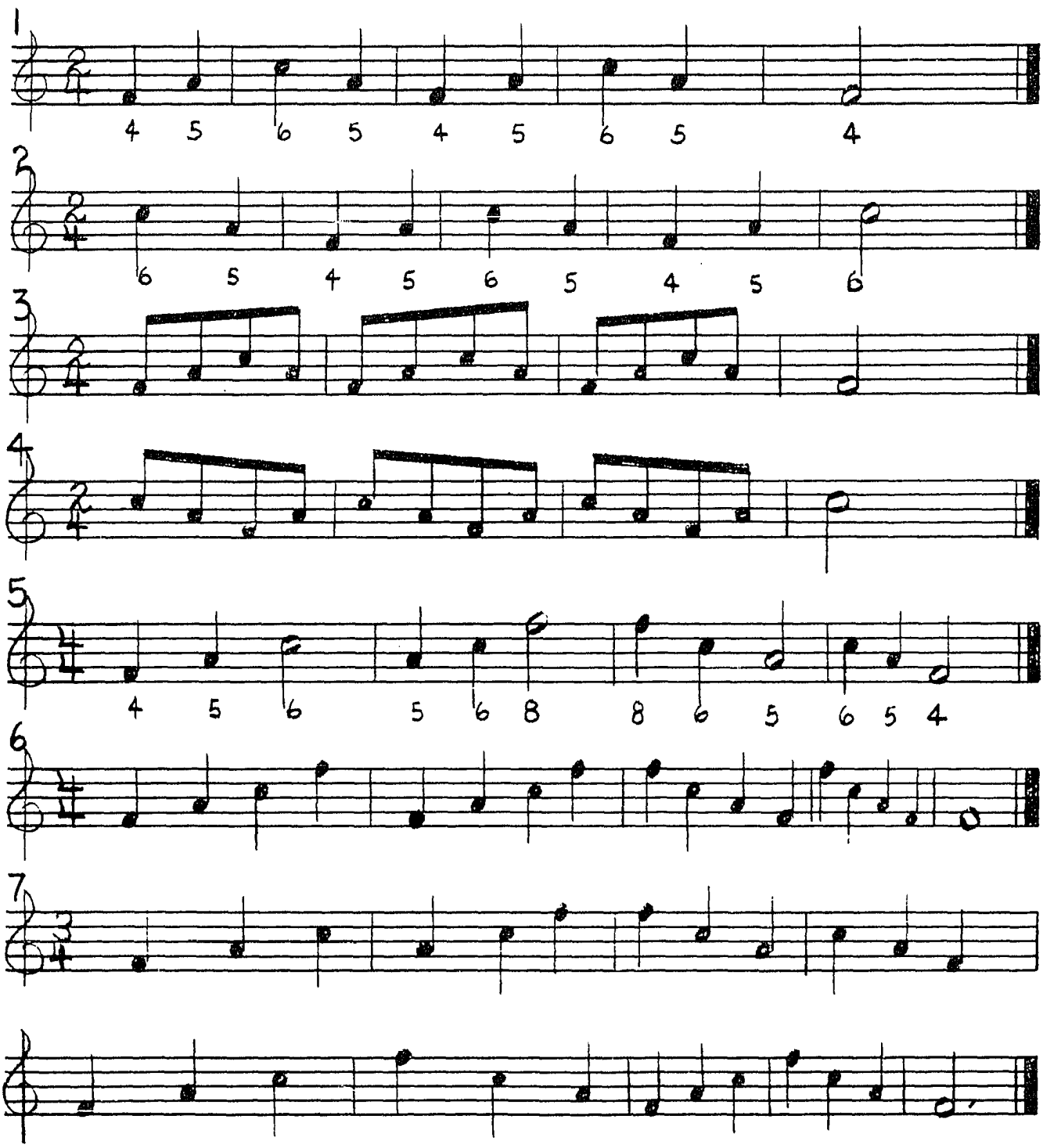
4. Orchestral Excerpts

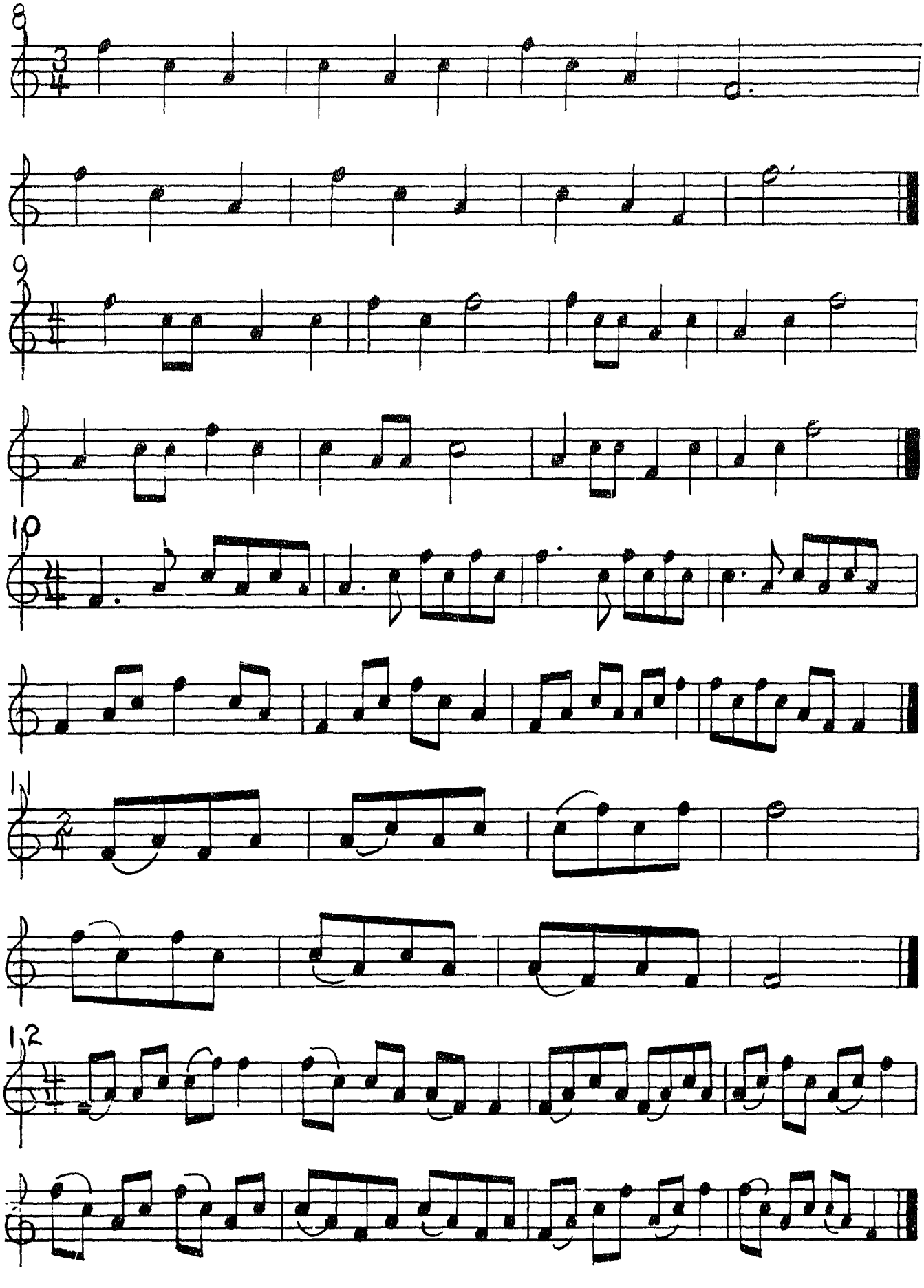
   Section IV - Page 184

F HARMONIC SERIES STUDIES

HARMONICS 4-5-6-8



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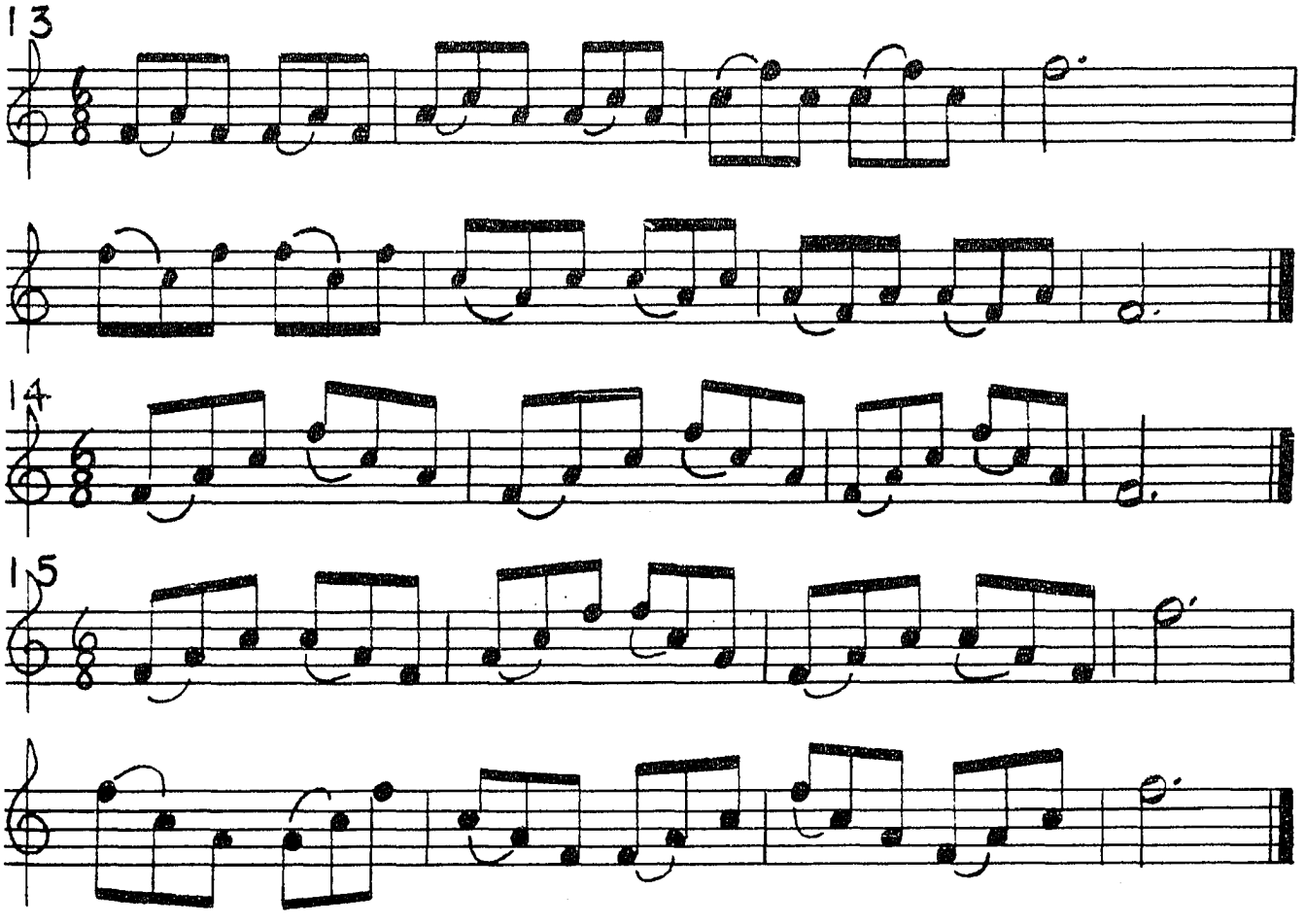


Play the tones represented by the following harmonic series numbers.

A. 4 - 5 - 6 - 8 - 6 - 5 - 4

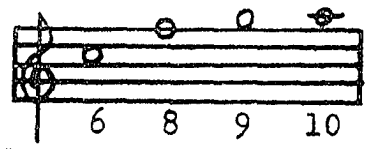
B. 8 - 4 - 6 - 5 - 8 - 6 - 4

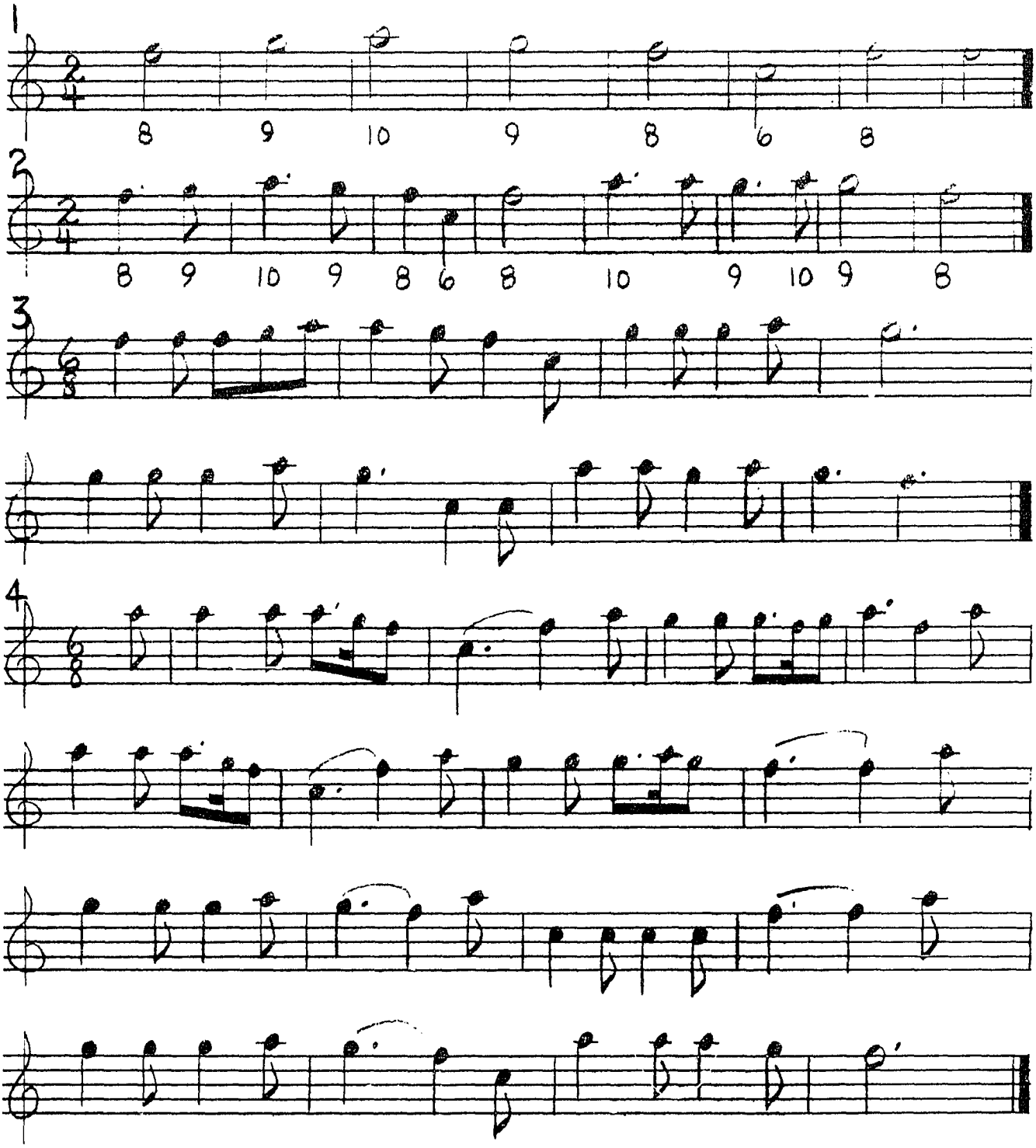
C. 6 - 5 - 4 - 8 - 5 - 6 - 8

D. 8 - 5 - 6 - 4 - 8 - 6 - 5

E. 4 - 6 - 5 - 8 - 5 - 4 - 6

HARMONICS 6-8-9-10



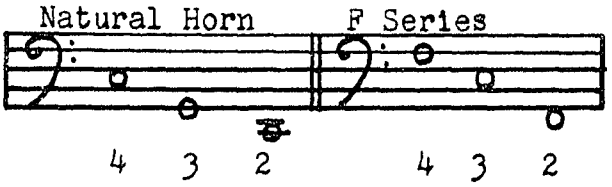


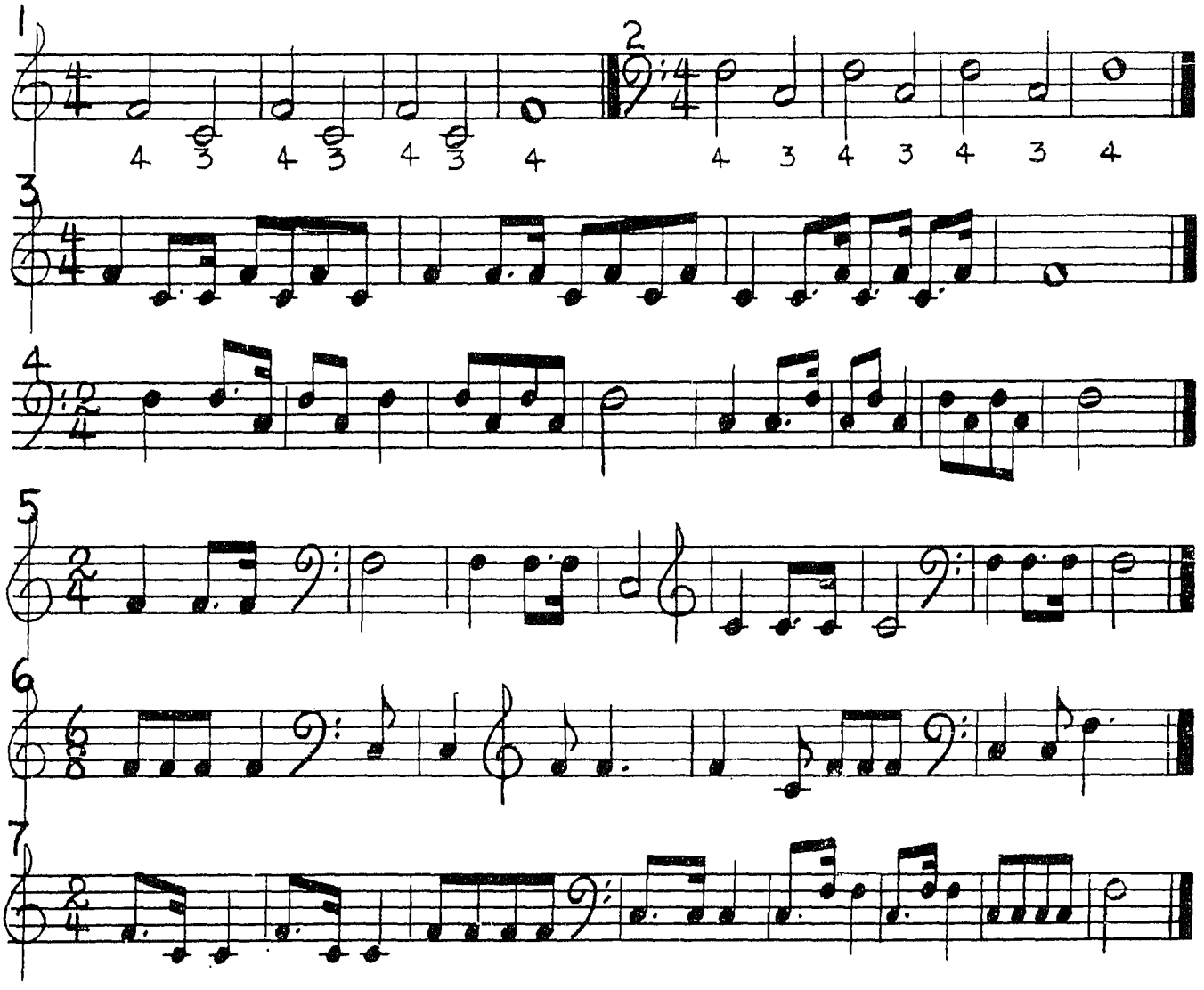
Play the tones represented by the following harmonic series numbers.

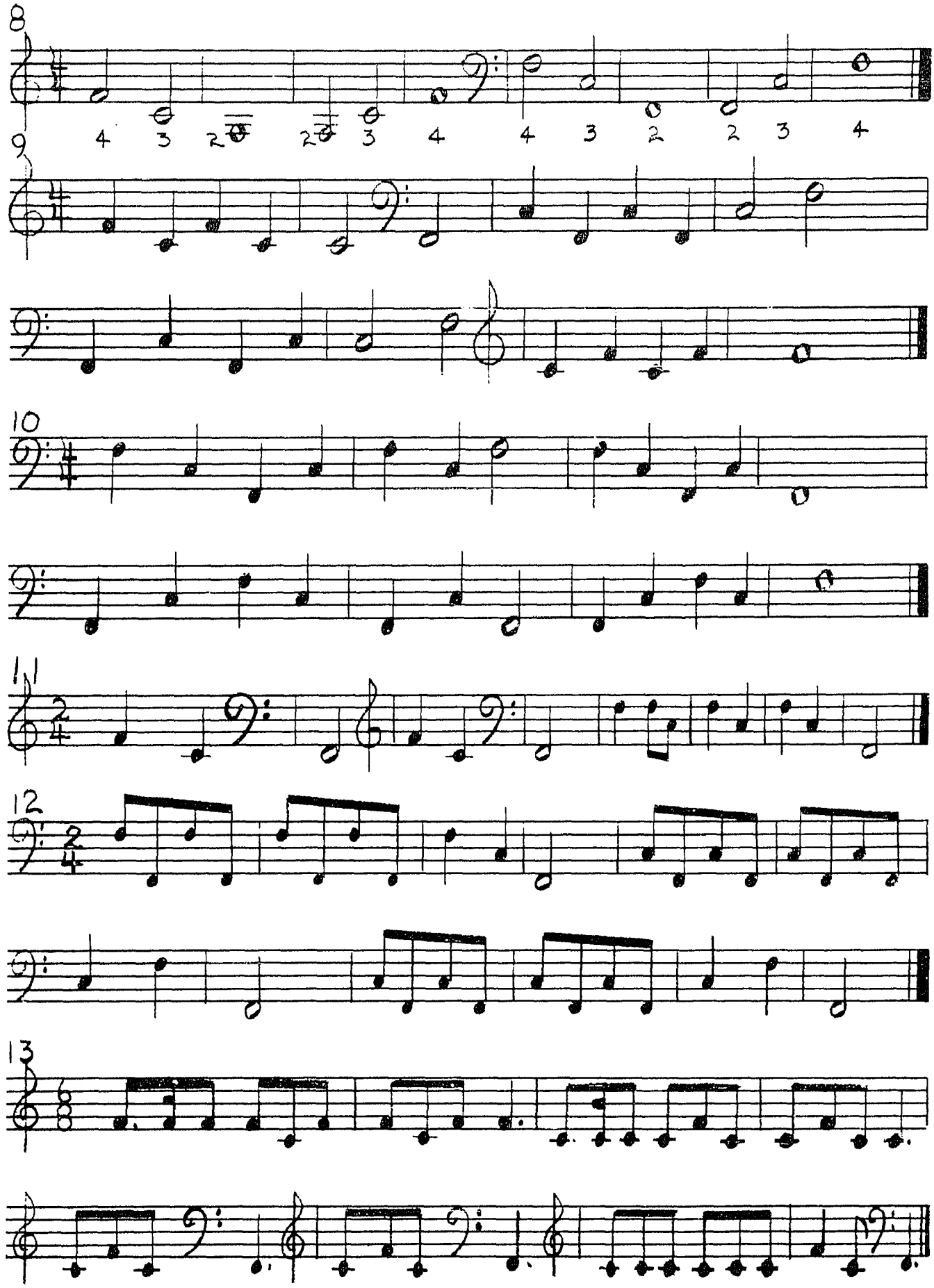
A. 6 - 8 - 9 - 10

HARMONICS 2-3-4

The 2nd, 3rd, and 4th harmonics were often written in the bass clef in natural horn parts. When the notes appeared in the bass clef they were written an octave lower. The 2nd, 3rd, and 4th harmonics of the F series are written an octave lower in this method when they appear in the bass clef.






8
4 3 2 2 3 4 4 3 2 2 3 4
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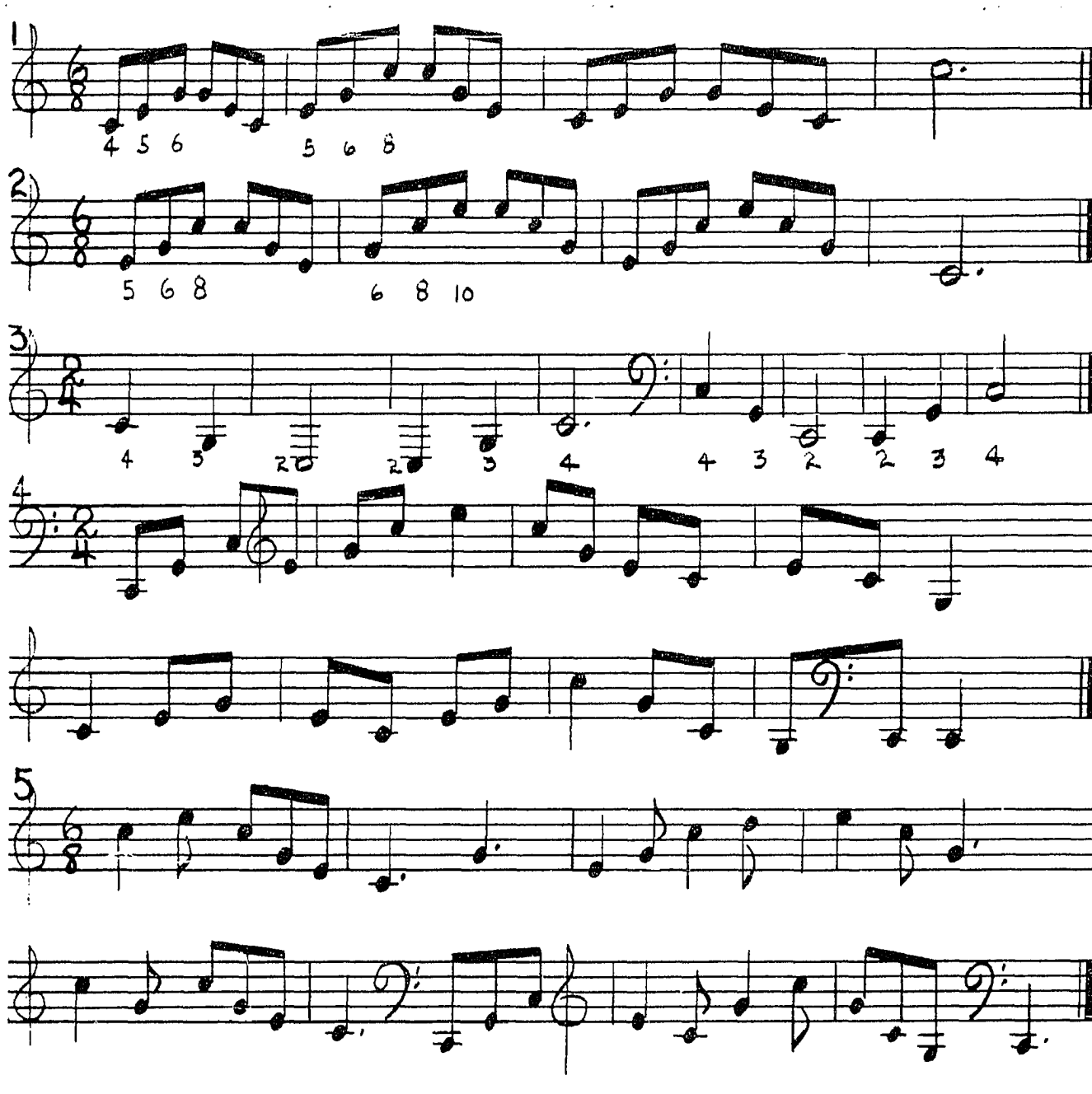
Play the tones represented by the following harmonic series numbers.

A. 3 - 4 - 2 - 4

B. 4 - 3 - 4 - 2

For each note in the natural horn part in Bb alto, substitute the note in the F series with the corresponding harmonic series number.

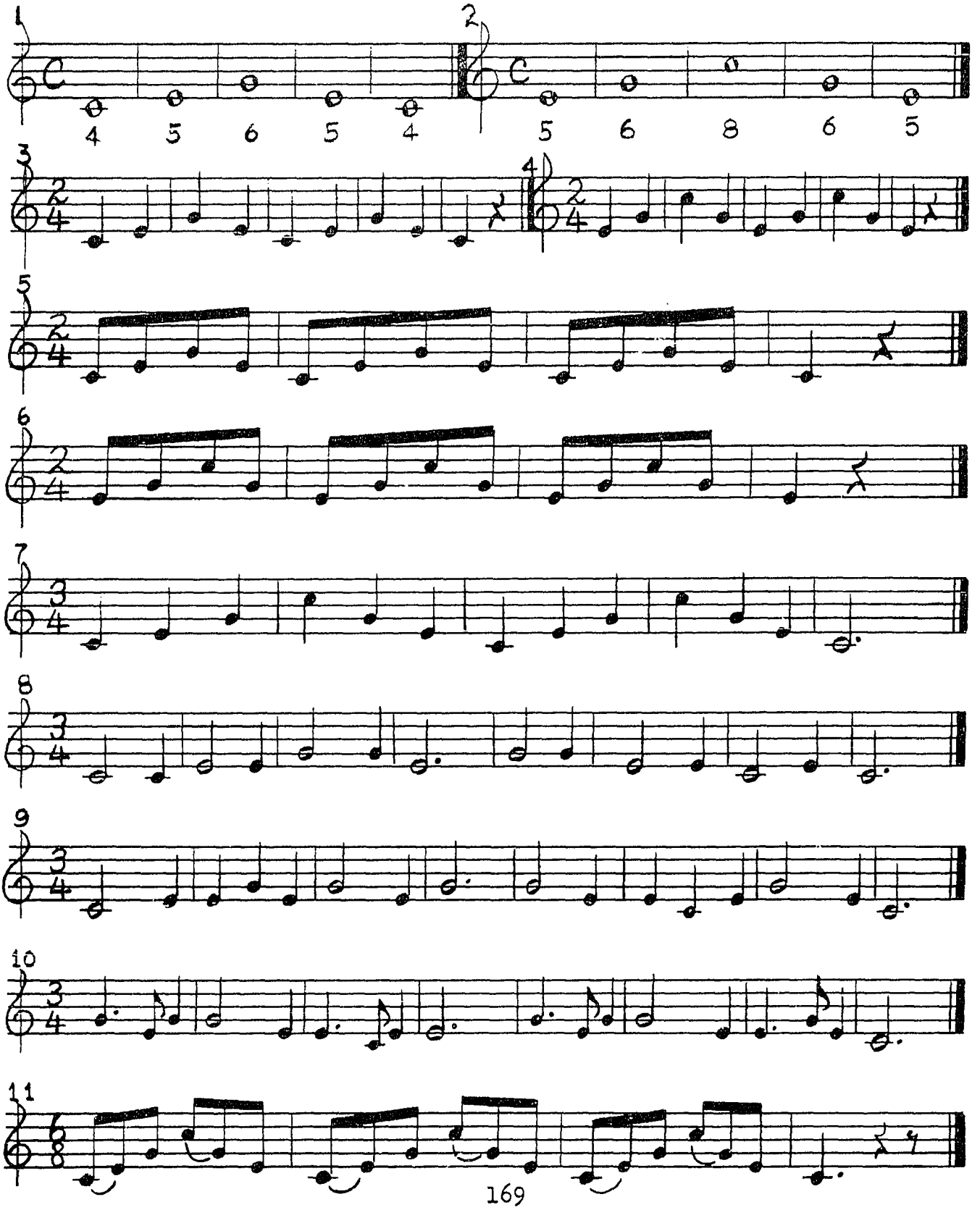
Natural Horn in Bb Alto

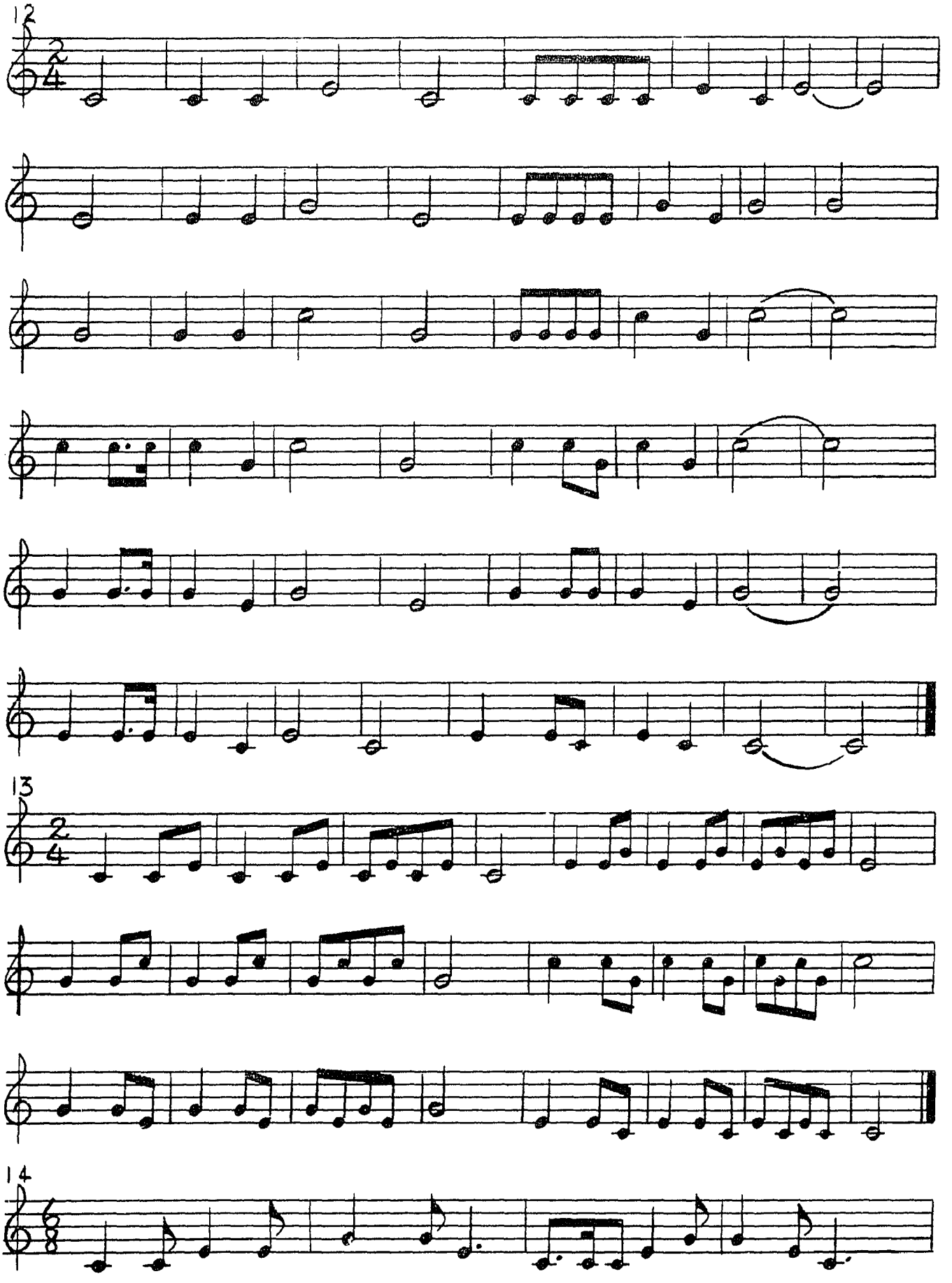


SECTION III

STUDIES IN ALL KEYS

HARMONICS 4-5-6-8

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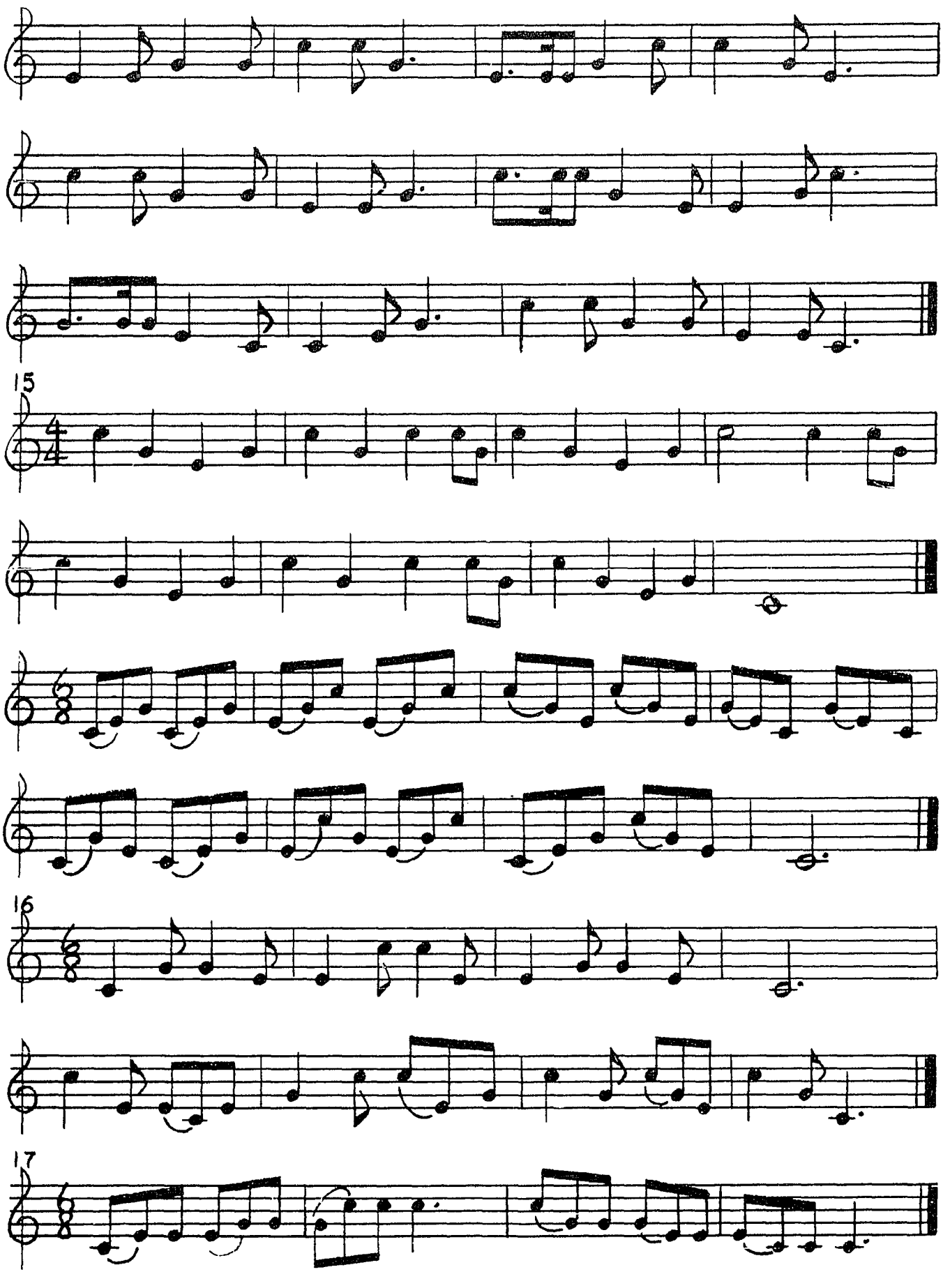
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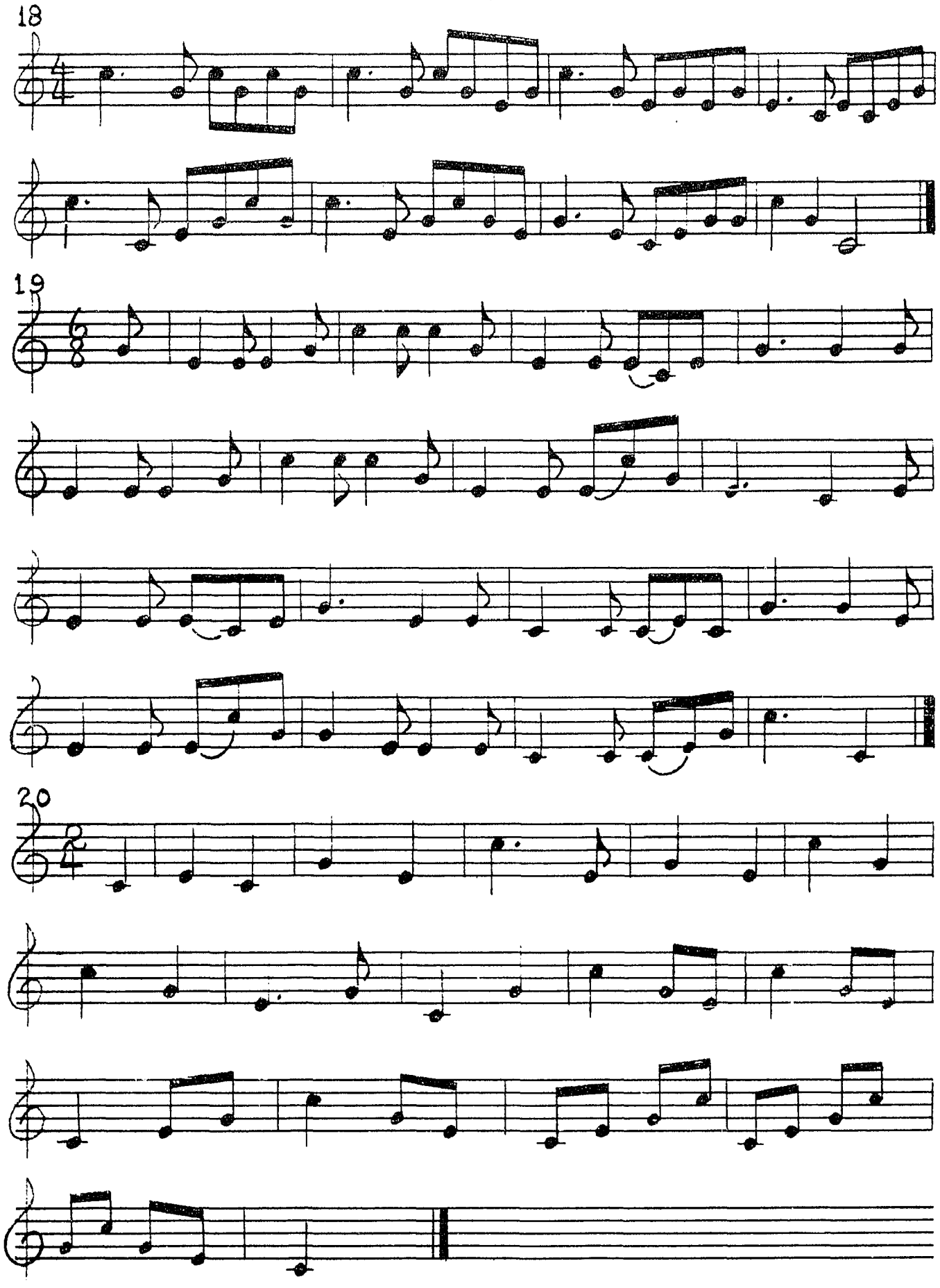
17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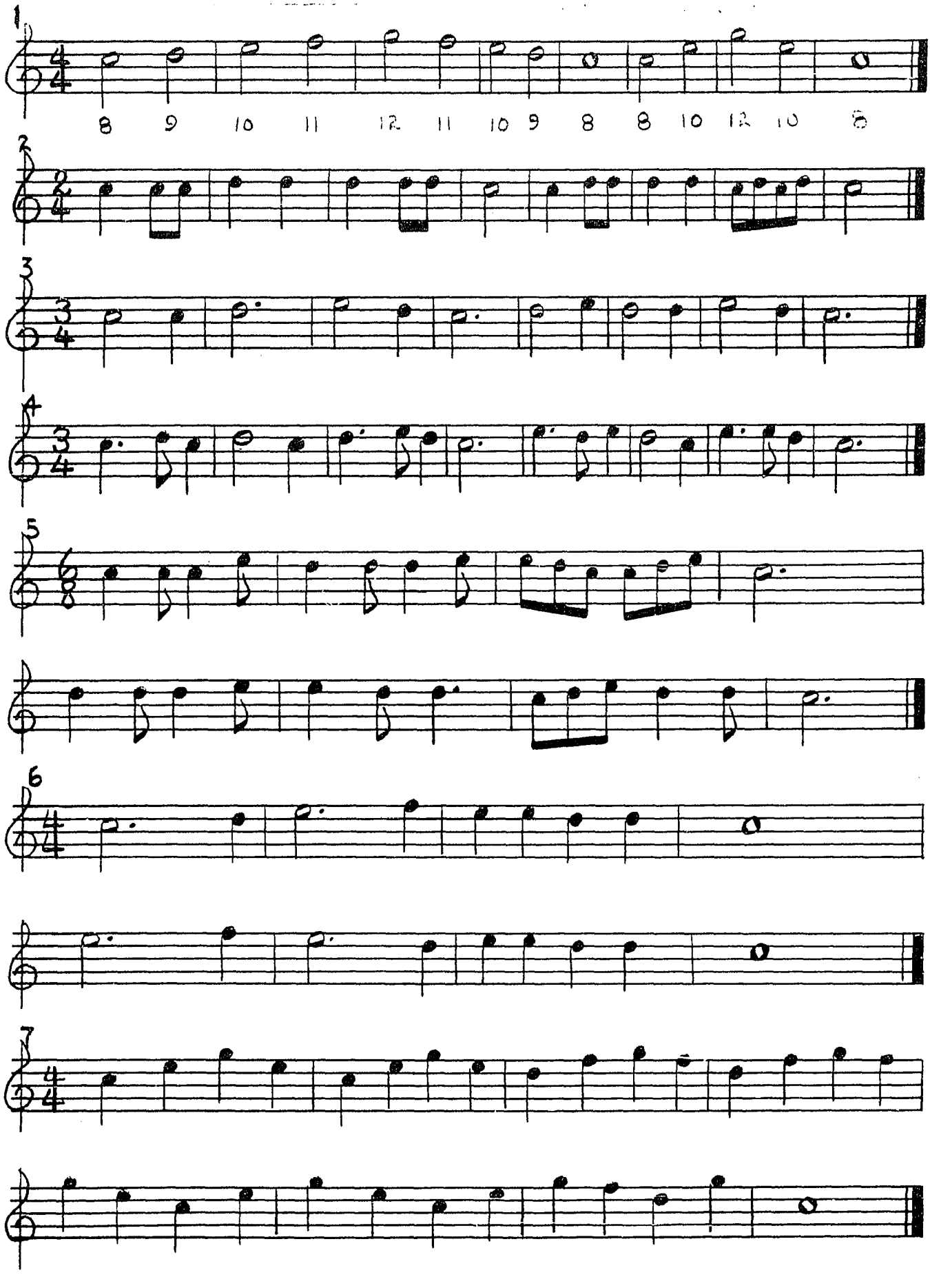
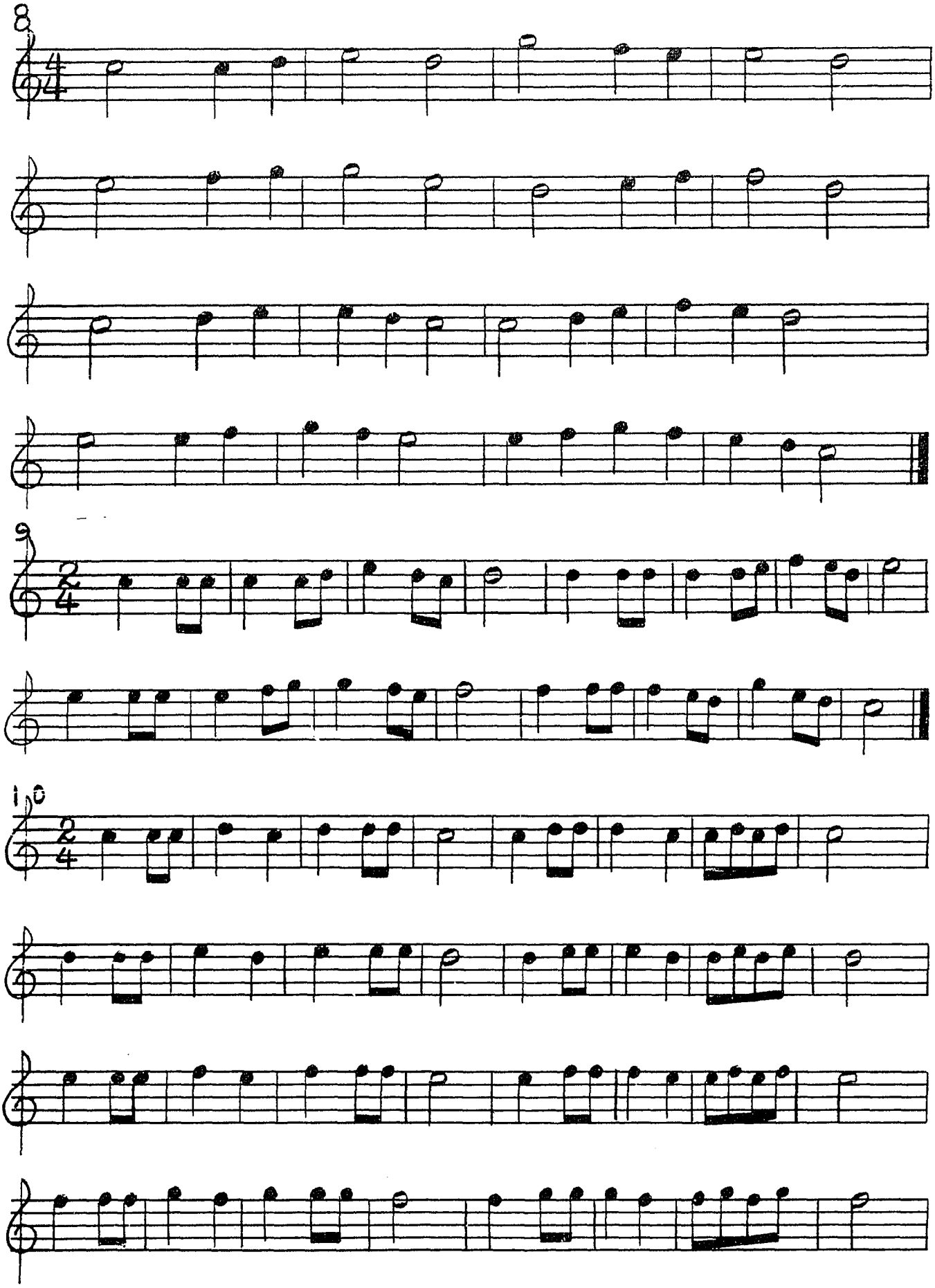
HARMONICS 8-9-10-11-12

Omit these studies in the keys of A and Bb alto.

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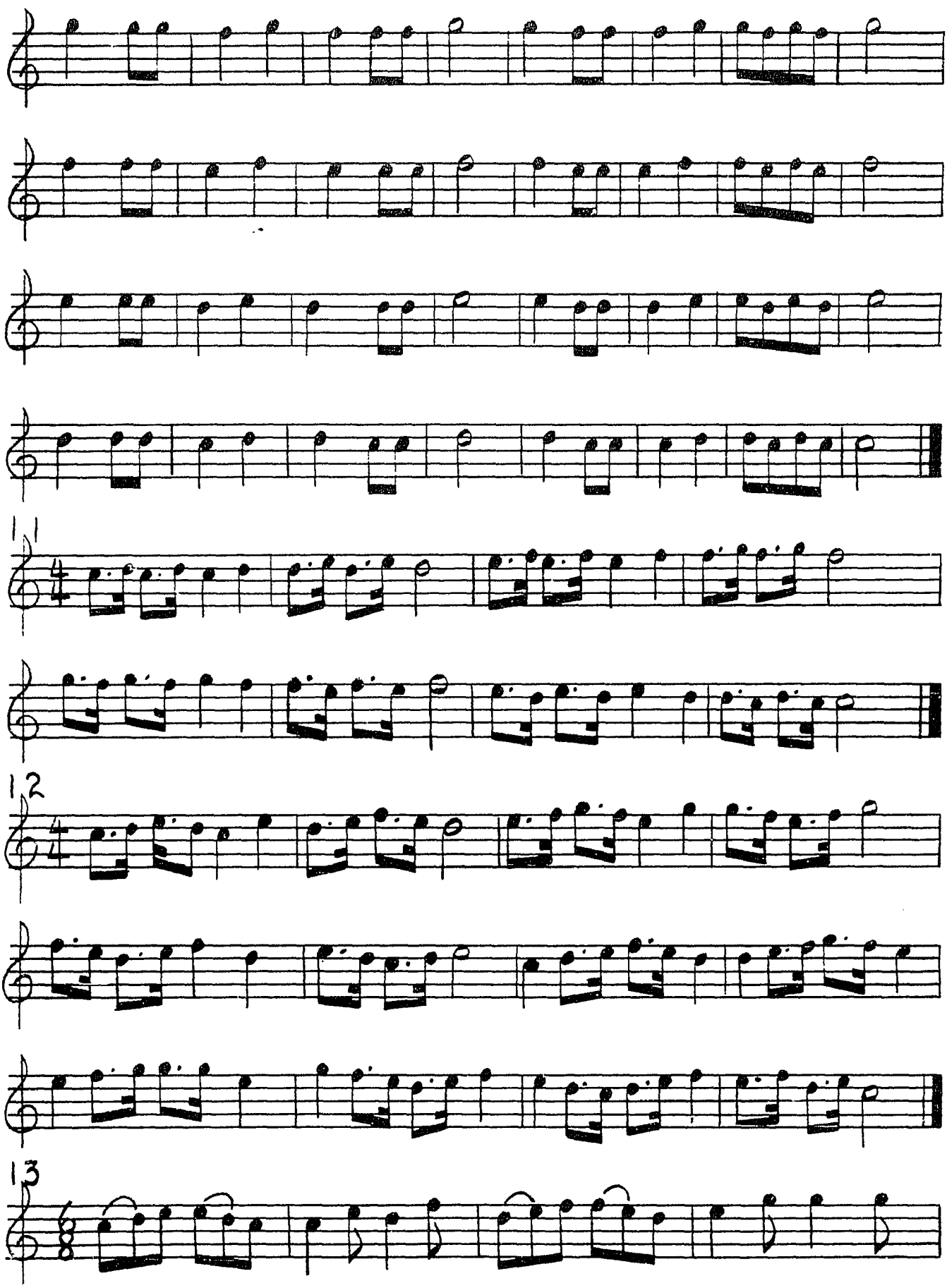
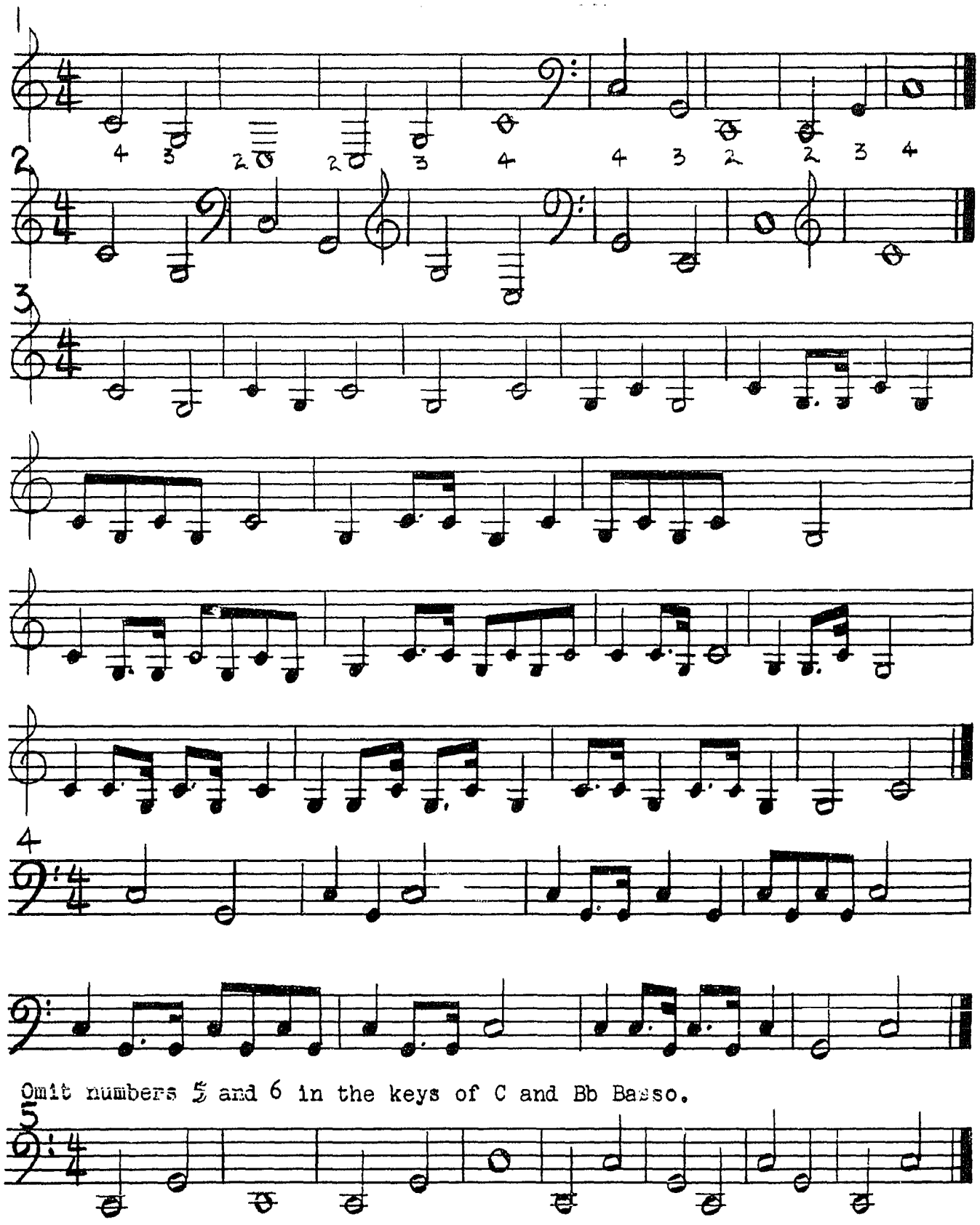
10

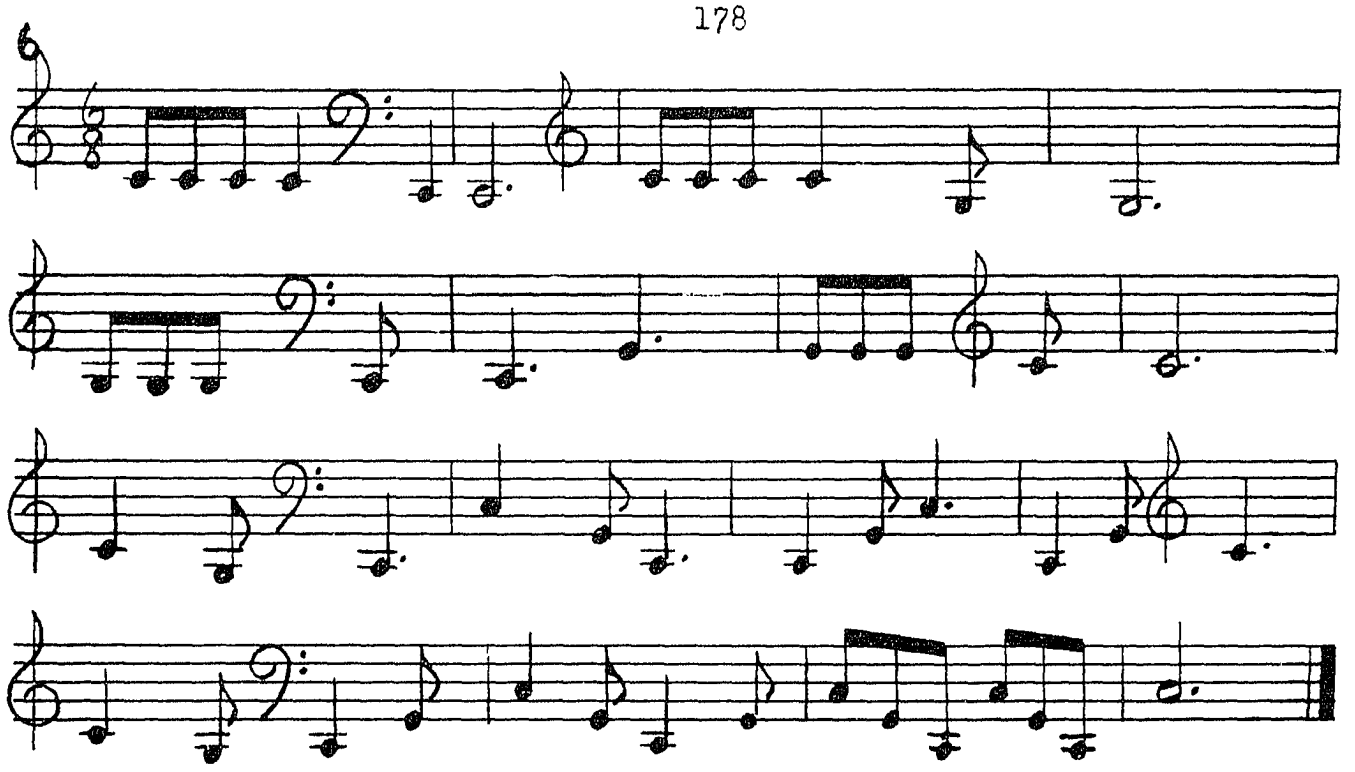

1.1
1.2
13

14
15

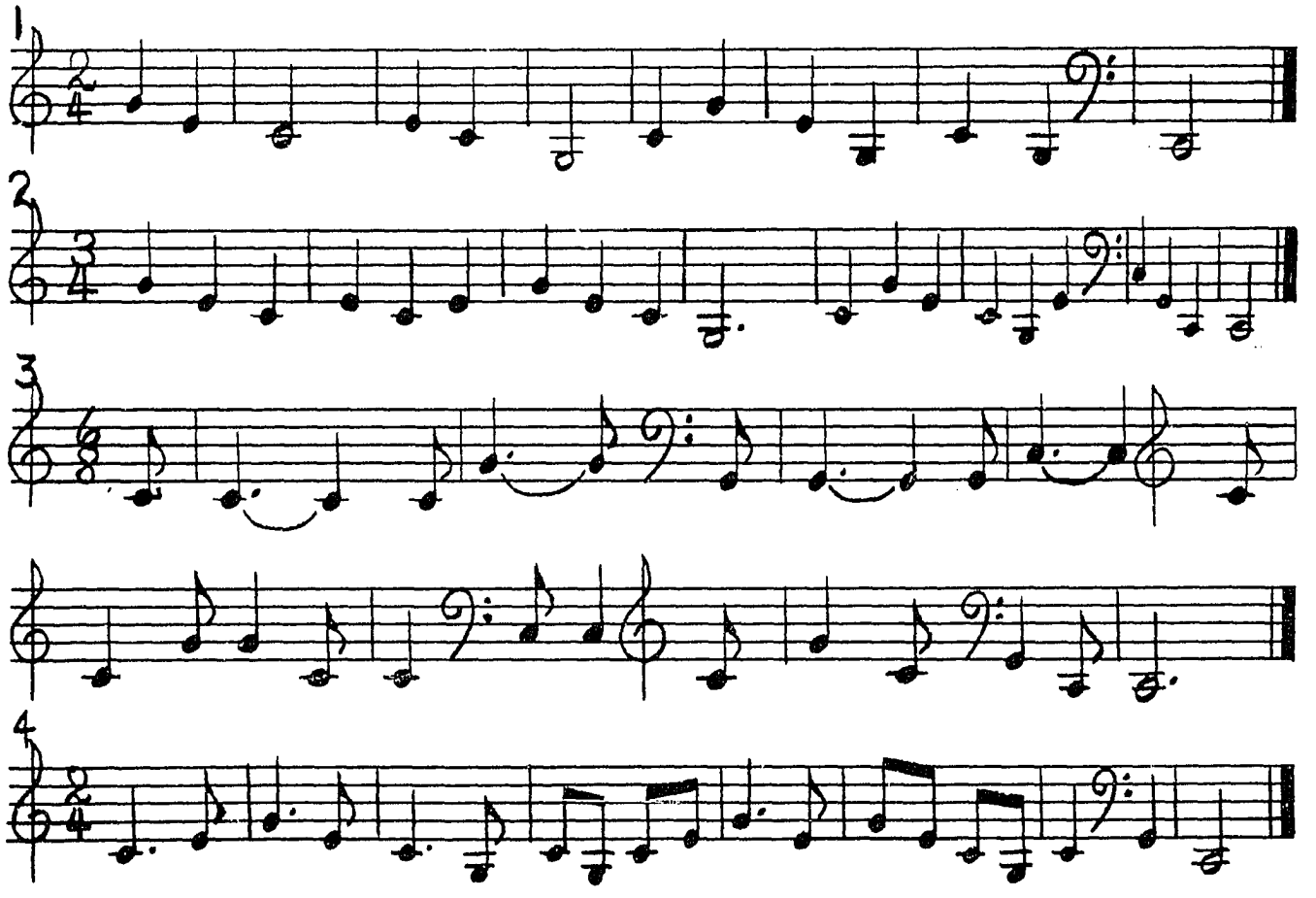
HARMONICS 2-3-4



Omit numbers 5 and 6 in the keys of C and Bb Basso.

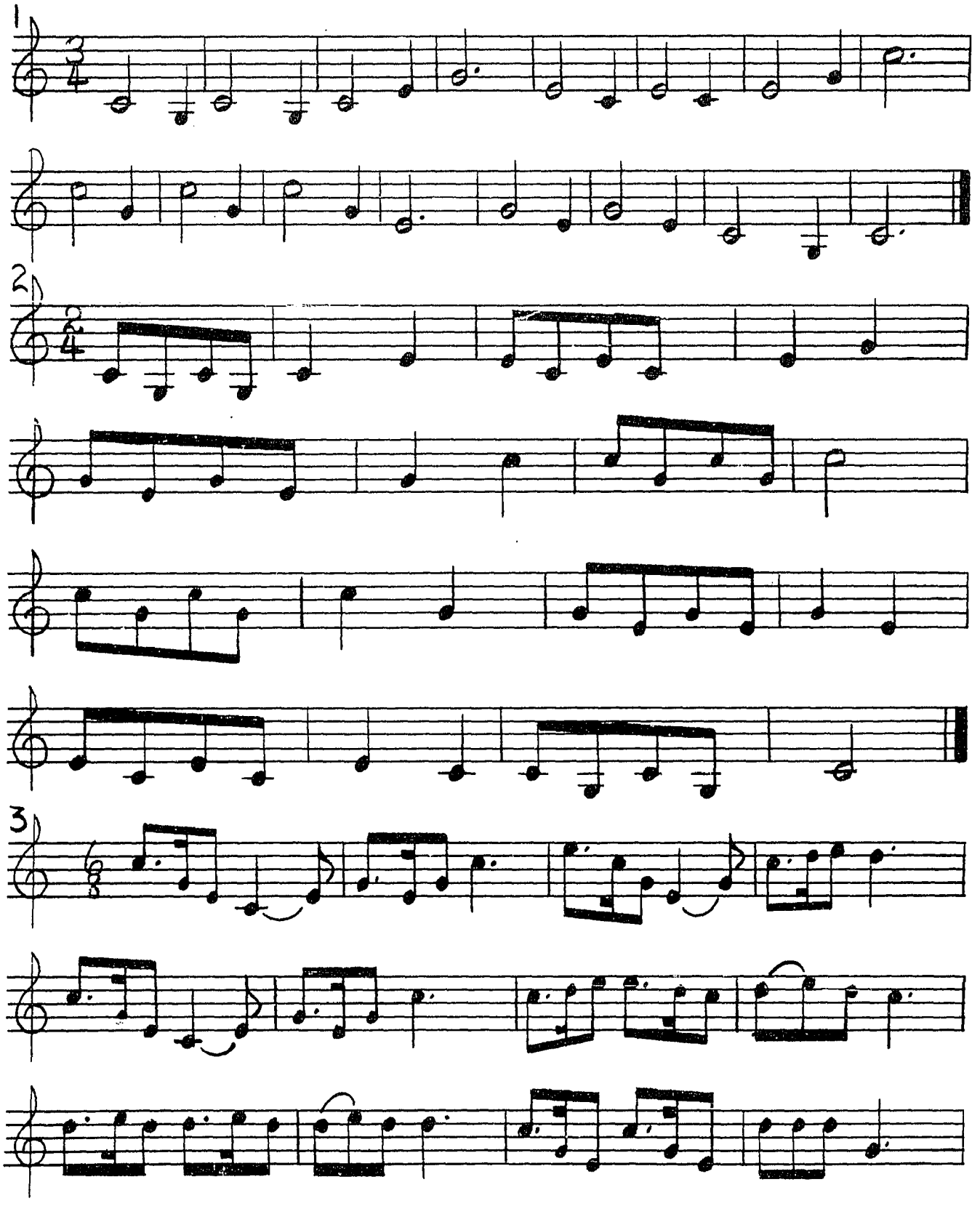


HARMONICS 2-3-4-5-6



HARMONICS 3 THROUGH 10

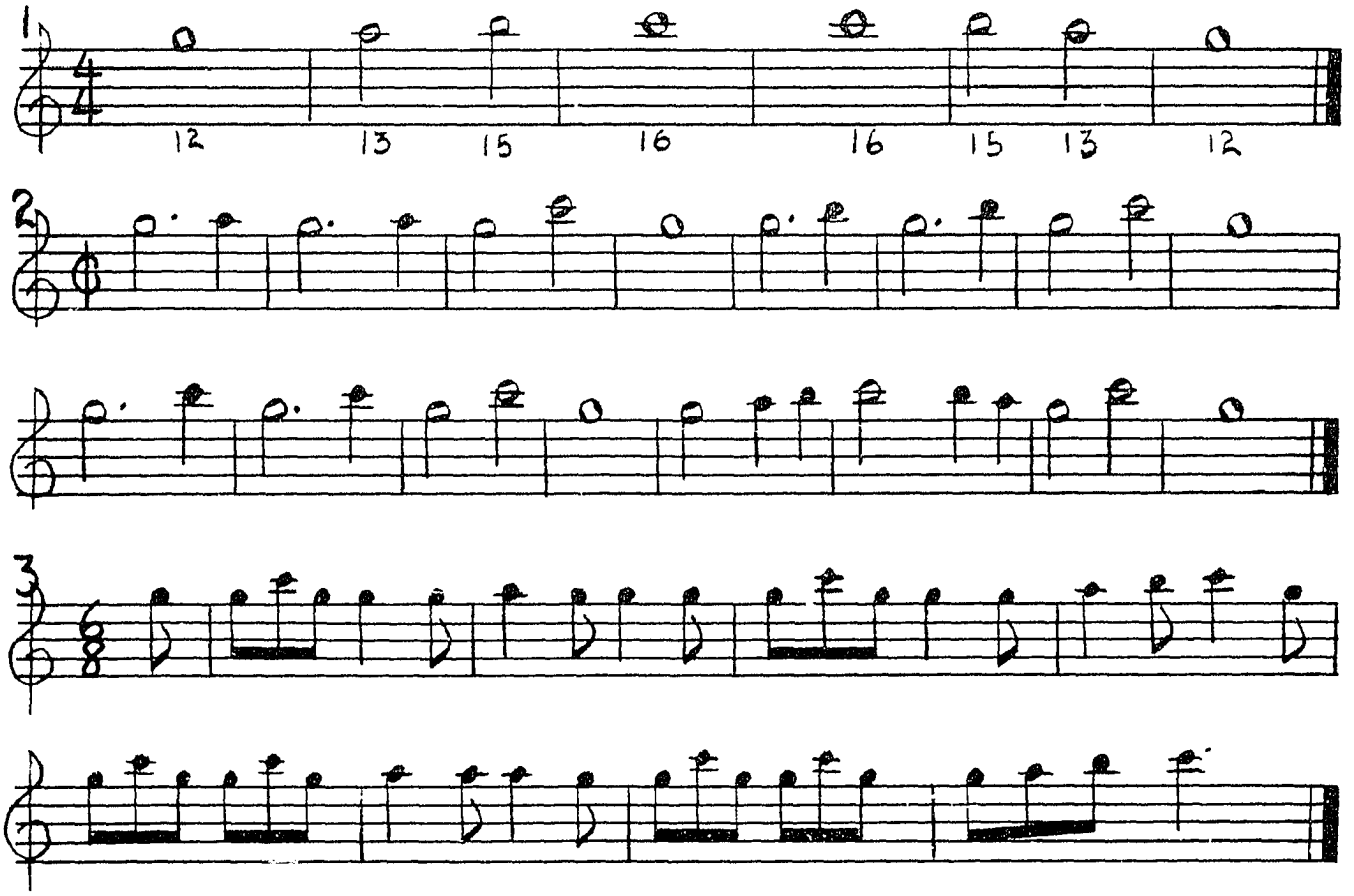
Play in all keys



4
5
6

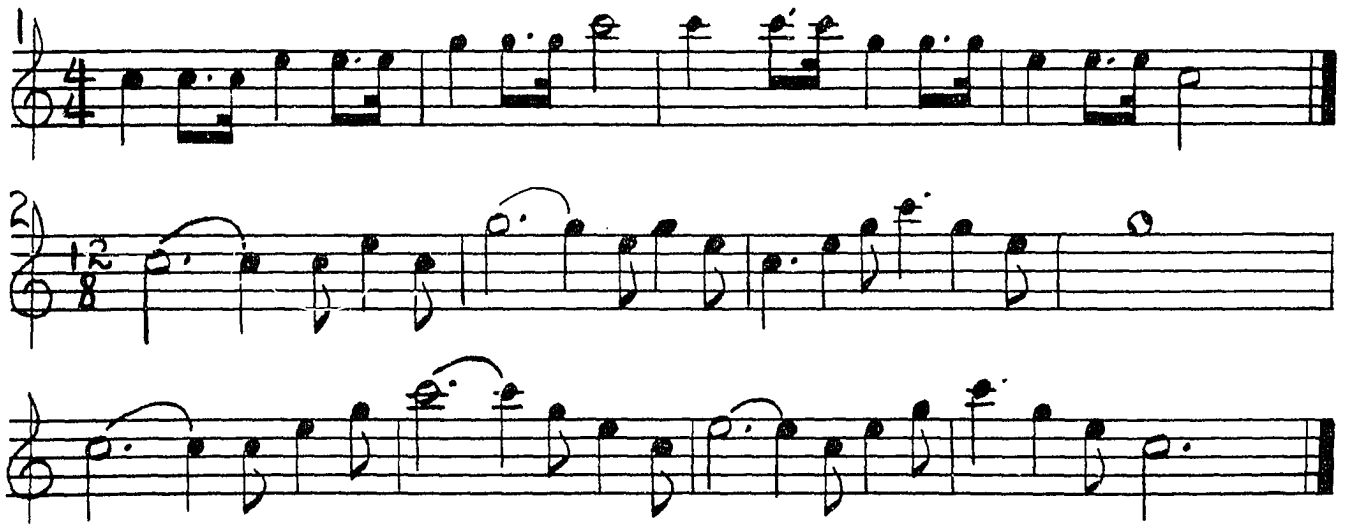
HARMONICS 12-13-15-16

Play these studies only in the keys below F.



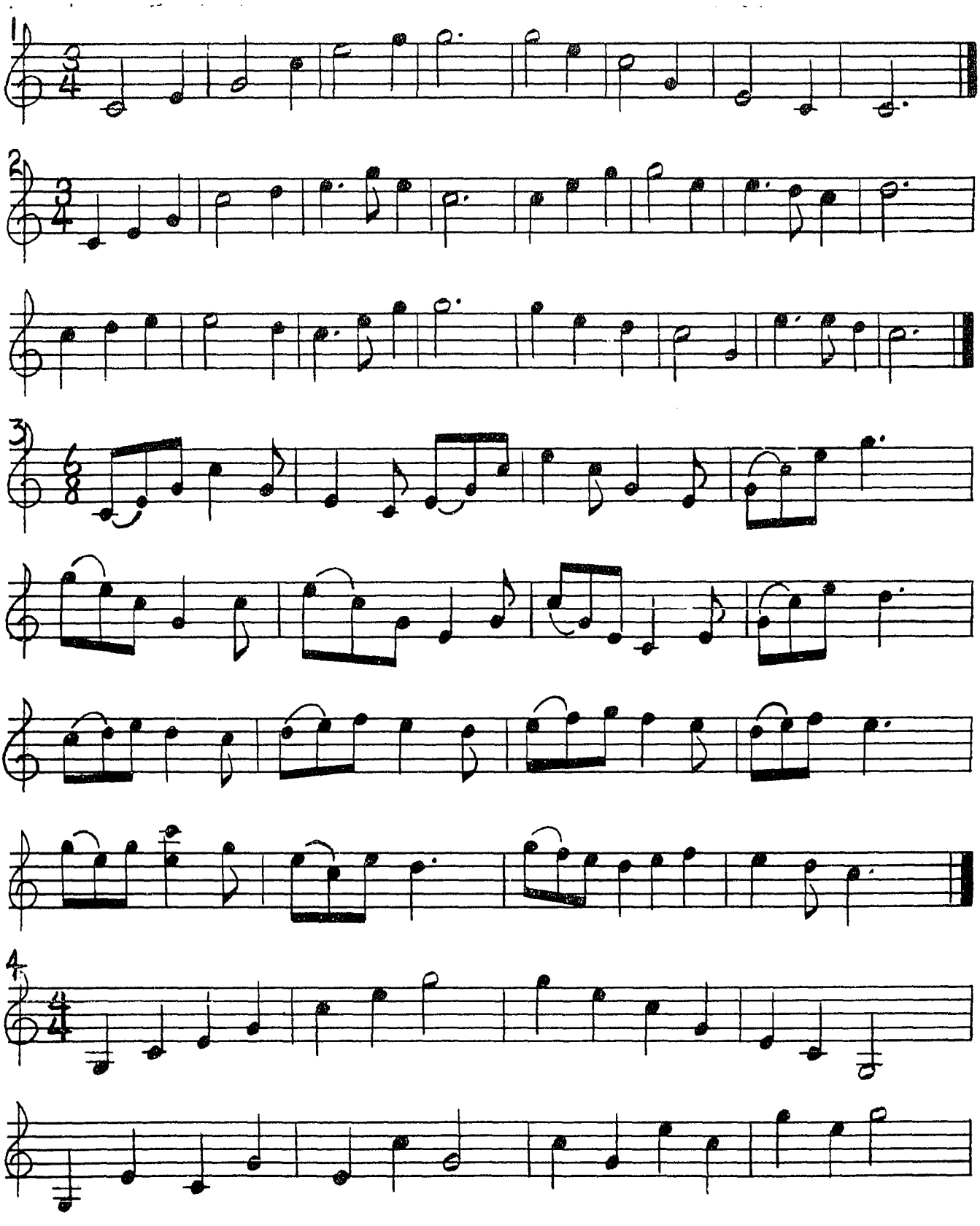
HARMONICS 8-10-12-16

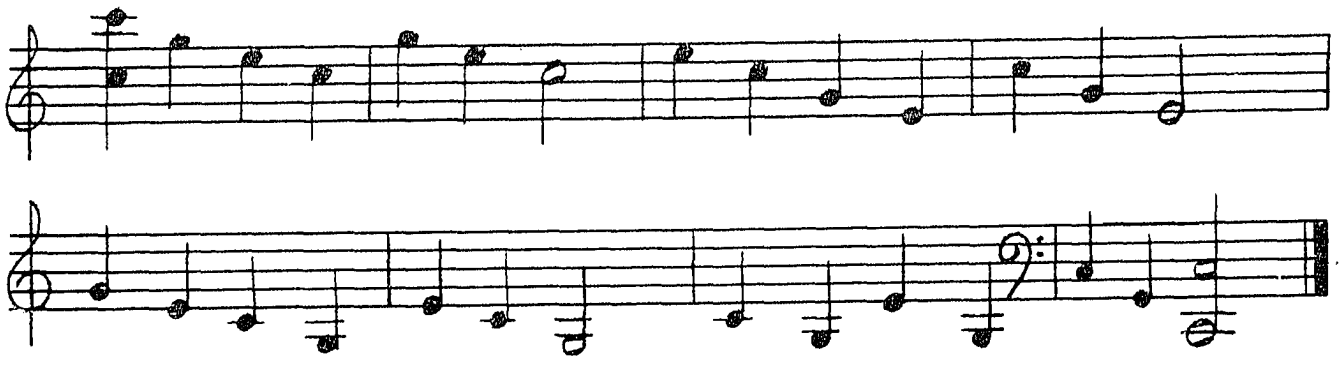
Play these studies only in the keys below F.



HARMONICS 2 THROUGH 16

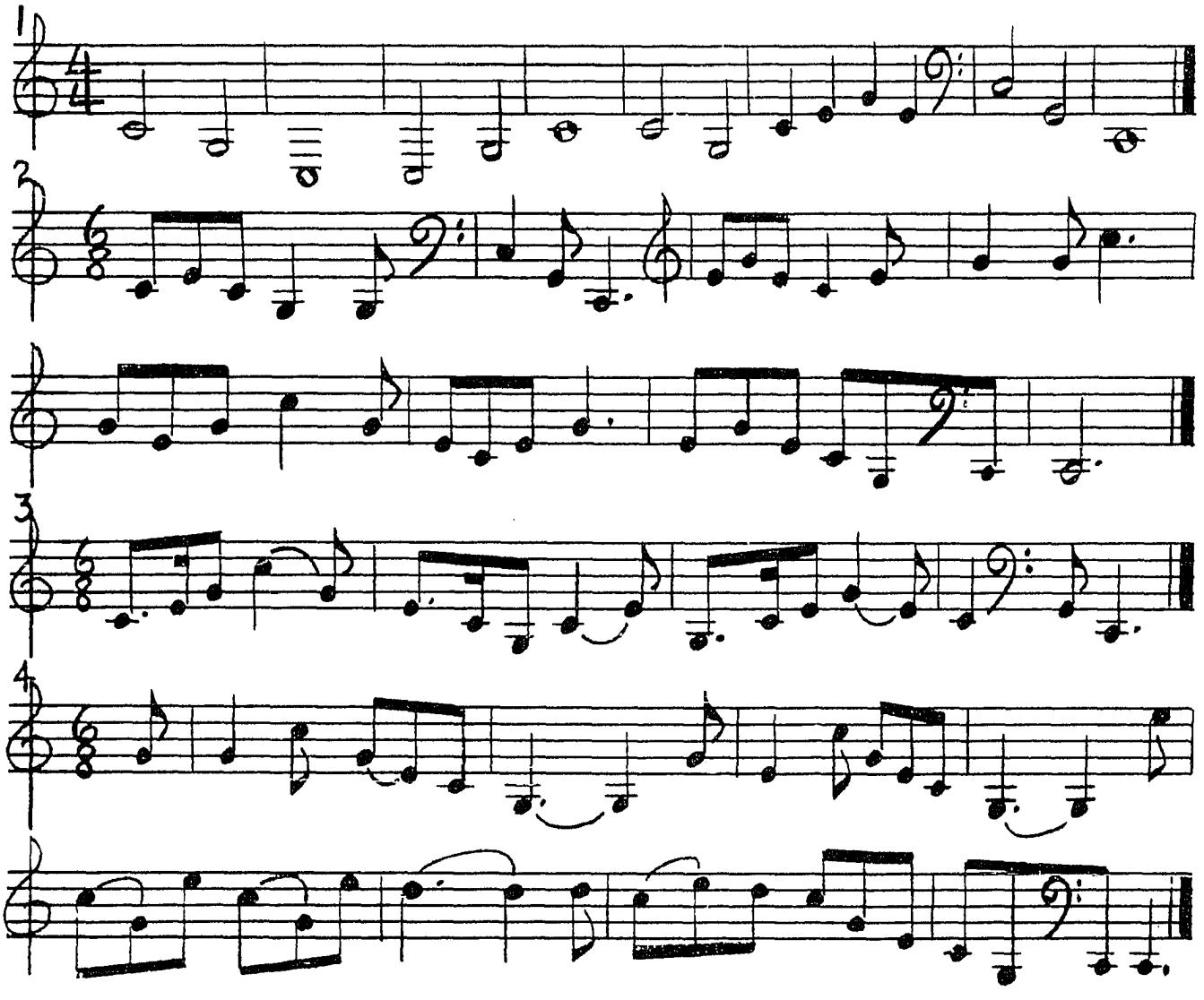
Play in all keys except A and Bb alto.





HARMONICS 2 THROUGH 10

Play in all keys except Bb basso and C.

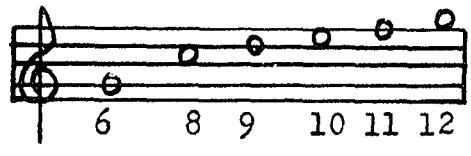


SECTION IV

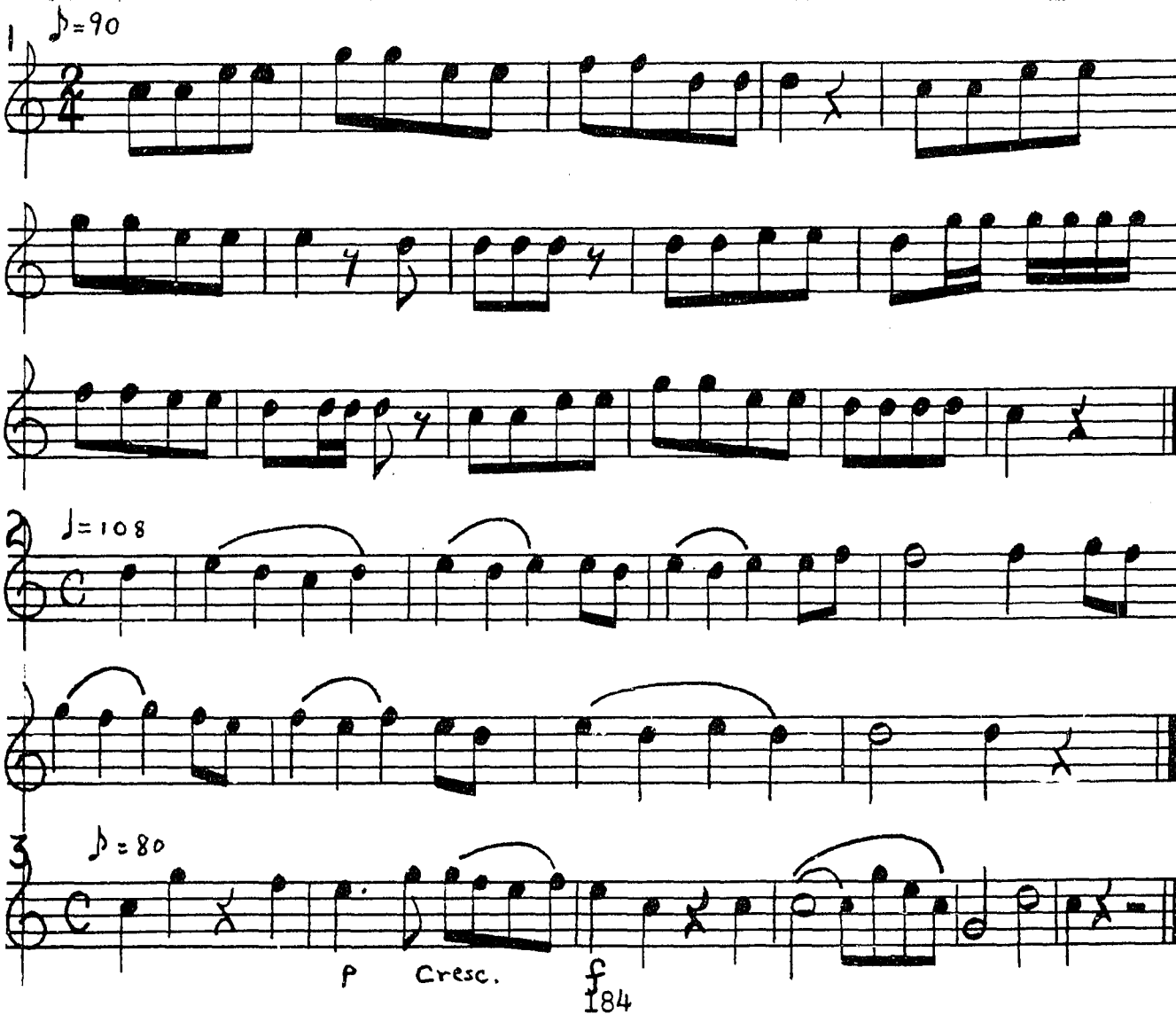
ORCHESTRAL EXCERPTS

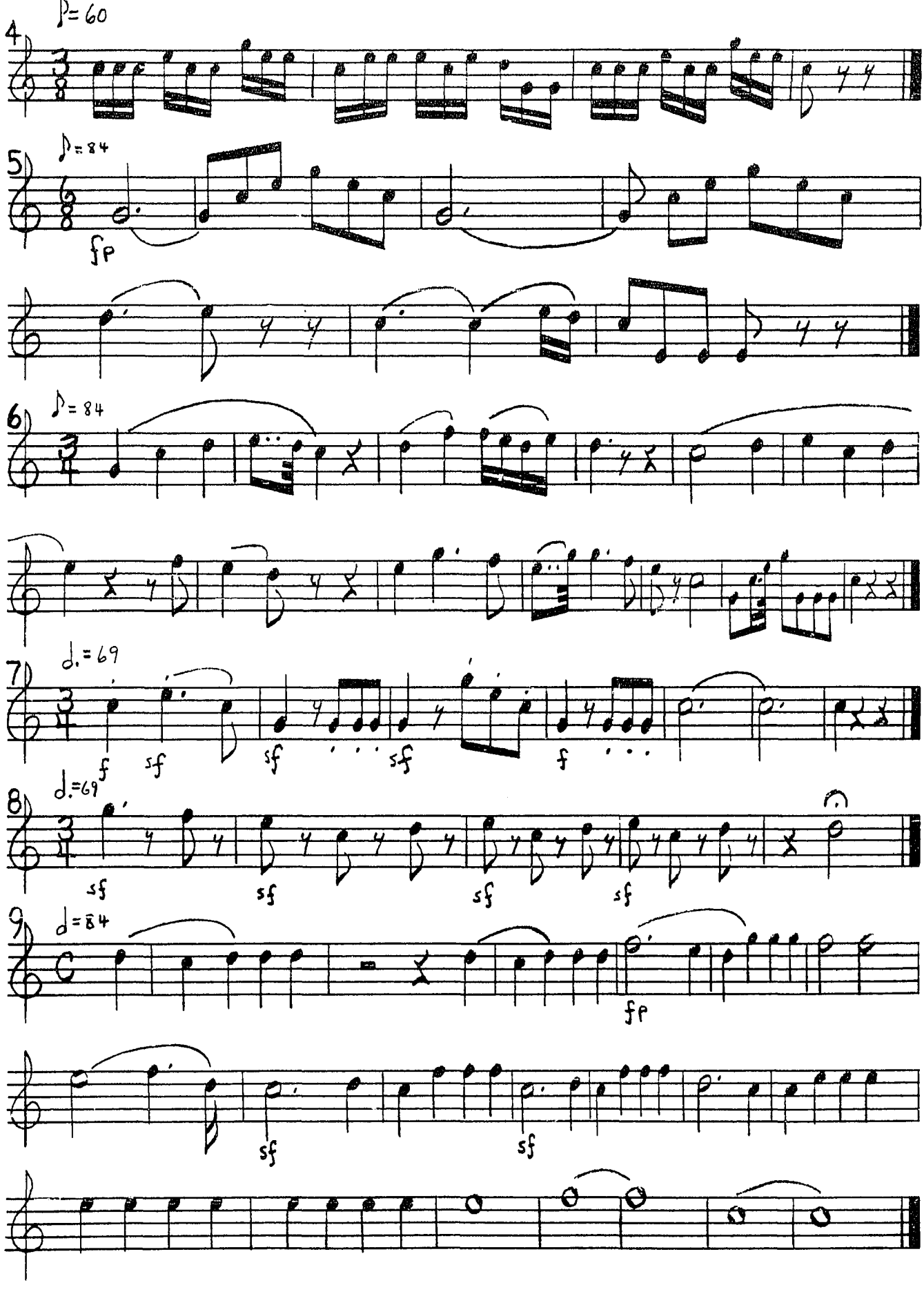
First Horn Part

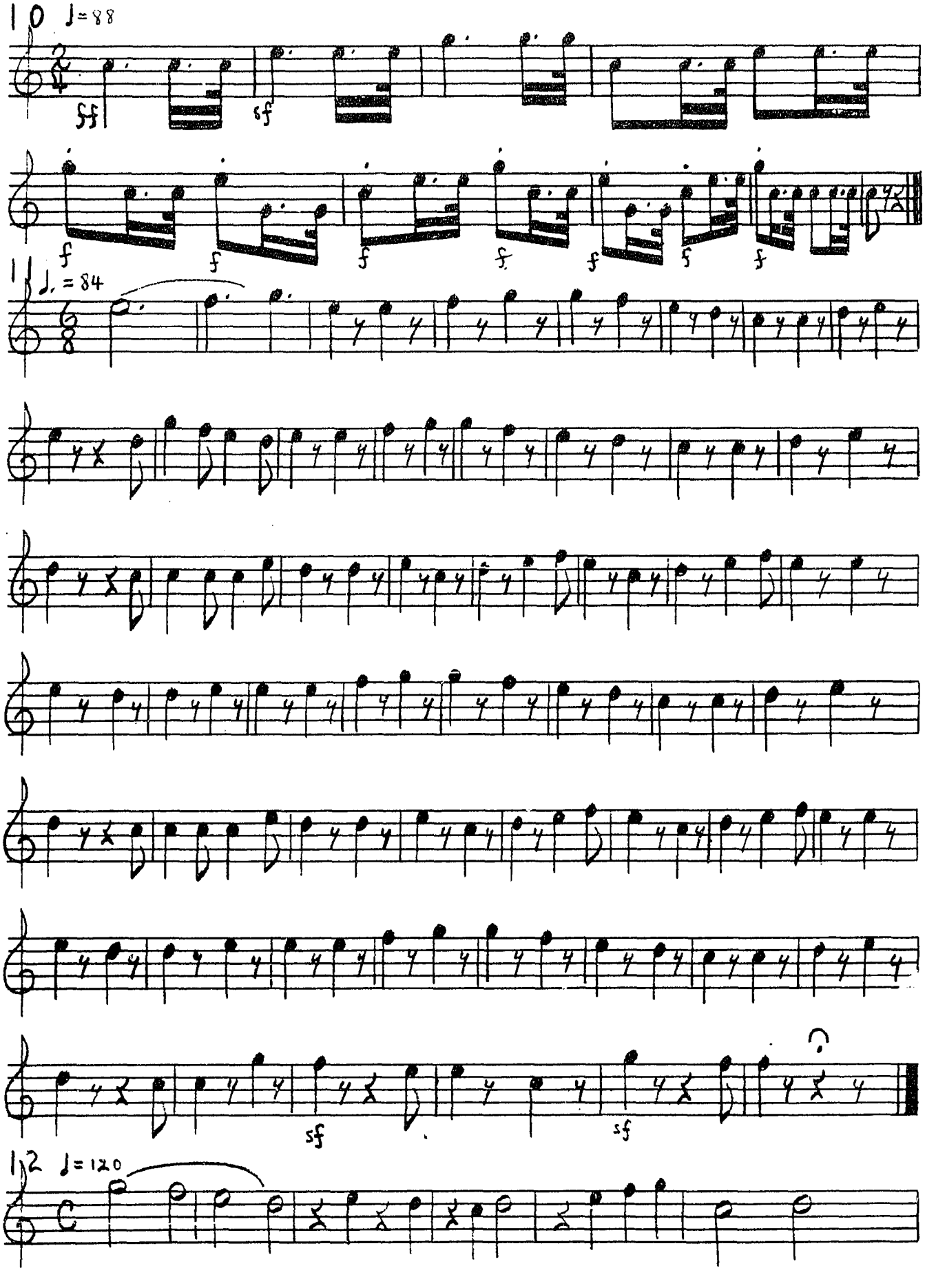
Natural horn parts in orchestral music were normally written in pairs. The first horn part usually covered the range from the sixth to the twelfth harmonics. In the keys of B flat alto and A, the part was seldom written higher than the tenth harmonic.

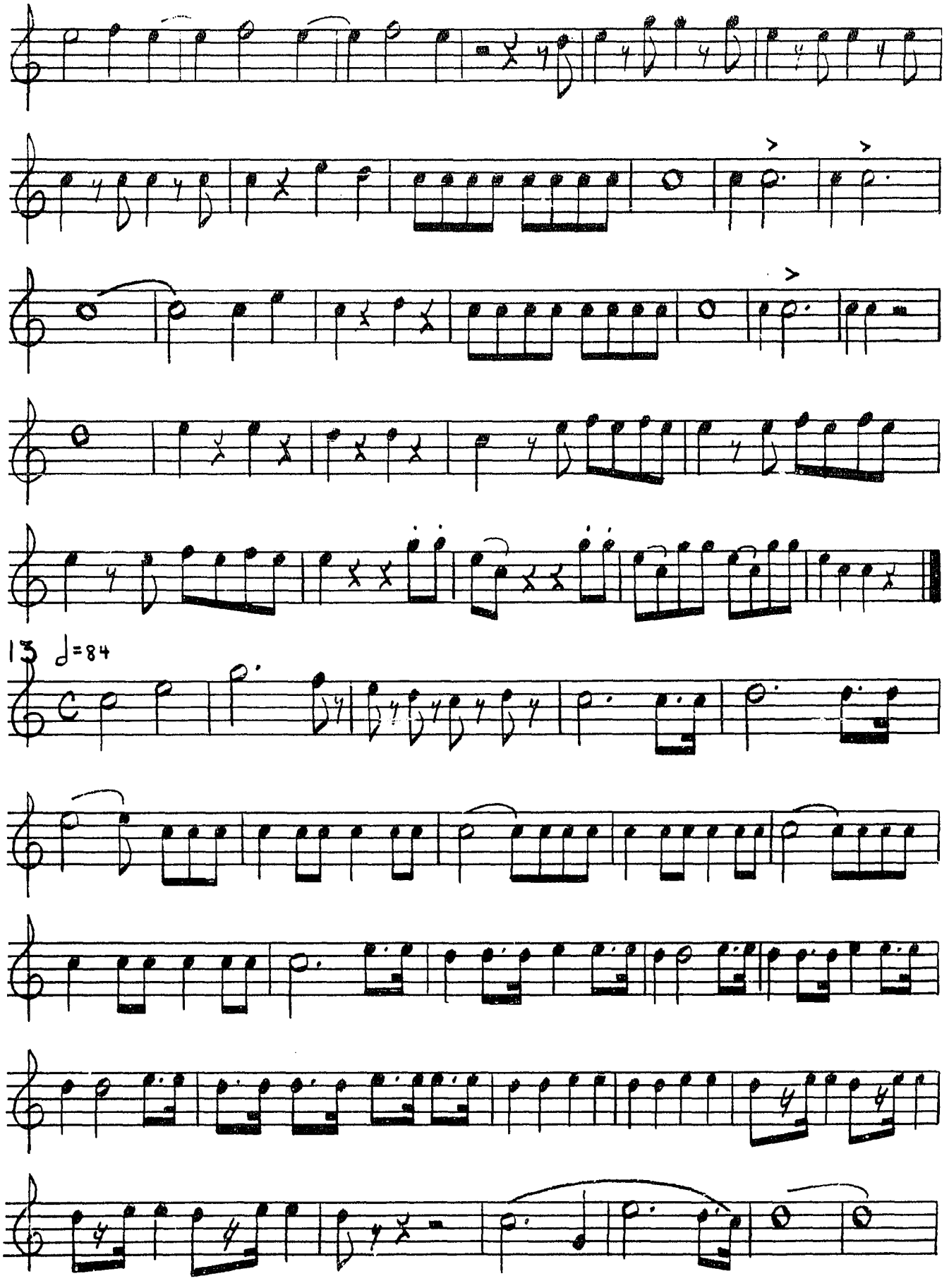


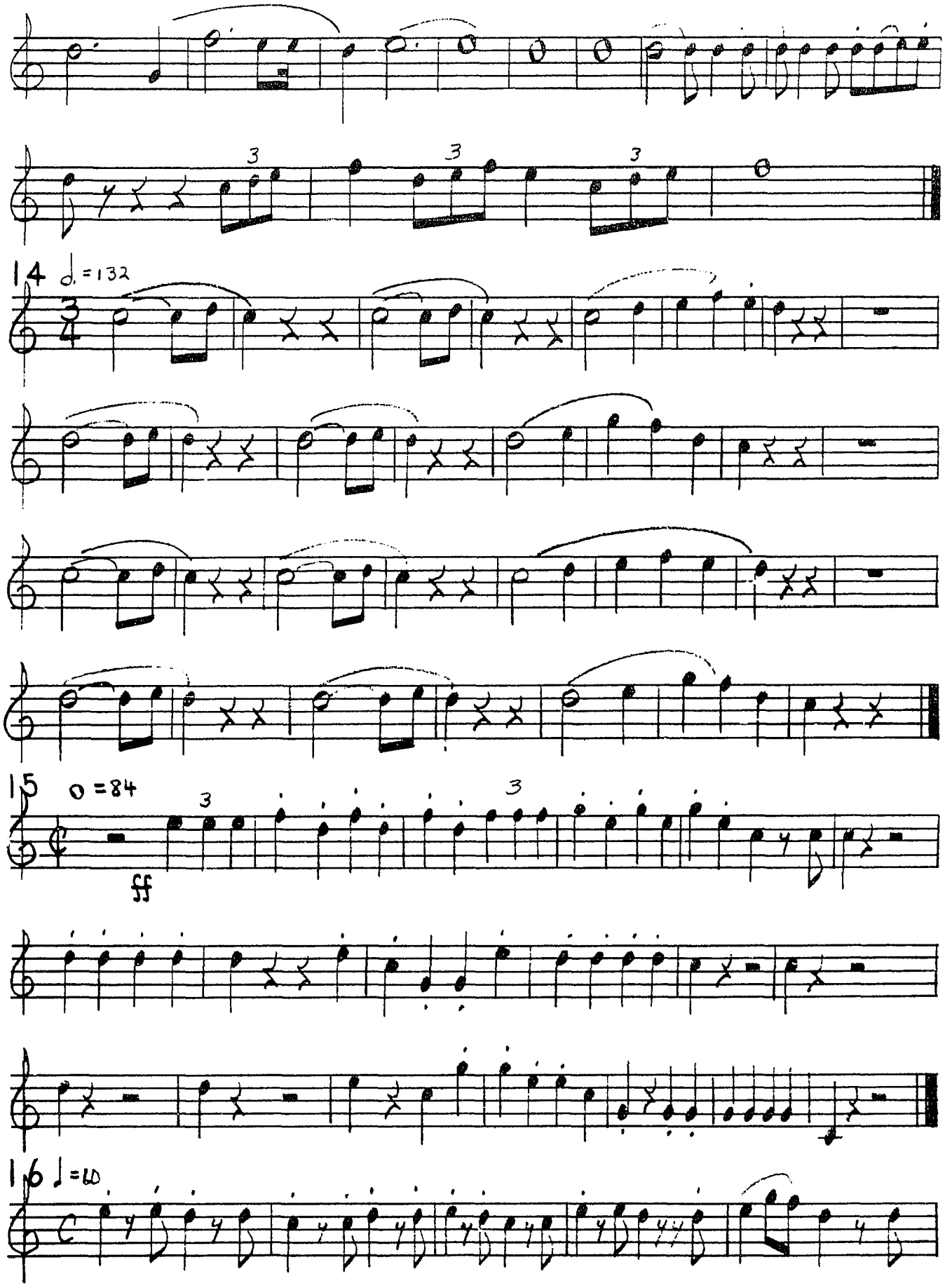
The following excerpts may be omitted in the keys of Bb alto and A.

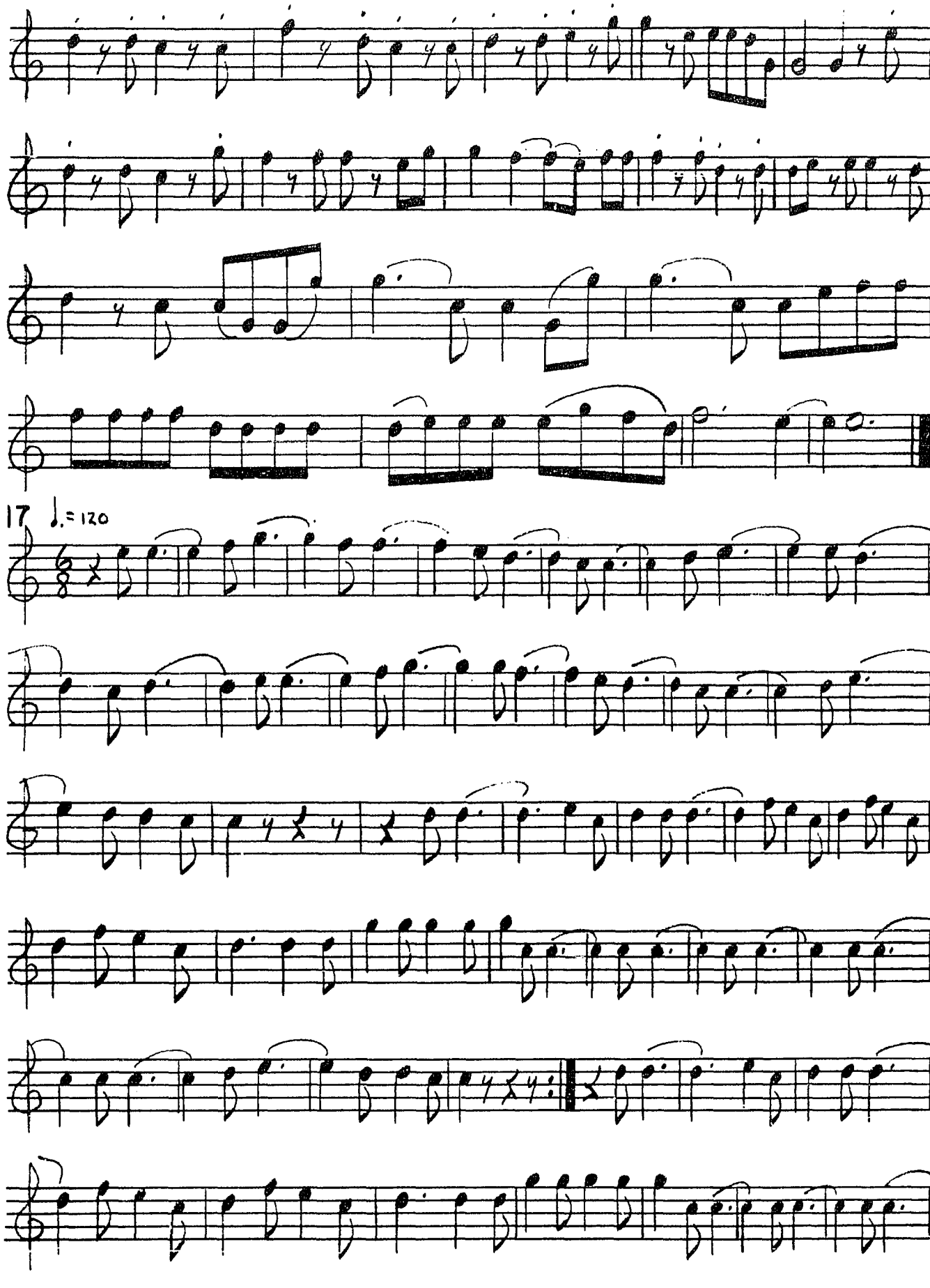


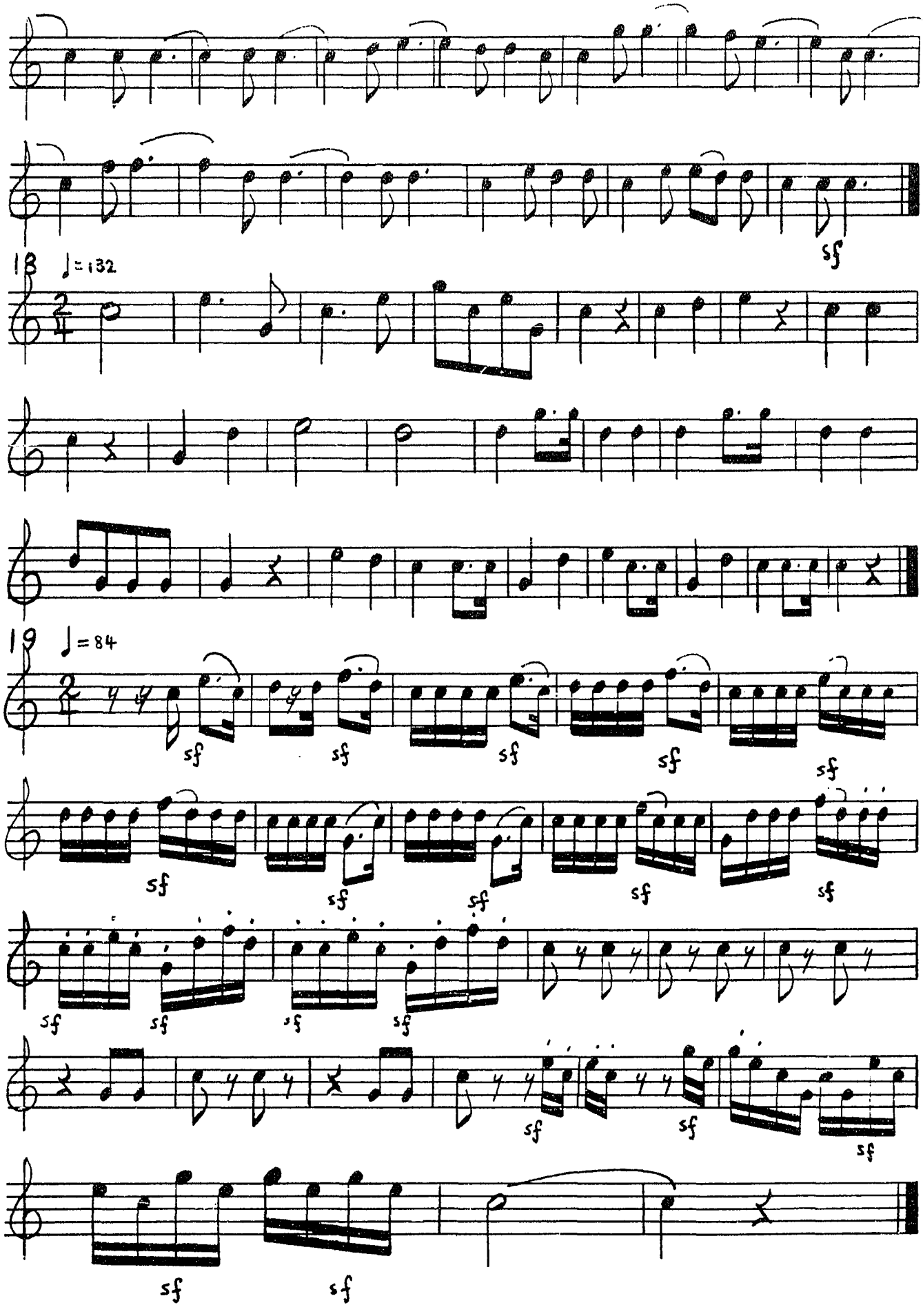

4
♪= 60
5
♪= 84
fp
6
♪= 84
7
♩.= 69
f
sf
sf
sf
f
8
♩.=69
sf
sf
sf
sf
9
♩= 84
fp
sf
sf

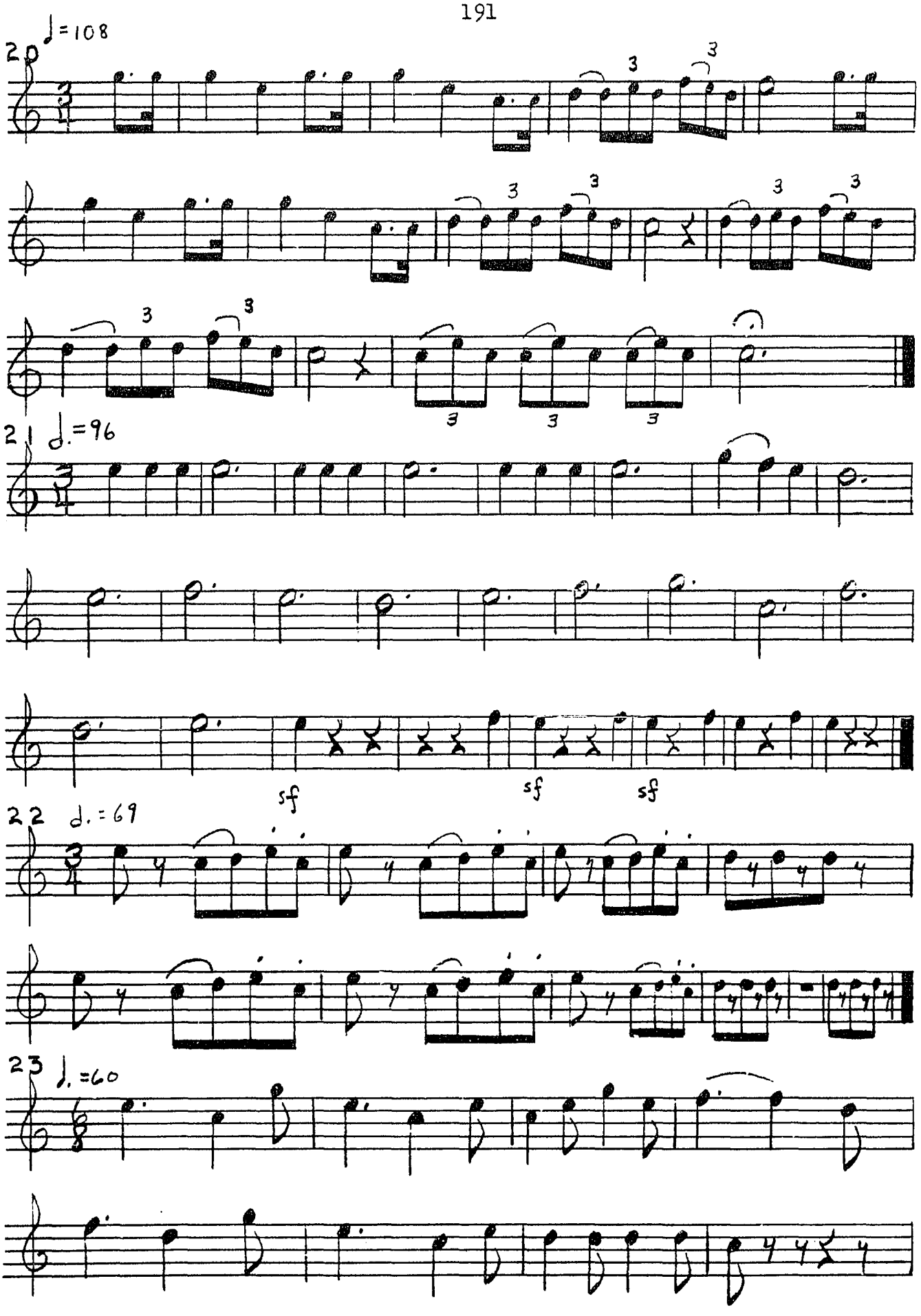

10 ♩=88
ff
sf
f
f
f
f
f
f
11 ♩.=84
sf
sf
12 ♩=120

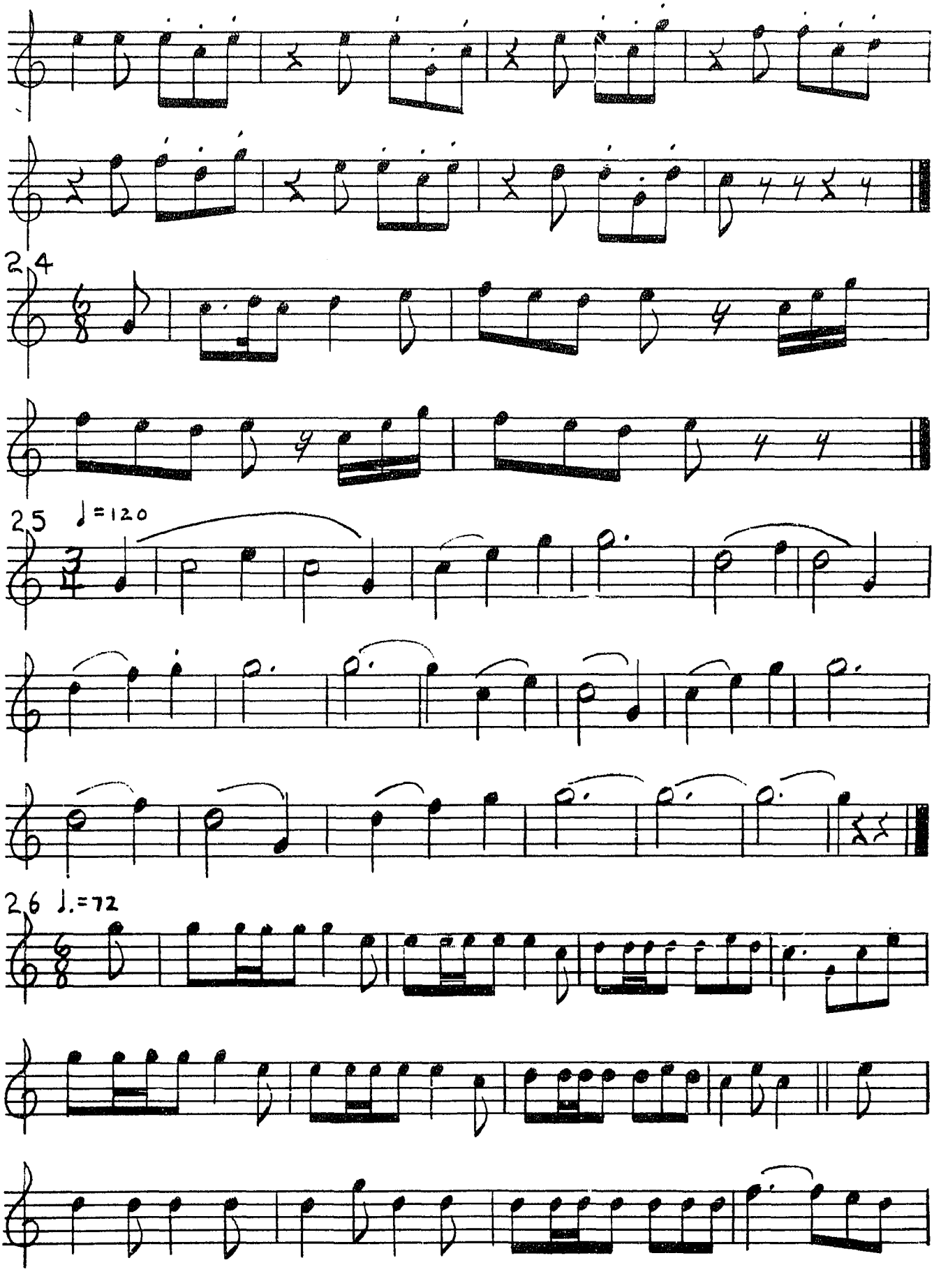

13
♩=84

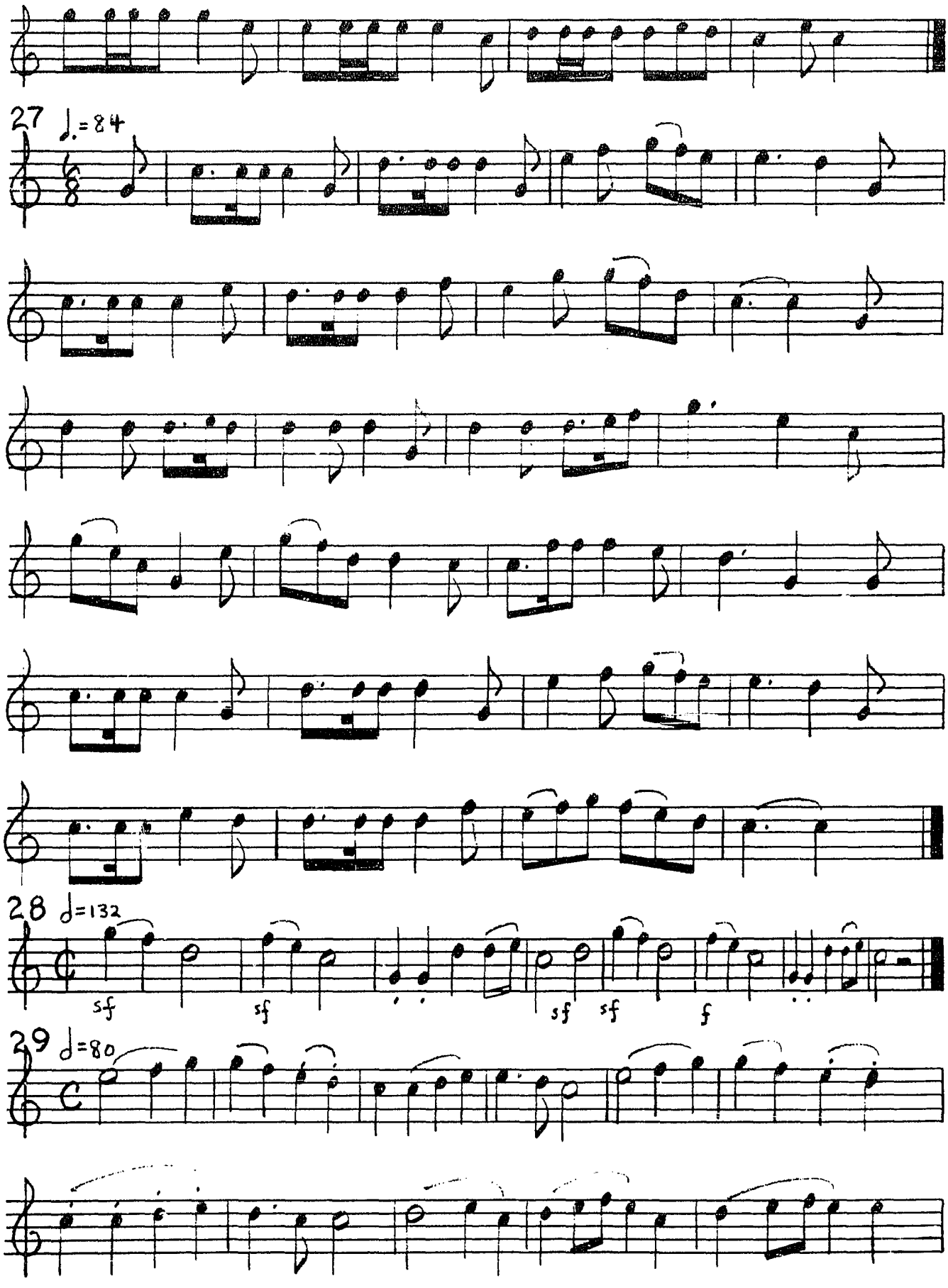

14 ♩. = 132
15 𝅝 = 84
ff
16 ♩ = 60


17
♩. = 120

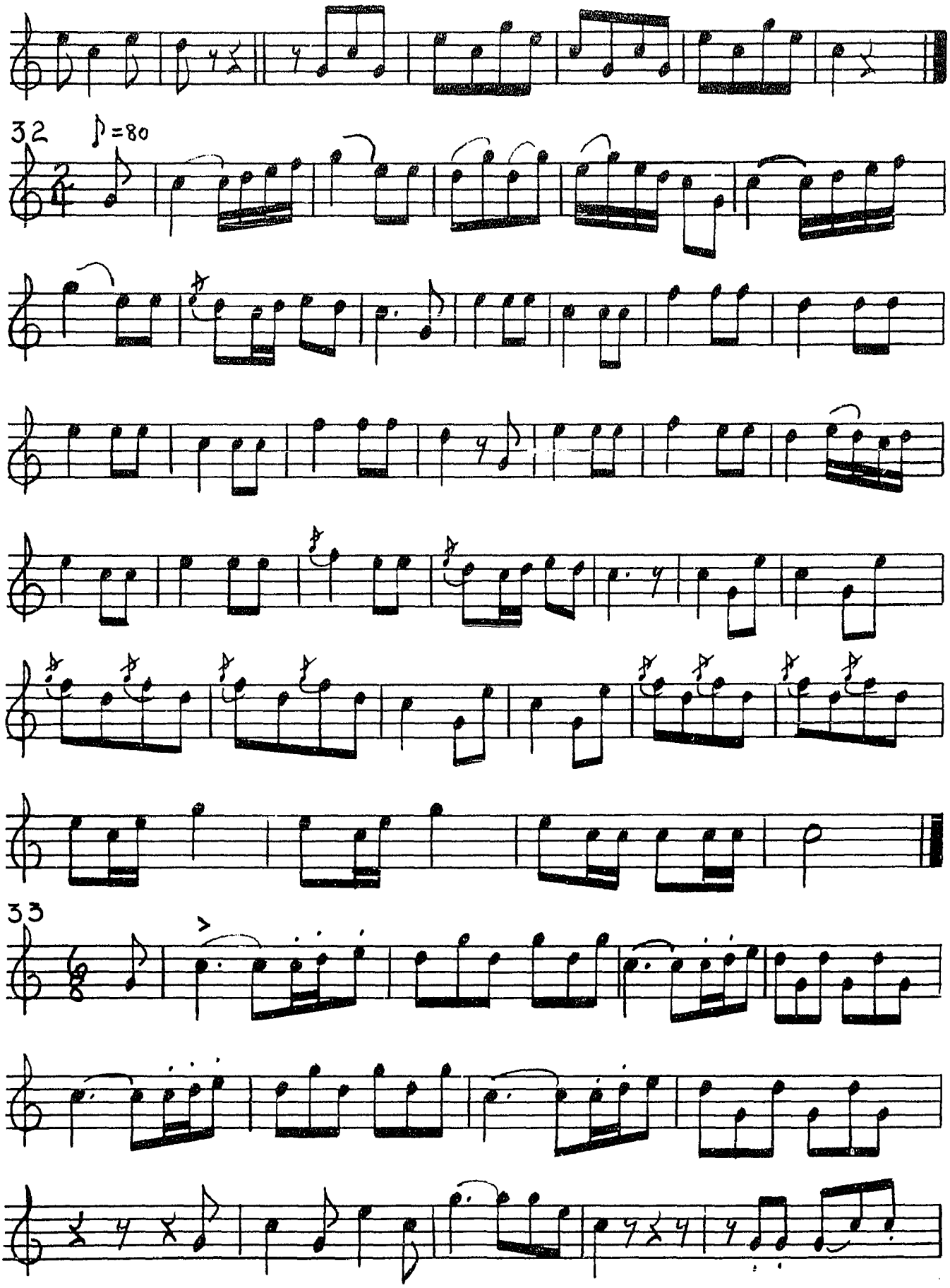

18 ♩= 132
19 ♩= 84
sf

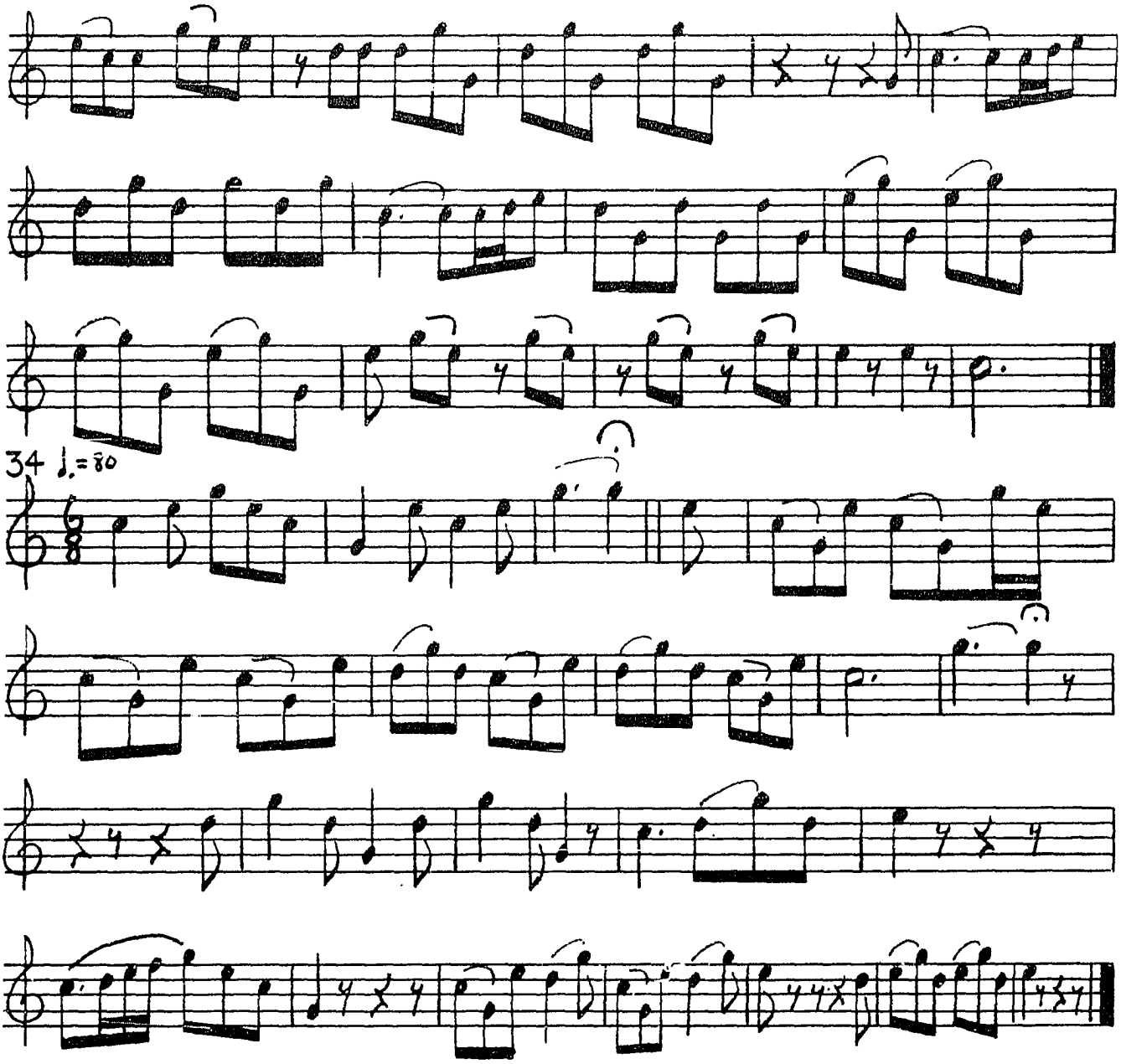

20
♩=108
21
♩.=96
sf
sf
sf
22
♩.=69
23
♩.=60


2.4
2.5
♩=120
2.6
♩.=72

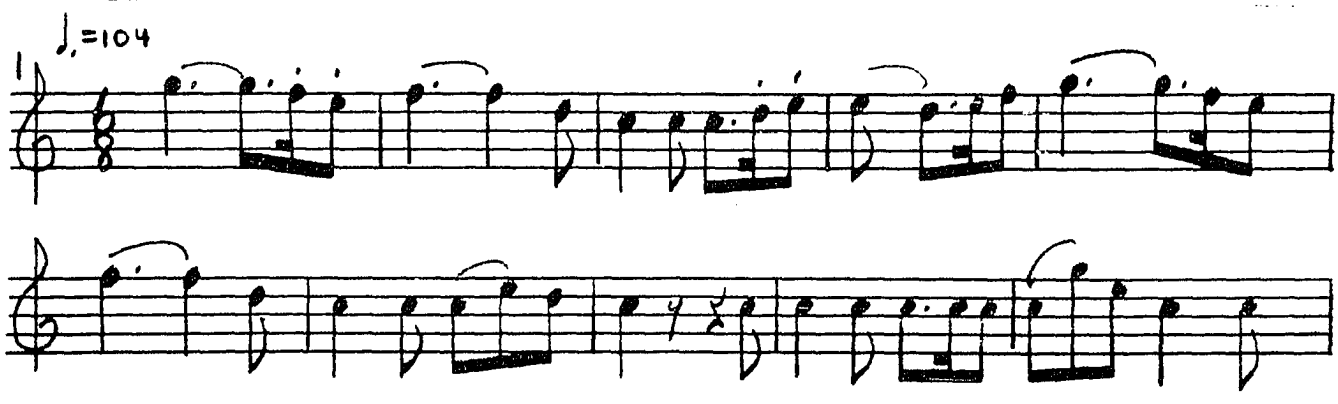

27 ♩.=84
28 𝅗𝅥=132
sf
sf
sf
sf
f
29 𝅗𝅥=80

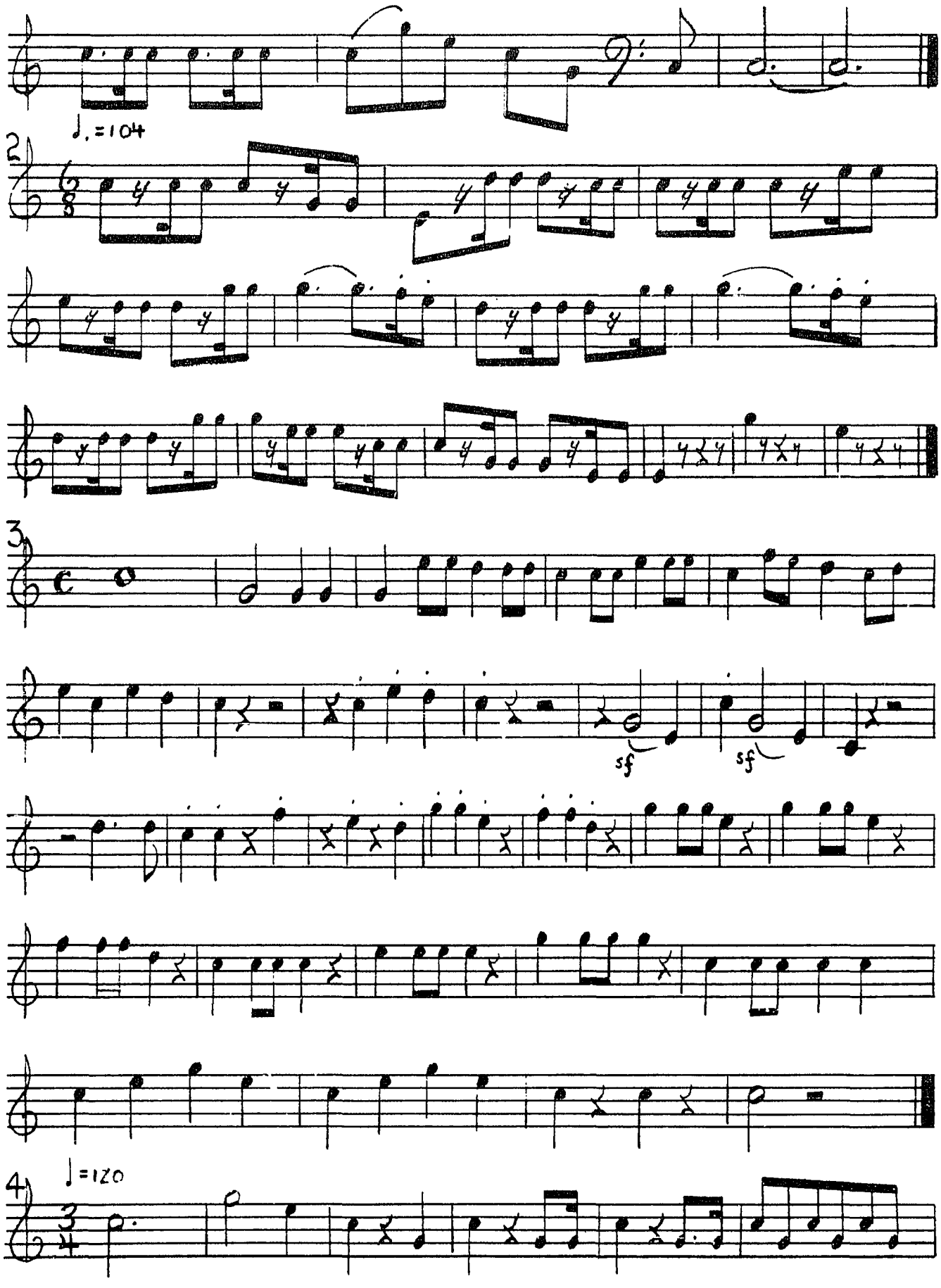
30
♩=96
31
♩=120

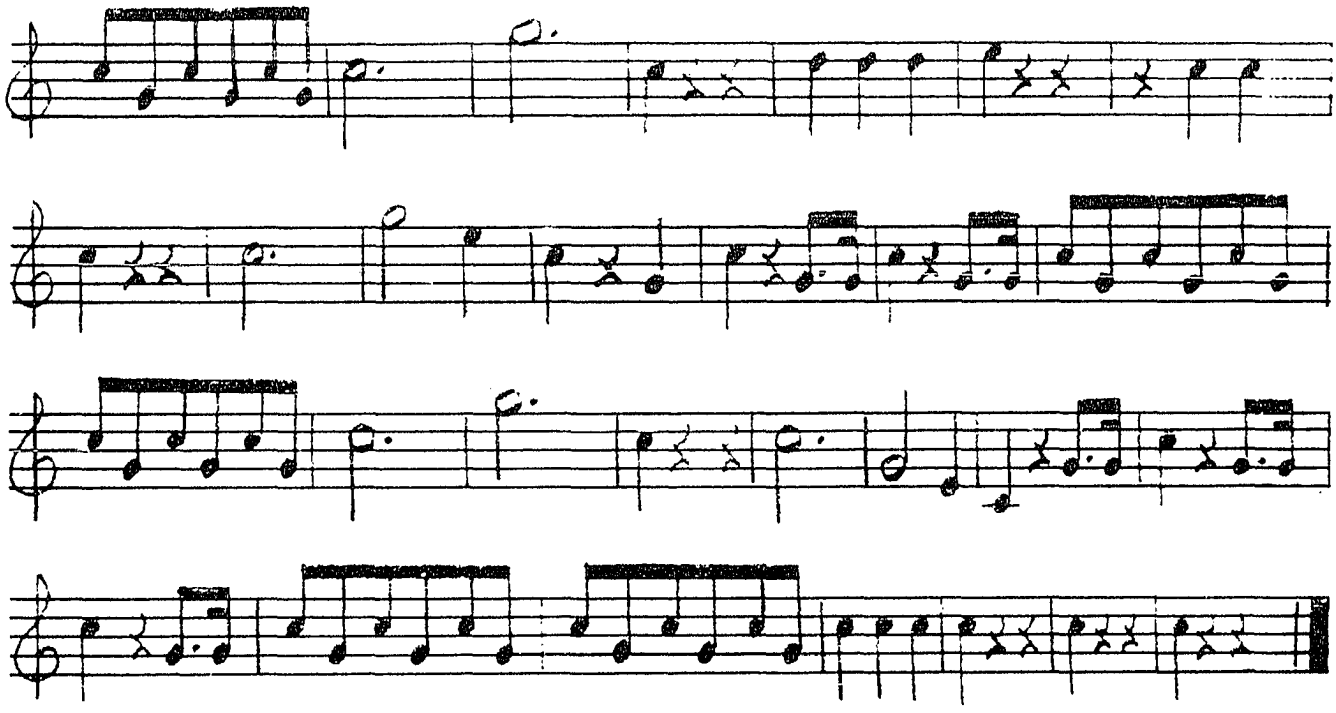

32
♪=80
33



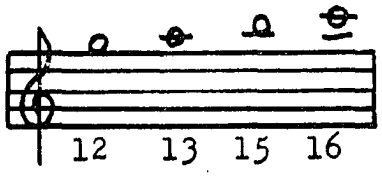
The first horn part was occasionally written below the sixth harmonic.



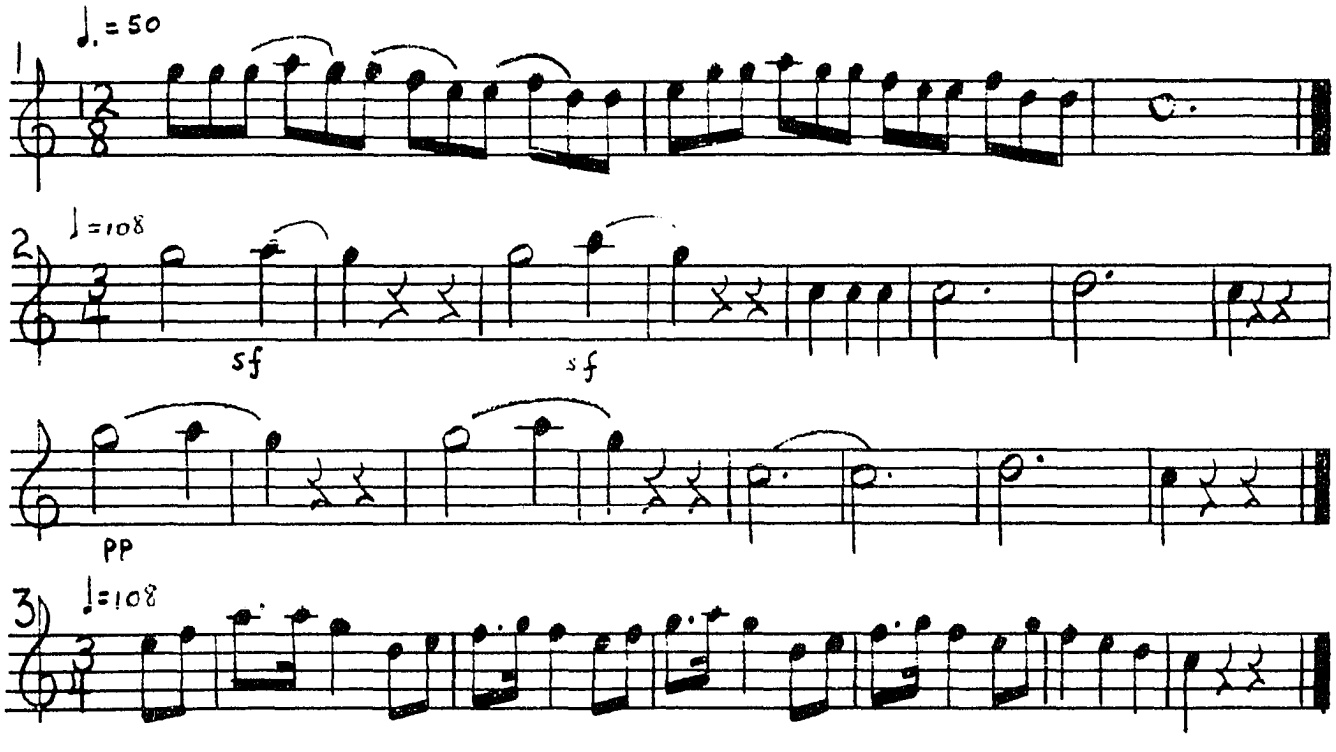

♩. = 104
2
3
sf
sf
♩ = 120
4

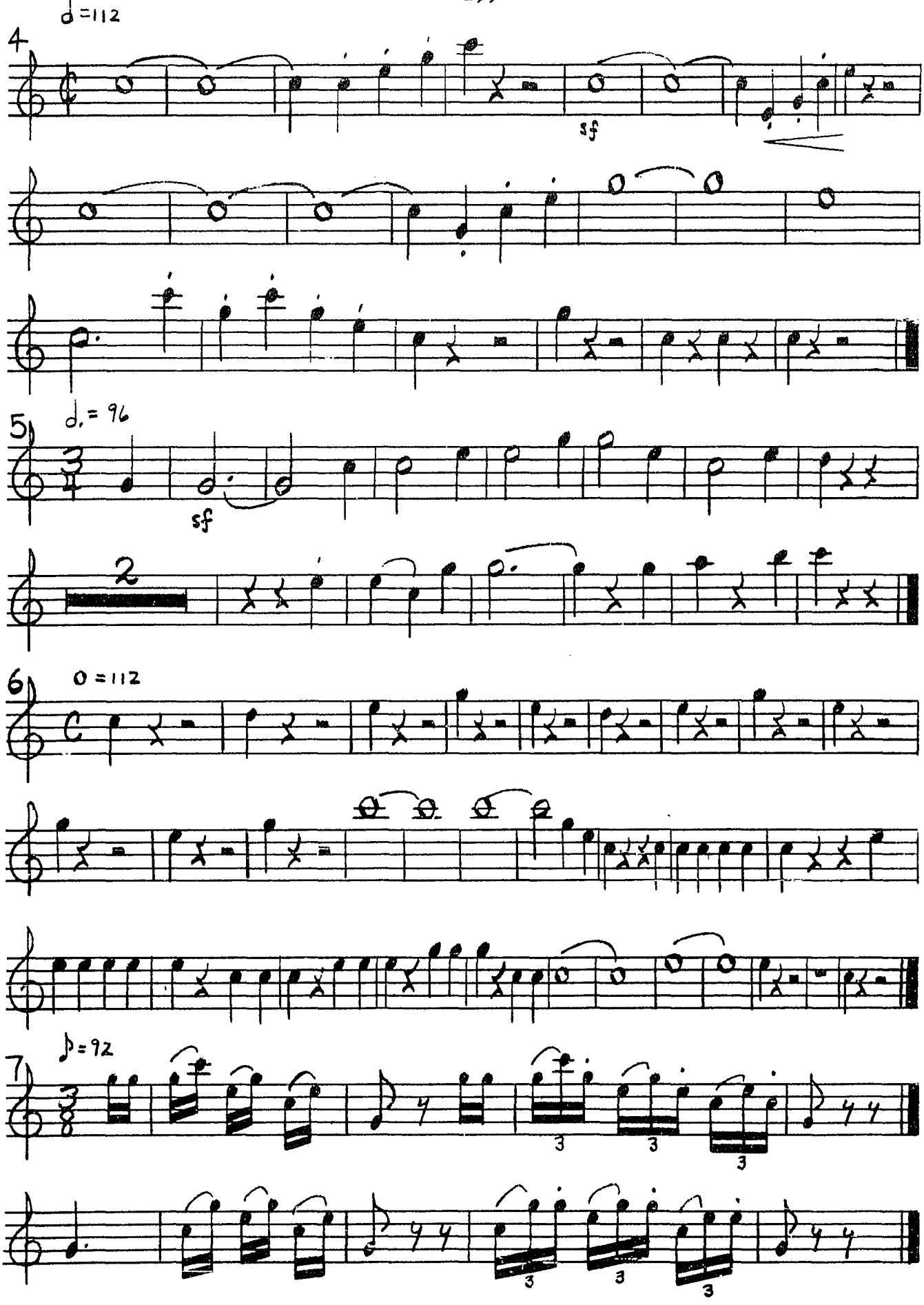


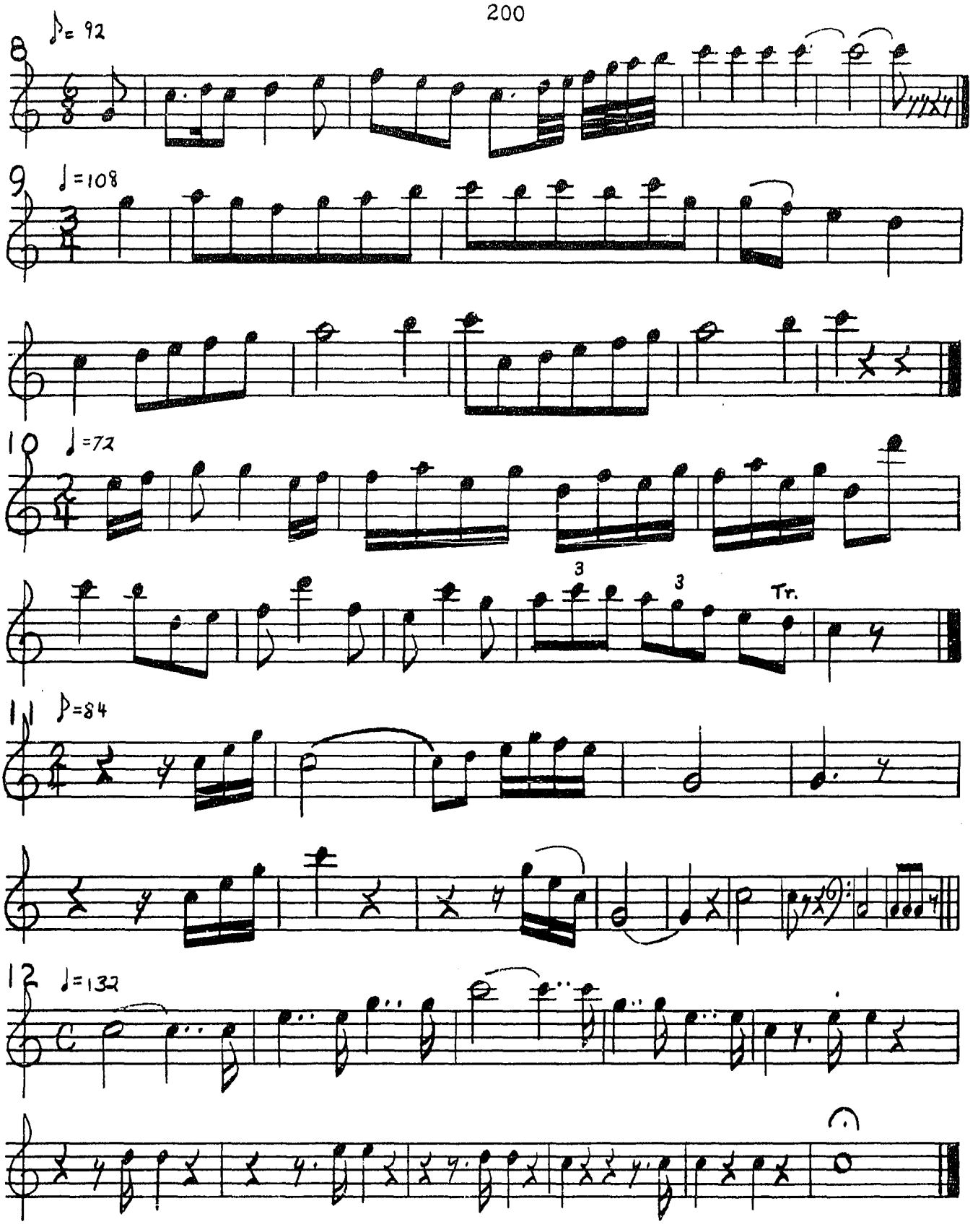
The first horn part was occasionally written to the sixteenth harmonic in the keys below F.



Omit the following excerpts in the keys of G, A, and Bb alto.

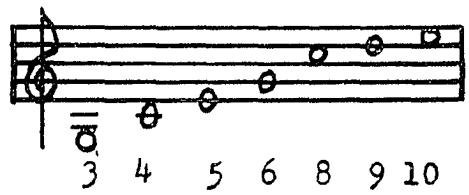



♩=112
4
sf
♩.= 96
5
sf
2
♩=112
6
♪=92
7
3
3
3
3
3
3

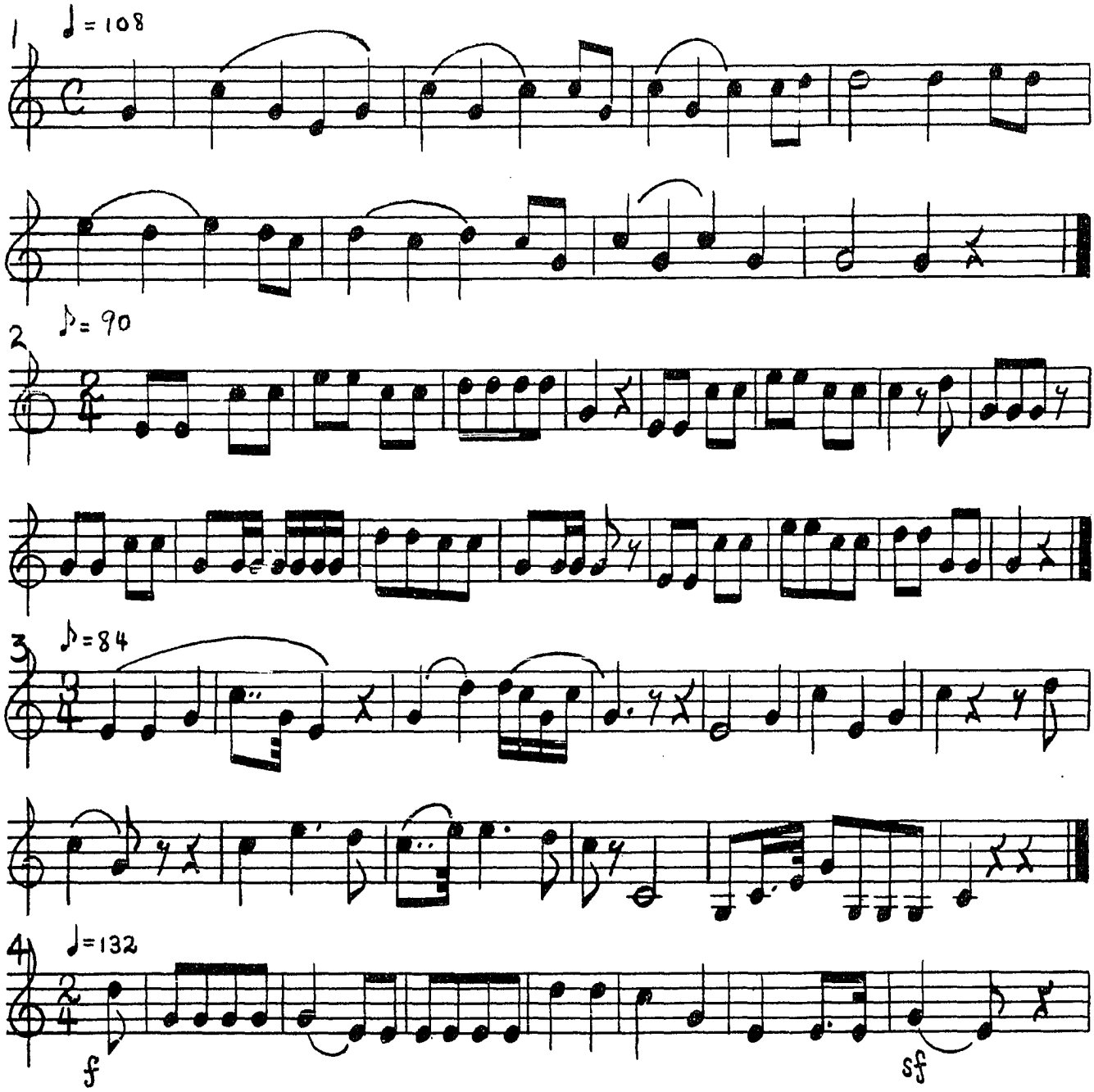

8
♪= 92
9
♩=108
10
♩=72
3
3
Tr.
11
♪=84
12
♩=132

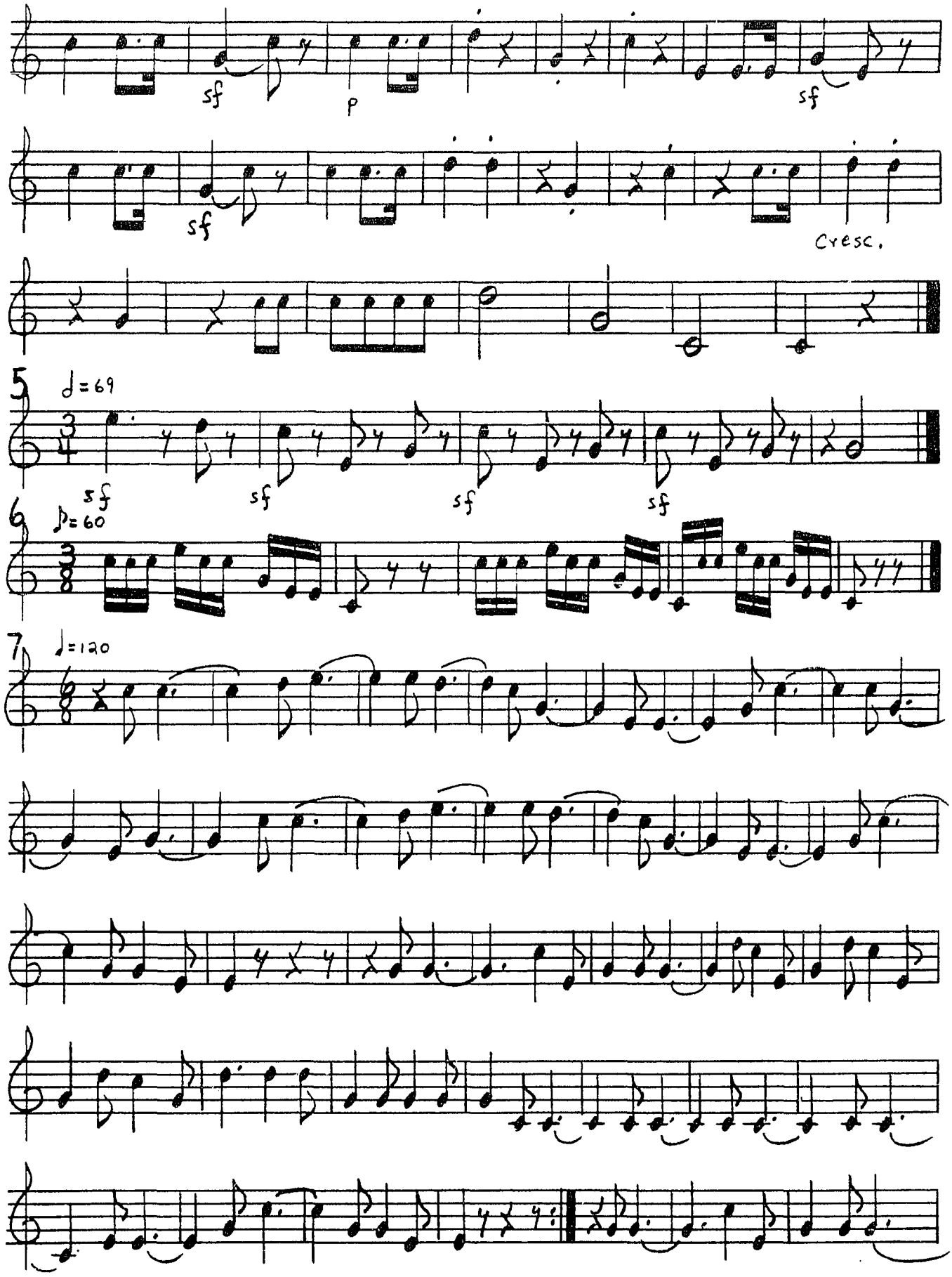
Second Horn Parts

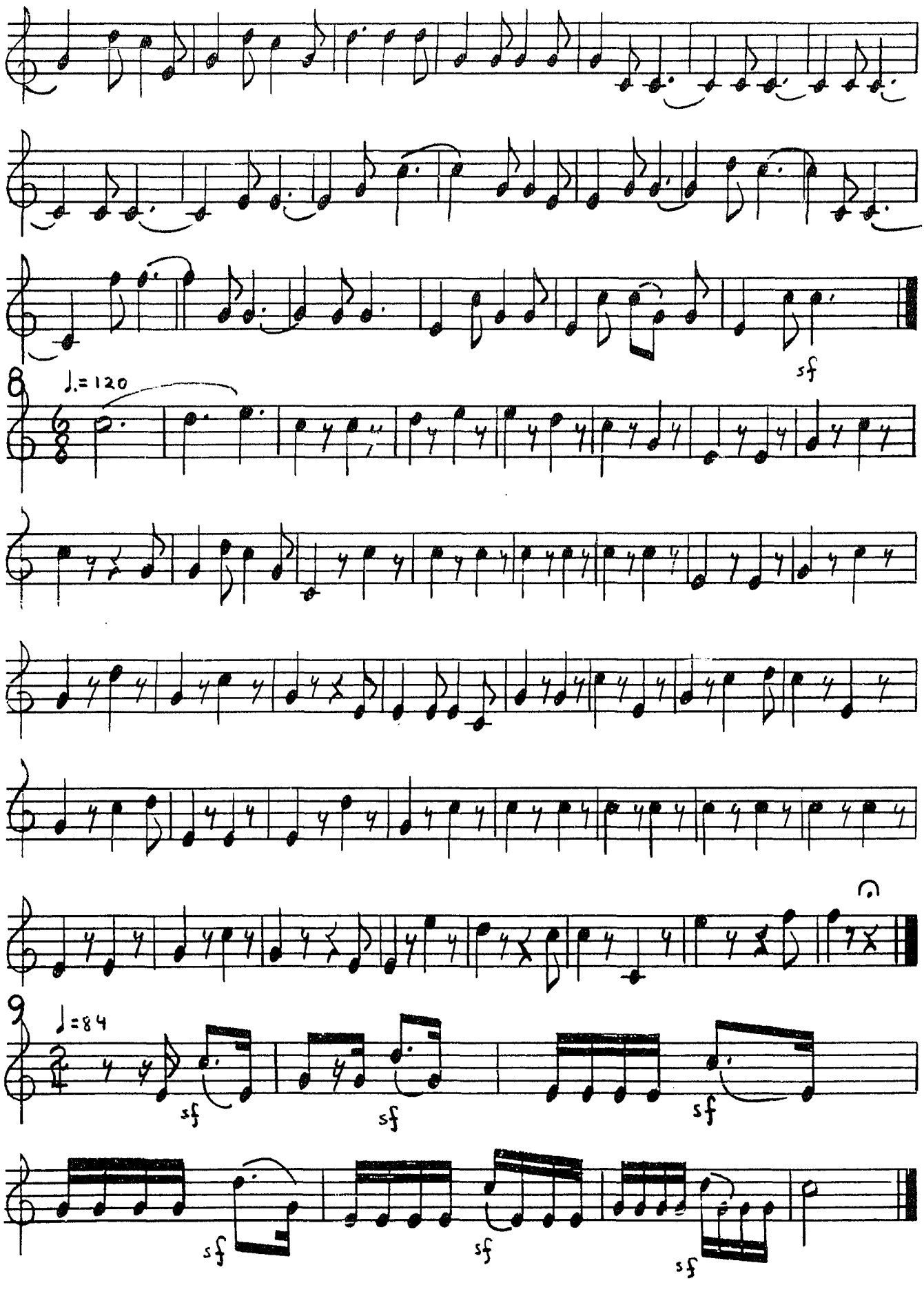
The most common range of the second horn part was from the 3rd to the 10th harmonics.

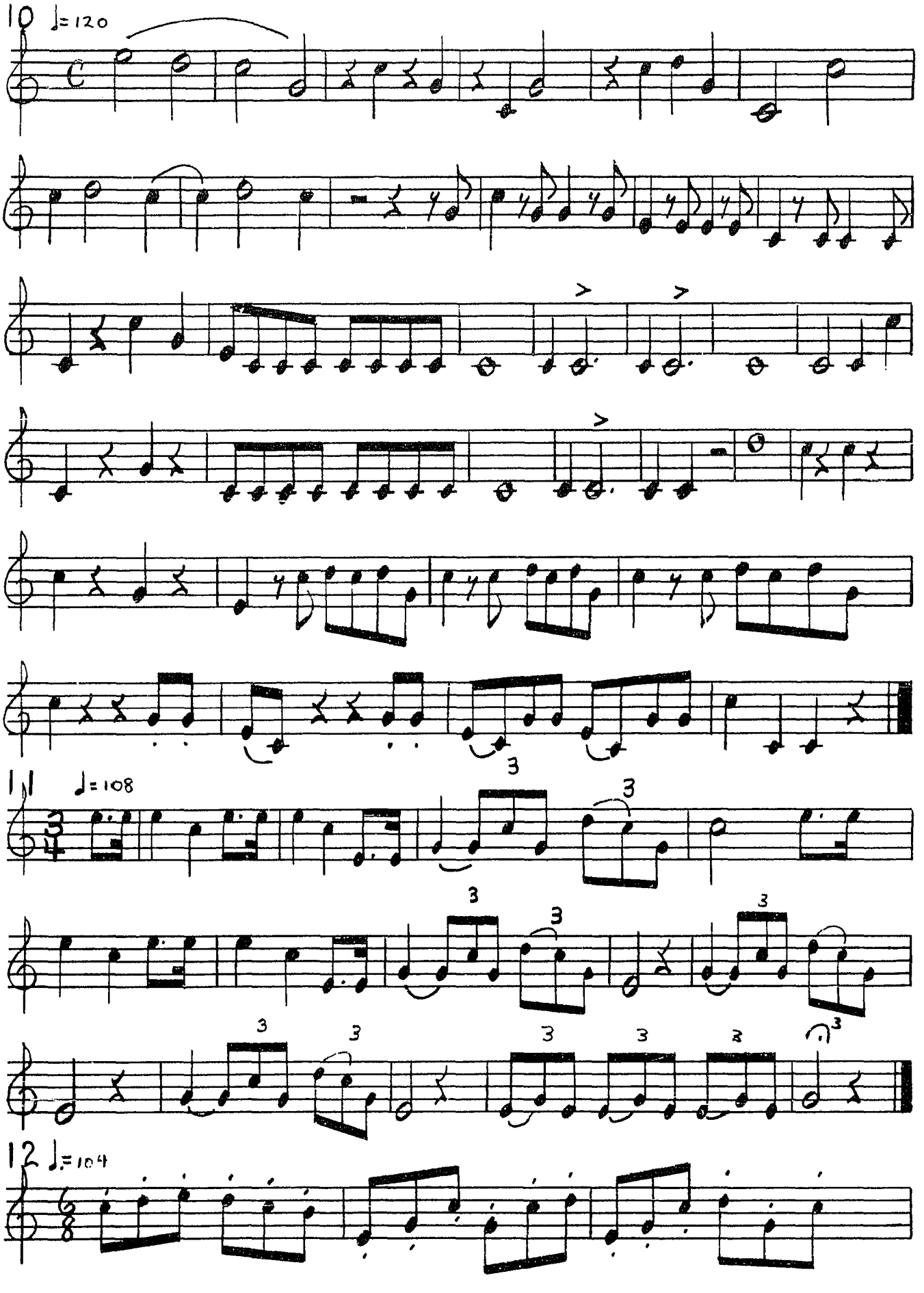


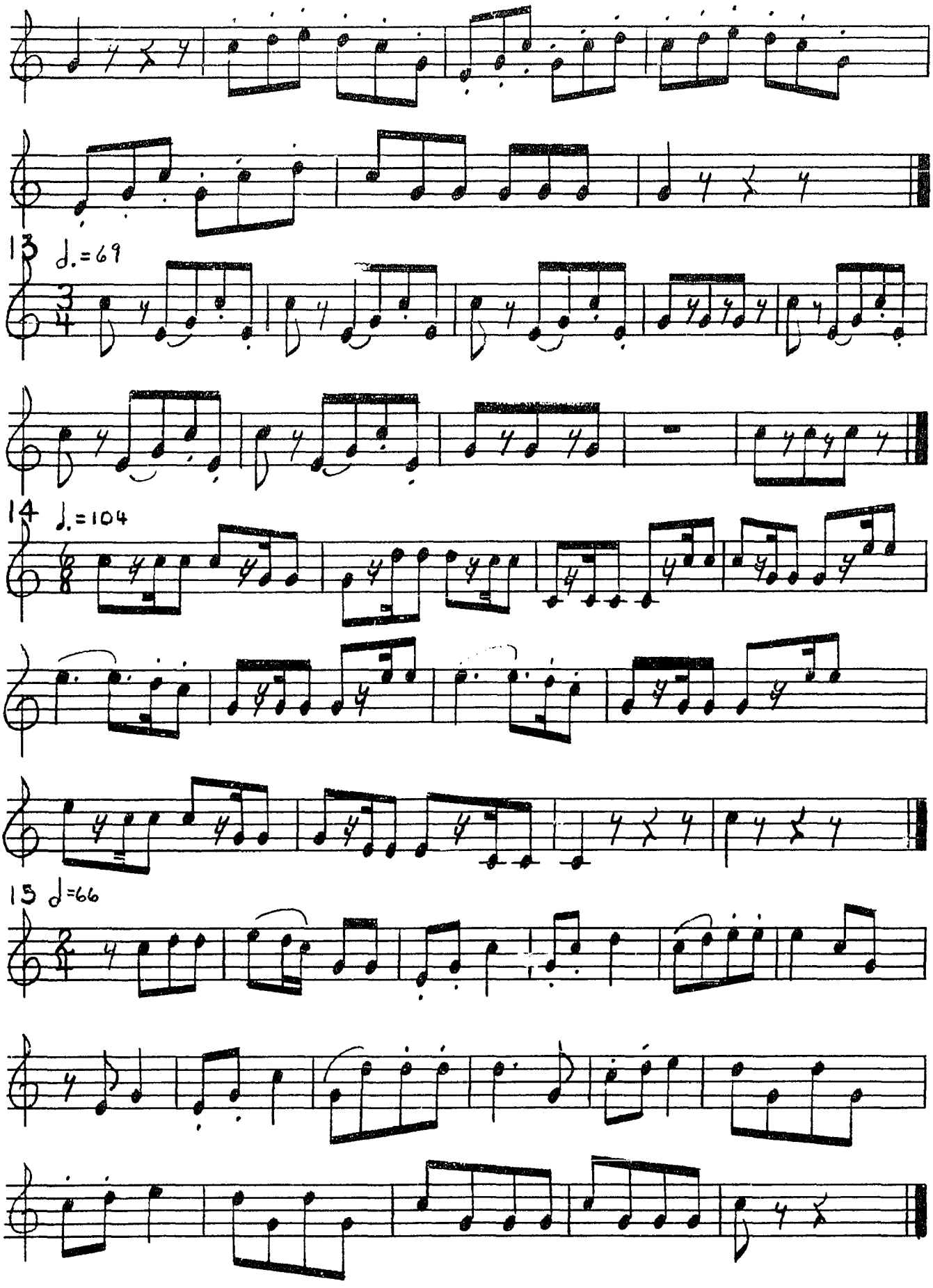
Play the following excerpts in all keys.

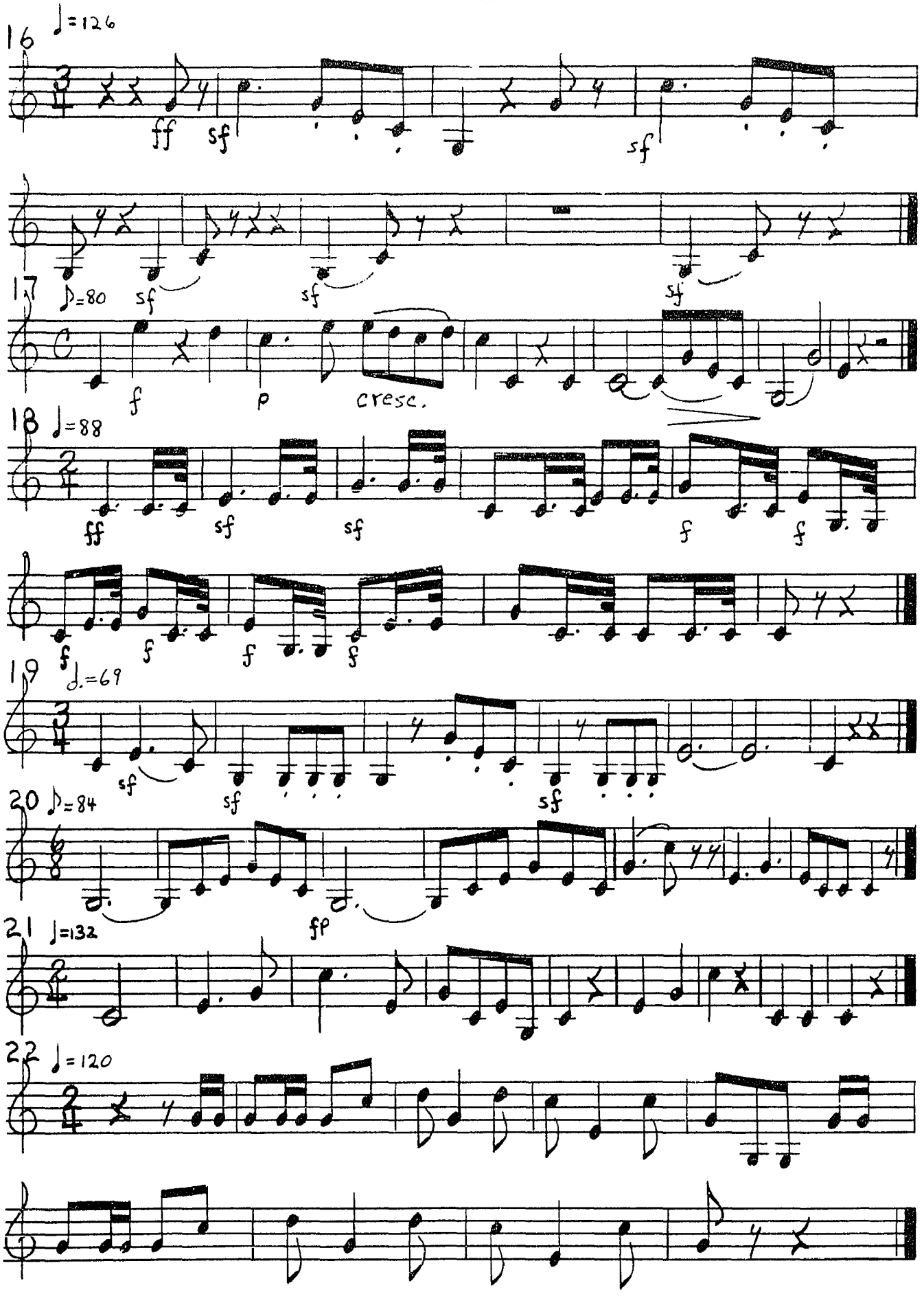


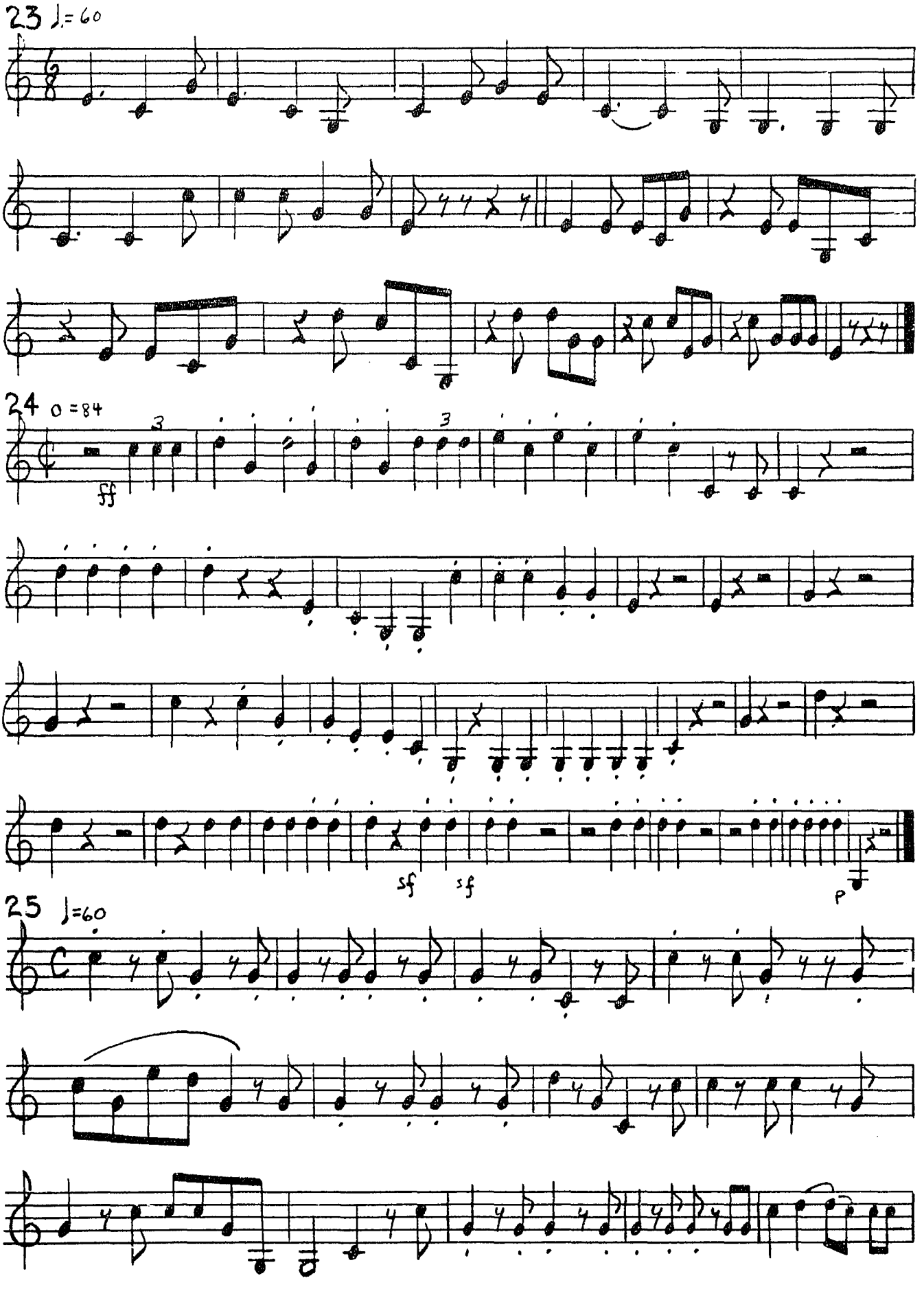

sf
p
sf
sf
Cresc.
5
♩=69
sf
sf
sf
sf
6
♪=60
7
♩=120

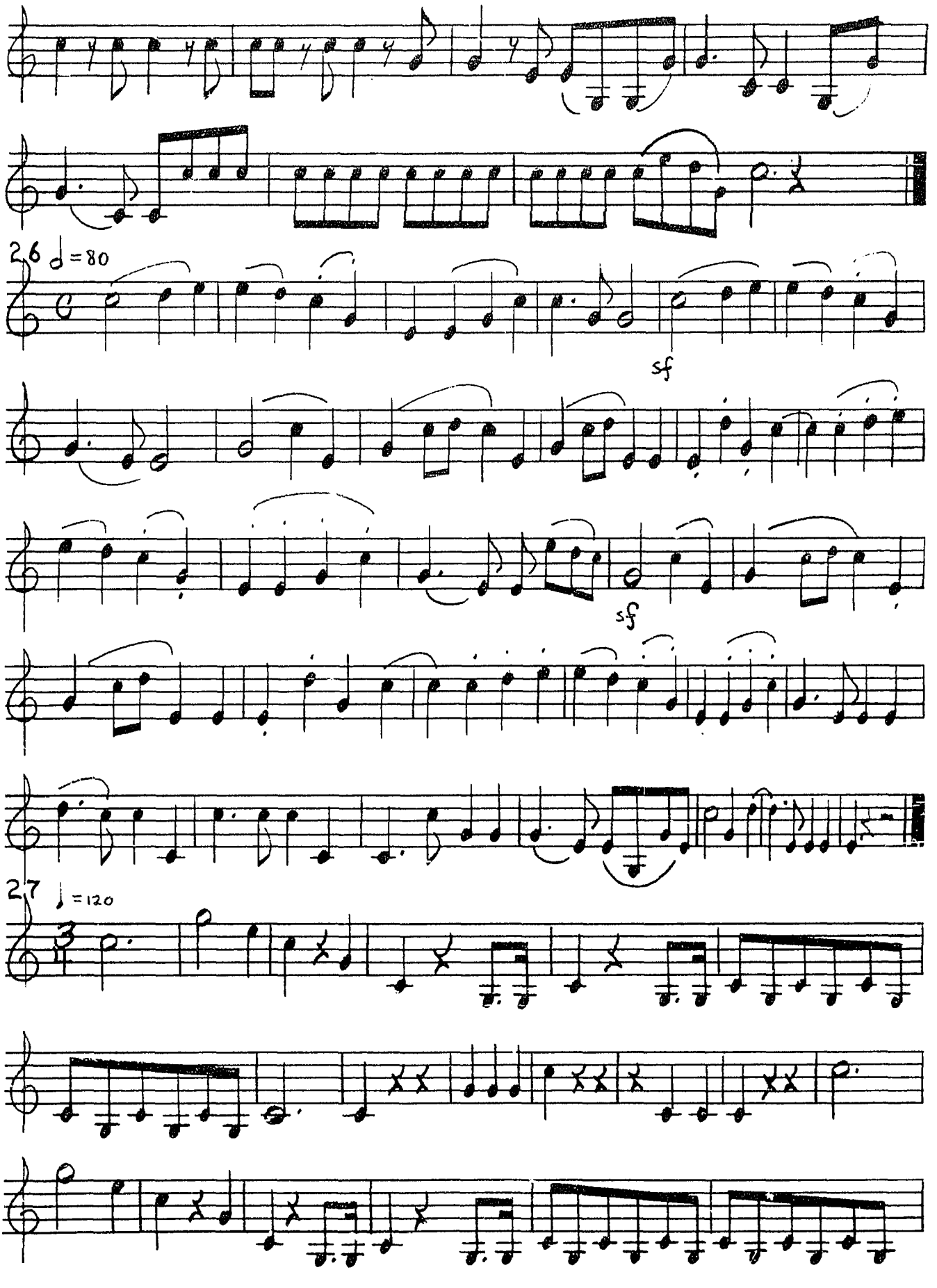

sf
8
♩.=120
9
♩=84
sf
sf
sf
sf
sf
sf

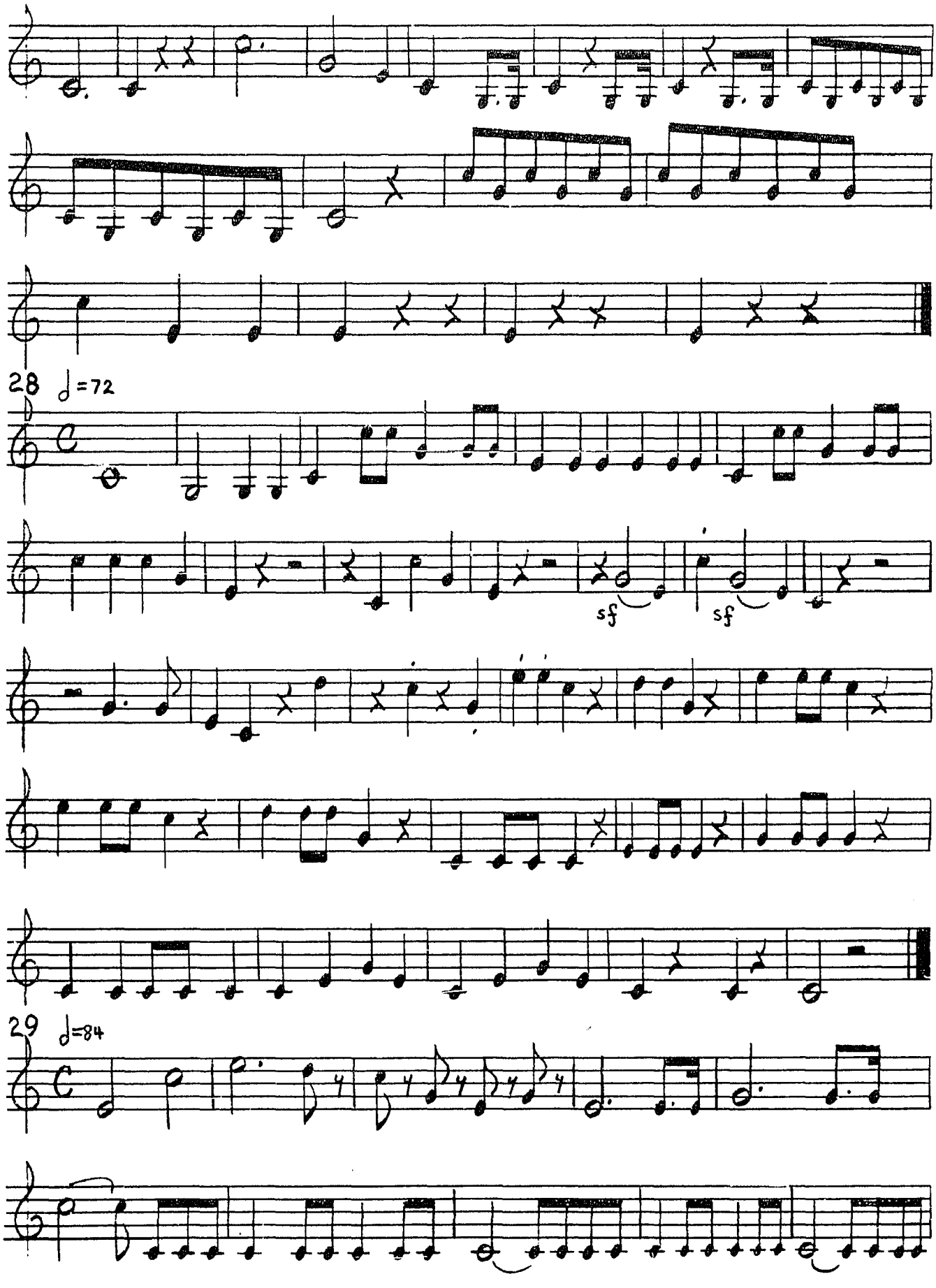

10 ♩= 120
11 ♩= 108
12 ♩= 104

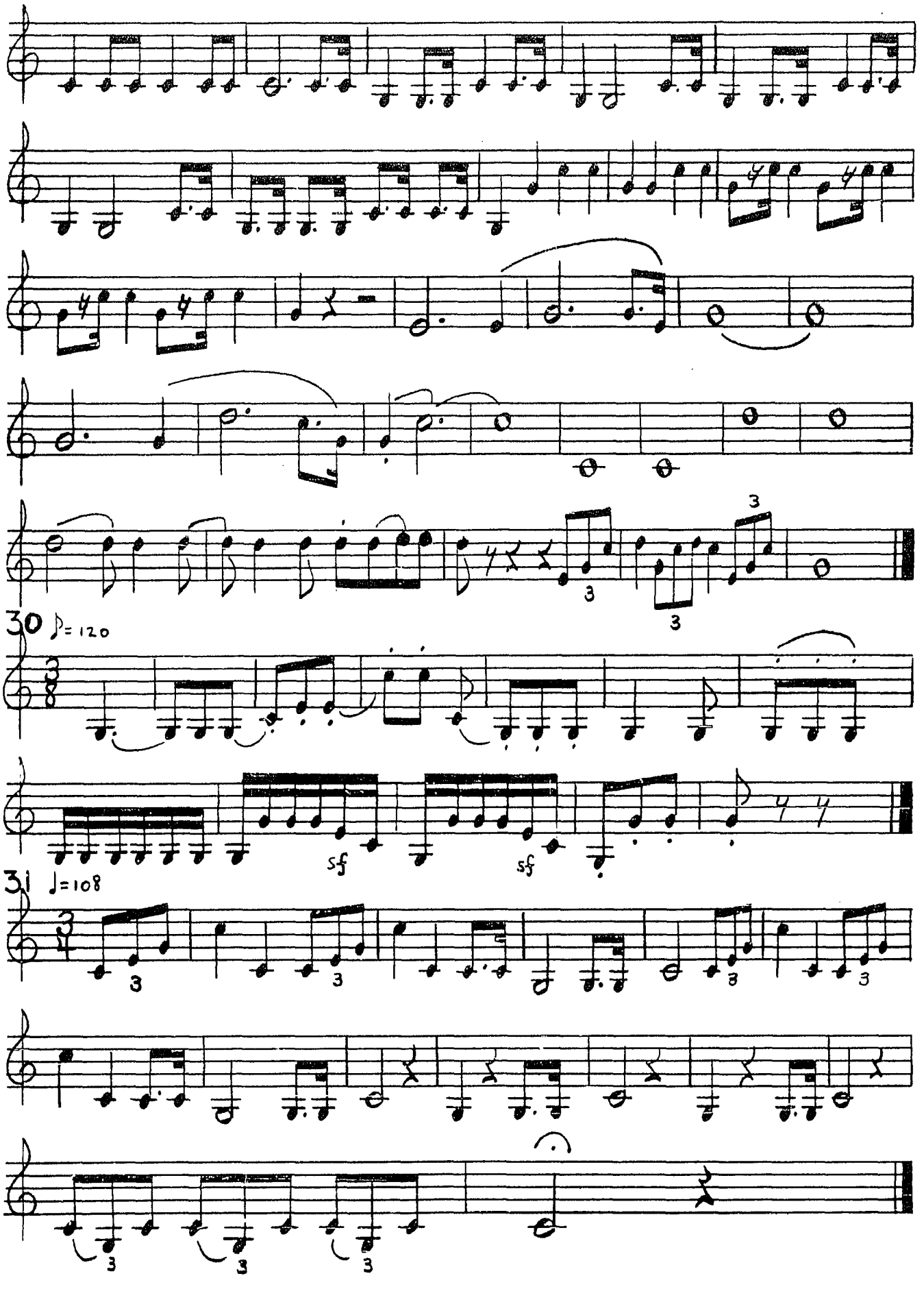

13 ♩.=69
14 ♩.=104
15 ♩=66

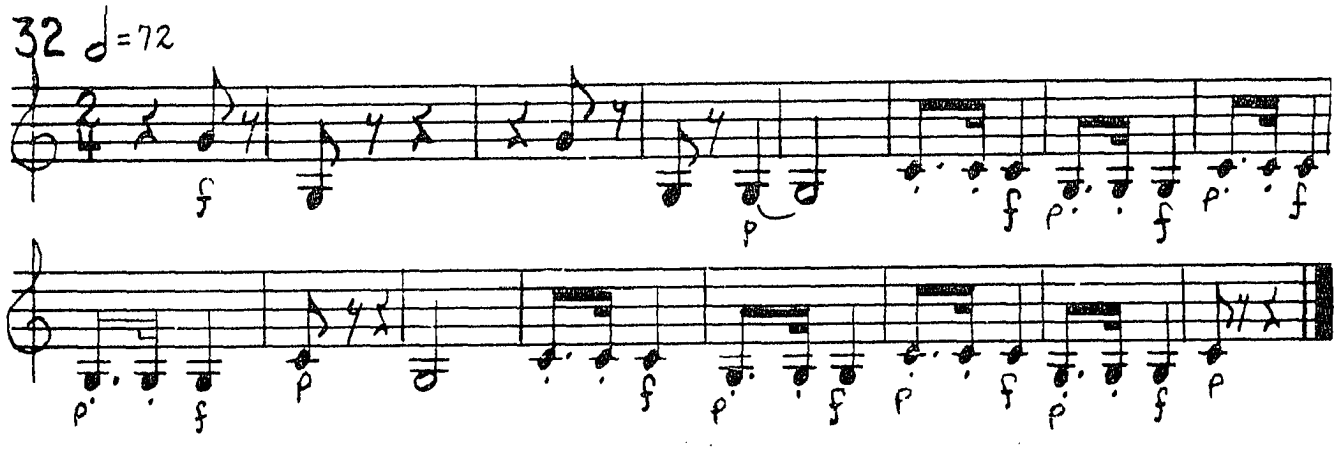

16
♩=126
ff
sf
sf
sf
17
♪=80
sf
sf
sf
f
p
cresc.
18
♩=88
ff
sf
sf
f
f
f
f
f
f
19
♩.=69
sf
sf
sf
20
♪=84
fp
21
♩=132
22
♩=120


23 ♩.= 60
24 𝅗𝅥 = 84
ff
sf
sf
P
25 ♩=60

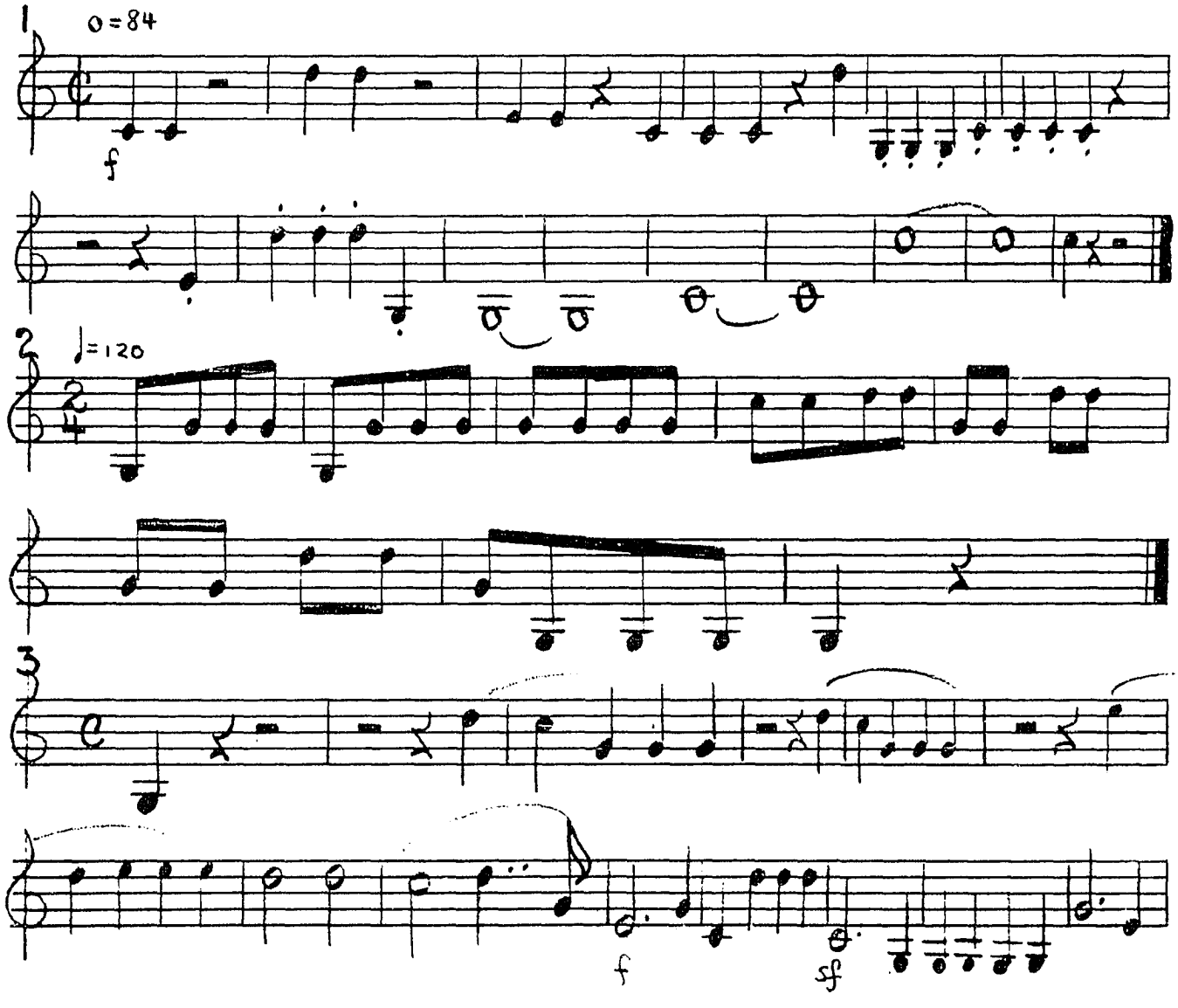

26
♩=80
sf
sf
27
♩=120

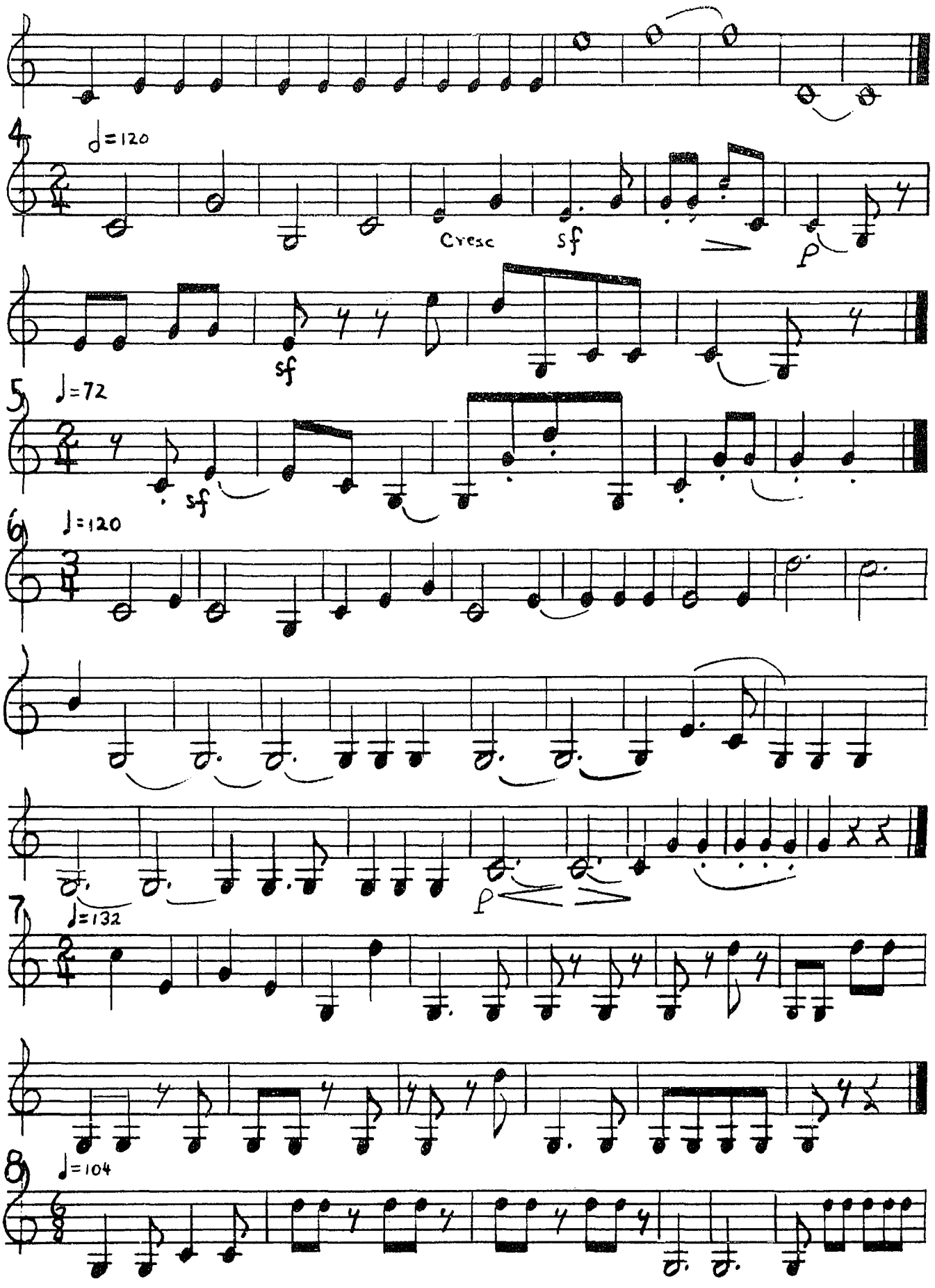

28
♩=72
sf
sf
29
♩=84

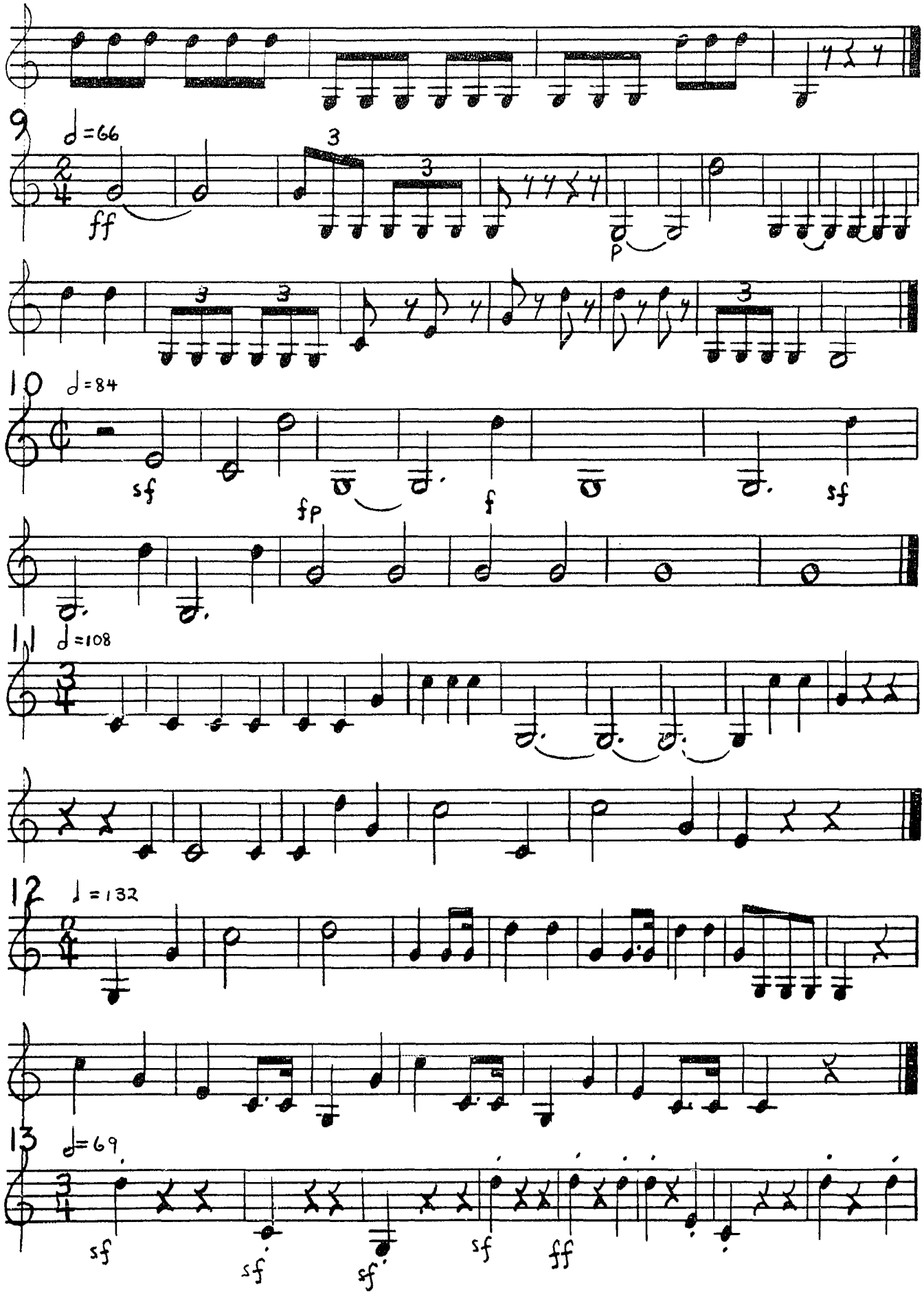

30
♪= 120
sf
sf
31
♩= 108

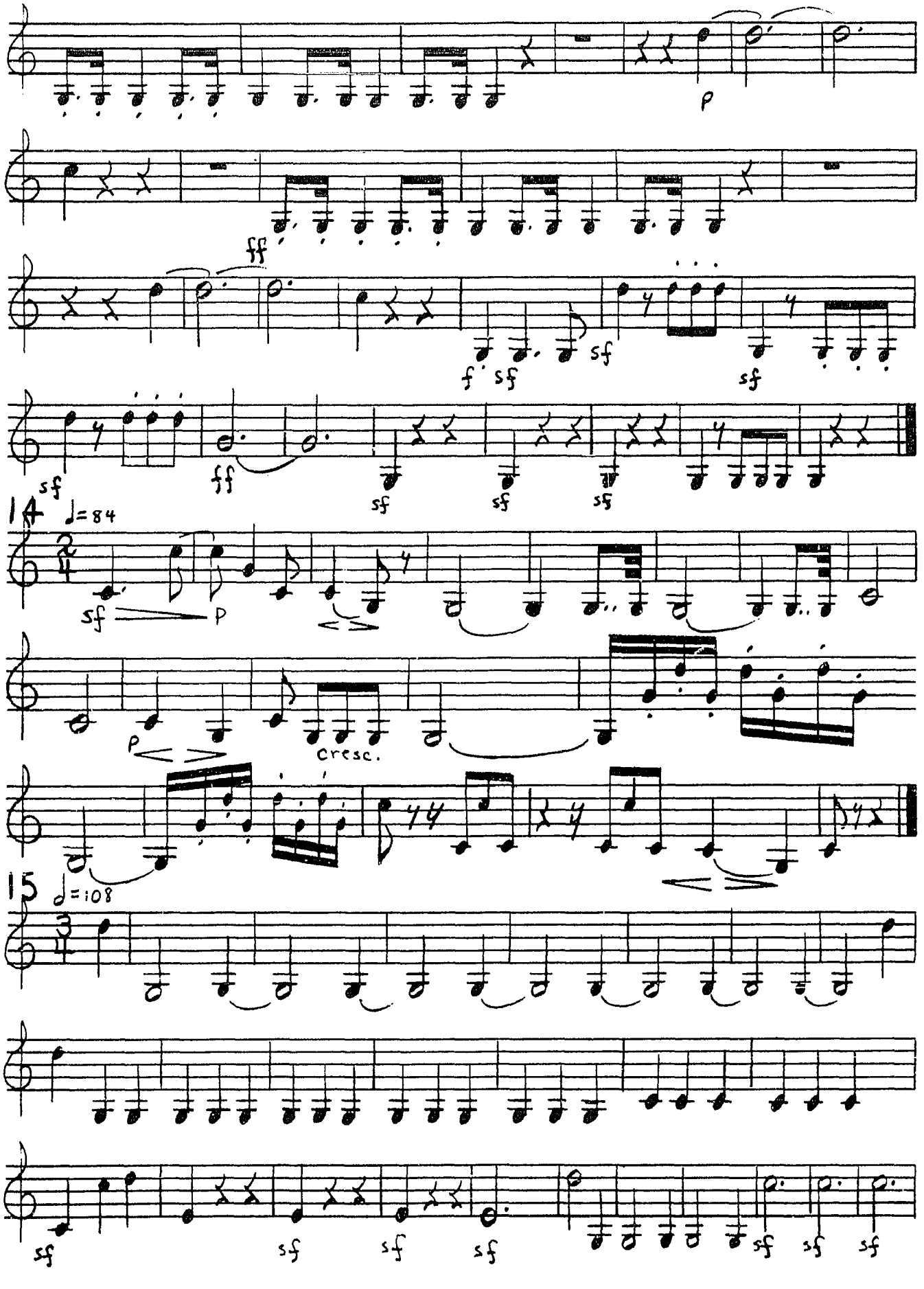


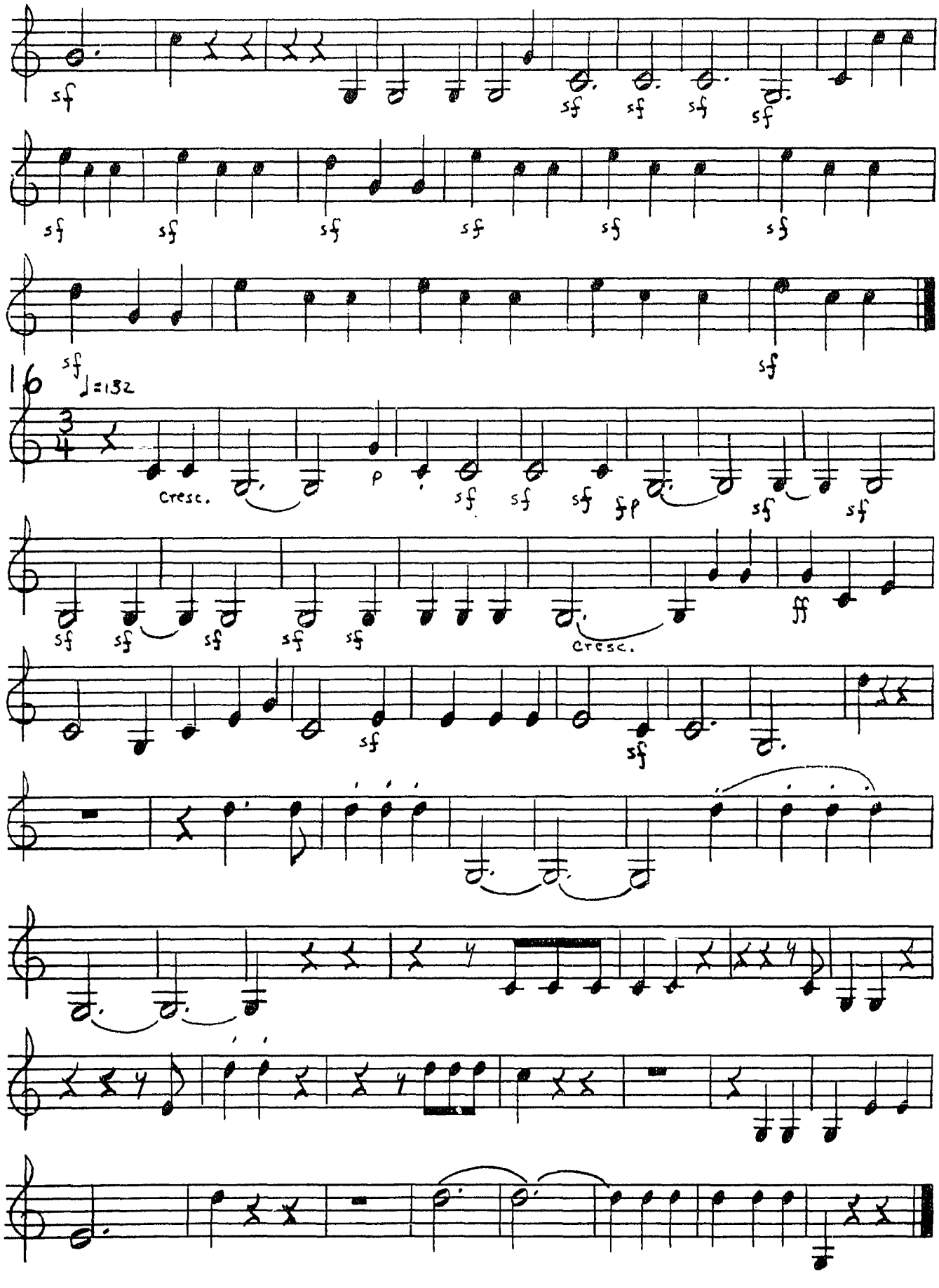
Large leaps were often written in the second horn part.




4
♩=120
Cresc
sf
sf
5
♩=72
sf
6
♩=120
7
♩=132
8
♩=104

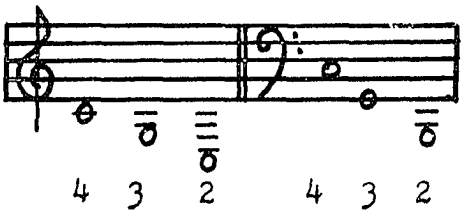

9
♩=66
ff
3
3
p
10
♩=84
sf
fp
f
sf
11
♩=108
12
♩=132
13
♩=69
sf
sf
sf
sf
ff


p
ff
f sf
sf
sf
sf
ff
sf
sf
sf
14 ♩=84
sf
p
p
cresc.
15 ♩=108
sf
sf
sf
sf
sf
sf
sf

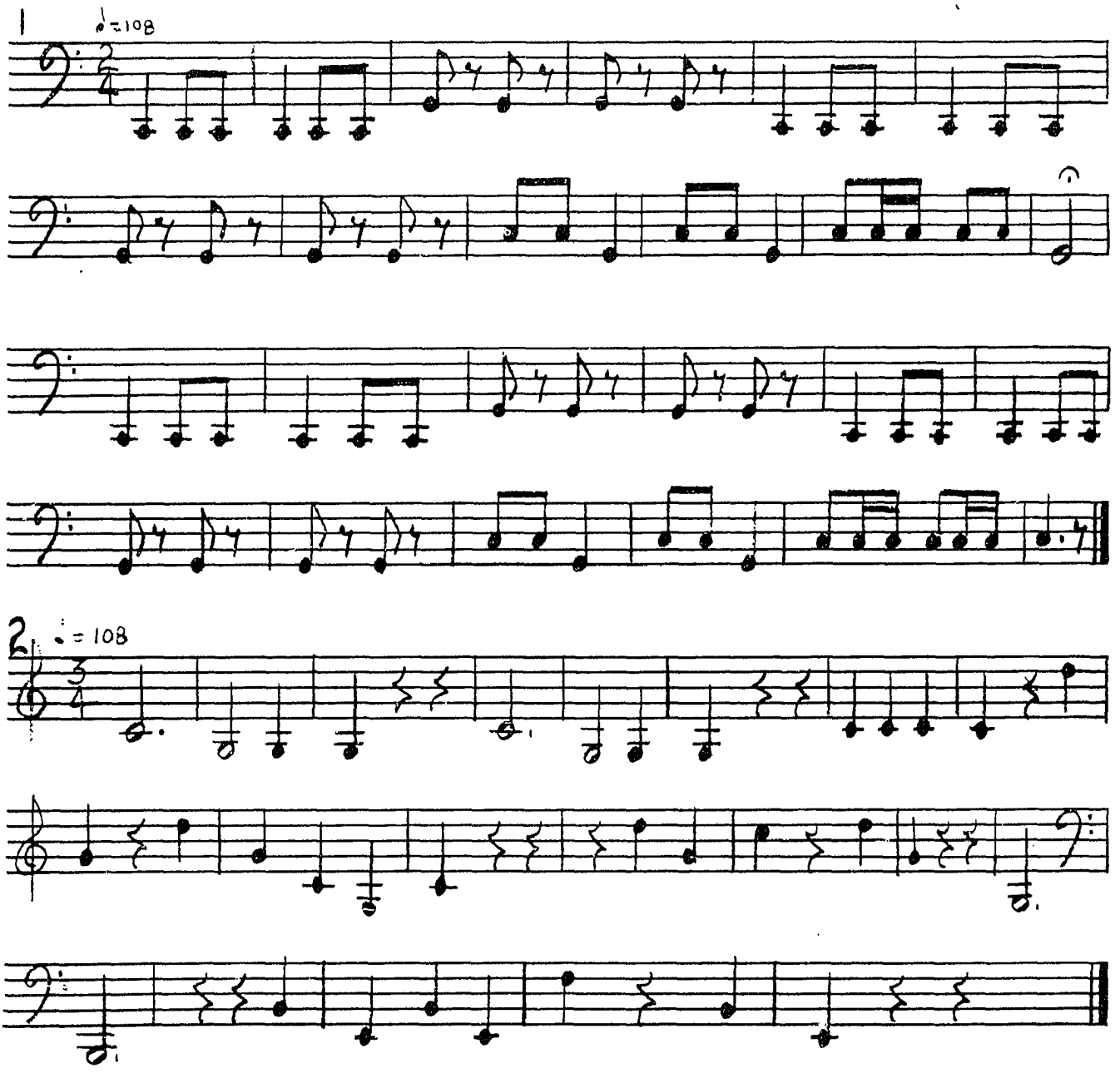

sf
16
♩=132
cresc.
p
fp
ff

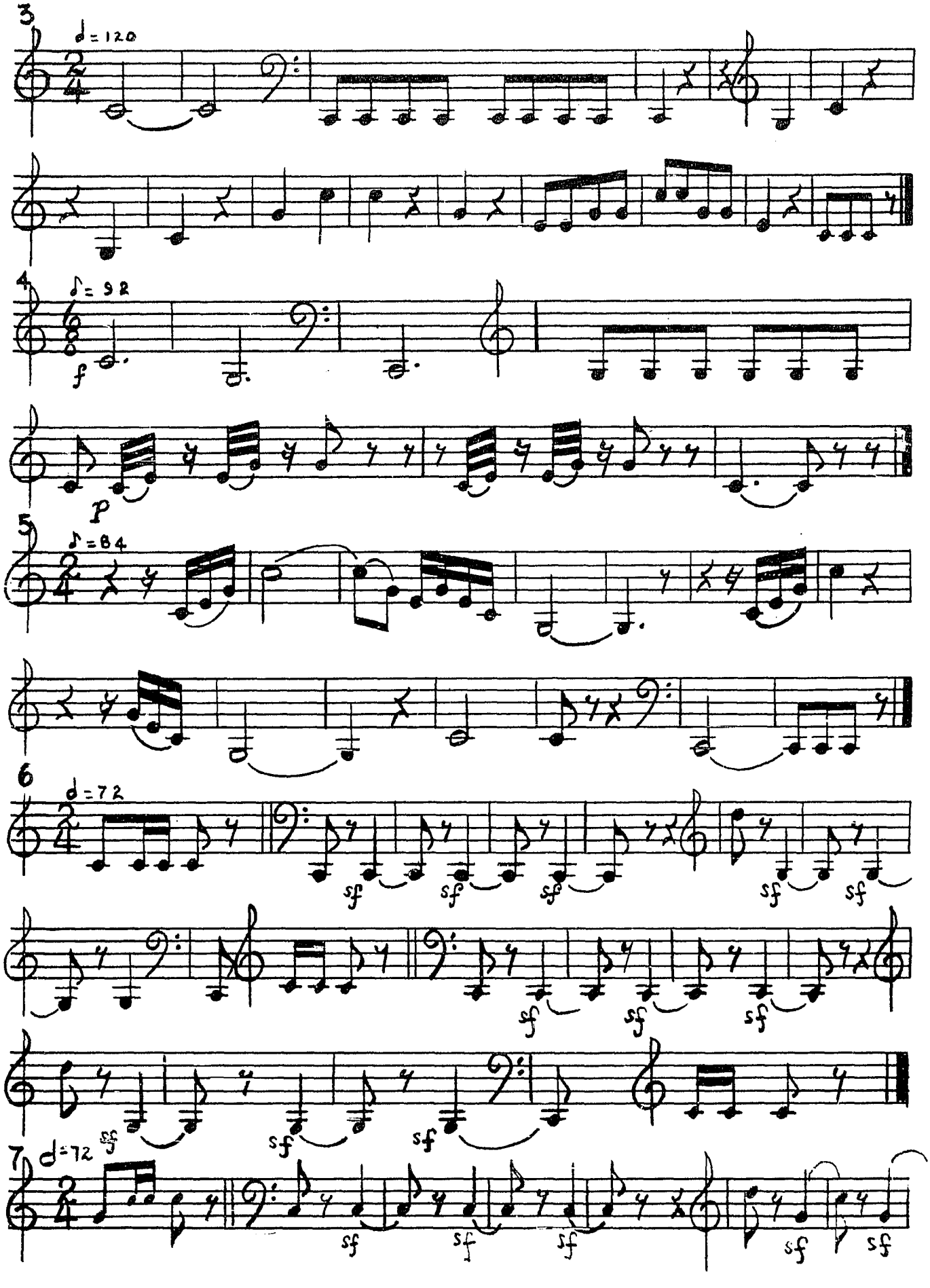
Horn in Bass Clef

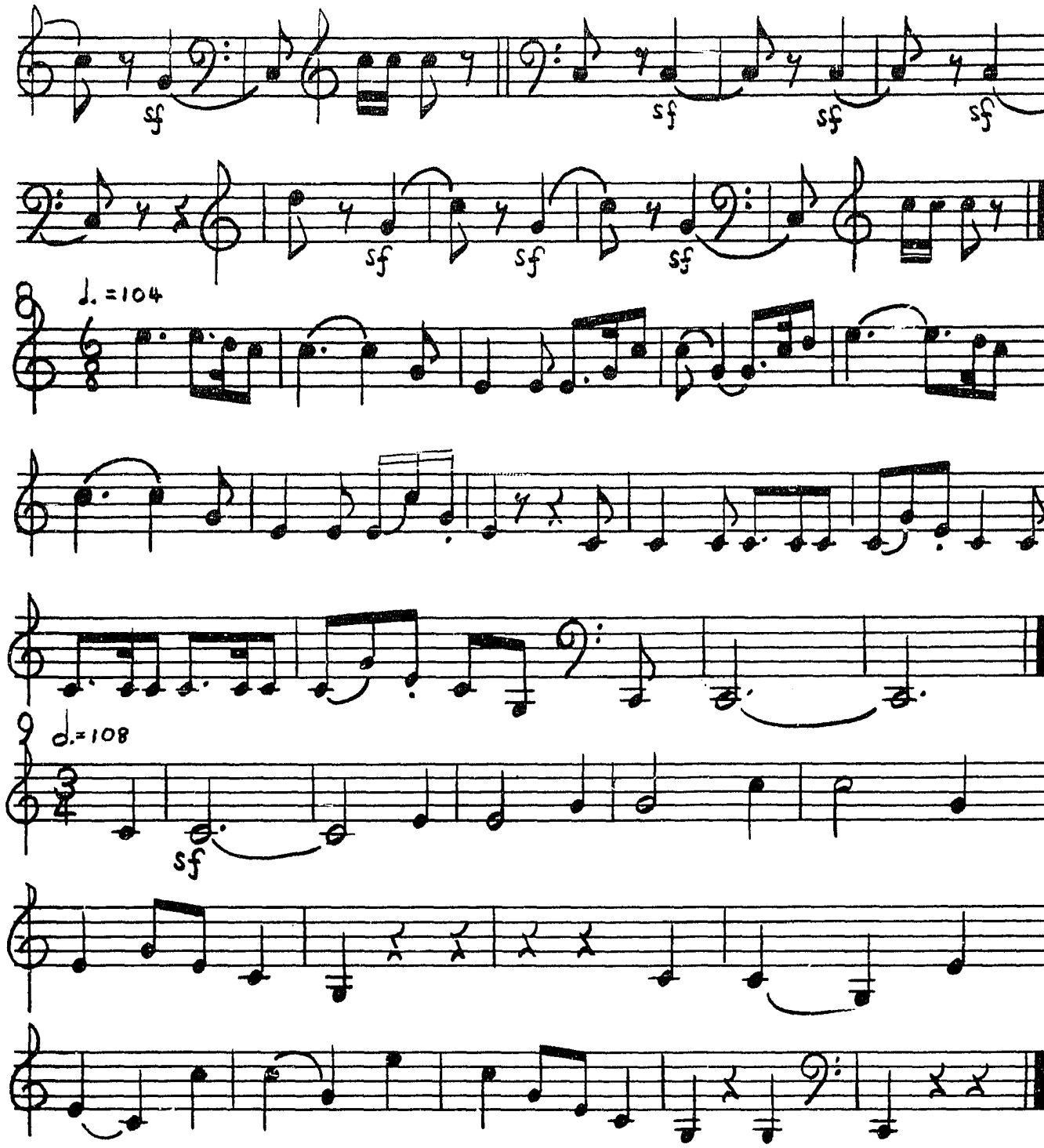
The lower notes in the second horn part were frequently written in bass clef. When the notes were in the bass clef they were written an octave lower.



Omit the following excerpts in the keys of C and Bb basso.



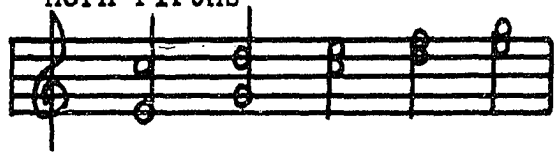

3
♩= 120
4
♪= 92
f
p
5
♪= 84
6
♩= 72
sf
7
♩= 72
sff
sf

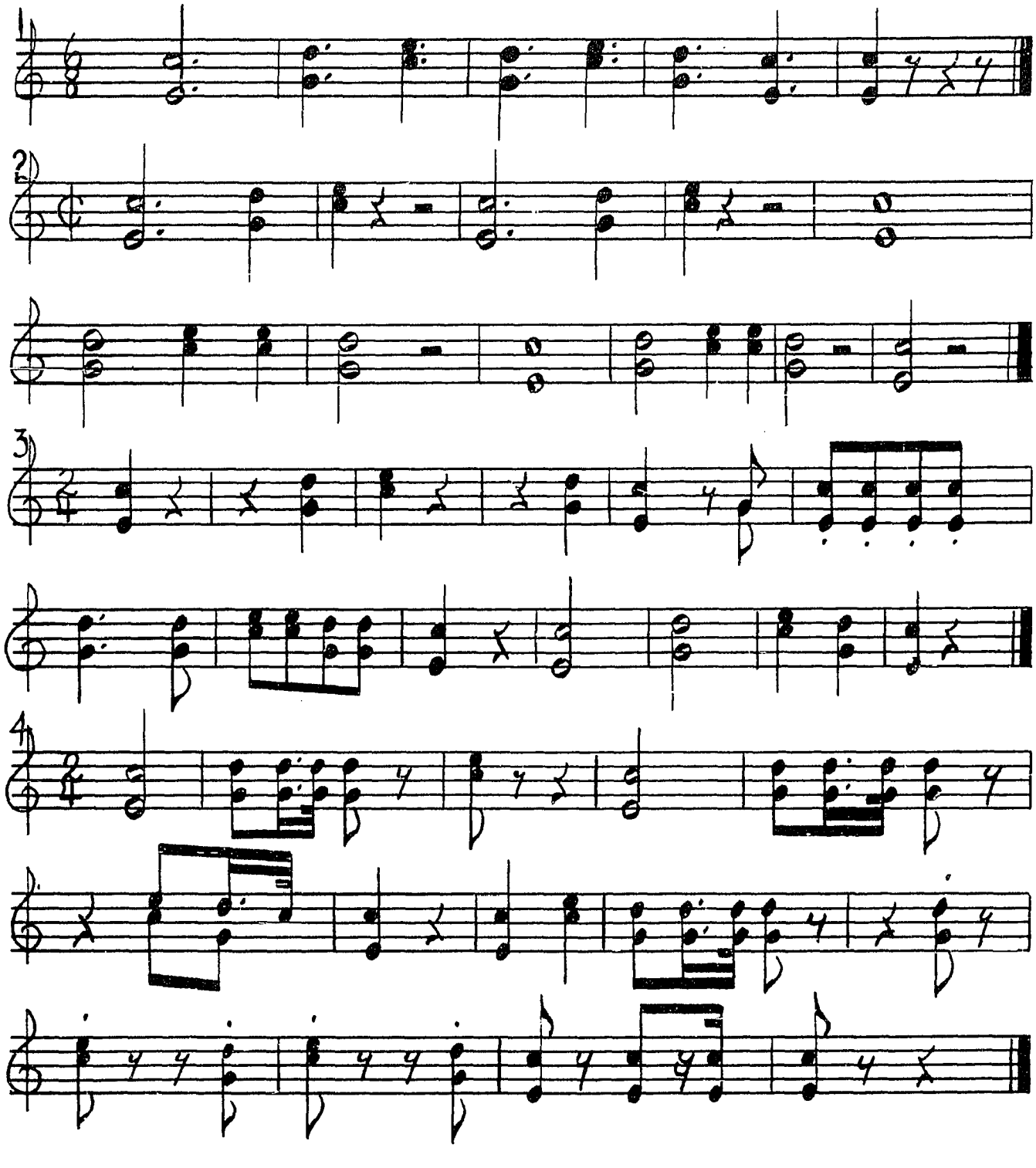

sf
sf
sf
sf
sf
sf
sf
♩. = 104
♩. = 108
sf

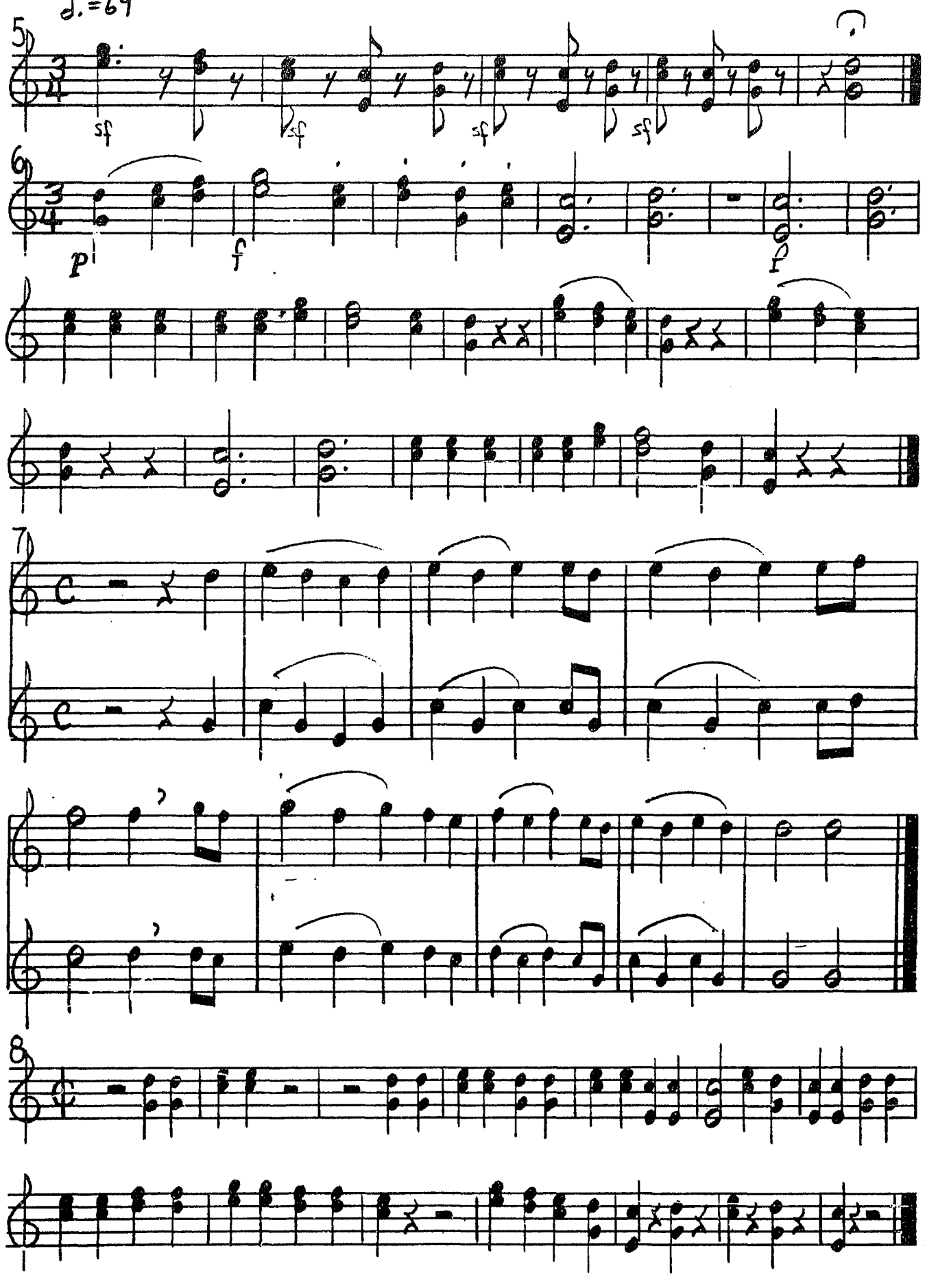
Orchestral Excerpts for Two Horns

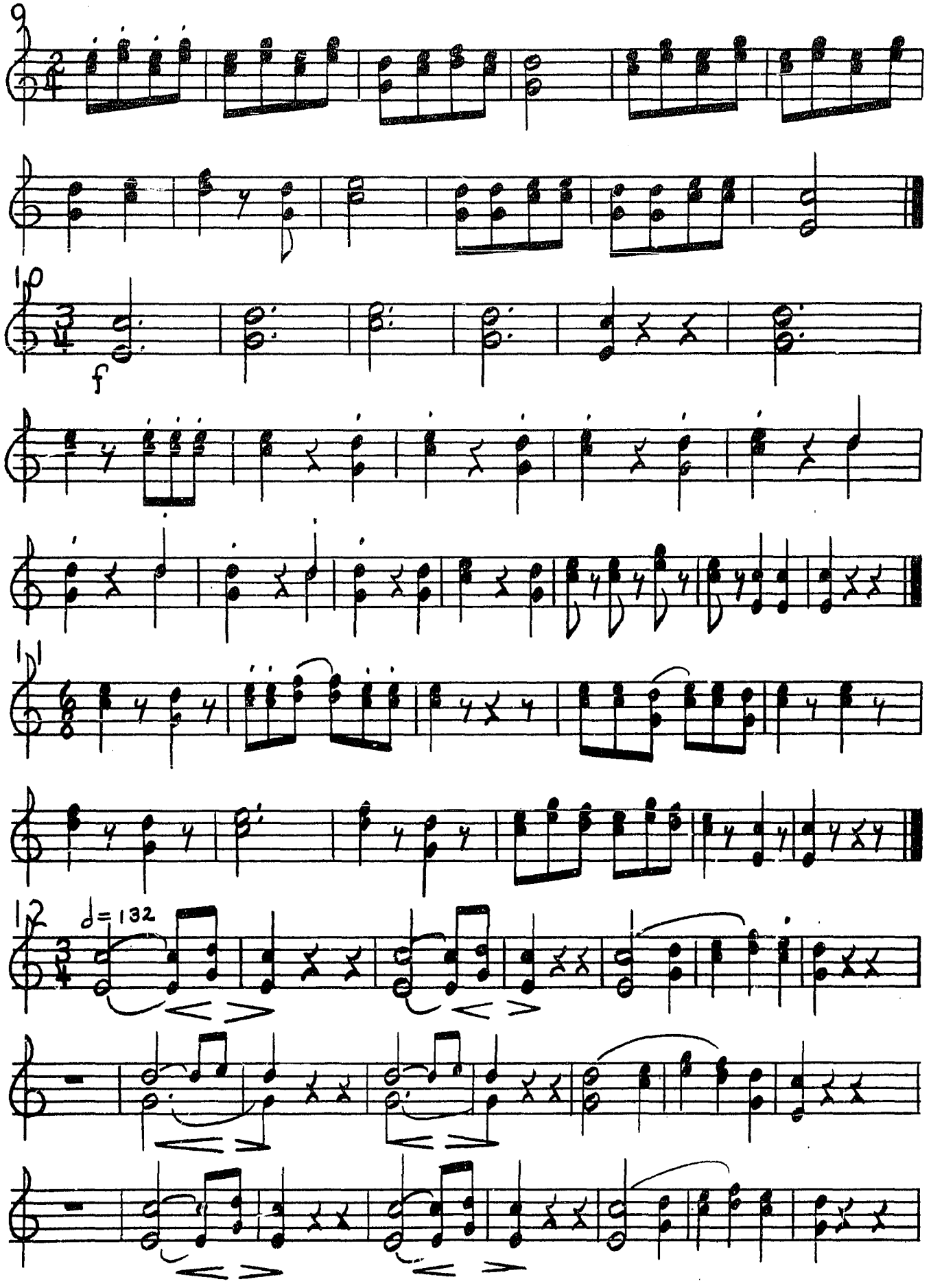
The most common scoring for horns written in pairs was octaves, unisons, and horn fifths.

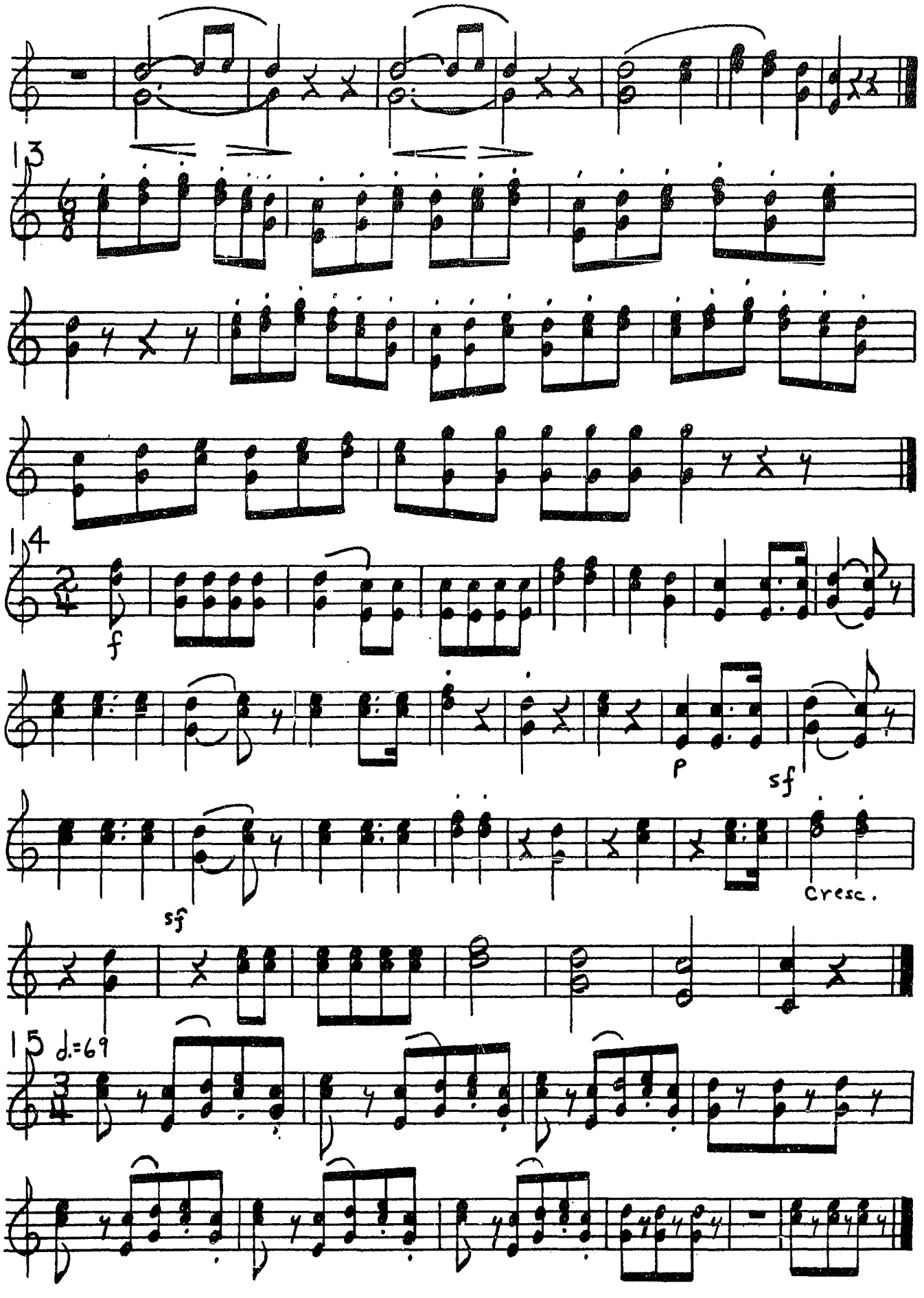
Horn Fifths

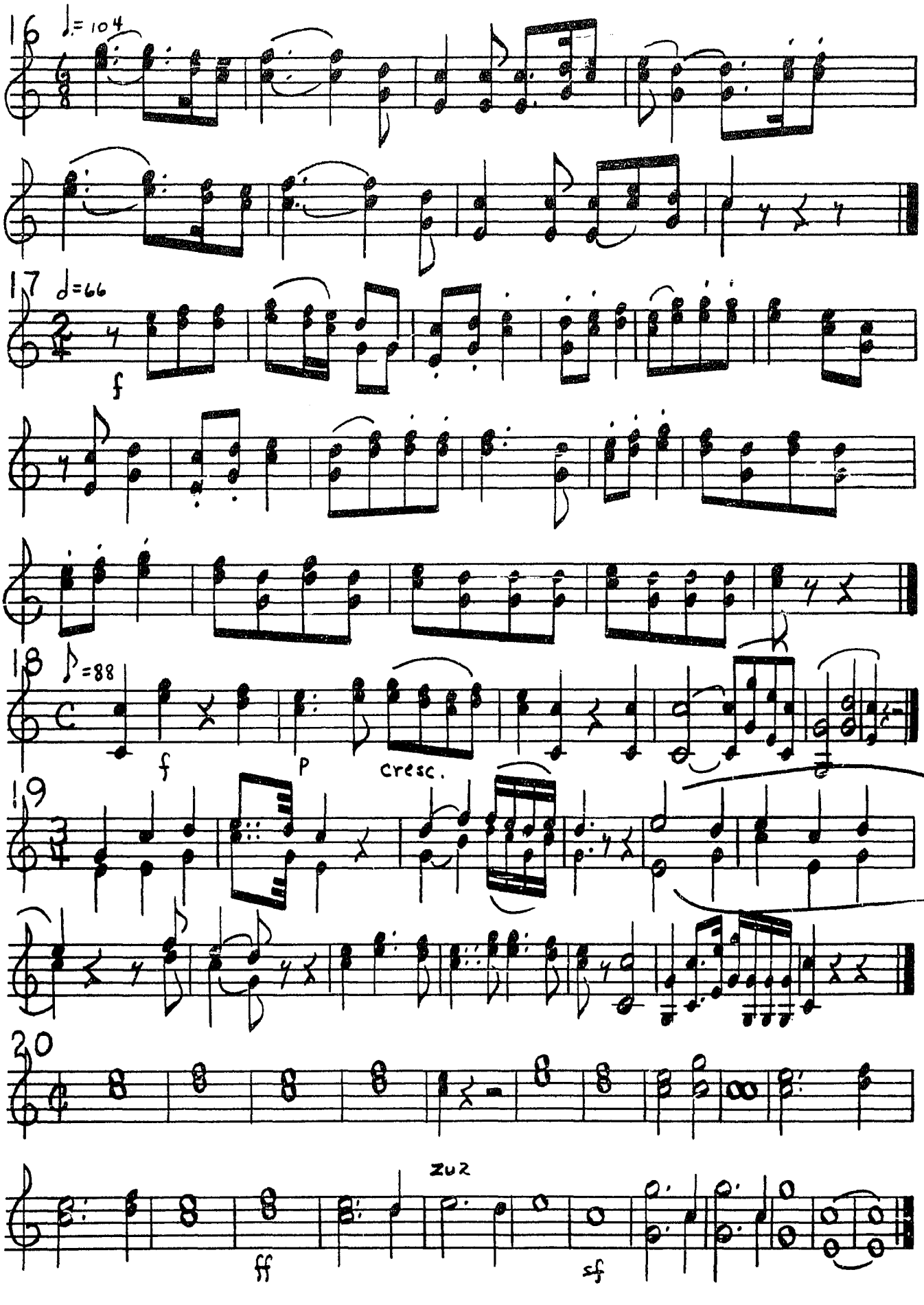


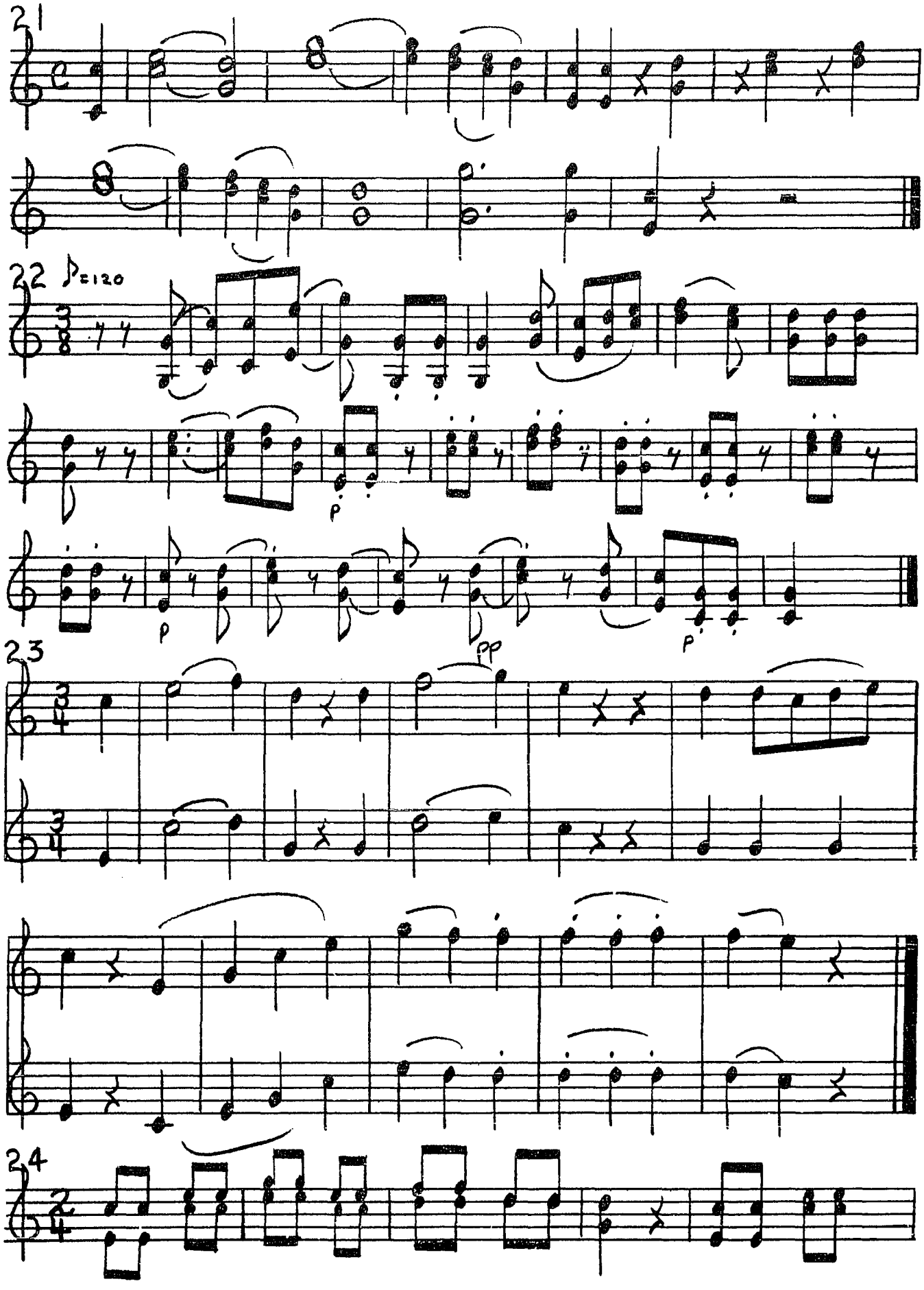


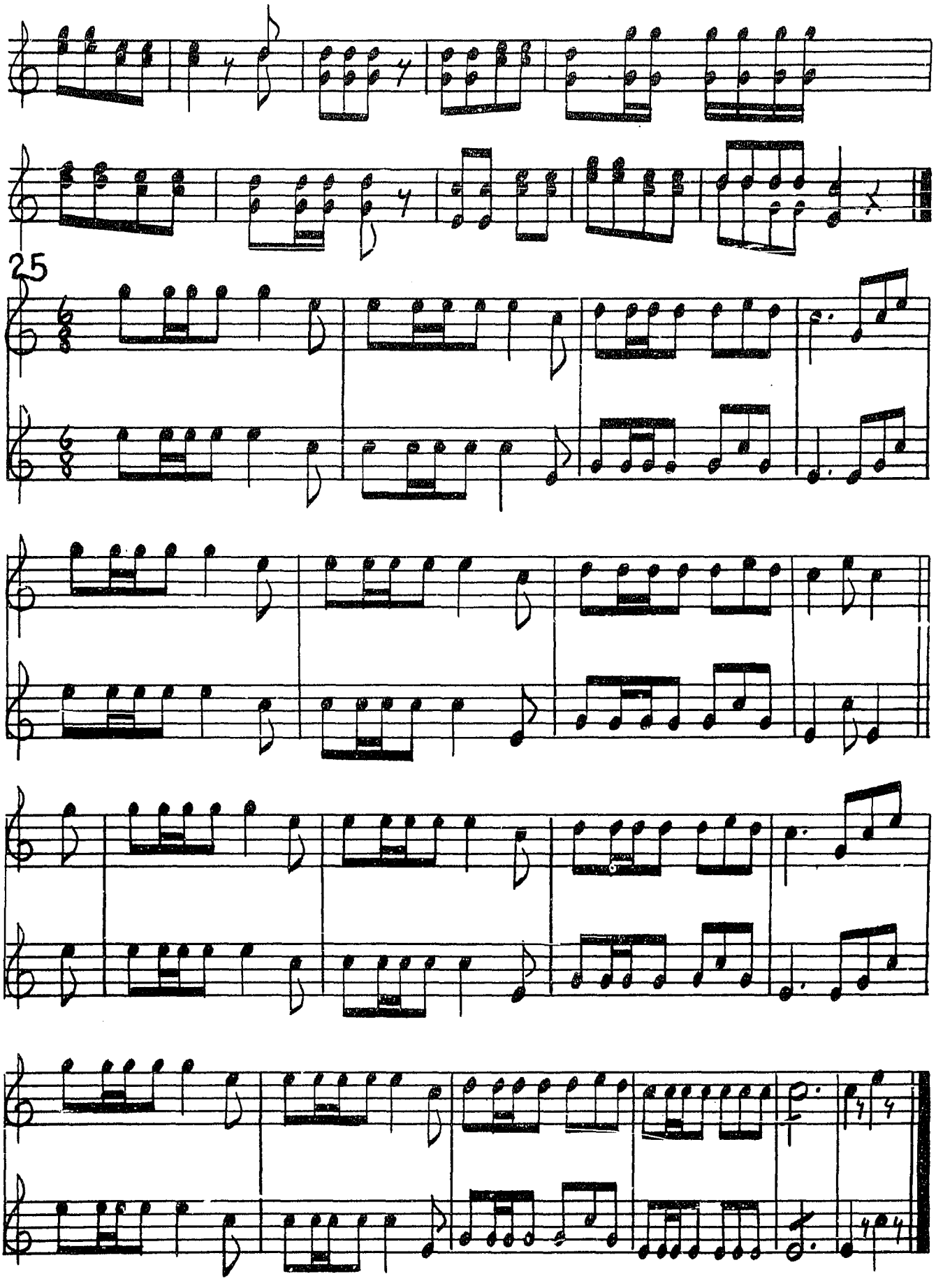

♩.=69
5
sf
sf
sf
sf
6
p
f
f
7
8

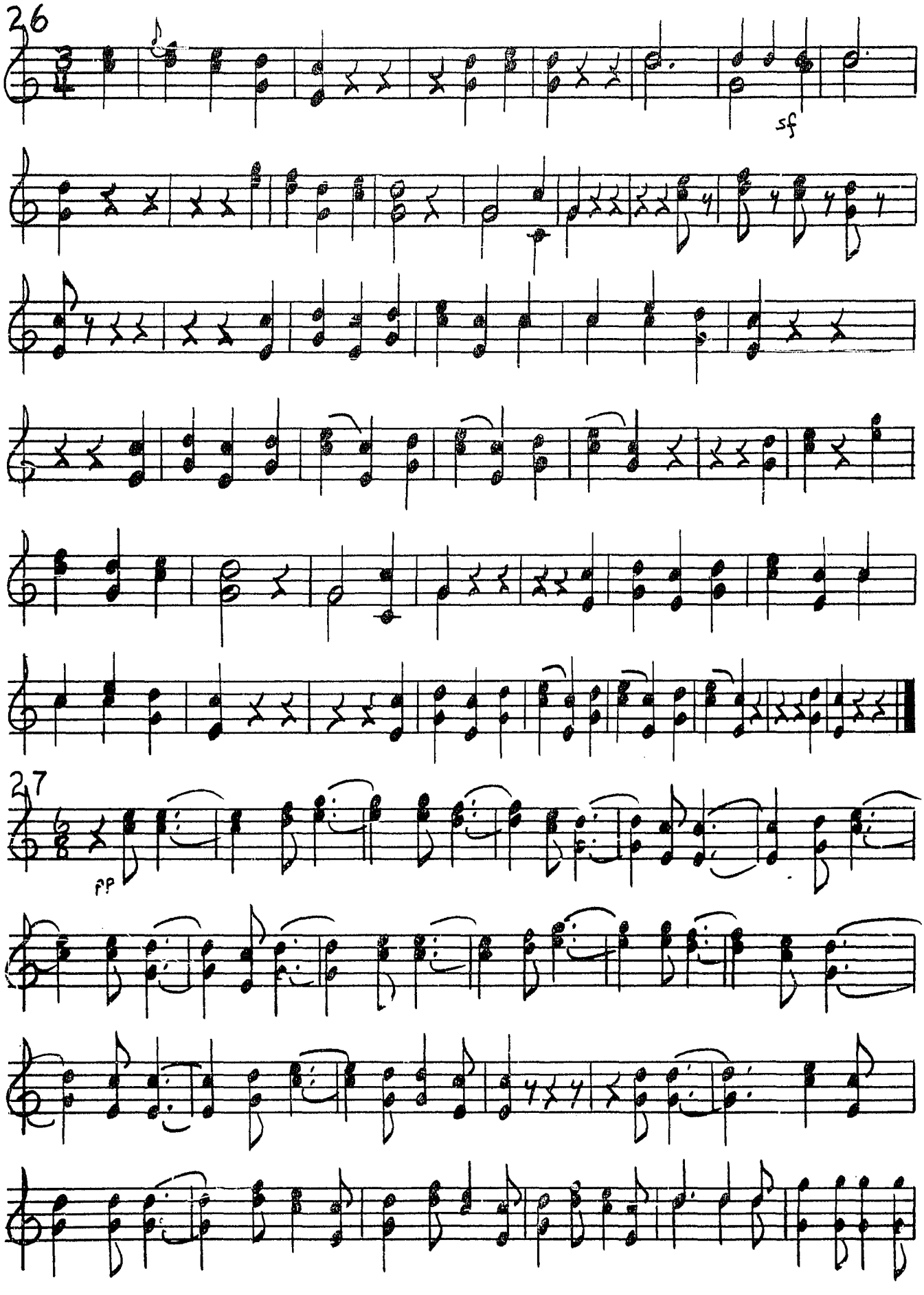

9
10
f
11
12
♩=132

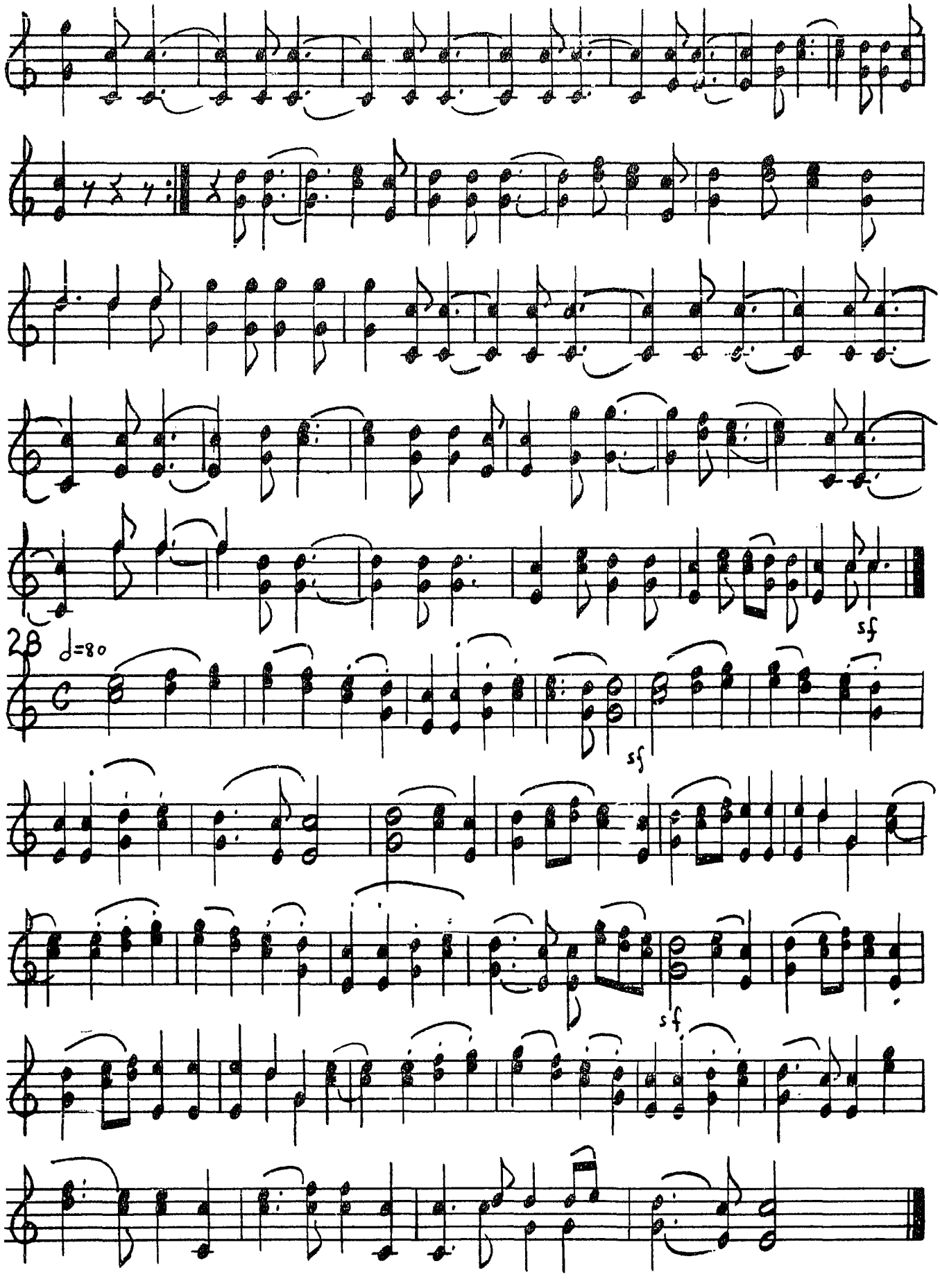

13
14
f
p
sf
sf
Cresc.
15 ♩.=69

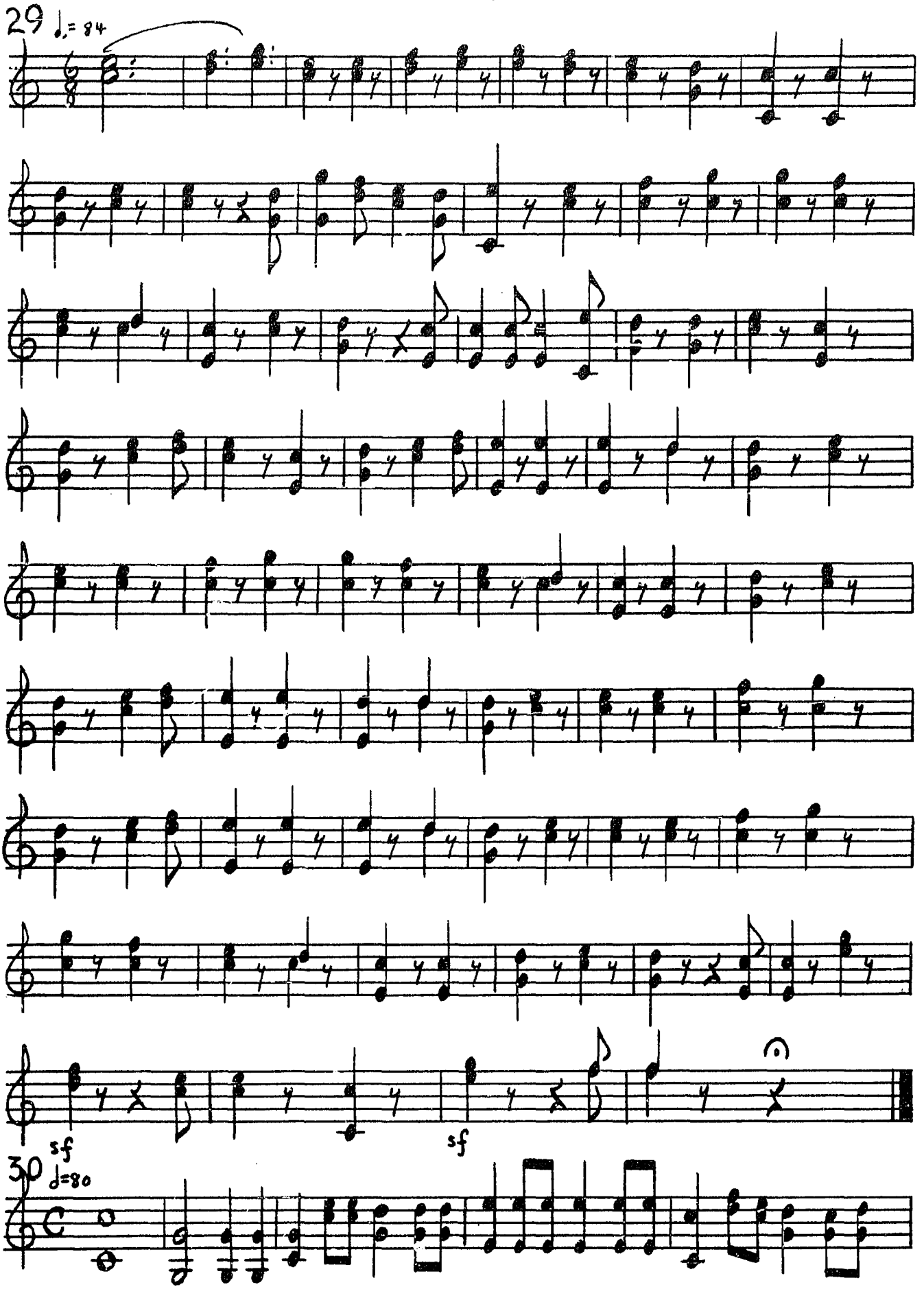

16
♩.= 104
17
♩=66
f
18
♪=88
f
p
cresc.
19
20
zu2
ff
sf

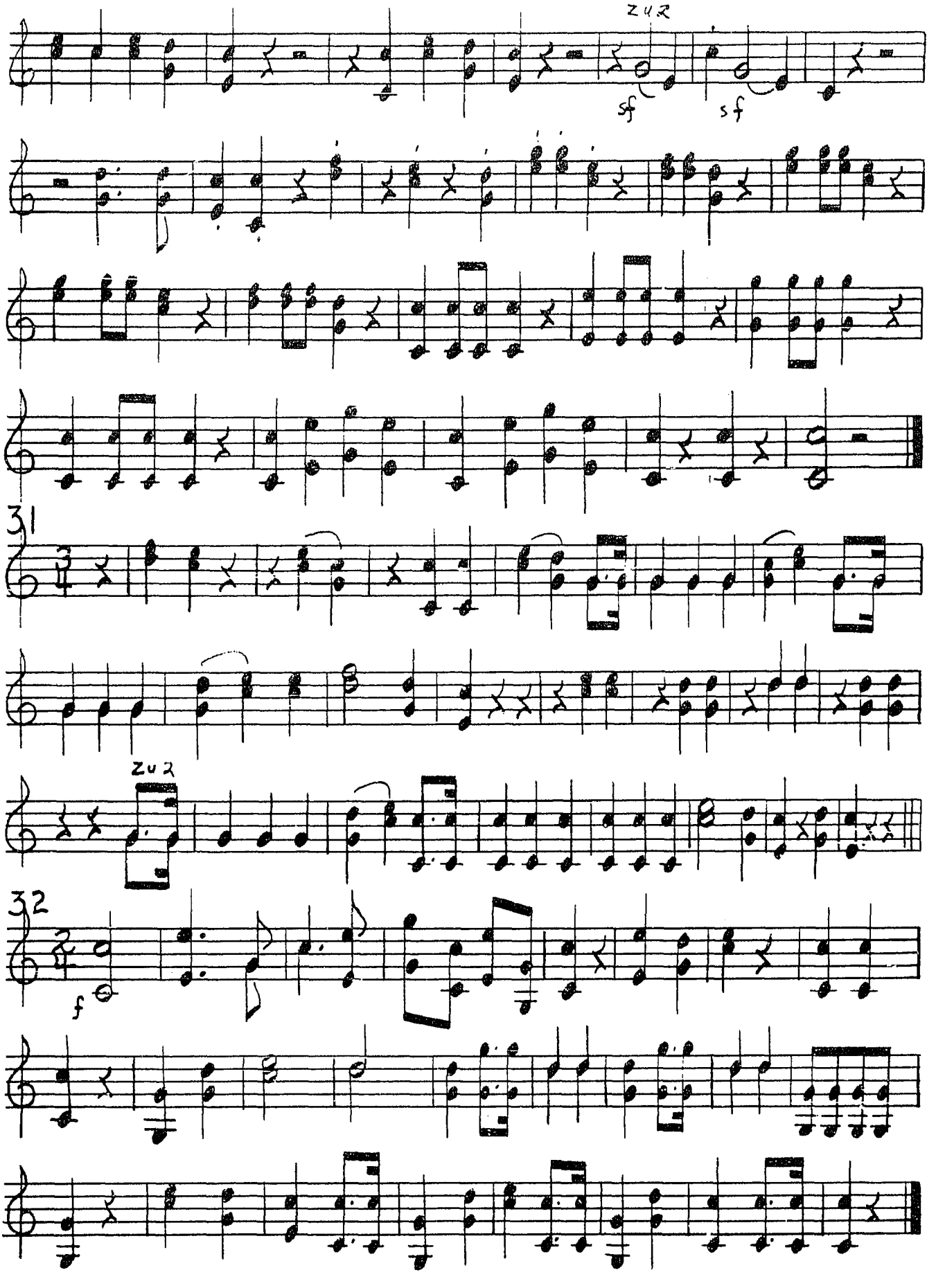

21
22
♪=120
p
p
p
23
pp
24

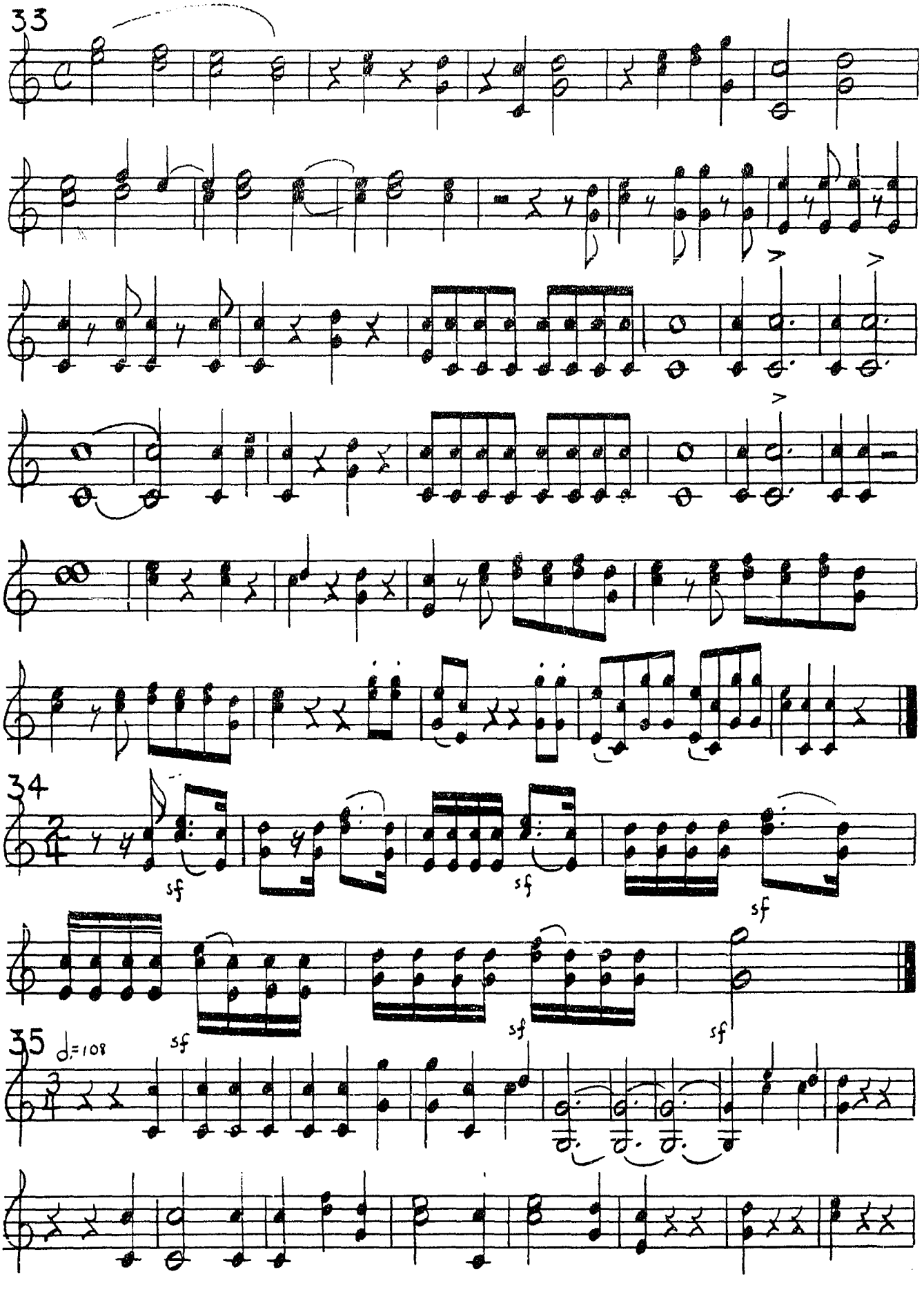

25

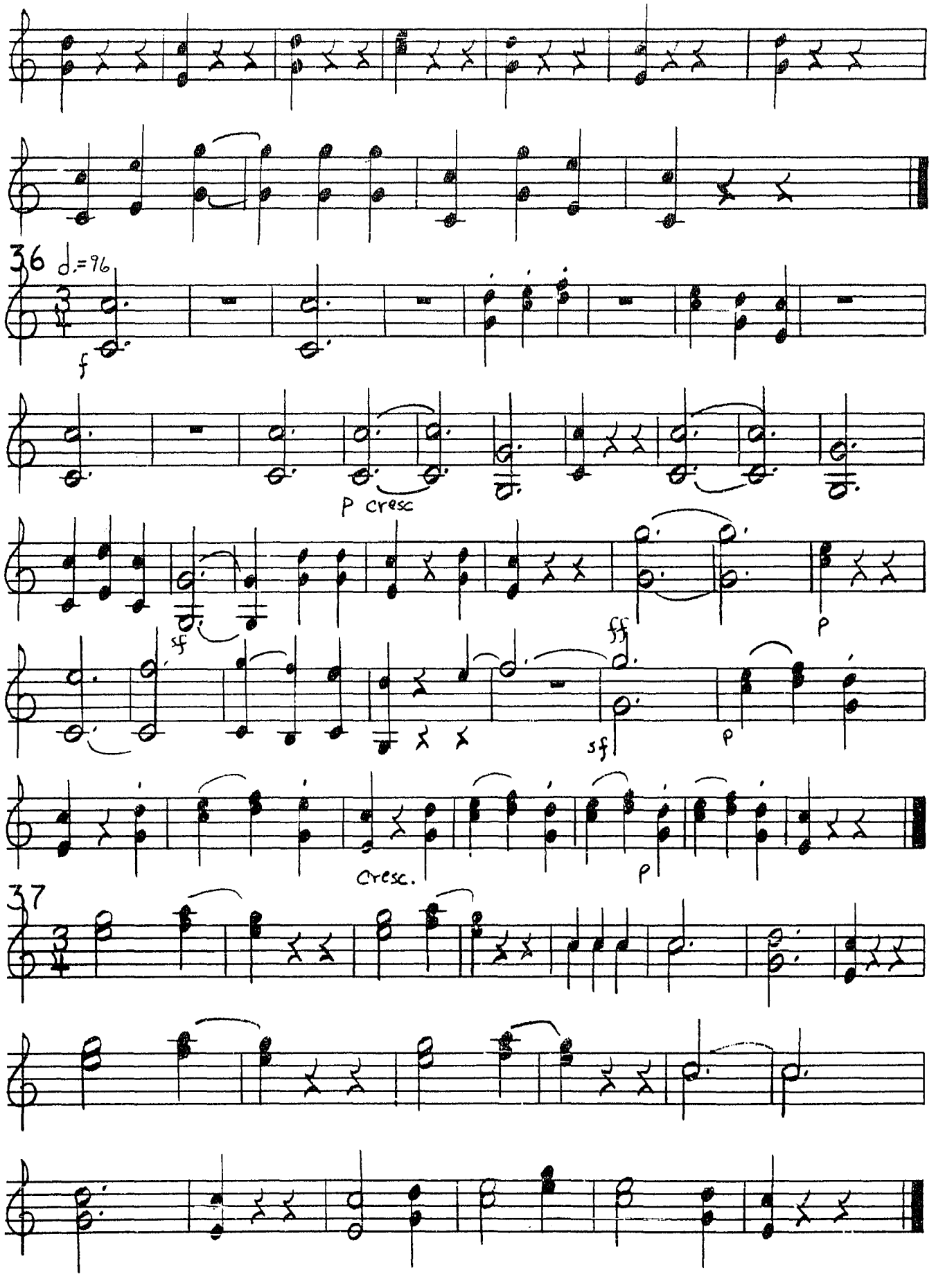

26
sf
27
pp

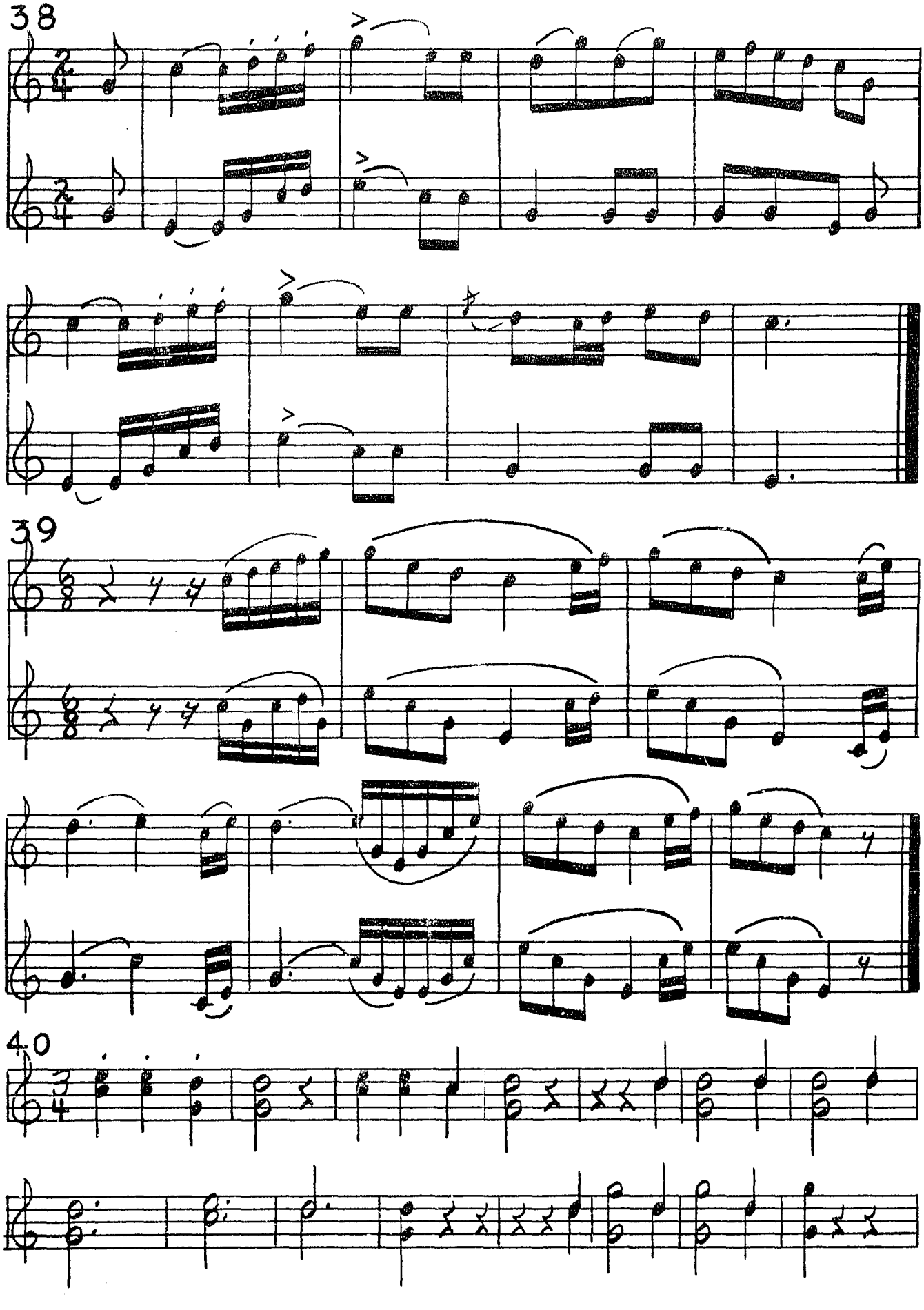

28
♩=80
sf
sf
sf
sf

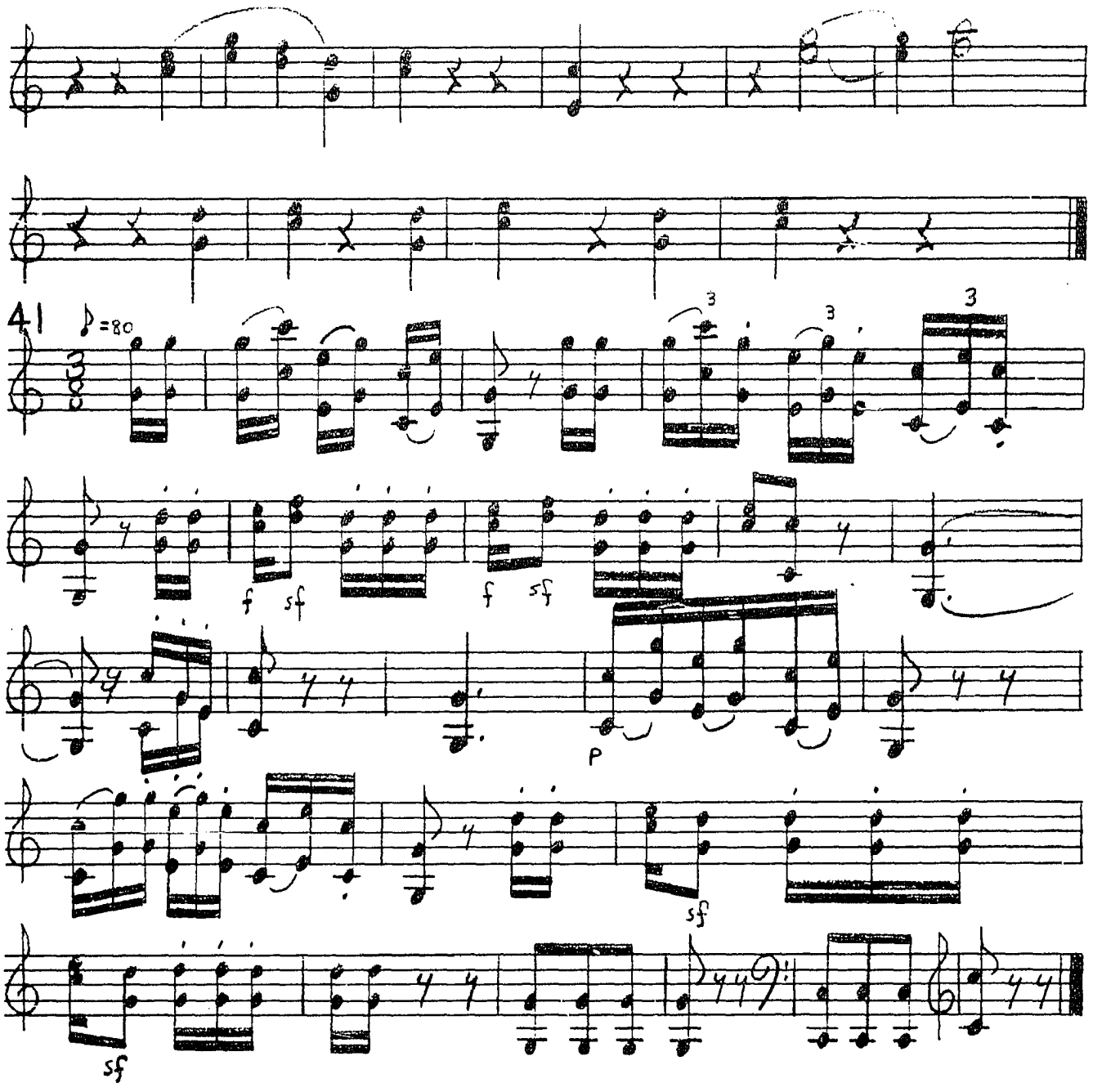

29
♩.= 84
sf
sf
30
d=80


zur
sf
sf
31
zur
32
f


33
34
sf
sf
sf
35
♩=108
sf
sf
sf


36 ♩.=96
f
P cresc
sf
ff
P
sf
P
cresc.
P
37


38
39
40


41
♪=80
3
3
3
f
sf
f
sf
P
sf
sf