NOTATION FOR PERCUSSION INSTRUMENTS

A Thesis

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for the Degree Master of Arts

By

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INTRODUCTION

The notation of percussion instruments in musical compositions has often been faulty and uncertain. This uncertainty produces unsatisfactory results from the percussion sections of the orchestra and band. Percussion instruments should be notated in such a way that there is no doubt as to the desired sound. Performers who have had experience with faulty and uncertain notation will either rewrite the part or leave the part unplayed. The result either way is often unsatisfactory. The performer who rewrites or fakes the part often detracts from the musical composition being performed. At the other extreme, the person who does not play the poorly written part is also distorting the intent of the composer or arranger.

Before music can be performed well it must be properly notated. There must be an understanding of the symbols so that composer, arranger, conductor, and performer will have the same interpretations. The notation must be clear enough so that there can be no doubt as to the desired sound. If a common system of percussion notation can be established the composer will then know what to write and how to make the best use of the percussion instruments for expressive purposes and to emphasize his music. The conductor will immediately be able to interpret the music correctly, the percussionist will be more secure, and a truly musical per-
formance will result.

For many years much drum music was handed down by tradition. Words and sounds were used that came close to representing the rhythms to be used. Many of the patterns were basic and vital to the technique of the drummer and have become known as the rudiments of drumming. An organization was founded in 1933 to standardize these rudiments so that the quality of drumming and percussion writing would both benefit. This group called themselves the National Association of Rudimental Drummers. Even though this has been done it is apparent from all sources of activity -- new compositions, new publications, school music programs -- that there is not yet the standardization that is necessary to improve the general quality of percussion performance.

In a recent bulletin from the National Association of Rudimental Drummers Mr. William F. Ludwig, secretary for the group writes:

I recently read in a percussion column in a prominent magazine of one of our large universities. I quote one paragraph from it as follows:

'There are existing many systems for reading snare drum music and as a result much confusion reigns. Snare drummers do not readily agree on what correct sticking is, and therefore, difficulties arise when snare drummers schooled in various systems are brought together in a band or orchestra section.'

....Are there many systems of reading snare drum music? Not to a rudimenter. Is there much confusion in reading drum parts? Not if you know rudiments. Do rudimenters know correct sticking?
Of course they do -- that's the main purpose of rudiments.¹

To the drummer this is an age-old argument. There is no general agreement to the problem of rudiments. The problem of notation, sticking, and performance varies with different instructors.

To add to the problem, the lack of experience and background of a great many composers and arrangers has produced, in the past, a great deal of inconsistent writing for the instruments of the percussion family. This makes the task of proper performance more difficult. Even more frustrating is the task of reading at sight. Sight reading is almost impossible in many cases. All of this can be eliminated by the agreement upon and usage of a good standardized notation.

It is the rule rather than the exception that composers and arrangers do not use percussion because they are not familiar with the sounds and effects available; or they will not use percussion because they are not sure of the correct notation for the sounds that they desire. There is also the other extreme, composers and arrangers who overwrite for percussion. Many times the only purpose seems to be that of filling or just keeping the percussion section of the band.

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or orchestra occupied.

The percussionist is often handicapped by the characteristics of the percussion instruments. Since the music is fundamentally rhythmic, nothing should be left for the player to figure out for himself. It is vital that all the information necessary for the proper performance be written into his part. There should be no doubt as to the length or shortness of a note such as often occurs in present percussion writing. There should be no doubt as to the force with which a note should be played for the effect wanted. Most important is that there should be a general organization of the percussion parts so that performers can readily see what is to be played without the confusion that arises when parts are not well organized. There must be obvious cues when there are long rests. There must be clear and definite markings to designate the next percussion instrument to be played. This is of major importance, for, unlike the violinist or clarinetist who performs on only one instrument during a given composition, the percussionist may use several different instruments.

Percussion instruments have been technically improved in recent years. The pedal timpani of the present day are far superior to those timpani used in the sixteenth and seventeenth centuries. The snare drums and bass drums of today are of much better quality than those of twenty years
ago. There have been added various types of snares to improve tone quality. There has been the development of quick-change mechanical snare strainers that can add the variety of muted drums.

Percussionists have improved with their instruments. Today, work in percussion as a specialized field is recognized. Percussionists with their improved instruments and improved teaching and study find themselves a necessary and important part of musical organizations. This importance is limited and jeopardized by the lack of a good notation system.

The composer-arranger must have the knowledge of three things before there can be any effective percussion writing. First, there must be an understanding of the technical possibilities of the instruments. Second, there must be a realization of the sounds of the various instruments both as individual instruments and in combinations. Third, there must be the association of these sounds with a good understandable notation. Without these three fundamental objectives there cannot be a good presentation of the music. At present one can understand why there is confusion in the performer’s training and in his comprehension of percussion music. It is also understandable why there is uncertainty among the composer-arranger group as to the best use and notation of percussion in musical composition.
The Problem

Statement of the problem. The intent of this thesis is to present a notation for percussion instruments that will have the same meaning to the composer, arranger, conductor, and percussionist. This will eliminate the necessity of continual experimentation to produce a desired effect. It will also be an aid to the blending of the percussion section into a band or an orchestra. The section will then more readily aid in the development of musical ideas. It is the author's belief that it is of the utmost importance that the composer and arranger have a good understanding of the possibilities and concise notation selected for the sounds of the percussion instruments.

Definition of Terms

Organized. To organize a percussion part in a composition is to group the parts of the various percussion instruments so that the parts may be performed in the most efficient manner.

Muted. To mute a snare drum, one releases the snares. When playing timpani, the drum is muted by placing a piece of cloth on a small portion of the head that is not in the playing area.

Dampen. To dampen a sound means to stop the sound. In the case of the timpani this may be done with either the
fingers or the entire hand depending upon the training of
the timpanist. In vibraphone technique dampening is accom-
plished by means of a pedal, or by touching a single note
with a mallet.

Rudiments. Rudiments are basic rhythm patterns that
are used as a teaching aid for the student of the snare drum.

Width. The width of a note refers to the length of a
snare drum sound. The single struck note is of very short
duration. The technique of adding grace notes to the single
note is common. The note combinations, thus developed, are
played as closely together as possible without two strokes
striking the drum at exactly the same time. This has the
effect of placing two sounds together so that they sound as
one wider note.

Single Stroke. The single stroke refers to the
practice of striking the drum once, sounding one note.

Rebounded Stroke. The rebounded stroke refers to the
practice of striking the drum once and sounding two or more
rebounded strokes from the same principle movement.

Bells. In this thesis the bell sound is designated
as either orchestral bells, which are often called glocken-
spiel, or as chimes which are the tubular chimes commonly
used in orchestra and band scores. The use of real bells
is not practical. A real bell sounding middle C would
weigh about twenty tons.
CHAPTER I

THE TIMPANI

It is well agreed that the timpani is the oldest of the instruments of the percussion family. There is evidence that a form of "kettle drum" was in use by the Egyptians as early as 4000 B.C. \(^2\) However, there is some discrepancy as to the first use of the timpani in the orchestra. It is generally agreed that the timpani were being used in the orchestra by the early part of the seventeenth century. Percival Kirby in his book, The Kettle Drums, states that timpani were in use in England as early as 1548, and that they were used in the masques that were produced in England from 1604 onward. Mr. Kirby also makes the point that Lully is usually credited with introducing the timpani into the orchestra in his opera, Thésée, (1685). \(^3\) In a bulletin on timpani distributed by an American timpani manufacturer, it is stated that Johann Sebastian Bach was the first to write orchestral parts for the timpani in 1729. \(^4\) It is evident that the timpani were the first of the many percussion instruments to be used in the orchestra.


Since the time of Bach the timpani has been the most commonly used percussion instrument. Bach’s contemporary Handel, and their successors, Mozart and Haydn realized the potential of the timpani as an orchestral instrument. Because of its construction in the eighteenth century, it was limited in pitch change and in range. Composers generally did not require the change of pitch during the course of a movement. The tunings were always in fourths and fifths, and the instrument was considered a transposing instrument. The notation was under these conditions small c and the g either above or below.

The construction of the timpani has improved a great deal since the time of the classical period. It is now possible to tune timpani very easily and rather quickly in comparison to the first orchestral drums. The tone quality of the modern mechanical timpani with their one-piece copper bowl construction is superior to the early forerunner of hammered construction.

The number of timpani now used in musical compositions varies considerably. It is customary, however, to use timpani in pairs. The most common sizes in use today are those which have heads with a twenty-five-inch and twenty-eight-inch diameter. If a larger range is needed two more timpani may be added. They will have heads with a twenty-three-inch and a thirty-inch diameter.
Range of the better-constructed timpani of today is quoted by some, as one octave on each drum. For practical writing and playing this is not true. Weather conditions, room conditions, the quality of the head, and the length of time that the head has been in use are all important causes which produce varying ranges. It is therefore necessary to accept a range for each drum that will always be certain. This is important for two reasons: one, tone quality will be superior; two, the problem of intonation will not be so great.

The practical playing range for a single drum is that of a perfect fifth. The large twenty-eight-inch drum has F as its low note and can go up a perfect fifth to C. (Illustration 1.) The smaller drum has B-flat as its lowest note and can play up to an F. (Illustration 2.) For added range the thirty-inch drum can produce a good quality D and extends a perfect fifth to A. (Illustration 3.) To add higher notes the twenty-three-inch drum has as its lowest note D an octave above the thirty-inch drum and extends a perfect fifth to A. (Illustration 4.) The timpani are now nontransposing and sound where written.

Several modern composers have used notes that are out of the ranges just given. However, it is the exception rather than the rule to find a written high B or middle C. Delibes, in his opera Lakmé, calls for "Petite Timballes"
tuned to an A and an E an octave above the normal range. In the Bach orchestral transcriptions of Stokowski there is written a low C. In these instances it would be necessary to have a twenty-one-inch drum for the higher notes and a thirty-five-inch drum for a good quality low C. (Illustrations 5 and 6.)

When writing for timpani it is of the utmost importance for the composer to think in terms of tone as well as rhythm. Even though the timpani part is predominantly rhythmic rather than harmonic or melodic, the sound of the instrument can be very disturbing, and can sound as a wrong note when not used properly. In early writings the drums were generally tuned to the tonic and dominant or to the tonic and subdominant tones of the composition. It was not the practice to change tunings during the compositions even though there might be a modulation to another key.

In some instrumental ensemble writing there often have been parts written for the timpani when the notes that were written were not a part of the harmonic structure of the composition. As a result the tones from the timpani are actually wrong notes. This type of writing resulted from the limitations of early instruments. The composer might have found that a new tuning was more trouble than it was worth and rather than risk having all succeeding notes out of tune, would accept the few wrong notes which at least
gave the rhythmic pulse and added the weight which was necessary to the score at these points. Where composers were sensitive to the addition of the timpani in such instances, the timpani were omitted even at a climactic point in the composition. Illustrations 7 and 8 are examples of such problems taken from the first movement of the Mendelssohn's Violin Concerto.⁵

There is no rule when writing for timpani that the composer must follow as to which tones should be used. There is also no rule when writing for timpani that the composer be limited to using only the interval of a perfect fourth or a perfect fifth.

Composers have long realized and used the harmonic potential of the timpani. With the use of the new pedal timpani and the comparative ease and security of changing pitch, the harmonic use can be even more important. The tone can be made to blend well with woodwinds, brass, or strings in all registers except the extreme high register of either woodwinds or strings. As a result the timpani can be used with the individual sections or in tutti passages of the band or orchestra.

The timpani is made to sound by striking the calfskin head that is stretched across the copper bowl. The

⁵ Lockwood, Samuel P., Elementary Orchestration, George Whar, Ann Arbor, Michigan, 1926.
instrument is struck with some type of stick or mallet. The pitch of the sound varies directly with the amount of tension that is exerted upon the timpani head. The tone is dependent upon three factors: First, is the construction of the timpani. A timpani that has a suspended bowl will have a better tone quality than a bowl that is held tightly on a foot pedal base. Any imperfections that impair the smoothness of the bowl will change the quality of the tone. Second, the kind of mallet used to strike the timpani will have an effect upon the tone. Third, the force with which the timpani is struck will have a definite effect upon the tone quality of the timpani sound.

The type of timpani stick to be used is generally left for the performer to decide for himself. It should be the composer's job to designate the kind of stick to be used, particularly if a special effect is desired. A leading timpanist has said, "The method of playing no other instrument in the orchestra has caused such controversy as the method of playing the timpani. The methods used are as many as there are players. Certain similarities do exist, of course, but actually the method used is as individual as the player himself."\(^6\) This applies also to the use of different types of mallets.

Fundamentally, mallets are of four types of construction. Each one is used for a particular musical purpose. First, the soft felt or flannel-covered felt is used for soft playing or when softness of tone is the more important element. The sound resulting from this type of stick will not have a definite attack but will resemble a legato type of playing, which is most often used in a slow sustained style of composition. Second, the medium hard felt mallets are for general use. With this type of stick the attack is definite and the sound is normally louder. Third, the hard felt is used for loud rhythmic playing. This type mallet has a sharp attack that has little resonance. Fourth, the wooden type sticks are used for rhythmic playing and for special effects. With wooden sticks there is an extremely hard attack and precise pitch is lost.

It must be remembered when writing for timpani that even though there is tone that remains after the initial stroke, it is not of the same intensity as is true for instruments that are blown or are bowed. The notation of note values when writing for percussion instruments is different than for other instruments for that reason. In slower tempos a written quarter note or any written notes of longer value actually would not be sounding the full values given because of the characteristics of the instruments. If listened to very carefully the tones have the
effect of a strong attack with an immediate diminuendo which is not always desirable. Similarly, there might be written quarter notes for timpani when the rest of the group would be playing eighth notes followed by eighth rests. In this instance the timpani pitch would carry through the rest and therefore would be undesirable. (Illustrations 9 and 10.)

The only way that a timpanist has of sustaining the sound of the timpani is the quick reiteration of strokes. The amount of strokes necessary to sustain the timpani sound is dependent upon the pitch of the drum. There will be fewer strokes required to sustain the sound at lower pitches and more strokes required to sustain the sound for the same time interval at higher pitches. The rapid striking of the timpani to sustain the sound is not necessarily done in a strict rhythmic manner. It is important that the timpanist adjust the striking of the timpani to the rate of speed at which the head is vibrating. If this is not done there will be places in the sustained sound where the tone stops. The stopping of the sound for an instant is the result of a new stroke canceling the vibrations of a previous stroke rather than reinforcing the vibrations and continuing the sound. The 'dead spots' that result from the unsatisfactory adjustment of strokes is undesirable. Good timpani technique does not admit such a possibility.

The sustaining tone is referred to as the 'roll' and is
preferably notated as in illustration 11. The roll should be written for the exact time that the sound is to continue. It is preferable to write the notes designating a roll with the three lines through the stem, thereby designating thirty-second notes. This is more accurate and better designates the sound than the use of trill markings. It should be remembered, however, that thirty-second notes will not always be played.

The problem that is continually confronting timpanists seems to be caused by the neglect of composers to notate a roll exactly as it is to be played. This involves the proper use of the tie. If the roll is not tied to a note that follows, there will be a separation between the two notes as in a marcato style. Mr. Goodman states,

Most composers make no definite distinction between tied and separated rolls. Generally when a roll is designated in a timpani part where the roll is followed immediately by a beat, it is often found that a composer will specify by use of the tie whether the roll is meant to be tied over to the beat or whether the roll is to be stopped slightly before this beat is struck.7

When the tone is to continue either into the next beat or across the bar line, there should be a tie marked between the notes. If there is to be a separation or attack on each note then there should not be a tie marked between

notes. (Illustrations 12 and 13.)

The use of double notes or tones sounding at the same time by using two or more drums is not uncommon. Berlioz in his *Symphonie Fantastique* used four timpanists on four different drums simultaneously. (Illustration 14.) Sibelius in his *First Symphony* made use of a double-note roll performed by one timpanist, notated as in illustration 15. Many composers have made use of the two-drum tone at different intervals. Hindemith in his *Concerto for Violin and Orchestra* made use of seconds and thirds. Brahms used perfect fourths in his *Requiem*. Beethoven used perfect fifths in the last movement of his *Symphony No. 9*. If a double-note roll is to be used and performed by one player it is preferred that it be notated as in illustration 16; however, if two performers are used the preferred notation would be as in illustration 17. It should be remembered when writing double notes to be played by only one performer that intricate rhythms at fast tempos will not be affected. This is due to the physical limitation of the performer rather than the limitations of the timpani. (Illustration 18.)

One of the special uses of the timpani is the forte-piano roll normally notated as in illustration 19. This use of the timpani is very effective. However, the notation does not indicate the actual sound involved. Composers have always indicated this type roll by the use of dynamic markings only.
As a result the forte-piano roll is often played incorrectly. As previously stated a single note struck on the timpani will continue to sound loud enough to be heard unless dampened. The approximate time interval that the sound will be audible is one half second. This will vary with pitch to some degree. The lower pitches will continue to sound slightly longer than will the higher pitches.

The timpanist executing the forte-piano roll correctly will strike the drum with a loud forte stroke, then will wait, making use of the natural diminuendo before starting the roll. This technique to be notated properly would make use of either an eighth note or sixteenth note, depending on tempo, tied into the roll notation. With this type notation there would be no doubt as to the intended sound. (Illustration 20.)

An additional special effect that has been made possible by pedal timpani is the timpani glissando. This is accomplished by striking the drum and immediately, by means of the pedal, raising or lowering the pitch. The downward glissando does not have the force and will not sound as well as the glissando where the pitch is made to rise. This effect has been used by Samuel Barber in his composition A Stop Watch and Ordinance Map. For an example of glissando notation see illustration 21.

Because of the continuing tone that exists after a stroke unless the head is dampened, there is a limitation
to the rhythms that can be made intelligible on timpani. Two of the better examples of this are found in the first movement of the Beethoven, Symphony No. 9 and the second movement of the Brahms Symphony No. 4. (Illustration 22.) The capabilities of the timpanist will admit the performance of these passages, but due to the characteristics of the timpani there will be no clarity to the passage. It is therefore recommended that such rhythms not be written. In such a situation the intended musical effect will be produced by writing a roll to sustain the sound.

Of the many problems confronting the composer when writing for timpani the most perplexing is the problem of determining how quickly the timpanist can change the pitch of the pedal drum or drums. This is a very real and difficult problem. There are so many variables that it is not practical to make a definite rule or establish a standard time limit. The variables that must be considered are several. One, is the size of the interval change. If the interval change is only that of a minor or major second, the change may be made in the matter of two or three counts at 100. However, if the interval is larger it may take ten to twelve counts to make the change. A second variable, is

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8 It has been recommended that timpanists should have perfect pitch. Though it might be an aid it is not a necessary prerequisite.
the direction of the change. A change to a higher pitch can be made more quickly than can a downward change. Three, the harmonic structure of the composition is an important variable. If the tonality is clear, the change, even though it may be to a new key center, can more easily and quickly be made than if the tonality is obscure and vague. Four, the cues and directions for making quick changes are important. Five, there is the consideration of the number of drums or timpani that are available and the number which must be changed. 9

In the past, composers, arrangers, and copyists have been somewhat unreasonable and neglectful in timpani music especially in reference to the mechanical problems. Mr. Percival Kirby in his book Kettle Drums makes a point of this.

To many musicians the appearance of a kettle drum 'part' is somewhat startling; in fact, relatively few realize the enormous difference that there is between the appearance of the music that is placed before the kettle-drummer, and that given to the first violinist of an orchestra. The late Gabriel Gordon Cleather once said in a lecture that 'a large proportion of the mistakes made by timpanists are really due either to the conductor or to the way in which the music is written, and to the absence of cues, or to cues that are useless and only misleading or refer to instruments of the orchestra which the Timpanist may be quite unable to hear.'

9 Normally there will be only two timpani available to a band or an orchestra. Generally the use of a third and fourth timpani minimizes the quick changes of pitch necessary in certain scores.
For whereas most of the instruments have before them, as a guide, the melodies of the work, or at least suggestions of the harmonies, together with key-signatures, the kettle-drummer is frequently furnished with an almost cue-less part with no key-signatures or thematic aids, and has to depend on his arithmetical sense and feeling for form.\(^\text{10}\)

Good cues written in the part are important when there are long rests to be counted, and are vital when quick changes of pitch are to be made. To be of any value, a cue must refer to a melodic line that can easily be heard, or be that of either a brass or woodwind entrance that would be obvious and noticeable. A good cue would not be a cue that would be difficult to hear and detect such as a second oboe cue in a tutti passage. Such a cue would only add to the confusion of the timpanist.

Key signatures are also of great value. This is particularly true in a composition where there are modulations to new keys. A good example of this type of writing is found in the fourth movement of the Tchaikowsky Symphony No. 5. (Illustration 23.)

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Ill. 1

\[ \text{Range} \]
\[ 28'' \text{ Timpani} \]

Ill. 2

\[ \text{Range} \]
\[ 25'' \text{ Timpani} \]

Ill. 3

\[ \text{Range} \]
\[ 30'' \text{ Timpani} \]

Ill. 4

\[ \text{Range} \]
\[ 28'' \text{ Timpani} \]

Ill. 5

Lakmé
Delibes

\[ \text{Range} \]
\[ "Petite Timbales" \]

Ill. 6

Found in Stokowski's
Bach transcriptions
Ill. 7

Violin Concerto in B
Mendelssohn

vl. solo

orch.

Use of timpani when the sound is not in the harmonic structure
Omitting timpani because of harmonic implications
Ill. 9

The improper use of note values

Ill. 10

In such writing the sound will carry through

Ill. 11

The notation of a roll

Ill. 12

Rolls not tied

Ill. 13

Rolls tied
First Symphony
Sibelius

Double note roll,
one player

Double note roll,
two players

Timpanists are limited
in the performance of
this notation

Normal notation
Recommended notation

Timpani glissando
perfect fifth

Timpani glissando
perfect fourth
Ill. 22a

Symphony No. 9
Beethoven

An impractical notation

Ill. 22b

Symphony No. 4
Brahms

An impractical notation

Ill. 23

Symphony No. 5
Tschaikowsky

A good cue
CHAPTER II

THE SNARE DRUM AND TENOR DRUM

Of all the other instruments in the percussion family the snare drum or military drum ranks next to timpani in importance and use in the orchestra and band. The history of this drum is vague. Drums of various sizes and types were used by all primitive cultures. In India there was a drum used called a "Nakara" or "Naguar" long before the birth of Christ.\(^{11}\) This drum resembled a present-day field drum. The drum had two heads or skins placed at each end of the shell that were tightened by laced ropes much the same as were the military drums used in this country during the Revolutionary and Civil Wars.

The pieces of wire or gut stretched across the bottom head of the drum called 'snares' give the instrument its name. Just when this addition to the drum came into being is impossible to determine. The importance of the snares is to give snap and life to the tone. The drum is constructed with two heads. The top head is called the batter head; the lower head is called the snare head. The drum is struck on the batter head. This causes a chain reaction of vibrations that force the snares to strike against the snare head and

\(^{11}\) Leedy and Ludwig, *Timpani Historical Highlights*, Elkart, Indiana.
the result is a very quick snap that is short in duration.

Snare drums vary considerably in size. In general the different sizes are for different uses. The larger of the snare drums are often referred to as marching or military drums. The head diameters of the drums often remain the same. The major difference is the distance between the two drum heads. The military drum is often fifteen or sixteen inches deep in contrast to the orchestra snare drum that is seven or eight inches deep, or the snare drum that is used in the modern dance bands that is only four or five inches deep, the deeper the drum the lower the tone and the greater the volume that can be obtained. The larger drum also has a somewhat slower response and rhythms tend to be more open and distinct; however, the tone will have less snap and a more lumbering sound. As a consequence the larger drum is seldom used in concert organizations except for special effects. If it is to be used, the music should call for military or field drum.

The snare drum has no melodic or harmonic implications or possibilities. The uses of the snare drum are three: one, to point rhythms or provide rhythmic stability; two, to change dynamic level such as crescendo rolls; three, as the addition of a new instrument for color. With the quick interesting rhythms that can be performed on the snare drum the instrument can be very colorful.
Since there is no pitch involved, it is recommended that the music for the instrument be written on a single line and not on a five-line staff. For the same reason there is no need for any kind of indication as to the tonality of the composition. It is desirable, as in the case of the timpani part, to include melodic cues both as an aid to counting rests and as an indication of tempi at the beginning of the composition and in any place where there might be difficult tempo changes.

Unlike the timpani, there is no duration whatsoever to a note struck on the snare drum. As a result a single note could be written as a sixteenth note, an eighth note, or a quarter note, all sounding the same. In a succession of notes the difference in note values is implied not by a continuing tone but by the length of the interval between notes. It is therefore possible to write and think in terms of note values. Mr. Samuel Lockwood stated, "A single note on the snare drum is of no use." Many composers and arrangers have made good use of single notes on the snare drum. Without the single note or single note technique it would be difficult to accomplish the many and varied rhythms that are written.

Mr. Lockwood further added that the snare technique

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is based on double notes or the rebounded stroke. This is not true, or, at the very best, is only partly true. It is the combination of the single and rebounded stroke that go to make up the technique of the snare drummer. All rhythmic patterns possible on the snare drum are either done by single or rebounded strokes or combinations of the two. This admits no other possibility. The rebounded stroke is made of only two notes for practical playing.\textsuperscript{13} The purpose of the rebound is more facility in performance. The well-schooled snare drummer will try to duplicate single notes when doing rebounded strokes.

The most important use of the rebounded or double stroke is that of sustaining the tone of the snare drum. This is called a roll and is notated in the same way as the timpani roll. (Illustration 24.) The snare drum roll is different than that of the timpani roll because of the difference in the duration of tone. The timpani, having a tone of much longer duration than that of the snare drum, uses single strokes only and because of the slower vibrations of the timpani head the strokes are in themselves non-rhythmic so that a good clear sustained tone is achieved. This is not true in the case of the snare drum. The snare

\textsuperscript{13} It is possible to obtain several notes per rebounded stroke; however, for normal playing this is not practical. The sound obtained by using multiple rebounds is not desirable and is not considered good technique.
drum double stroke is rhythmical and can be measured as to the number of strokes per beat. In this manner a good consistent snare drum roll is achieved. As written, thirty-second notes are actually heard and played. In this manner an eighth note tied over to the next note with the eighth note written as a roll will sound four thirty-second notes plus the tied note making the total number of strokes five. For a similar breakdown of rolls of different note values see illustration 25. It is not necessary to mark rolls designating the number of strokes.

As previously stated snare drum technique is a combination of the single and double or rebounded strokes. This is also true when the composer wants to add width or emphasis to the snare drum note since a single note has very little sound duration. This is accomplished by the addition of grace notes. Unlike melodic instruments this is not for ornamentation. For examples of notation see illustration 26. From the standpoint of performance to achieve this effect the timing of the strokes is of the utmost importance. The notes are played closely together to achieve the effect of one 'wider' note being played. If the strokes are played together, there will result an undesirable 'pop'. Another way of widening the snare drum note more than the single grace note is to make use of a rebounded stroke and a single stroke. This is notated by double grace
notes and a single stroke as in illustration 27.

These two strokes or combinations are very important in the use of the snare drum. They will add variety and effectiveness to snare drum writing. These two strokes are essential to the technique of the snare drummer and are considered to be two of the fundamentals of drumming and have their place in the list of rudiments. The single grace note and stroke combination is called the "flam"; the double grace note and stroke combination is called the "ruff".

Snare drum technique is based upon certain basic rhythms called rudiments. This does not mean that it is impossible to perform well on the instrument if the rudiments are not known. The rudiments are used as a teaching aid. Rudiments are primarily a carry-over from military drumming. As a result the sounds that are obtained from some of the rudiments, particularly those using the double grace are not desirable for most writing. The exception to this is the ruff. The purpose of the double grace note in military or rudimental drumming is to fill the empty space, and the performance has the effect of a continuous roll with different accented beats. The same effect can be achieved if one snare drummer will play a continuous roll while a second drummer plays a series of different rhythms.

The National Association of Rudimental Drummers, formed in 1933, hoped to use rudiments to develop a standard
rudimental drumming system. As Mr. William Ludwig states in his autobiography, "The prime objective of the Association is to standardize the American rudiments, thereby eliminating considerable controversy as to one or another system of drumming." There is no question but that the Association has done much to further standardization of snare drumming. There have been established twenty-six rudiments that are considered necessary to the snare drummer. However, even within the Association there is some confusion as to the proper performance and notation of some of these rudiments.

In the Haskell Harr Drum Method Book II there is a standard rudimental snare drum solo. On one page there is the Western and Central States version with the following quote,

The Downfall of Paris is used extensively as a contest number. The interpretation on this page is the one commonly used in the western and central states... 15

On the next page appears the Eastern States version with the following quote,

This arrangement of the Downfall of Paris has the sticking used in the eastern states. The variation of sticking used is in the first measure,


the first three notes and the grace note are played with the right hand, the next three notes and the following grace note are played with the left hand. In the arrangement on the previous page, the first measure is stucked the same as the flam accent. I would advise the student to familiarize himself with both systems, then when playing in a contest, have the judge declare himself as to which method of sticking he prefers. 16

With these statements it is obvious that there is confusion even when using rudiments. It is the author's advice to notate in detail the rhythms that the snare drum is to play. The snare drummer will be capable of executing any single-line rhythmic patterns that are necessary to any given composition. However, as the snare drummer who is developing his technique must understand and use the rudiments, the composer should also be familiar with the rudiments. In this manner an understanding of the possibilities of the snare drum would be achieved. At the same time it is important that the composer realize that this is a starting place and not the goal when writing for snare drum. The important rudiments are shown in illustration 28. As previously implied those rudiments using the double grace note, with the exception of the ruff, should be avoided except in writing a military drum solo. In such an instance it would be well to mark the music "In a military style, very open."

The snare drum can be most effectively used with the brass instruments, especially trumpets or cornets. This is

16 Ibid.
most often found in a military type composition such as the Rimsky-Korsakov _Cortège des Nobles_. It is generally ineffective to use the snare drum with only the lower brass instruments. The snare drum is also out of place in a chorale type of composition except for the use of the roll; the use of single note rhythms often seems abrupt against the sustaining instruments. In tutti passages the snare drum can be effectively used to point rhythms, though with woodwinds or strings alone the snare drum generally sounds out of place and unnecessary.

Very closely related to the snare drum is the tenor drum. Generally it is the same size as the military drum but does not have snares. The sound of the tenor drum may be obtained by asking for either snare drums without snares or 'muted' snare drums. The technique of performance is the same as that of snare drum; but for best results it is better that the drummer use medium hard felt timpani sticks on a 'muted' drum. Therefore it is recommended that the composer designate "with medium hard timpani mallets." The tone will vary with the size of the drum. It will be higher for the smaller drum, such as the one used in the orchestra, and lower for the larger field drum. These two drums are normally available in most organizations and can be used separately. If two drums are used together, generally they will be played by separate performers. It is possible for
one drummer to play on two drums at the same time as in Owen Reed's composition for band, *Spiritual*. Or by using a technique similar to that required of the percussionist in the "March" from Benjamin Britten's *Matinées Musicales*. When being used together the drums can be used at specified intervals such as a fourth or a fifth but need not be notated as to pitch. The suggested notation would be as in illustration 29.

Tenor drums can be used effectively in places within compositions where a snare drum with snares would sound out of place. Because of the dull, lifeless sound this effect has been used in dirges and funeral marches. At the same time because of the tom-tom sound it is also used in descriptive music giving a setting for Oriental, African, Latin American or American Indian styles. The sound tends to blend well with almost any instrumental group but can easily be lost in heavy writing, for the volume potential is not great from a single drum.

The snare drum can also be effectively used in the modern jazz idiom. For variety of sound and a soft rhythmic effect a special type of stick is used. The part of the stick that is held is smaller than the ordinary snare drum stick. At one end of the stick are numerous pieces of fine wire that are similar in appearance to a small hand fan. This type of stick is called a "wire brush." They are
used in pairs as are regular snare drum sticks. The technique used when playing on the snare drum with the wire brushes is different from that used when playing with snare drum sticks. There is no rebound that can be used for a roll. Therefore the wire brush technique is entirely that of single strokes or of dragging or sweeping the brushes across the drum head to give a swishing sound. When wire brushes are to be used in a composition it is necessary to use the words 'wire brushes'. It should be remembered that wire brushes will not sound through heavy bandstration or orchestration. Generally in wire brush technique a basic rhythm pattern is followed; it is not desirable to make use of a great many different rhythms. For examples of wire brush notation see illustration 30.
Ill. 24

Snare Drum roll

Ill. 25  Abbreviated and actual notation of Snare Drum rolls

A

Snare Drum roll

B

C

D

E

Ill. 26

Single grace note

Ill. 27

Double grace note
Snare Drum rudiments

Single paradiddle

Double paradiddle

Flam

Flam accent No. 1

Flam paradiddle

Flamacue

Ruff

Single drag

Double drag

Single ratamacue

Double ratamacue

Triple ratamacue
Ill. 29

Different pitched muted drums

Ill. 30

Wire brushes
CHAPTER III

THE BASS DRUM, CYMBALS, AND EFFECT INSTRUMENTS

Often the largest instrument of the percussion family is the bass drum. Due to many different preferences there is variance in the size. Bass drums will vary in head diameter from twenty inches, for use in modern dance bands, to seven and one-half feet in diameter for use as a promotional exhibit in some University marching bands. For practical purposes neither of these extremes is of any use to the concert organization or to the composer. The average concert bass drum is thirty to thirty-two inches in diameter. In appearance the bass drum looks much like an enlarged field drum. The bass drum was first introduced into the orchestra by Mozart in 1760 in Die Entführung aus dem Serail.\textsuperscript{17}

The bass drum has a sound of indefinite pitch. This sound being low and indeterminate tends to blend with almost any instrumental combination. The bass drum is struck with a stick having a large striking surface made of lamb's wool. This type of stick gives a soft attack so that there is the booming bass drum sound.

Because of the large head diameter that is not kept tight like the head of the snare drum there is a duration

of the sound, much the same as there is from the timpani. However, the sound of the timpani does not resemble that of the bass drum nor does the sound of the bass drum resemble that of the timpani. Since there is a duration of tone it is necessary that the composer concern himself with the actual note values that he wishes to be played. The performer can control the duration of the tone by dampening the left side of the drum with the left hand and the right side of the drum with the right hand and knee. As in the case of the snare drum, since there is no pitch involved, it is recommended that the bass drum be notated on a single line as in illustration 31.

Normally the bass drum is struck halfway between the center of the head and the top of the drum. This is done with an upstroke as if the performer was pulling the sound out of the drum rather than driving the stroke into the drum head. It is in this manner that the best bass drum sound is obtained. The bass drum sound is most effective when used to maintain the principle rhythmic beats. The soft yet forceful low sound of the bass drum when used to maintain a constant pulsation can be an important unifying instrument. The bass drum sound will have a tendency to blend with the lower strings and brasses. As a result the sound will not come through as an individual instrument.

In contrast to the soft unifying sound of the bass
drum, the instrument can also be used for loud accents or even for the effect of thunder. If a hard, loud sound is desired, the note or notes are marked with an accent and the words "Play in Center" are added. The sound will be heavy and forceful.

The sustained sound of the bass drum is notated by the roll. In most playing the performer will use only one mallet; however, the most desirable way to play the roll is with two bass drums or timpani mallets. Sometimes a bass drum mallet is used that has a lamb's wool pommel on each end of the stick. This can be used for executing the roll, but it does not always produce the best sound and therefore is not recommended. The bass drum roll can be very effective either as a sustained tone for support as in the latter part of Dukas' L'Apprenti Sorcier or for building crescendos.

It would be well to remember when writing for bass drum that the player normally uses only one stick; so fast, complex rhythms are difficult. To play complex rhythms two mallets are used. When two mallets are used the performer can no longer make use of the dampening technique. The result will be that of an unorganized beating rather than well-defined rhythms. It is recommended that no more than sixteenth notes at a tempo of $\frac{1}{4} = 112$ be written.
The Cymbals

Cymbals are hammered discs of brass or some other metal that can be formed. The process of cymbal manufacture has been kept as a trade secret. The better cymbals are made by this secret process and carry the trade name of ZILDIAN, an old Turkish family. There are two separate ZILDIAN cymbal companies; there is K. Zildjian, which is a Turkish company and A. Zildjian, which is an American company. It is from these two companies that the best cymbals are obtained.

Cymbals are manufactured and used in a variety of different sizes and degrees of thickness. As a consequence cymbals are used in many different ways and for many different purposes. The most common use of cymbals is for the cymbal crash which adds brilliance and has a great emotional effect. A good example of this is in the finale of the Shostakovich Symphony No. 5. The cymbal crash is made by striking two cymbals together. Cymbals should be matched in pairs. A matched pair of cymbals means two cymbals of the same size that are not alike in sound. An interval between the two cymbals of either a third or a fourth is preferred. This will add brilliance to the cymbal sound. There is no definite pitch to the cymbal-crash sound, yet there is pitch to individual cymbals. This pitch of the individual cymbal is generally obscured by the many overtones
and is of no real importance except in the case of finger cymbals such as Debussy scored for in his *L'Après Midi d'un Faun*. These are small cymbals used by dancers which, when struck, have a clear bell-like sound. They are not in general use.

Since the cymbals when struck have a duration of sound it is important that the exact amount of time that they are to be sounded be accurately notated. This should be done by the use of both note values and words. If the sound is to continue after the cymbals are struck, the words "let ring" should be used. If the cymbal sound should not continue then it is advisable to include the word "choke." The cymbals will then be struck and immediately stopped. Cymbals should be notated on a single line as in the case of the snare drum and bass drum. (Illustration 32.)

Because of the variety of ways in which cymbals can be used it is recommended that the exact way in which they are to be used be designated. The method of using two cymbals together is one way of use. Another method to obtain the cymbal sound (but without the hard attack produced by striking two cymbals together) is to designate that the cymbal be struck with a hard timpani mallet. The composer should never designate that a bass drum stick be used; similarly, designating a soft stick is not enough. Neither a bass drum stick or a soft stick produce sufficient sound from the cymbal to be audible to the conductor or listener. By
means of the timpani stick it is not possible to obtain any rhythms. If a rhythmic sound is wanted on cymbals it is best to designate that the cymbal be struck with a snare drum stick. This will give a harder attack and the rhythms will be well defined and clear. For large concert groups it is useless to score for the snare drum wire brushes on cymbals. The resultant sound will not be audible unless the composition is scored very lightly.

The roll may be used when writing for cymbals in the same manner as it is for other percussion instruments. The roll is executed on one cymbal and a single stroke technique is used. For a smooth, consistent sound that can easily be controlled as to dynamic level it is recommended that hard timpani sticks be used. The cymbal roll is very effective for establishing mood for changing dynamic level. Use of the cymbal roll for mood is very well illustrated in Dukas' L'Apprenti Sorcier. Use of the cymbal roll with timpani sticks to change the dynamic level is well illustrated in the last movement of the Shostakovich Symphony No. 5.

The Gong

The gong used in musical compositions can well be thought of as a large thick cymbal having a low shimmering sound that has a flavor of the Orient. The gong is always struck in the center with a large hard mallet and has a natural crescendo to the sound. The gong can be notated on a single line as in the case of the cymbal, using the exact
notation for the amount of time that the gong is to sound. It is also desirable as in the case of cymbals to use words to designate that the sound is to continue or that the sound is to be stopped. The roll written for other percussion instruments is not practical for the gong. If the sound is to continue it is desirable that it be notated as in illustration 33. The gong was very effectively used in the Richard Strauss Death and Transfiguration and the Respighi Symphonic Poem The Pines of Rome.

Effect Instruments

The name 'small traps' is given to and includes all the various small instruments and sound effects of the percussion family. Some of these smaller instruments are used often, such as the triangle and the tambourine. Others such as the whip-crack, ratchet, and sandpaper are not so common. Since none of the traps has pitch variations it is recommended that all be notated on a single line.

The Triangle

The triangle is a steel rod that is made in the shape of an equilateral triangle with one of the angles open. The triangle is made in various sizes. The two sizes that are most often used are the six-inch and the eight-inch. The larger sizes have a loud clang that is not desirable for
most triangle writing. Triangles are not used in pairs; only one instrument is used during a composition. The triangle is struck with a steel rod or with any one of a selection of different size nails for different volume levels. The composer in the past never worried about the pitch of the triangle. The high tone often tends to blend with the tonality of the composition. Because of the variety of the triangles that are available and the variation of pitch of different triangles of the same size it is recommended that the composer designate that the triangle be at a certain pitch. This does not mean that there would be enough triangles available to use as a melodic instrument or that such a possibility would be desirable. It does mean that there would be less opportunity for the triangle to clash with other sounds. The roll is used in triangle technique and should be notated as it is for the other percussion instruments. Most any rhythmic figuration may be used. In fast rhythmic passages the performer will use two beaters. The roll is normally executed by using the beater inside of the triangle striking first on one side then on the other thereby seeming to sustain the tone. The triangle is used very effectively in the "Overture" of Tchaikowsky's Nutcracker Suite.
The Tambourine

The tambourine is a small drum-like instrument widely used by dancers, particularly in those dances that are Spanish, Russian, or Latin American. Generally it is about ten inches in diameter and is constructed so that a single piece of drum head is stretched across a small shell. The shell will not have a width of more than two inches. To the shell are attached small metal discs that are loose so that they will sound or jingle with any movement. The tambourine is made to sound either by striking with the hand, thumb, or fingers, or by shaking. A roll may be executed either by shaking or by using the thumb so that the tambourine bounces. It should be notated the same as for other percussion instruments. Tschaikowsky used the tambourine very well in the "Trepak" of the Nutcracker Suite. Occasionally a composer has written parts for the tambourine that cannot be played with the technique previously mentioned. In Liadov's Eight Russian Folk Songs it is designated that the tambourine be played with small sticks on the head. The rhythms required can be performed only in this manner. However, the sound that is obtained is not characteristically a good tambourine sound. The performer may place the tambourine on a cloth pad and then strike the instrument with both hands. The author recommends that composers never write for tambourine to be played with sticks.
The Castanets

The castanets are closely related to the tambourine since they are also an instrument used by dancers, particularly those who dance to Spanish music. Castanets are small hollow wooden shells originally made of chestnut, that are used in pairs one striking one against the other.\footnote{Castanets are manufactured in this country from a plastic composition material called bakelite. They are more consistent in sound than those of wood. The tone is sharper but less resonant.} The dancer ties the castanets to the thumb and uses the fingers and the movement of the wrist to cause the two shells to strike together. The instrument originated with the early Moors.\footnote{Smith, Harold D., Instruments of the Orchestra, RCA Manufacturing Co., Inc., Camden, New Jersey, 1937.} In the percussion section, for convenience, the castanets are fastened to a paddle. The castanets are then made to sound by either shaking the paddle or by striking the paddle with the fingers. If the tempo is very fast or the rhythms complicated, two such paddles are used, one in each hand. Bizet used the castanets with their characteristic click at the beginning of the second act of the opera Carmen. For characteristic tambourine and castanet writing see illustration 34.

The Wood Block

The wood block is made from a hollow piece of Honduran rosewood and has a resonant hollow-sounding click much like
that of a grandfather clock. The sound is very colorful and descriptive. The wood block has been used by composers and arrangers of the lighter type of program music, such as Paul White's *Miniatures*, Leroy Anderson's *The Syncopated Clock* and many other similar compositions. The wood block is capable of almost any rhythms. The sound is short. Generally the performer will strike the wood block with bell mallets or xylophone mallets for the best sound. The same technique and notation that apply to the snare drum are adaptable for the wood block.

**Temple Blocks**

Temple blocks, as the name implies, are originally from the oriental temples. Both the Buddha and Shinto temples use temple blocks. They are normally in sets of five. The tone is much more resonant than that of the wood block mentioned above. The temple blocks are made of round pieces of hollowed-out wood and have pitch. The pitch is not standardized so that every set of five will be at the same pitch level. They generally are in the octave from F above middle C, to the F above. The five are tuned so that there is generally a whole step between them. The most common use of temple blocks is to give the effect of horse's hoofs

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20 Manufacturers, because of the excessive cost of rosewood, now make wood blocks of maple which are stained to look like rosewood.
either by using one, or by using pairs, one of a higher pitch and one of a lower pitch. (Illustration 35.) Because of their oriental origin temple blocks are descriptive for any exotic music.

Whistles

The percussion section is responsible for the performance of various whistle sounds that are used in descriptive program music. Bird calls and whistles have been used to add realism to this type of picturesque music. If such an effect is wanted it is best to designate with words the exact type of sound described. The notation of the effect can be made on a single line and should be such that the sound will continue for the exact amount of time that the composer desires. Whistle effects for locomotive, steamboat, slide glissando, or that of a drum major or police whistle are available. For examples of notation see Illustration 36.

The Whip and Sleigh Bells

The whip crack and the sleigh bells are very often used together in music portraying a winter scene and the use of the horse and sleigh. The whip crack is produced by the slapping of two pieces of wood together. This gives a sharp crack that is much the same as that of a whip. Sleigh bells used in the percussion section are of a smaller variety than
those actually used on the harness of a sleigh. The sleigh bells are either attached to a belt or to a paddle so that they are made to sound by shaking them. Generally the rhythms used are very simple such as straight quarter notes or eighth notes. For an example of the standard use of sleigh bells and whip see illustration 37.

Sandpaper Blocks

Sandpaper blocks are used for imitative effects. The volume level of the sandpaper blocks is so low that any use of them must be made with only a light orchestration or bandstratation. The sandpaper block is made by fastening a small piece of sandpaper to a piece of wood. The blocks are used in papers and held in such a way that the sandpaper sides rub together, giving a soft shuffling sound. This sound is also similar to that of a train leaving the station. Typical use of the sandpaper is in 'cake-walk' compositions or for the sound effect of a train. For notation see illustration 38.

The Ratchet

The ratchet is a small wood cogwheel which when turned, makes a piece of thin wood vibrate against the teeth of the wheel. The sound produced is a sharp, scraping, wooden noise. This type of effect is not used very often. However, the sound is descriptive of either Fourth of July or Halloween
celebrations. The notation would be on a single line. There should be a note value designating the duration of the sound. Because of the nature of the sound it is not desirable to write any kind of a rhythmic pattern for the ratchet. (Illustration 39.)
Ill. 31
Bass Drum
\[ \frac{2}{4} \]

Ill. 32a
Cymbals
\[ \frac{3}{4} \]

Ill. 32b
Cymbals
\[ \frac{2}{4} \]

Ill. 33
Gong
\[ \frac{2}{4} \]

Ill. 34
Castanets
\[ \frac{2}{4} \]

Ill. 35
Temple blocks
\[ \frac{2}{4} \]
Ill. 36a

Locomotive Whistle

\[ \frac{\text{1}}{4}, \frac{\text{1}}{4}, \frac{\text{1}}{4}, \frac{\text{1}}{4} \]

Ill. 36b

Steamboat Whistle

\[ \frac{\text{1}}{4}, \text{1}, \text{1} \]

Ill. 36c

Police Whistle

\[ \frac{\text{1}}{4} \]

Ill. 36d

Slide Whistle

\[ \text{2} \]

Ill. 37

Sleigh bells

\[ \text{2} \]

Whip crack

Ill. 38

Sandpaper

\[ \frac{\text{2}}{4}, \frac{\text{4}}{4} \]

Ill. 39

Ratchet

\[ \text{2} \]
CHAPTER IV

MELODIC PERCUSSION INSTRUMENTS

The Xylophone

The xylophone is of ancient African origin. The natives laid pieces of different sounding wood across their legs and struck the pieces of wood with a stick to produce the sound. The instrument developed so that later the pieces of wood were laid on a table and a gourd was placed under the pieces of wood to amplify the sound. This was done among the Bantu negroes. A similar type instrument appeared in India, Burma, Siam, Java, and China nearly 4000 years ago.21

The xylophone used today is made of Honduran rosewood using metal tubes as resonators. The pieces of wood or the bars vary in size and pitch. The larger the bar the lower the pitch. The smaller the bar the higher the pitch. The pitch is controlled by the length of the bar and also by the fact that the bars are hollowed out on the underneath side. In this way the bars may be tuned either by filling or enlarging this hollowed-out portion.

The arrangement of the pitches or different sizes of bars is the same as the key board of the piano. It is

thereby possible to use or write for the instrument in any key. However, because of the high pitch of the instrument, xylophone music is generally written an octave lower than the instrument sounds. This practice facilitates reading for it eliminates excessive use of ledger lines. The xylophone is considered a transposing instrument and should always be scored for in that manner.

Because of the variation of use and the variety of manufacturer's models there is no consistency as to the range of a xylophone as a single instrument. However, there is consistency within the various sizes. The smallest xylophone has as its sounding range from G² to F4. The next in size is a three-octave instrument that has as its sounding range F¹ to F4. The largest xylophone sounds middle C and extends upward four octaves. For sounding and written ranges see illustrations 40 through 42.

The xylophone is struck with hard rubber mallets. The sound obtained is a brilliant "woody" sound of short duration. The duration of the sound is similar to that of the snare drum. As a result any extension of the sound is obtained by the use of the roll. The xylophonist normally uses one mallet in each hand. The roll executed is similar to that by the timpanist, a single stroke roll, and is not like the rebounded roll of the snare drum. However, in fast performance when there are two notes of the same pitch to be played,
one immediately after the other, a rebounded double stroke may be used. It is possible for the performer to use three or four mallets and, by so doing, he is able to play three or four different pitches at the same time either as a single struck chord or sustained in a roll. However, except for special effect chord-playing is not a desirable sound on the xylophone. Chord-writing should be limited to rhythmic and repeated effects. The more general use of the xylophone is for scalar passages and arpeggiated figures.

Typical use of the xylophone may be found in the Danse Macabre by Saint-Saëns or Stravinsky's Petrouchka, and in the Kabalevsky Comedians. The instrument is used in ensemble to point up melodies, particularly with trumpets or cornets, high woodwinds, or strings. The xylophone is also used effectively as a solo instrument playing short melodic passages or motifs. For examples of each see illustrations 43, 44, and 45.

The Orchestral Bells

The orchestral bells have had a more recent origin than that of the xylophone. The orchestral bells of the present time are not bells in the true sense of the term but are small metal bars that are arranged chromatically. Orchestral bells are normally in sets of two-and-a-half or three octaves.
During the time of Handel (1685-1759) actual bells were used; these were a kind of toy Flemish carillon. They proved impractical and difficult to control and manipulate. In Mozart's time orchestral bells played from a keyboard were used. Today the keyboard is gone and the performer uses small hard rubber mallets on the steel bars to give a clear bell sound.

As in the case of the xylophone with the chromatic arrangement of the tones, the bells can be used in any key. The parts are written lower than they sound to facilitate reading and writing for the instrument. In this case, however, the part is written two octaves lower than the sound produced. As a result the orchestral bells are a transposing instrument.

The range of the orchestral bells is not as varied as that of the xylophone. The normal accepted range is that of two-and-one-half octaves written from small g to C^3. There have been instruments starting on written middle C and extending three octaves. This is the exception and is not in common use. For example of standard range see illustration 46.

The technique used by the performer on the orchestral bells is very similar to that of the xylophone. The basic difference lies in the fact that the bells have a tone of a much longer duration than that of the xylophone. As a

result the orchestral bells are not capable of sounding well in fast scalar passages. The sounds produced will run together and result in a confusion of tones. However, in the use of pitches that will result in a harmony, the running together of the individual notes is sometimes desirable. It is better to confine the orchestral bells to a lyric type of melody such as the Strauss Perpetuum Mobile or the Tschaikowsky "Sleeping Beauty" Waltz. Because of the duration of sound of the orchestral bells, the roll used to continue sound on other percussion instruments is never used and should never be written. The performer will make use of the hand-dampening technique whenever it is desirable and possible so that the sounds will not carry through when not wanted. The composer or arranger need not designate the dampening of the sound in this case.

Since both the xylophone and orchestral bells can produce different pitches it is necessary to make use of a staff. As previously stated the instruments are notated as transposing instruments and are scored on the treble staff.

The Marimba

The marimba is much like the xylophone. To the inexperienced observer there would be little if any difference. Yet in sound and use the marimba is entirely different from the xylophone and is not interchangeable. The marimba is a
poor substitute for the hard, brittle sound of the xylophone. The origin of both instruments is basically the same. The materials from which the wood bars are made are the same, Honduran rosewood. However, the bars of the marimba are cut so that they are thinner and much more resonant than those of the xylophone. The sound of the marimba is mellow, soft and organ-like. Because of the more resonant bars there is longer duration to the sound of the marimba but does not equal the duration of the orchestral bells.

Marimbas are manufactured in a similar variety of ranges as is the xylophone. However, the marimba will sound where written and is not a transposing instrument. The smaller marimba is two-and-one-half octaves from small g to C⁴. The middle instrument extends from small f to F⁴. The larger instrument is a four-octave marimba, from small c as its lowest note to C⁴.

It has only been since the World's Fair in 1915 that the marimba has achieved any popularity in this country. Since then, the marimba has been considered a solo instrument and has been used extensively in a modern jazz idiom. As a result the instrument has been avoided in concert groups as an ensemble instrument until recent writings for concert bands. Morton Gould has used the marimba in some of his band compositions; the best example is, probably, the Cowboy Rhapsody. Ernest Williams in his Symphony in C Minor
calls for a marimba in the second movement. There have been other compositions by modern composers such as the Concertino for Marimba and Orchestra by Paul Creston and the Concerto for Marimba and Vibraphone by Darius Milhaud.

The technique used by the marimbist is the same as that used for the xylophone. The instrument is struck, however, with a variety of different mallets. The performer may use mallets constructed of hard rubber, soft rubber, wound yarn, or felt. The texture of the mallet determines to some extent the volume level but most of all the texture determines the kind of attack. The harder the mallets the harder the attack. The hard rubber mallets are used for rhythmic types of composition. The soft rubber and yarn mallets are used for a more legato style of playing. The yarn mallets will yield a larger volume range but the attack is less distinguishable than that of the soft rubber mallets. The attack of the felt mallets is the least noticeable of all and the volume range of this type of mallet is very limited; therefore, felt mallets are used only for the softest type of legato playing.

The marimba tone blends very well with woodwind and string ensemble playing and has been used at times to augment those sections. The marimba with its soft organ-like sound does not stand out as does the hard, "woody," sound of the xylophone. As a result the marimba will not
be heard as an individual instrument unless the ensemble is scored lightly. The treble clef should be used when writing for the marimba. It is recommended that all notes that are to be sustained be notated as a roll. Three- and four-mallet technique is commonly used on the marimba and is desirable especially in a slower sustained chordal style of composition.

The Vibraphone

Closely related to the orchestral bells is the vibraphone. The vibraphone is of very recent origin. Credit for the invention of the instrument is given to Joe Green, an outstanding marimba and xylophone soloist, who appeared at the Strand Theater in Brooklyn in 1924. It seems that the idea of the shutters of the vox humana stop of the pipe organ opening and closing combined with the sounds of the orchestra bells were the basis for the present day vibraphone.

The vibraphone is similar to the marimba except that it has metal bars made from an aluminum alloy. This instrument

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24 This same instrument is also known by similar names such as vibraharp, vibracelest, vibrabelle, or vibes. All of these instruments are basically the same.
makes use of the metal resonators similar to those of the marimba but with an additional mechanism which produces the characteristic vibrato. This additional mechanism is a series of discs or fans (one in each resonator) attached to a central shaft which is turned by an electric motor. This rotation opens and closes the upper end of the resonating tube. The sounding bar is thus alternately resonated and not resonated producing a vibrato effect. There is a duration of sound when the instrument is struck; this is controlled by a damper mechanism that is similar to the damper mechanism of the piano. The performer uses the left foot to control the damper mechanism.

The technique used by the performer is very similar to that of the marimbist. Either soft rubber or yarn-wrapped mallets are used. It is common to use either two, three, or four mallets when playing. Since there is a duration of sound the roll is never used in vibraphone technique. The pedaling technique used is very similar to that of the piano. The vibraphonist has one advantage over the pianist since a mallet can be used to dampen some pitches while all the other notes that have been struck will sound through. In this manner even the quality of the chord may be changed. Dampening a note in such a manner is indicated by the use of a plus sign over each note to be stopped. The same marking may be used to designate
pedaling that is used in piano composition. Since the
vibraphone is somewhat similar to both the piano and harp
and can make use of arpeggios as filler or decoration
underneath the melody line, it is recommended that a double
treble staff be used when writing for this instrument.
(Illustration 47.)

The vibraphone is limited in literature because of its
recent origin and because of its characteristic lyric sound.
The instrument is most valuable for harmonic support with
either woodwinds, or strings, and at the end of phrases
where there is a tenuto. In rhythmic writing the effect of
the vibraphone is most often lost. The vibraphone has
possibilities as a solo instrument in a slow sustained type
of composition.

The melodic mallet instruments of the percussion family
have not been used by composers and arrangers as much as is
possible. There is no question that the melodic percussion
instruments can add variety and interest to compositions and
a more extensive use might be desirable.

Chimes

Chimes or tubular bells, as they are sometimes called,
produce the effect of church bells. They are long tubes
either one-and-onehalf or one-and-one-quarter inches in
diameter and vary in length and pitch. The longer tubes
will be about five-and-one-half feet long while those of higher pitch will be about two feet in length. The tubes of the larger diameter have a more resonant sound and are more desirable.

Like the orchestral bells and the vibraphone, the chimes have duration to the sound. On most sets of chimes there is a dampening device so that the sounds may be stopped. The range of chimes has been standardized by manufacturers. Since there is a peculiarity to the sound of the chimes, they are considered to be in the class of the xylophone and the orchestral bells and are notated as a transposing instrument. The fundamental tone of the chime bar seems to stand out more than the other partials, thereby giving the effect of sounding an octave lower than the actual pitch of the instrument. The standard set of chimes is one-and-one-half octaves from C². Written range is from C¹. (Illustration 48).

Chimes are struck with one or two rawhide mallets on the playing ring at the top of the chime bar. The chime bar is struck only on the ring at the top of the bar. Generally the parts are more harmonic and make use of only two or three notes. Occasionally slow melodies are written and can be very effective and inspiring. Chimes have been used for climaxes in the Tschaikowsky Overture of 1812, in the fourth movement of Sibelius Symphony No. 4, and in
Respighi's *Fountains of Rome*. As in the case of the orchestral bells the roll is never used. Since there is the carry over of sounds the instrument is limited to a slower sustained style of composition.
Sounding Written

Range
Two-and-one-half octave xylophone

Sounding Written

Range
Four-octave xylophone

Sounding Written

Range
Three-octave xylophone

Danse Macabre
Saint-Saëns

Short motif

Petrushka
Stravinsky

In unison with the clarinet to help point the passage

The Comedians
Kabalevsky

Solo passage
Ill. 46

Sounding  Written

Orchestral bell range

Ill. 47

Vibrophone notation

Ill. 48

Sounding  Written

Chime range
CHAPTER V

LATIN-AMERICAN PERCUSSION INSTRUMENTS

It has been only within recent years that Latin-American music has become popular in this country. Now the rhythmic Latin-American style is finding its way into the scores of bands and orchestras. Since most of the Latin-American music is intensely rhythmic and makes use of many rhythm instruments that are native to those Latin-American areas, they must be known to the percussionist. These instruments are not yet familiar enough so that composers who wish to write in that idiom can feel competent to use them. Since most of the Latin-American percussion instruments are native instruments, they are of simple construction and usually produce a basic rhythm for each style of composition. All of these instruments can be notated either on one or two lines making the clef and staff unnecessary.

The Claves

The sound of the claves playing a two-measure rhythm pattern forms the foundation for most Latin-American music. The claves are two sticks one inch in diameter and eight inches long. They are made from a hard resonant wood such as Honduran rosewood, or ebony. One stick is held by cupping
one hand so that the stick lies on top of the fingers and will form a sounding board. The other stick is gripped on one end by the opposite hand and is used as a striker. The sound is a very resonant "woody" sound much the same as a high note of the xylophone. For examples of basic rhythm patterns see illustrations 49, 50, and 51.

The Timbales

The timbales are a pair of single-headed drums, without snares. One drum is thirteen inches in diameter and has a shell of six inches. The other drum is smaller and has a head diameter of eleven inches with a shell of six inches. Timbales resemble small snare drums and are generally mounted on a stand. The performer uses sticks that are different than the regular snare drum sticks to play on these drums. Timbale sticks are three-eighths inch in diameter and about twelve inches long. The sticks are much smaller than the snare drum sticks and are held much as a marimbist holds his mallets with the grip between the thumb and index finger. The other fingers are around the stick. One stick is held in each hand. The sound of the timbales is similar to that of 'muted' snare drums; however, there is a difference of pitch between the two drums. Since there are basically the two different sounds from the two different sized drums it is best to use two different lines when
writing for timbales. For basic timbale rhythms see illustrations 49, 50, 51, and 52.

The Bongos

The bongos are a pair of single headed drums, without snares, that are smaller in size than the timbales. The larger drum has an eight-inch head diameter and a five-and-one-half inch shell. The smaller drum has a six inch diameter head and a five and one half inch shell. The drums are held together by a wooden brace. The performer holds the bongos between his legs when playing and uses his fingers, thumbs, or entire hand instead of sticks or mallets. As in the timbales there are two different pitches and should be notated on two different lines. The sound of the bongos is a clearer, more resonant sound with more chances for variation since the technique with the hands is more flexible than the technique of the sticks used in playing timbales. For illustration of basic bongo rhythms see illustrations 49, 50, 51, and 52.

The Conga Drum

The conga drum is a long deep-sounding single headed tom-tom with a tapering shell that is played with the palms of the hands. The head diameter is generally about twelve inches and the width of the shell is twenty-seven inches.
The conga drum has a deep penetrating sound. The purpose of this type drum is to accentuate or reinforce the rhythms of the string bass. The conga drum is generally slung from the shoulder by means of a strap. For basic rhythm patterns see illustrations 50 and 52.

The Maracas

The maracas are vital to the sound of Latin-American music. Maracas are made from small oval gourd shells that have been hollowed and dried. These shells have been filled with beads, seeds, or buckshot. To these shells are then added handles so that the performer will not touch the shell and deaden the sound. The sound is made by shaking the maracas in a rhythm pattern. One maraca is held in each hand and a motion similar to that of striking is made so that the seeds will bounce inside the shell. The sound has a rasping quality that seems to linger after the first impact of seeds inside the shell. For the basic rhythm patterns of the maracas see illustrations 49, 50, 51, and 52.

The Gourd

The gourd is a vegetable gourd that has been hollowed and dried. The gourd is of the long narrow variety and not the same as those used in the construction of the maracas. One side of the gourd has small grooves cut across the surface.
On the opposite side there is an opening so that the instrument may be held on the fingers when played. The performer holds the instrument on one hand and uses a small stick about one-quarter inch in diameter in the other hand. This small stick is rubbed across the grooves so that there is a scraping sound. There is a close relationship to this sound and the sound made by scraping a wash-board. The sound produced is a very useful rhythmic sound for Latin-American music. For examples of basic patterns see illustrations 49 and 51.

The Cowbell

The cowbell used by the percussionist is the same cowbell that is used by dairy farmers of some areas. The cowbell is usually made of bronze. Before the instrument is used in Latin-American music the clapper inside the bell is removed. The cowbell is then held in the performer's hand so that the sound is deadened. The performer uses a stick similar in size and shape to the clave to strike the cowbell which results in a dull metallic sound. For examples of the basic rhythm patterns of the cowbell see illustrations 49 and 51.
Ill. 49

Basic Rumba rhythms

Timbales

Bongos

Claves

Gourd

Maracas

Cowbell

Ill. 50

Basic Guaracha rhythms

Timbales

Bongos

Claves

Maracas

Conga Drum
Ill. 51

Basic Samba rhythms

Timbales

Bongos

Maracas

Conga Drum

Gourd

Cowbell

Ill. 52

Basic Montuna rhythms

Timbales

Bongos

Claves

Maracas

Conga Drum
CHAPTER VI

SUMMARY

Although the orchestral instrumentation as we know it today was not established in the early part of the seventeenth century the timpani was, in that time included as a useful and important instrument. Subsequent to that time the timpani has maintained its initial place and has through the developments in drum structure, techniques of performance, and skill of performers, added to its position of importance. Haydn is reputed to have been an accomplished timpanist of his time. Timpani were used in several of his many Symphonies. The many subsequent composers have made considerable use of the timpani. The timpani is used extensively in the works of Beethoven and is even given solo passages in the Symphony No. 9. In the Brahms Symphonies the timpani has predominant parts. In the compositions of Berlioz, Strauss, and Wagner there were timpani parts that asked for three, four, and five drums and as many performers to achieve dramatic effects. Contemporary composers have written intricate rhythmic timpani parts that require the maximum of technique and exploit the possibilities of the timpani.

To exploit additional percussive sounds the snare drum and bass drum were also added to the orchestra soon after the timpani. Uses of the bass drum appear in Haydn's Military Symphony, in Berlioz's Fantastic Symphony, and in Wagner's overture to Rienzi. Berlioz asked for a bass drum placed on its side and played by two drummers with timpani sticks in the Fantastic Symphony. Brahms also used the bass drum at the beginning of his Academic Overture. The snare drum has been used by Wagner in his Rienzi overture. Rimsky-Korsakow used the snare drum in his Spanish Caprice. Ravel made extensive use of the snare drum in a two-bar rhythm pattern in his Bolero.

The smaller percussion instruments such as the cymbals, gong, triangle, tambourine have all been used considerably in the past. The cymbals and triangle were used in the Haydn Military Symphony. Gluck made use of the cymbals and triangle in his Iphigenia in Tauride. Strauss makes use of these instruments in Salome's Dance from the Opera Salome. Stravinsky in his Feu D'Artifice and Petrouchka used the cymbals, triangle, and tambourine. The gong has been used in the Shostakovitch Symphony Nos. 5 and 6 as well as the compositions mentioned in the text.

The melodic percussion instruments are being used more by the contemporary composers. However, Mozart wrote for the orchestral bells in his Magic Flute. The xylophone has been
used a great deal by the composers Prokofiev, Stravinsky, Shostakovich, Copland and others of the present day. The marimba and vibraphone has been used by Percy Grainger in his Marching Song of Democracy. Morton Gould has used the vibraphone in his composition for band Easter Morning. Paul Creston calls for vibraphone in his composition The Legend.

The Latin-American instruments have not had much use in the concert orchestra music. However, composers Darius Milhaud and Villa Lobos have made some use of these native instruments. Villa Lobos has perhaps done more with these instruments in his Bachianas Brasileiras No. 2. than any other orchestral composer. Extensive use has been made of Latin-American instruments in the modern dance orchestra.

From this profuse use of percussion instruments, it can be concluded that the many percussion instruments are necessary and desirable; necessary because the use of percussion helps unify a composition and maintain a rhythmic stability; desirable, since the percussion instruments add color to the music and help achieve dramatic effects that are of the utmost importance in musical composition.

The composer can best utilize the percussion instruments by having a good working knowledge of the individual instruments. He will not be tempted to exceed the limitations of the performer or the instruments. He will under-
stand the sounds that are desired and will designate those sounds in a manner that is understood by the percussionist and the conductor.

It has been pointed out that the practical range available on each drum is a perfect fifth. There are conditions under which a large range is available, but not consistently. When timpani are available to an organization, there are at least two drums and occasionally three or four to facilitate tuning and increase the range. The composer is not limited to any specific notes of the scale when employing the timpani. However, it should be remembered that there are harmonic implications to the sounds of the timpani.

The type of mallet that the timpanist uses will have an effect upon the attack and will determine the quality of the sounds obtained from the timpani. It has been recommended that the composer indicate the type of mallet to be used so that there is no doubt in the performer's mind. The timpanist makes use of a single-stroke technique never a rebounded stroke. The tone is sustained by the continual reiteration of the single stroke for the amount of time indicated by the composer. The roll technique can be employed for dynamic changes such as the forte-piano roll.

It is important that rolls be properly notated. The composer should never assume that the performer will know whether or not the roll should or should not be tied to the
following note. Simultaneously playing two drums is often desirable and effective. However, it should be remembered that in fast tempos with intricate rhythms there is a physical limitation to the timpanist's virtuosity. If there is any doubt concerning the ability of one player to perform a specific passage, it would be well to call for two players.

The use of good cues is important to the timpanist. It is only with good cues that the timpanist can make numerous pitch changes and be certain of his entrances. Good cues are invaluable as an aid to the correct counting of long rests. When writing for the snare drum there is no pitch with which to be concerned. The sound of the snare drum is of short duration in comparison to that of the timpani. The use of the snare drum is either for rhythmic figuration or to increase the total sound. The snare drummer makes use of the roll to sustain the sound of the drum. However, the snare drum roll is a double-stroke roll which is different from that used by the timpanist.

The snare drummers use of the single and double grace note is to increase the "breadth" of the sound and is not ornamentation. The use of the single and double grace note is a fundamental snare drum technique. Several basic snare drum rhythmic figurations have been organized and somewhat standardized; they are called "rudiments." These rudiments
should be considered a teaching aid for the snare drummer and should not be considered as an objective for the writing of snare drum parts in compositions.

The use of 'muted' snare drum can be effective where a drum with snares will sound out of place. The 'muted' snare drum will have a sound similar to that of a tenor drum and can be used for that purpose. The sound is also similar to that of a tom-tom and is very effective for descriptive writing. When writing for snare drum or any of the other percussion instruments that do not have pitch, it is recommended that a single line be used to notate the part to be played rather than a clef sign and staff.

The use of a single line for notation of the bass drum, cymbals and small traps is also recommended. With this simplification a more efficient performance of the many and varied parts may be accomplished. The chief function of the bass drum is for rhythmic stability. However, the bass drum may be used for other purposes. It may be used for dynamic changes and effects. The use of cymbals is predominantly for effect either with the brilliant cymbal crash or by striking the cymbal with a hard timpani stick or a snare drum stick. The small traps are for use as effects and in this respect are important in descriptive music.

In the melodic percussion instruments there is a large variety of sounds available to the composer. Unlike the
snare drum, bass drum, cymbals, and small traps, it is necessary to notate the xylophone, marimba, orchestral bells and chimes in the treble clef and in the case of the vibraphone it is desirable to make use of two treble-clef staves. A plus sign is used to designate the stopping of a single tone, and pedal markings similar to those used in piano composition to designate the stopping of the sound of the whole instrument. It should be remembered that there is a variety of ranges of the different melodic percussion instruments. Also that the sounding ranges for these different instruments are not the same. However, to facilitate reading and writing for these instruments, they are all written in the treble clef.

Beside the differences of range in the melodic percussion instruments there are the major differences of timbre. Even though all of the instruments are similar in appearance (and in the case of the xylophone and the marimba there is a similarity of the materials used in construction) there is a distinct difference in the quality of sound of each instrument. The xylophone has a hard brittle sound. The marimba has a deep-toned, rich, resonant, organ-like sound. The orchestral bells are high pitched and have a delicate tinkling sound. The vibraphone has an interesting vibrato which produces an eerie quality. The chimes produce the rich effect of large bells. Because of the sound duration of the orchestral bells, the vibraphone, and the chimes, the
roll is never used for these instruments. However, in the case of the xylophone and the marimba the roll is desirable as a means of sustaining the tone. The roll used is a single-stroke roll like that used by the timpanist.

The Latin-American percussion instruments are of simple construction and are used only in that style of composition. They are of indefinite pitch and can be notated on either one of two lines. In all instances there is a fundamental rhythm pattern that is used for each instrument. This pattern may be varied to fit the needs of the composition.

From the contents of this thesis it is obvious that there is a great variety of instruments that the percussionist must know and which he may be called upon to play in one composition. Whether or not the task of performance will fall upon one person, two persons, or more will be determined by the number of percussion instruments used, the length of the portions in the composition that each instrument must be played, and the technical facility of the performer. The possibility of one performer playing more than one instrument is determined by the instruments to be played, the capabilities of the percussionist, and the difficulty of the parts to be performed. It is possible in some instances for one performer to play two percussion instruments at the same time.

It is necessary that the percussion part be arranged
in such a way that it will be obvious which instruments are to be used and when they will be used. This may be done in two ways. First, at the top of each percussion part the instruments to be used in that composition should be designated. It is in this way that the percussionist will know which instruments are needed. He will place them so that they are available. Second, it would be well to have all the parts to be played by the different percussion instruments written on one sheet of music. This would also include those instruments notated in the staff. The parts of the different percussion instruments will help to serve as cues for each other. The timpanist can in this manner perform on other percussion instruments when the timpani is not being used. Therefore it is better to have a percussion score so that the performers can better organize the order with which the parts will be performed. For an example of a complete percussion score see illustration 53.

This thesis is the sincere presentation of the problems and basic fundamentals involved in percussion instruments. It is the author's desire that this writing will provide a basis for understanding the percussion instruments and will be an aid to composers and performers so that a more musical use of these instruments will result.
Ill. 53

Snare Drum

Triangle

Tambourine

Cymbals

Bass Drum

Orchestral bells

Xylophone

Timpani
Ill. 55 (continued)

<table>
<thead>
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<th>Notation</th>
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<tr>
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<tr>
<td>Tambourine</td>
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</tr>
<tr>
<td>Timpani</td>
<td><img src="image7" alt="Timpani notation" /></td>
</tr>
</tbody>
</table>

Recommended score for the percussion instruments.
BIBLIOGRAPHY


Berlioz, Hector, A Treatise of Modern Instrumentation and Orchestration, Tr. by Mary Cowden Clarke., New York: The H. W. Gray Co.


Lockwood, Samuel P., Elementary Orchestration (second ed. 1929), George Whar, Ann Arbor, Michigan.


Periodicals


*Timpani Historical Highlights*, Leedy and Ludwig Drum Co., Elkart, Indiana.
APPENDIX

Listing of Percussion Instruments and Terms Used in Percussion Performance
Appendix

Anvil: A steel bar made to imitate the sound of a real blacksmith anvil.

Bacchetta. (It.); Timpani stick.

Bacchette di legno. (It.); Wooden sticks

Bacchette di spunga. (It.); Sticks with sponge heads

Baguettes. (Fr.); Sticks

Baguettes de bois. (Fr.); Wooden sticks

Baguettes dures (Fr.); Hard sticks

Baguettes d'éponge (Fr.); Sticks with sponge heads

Baguettes ordinaires. (Fr.); Ordinary drum sticks

Bells; (It.) Campanelle, (Fr.) Cloches, (Gr.) Glocken: This is the kind of bell used in churches and towers and is not practical for orchestral use. A substitute is generally made when a composer asks for such an instrument.

Bass Drum; (It.) Gran Cassa, (Fr.) Grosse Cassa, (Gr.) Grosse Trommel; Large drum. See Chapter III.

Bongos. (Sp.) Small one-headed drums played with the hand. See Chapter V.

Castanets. (It.) Castagnette, (Fr.) Castagnettes, (Gr.) Castagnette; Small wood clappers played with the fingers. See Chapter III.

Chimes. (It.) Campane, (Fr.) Cloches, (Gr.) Glocken; Tubular Bells. See Chapter IV.

Conga drum. (Sp.) La Tambora; Single-headed drum with tapering shell. See Chapter V.

Cowbell. (Sp.) El Cencerro; Small metal bell without clapper. See Chapter V.

Cymbals. (It.) Piatti, (Fr.) Cymbals, (Gr.) Becken; Metal discs that make a brilliant sound when struck. See Chapter III.
Gedämpft Pauken. (Gr.) Muted or muffled timpani.

Gewöhnlicher Schlägel. (Gr.) Ordinary drum sticks.

Gong. (It.) Tam-Tam, (Fr.) Tam-Tam, (Gr.) Tam-Tam: Large metal disc that gives forth a shimmering, heavy sound when struck. See Chapter III.

Gourd. (Sp.) El Guiro: A hollowed vegetable gourd used in Latin-American music. See Chapter V.

Glockenspiel. (Gr.), Campanette (It.) Carrillon or Jeu de Timbre (Fr.): Orchestral Bells. A set of small steel bars that sound like bells. See Chapter IV.

Kettle-drums (It.) Timpani, (Fr.) Timbales, (Gr.) Pauken: Large drums capable of being tuned. See Chapter I.

Marimba. An instrument similar to the xylophone. See Chapter IV.

Maracas. (Sp.): Gourds filled with seeds. See Chapter V.

Muta. (It.) Change

Ruthe. (Gr.): Bundle of birch sticks.

Schwammschlägel, (Gr.): Sticks with sponge heads.

Tambourine. (It.) Tambourino, (Fr.) Tambour de Basque, (Gr.) Schellentrommel: Small single headed drum with jingles generally played with the hands. See Chapter III.

Timbales. (Sp.): A pair of small drums each having only one head. In construction they are similar to miniature snare drums without the second head and without snares.

Tabor. (Fr.) Tambourin de Province, (Gr.) Tambourin: A long drum with a single snare over the batter head.

Vibraphone, Vibraharp, Vibroceleste, Vibraphonets, or Vibes: These are terms that are given to the same instrument. See Chapter IV.

Xylophone. (It.) Xilofone, (Fr.) Xylophon or Claquebois, (Gr.) Xylophon or Strohfedel: A wooden melodic percussion instrument from which a hard, brittle sound may be obtained. See Chapter IV.
Wind-Machine. A barrel-like instrument with some of the staves missing covered with cloth and suspended in a cradle so the barrel can be turned giving the effect of wind.

Zurückstimmen. (Gr.) Retune

Zusammen drei Schläger. (Gr.) Three timpani in all.