A TEXT AND METHOD BOOK FOR COLLEGE BRASS TECHNIQUE CLASSES

A THESIS

SUBMITTED TO THE DEPARTMENT OF MUSIC AND THE GRADUATE COUNCIL OF THE KANSAS STATE TEACHERS COLLEGE OF EMPORIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN MUSIC

BY

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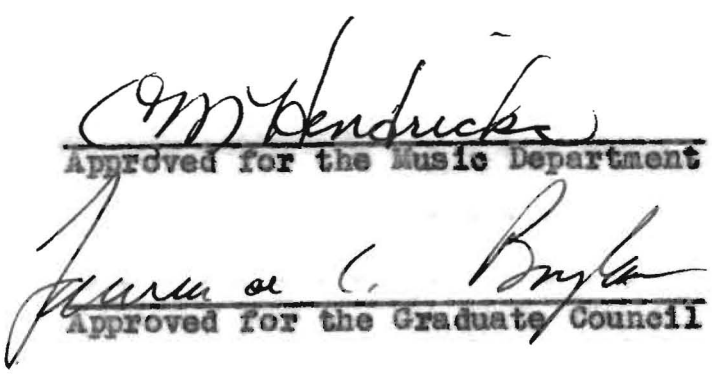
MAY 1960



Approved for the Music Department

Approved for the Graduate Council

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THE PROBLEM AND RELATED EXPLANATIONS

THE PROBLEM

Statement of the problem. It was the purpose of this study (1) to provide an ensemble method book written specifically for the brass instruments to be used in college brass technique classes; (2) to provide an approach to teaching adult beginners how to play brass instruments; (3) to present material pertaining to the fundamental aspects characteristic of brass instruments; (4) to open a channel through which the student may reach a desirable level of proficiency on each brass instrument; and (5) to prepare college students to teach the brass instruments in the public schools.

RELATED EXPLANATIONS

Need for the study. An investigation and search for an adequate brass method book written on the college level revealed that the only material available was scored for full band and was inevitably written for the beginner of elementary school age. It was further found that at present there has not been compiled any single source of reference material pertaining to the acoustic, mechanical, and psychological factors involved in brass instrument performance and/or

pedagogy. To meet these deficiencies there have been correlated in this dissertation the various factors relating to the preparation of the college music major for teaching brass instruments in the public schools.

The practical application. The written material presented herein is designed primarily to be used for lecture notes and to provide fast and easy reference for answering questions pertaining to brass instruments; it is, therefore, written in simple outline form with the usage of supplementary descriptive words and sentences held to an absolute minimum. The music lessons are interspersed with the written material so that the student may gain in his comprehension of the instruments as his performing ability also increases.

The music lessons are designed to give a simple, easy starting approach with rapid advancement leading to the development of technique, tone quality, proficiency, and an ease of playing in all major keys. No attempt has been made to place emphasis on rhythm. Speed is not an important factor; the teacher must use his judgment in this respect, but it is recommended that tempi be varied as mechanical dexterity progresses. With the exception of lesson 25, the exercises are written on three staves and in all cases are presented in the following manner; the first staff contains the part written in B flat for trumpet, cornet, and treble clef baritone, the second staff contains the part written in

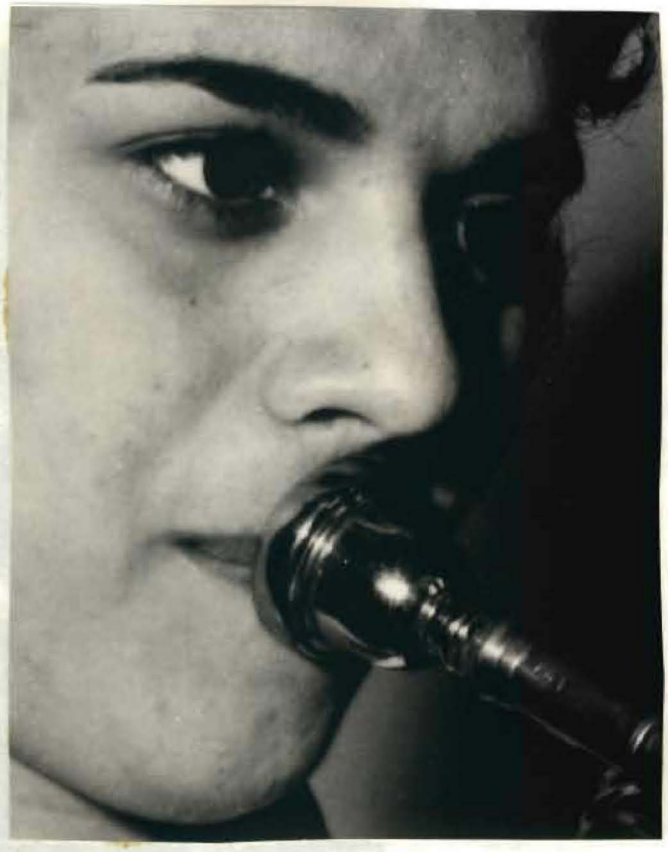
F for French horn, and the third staff includes two lines of notes; the upper line being for bass clef baritone, euphonium, and trombone, and the lower line for double B flat bass.

FIGURE 1

TOP TO BOTTOM; TRUMPET,
CORNET, AND
FLUGELHORN

2

BLE AND SINGLE
ORNS



LEFT TO RI[illegible] DOUBLE BELLED
EUPH[illegible] F VALVE, AND BELL
FRONT BARITONE

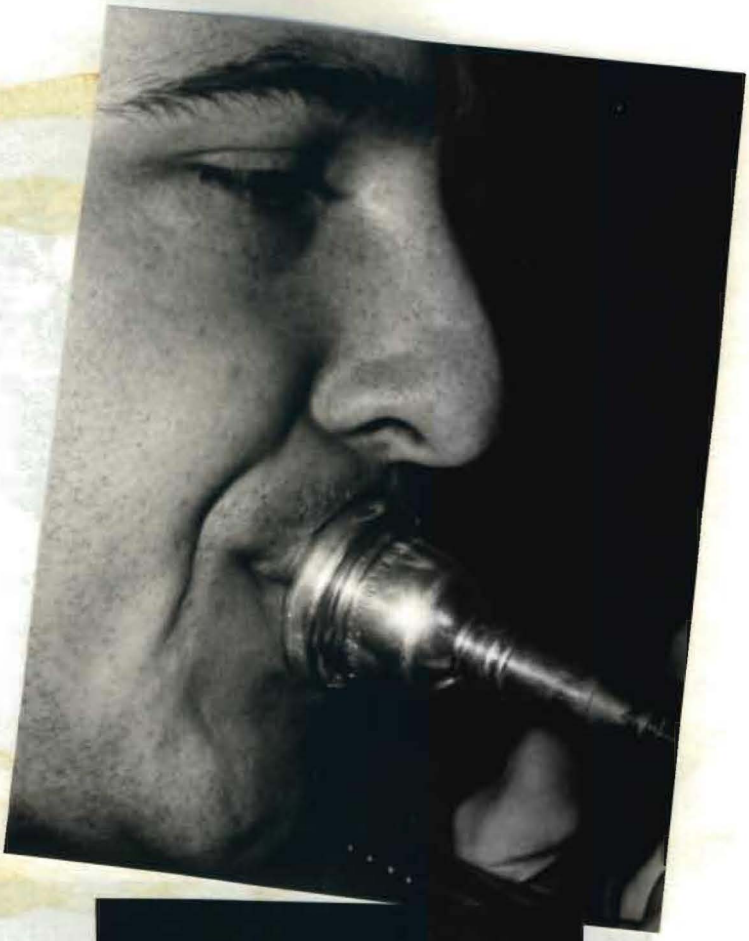


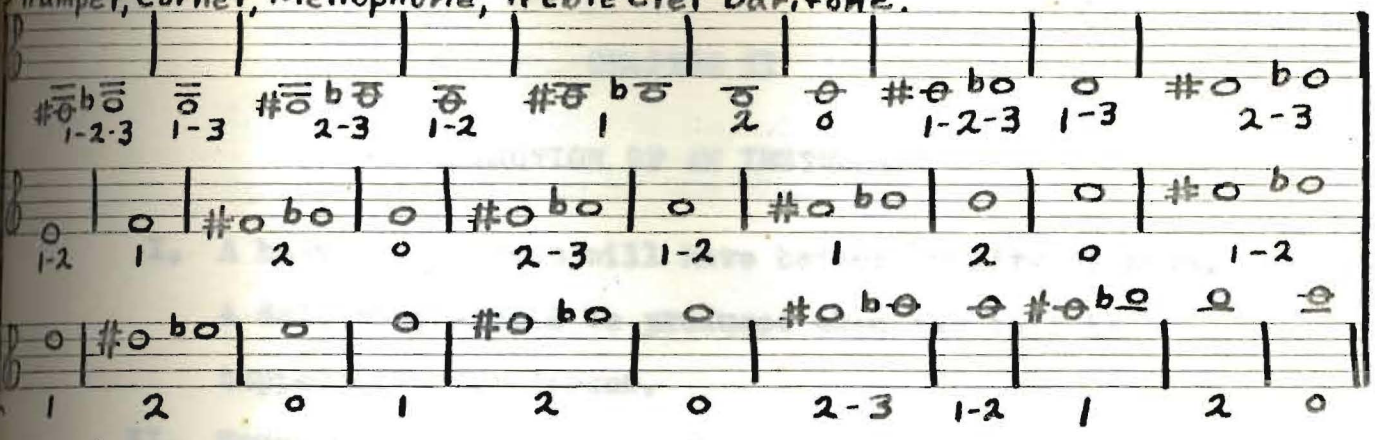
FIGURE 4

BASS TROMBONE, TENOR

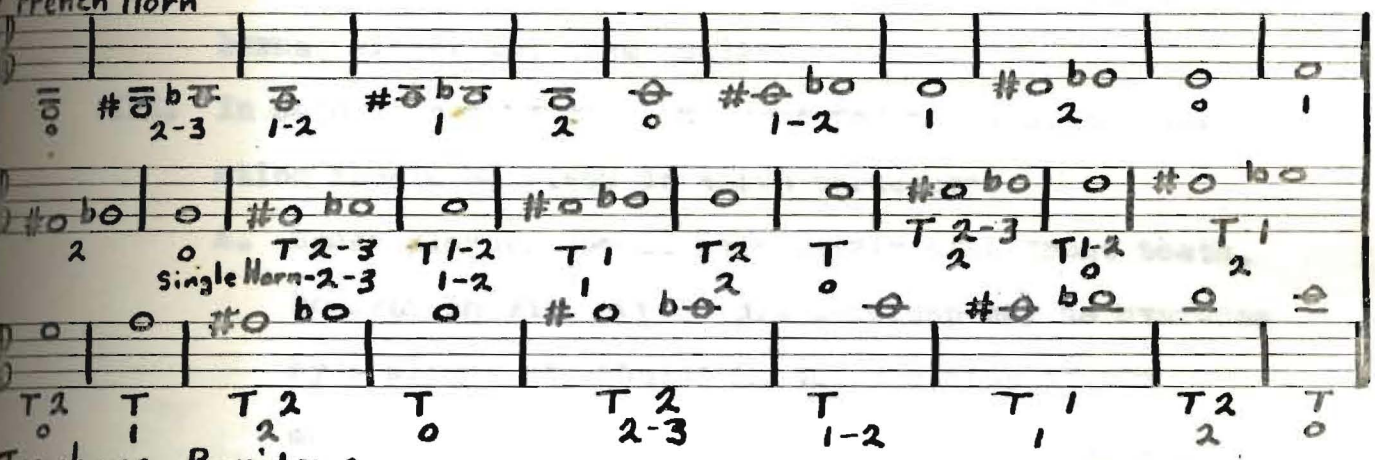
FIGURE 5
BBb SOUSAPHONE, BEb BASS, AND Eb BASS

Fingering Charts

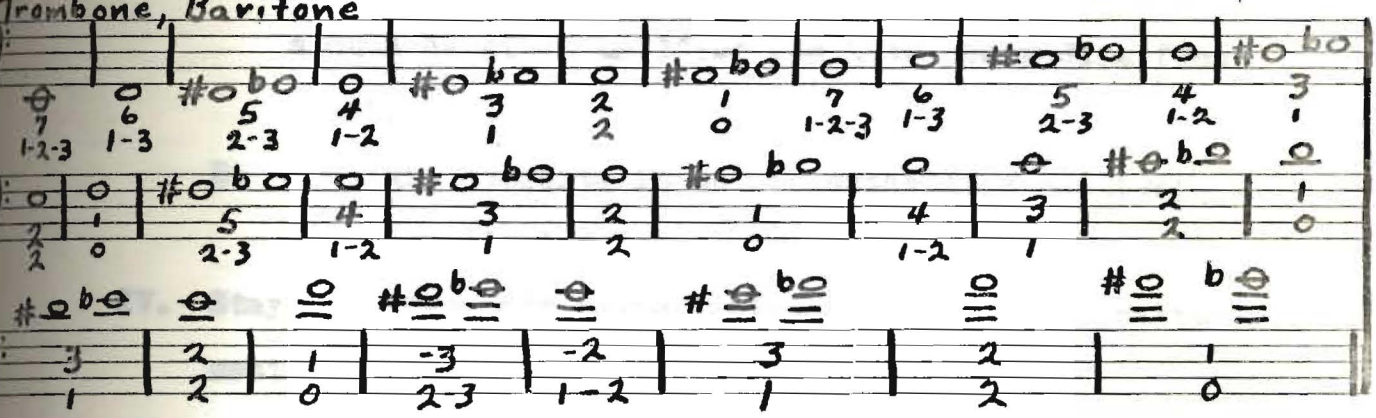
Trumpet, Cornet, Mellophone, Treble Clef Baritone.



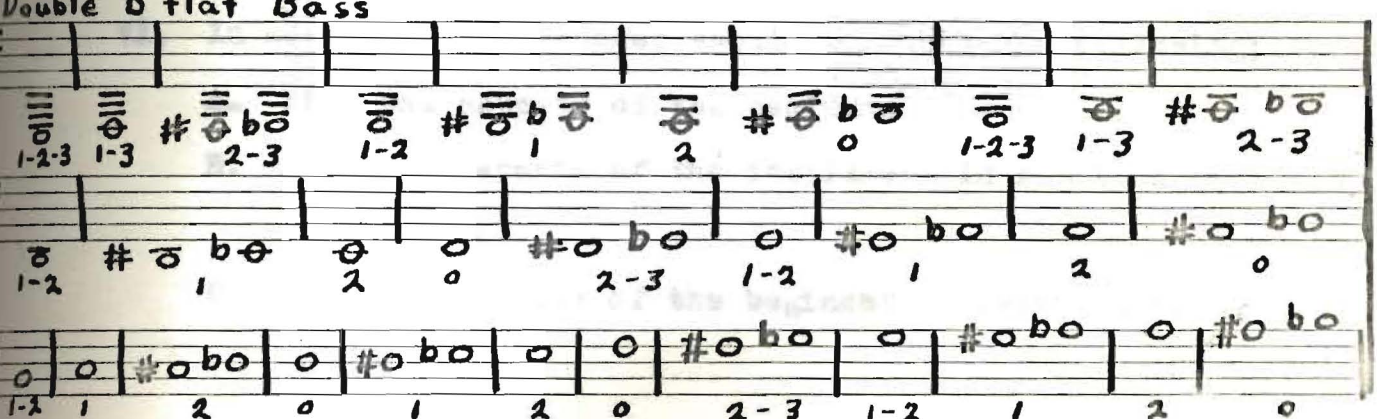
French Horn



Trombone, Baritone



Double B flat Bass



CHAPTER II

SELECTION OF AN INSTRUMENT

I. A heavy instrument will have better quality of tone. A dull thud should be produced when the bell is tapped with forefinger.

II. Seams around the bell such as found on many bell front horns, hinder the tone quality.

III. In selecting a brass instrument for a child, consideration should be given to tooth structure.

   A. Brass players should have fairly even front teeth, however in many cases this handicap may be overcome by a slight adjustment in the position of the mouthpiece on the lips. Careful consideration should be given children who have protruding front teeth.

   B. A slight overbite is not necessarily a handicap in brass playing.

IV. Stay away from off brand instruments. Choose instruments manufactured by reputable companies.

V. Beware of gadgets and gimmicks on horns.

VI. In addition, the teacher should consider the following;

   A. Physical aspects of the beginner.

   B. Physical aspects of the instrument in relation to the beginner.

   C. Mental abilities of the beginner in relation to

the instrument.

D. Perseverance of the beginner.

E. Musical ability of the beginner.

CHAPTER III

MAINTENANCE AND REPAIR

I. A dent in a brass instrument will interfere with the playing potentialities. A dent can never be completely repaired. All instruments should have cases.

II. Noisy valves.

A. Tighten caps. Felt or cork washers may need replacing.

B. Springs may need to be stretched out. Do not stretch an excessive amount or stretch crooked. Springs should be replaced by new ones when weak.

C. Do not use rubber bands on silver plate.

D. Corks can be replaced temporarily with paper.

E. Always have a supply of springs, corks, and washers on hand.

F. Valves should move freely, use good grade of oil.

G. Teach children how to care for valves right from the start.

H. Substitute repairs should never be made except in the case of an extreme emergency.

III. Rotary type valves.

A. These are more complicated and require more attention.

B. Use basically the same care as the other valve

instruments.

C. In stringing rotary valves, linen fishing line of about twenty pound test may be used. Nylon line may be used, however linen is considered best.

D. If it is necessary to remove valve, do so carefully and replace in exactly the same way. Always have a qualified repair man service valves when at all possible.

IV. Trombone slides.

A. Must be handled with great care. Very easy to dent or throw out of alignment.

B. Of school owned instruments, trombones are usually in worse shape.

C. Trombones are hard for children to handle and take care of properly.

D. The slide must be in top working condition at all times.

E. Use cold cream and soft, lint free rag to clean, then use oil or cold cream and water to lubricate.

F. Flush with warm water often.

G. Should be cleaned often, especially when played outside or when subject to dust. The slide is exposed and collects dust particles readily.

V. Sticking slides.

A. All slides should be freely moving.

B. Use a big cloth, run it through the end of slide, then pull or jerk to loosen.

C. Use penetrating oil.

D. Put cold water inside and hot water on the outside.

E. Have wooden block made to fit slide and tap it with a hammer. Use great care in doing this.

VI. Lubrication of tuning slides.

A. Use vaseline; must be clear vaseline, not mentholized.

B. Clean slide with soapy water or alcohol and soft rag.

C. Rub vaseline into slide and replace.

VII. Sticking mouthpiece.

A. Never hit mouthpiece into horn with hand.

B. Tap around mouthpiece with a stick.

C. Use penetrating oil or cold and hot water.

D. Best to use mouthpiece puller.

VIII. Cleaning instruments.

A. Run warm water through horn to clean inside. Can use baking soda or ivory soap solution.

B. For the outside use luke warm water and very soft rag. Do not use abrasive polish on lacquer. On silver, use silver polish, Bon Ami or glass wax.

IX. Do not attempt major repair or try to repair something you do not know anything about. It is always best to

take instrument to a qualified repair man when in doubt.

X. Have regular and periodic inspection of instruments. The time spent in doing this will be justified by dollars saved.

A. Left hand grasps the large outer tubing opposite the mouthpiece.

B. Right hand in relaxed position with the fleshy part of the finger near the tip, on the valves.

VII. Music stands should be placed at approximately eye level and where the player can see the music without changing his horn or seating position.

CHAPTER V

EMBOUCHURE

I. Embouchure means "in mouthing."

II. There are two positions for the lips.

A. Smile position; the higher you play, the farther the corners of the mouth go apart making the lips thinner.

B. Bunch or pucker position; the higher you play, the farther in to center you bunch. This position is generally considered to be the best.

III. The lips are to the brass instrument what the reed is to the clarinet or oboe. The lips must vibrate. The lips cannot vibrate properly if;

A. Pressed too tightly together.

B. Have air pockets around lip muscles or have puffed out cheeks.

C. Tongue is pushed between lips.

IV. Play with as little pressure as possible. Let the blood circulate by relaxing pressure as often as the situation permits.

V. Keep lips even, do not let one overlap the other. Often a beginner will bring his upper lip down in front of his lower one in order to play high.

VI. Buzzing lips with and without mouthpiece is highly

recommended. The horn acts as a resonator.

VII. Cornet or trumpet, use approximately the same amount or upper and lower lip on the mouthpiece. Position the mouthpiece on the lips according to physical characteristics which provide a comfortable playing position.

VIII. French horn, baritone, trombone, and bass, generally better to use 2/3 of upper lip and 1/3 of lower lip. Position the mouthpiece on the lips according to physical characteristics which provide a comfortable playing position.

IX. French horn; some players use the "setting in" position where the mouthpiece is placed inside the lip or on the red of the lower lip.

X. Most brass players use the "setting on" position.

CHAPTER VI

BREATHING

I. It is of the utmost importance to have correct posture.

II. For the most part, breathing should be done out of the corners of the mouth.

- A. Throat should be kept open.
- B. Arms should not press into the sides.
- C. Do not raise shoulders or tighten muscles.
- D. Breathe into the lungs deeply.

III. Diaphragm; disk-like layer of tissue and muscle which separates the upper chest cavity from the abdomen.

- A. Creates breathing power.
- B. Must learn to control the diaphragm.
- C. Use breathing exercises.
  1. Inhale and exhale to a count when walking.
  2. Play long steady tones.

IV. Learn to read ahead and take in enough air to carry through phrases. It is possible to use catch-breaths; short breaths, not completely filling the lungs but allowing the player to get through a long passage with sufficient air.

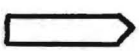
CHAPTER VII

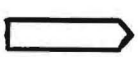
ATTACKS AND RELEASES

I. Tone must have attack, body, and release.

A. The attack is the same as the body, the body stays the same, and the release is quick with the breath.

B. Tooh;  good for lower register.

Taah;  good for producing middle register.

Tee;  good for producing upper register.

C. Taah; good for beginners because the back of the throat is kept open.

D. Legato playing, use Dooh, Daah, and Dee. Less tongue is used.

E. The tip of the tongue is placed at the base of the upper teeth.

F. Do not touch the roof of the mouth with the middle part of the tongue, or let the tongue slip between the lips. Never say tut or shut the tone off with the tongue.

G. Bad; ~~TOOAH~~ ~~TOOH~~

H. Keep tongue relaxed.

I. The character of the music will determine which type of attack to use.

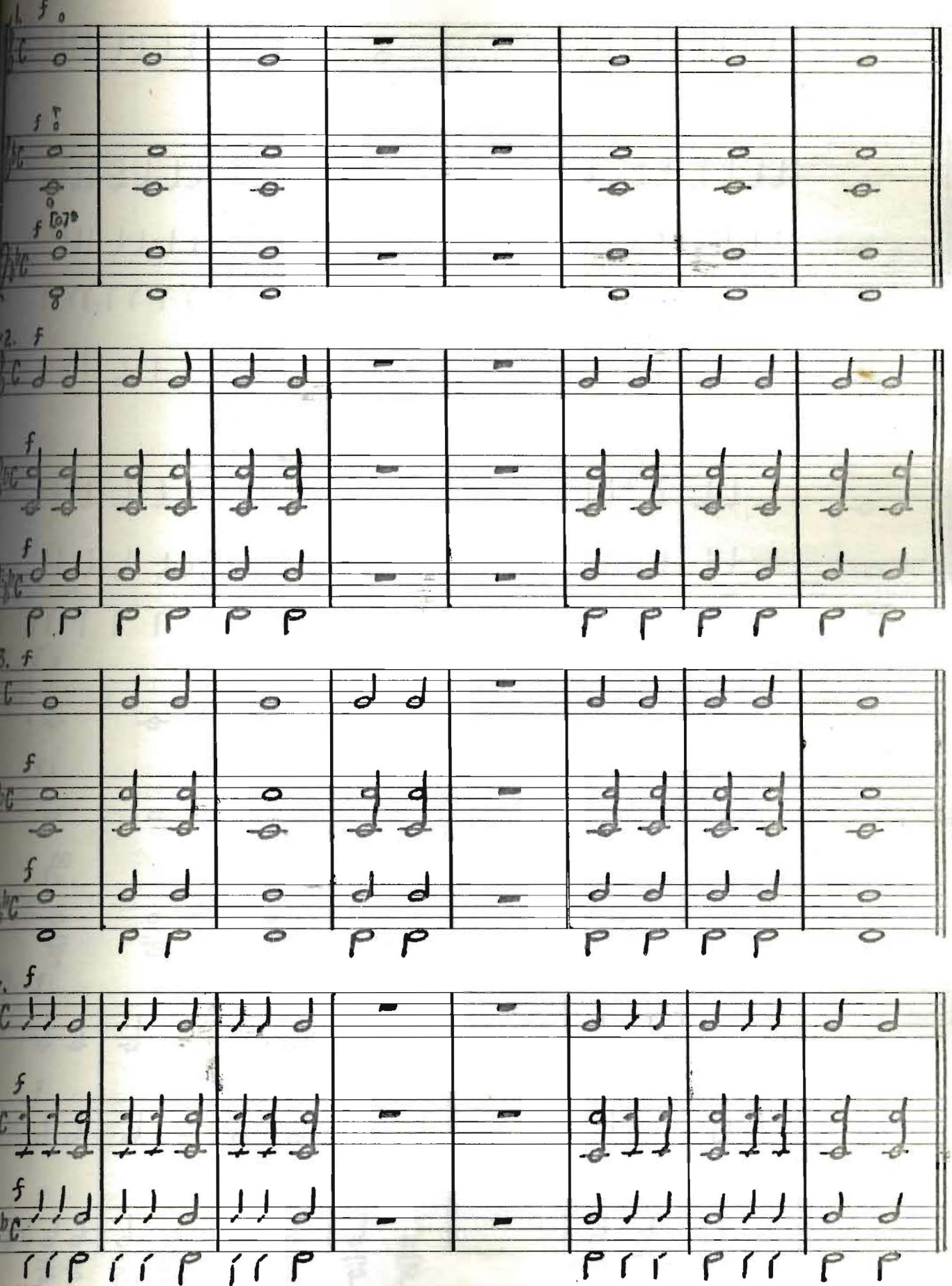
II. Trombone; when playing legato and slurring in the same direction as the movement of the slide, use a soft Daah attack to prevent glissando. This attack must be

well developed as it is used a great deal on trombone.

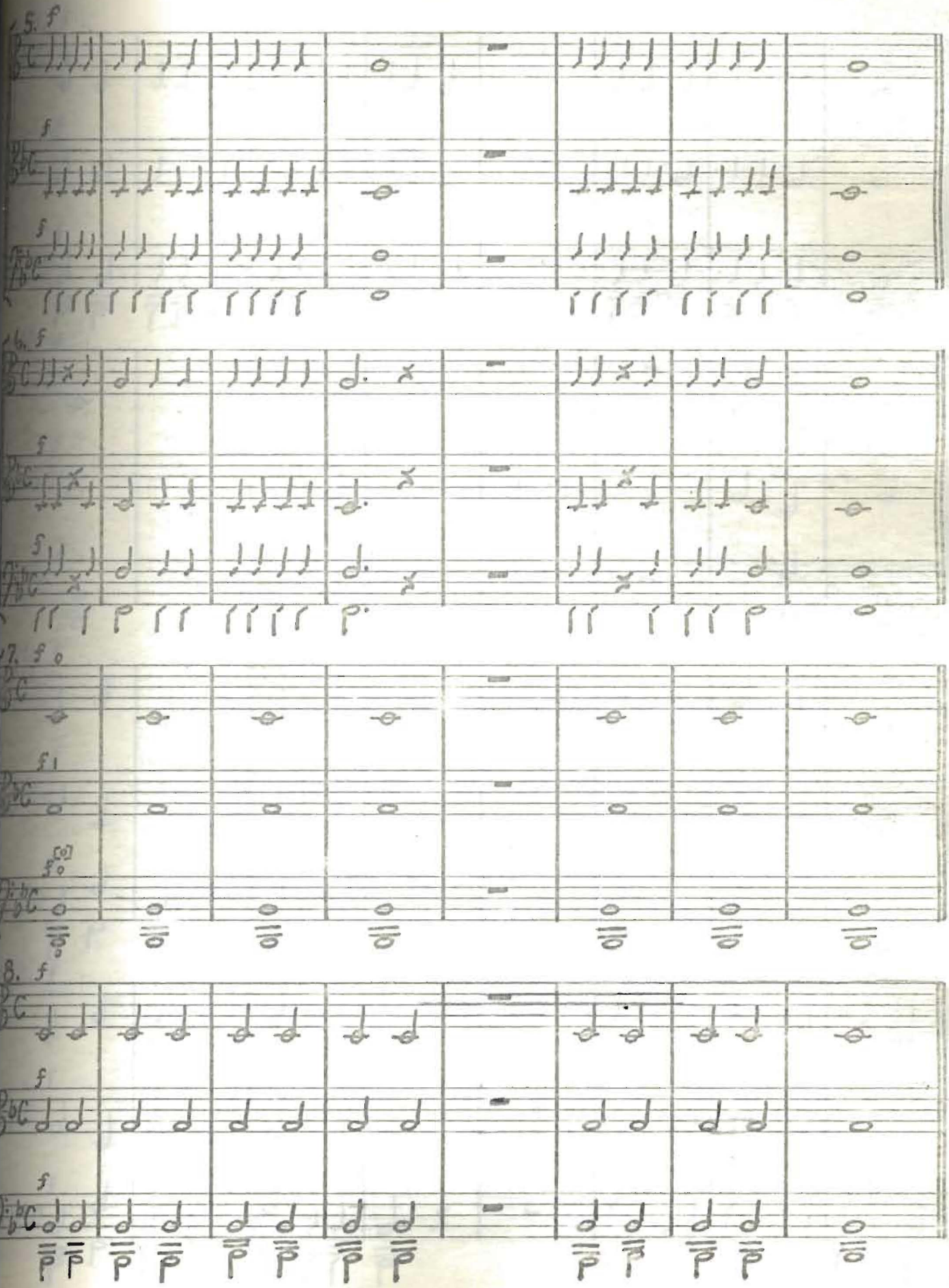
III. Double tongue use the attack TK. This is pronounced Tu Ku and must be played even. For development, practice with metronome slowly and gradually increase speed.

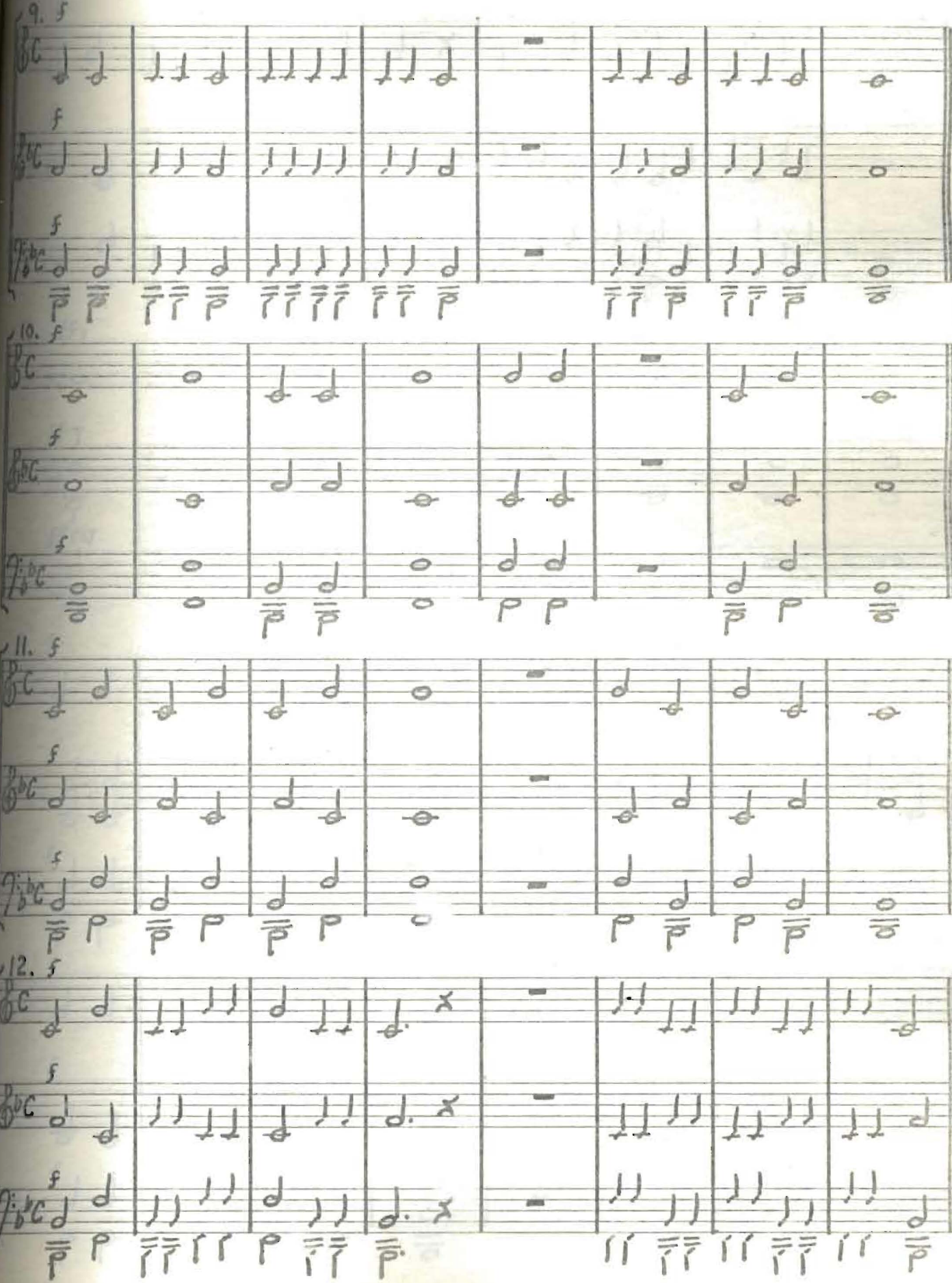
IV. Triple tongue use the attack TTK or Tu Tu Ku. This is developed in the same manner as the double tongue. Take special care to obtain an even and steady attack.

Lesson 1

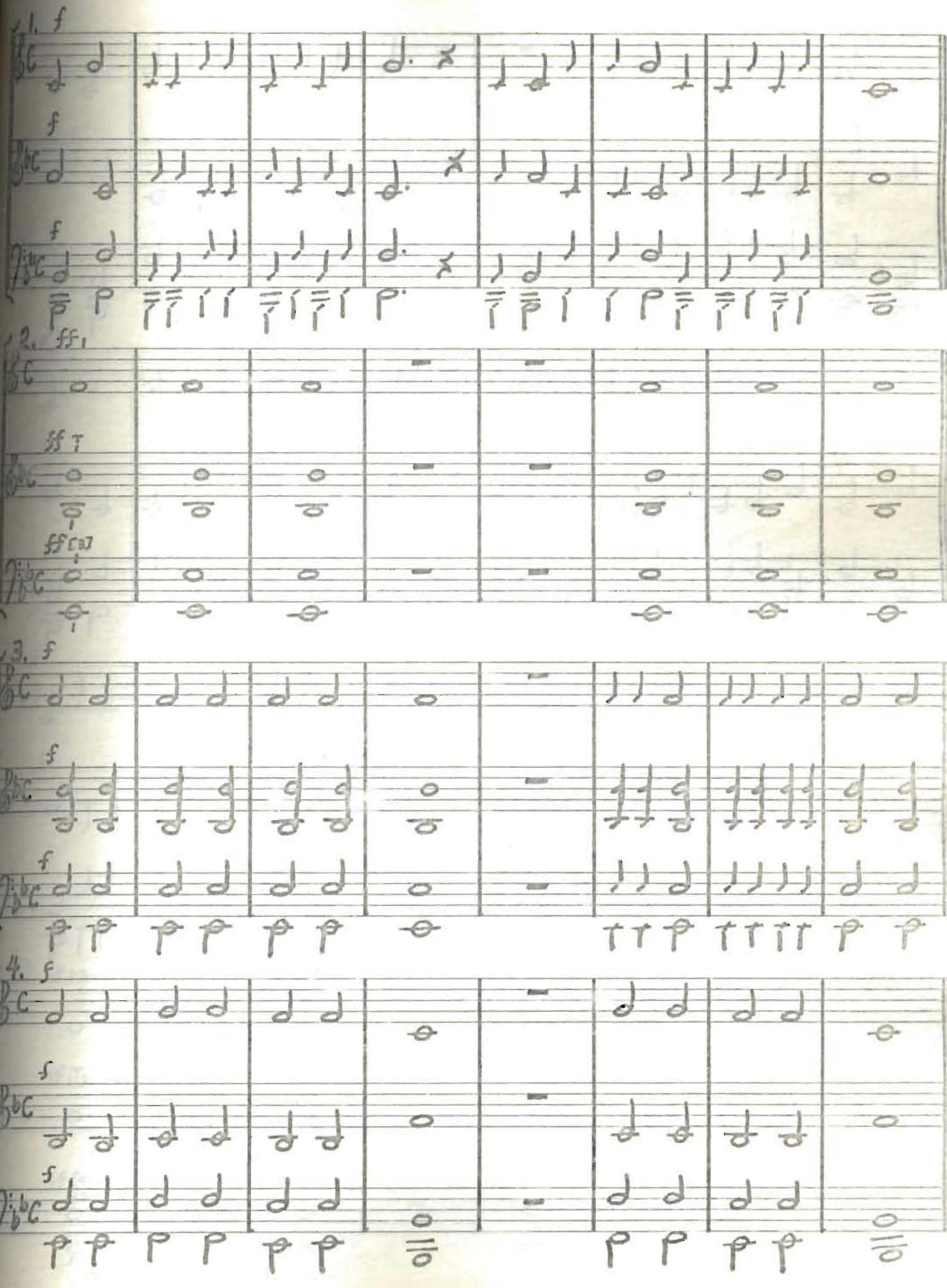


*Number in [ ] is for trombone positions.

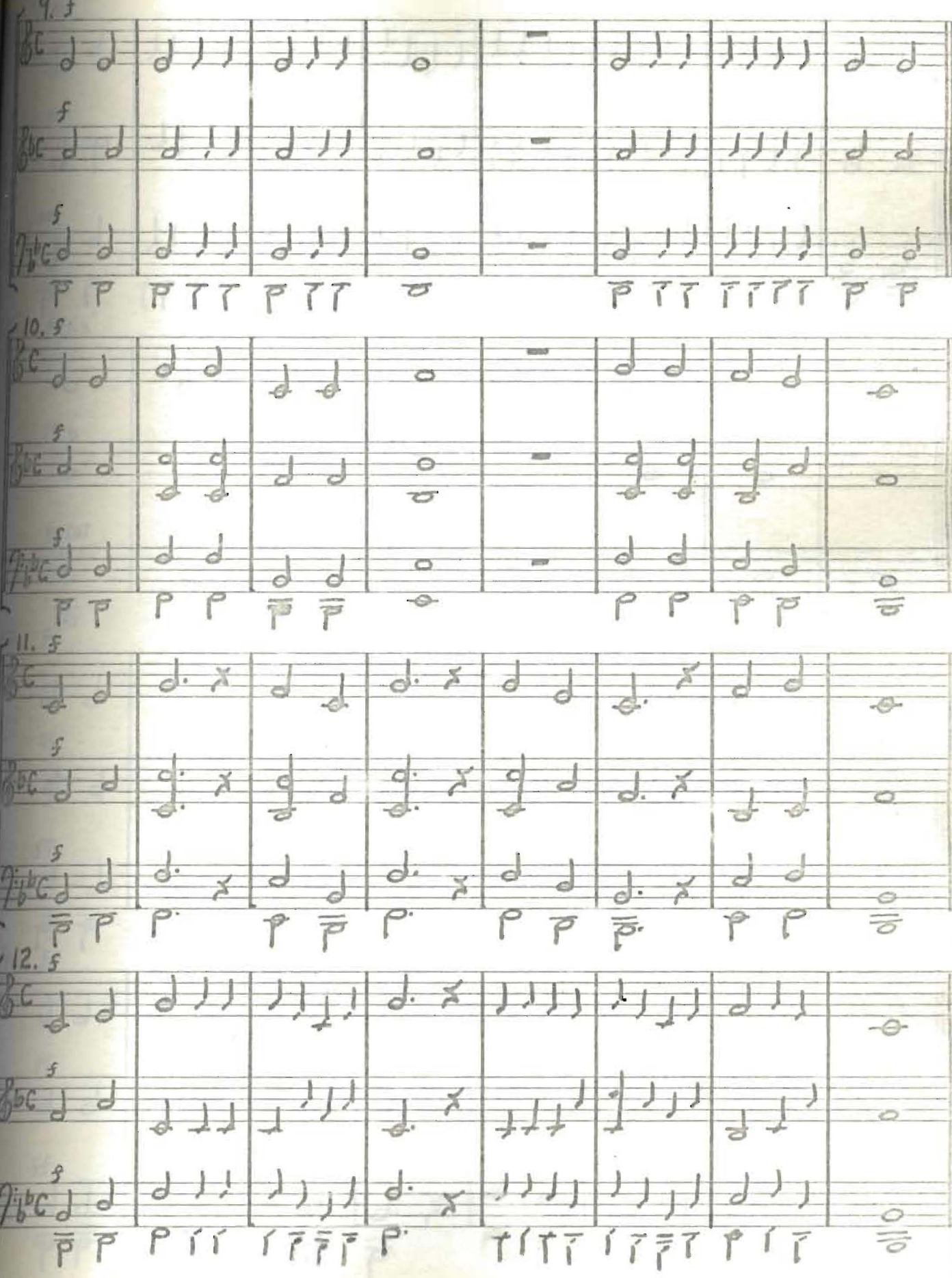

15. f
f
f
16. f
f
f
17. f o
f 1
f o [o]
18. f
f
f


9.
10.
11.
12.

Lesson 2



5. f
f
f
6. f
f
f
7. f
f
f
8. ff 1-2
ff T. 2.
ff [4]
1-2


9. f
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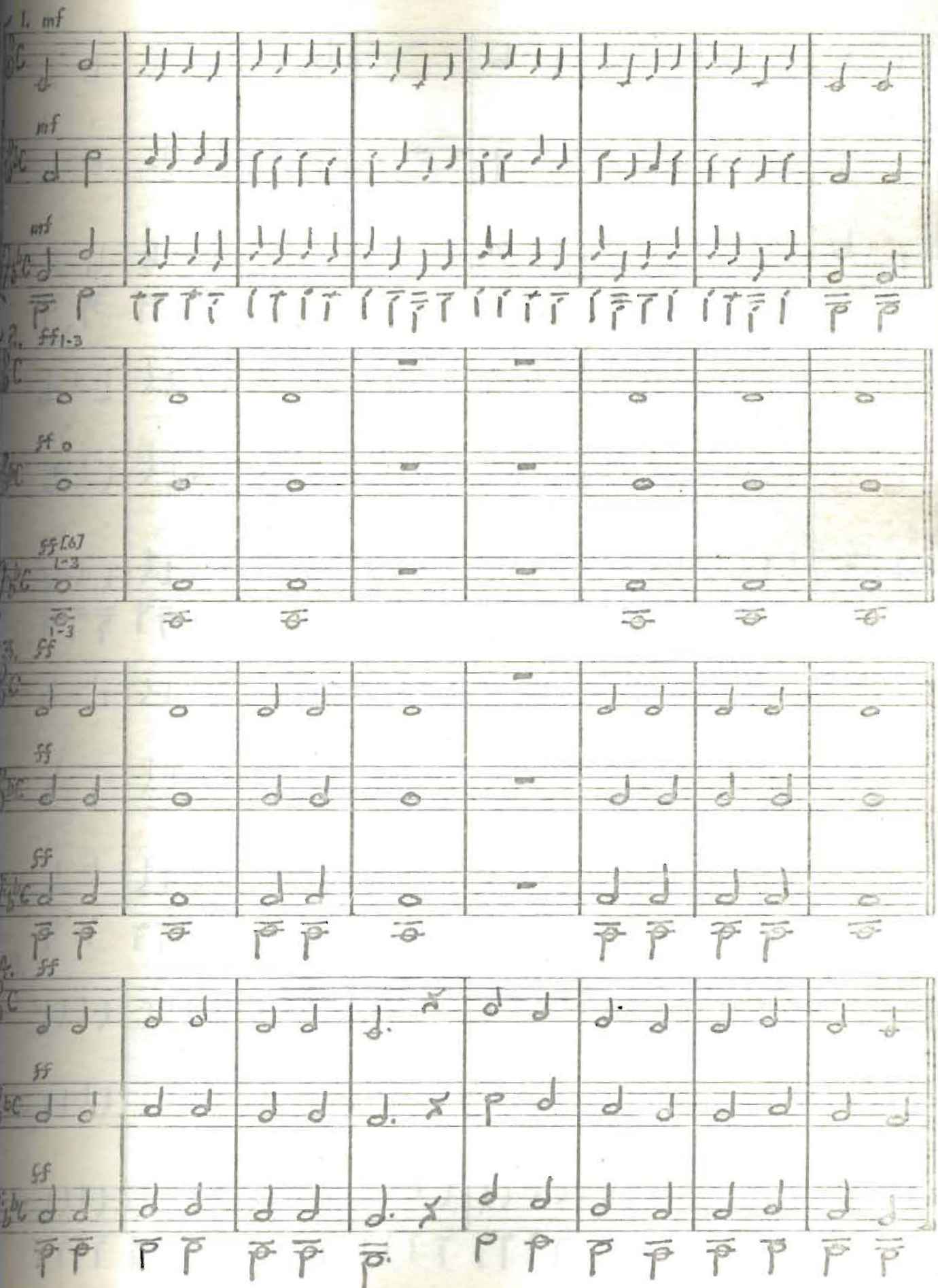
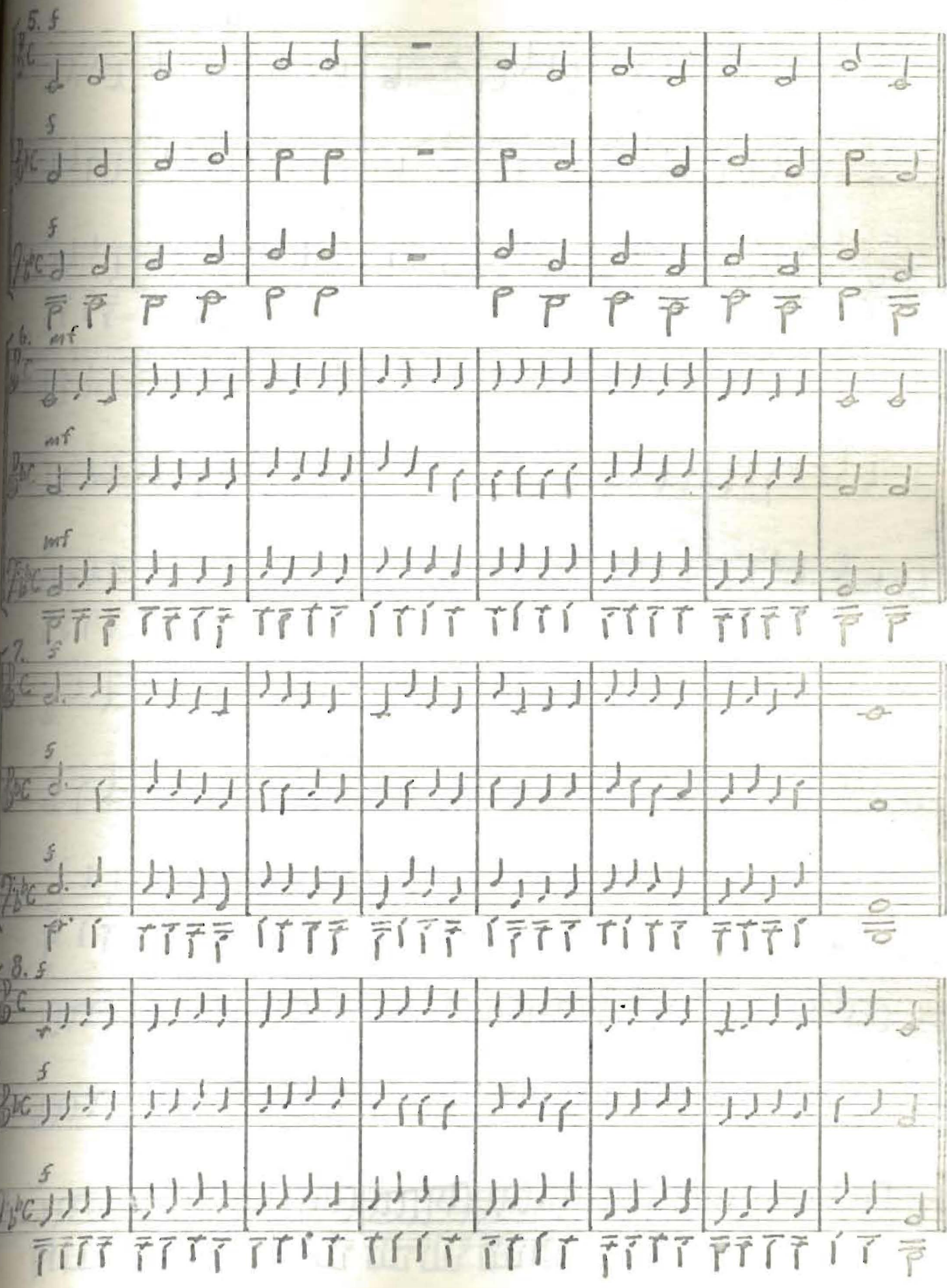
f
10. f
f
f
11. f
f
f
12. f
f
f

Lesson 3




5.
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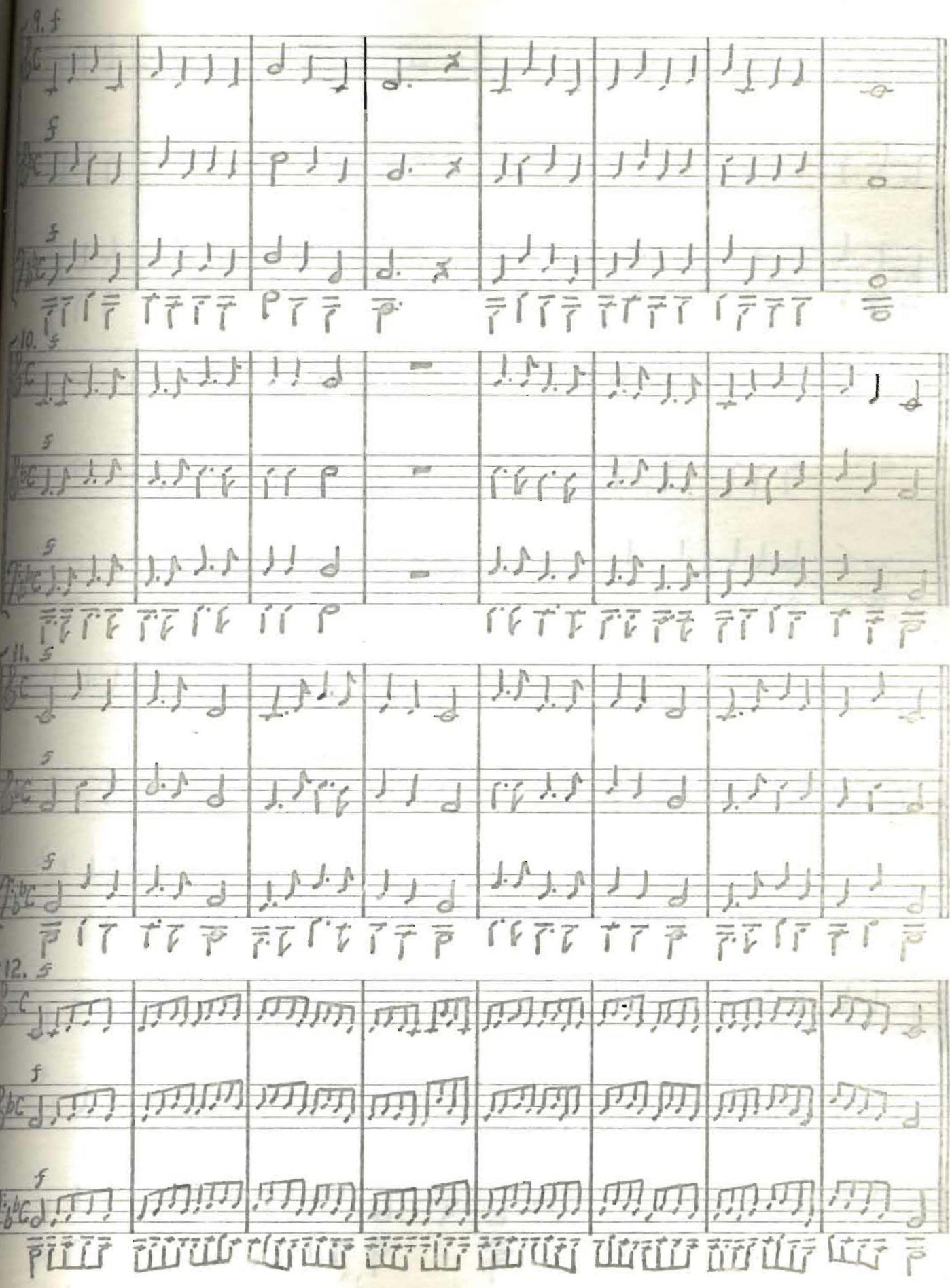
mf
7.
8.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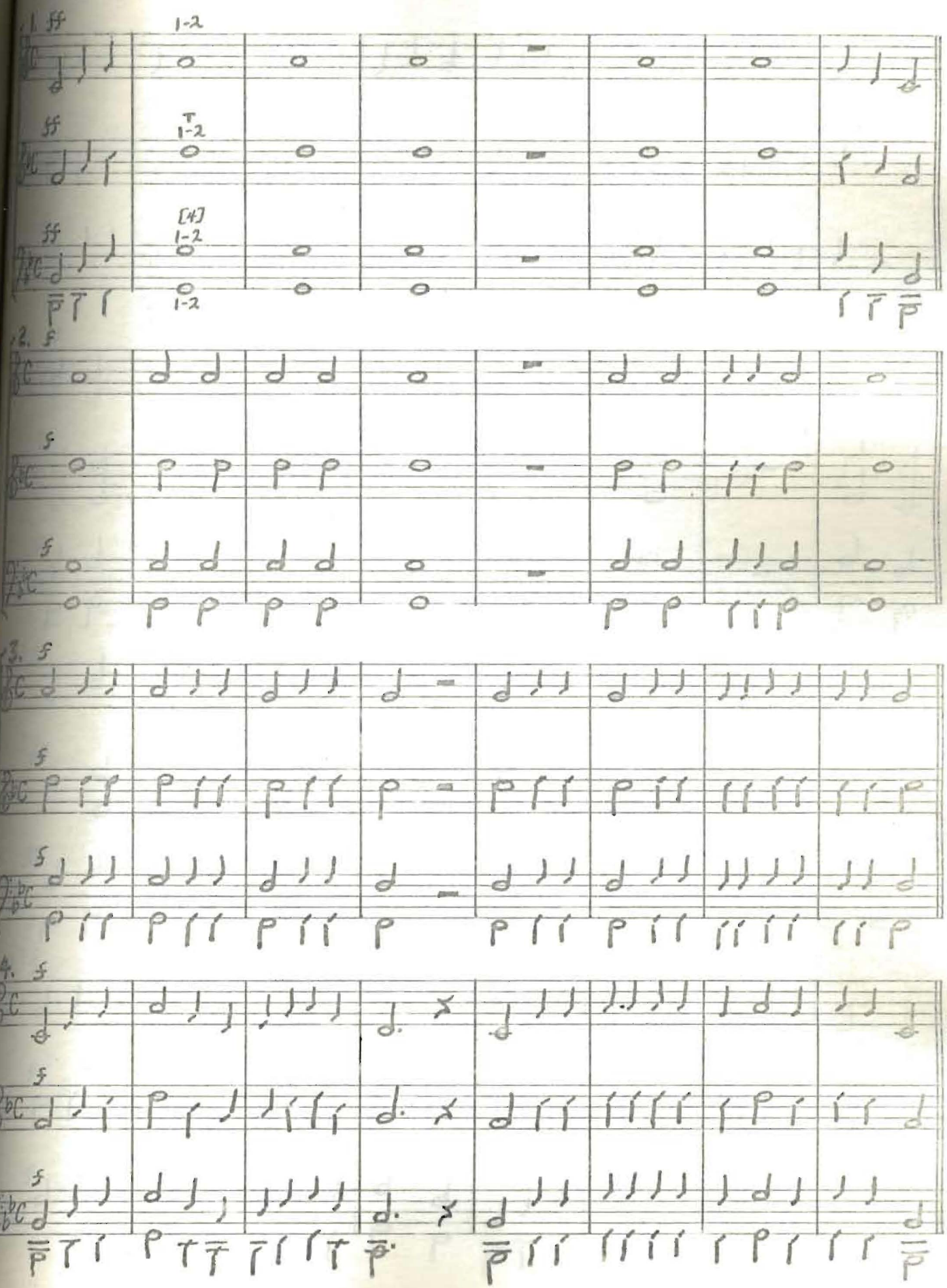
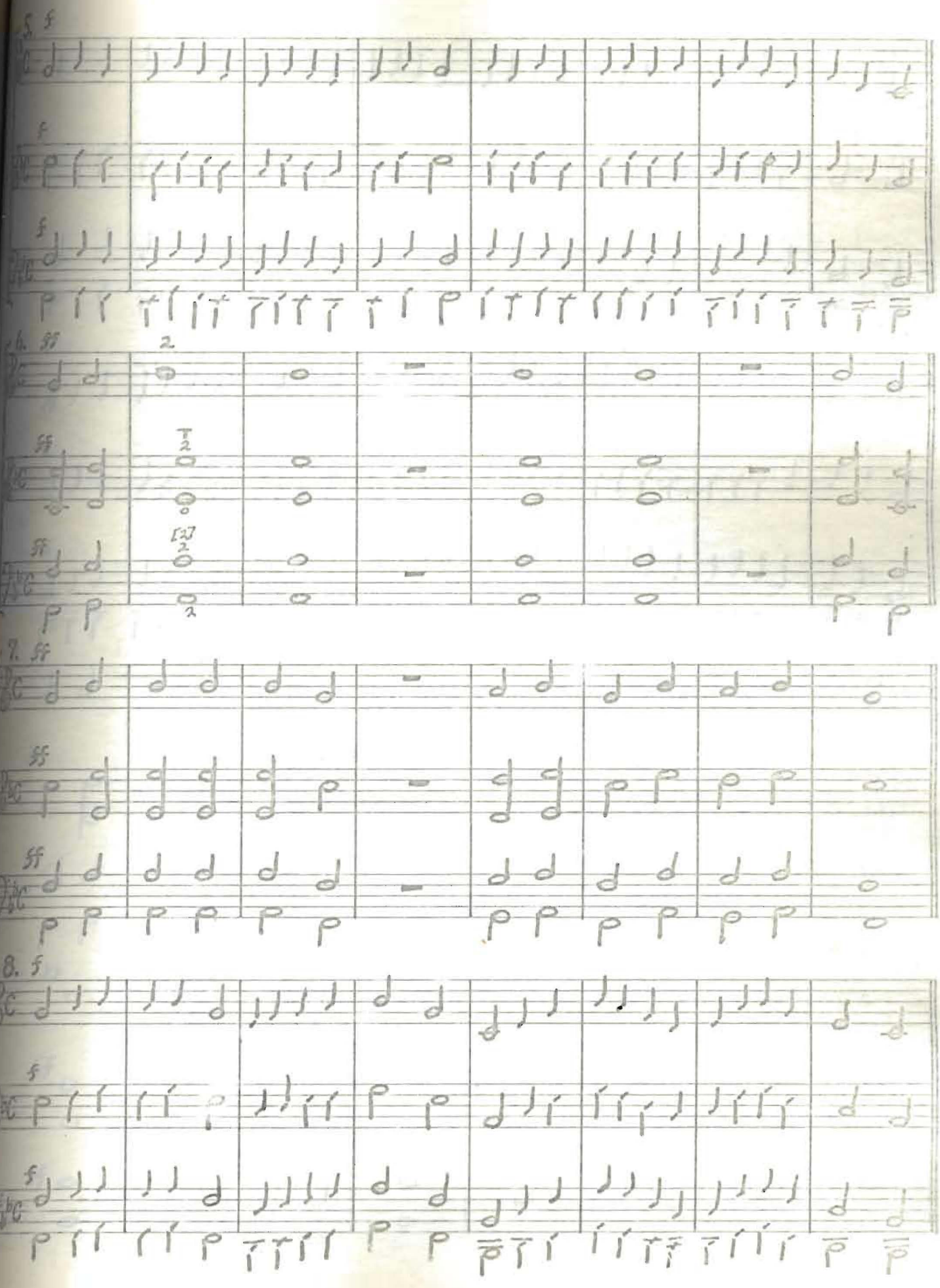
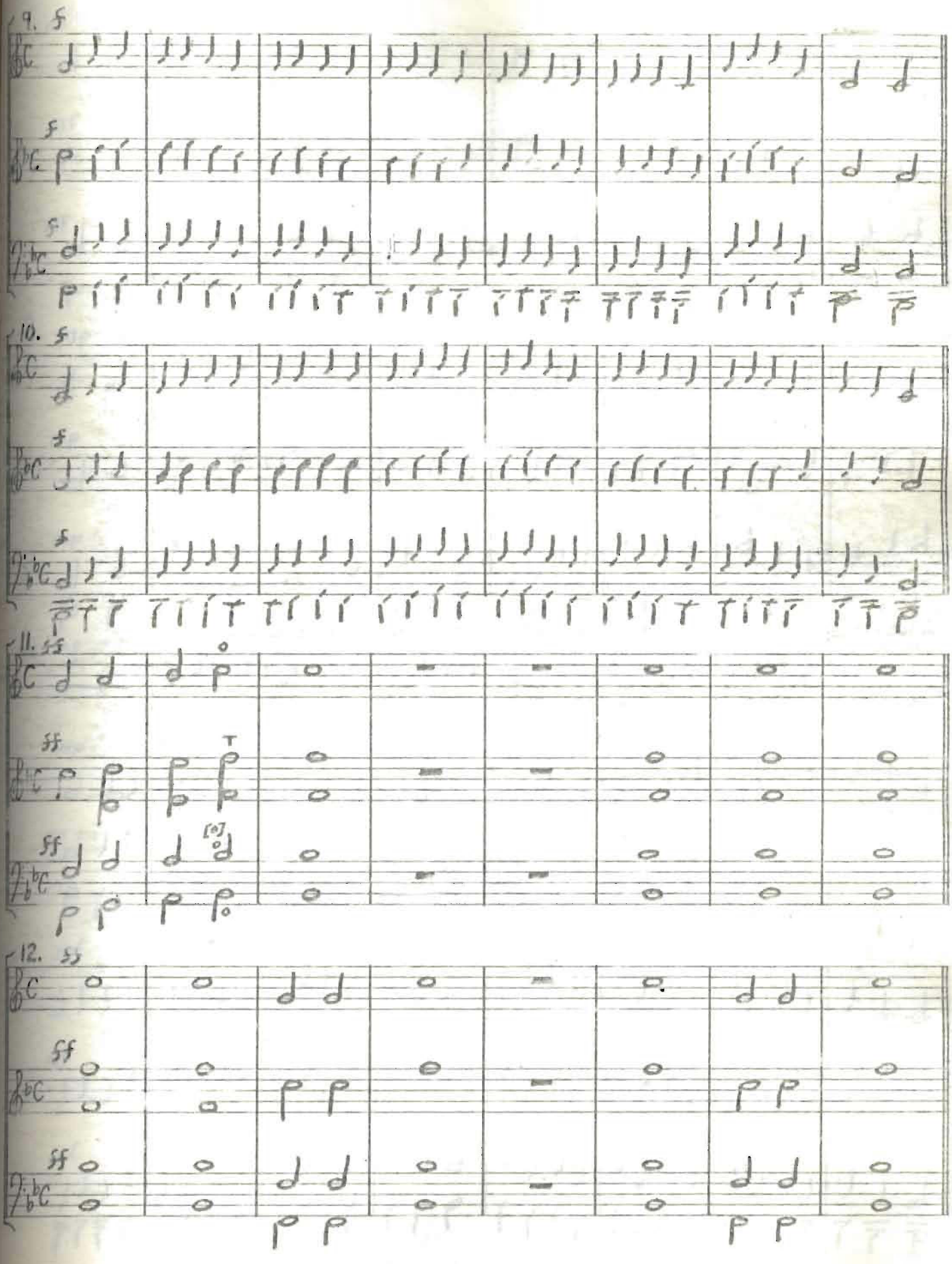
Lesson 4




5. f
f
f
6. ff
ff
ff
7. ff
ff
ff
8. f
f
f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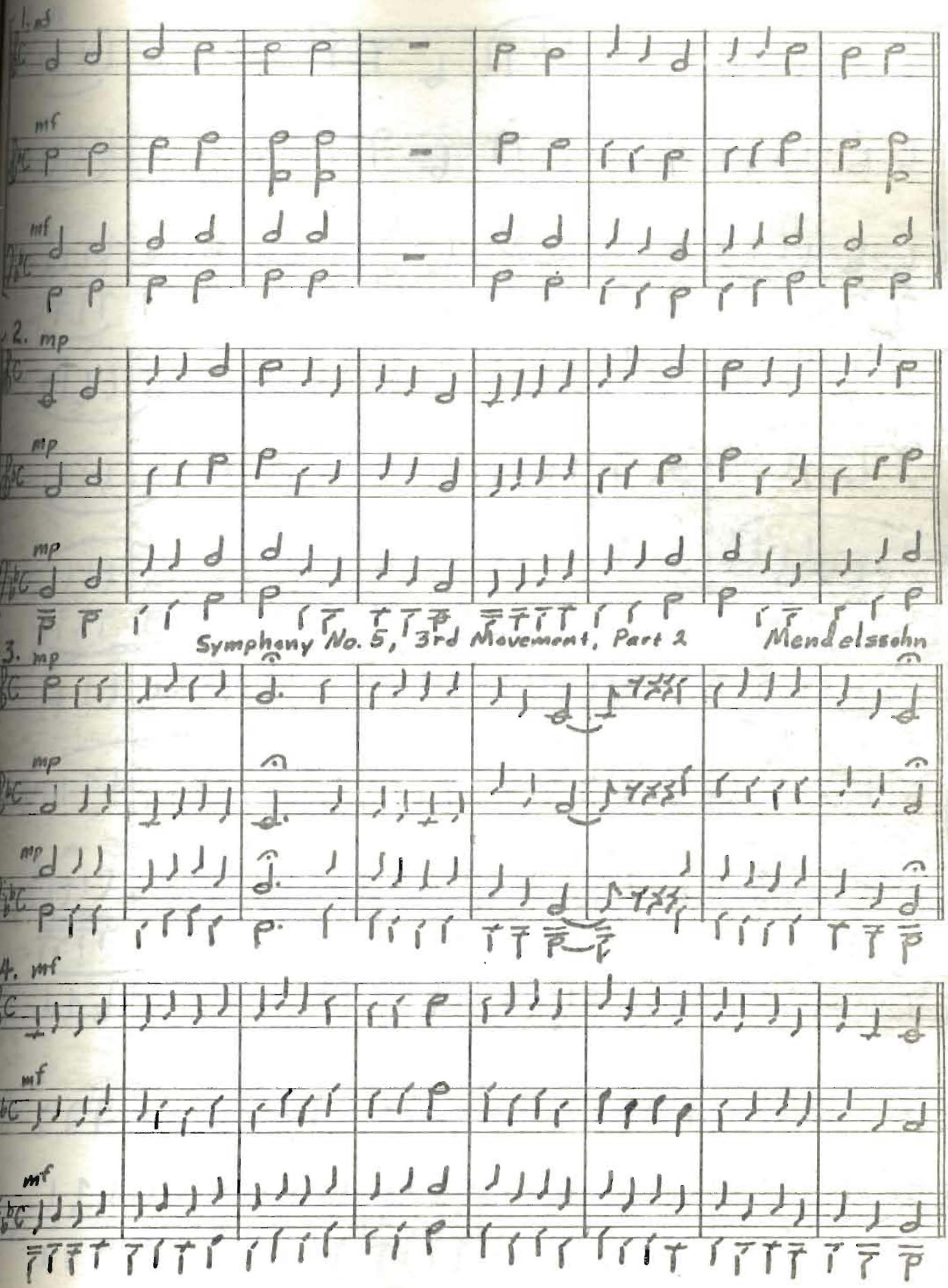
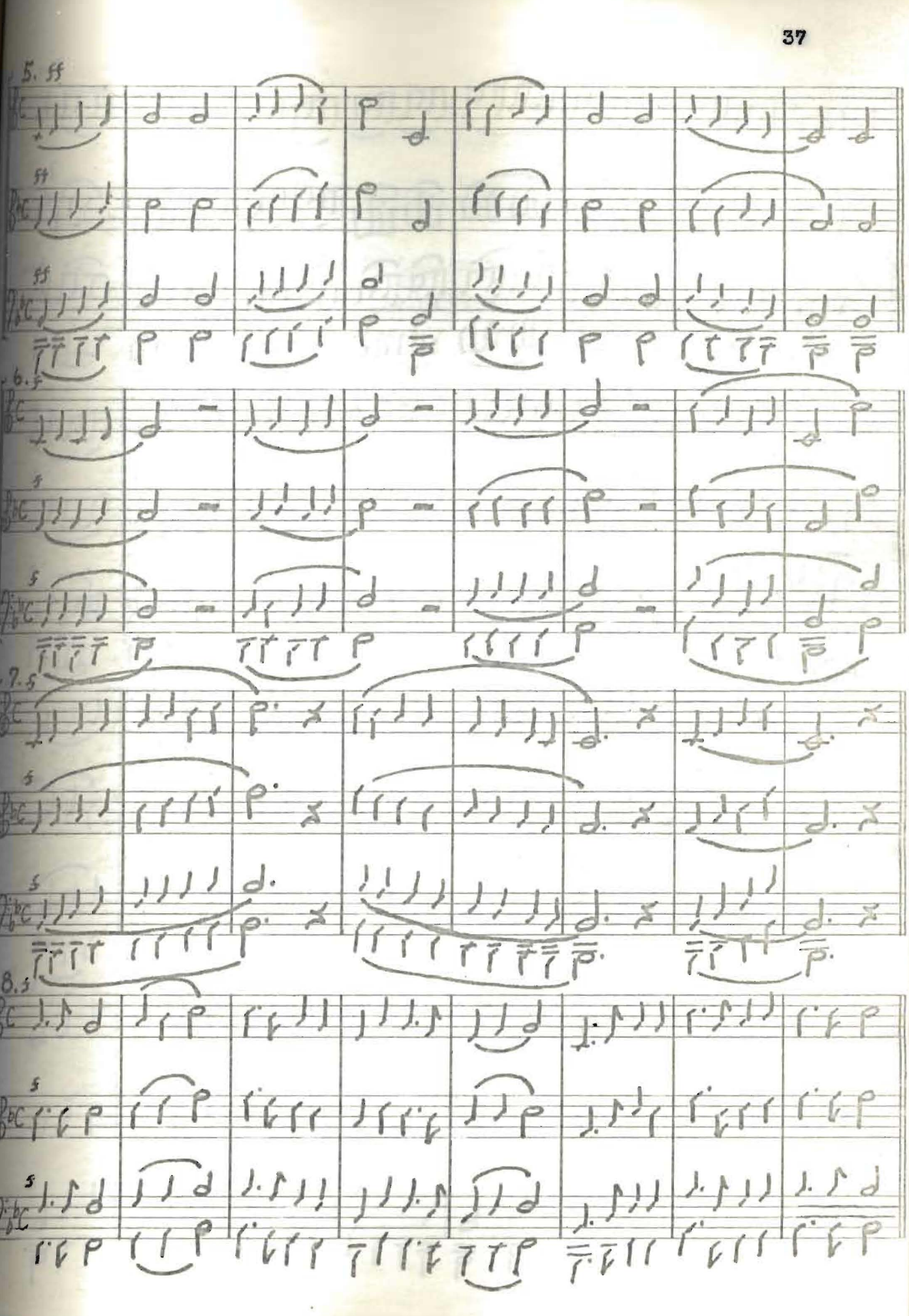
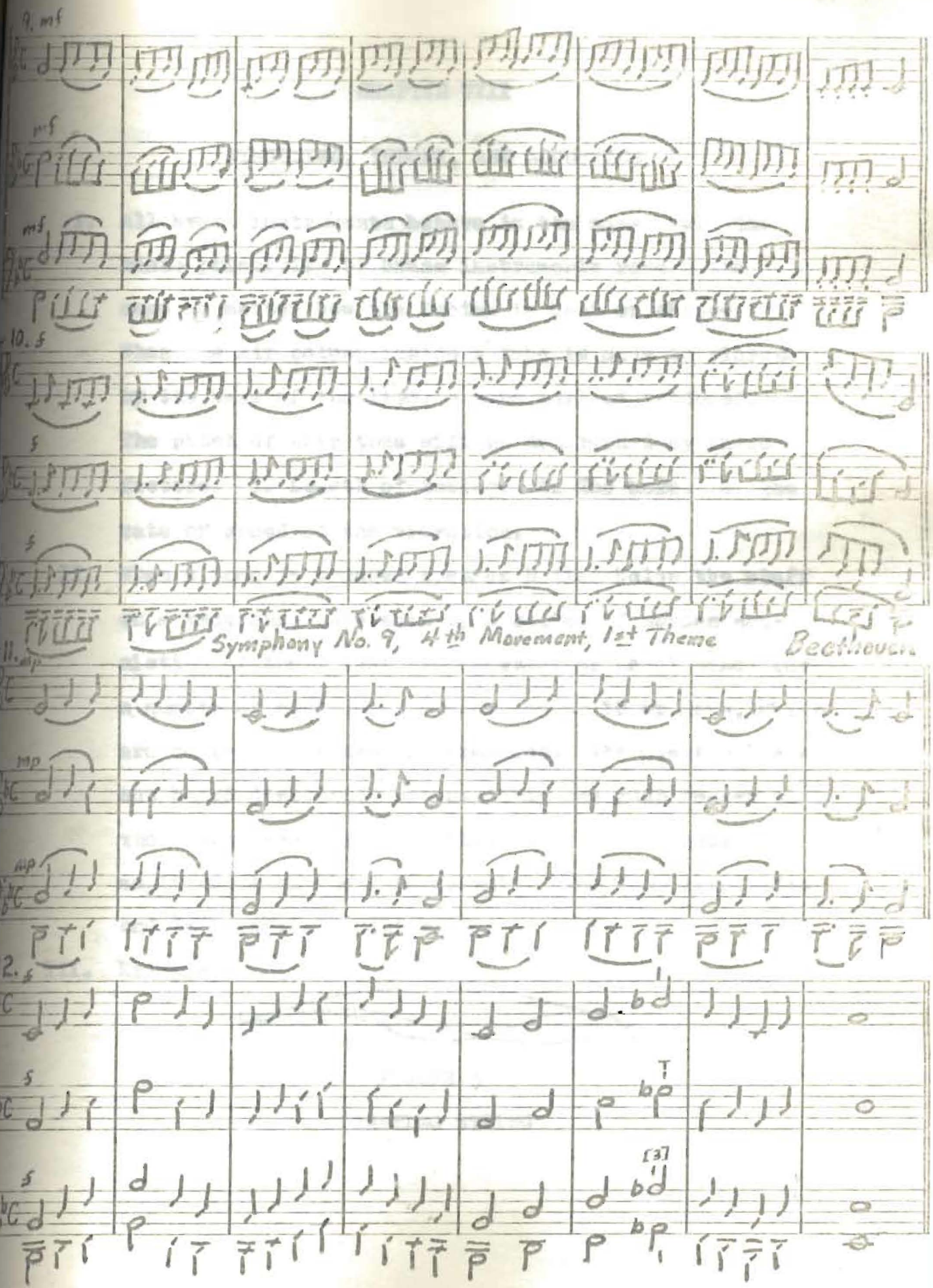
Lesson 5


1. mf
mf
mf
2. mp
mp
mp
Symphony No. 5, 3rd Movement, Part 2
Mendelssohn
3. mp
mp
mp
4. mf
mf
mf


5. ff
6. f
7. s
8. s


9. mf
10. s
11. mp
12. s
Symphony No. 9, 4th Movement, 1st Theme
Beethoven

CHAPTER VIII

FINGERING, THEORY, AND ACOUSTICS

I. All brass instruments behave in the same way. The basic principles of brass instruments remain the same no matter how the tubing is bent or shaped. When the air column inside a tube is made to vibrate by the buzz of the lips, a tone will be produced. The pitch of this tone will be determined by three factors. 1. Length of tubing. 2. The bore. 3. The rate of speed of the vibration.

II. When a tone is sounded such as B flat below the staff on a trombone, this sets up a series of sounds consisting of the B flat (fundamental or pedal tone) and a number of additional sounds, up to 20 or more, which are called overtones or harmonics. The overtones are not heard distinctly because they are much weaker than the fundamental (approximately 1/5 to 1/50 less amplitude than the fundamental). The 7th, 11th, 13th, and 14th partials will be out of tune.

III. Example;

FIGURE 6

VIBRATING STRING

The string vibrates as a whole, in halves, thirds, fourths, fifths, sixths, sevenths, eights, etc., with the whole vibration being the strongest.

IV. Overtone series; the harmonics determine the natural open tones and partially determine the timbre of wind instruments.

V. The instrument is capable of producing the notes in the open overtone series so in order to make an instrument chromatic, a method must be used to bridge the gap between the partials. The slide (trombone) or valves serve this purpose. In order to bridge the longest gap, not counting the octave, there must be six positions plus open for the slide, or six combinations of valves plus open.

A. Slide.

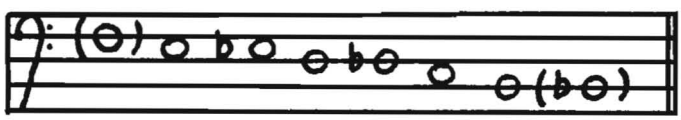


FIGURE 7

BRIDGING THE OVERTONE GAP CHROMATICALLY

1. Each position of the slide lowers the note a semitone. When playing higher, the partials get closer so less movement of the slide will be required to bridge the gaps.
2. The trombone can play all partials in tune

FIGURE 8

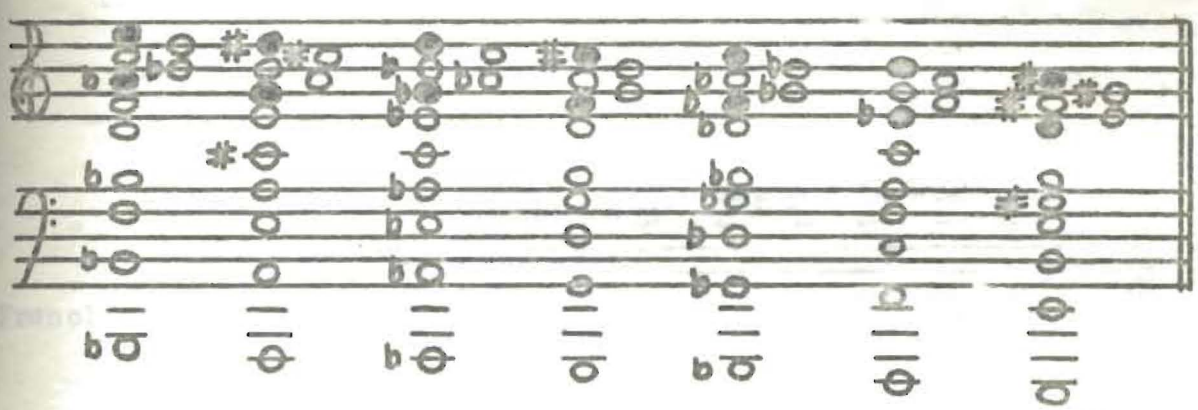
OVERTONE SERIES
(CHORD OF NATURE)

To find the fingering of a given note, pick the chord in which the note is closest to the fundamental unless this note falls in the 7th or 11th partial.

The solid notes indicate the partials which are out of tune in a given series.

Intervals;

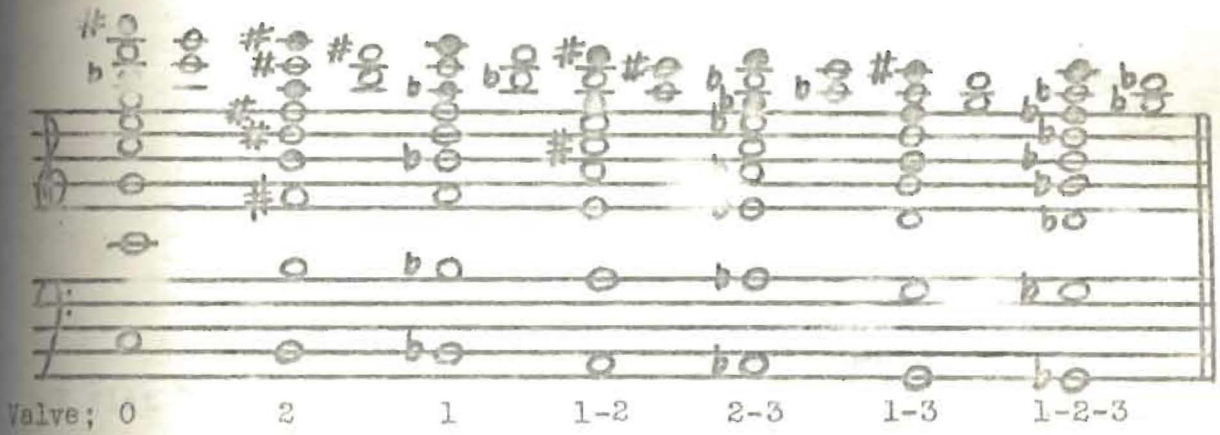
1. Octave
2. Perfect 5th
3. Perfect 4th
4. Major 3rd
5. Minor 3rd
6. Minor 3rd
7. Major 2nd
8. Major 2nd
9. Major 2nd
10. Major 2nd (approximately)



Valve;	0	2	1	1-2	2-3	1-3	1-2-3
Slide;	1	2	3	4	5	6	7

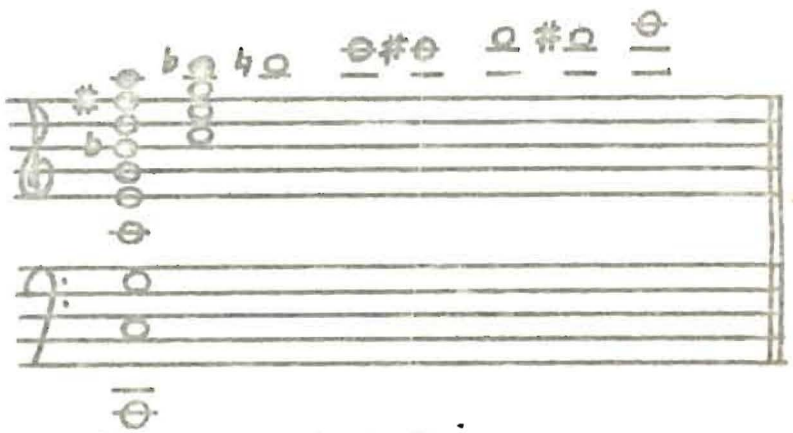
Instruments with open partials of Bb. Baritone (bass clef), Euphonium, Trombone. Double Bb Tuba series is the same an octave lower.

FIGURE 8 (continued)



Instruments with open partials of C. Bb Cornet, Trumpet, Flugelhorn, Baritone (treble clef), Eb Alto (Mellophone).

French Horn in F

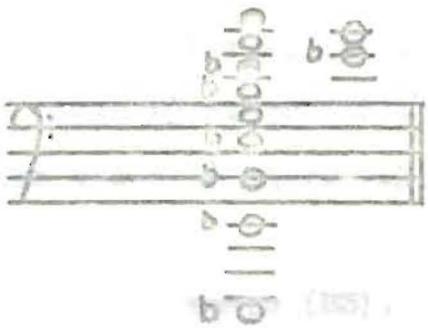


Open partials, no valves down.

This series is continued downward chromatically for six additional chords, thus utilizing the open position and the six combinations of fingerings as shown in previous examples.

FIGURE 8 (continued)

E flat Tuba



The Eb Tuba follows the same pattern as explained in previous examples starting with open partials of Eb.

except in first position.

B. Valves.

1. From any given open tone on a three valve instrument the valves lower a tone a certain distance.

2. 2nd valve lowers pitch ½ step (m2).
1st valve lowers pitch 1 step (M2).
1 and 2 lowers pitch 1½ steps (m3).
3rd valve lowers pitch 1½ steps (m3) same as 1 and 2.
2 and 3 lowers pitch 2 steps (M3).
1 and 3 lowers pitch 2½ steps (P4).
1, 2, and 3 lowers pitch 3 steps (A4 or D5).

3. Valve slides and intonation.

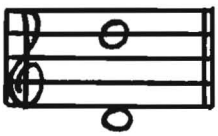
a. Valves when used singly are in tune, with the exception of the third valve, but when used in combination are out of tune. Valves 1 and 2 lower the pitch 3 semitones and produce a tone that is sharp. Other combinations of valves produce even sharper tones.

b. The only time the 3rd valve is used is in combination with other valves, therefore it is made longer to compensate for its being sharp. This cannot be done to valves 1 and

2 because they are used individually. Even though the 3rd valve is made longer it still cannot allow for all combinations using the 3rd valve. To further remedy this, instrument manufacturers have added finger rings or triggers to the 3rd valve slide on cornets and trumpets so that adjustments can be made to correct intonation while playing. Occasionally these devices will be installed on both the 1st and 3rd valve slides. Other methods of correcting this problem on lower voiced instruments are discussed under "Multi-Valve Instruments."

VI. Fingering simulation.

A. French horn; fingers same as trumpet an octave higher.



trumpet valve 1

French horn valve 1

FIGURE 9

TRUMPET AND FRENCH HORN FINGERING SIMULATION

The B flat thumb valve raises the pitch a perfect 4th then it fingers the same as open French horn a perfect 4th lower.

B. Baritone and euphonium.

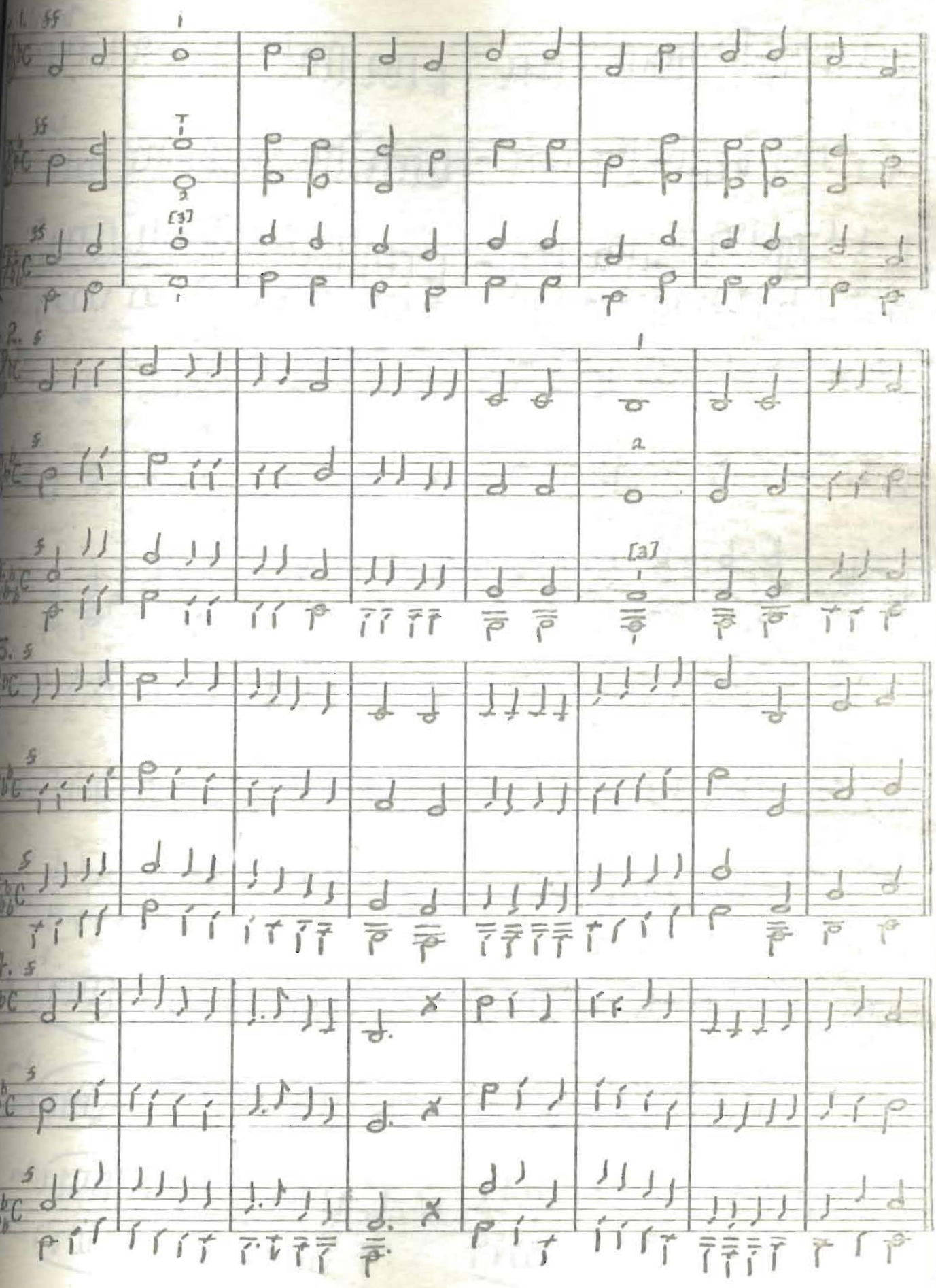
1. Treble clef; fingers just like trumpet for identically written notes. Sounds an octave lower than trumpet.
2. Bass clef; fingers like trumpet a major 9th higher.

C. BB flat tuba; has the same relationship to bass clef baritone as French horn to trumpet. Same as baritone an octave higher. Same as trumpet two octaves and a major second higher.

D. E flat tuba; change the clef sign to treble, add three sharps, and finger like trumpet.

E. Alto horn, mellophone, flugelhorn finger the same as trumpet but do not in all cases sound the same.

Lesson 6



5. mf
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2-3
7. f
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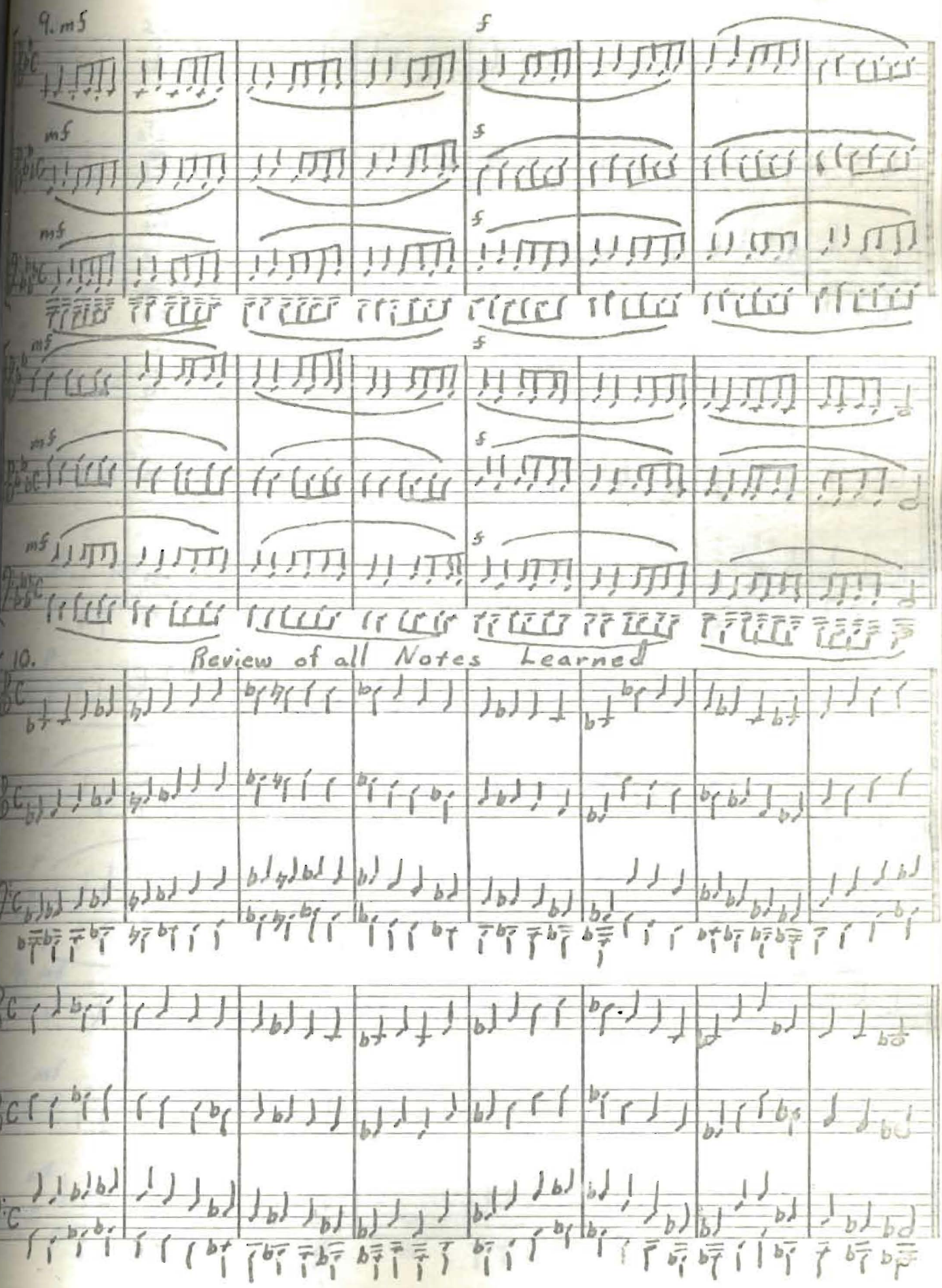
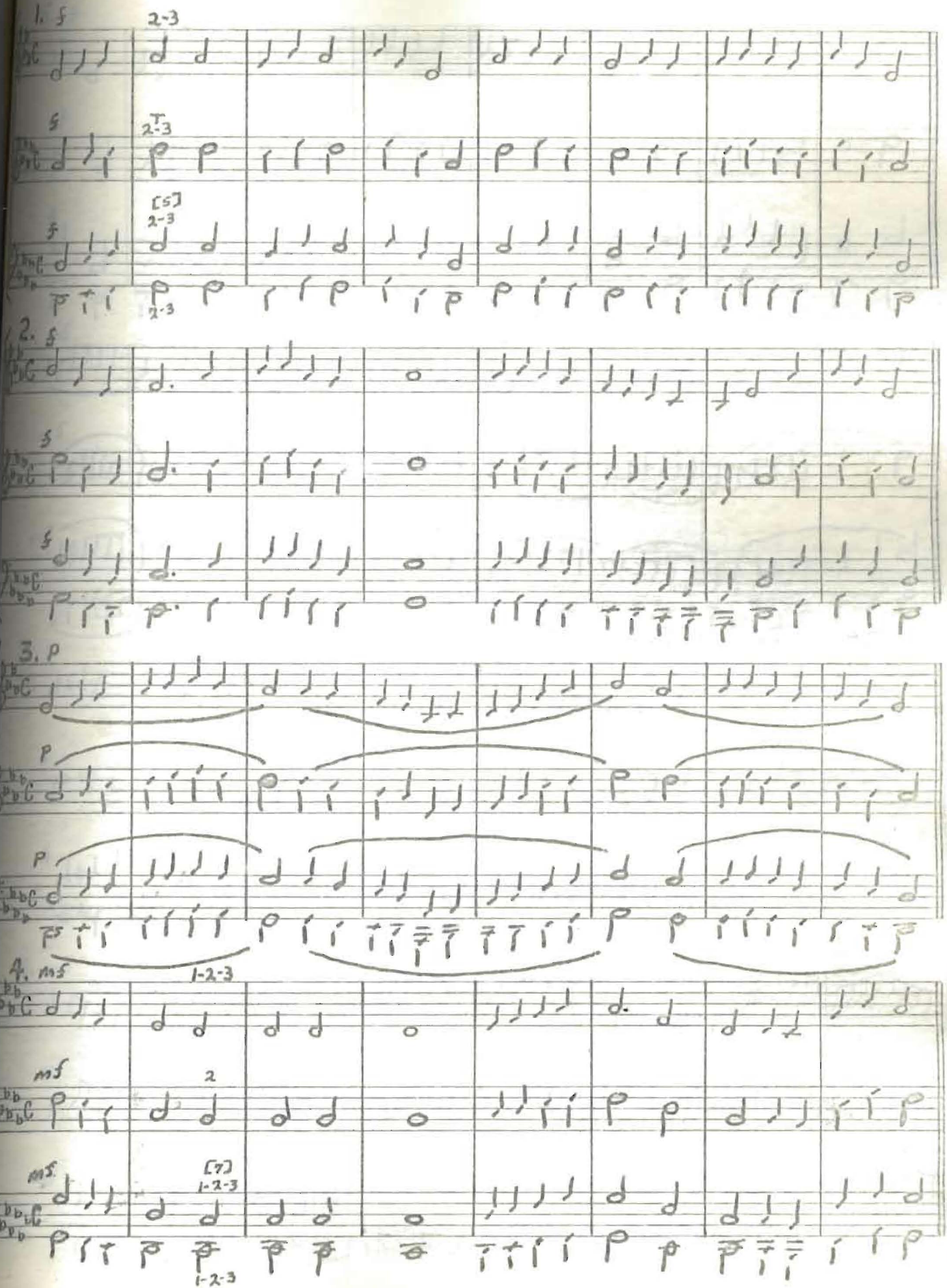
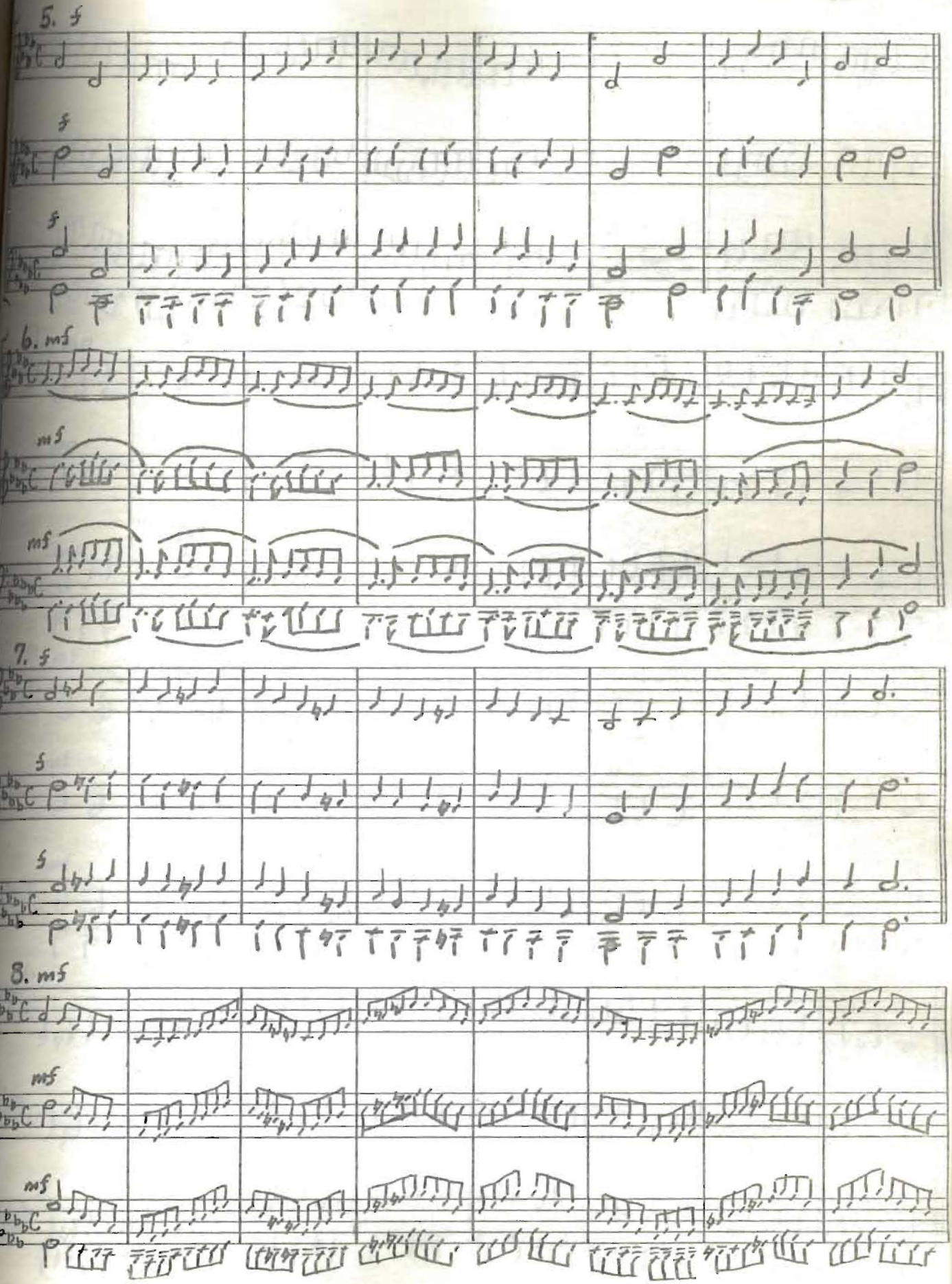
f
8. mf
mf
mf


9. mf
f
10.
Review of all Notes Learned

Lesson 7

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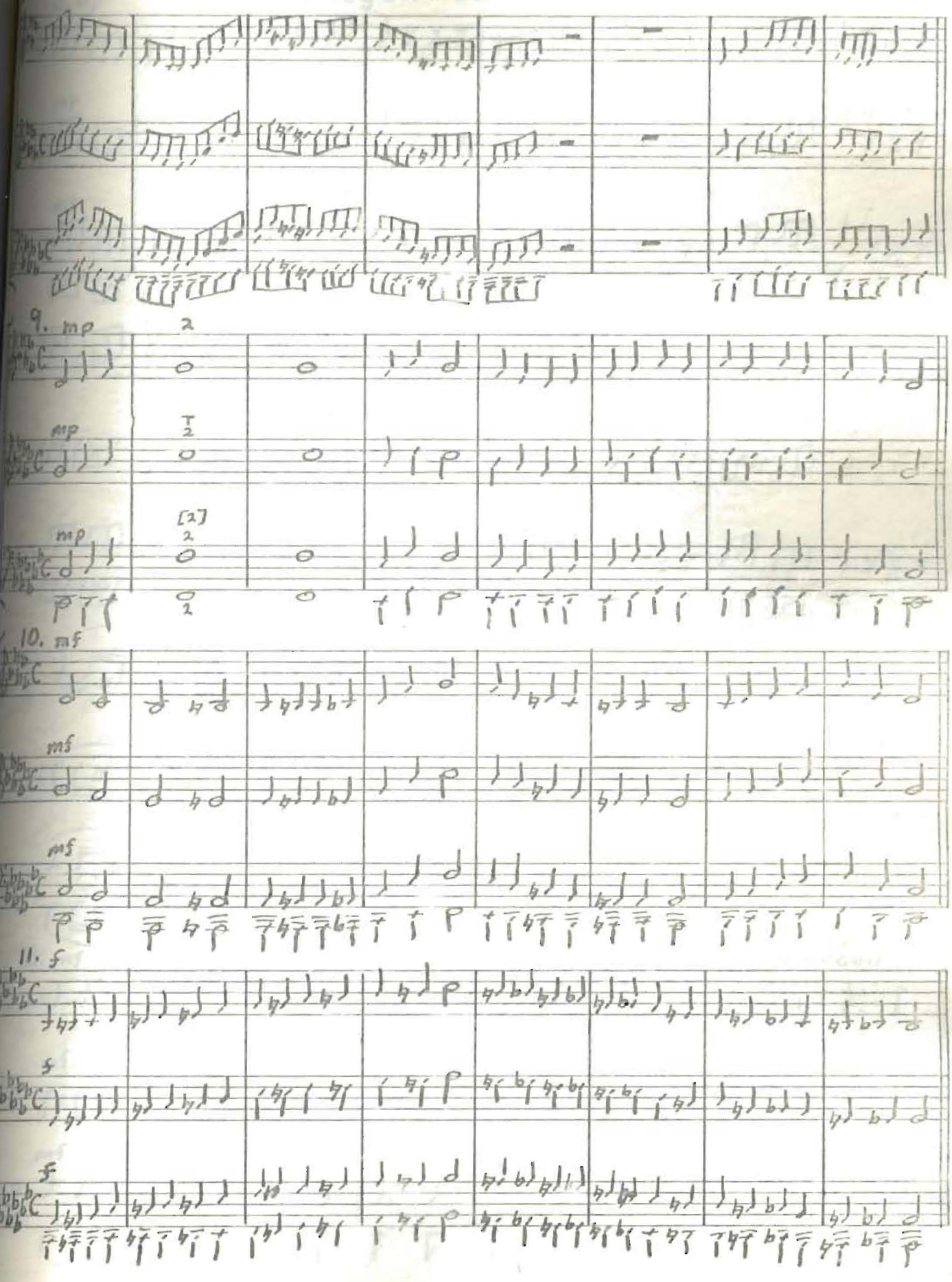
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Lesson 8

Wiegenlied

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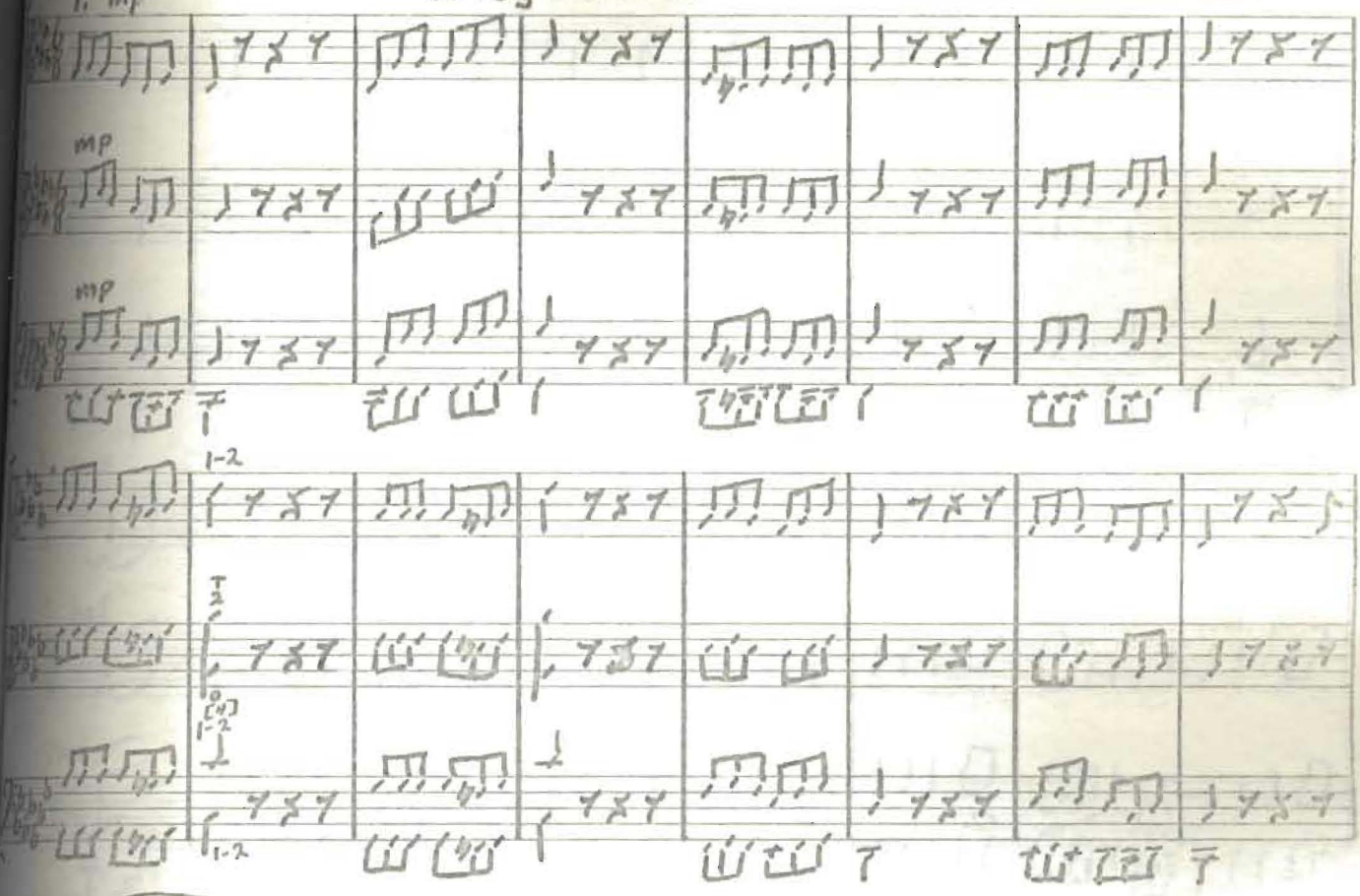
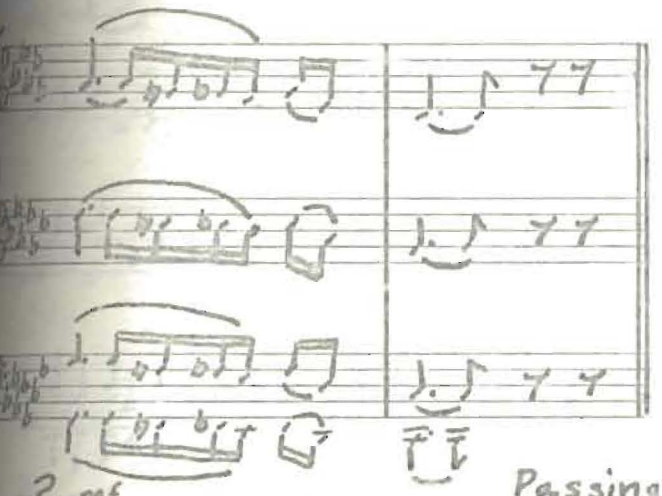
Mozart





Passing By

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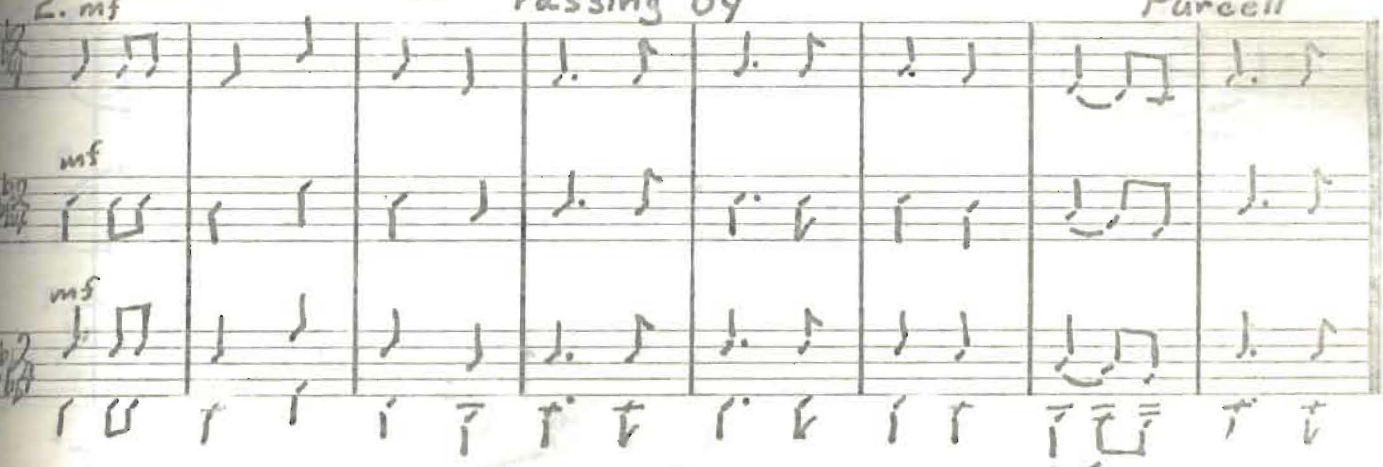
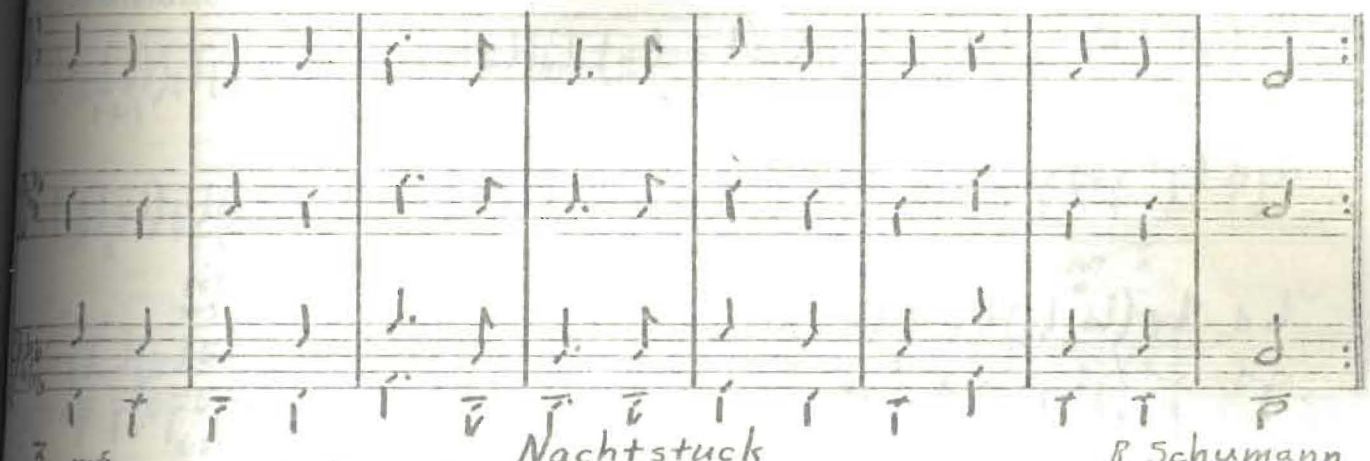
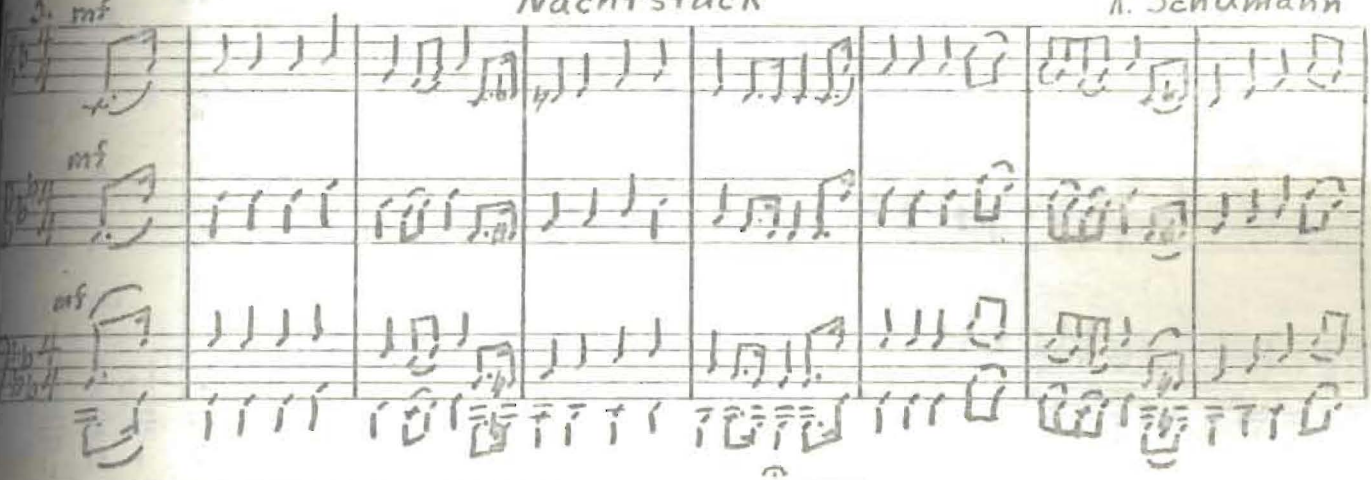
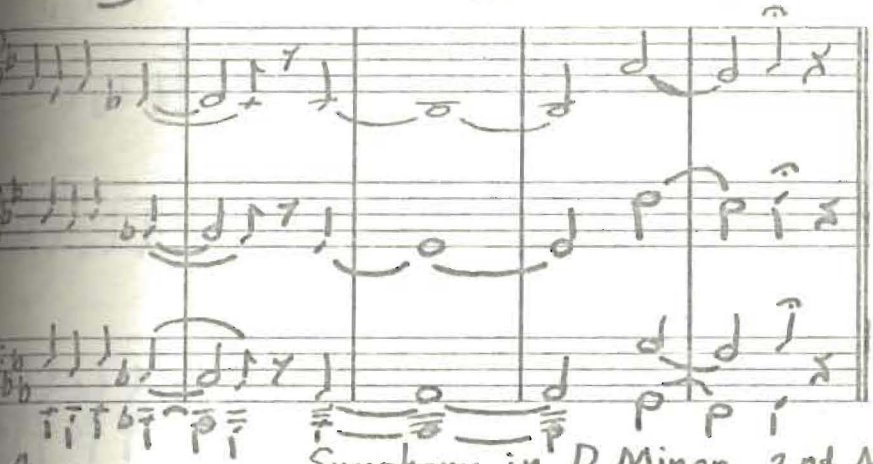
Purcell



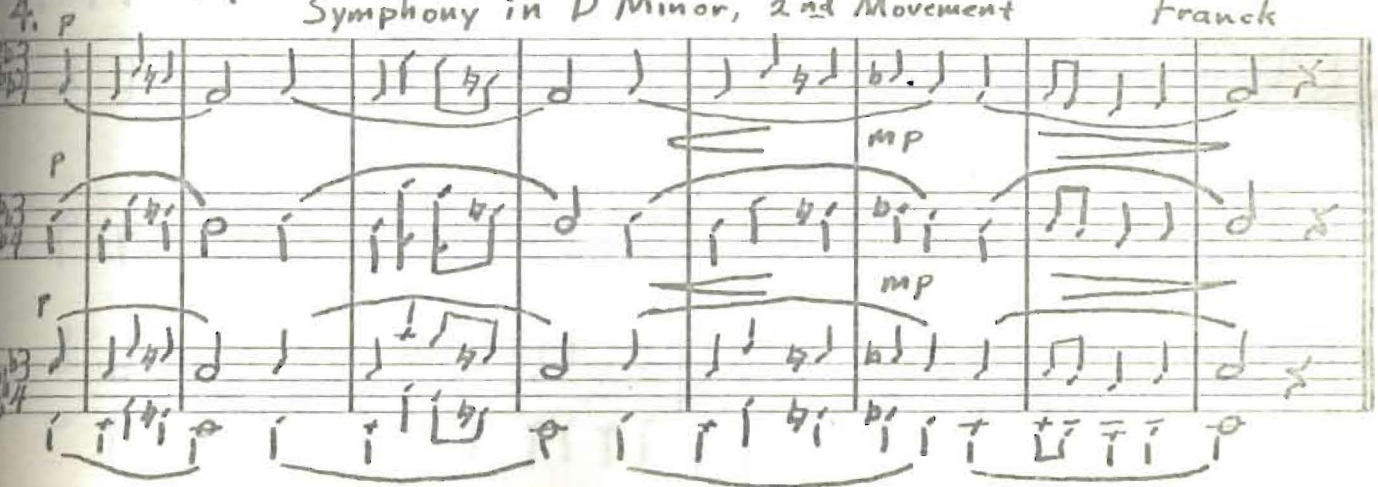


3. Nachtstuck — R. Schumann



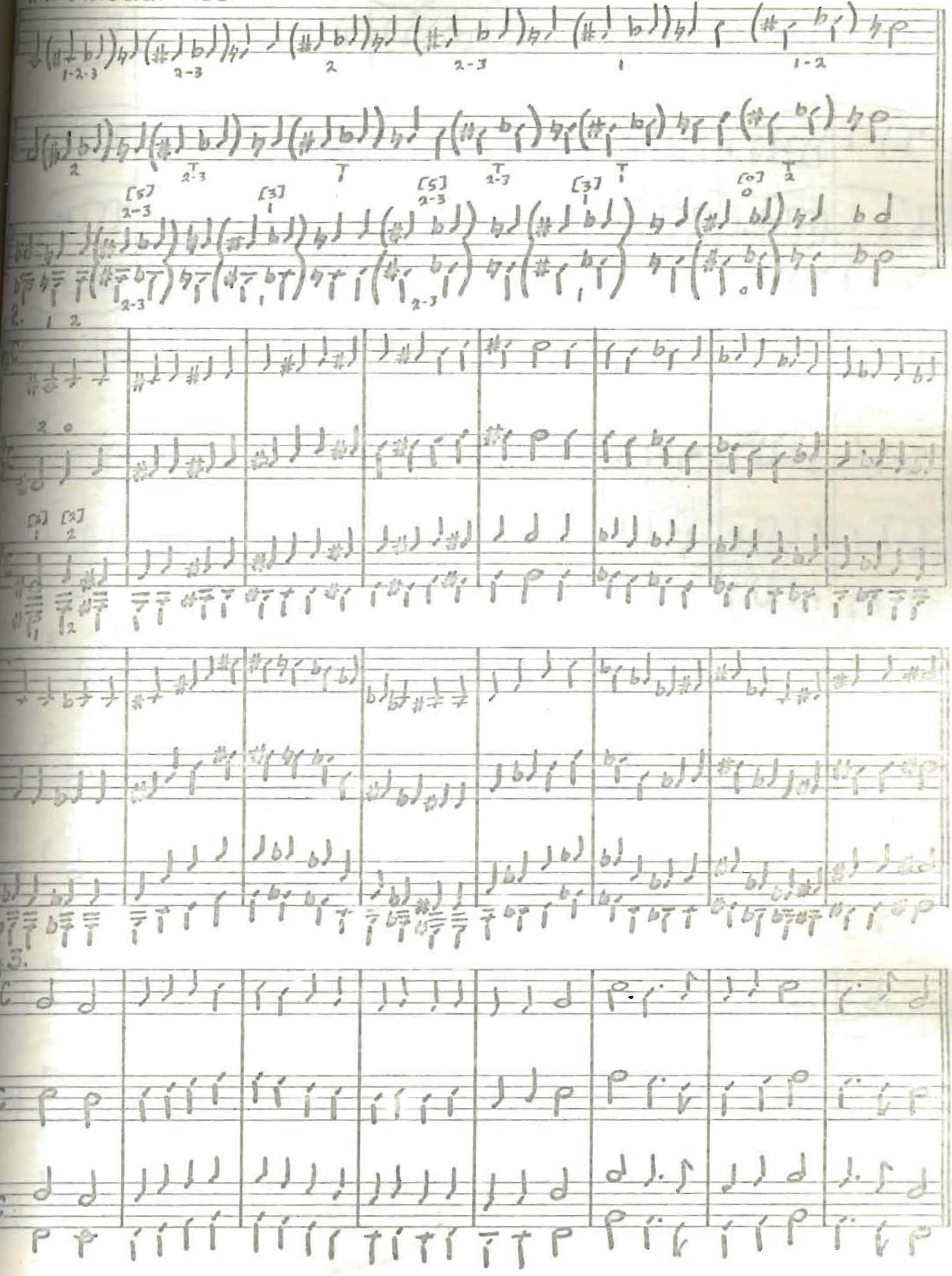


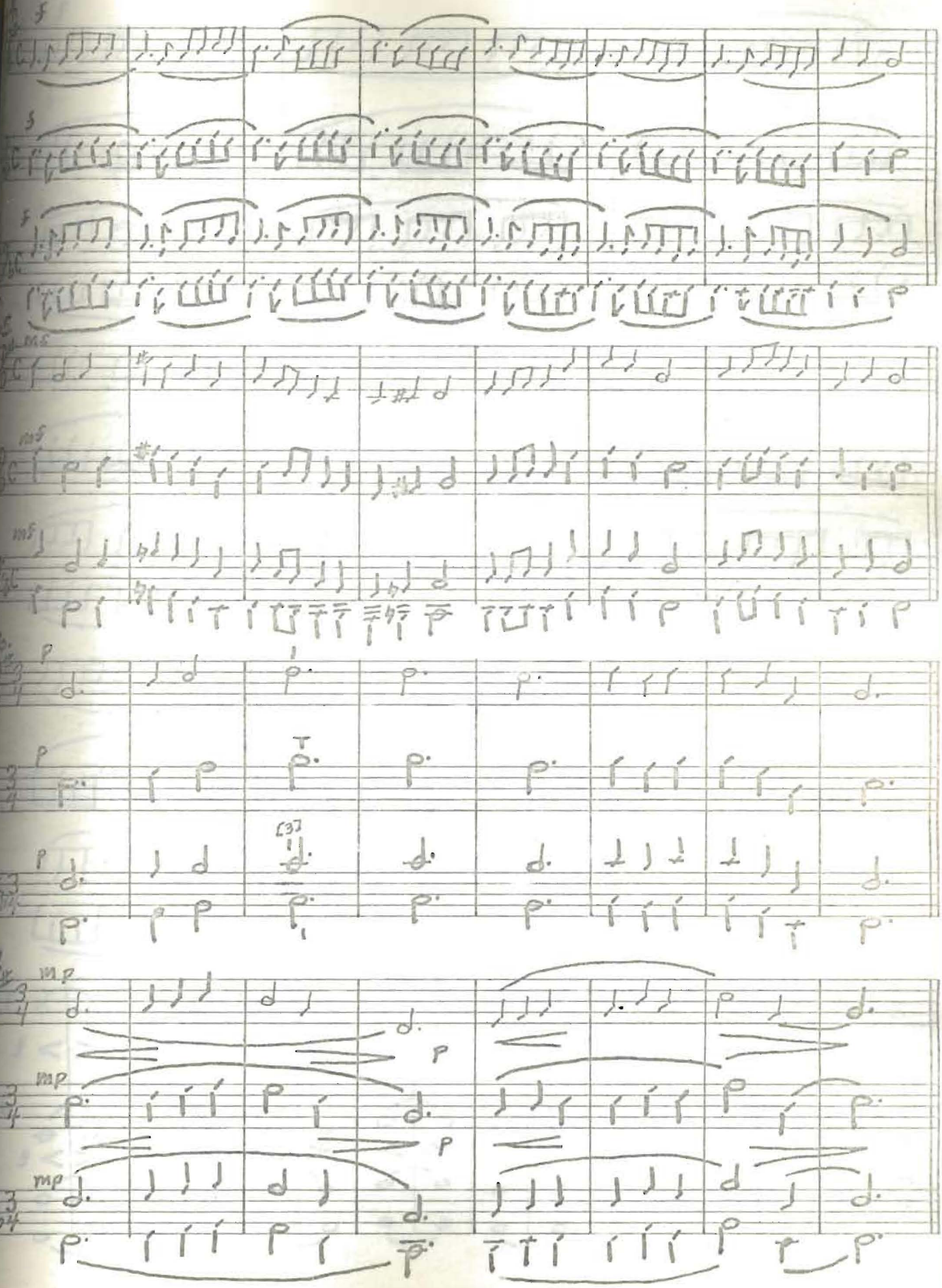
4. Symphony in D Minor, 2nd Movement — Franck



Lesson 9

1. Individual Use

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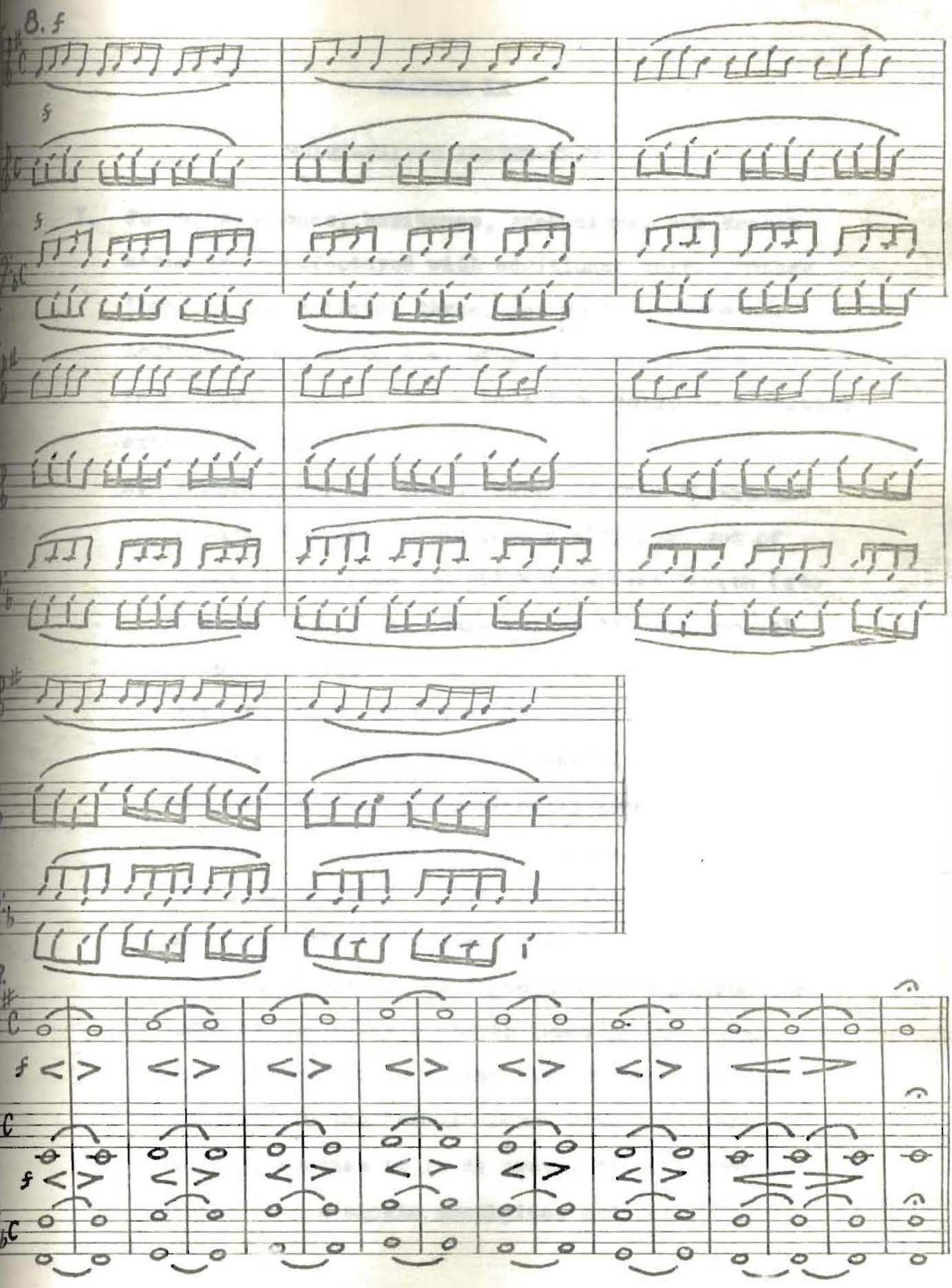
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CHAPTER IX

MULTI-VALVED INSTRUMENTS

I. Tubas, trombones, baritones, euphoniums, and French horns are manufactured with additional valves, other than the conventional three, for various purposes. Additional valves on the cornet and trumpet are impractical, however these have been used, to a certain extent, in Europe.

A. French horn; the fourth valve on this instrument diverts the air stream into a different set of crooks and raises the pitch a perfect fourth into the key of B flat. This raises the fundamental note a perfect fourth. Inasmuch as the horn normally plays in the higher partials the result of this raising of the fundamental tone is that the partials are proportionally lower in the series and thus less difficult to produce. Second line G is the arbitrary pivot point for the use of the fourth valve. All notes above G should be played with the fourth valve depressed and fingered the same as the notes a fourth lower on the F horn. This instrument is called the "double horn" (as compared to the "single horn" with only three valves) because it is in truth, two instruments built with a single mouthpiece and bell.

B. Baritone or euphonium (bass clef); the fourth valve, sometimes known as the compensating valve, on this instrument, lowers the pitch a perfect fourth and changes the instrument into the key of F. It already has been seen how valve three is the equivalent of valves one and two. Valve four, then, is the equivalent of valves one and three. Valve four lowers the fundamental note and allows C second space, B second line, D, and E, below the staff to be played in tune, which is impossible to do with the three valve instrument. The fourth valve also enables the instrument to bridge the gap chromatically between the fundamental and the first overtone in the open B flat series.

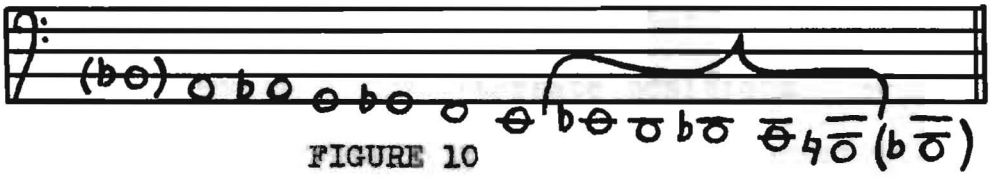


FIGURE 10

PURPOSE OF FOURTH VALVE

Since there is the intervallic distance of a perfect octave between the fundamental and the first overtone, with the seven fingering combinations possible with the three valves a maximum of six semitones (diminished fifth) below the first overtone can be chromatically produced. There remains, then, the

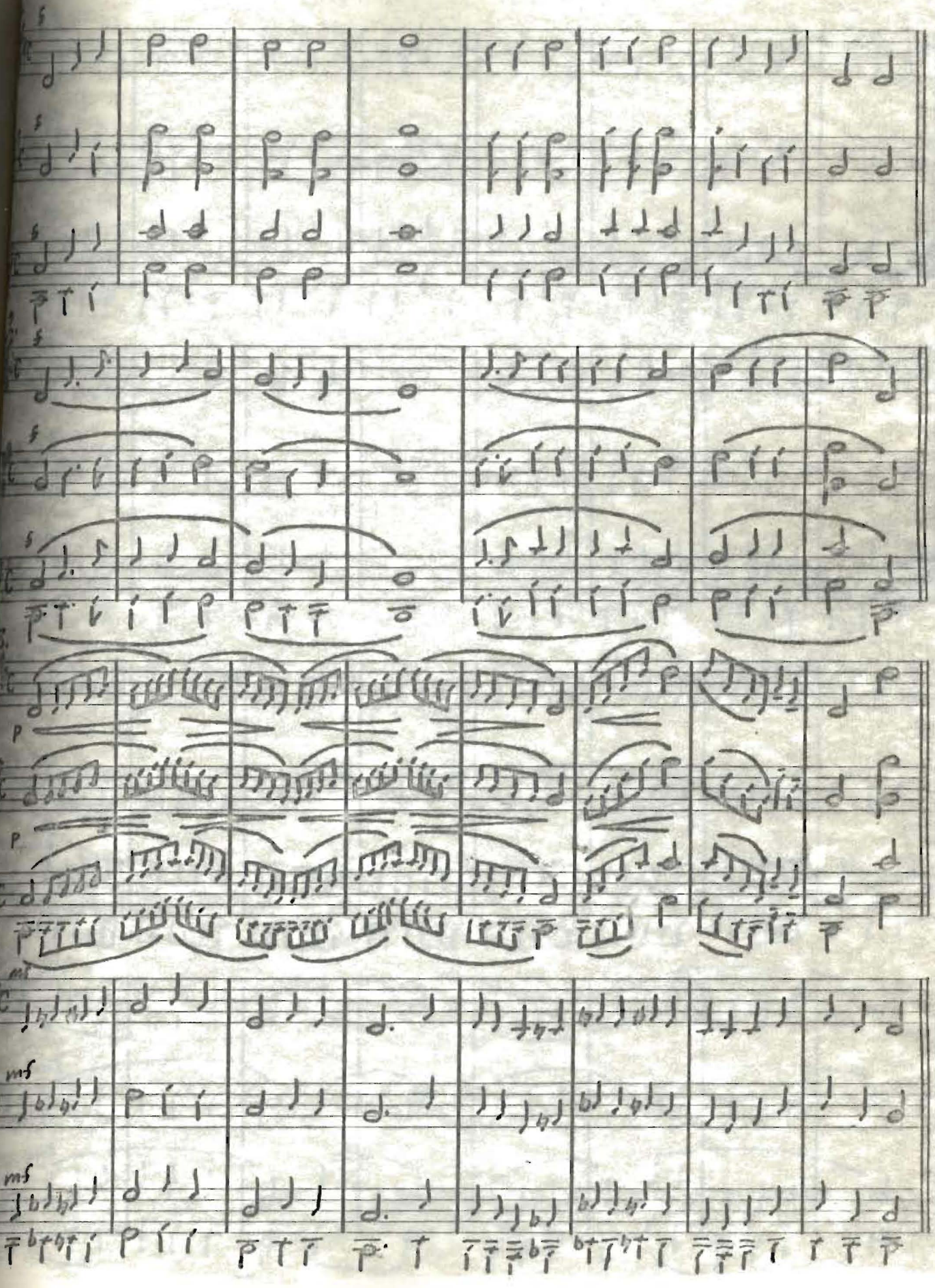
intervallic gap of an augmented fourth above the fundamental in which no tones are possible. By use of the fourth valve, which lowers the first overtone a fourth, the seven fingering combinations of the other three valves make possible the chromatic bridging of this gap.

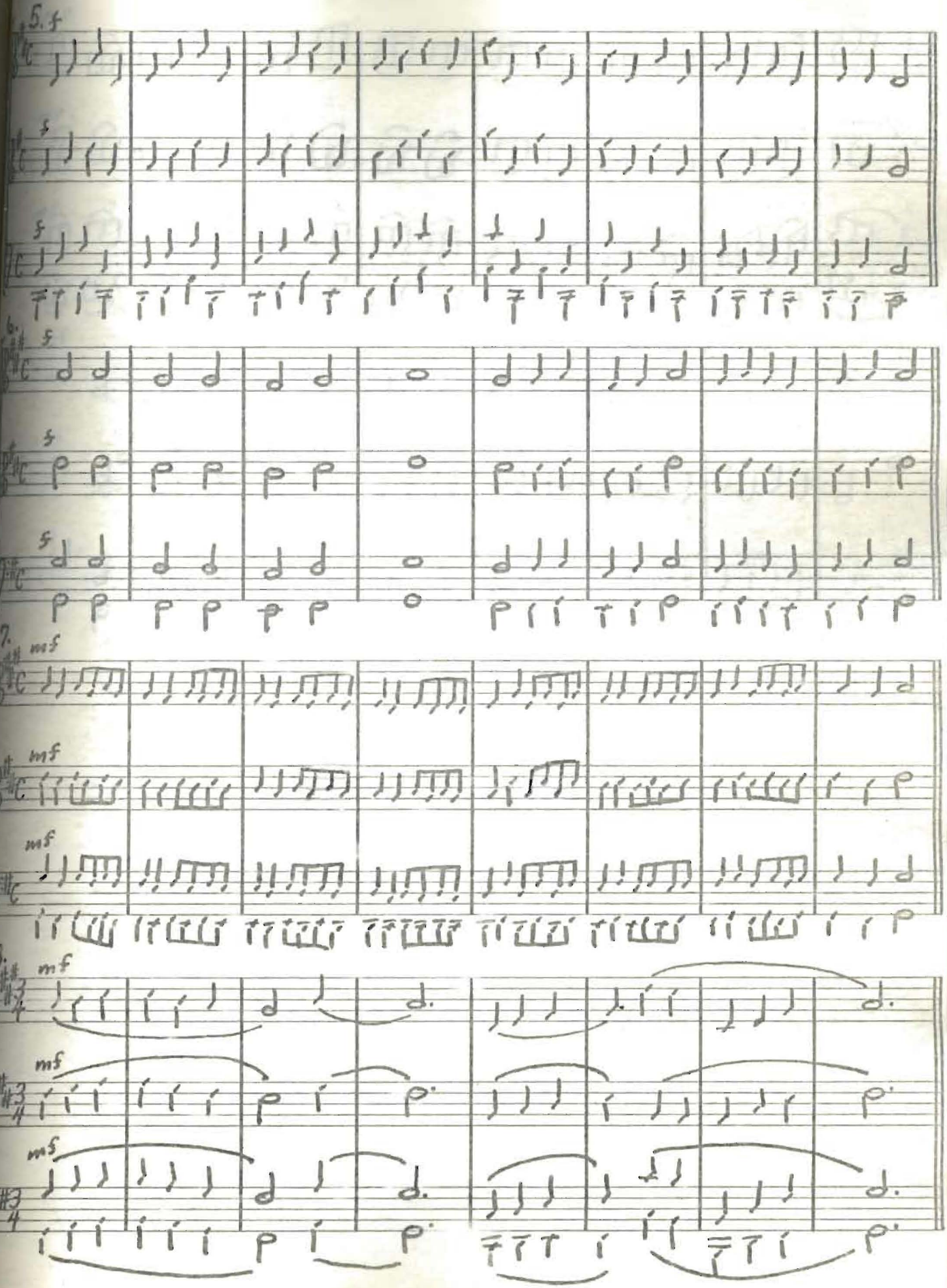
C. Double belled euphonium; this instrument has a fourth valve for purposes described in section "B" but in addition has a fifth valve that diverts the air column into a smaller bell which produces a tone quality of lighter nature almost synonymous with the tone quality of a trombone.

D. Trombone; this instrument, being able to play all notes in tune except in first position, the thumb valve sometimes found on this instrument is used only to bridge the gap as described in section "B" and to provide a few alternate positions. Both the tenor and bass trombone now are constructed with this valve optional.

E. Tuba; the fourth valve on the tuba is used for the same purposes described in section "B".

Lesson 10

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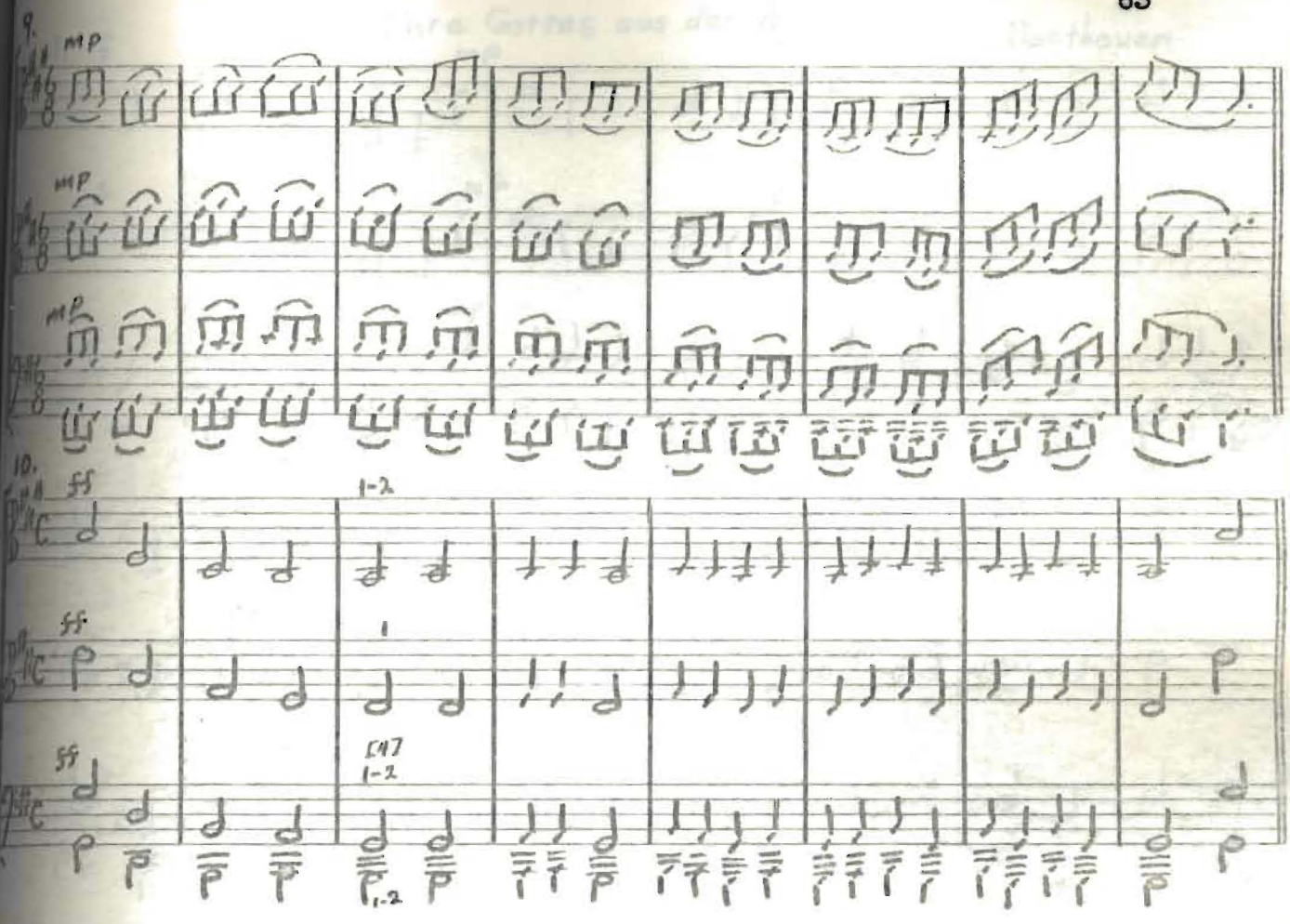
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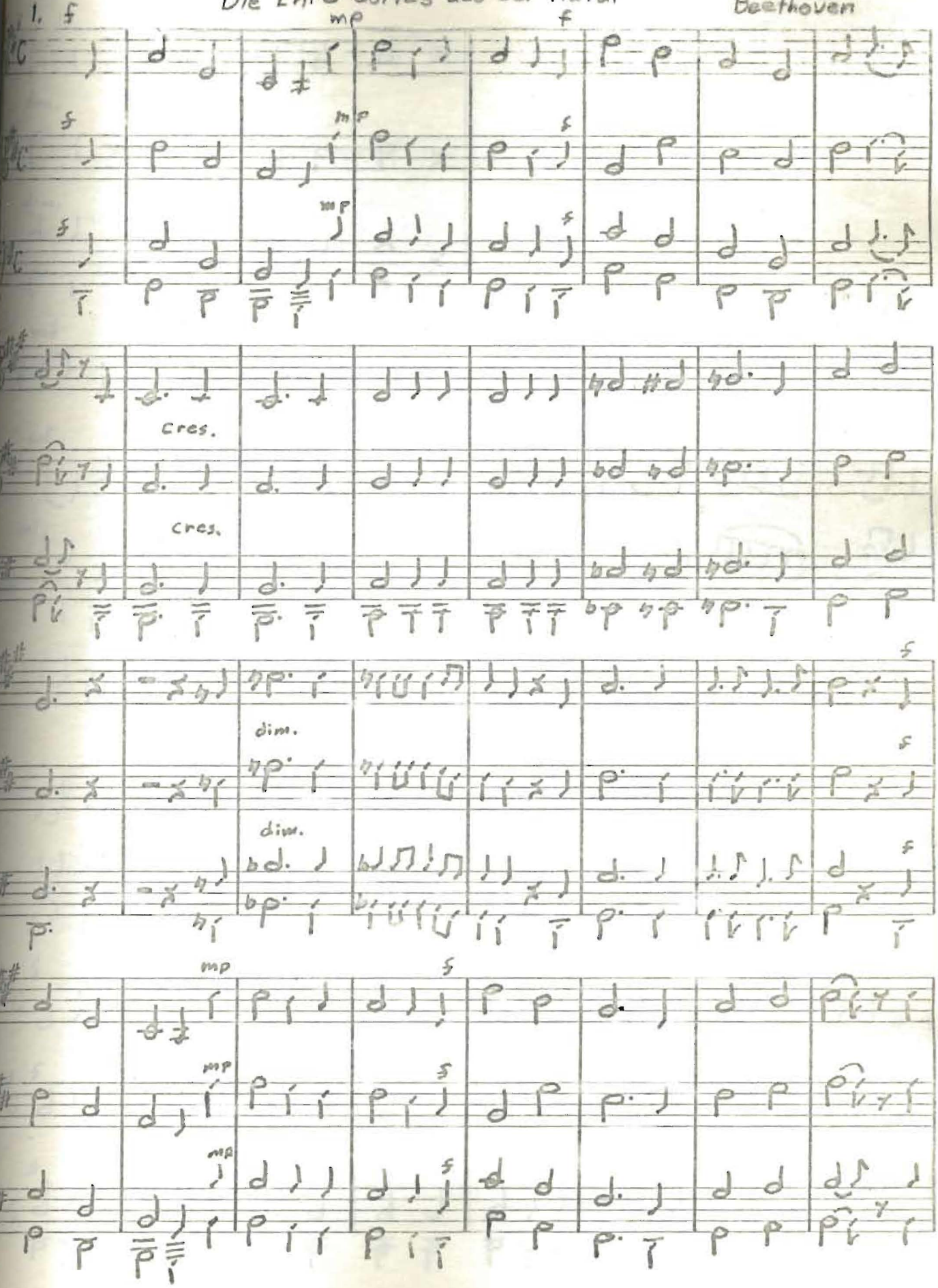
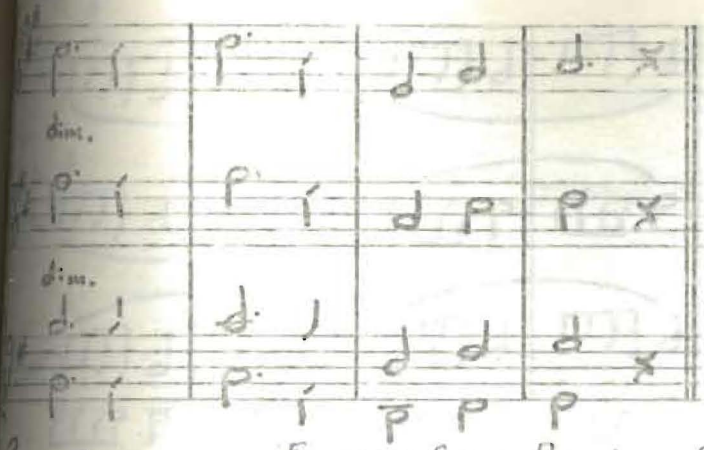
Lesson 11

Die Ehre Gottes aus der Natur

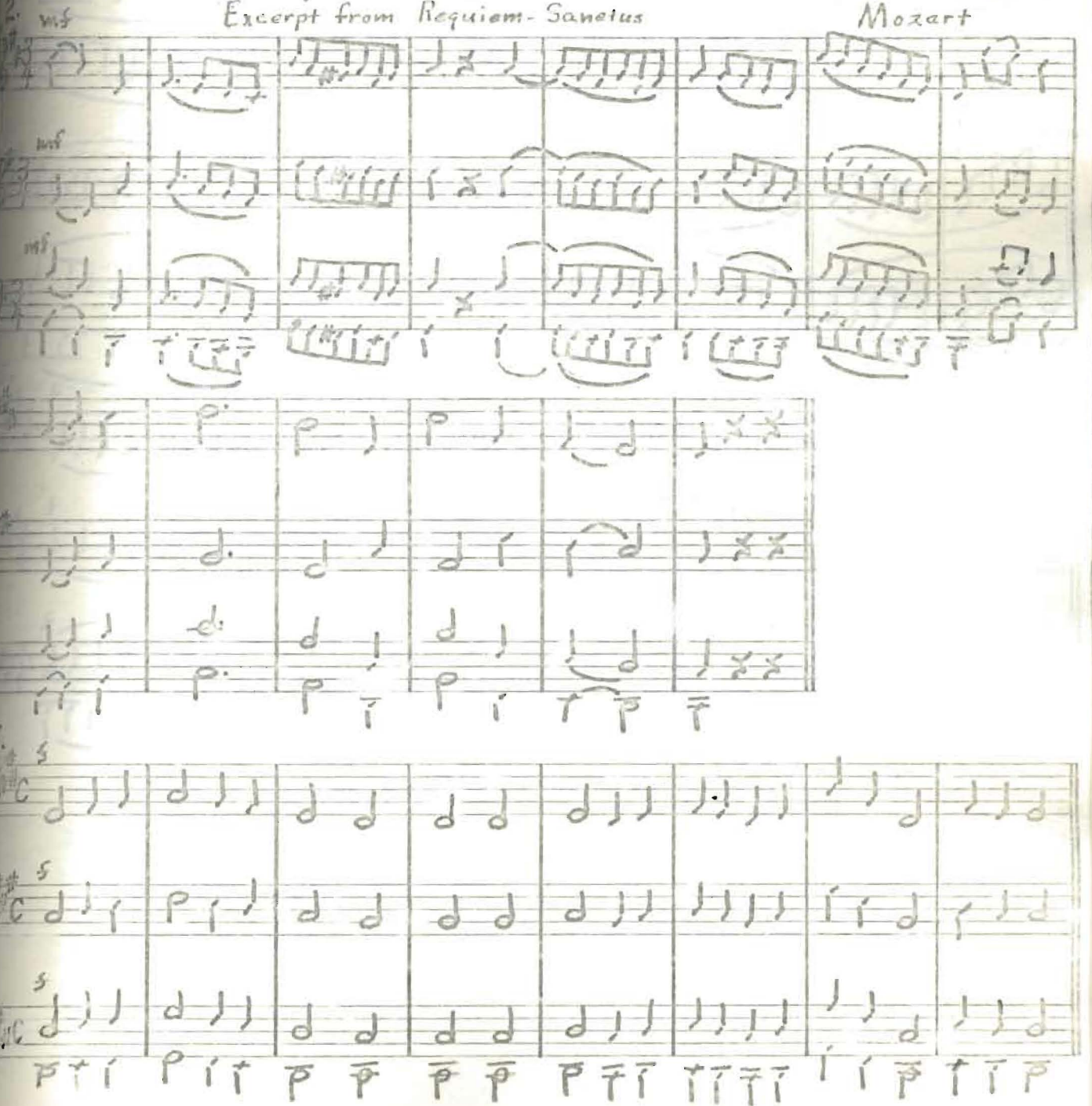
Beethoven

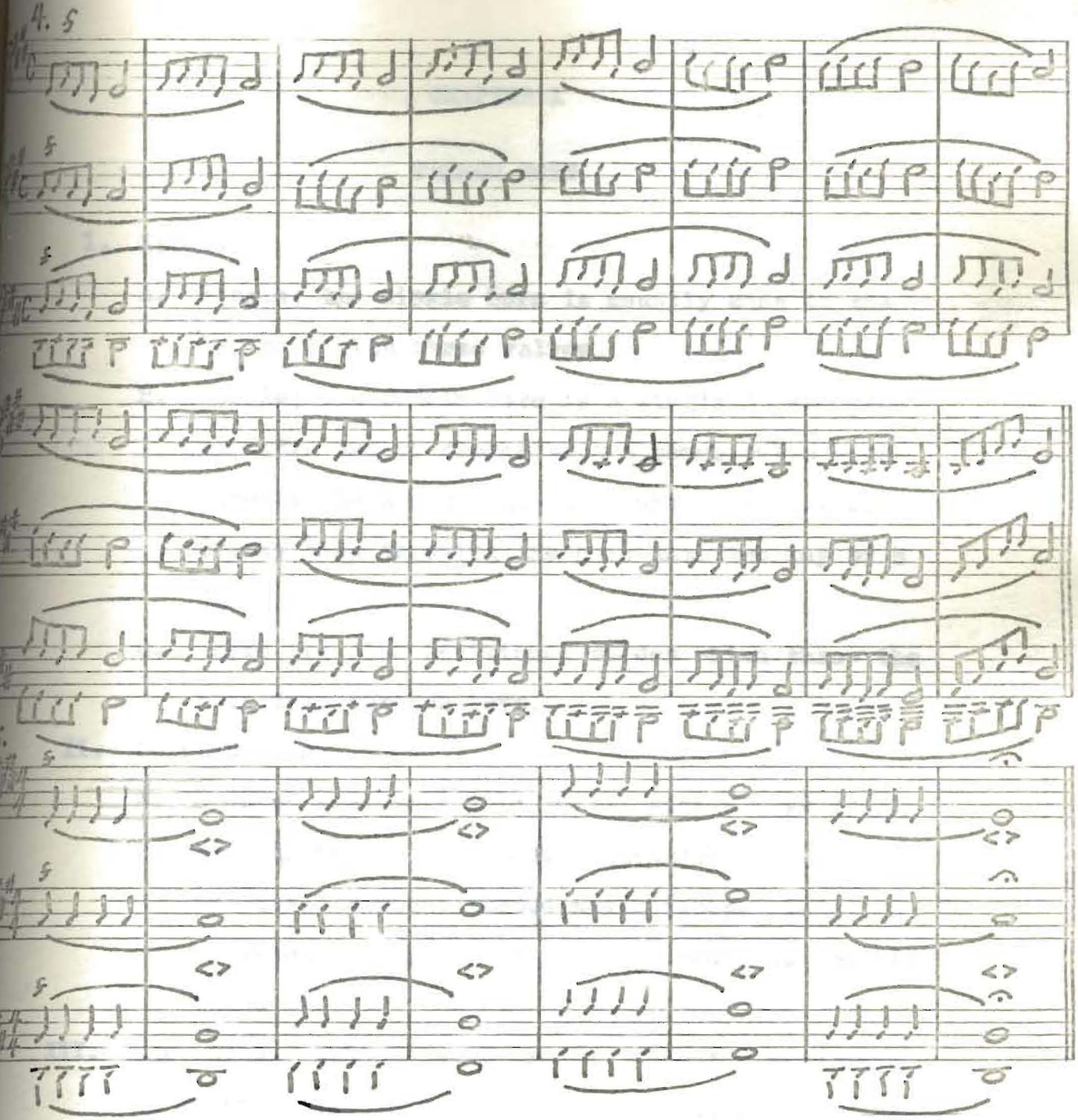




Excerpt from Requiem - Sanctus

Mozart





CHAPTER X

FRENCH HORN

I. Types.

A. Single; the single horn is usually made in the key of F with three valves.

B. Double; the double horn is a single F horn plus an extra set of crooks with a thumb valve which directs the air column into this extra set of crooks thus throwing the horn into the key of B flat.

C. There are also additional slides which throw the horn into various keys.

II. Construction.

A. Made of very soft thin metal, with a very small bore in relation to their extensive length.

B. Use small conical shaped mouthpieces. This produces a soft, mellow, almost woodwind quality tone.

III. The range, although much greater than the trumpet, is acoustically an octave lower than that of the trumpet.

IV. Notation.

A. In modern music, horn parts are sometimes written in the bass clef. When this occurs, the instrument remains a transposing instrument. The rule that

bass clef instruments do not transpose, is not applied to the French horn.

B. Occasionally music will call for a stopped horn. This means that the hand will be inserted in the bell farther than normal thus producing a tone a half step higher. In this case the player must transpose the music down one half step.

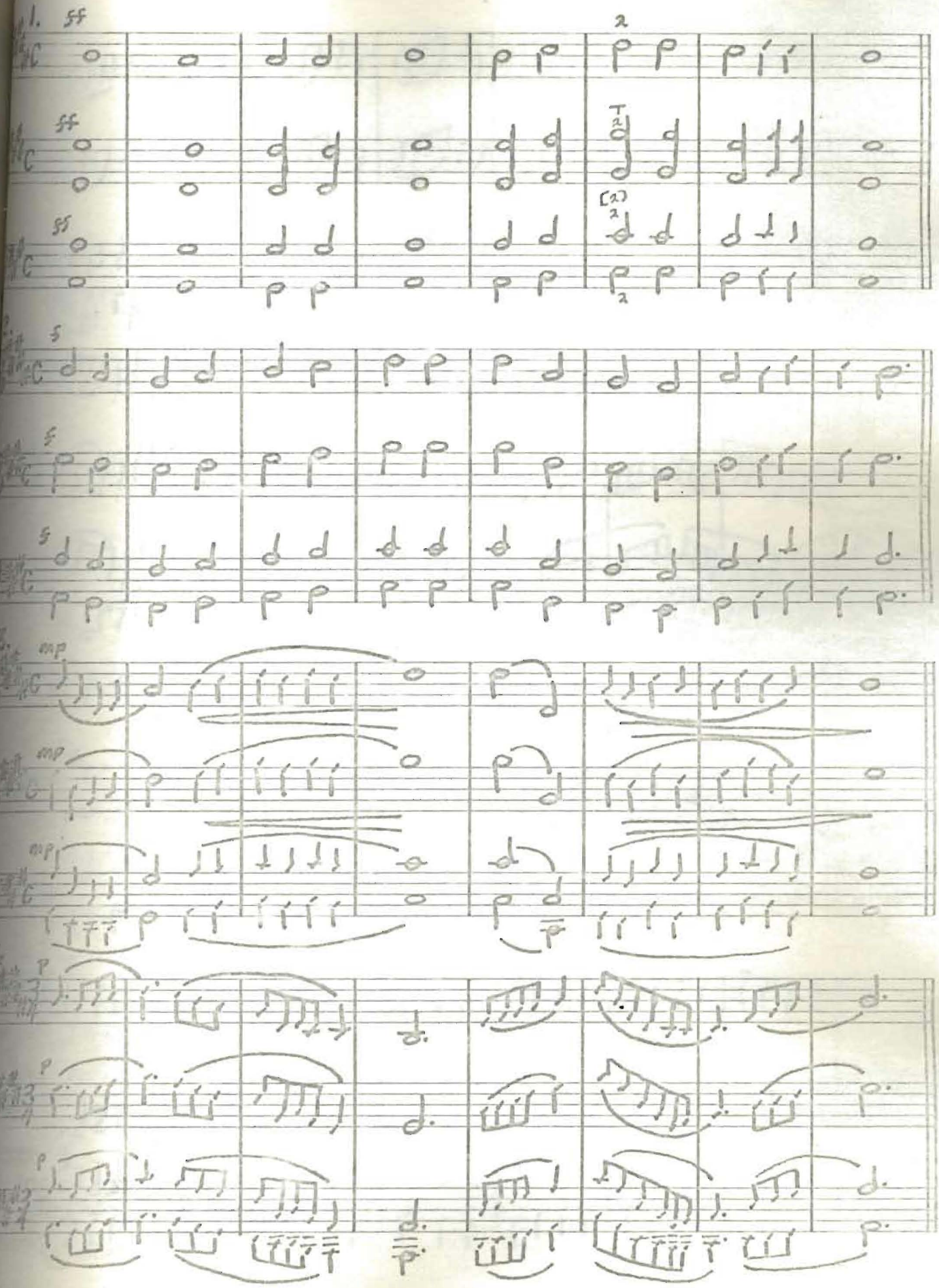
V. Beginners.

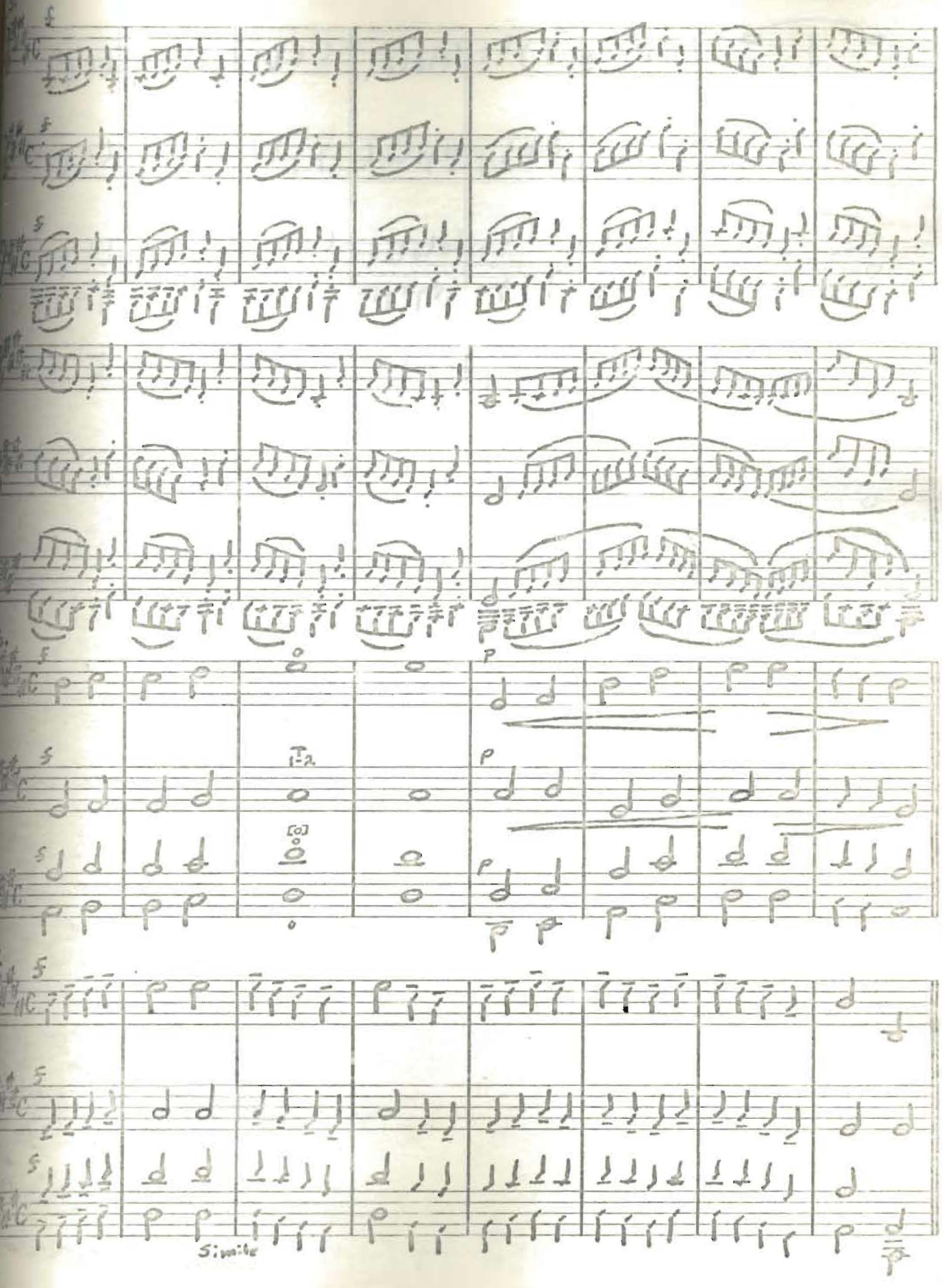
A. Many times it is advisable to start beginners on the E flat alto or mellophone, then change them to French horn when they reach a desirable level of proficiency.

B. The same procedures used in starting beginners on other brass are applied to French horn. Care must be taken to see that the student understands and uses the correct position for the right hand.

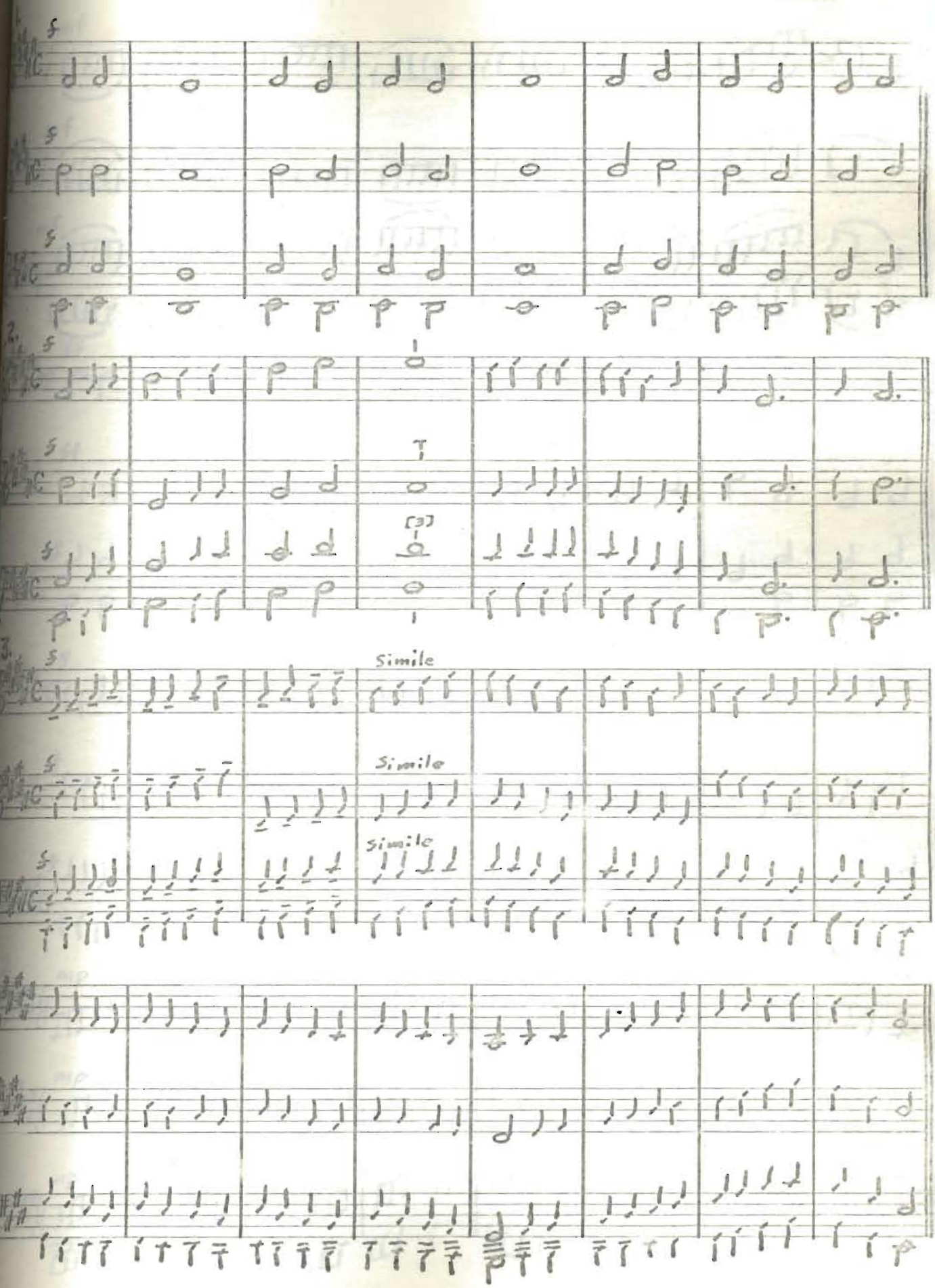
C. It is best to put a more musical child who has good pitch discrimination, perseverance, and flexible, sensitive lips, on French horn.

Lesson 12




Simile

Lesson 13



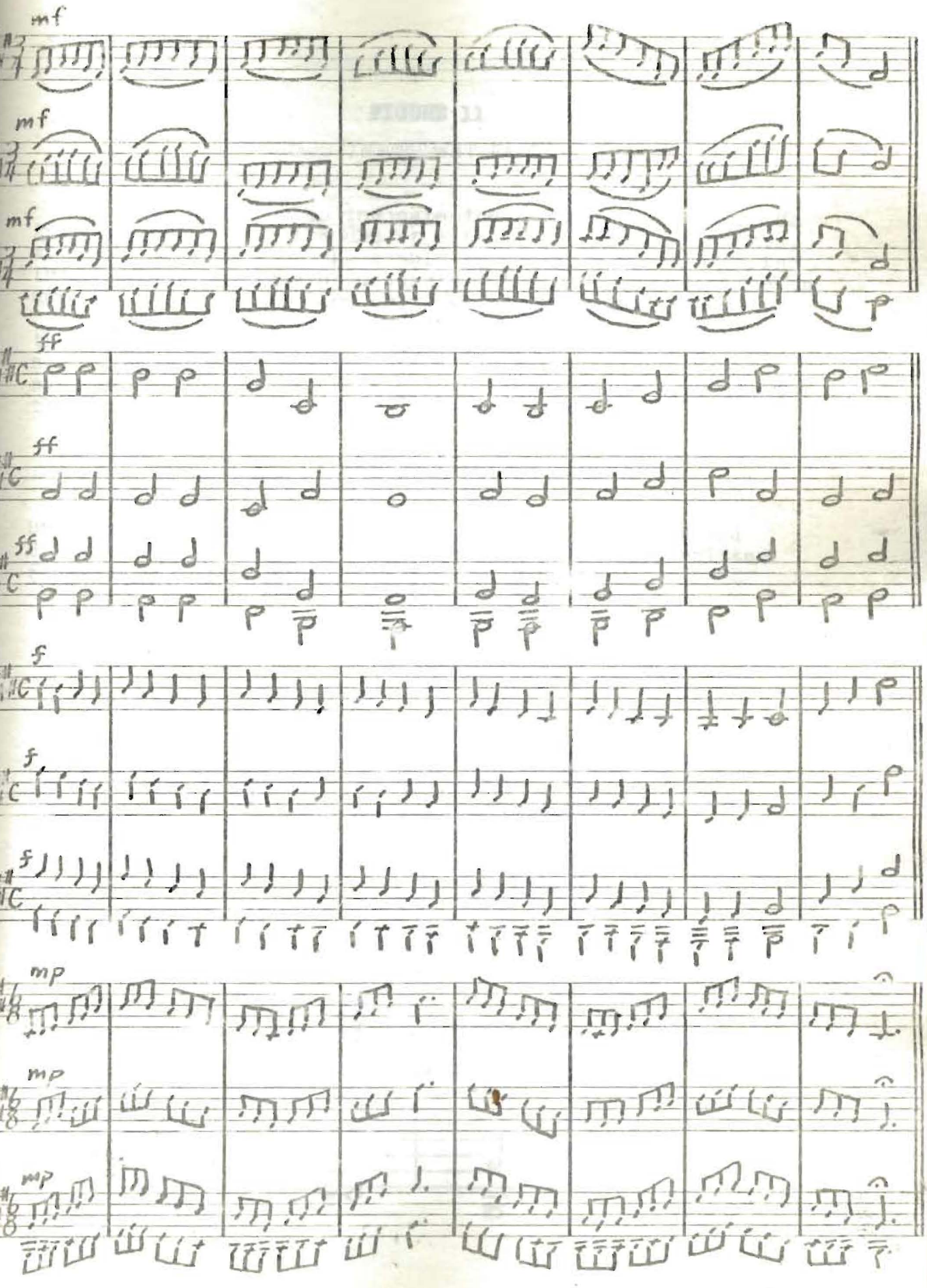

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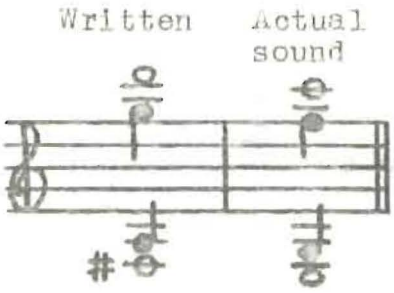
FIGURE 11

BRASS INSTRUMENT RANGES

The whole notes indicate the complete ranges of the instruments without the use of extra valves or pedal tones, with the exception of the double French horn which uses the thumb valve. It must be understood that the topmost tone on any instrument is limited only by the performer's ability.

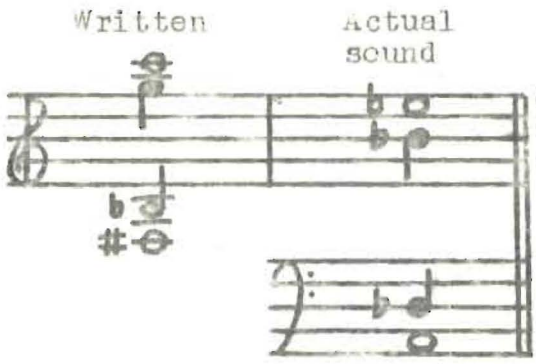
The quarter notes indicate the practical ranges of the various instruments. These are not constant and will also vary a slight degree with each individual player. The average high school student should have a range approximately the same as indicated by the quarter notes.

Bb Cornet
Bb Trumpet
Flugelhorn



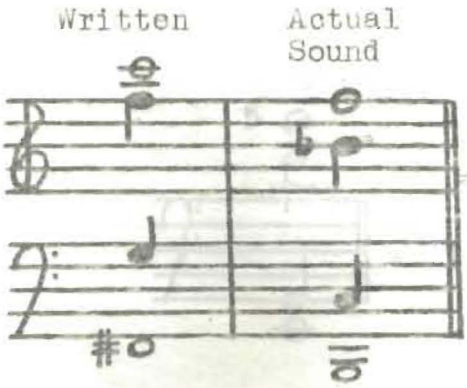
Sounds major 2nd lower than written.

Eb Alto
(Mellophone)



Sounds major 6th lower than written.

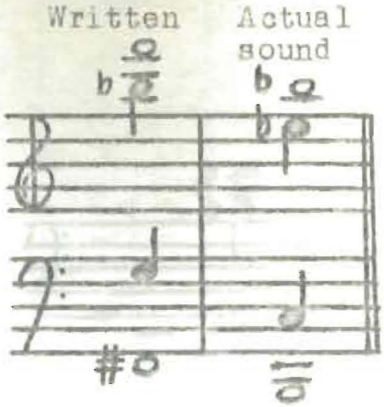
Single French
Horn in F



Sounds perfect 5th lower than written.

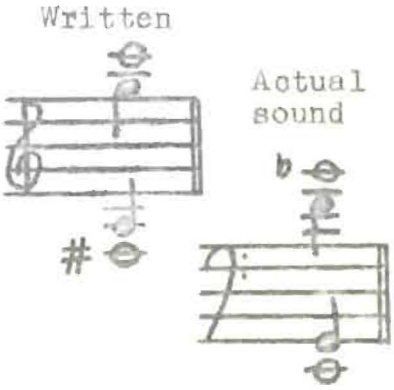
FIGURE 11 (continued)

Double French Horn in F-Bb.



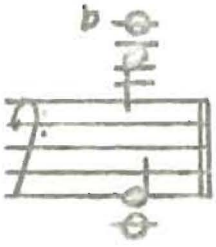
Sounds perfect 5th lower than written. With use of Bb thumb valve, range is extended above the single horn a perfect 4th.

Baritone treble clef



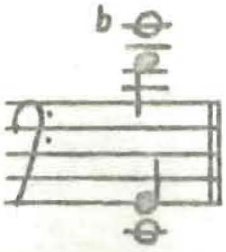
Sounds major 9th lower than written.

Baritone Euphonium bass clef



Sounds the same as written.

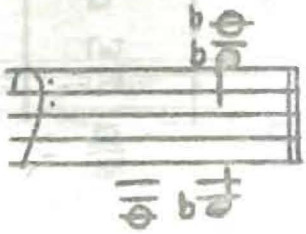
Trombone



Sounds same as written.

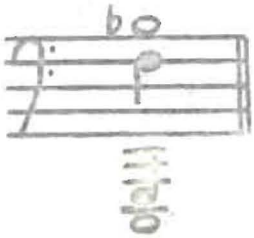
FIGURE 11 (continued)

Eb Tuba



Sounds the same as written.

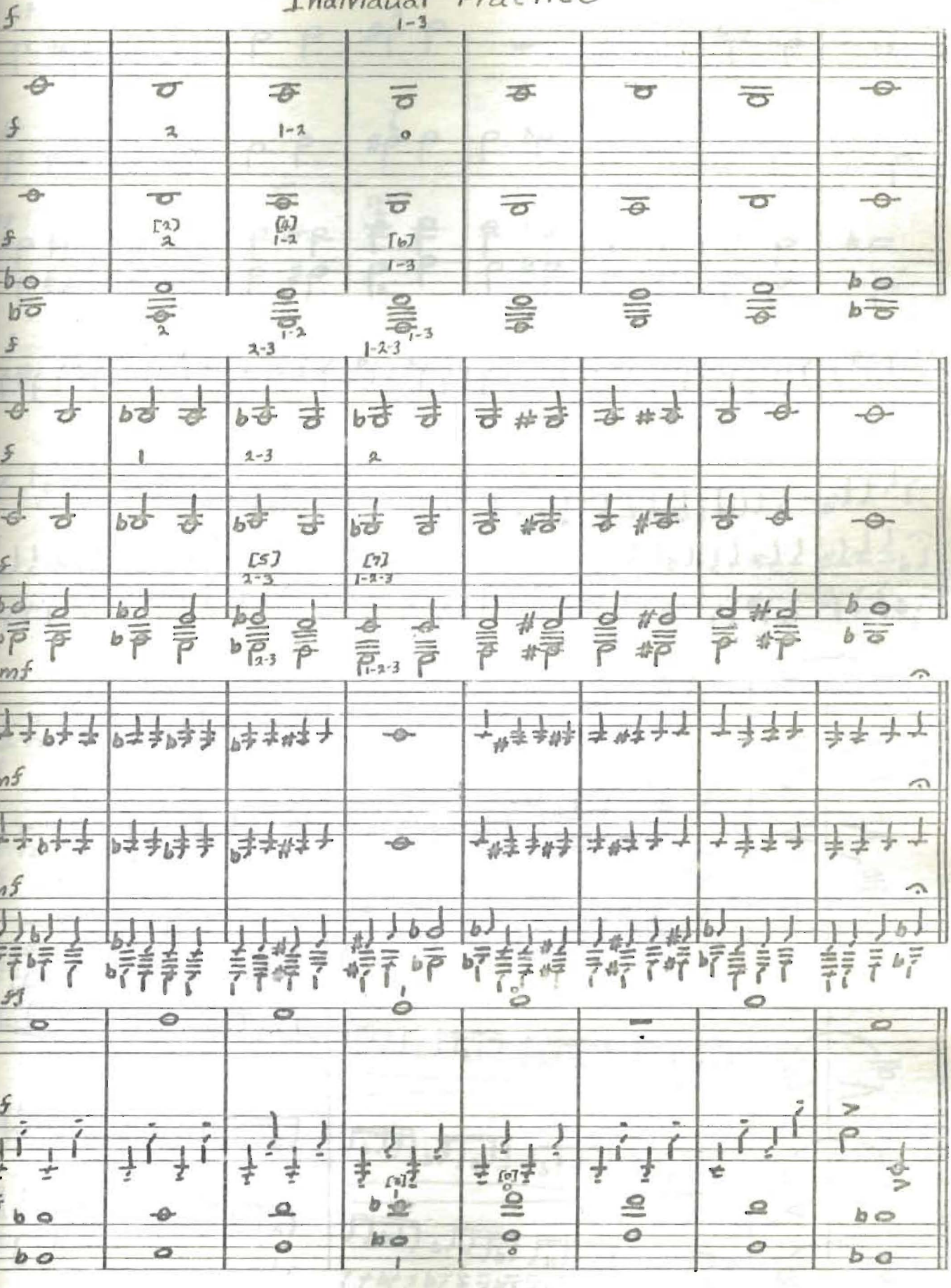
Double Bb Tuba

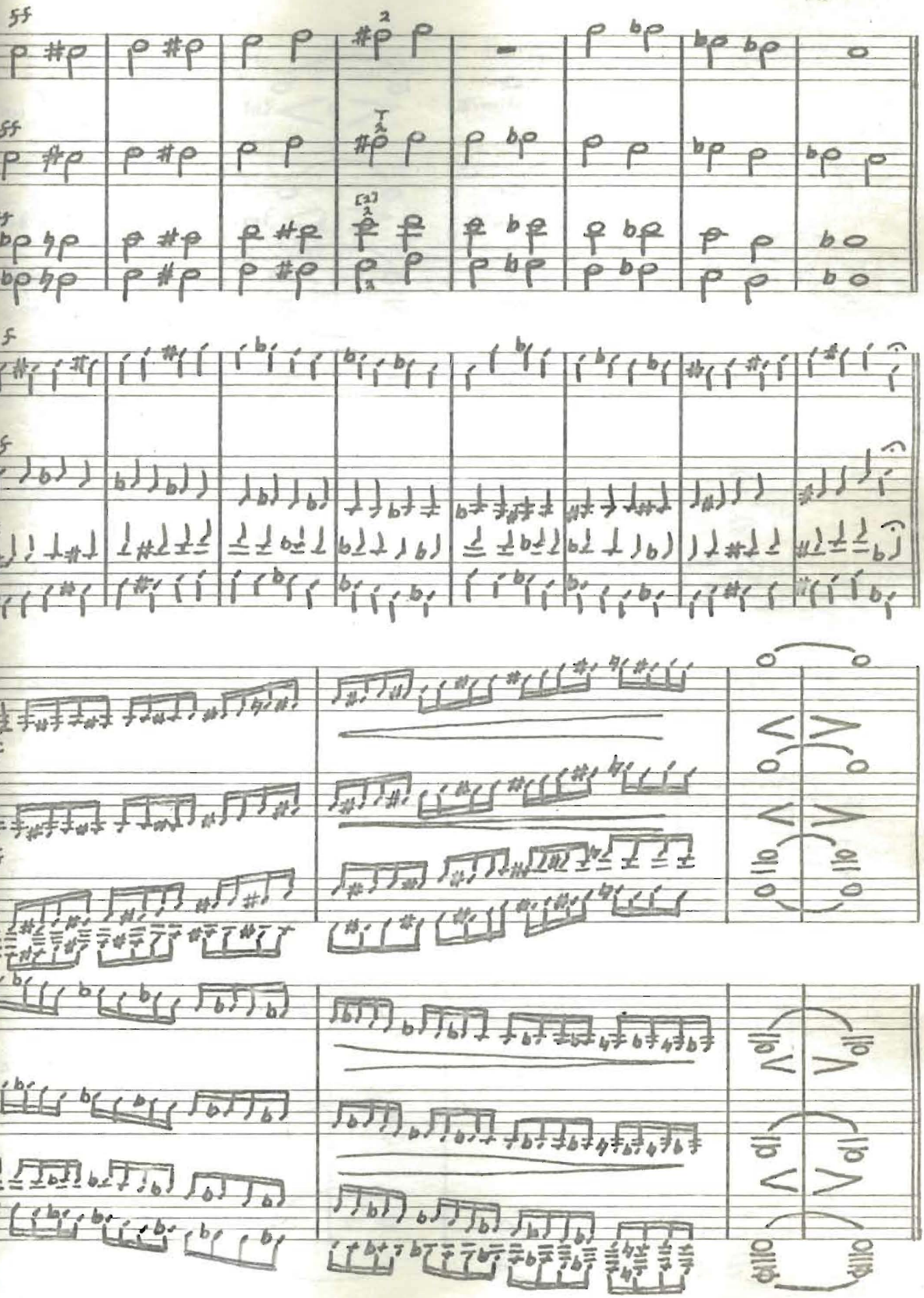


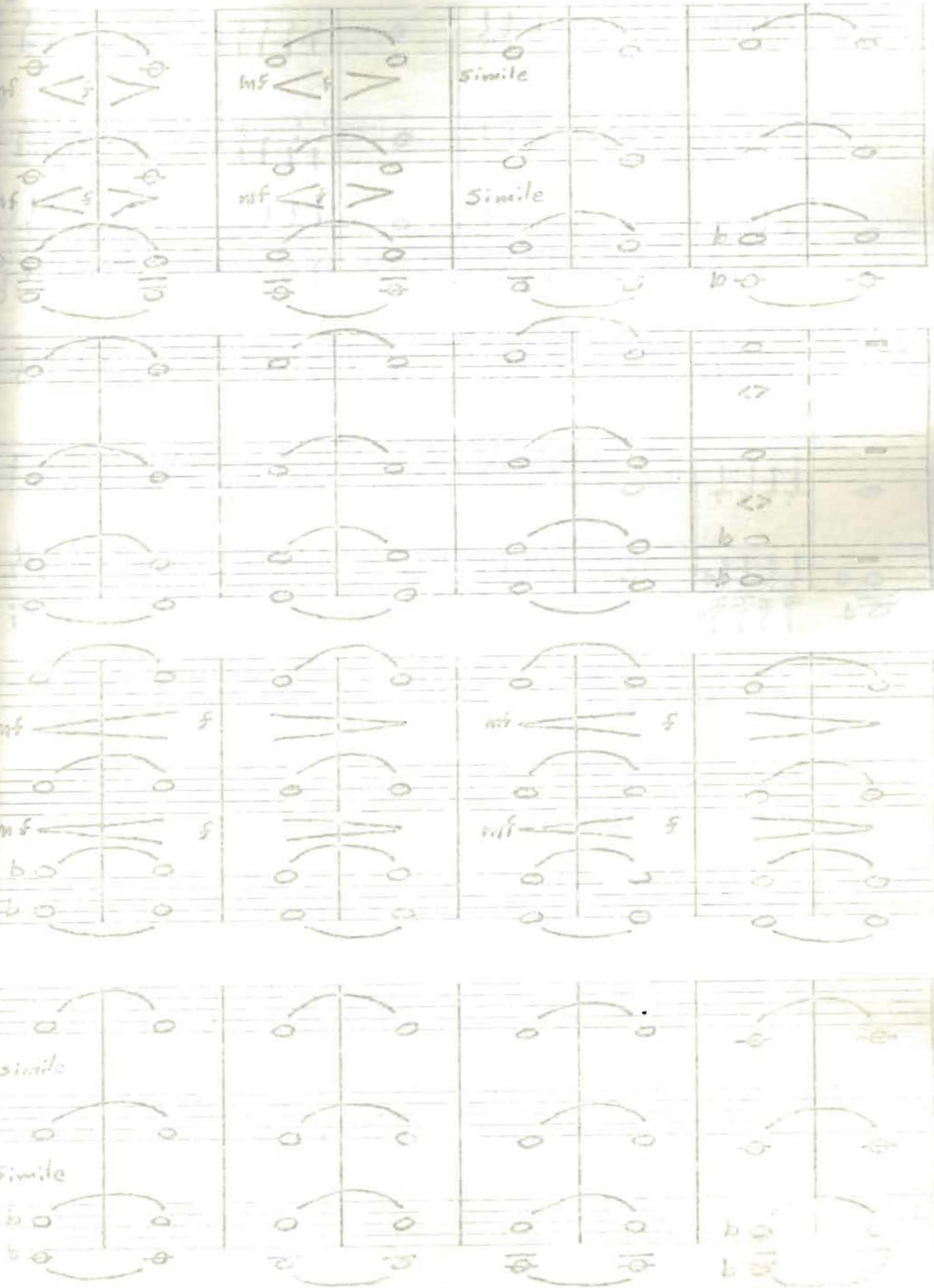
Sounds the same as written.

Lesson 14

Individual Practice



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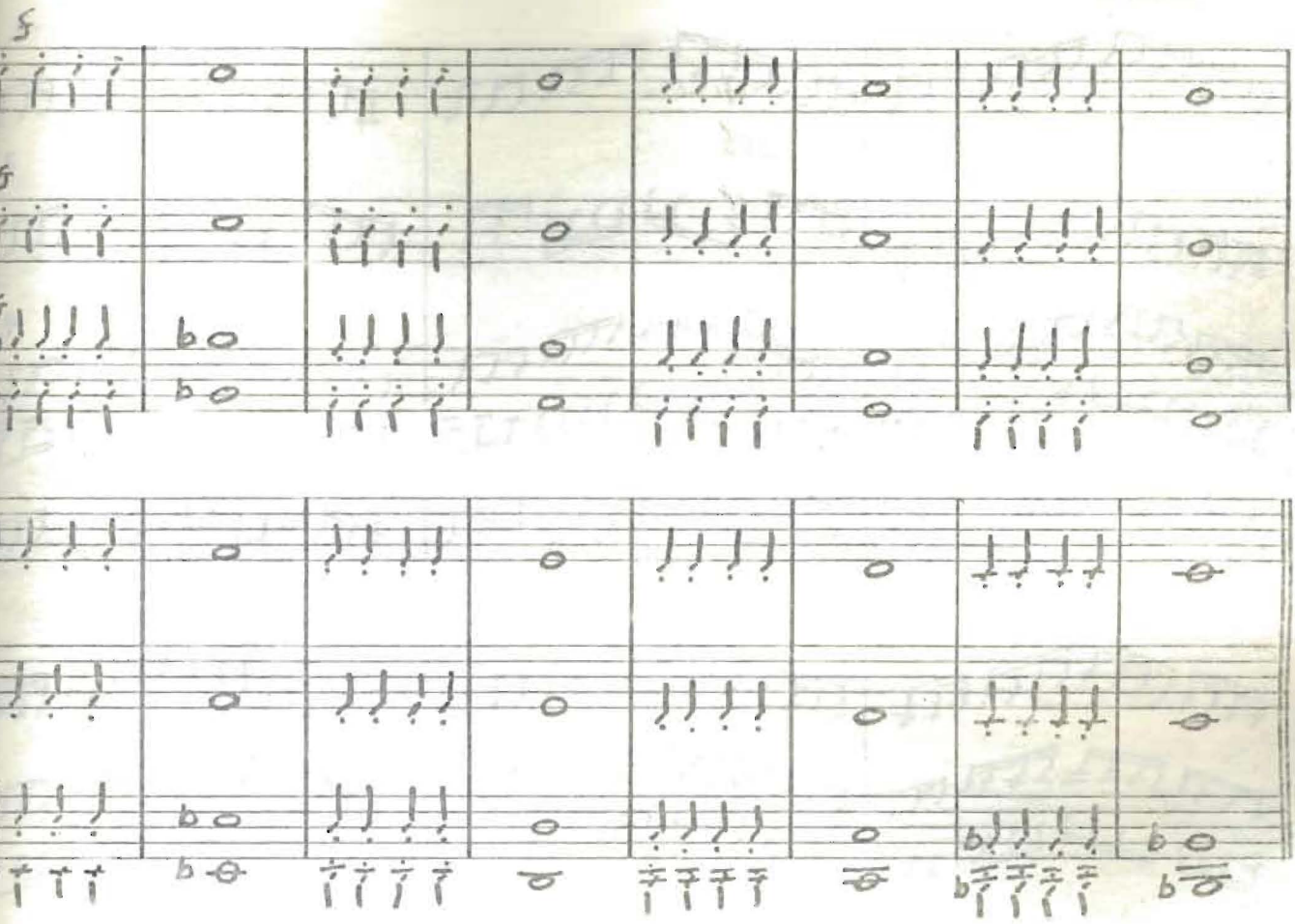
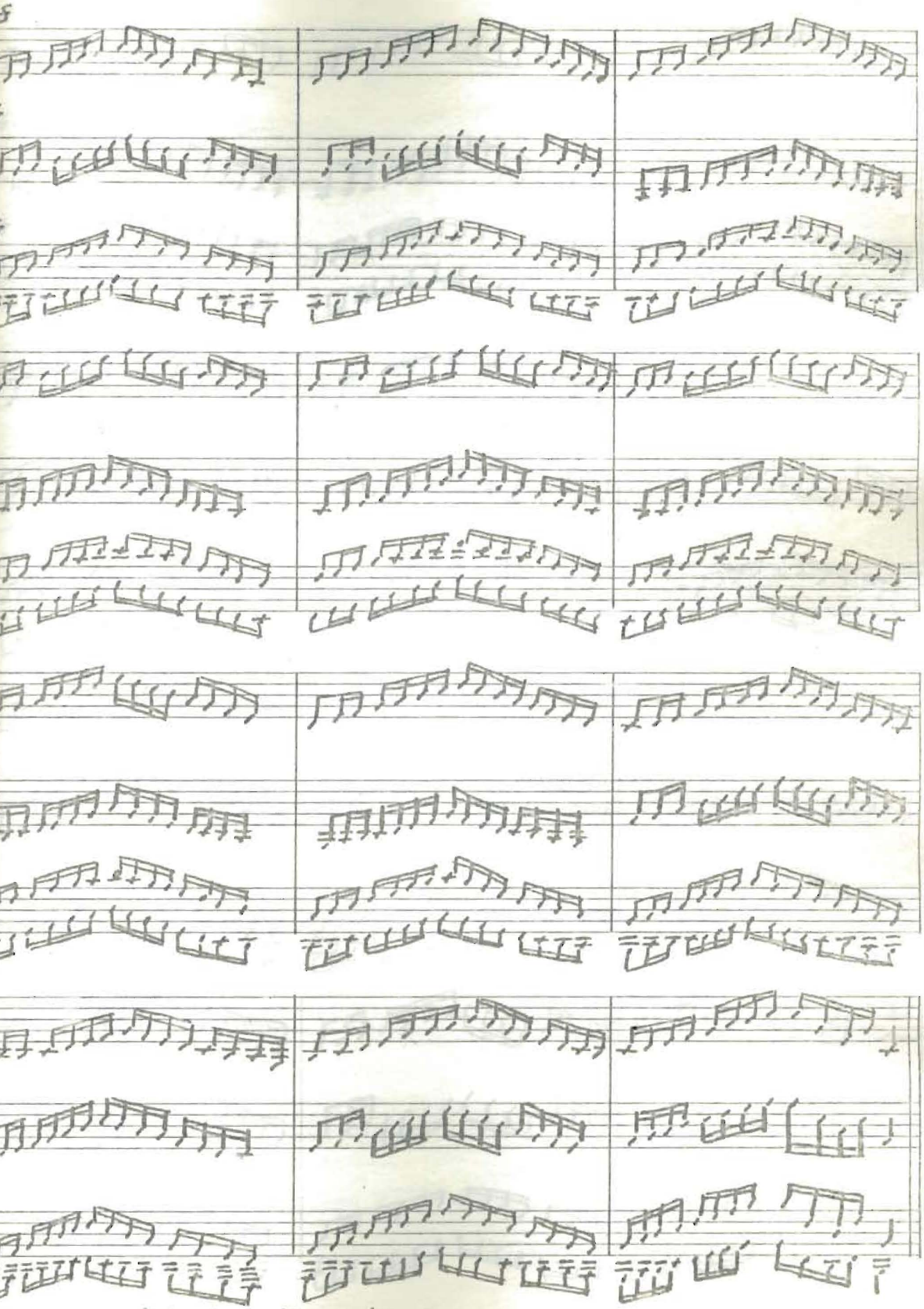
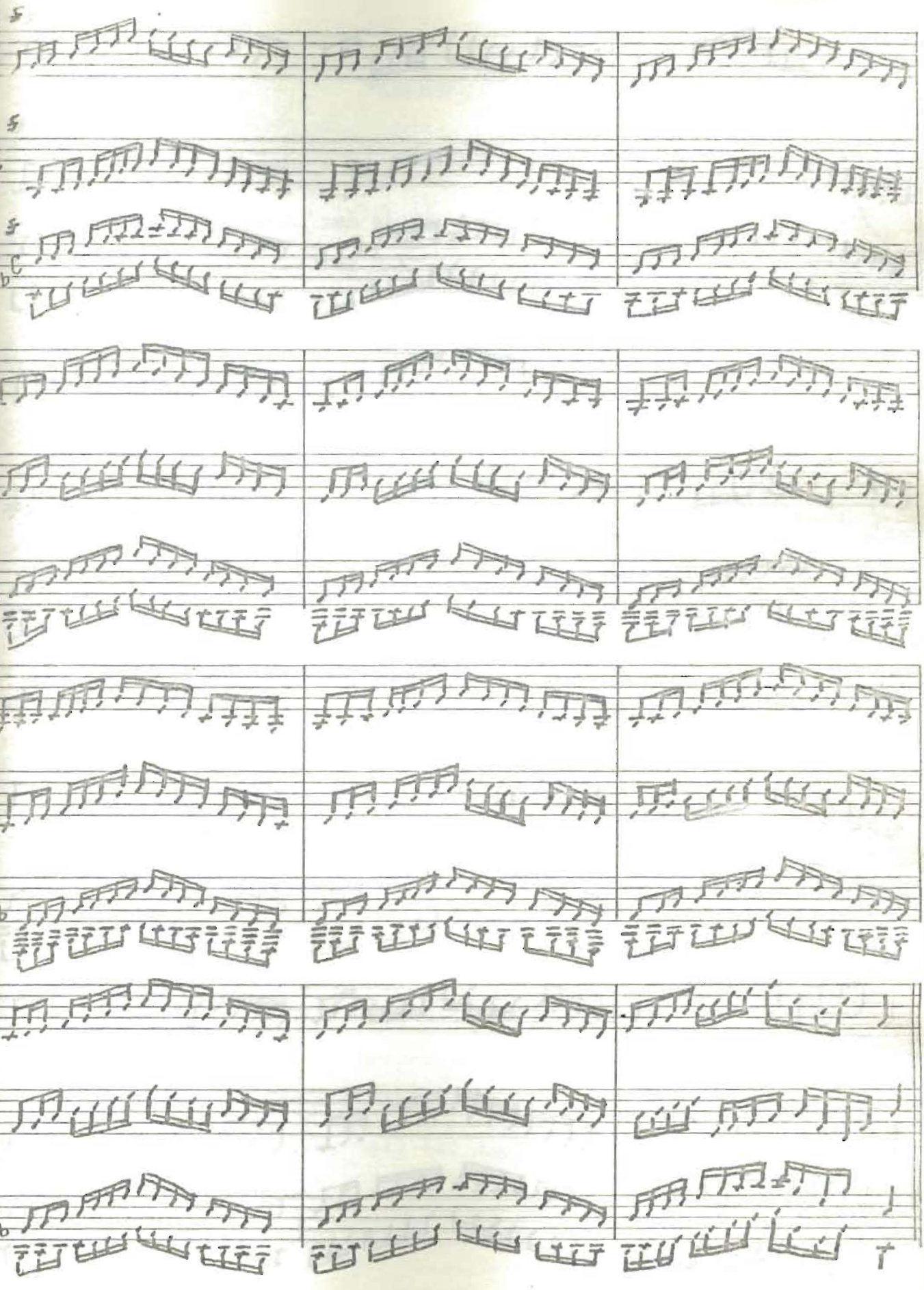
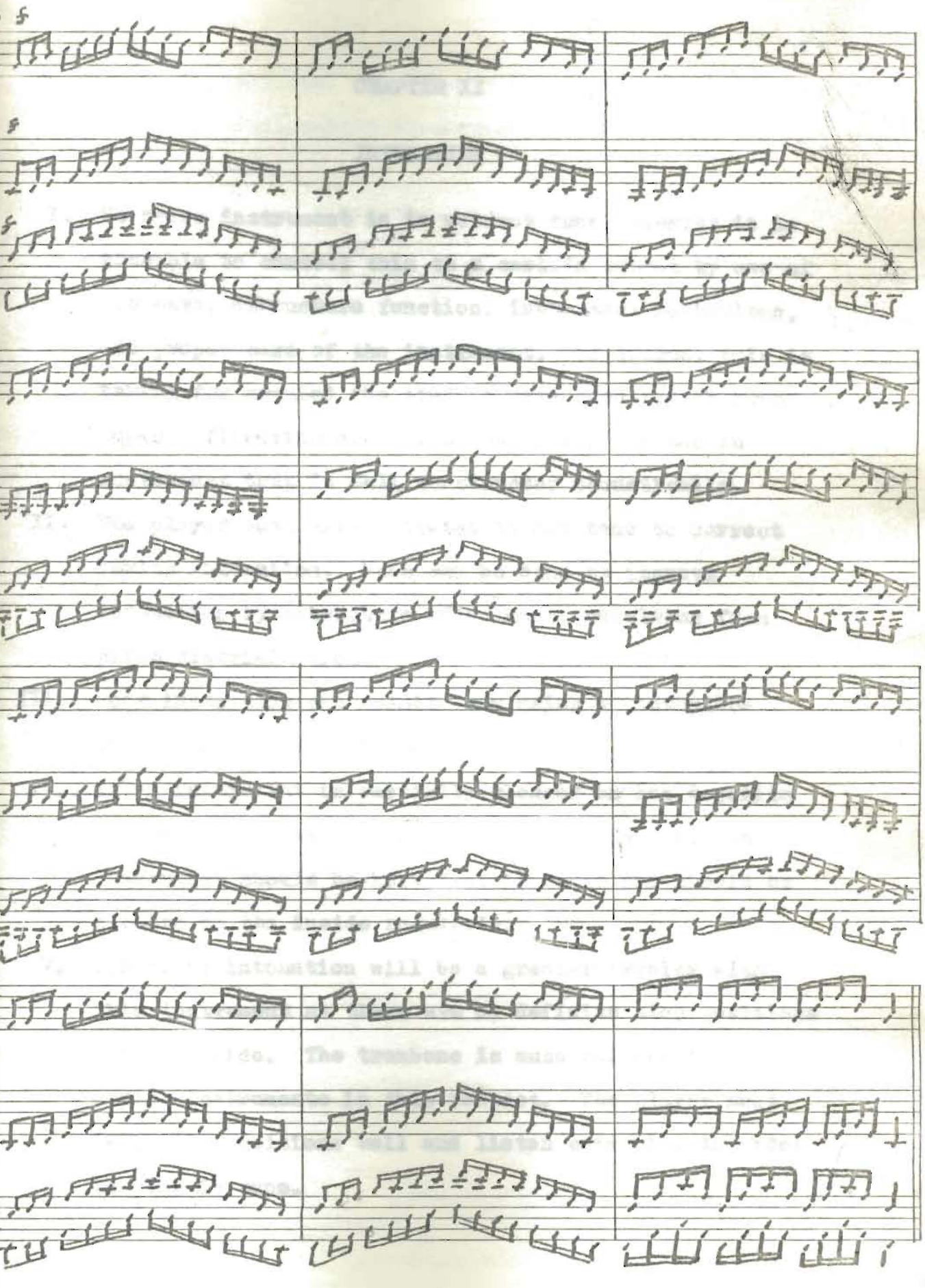


*Lesson 15



* See Lesson 19, second page





CHAPTER XI

INTONATION

I. No brass instrument is in perfect tune, however it is possible to correct this to a certain extent by use of the ears, embouchure function, instrument mechanisms, and proper care of the instrument. Of course, this is taking for granted the student uses good breath support, correct fingering and slide positions, and has an instrument that is well constructed acoustically.

II. The player must always listen to his tone to correct faulty intonation. Much can be done to improve intonation by embouchure adjustment, resulting from pitch discrimination.

III. Poor intonation can result from using a mouthpiece with incorrect proportions.

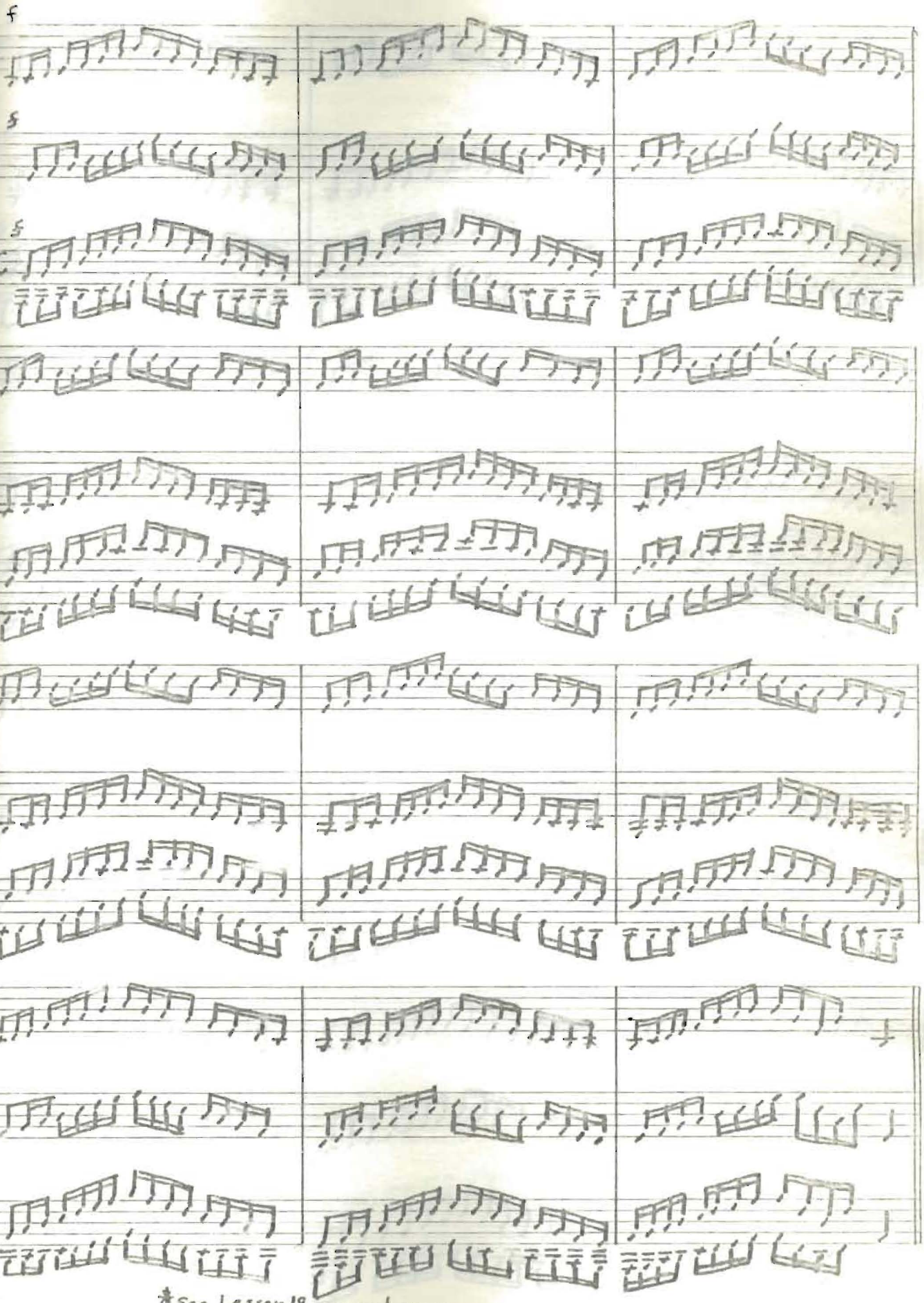
IV. If an instrument is partially clogged or has deposits on the inside the intonation will be affected. An instrument should be kept free of dents and should be cleaned on the inside regularly.

V. Trombone; intonation will be a greater problem with this instrument as there are no definite stop positions for the slide. The trombone is much related to the string instruments in this respect. The player must learn the positions well and listen carefully in order to play in tune.

VI. Valve instruments; the intonation problems in relation to valve construction is discussed under "Fingering," section B-3.

VII. The majority of intonation problems can be overcome be teaching students to listen, and to use pitch discrimination in tuning and playing their instruments.

Lesson 16



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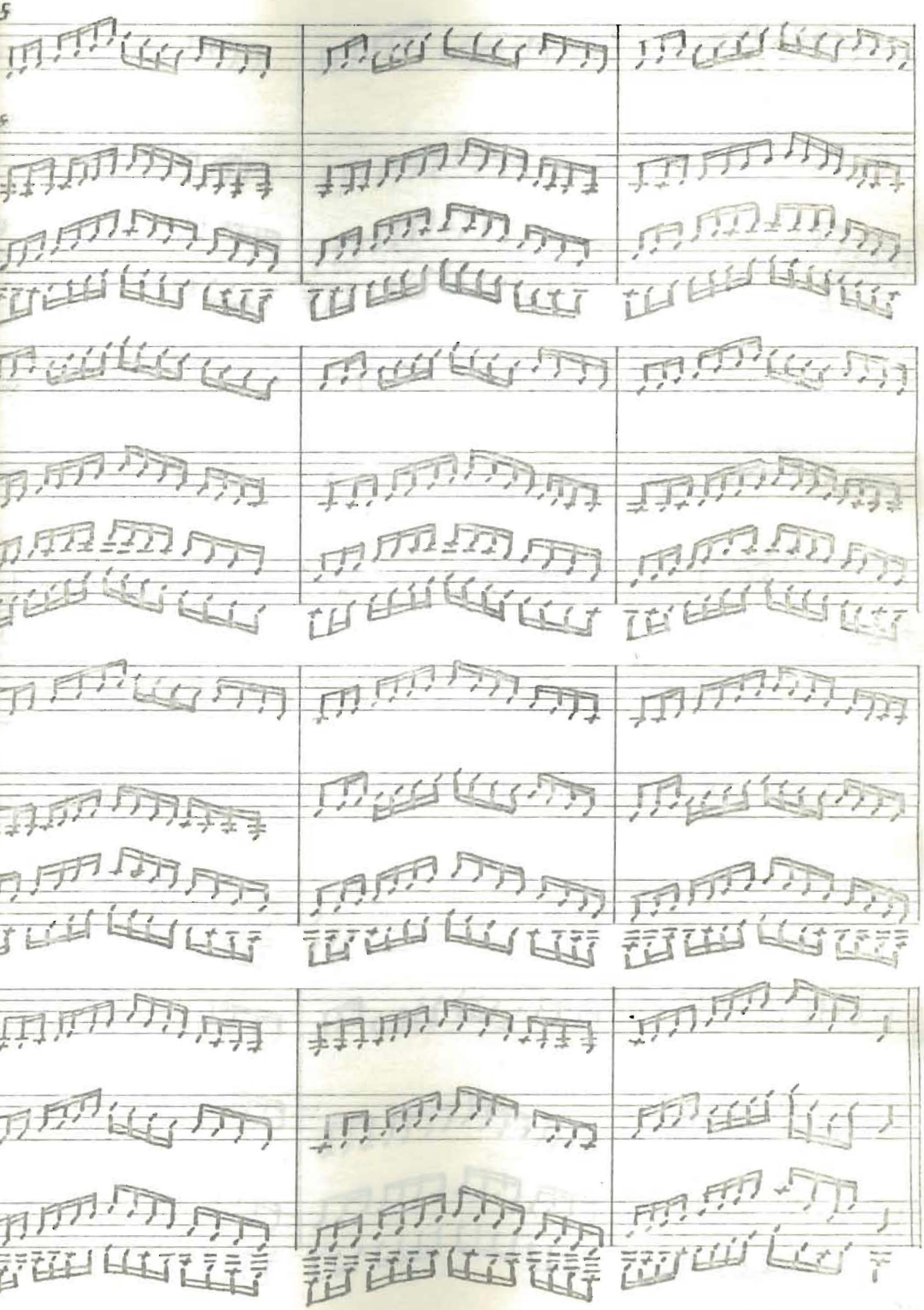

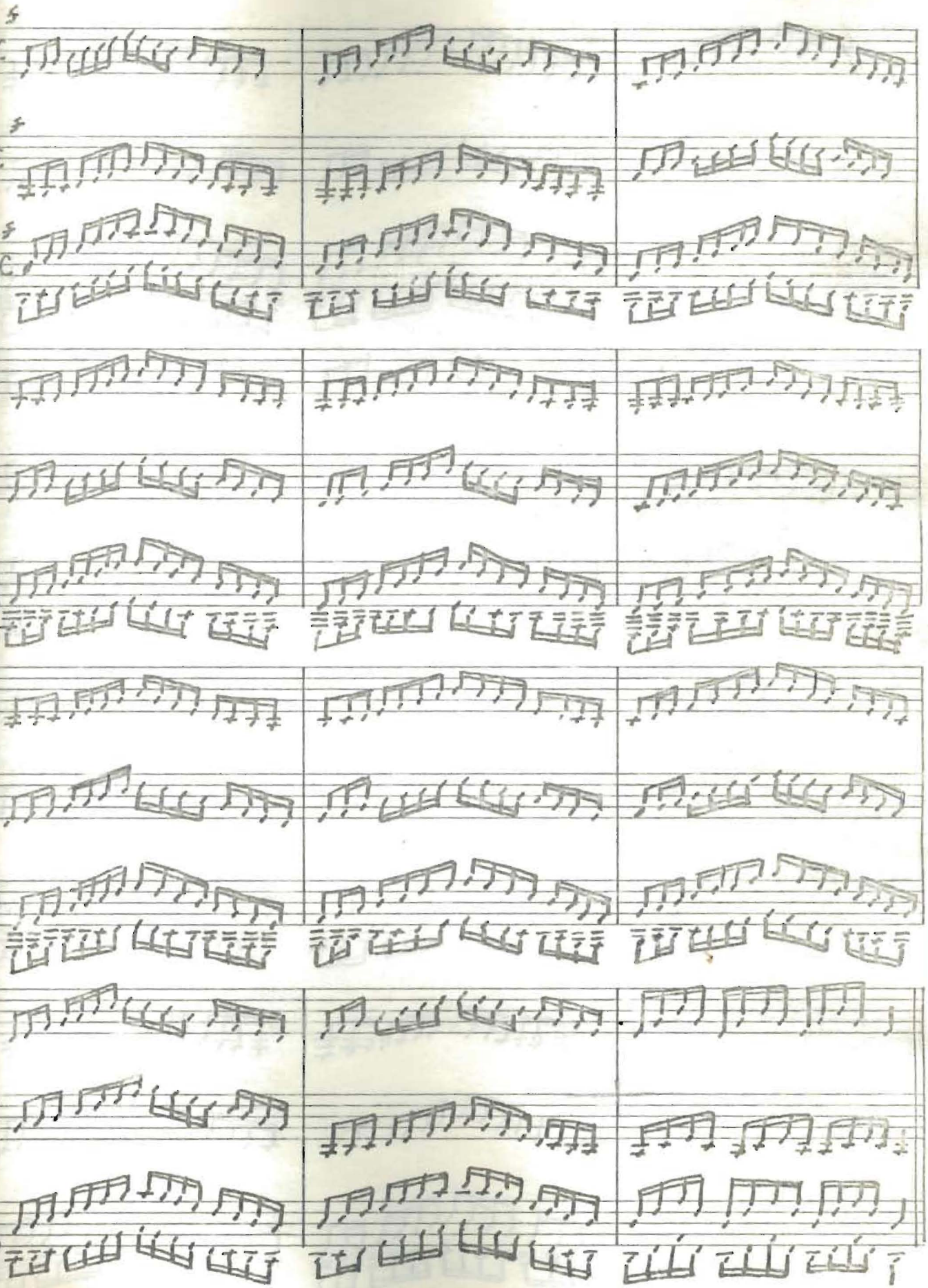

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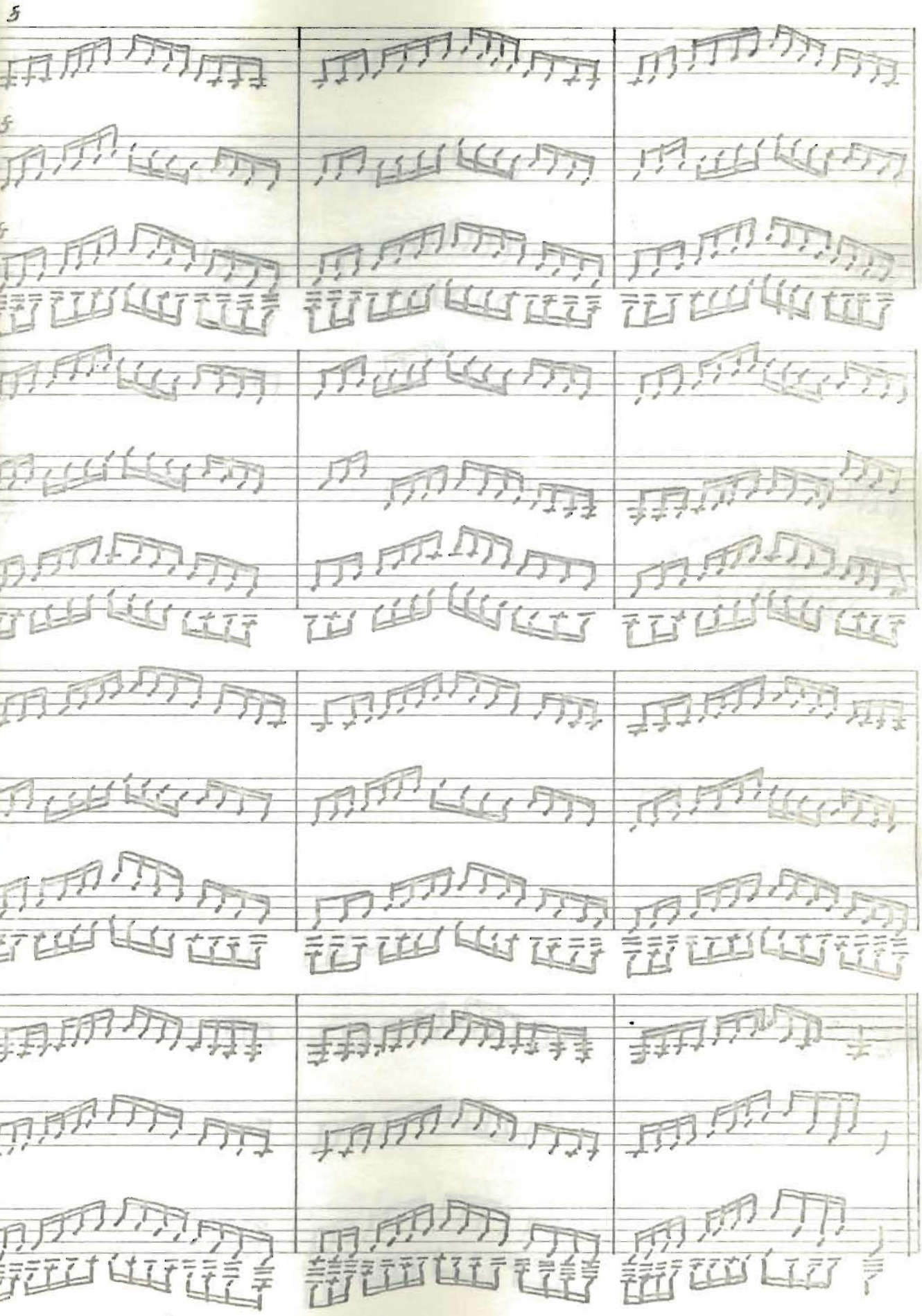

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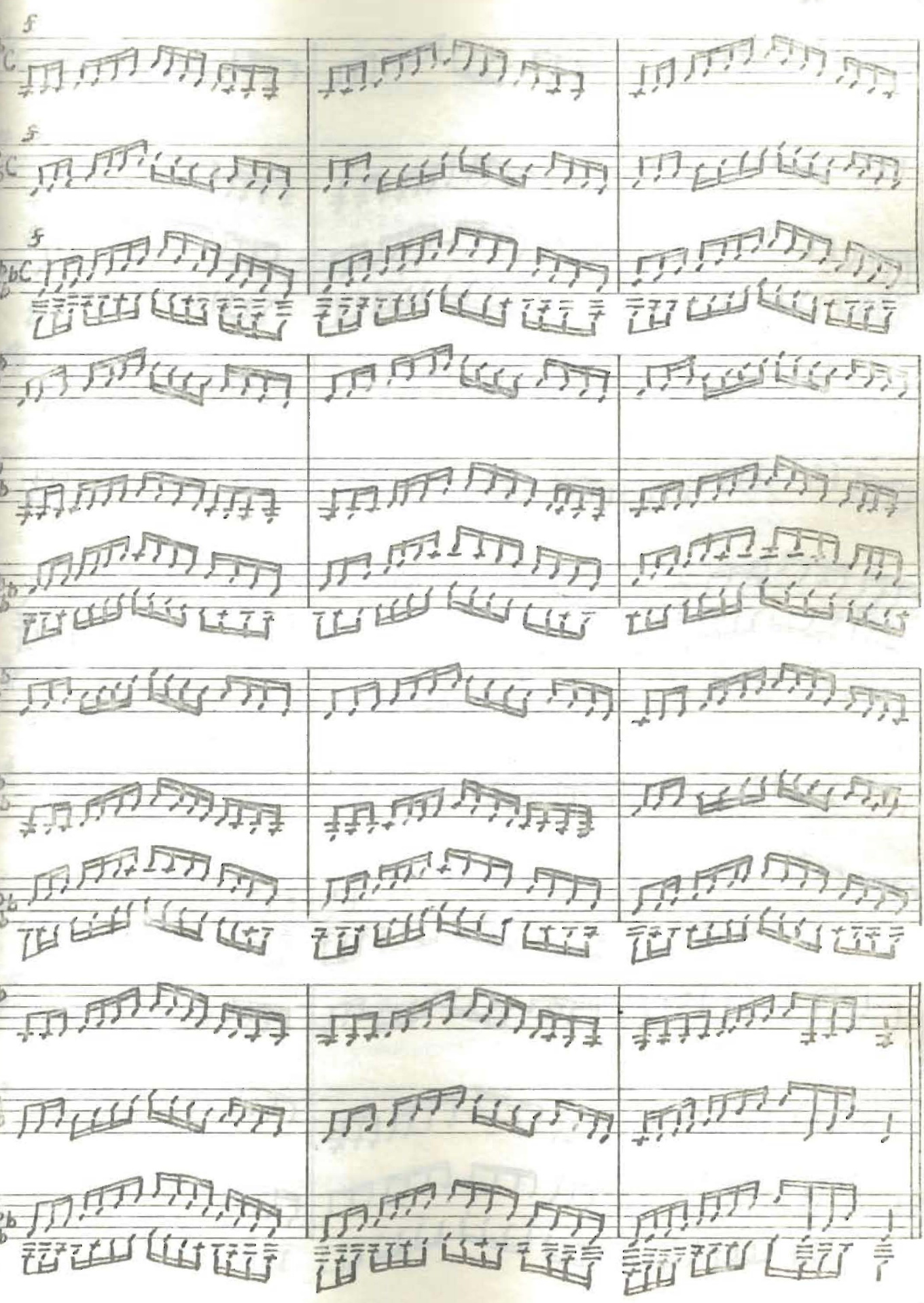
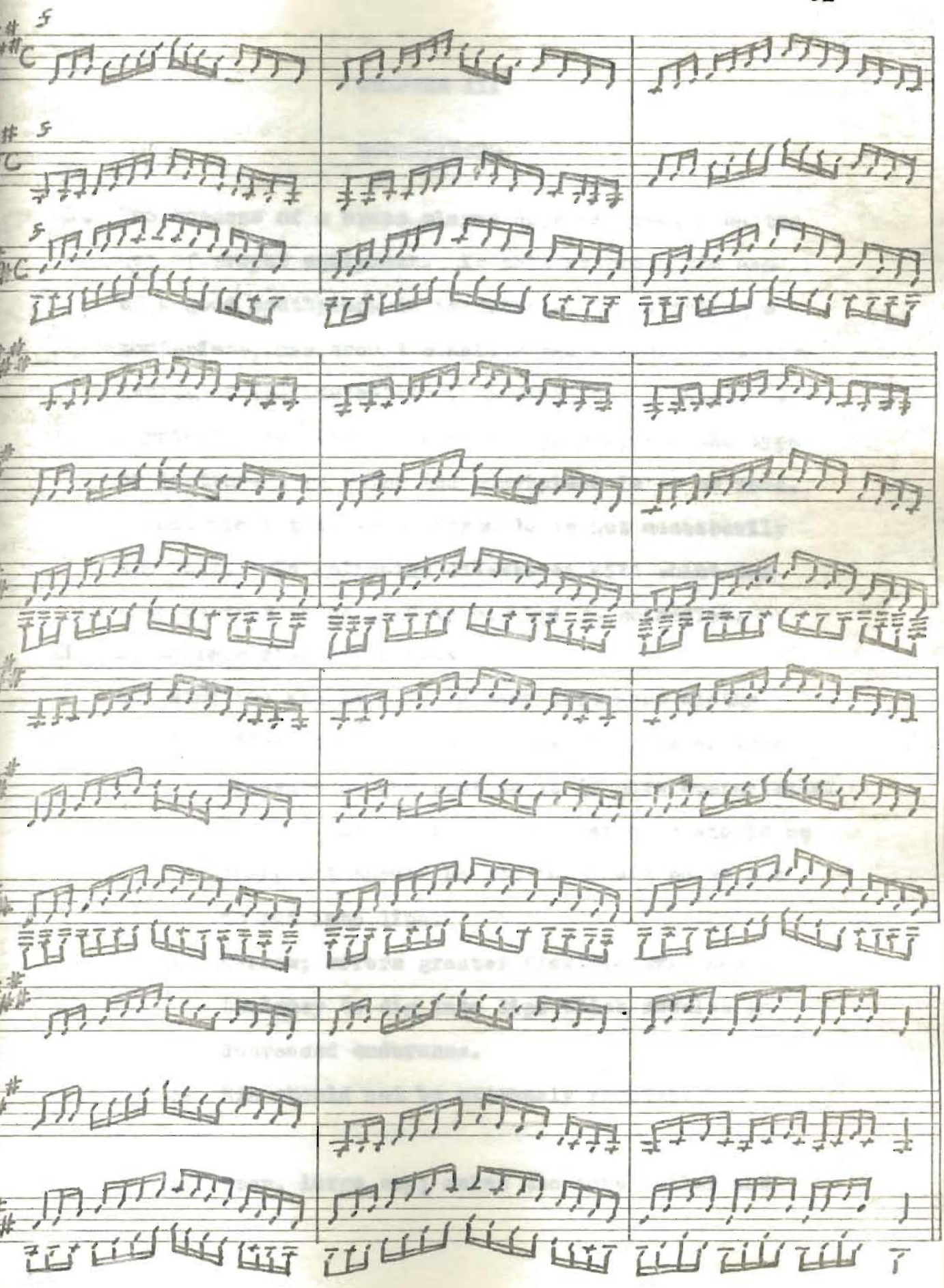




CHAPTER XII

MOUTHPIECES

I. The success of a brass player depends greatly on the use of proper equipment. In this respect, the use of a good mouthpiece is important. In selecting a mouthpiece, one should consider the brand, characteristics of the mouthpiece including tone production, physical characteristics of the player, and the type of instrument in which the mouthpiece is to be used. A mouthpiece that is comfortable is not necessarily the best. The following discussion will point out some factors to be used in mouthpiece selection.

II. Mouthpiece characteristics.

A. Rim; the rim is made in many different widths.

1. Wide; more surface against lips, makes less pressure on one spot so it is more comfortable. Reduces flexibility; the inner edge should be sharp but should be set in enough so as not to cut into lips.

2. Narrow; offers greater flexibility. Has a tendency to dig into lips which results in decreased endurance.

3. Rim should not be extremely rounded.

B. Cup.

1. Deep, large cup; makes the tone fuller and

darker. Makes the upper partials less prominent. Less tendency to split tones. Cup should be more of a concave design.

2. Shallow; less body of tone, raspy tone, and will lack volume. Easier to play high. A small child does not necessarily need a small mouthpiece.
3. Mouthpiece should produce a full tone throughout the entire range of an instrument.

C. Throat.

1. Small; chokes tone, makes high tones flat and low tones sharp. Provides more endurance.
2. Large; lips tire easier, more difficult to play soft. Produces bigger volume of tone. Recommended for symphony playing.
3. Medium; best for public school use.

D. Backbore.

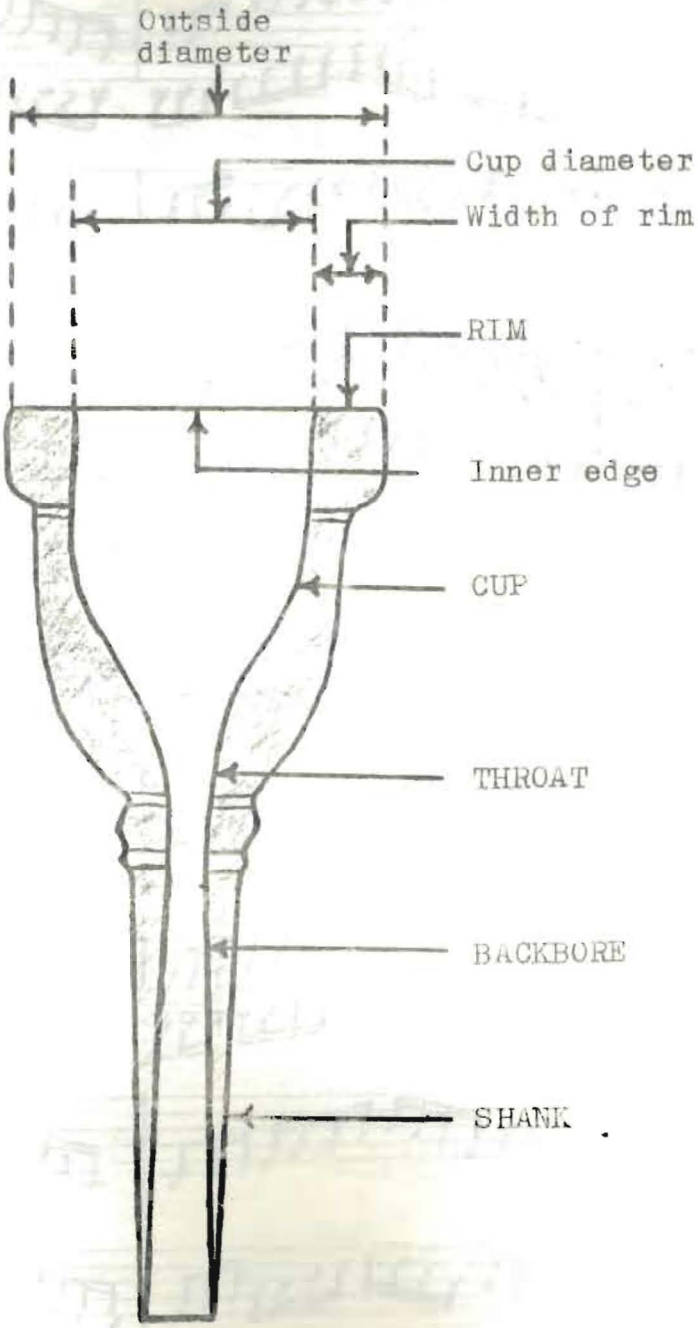
1. Designed acoustically to match the rim, cup shape, throat, and make and bore of the instrument.
2. Small; flat and hard to play in the high register.
3. Large; cuts down endurance.

E. Shank; should fit easily into the instrument. A small amount of mineral grease should be applied occasionally.

III. Keep mouthpiece clean, it easily collects food particles etc. Keep sterilizer on hand. Sore, irritated lips may result from playing on a mouthpiece with worn plating.

FIGURE 12

PARTS OF MOUTHPIECE



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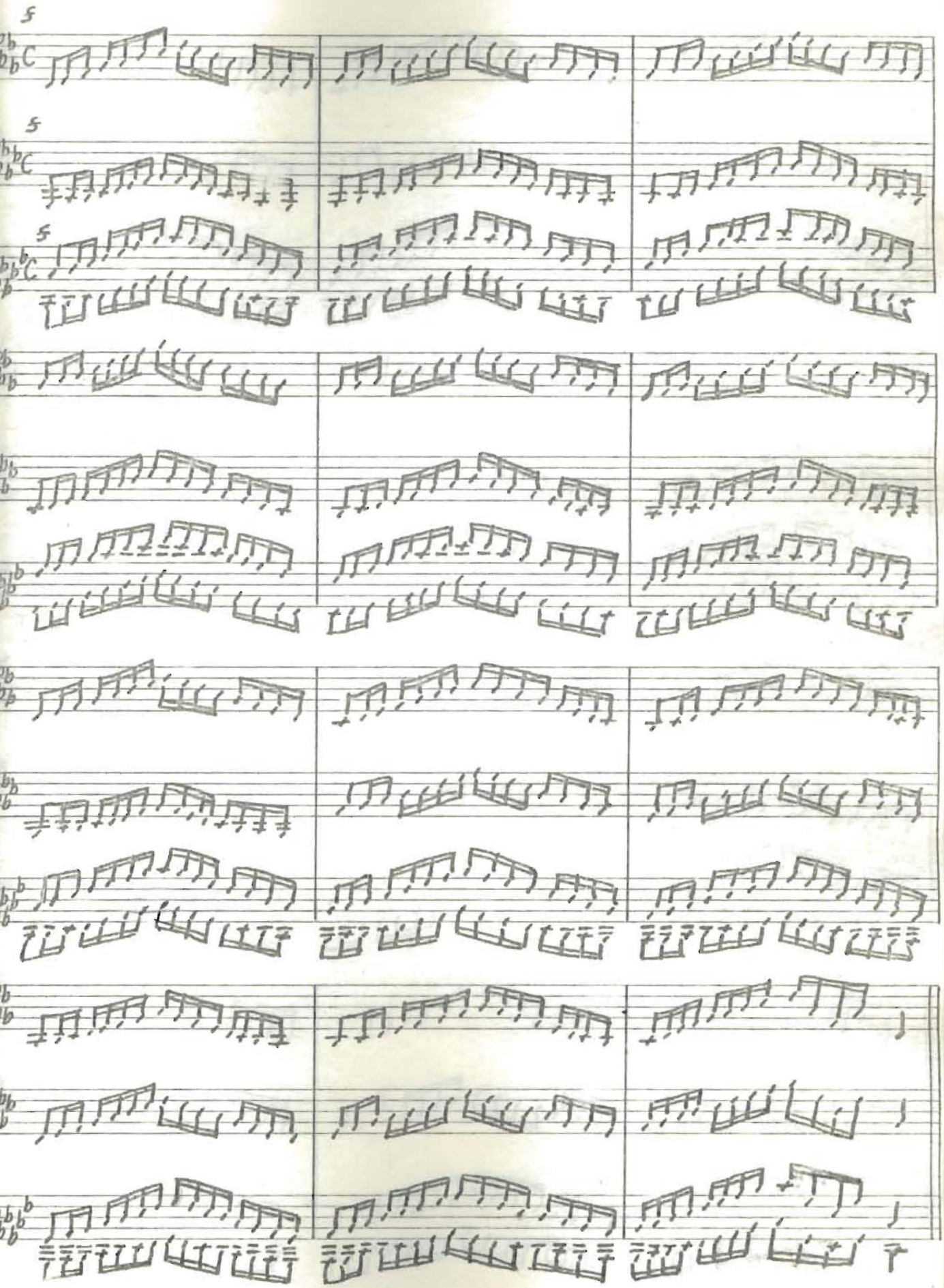

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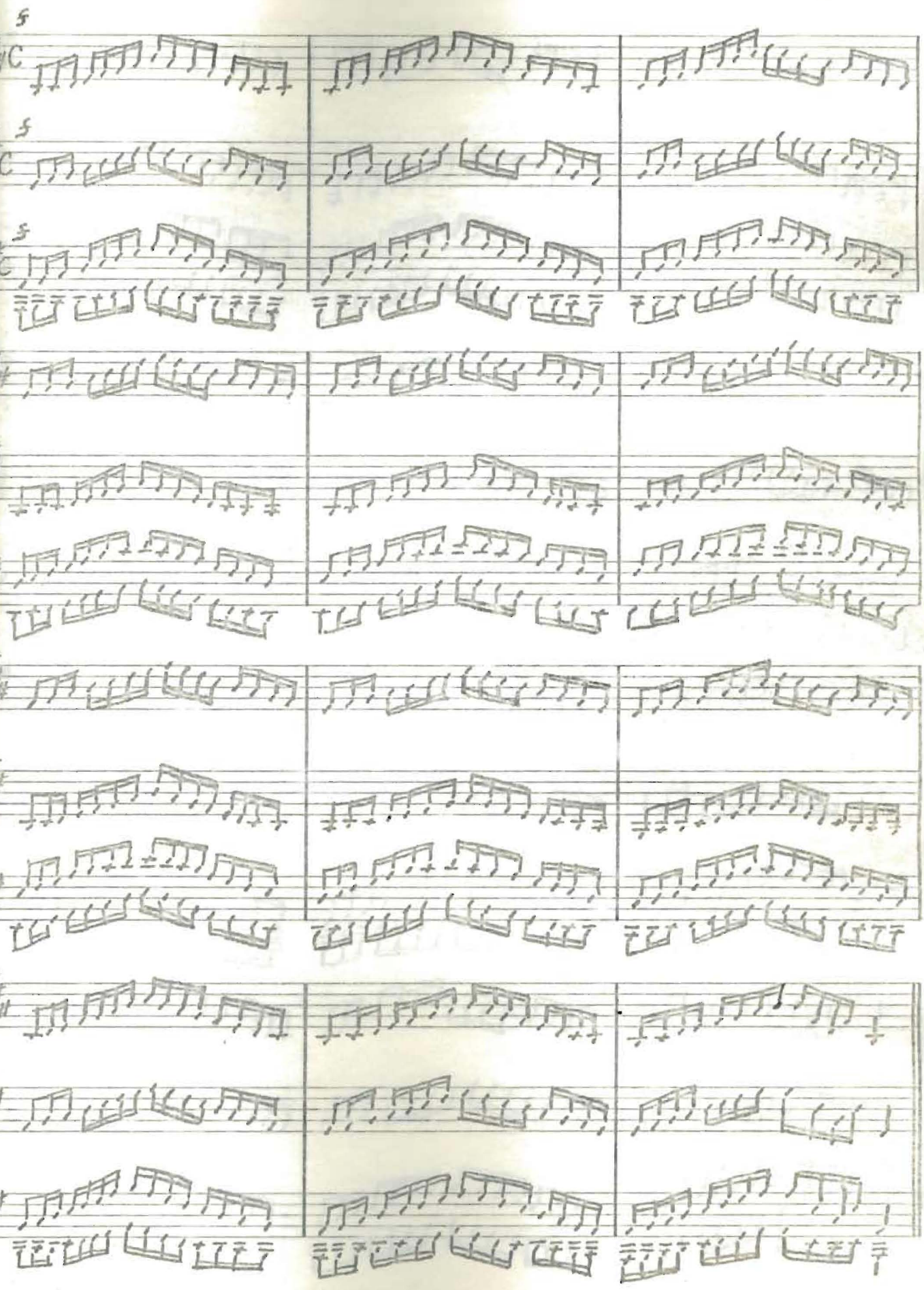
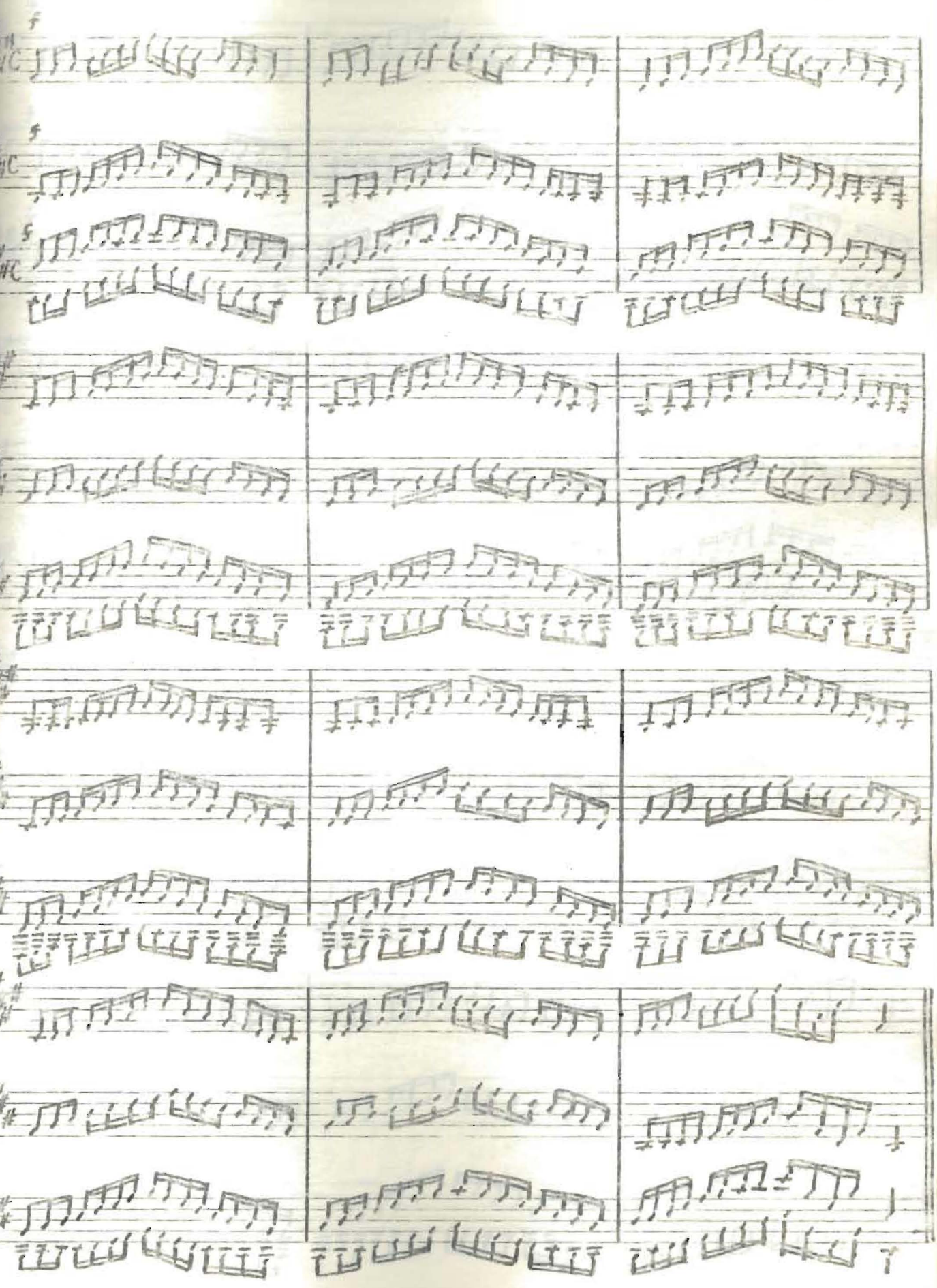
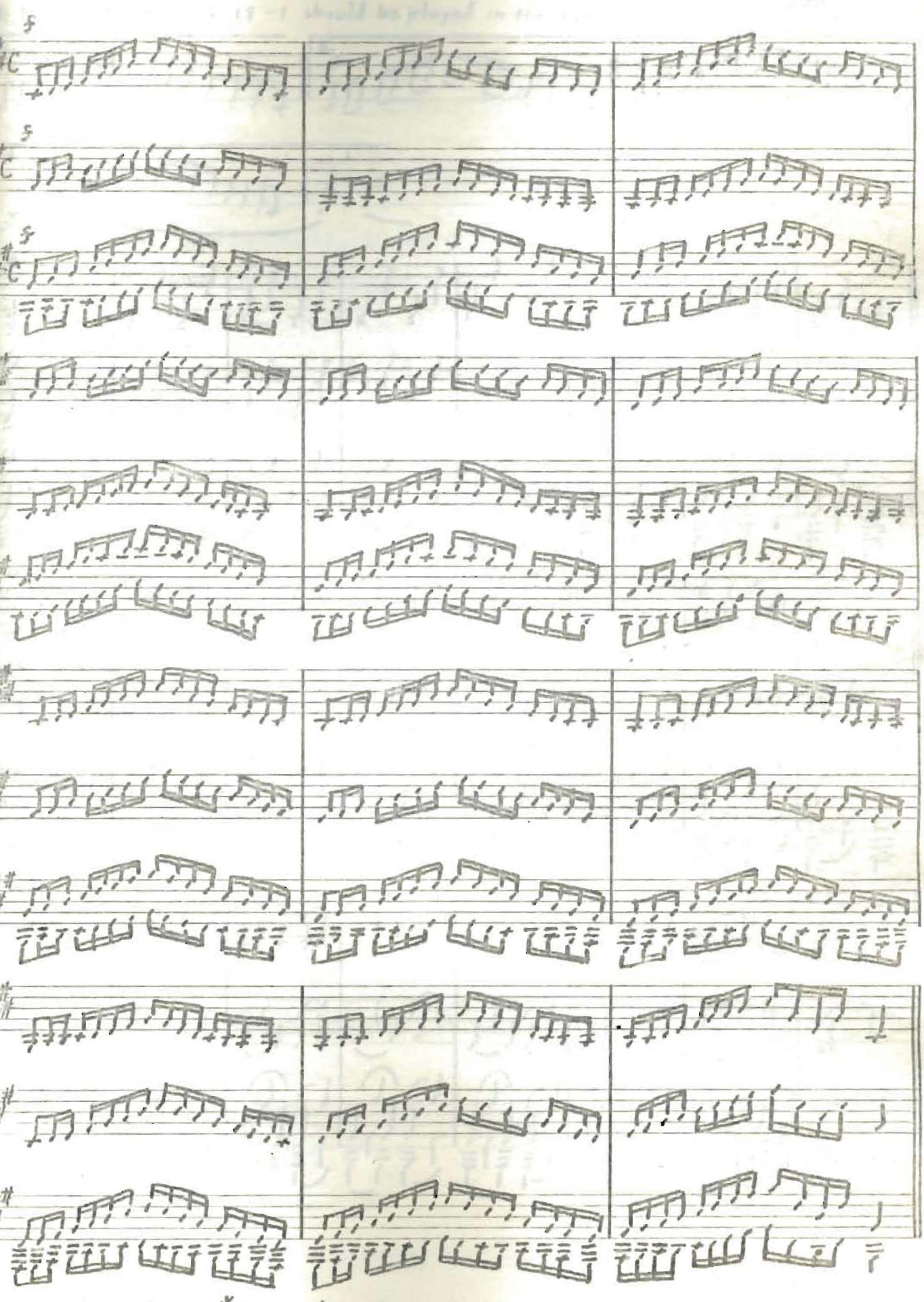




Lesson 11



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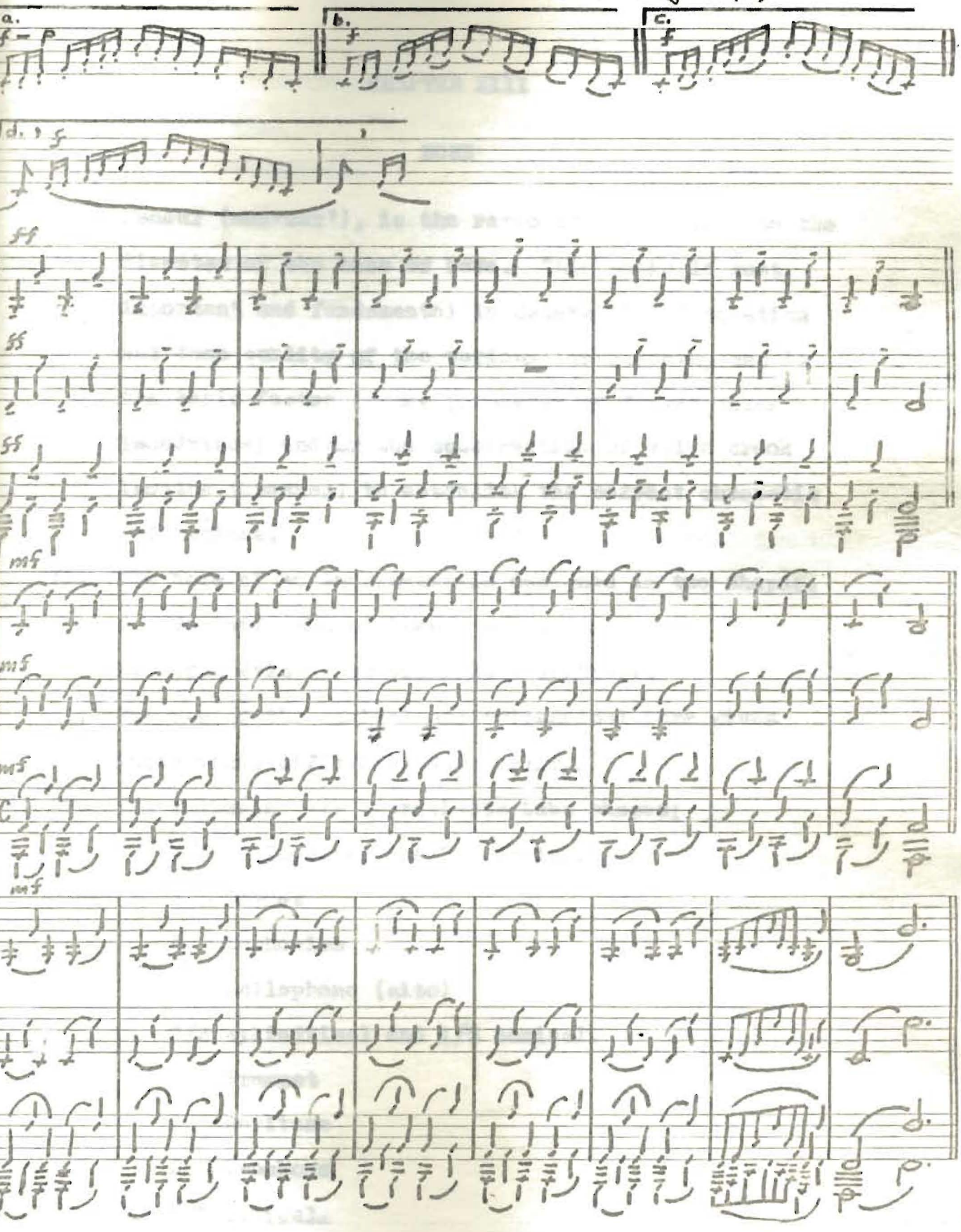
* Lessons 15 through 19 - I should be played in the following ways;



CHAPTER XIII

BORE

I. Mensur (mon·zur'), is the ratio of tube length to the diameter of the tube or bore. This ratio is most important and fundamental in determining intonation and tone quality of the various instruments, and is the basic factor in the placement of finger holes (woodwinds) and/or the construction of valve crook lengths (brasses) to establish the correct chromatic intonations.

II. The bore of an instrument is designed in two shapes.

A. Conical; shaped like a cone.

B. Cylindrical; shaped like a cylinder.

III. The use of the conical and cylindrical bore gives instruments different tone quality.

IV. The following are approximate tube shapes;

A. 1/3 cylindrical and 2/3 conical.

1. Cornet
2. Euphonium
3. Mellophone (alto)

B. 2/3 cylindrical and 1/3 conical.

1. Trumpet
2. Baritone
3. Trombone

C. 3/3 conical.

1. Flugelhorn
2. Tuba
3. French horn

V. The more conical shaped an instrument is, the less prominent are its upper partials. The tone quality will be darker and more mellow.

VI. In addition to tube shape, brass instruments made by reputable manufacturers generally are constructed with tube diameters of various sizes, referred to as small, medium, or large bore.

A. Large bore instruments are not recommended for the beginning student inasmuch as they require increased breath control to support tone.

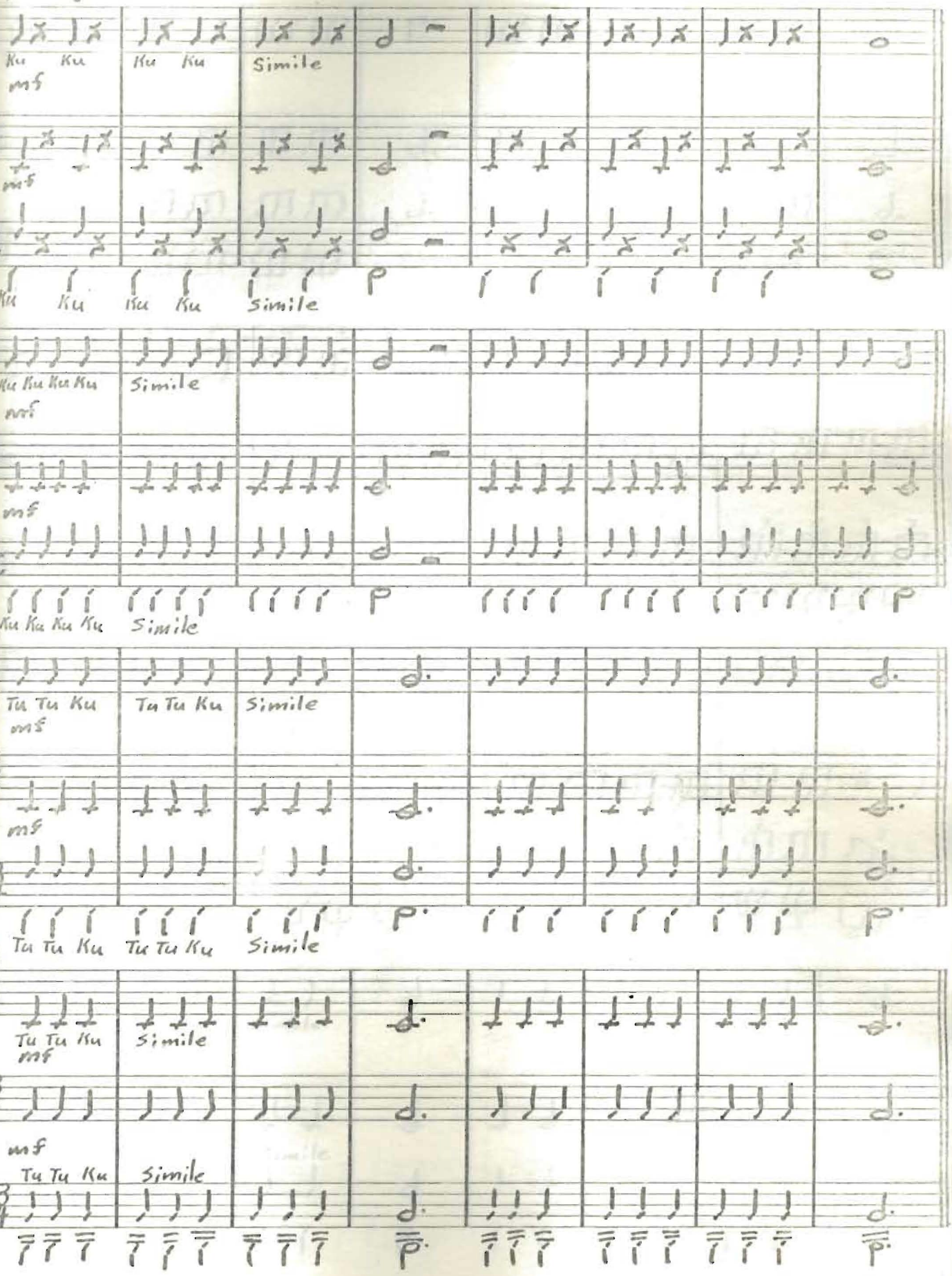
B. Small bore instruments possess easier tone producing characteristics but tonal resonance is limited.

C. The larger the bore the fuller the tone, hence most professional players prefer the larger bores.

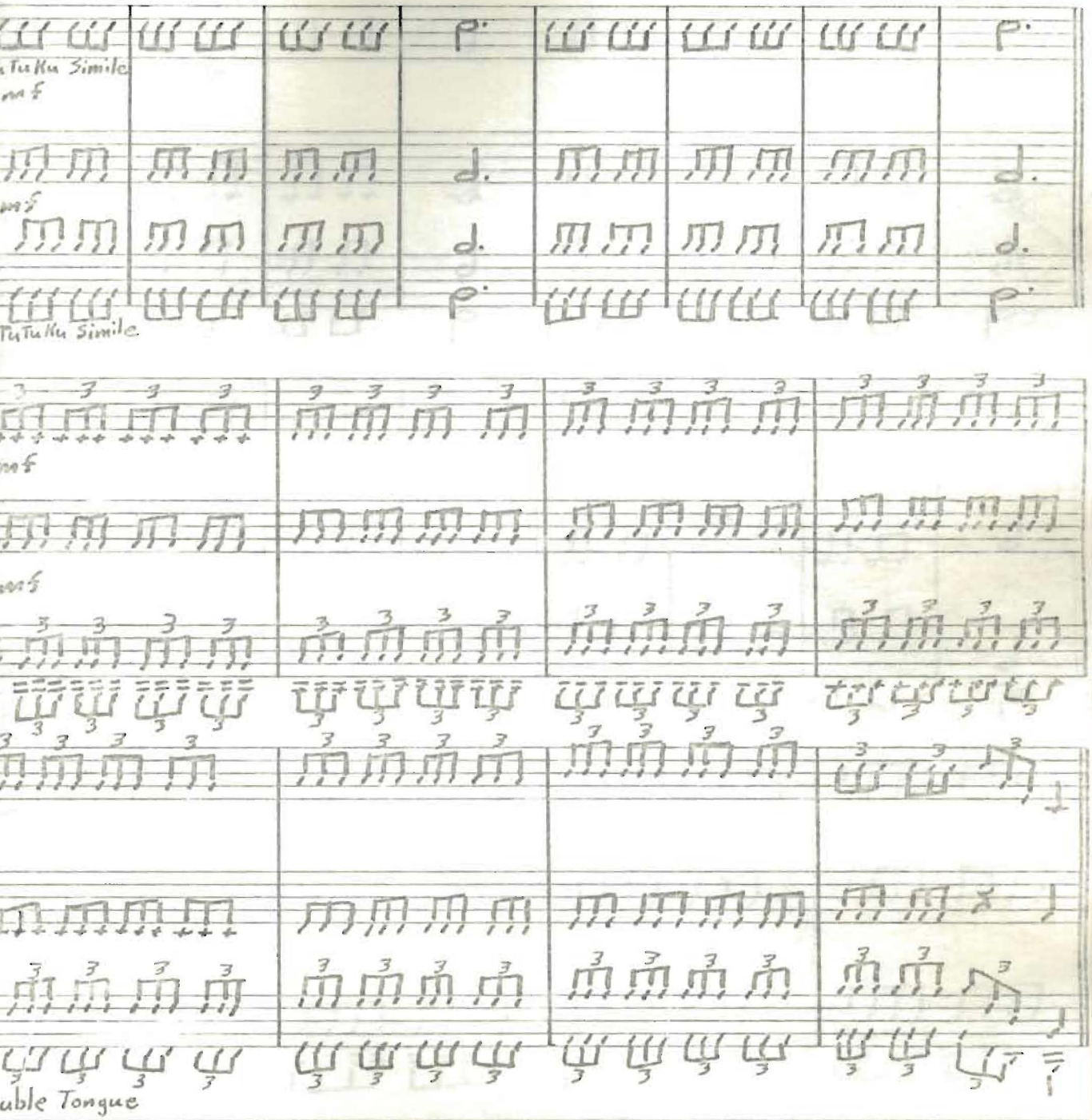
Lesson 20

Triple - Double Tonguing

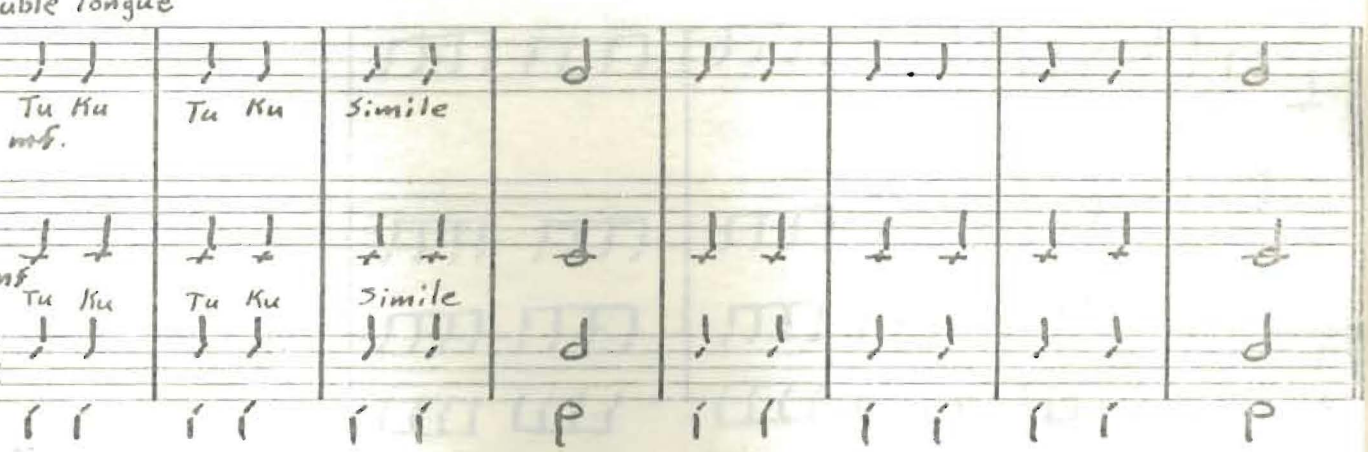
iple Tongue



Triple Tongue Contd.



Double Tongue



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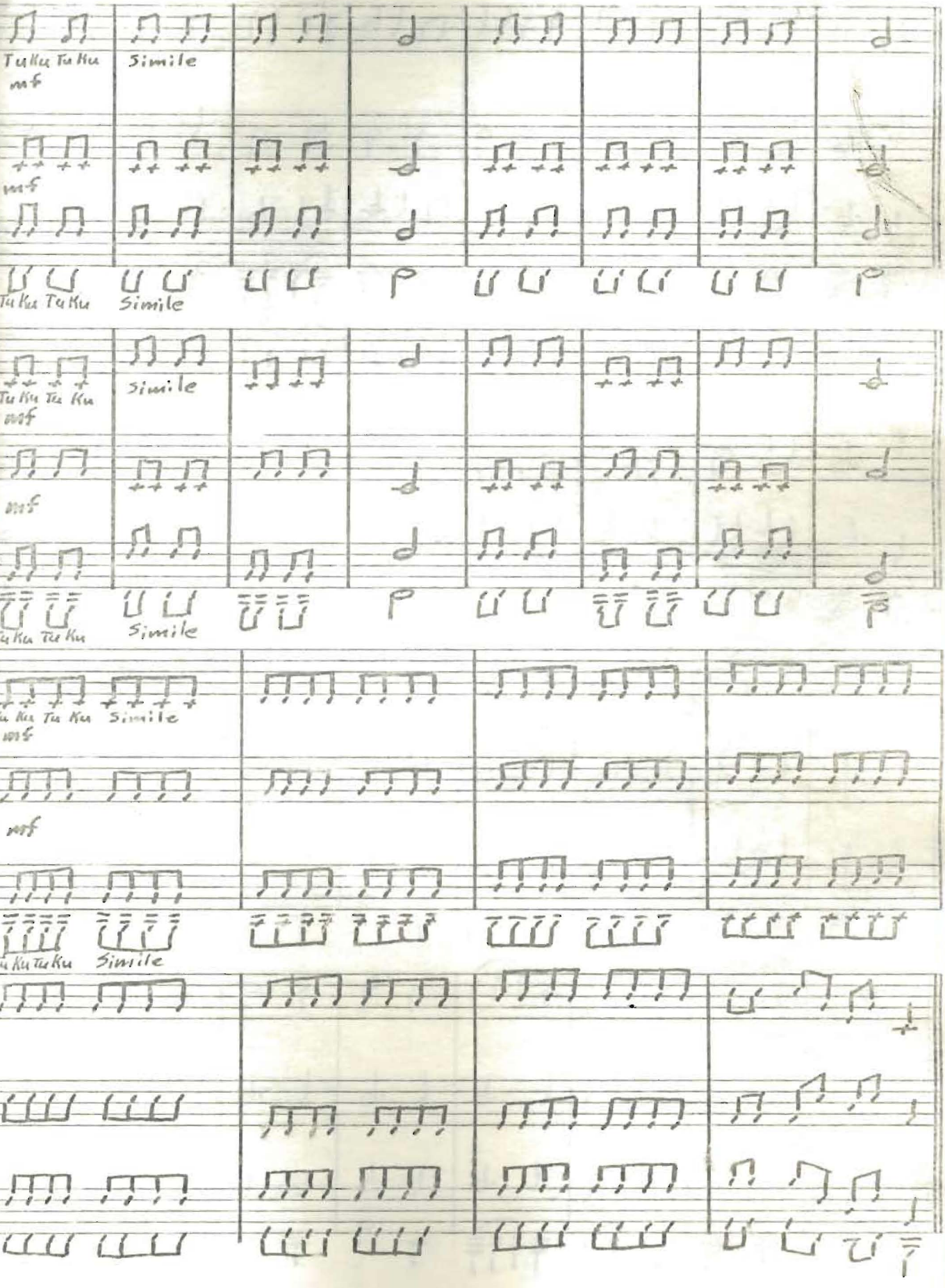
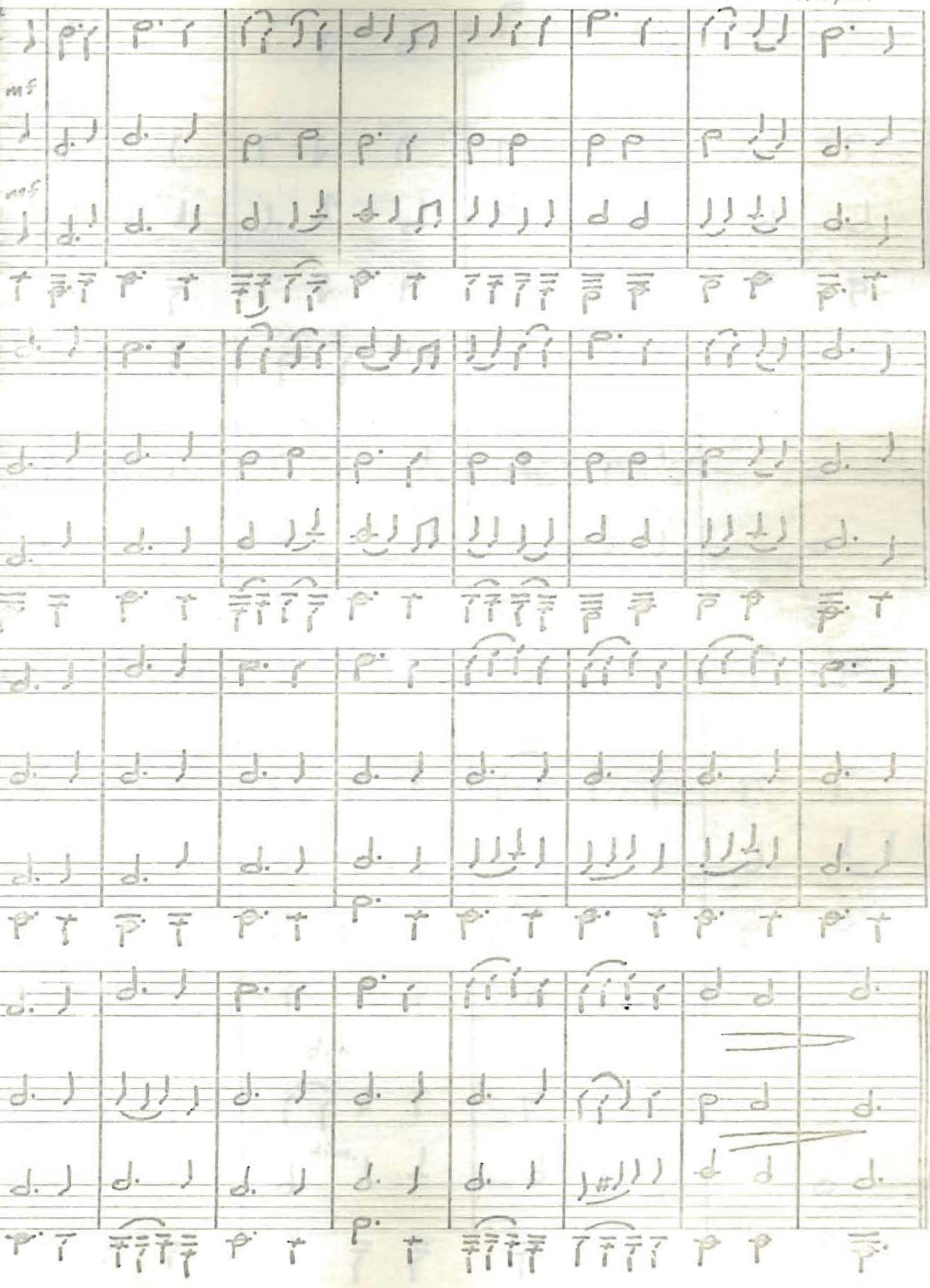


Lesson 21

mf

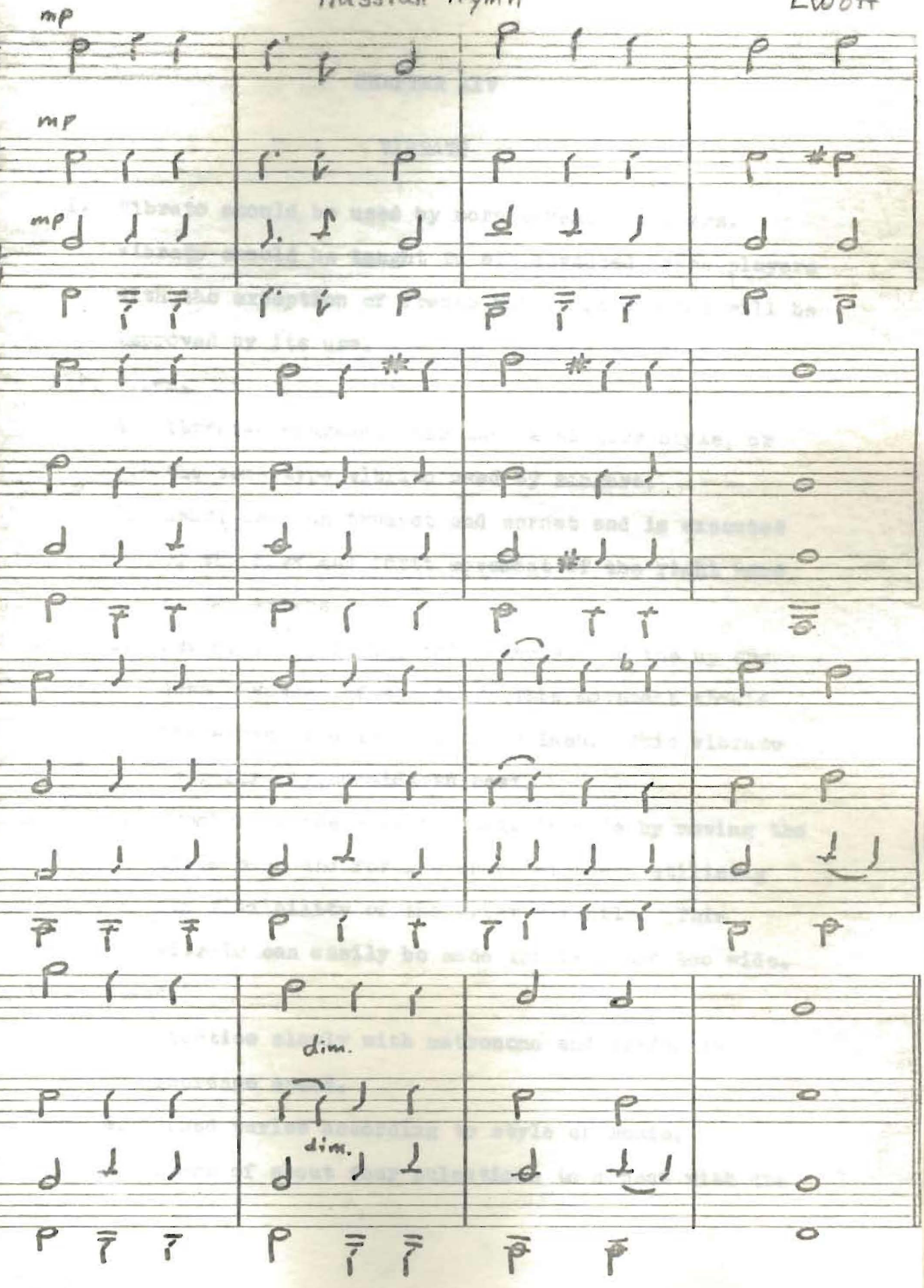
The Heavens Are Telling

Haydn



Russian Hymn

Lwoff



CHAPTER XIV

VIBRATO

I. Vibrato should be used by more advanced players. Vibrato should be taught to all advanced brass players with the exception of French horn. Intonation will be improved by its use.

II. Types.

A. Throat-diaphragm; this is the singing style, or the same type vibrato used by singers.

B. Hand; used on trumpet and cornet and is executed by the back and forth movement of the right hand on the valves.

C. Jaw or lip vibrato; this consists of the up and down movement of the jaw. This movement should not exceed 1/8 to 1/16 of an inch. This vibrato is generally considered best.

D. Trombone slide vibrato; this is made by moving the slide back and forth a short distance utilizing the flexibility of the wrist slightly. This vibrato can easily be made too fast and too wide.

III. Speed.

A. Practice slowly with metronome and gradually increase speed.

B. Speed varies according to style of music.

C. Speed of about four pulsations to a beat with the

metronome set at 90, is a good average.

IV. Use.

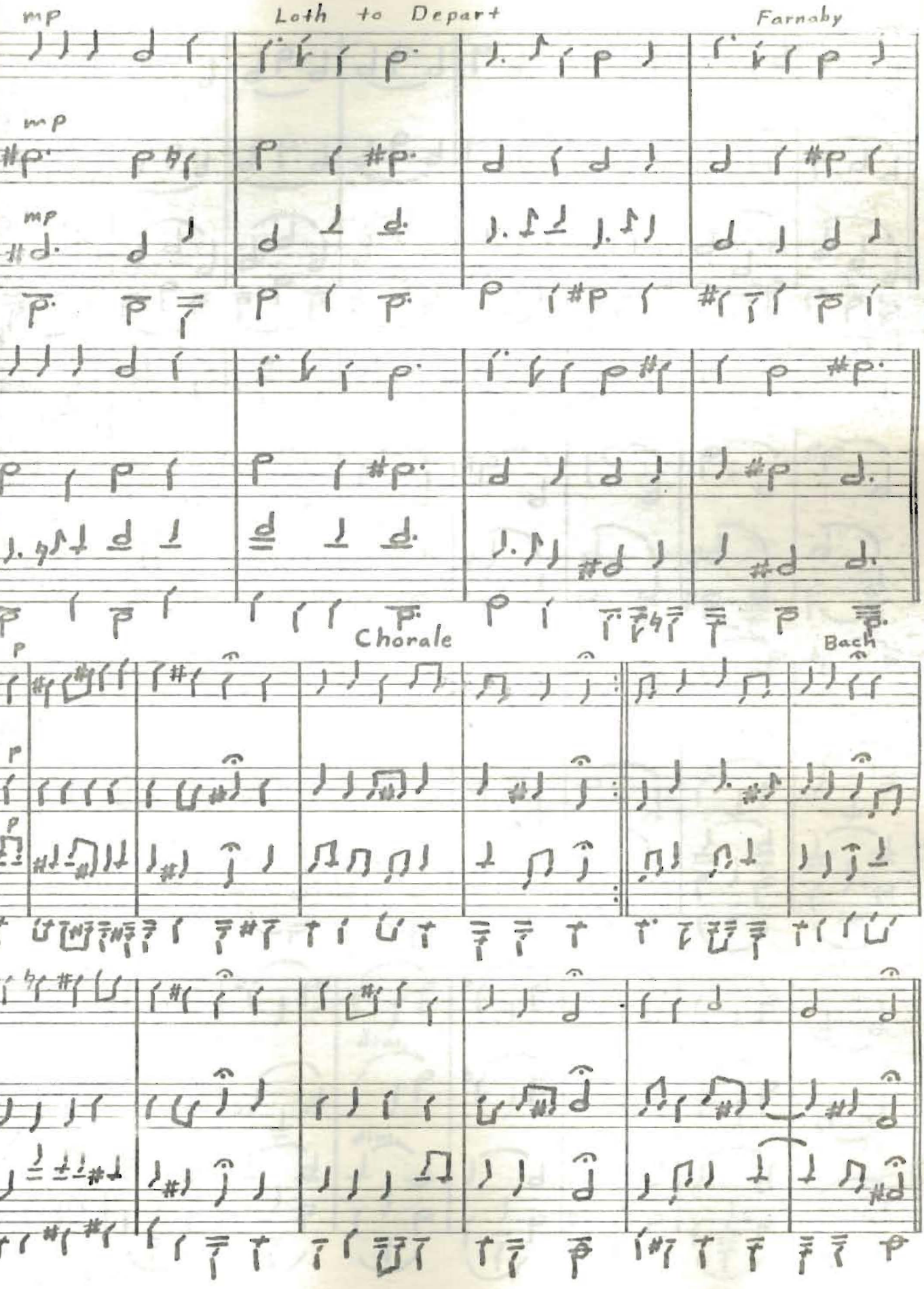
A. Used for solo work.

B. Can be used in sections at own discretion. When used as such, the vibrato need not be matched.

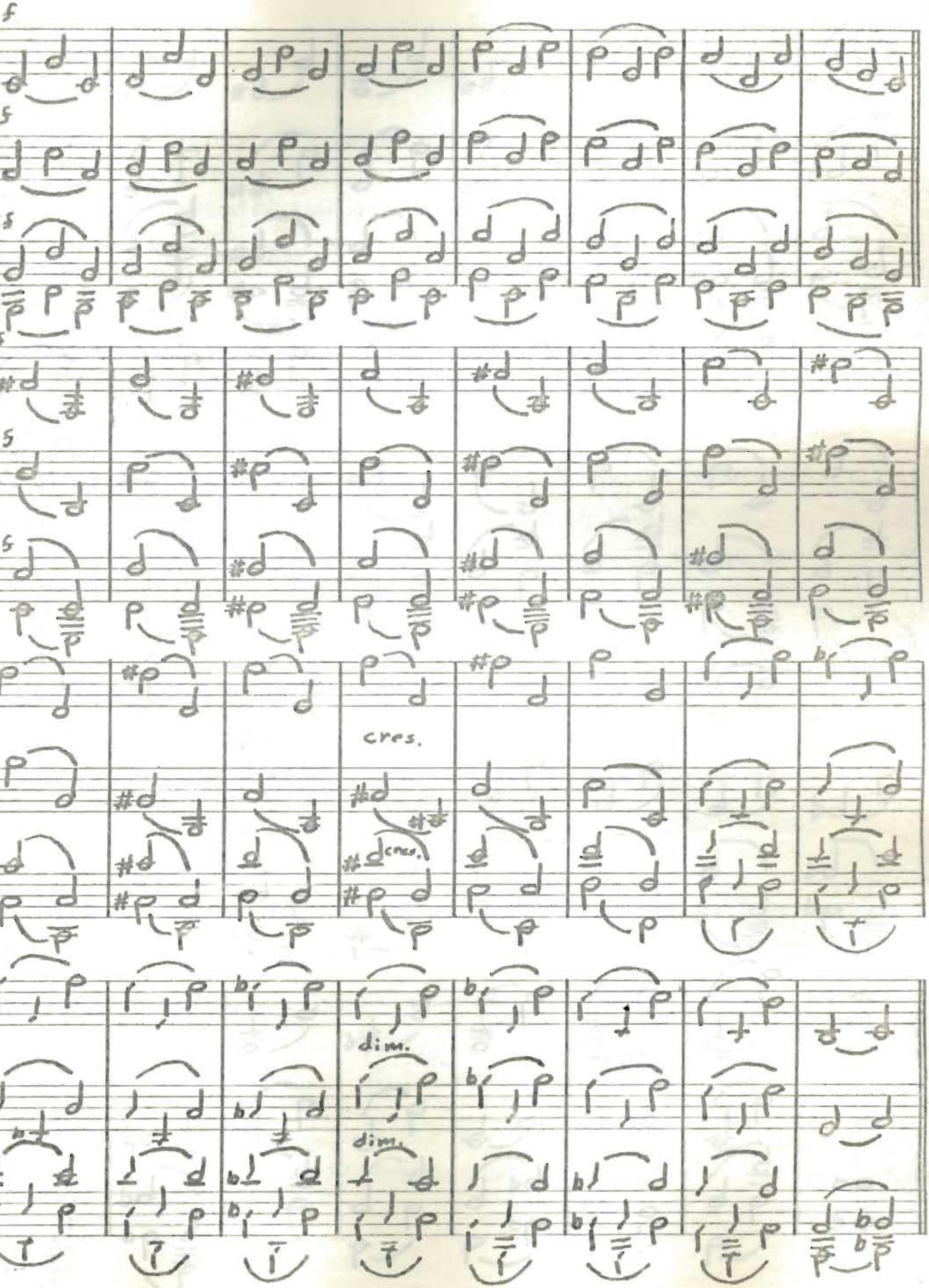
C. The player must have complete control over it.

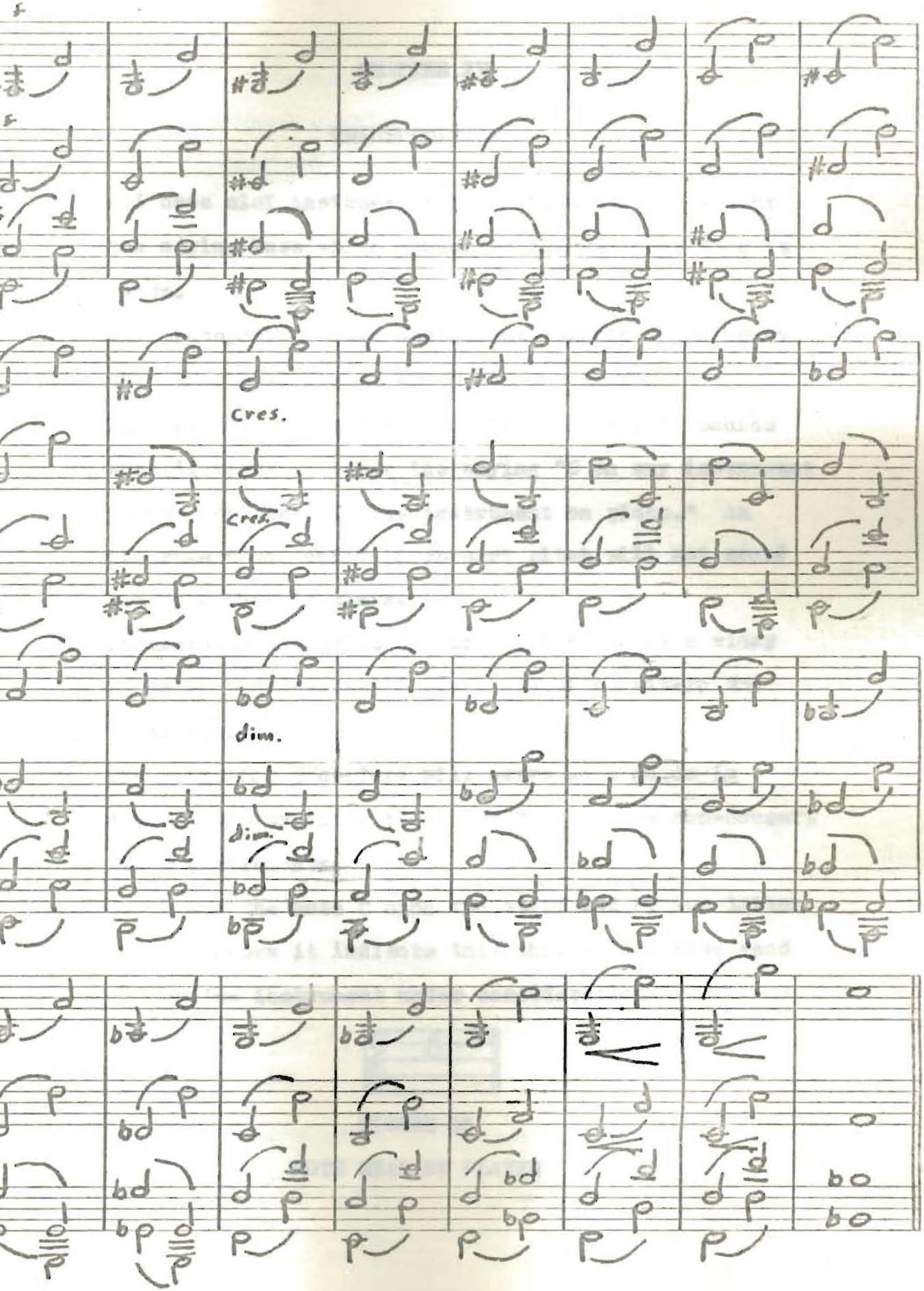
V. As with concert or opera, the vibrato on brass instruments should vary according to the dramatic impact of the music being performed--i.e., the more highly dramatic the passage is, the faster and tighter the vibrato is performed; the more lyric or reposed the music, the slower and wider the vibrato.

Lesson 22



Lesson 23




cres.
cres.
dim.
dim.

CHAPTER XV

TRANSPOSITION

I. All bass clef instruments are nontransposing except the string bass which sounds an octave lower than it reads.

II. All transposing brass instruments should sound lower than they read except the C and D trumpet.

III. The key name of an instrument is the note it sounds when it reads C, hence the saying "C on any instrument is the key name of that instrument on piano." An instrument not built in concert pitch will not sound the note that it plays.

IV. Instruments are built in different keys for a wider range of tone quality (color) and pitch within the brass family.

V. The following procedure will serve as a guide in determining transpositions for the various non-concert pitch instruments.

A. Place the note C upon the staff and by the letter "R" above it indicate that this is the note read by the instrument under consideration.

FIGURE 13

NOTE READ BY PLAYER

B. Below this note place the key note of the particular instrument considered and by the letter "S" above it indicate that this is the concert pitch sounding.

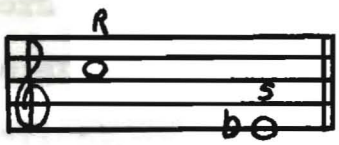


FIGURE 14

DETERMINING INTERVAL OF TRANSPOSITION FOR E FLAT INSTRUMENTS

C. Draw and arrow from "S" to "R" and name the interval below.

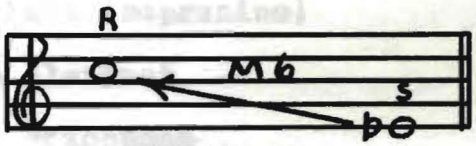


FIGURE 15

INTERVAL OF TRANSPOSITION FOR E FLAT INSTRUMENTS

D. The completed diagram now shows the intervallic distance between the concert pitch sounding ("S") and the note which must be read ("R"). Thus in this example above every note read by the E flat instrument sounds a major 6th lower; every note wishing to be sounded must be read a major 6th higher.

VI. Below is a listing of instruments and the keys they are built in.

A. Instruments built in the key of B flat.

1. Clarinet
2. Trumpet
3. Cornet
4. Flugelhorn
5. Treble clef baritone
6. Bass clarinet
7. Soprano saxophone
8. Tenor saxophone
9. Bass saxophone

B. Instruments built in the key of E flat.

1. Clarinet (sopranino)
2. Alto clarinet
3. Alto saxophone
4. Baritone saxophone
5. Flute
6. French horn
7. Mellophone

C. Instruments built in the key of F.

1. French horn
2. English horn
3. Basset horn
4. Mellophone

D. Instruments built in the key of D flat.

1. Flute
2. Piccolo

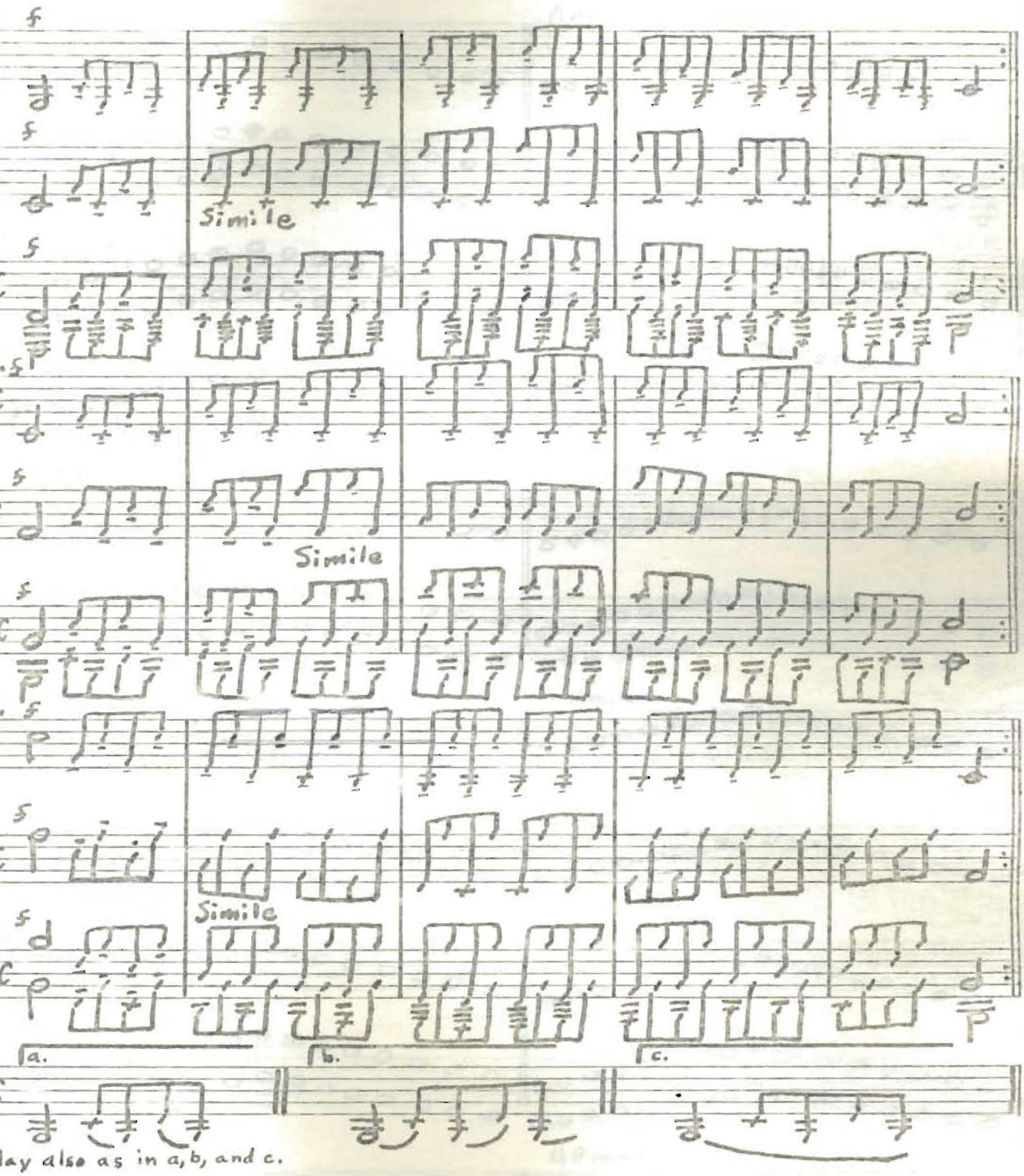
E. Instruments built in the key of A.

1. Trumpet
2. Clarinet

F. Instruments built in the key of C (nontransposing).

1. Flute
2. Piccolo
3. Oboe
4. Bassoon
5. Trombone; open partials of B flat.
6. Bass clef baritone; open partials of B flat.
7. Euphonium; open partials of B flat.
8. BB flat tuba; open partials of B flat.
9. E flat tuba; open partials of E flat.

Lesson 24

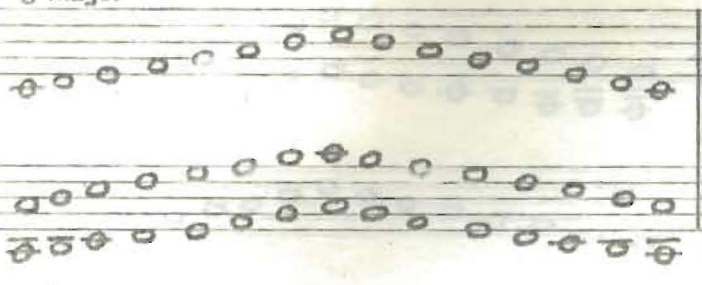


lay also as in a, b, and c.

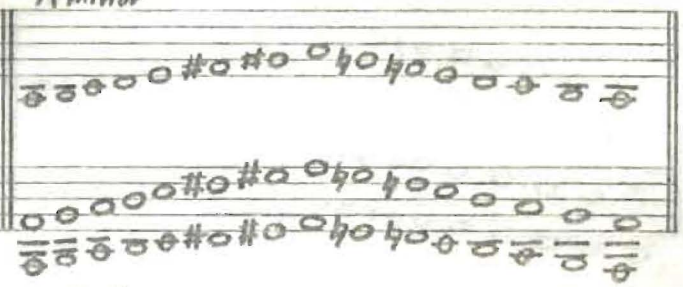
Lesson 25

Major and Minor Scales in Concert Pitch for Individual Use

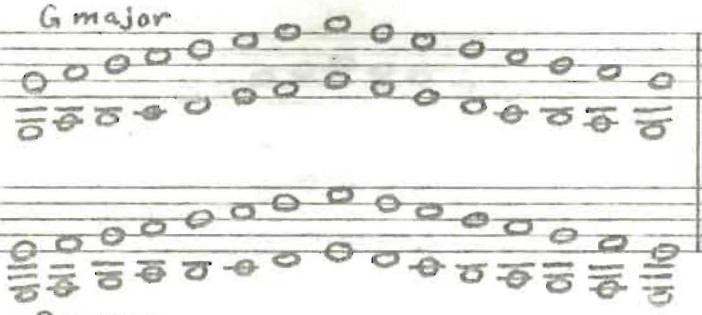
C major



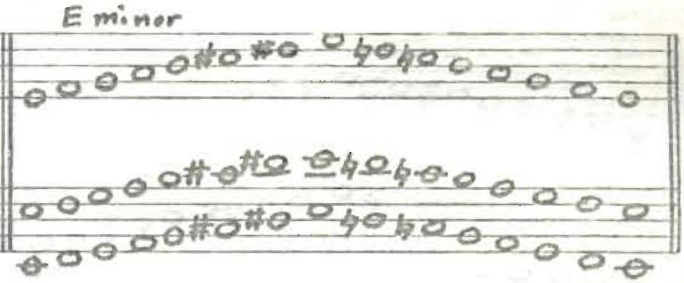
A minor



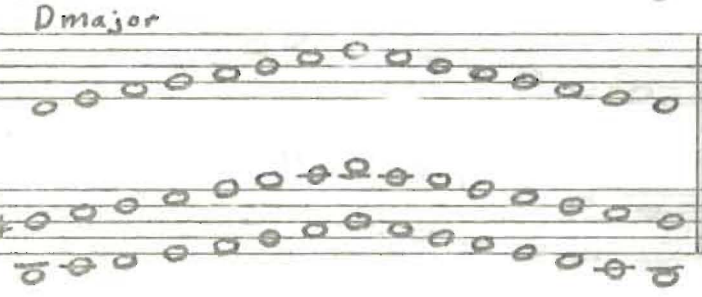
G major



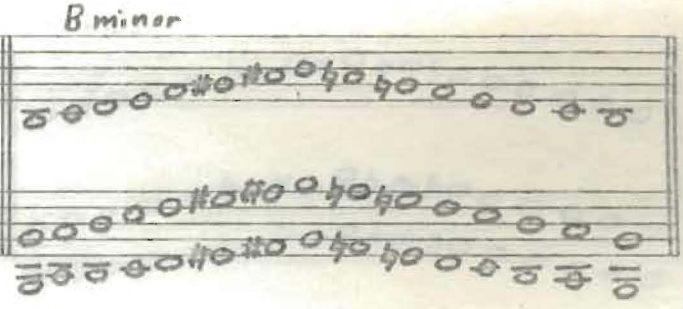
E minor



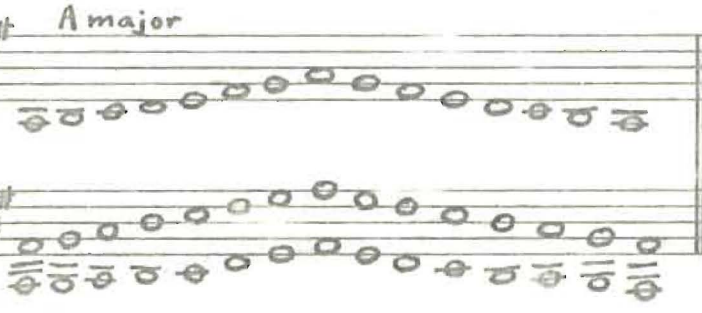
D major



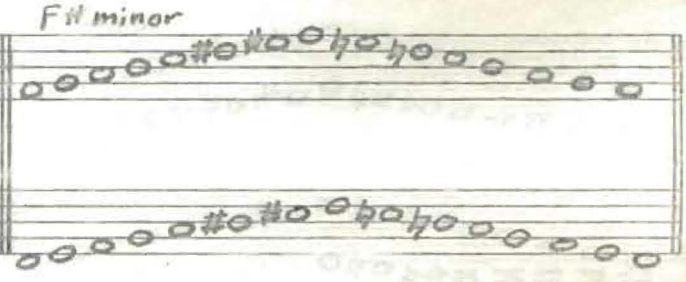
B minor



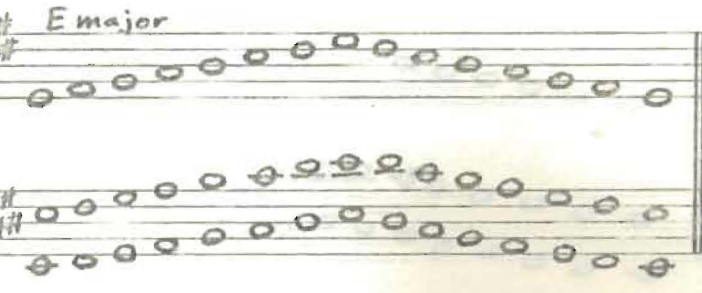
A major



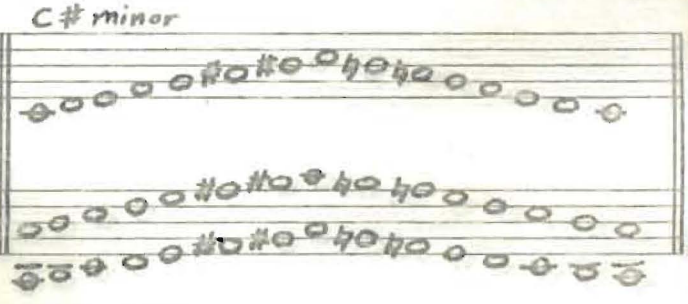
F# minor



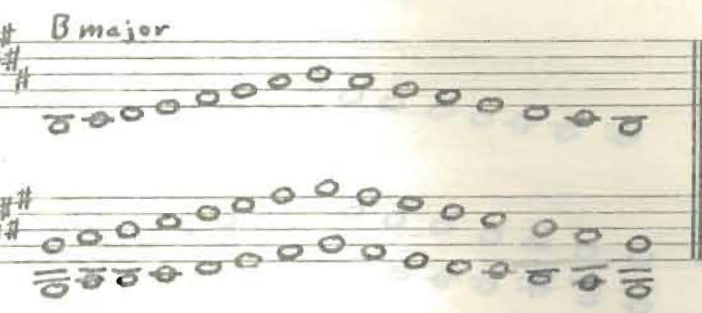
E major



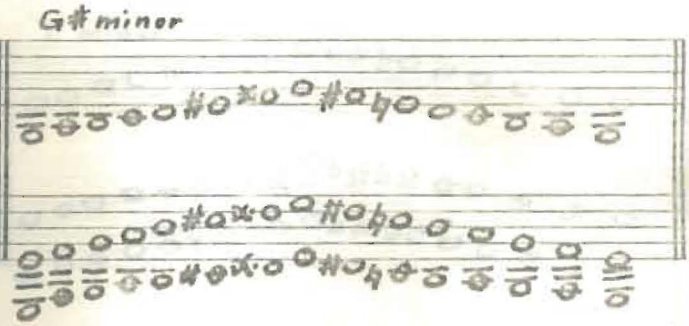
C# minor



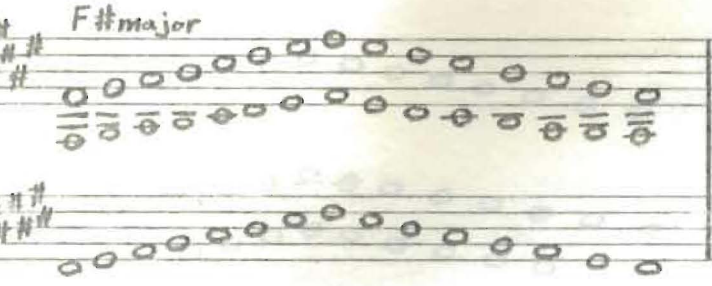
B major



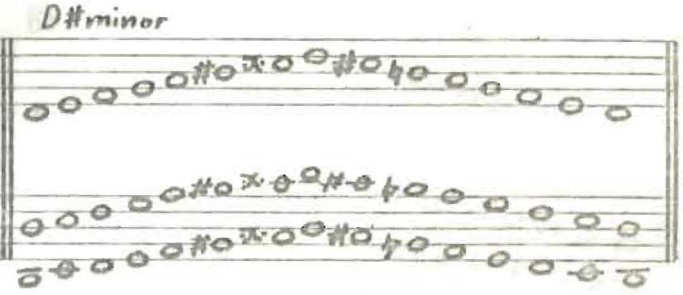
G# minor



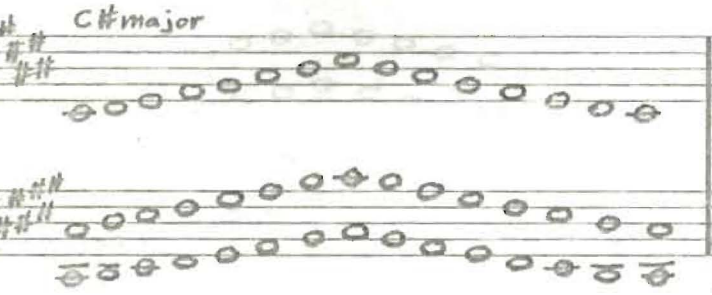
F# major



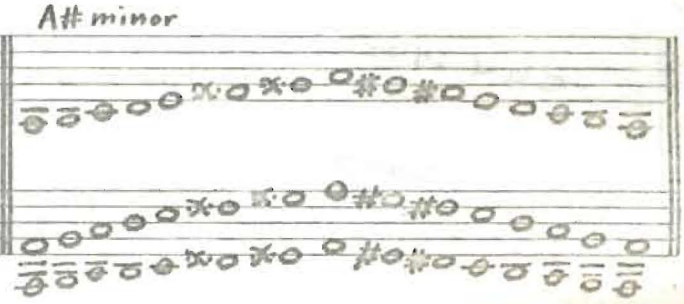
D# minor



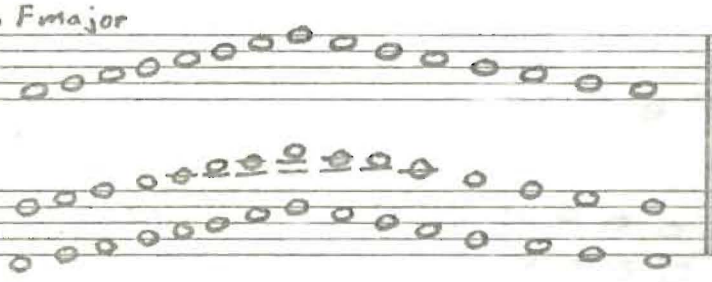
C# major



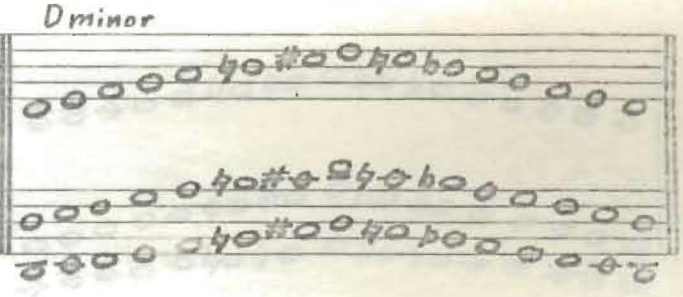
A# minor



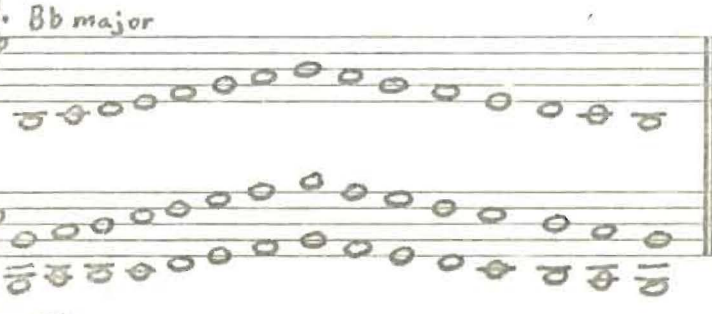
F major



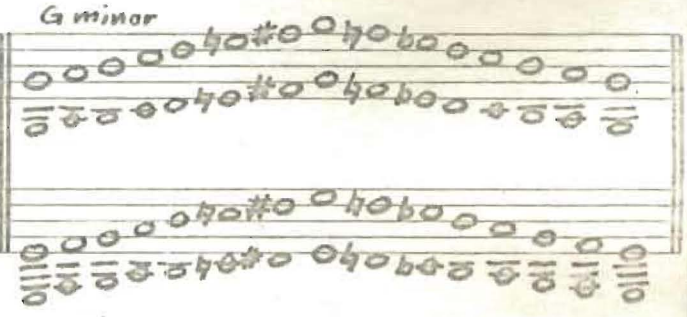
D minor



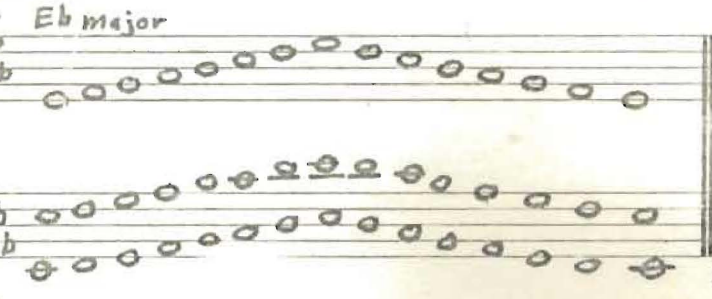
Bb major



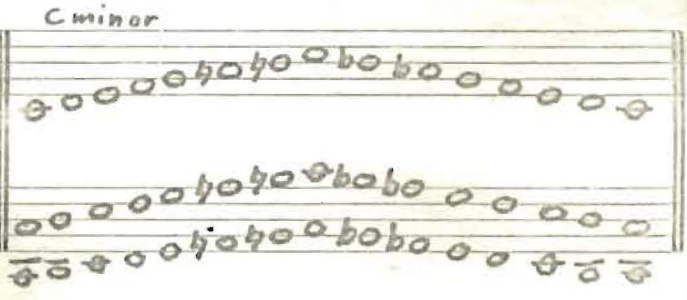
G minor



Eb major



C minor



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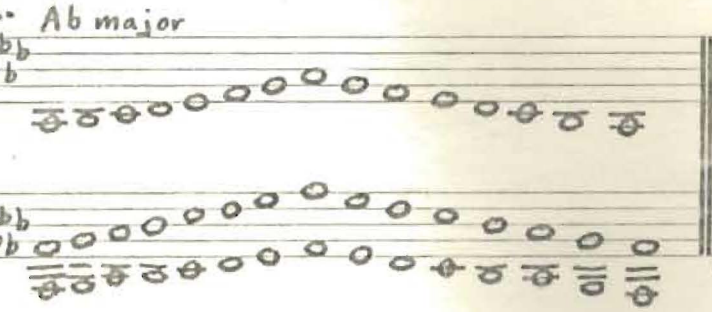
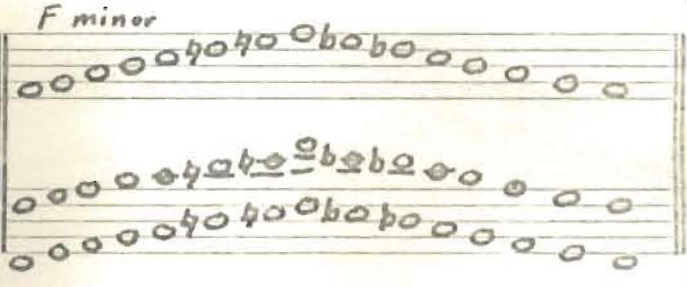


F minor



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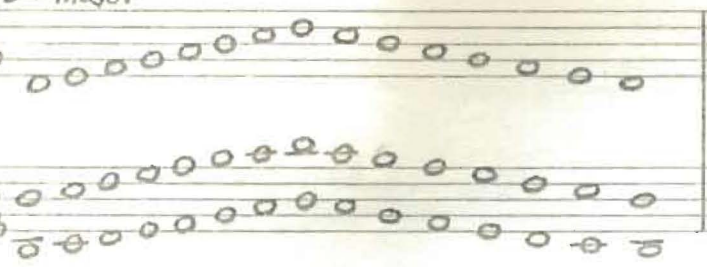
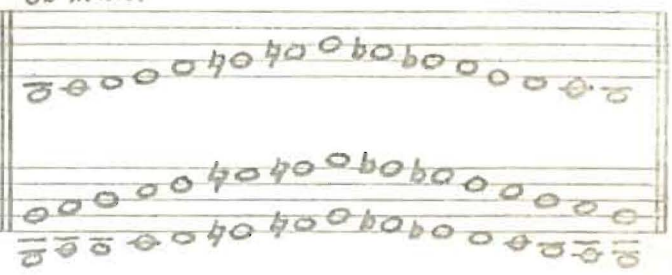


Bb minor



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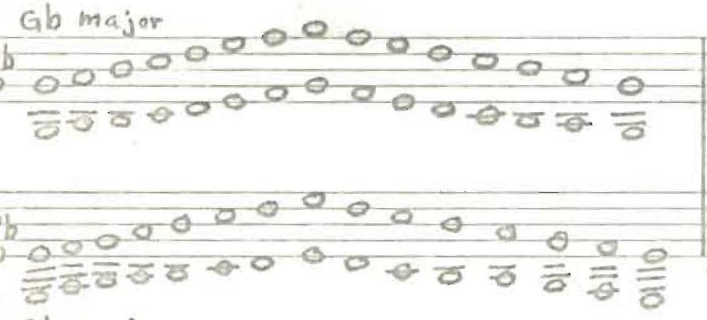

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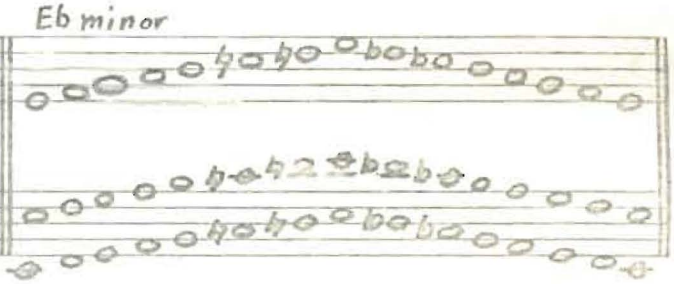

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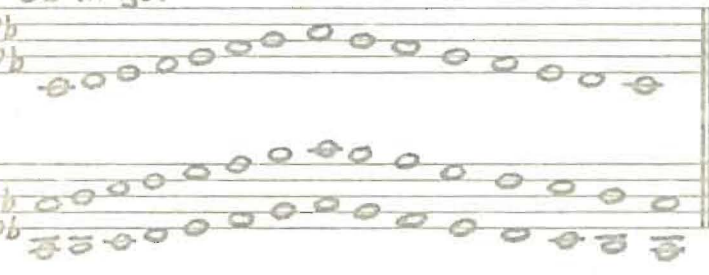

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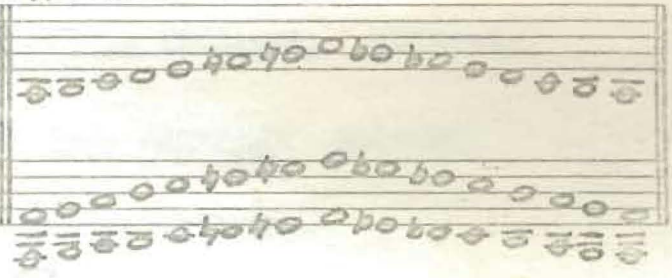

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