Louis C. Elson

THE

THEORY OF MUSIC.

AS APPLIED TO THE TEACHING AND PRACTICE OF VOICE AND INSTRUMENTS.

BY

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PREFACE.

THIS work is not so much intended for self-instruction, as to provide a systematized course by which teachers may assist their pupils toward that general knowledge which is necessary to the true musician. The keen competition in the musical branches at present, is gradually leading the musician to become merely a specialist; to counteract this, a study of those principles which underlie all music, such as the laws of Acoustics, musical form, etc., are most necessary, and this little volume is intended to become a text-book of such studies. It naturally gives but an outline, the details of which are to be filled in by the teacher. In the matter of Acoustics, only those facts which are of the utmost importance to the musician are stated, and no attempt is made to touch upon all the ramifications of the interesting subject. It is as a means therefore, not as an end, that I hope this work may be accepted by musician and public.

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THE
THEORY OF MUSIC.

CHAPTER I.

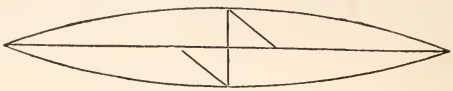
ACOUSTICS.— STRING VIBRATIONS.

SOUND is a sensation made on the organs of hearing by peculiar vibrations of the air. Acoustics treats of the laws governing these vibrations and their production, the name coming from the Greek verb "to hear." Without the presence of air there could be no sound, and the air is generally set in motion by the collision of two bodies, and the subsequent vibration of one or both of them. Such vibration can be most readily understood in the case of stretched strings, and as some of the most important musical instruments are founded on this principle we will examine these first.

Let the following figure represent a string fastened at both ends :—

If this string be plucked in the centre it will begin to

swing to and fro on each side of its point of rest. A complete swing, first to one side and then to the other and back to the starting point is called a vibration,* as illustrated by the following figure:



Both strings and other substances have more complex vibrations which will be explained later. These vibrations of the string are imparted to the air, and thus carried to the ear. If they are very slow they are inaudible, or convey only single, isolated shocks, but when they reach sixteen per second, a tone is heard. The beauty or ugliness of a sound depends chiefly upon the regularity or irregularity of these vibrations. If they are regular and continuous a musical tone is heard, while their irregular succession will produce a noise.

The quicker the vibrations the higher the pitch: thus at about sixteen vibrations per second we hear the deepest pedal tone of the largest church organs, at thirty-two vibrations we have reached about the

* In France, the motion to *each* side is called a vibration, thus giving twice the number of vibrations stated in this work. Chladni used this system. The double vibration system used in England and America, originated with Newton.

lowest C of a seven-octave pianoforte, at 260 vibrations per second we attain a tone approximate to the middle C of the instrument, at about 4160 vibrations per second we hear the highest C of the piano, and at about 38,000 vibrations per second sound vanishes altogether, although the vanishing point is different in different ears. The speed of sound depends in some degree upon the state of the atmosphere, being quicker in warm, damp weather than in cold, clear air, but it is about *1100 feet per second* in a moderate temperature.

All kinds of sound have the same velocity.

The vibrations of strings are subject to four laws which are called the *Canons of the stretched string*. All of these, except the one relating to tension, apply in some degree to other vibrating substances, therefore they are most important points to memorize, if the student would comprehend the construction of different musical instruments. These laws relate to the length, thickness, tension, and density of the string.

First Canon. The longer a string the slower its vibrations, in inverse proportion to the length. That is, if a string of twenty feet should have fifty vibrations per second, the same string, under the same conditions, but shortened to ten feet, would have one hundred vibrations in the same time, sounding

an octave higher than the note first produced, since twice the number of vibrations will produce the octave above a given note, and half the number the octave below. The above rule applies also to the length of organ pipes.

Second Canon. The thicker a string the slower its vibrations in inverse proportion to the thickness. That is, a string of a certain diameter will vibrate twice as slowly as one of half its diameter, all other conditions being equal.

Third Canon. The tighter a string is drawn, the more rapid will be its vibrations, in a proportion of four to one. Thus, if a string with a twenty-five pound weight at the end of it had fifty vibrations per second, by changing the weight to one hundred pounds we would attain one hundred vibrations per second, twice the original number.

Fourth Canon. The greater the specific gravity of the substance of which the string is composed, the slower its vibrations. Thus two strings of wire, the one made of platinum, the other of iron, but in all other conditions alike, will not vibrate at the same rate since platinum is nearly three times as heavy as iron. One quarter the weight of a given string will double the number of its vibrations, if other things (tension, length, etc.) remain equal.

All of the above rules are applied in the stringing of a piano, for while the upper wires are short, thin, tightly drawn, and of steel only, the lower ones are long, thick, rather loosely drawn, and coiled around with copper or wrought iron, both of which substances have a greater specific gravity than steel. In stringing the violin, the last three canons are regarded, and thickness, tension, and density (the last produced by coiling the G string) give the requisite proportion of vibrations.

CHAPTER II.

PERCEPTION OF SOUND.—OVERTONES.

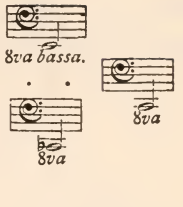
We have already stated that the perception of sound by the human ear begins at about sixteen vibrations per second and ceases at about 38,000 vibrations per second; this interval comprises about eleven octaves and a minor third, beginning an octave below the deepest C of the piano, and ending nearly three octaves and a minor third above its highest note — the five-lined C. Women are said to be able to perceive sounds which are too high in pitch to be observed by the male ear. In practical music only about seven of these octaves are employed, and although the organ has tones both higher and lower than these seven octaves, they are not used melodically, but only in combination with other notes, to give fulness, or to add the harmonics (of which hereafter) to a chord. Stated in vibrations, the lowest tone ordinarily employed in music would have about thirty-two per second, and the highest a trifle over 4000. The deepest tones attainable by an orchestra would be the following:—

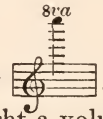
Contrabass, four-stringed, . .

Contrabass, five-stringed, ...

Harp, ...

Contrabassoon, . .

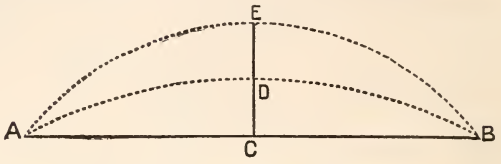


while the highest tones of Violin (harmonics) or Piccolo are a little below 

. The vibrations of the strings move so slight a volume of air that it is always necessary to re-enforce them, just as the light of a locomotive or of a lighthouse is strengthened by reflectors. The reflector in the case of musical instruments is the sounding-board, and its function is quite as important as that of a Fresnel lens in a great lighthouse, for the sound of a vibrating string, unaided, would be inaudible at the distance of even a few feet; it is the amplified and reflected vibrations of the sounding-board which cause the full tone which we hear when a note is sounded on piano, violin, and in a less degree, harp. The piano sounding-board is generally made of Spruce wood, and the violin makers use Pine for this important part of the instrument.

Vibrations which cause sound can differ in rapidity, extent, and shape. Difference in rapidity would

affect the pitch only: difference in extent would affect the fullness and power of the tone.



The string A B, for example, will produce a louder tone when it swings as far as E, than when it only reaches D, since it gives a more decided shock to the air, producing a greater compression and expansion, and, therefore, sound-waves of a more definite and clearer character.

Differences in shape of vibrations cause differences in the quality of tones, and in these we must seek the cause of much that makes a musical tone agreeable. These differences can be best illustrated by studying the shape of string vibrations, although they exist in all vibrating surfaces.

Just as a large wave on the ocean bears smaller waves upon its breast, and these again carry yet smaller ones upon their surfaces, so a vibrating surface carries smaller vibrations along with its chief or fundamental one: but, different from the undulations of water, these smaller vibrations subdivide in a regular order, and, as each set produces a fainter, higher tone which mingles with the fundamental tone produced by the chief vibration, it follows that a regular set

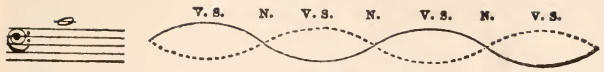
of tones, each one fainter and higher than the other, is sounded simultaneously with the fundamental tone. The laws which govern the production and order of these overtones, or harmonics, as they are frequently called, were first thoroughly formulated and explained by Helmholtz, in 1863, although the fact of the existence of such tones was stated by Mersenne as early as 1636. The overtones are present in every musical tone, and it is their proportion which causes tones of the same pitch and power to be distinguishable from each other because of their quality, as for example, the tone of a violin from a flute, or a clarinet from an oboe. The character of every musical sound depends on the number and proportionate strength of the overtones, as all fundamental tones have the same quality. Nature does not present simple, or merely fundamental, tones to our ears. The tones in music which are most devoid of overtones are those produced by the larger stopped pipes in a church-organ, the lower tones of a simple keyed wooden flute, and the sound of a tuning-fork as it is dying away. When on the other hand the overtones are present in very large proportion, the result is a thin penetrating tone, such as is produced by the oboe or violin.

The effect of the overtones may therefore be summarized as follows,— a tone in which few harmonics are present is dull, hollow, and monotonous, while

one with many harmonics is bright, penetrating, and sharp. A thin metallic tone can be made more mellow by causing some of the upper harmonics to disappear, and a dull and hollow tone can be made brighter by adding harmonics to it. The principle has been directly applied in the manufacture of musical instruments, and the Boehm flute was made mellower in tone-color, by changing its bore from conical to cylindrical, thus eliminating half of the overtones, while the organ, which was too dull toned in its diapasons, was enriched and made brighter by the addition of certain stops as the "Mixture," the "Quint," the "Fifteenth," and others, the function of which was to furnish the absent overtones.

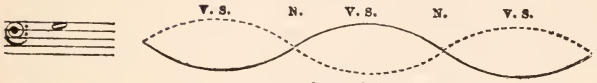
We have said that the subvibrations which cause the overtones can be most readily observed in vibrating strings; the chief vibration would be of the entire length of the string from end to end, but smaller vibrations will instantly arise and these will sound the overtones on which the beauty of the tone will depend. The following diagrams will illustrate the manner in which these arise.

Fig. 4.



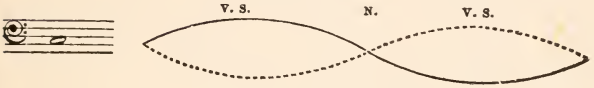
Third overtone.

Fig. 3.



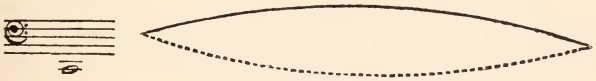
Second Overtone.

Fig. 2.

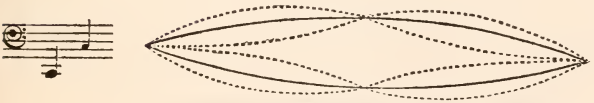


First overtone,

Fig. 1.

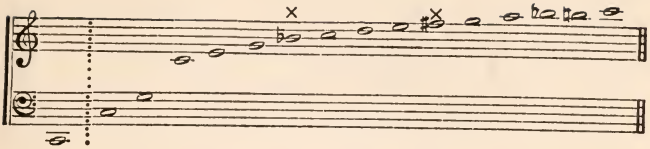


Fundamental.



Combinaton of fundamental and first overtone.

The explanation of the diagram is an explanation of the overtone system. Supposing the string to be the wire which sounds great C on a pianoforte, Fig. 1 would represent the whole vibration which sounds the fundamental note; but the wire would also vibrate in two sets of subvibrations (called ventral segments, and marked "V. S." in the diagram) and, as these would be half the length of the entire string, they would vibrate twice as fast as the full vibrations, thus sounding the note an octave above the fundamental, that is small C, as in Fig. 2. Meanwhile another set of vibrations has started, dividing the string into three ventral segments, and sounding small G,—Fig. 3; another set, begun simultaneously, divides the strings into fourths—Fig. 4—and sounds one-lined C; and thus the string which is intended to represent but a single tone in the musical scale, is subdividing itself into smaller and smaller segments, and sounding an entire assembly of notes, which have been called "the chord of Nature." The following would be the harmonic series of great C, and it must be borne in mind that every tone that is sounded has its own series formed of the same intervals as those represented here, *i. e.*, the first, an octave above the fundamental, the next, a fifth higher, the next a fourth, the next a major third, the next a minor third, etc.



The notes marked thus x are not exactly of the pitch of these notes as used in our scale, but nearer to them than to any other notes in our musical system. The points marked "N" in the diagram of vibrations indicate the nodes, or points of rest (partial) between the ventral segments. If a string be struck near, or at, the node of any particular overtone, that overtone disappears from the series, its particular subvibration having no chance to form. This fact is of importance in the excitation of strings of instruments. The piano wires are struck by the hammers at from one-seventh to one-ninth their length, thus causing two poor overtones to disappear, the sixth and the eighth of the series. The seventh, which is good but unimportant, because faint and a mere duplication of lower tones in the series, also incidentally disappears. The violin strings are excited to vibration at about one-tenth of their length, and in harp, guitar, and all instruments of plucking or percussion, even down to the kettle drums, due regard must be had to this principle of the formation of overtones, and the point of contact thereby deter-

mined. In the principle of the overtones and their combination is found the scientific explanation of St. Paul's sentence written nearly 2000 years ago: "And even things without life giving sound, whether pipe or harp, *except they give a distinction in the sounds*, how shall it be known what is piped or harped?" 1 Corinthians xiv. 7. And the question put by Paul in the first century, was completely answered only in the nineteenth by Hermann Helmholtz.

CHAPTER III.

THE TEMPERED SCALE.— PITCH.

In the harmonic series given previously it was mentioned that certain of the tones did not quite correspond to any of the notes of the scale used by us. As it is pre-supposed that the reader of this volume is already familiar with the elements of practical music, we will not speak of the succession of the intervals in our diatonic scale, but we may state *en passant*, that, while all nations of the civilized world have chosen a fixed succession of tones of one kind or another to represent their musical systems, no one has yet been able to explain why such a succession is used, and even Helmholtz has here given a rather metaphysical, and unsatisfactory attempt at explanation. The proportion of vibrations in the different intervals of our scale, and their relation to the key-note, can however be accurately determined, and it is quite possible that Pythagoras as long ago as the sixth century, B.C., explained these. When we attempt to form a scale upon the laws of natural proportions, we obtain a

result of especial sweetness, but a succession rather unsuited to modulation, if the instrument is one possessing a keyboard. As each note is calculated with reference to its relation to the keynote or tonic, it may be supposed that when the keynote changes, the entire scale of true intonation is thrown somewhat out of tune, and the farther we depart from the key first used, the more out of tune the scale will be unless a re-arrangement of the intervals is made. This is in fact the case, and it will therefore readily be understood that while certain progressions and chords can be founded on natural laws, the art of modulation is a product of the human mind, and does not derive itself from any physical law.

The scale which is at present employed by all civilized nations is a compromise. The octave which must always be taken as a true interval, its upper note vibrating twice as fast as its lower, is divided into twelve equal semitones, all a trifle out of tune with the scale of nature, but none distressingly so, and this "tempered scale" as it is called, admits of the use of all the twenty-four major and minor keys with equal facility. This system is also sometimes called "Equal temperament" and was advocated as early as the sixteenth century by Willaert, Zarlino, and others; but it was not thoroughly adopted until J. S. Bach in his noble collection of preludes and

fugues entitled "The Well-tempered Clavichord" proved the practicability of the system, by writing compositions in all of the different keys, where before only a very limited number had been employed.

The deviations of our intervals, as founded on the tempered scale system, from the true intervals as given by natural laws of proportion, are chiefly as follows, reckoning upward from the key-note:

The perfect fifth is only one-fiftieth of a semitone flat.

The perfect fourth is one-fiftieth of a semitone sharp.

These are so near to the true pitch that it would require the keenest musical ear to perceive the aberration at all. Those most perceptibly out of tune are:

The major third, one-seventh of a semitone sharp.

The minor third, one-sixth of a semitone flat.

The major sixth, one-sixth of a semitone sharp.

The minor sixth, one-seventh of a semitone flat.

The minor seventh, one-sixth of a semitone flat.

The major seventh, one-eighth of a semitone sharp.

In the scale made up of true intervals there would be a distinct difference between such notes as A-sharp and B-flat, or C-flat and B-natural, but in the tempered scale these distinctions disappear. The tempered scale came into being chiefly because of the keyed instruments, for violin and voice can

give the changeable intervals of the true scale with facility, and at times attain beautiful effects thereby.

In preceding sentences we have spoken of deviations of pitch of one-fiftieth of a semitone; these are the smallest deviations which even a trained musical ear can hear. We can scientifically prove two tones to differ by one one-hundredth of a semitone, but it would not be perceived by any human ear. Ordinary ears can distinguish from fifty to 100 different intervals to the octave, and highly trained ears about 600.

It seems strange that one cannot represent a fixed tone, as for example middle C, to the mind by a set number of vibrations, but the standard of pitch has always been a variable one and the note in question might consist of more or less vibrations according as it belonged to a higher or lower standard of pitch. Thus the note A which in Paris at present has 435 vibrations, in 1858 was given 448, and in 1699 had only 404, while Handel's tuning-fork dated 1740, gives the same note 416 vibrations. The standard of pitch has been gradually rising since the days of Bach and Handel, in whose time it was about two-thirds of a tone deeper than at present. The cause of this rise was the greater brilliancy sought for by manufacturers of pianos and wind instruments; but of course the vocalist was the sufferer by it, and in our own time it is gratifying to find a brave army battling with good success for a lower standard of pitch. The high pitch of the present is called "con-

cert pitch," the reformed or lowered pitch is generally called the "normal," and is practically the same as the French pitch of the present time, which has received the endorsement of almost all the leading acousticians, the French government, and many orchestral directors. The differences in the standard of pitch used at present in various countries may be understood from the following list: —  .

English (average), 540 vibrations.

German (Scheibler), 528 vibrations.

French normal diapason, 517 $\frac{3}{10}$ vibration. *

New England Conservatory of Music, 517 $\frac{3}{10}$ vibrations.

Classical (the average pitch at the beginning of the century), 512 vibrations.

Philosophical, or physical pitch, 512 vibrations.

American concert pitch is a very doubtful quantity, but is the highest pitch used anywhere.

The classical pitch is so called because it represents the average standard employed by such composers as Beethoven, Haydn, Mozart, Schubert, Weber, etc. The pitch used by Handel and Bach was somewhat lower.

Philosophical or physical pitch is so called because it is attained by a simple, physical process. We

* In 1892 The American Piano Manufacturers' Association adopted this, which may now be called "The International Pitch." A, 435; C, $517\frac{3}{10}$.

have already seen that halving the length of a string doubles the number of its vibrations. If we take a long wire, and draw it tight until a tension has been attained which will allow it to vibrate once a second (a result which can be readily attained by the eye, and a regulated pendulum) we will hear no sound; we can however call this imaginary note C, which, at one vibration per second, will be the unit of the physical system of ascertaining vibrations. If we now measure off half of the wire, we will have a length which will give us two vibrations per second; another division of the wire and we attain four vibrations, another and we have eight, yet another and the speed of sixteen vibrations is reached, and a deep tone is heard. If we now continue dividing the wire in the same manner, at the ninth division we attain the rate of 512 vibrations per second, a note which is nine octaves above the first, theoretical C of one vibration per second. This is but one of many modes of ascertaining the number of vibrations of a given note, for although we have only ascertained the number of vibrations in the different C's, yet if the number of vibrations in any one note be known, one can by a simple arithmetical process compute the number contained in any other note. The following table will present the proportion of the vibrations in the two notes of some of the musical intervals according to the scale of true intonation (*not* the tempered intervals): —

Octave.	Major seventh.	Minor seventh.
2	15	16
1	8	9
Major sixth.	Minor sixth.	Perfect fifth.
5	8	3
3	5	2
Diminished fifth.	Perfect fourth.	Major third.
36	4	5
25	3	4
Minor third.	Major second.	Minor second.
6	9	16
5	8	15

The logarithms of these ratios would be as follows:

Octave.	Major seventh.	Minor seventh.
301	273	250
Major sixth.	Minor sixth.	Perfect fifth.
222	204	176
Diminished fifth.	Augmented fourth.	Perfect fourth.
158	143	125
Major third.	Minor third.	Major second.
97	79	51
	Minor second.	
	28	

The application of these tables, which represent the enharmonic or natural intervals, would be as fol-

lows: if middle, or one-lined C  has 260 vibrations per second, this note,  being a perfect fifth above it, would have the proportion of three to two, *i. e.*, three-halves of 260 = 390; this note  an octave above the last would have twice its vibrations, *i. e.*, 780; this note  a major third above middle C, would have five-fourths of 260 = 325; and in the table of logarithms a fifth added to a fourth, a minor third to a major sixth, a minor second to a major seventh, etc., will give the logarithm of the octave.

In W. Pole's admirable "Philosophy of Music" a very full explanation of these proportions will be found.

CHAPTER IV.

CLASSIFICATION OF VIBRATIONS.

In order that the student may fully understand the musical instruments which are to be described in the next chapters, it may be well to reiterate the fact that all musical sounds consist of regular vibrations, and to supplement it with the statement that these vibrations can be classified as follows : —

First. The vibrations of strings ; these differ in quality according to the manner in which the string is set in motion, *i. e.*, by striking, as in the piano ; by plucking, as with harp or guitar ; and by friction, as with instruments of the violin family.

Second. The vibrations of reeds. A reed, in musical instruments, is a thin tongue of wood or metal, against which a current of air is directed ; the reed, swaying rapidly to and fro, breaks this current into intermittent puffs, which form the tone. Reed vibrations generally produce many overtones, and therefore a rather thin and penetrating quality of sound. Cabinet-organs, oboes, clarinets, bassoons, etc., are examples of reed vibrations.

Third. The vibrations of elastic membranes, generally organs of the human body, set in motion by a current of air. The lips of a player of horn, trumpet, cornet, trombone, etc., and the vocal chords in the human throat, are examples of this kind of vibration, which is of the same general character as reed-vibration.

Fourth. The vibrations of elastic membranes set in motion by a blow. These move the air in the same manner as a sounding-board would do. Drums give examples of such vibrations, and although most drums do not produce a strictly musical sound, the kettle-drums give as musical a tone as almost any percussive instrument of their pitch.

Fifth. The vibrations of solid substances of elastic material. These are almost always set in motion by percussion. Bells, tuning-forks, etc., are examples of this class of vibrations.

Sixth. The vibrations of the air upon itself in a confined space,—generally a tube. Although the air which gives the sound-vibrations is generally set in motion by some vibrating substance, yet the assistance of the latter is not always necessary. If we force a column of air with some degree of rapidity into or across a tube in such a manner that instead of passing directly through the tube it will cause a flutter of air at one end, we at once produce a tone

directly from the air itself, without the necessity of any other vibrating body, for the tube will at once select the sound-waves which suit its length, or synchronize with it. The wind whistling in a chasm or cave is a natural example of this, while flutes, organ (diapason) pipes, etc., show in what manner man has applied the principle. In the flute, the breath of the player is blown at a certain angle and with a certain power or no tone will result, but in the organ-pipe this angle or deflection which causes the alternate expansion and contraction of the air necessary to produce sound-waves, is caused by a plug or sharp edge (similar to that which the boy places at one end of his whistle), at the mouth. It remains only to add that the pitch of open pipes depends chiefly on their length. The width of pipes affects the quality of the tone. In wide pipes the harmonics are not prominent, and therefore these have hollow tones; narrow pipes have prominent harmonics, and therefore bright and penetrating tones. The same pipe can produce more than one tone; if the rapidity of the vibrations be increased, other tones ensue. In a cylindrical pipe or tube only every alternate overtone is strong, which gives a rather mellow quality to the tone. Flutes and clarinets are made upon this principle. In a conical pipe all the overtones are clearly present up to a reasonable height, which

causes the penetrating quality heard in the tones of the oboe and bassoon.

If a pipe that is open be plugged at its end (it is then called a "stopped pipe," and the plug a "tompion,") it at once sounds an octave deeper, and the tone becomes more hollow and dull, because the column of air is now undivided, while in an open pipe a node is formed at the centre of the tube, which divides the column in two, giving both a brighter and higher sound.

The foregoing facts, although merely an outline of the connection between practical music and acoustics, may yet suffice to give a general comprehension to the student of the principles upon which musical instruments are made.

CHAPTER V.*

THE ORCHESTRA AND ITS INSTRUMENTS.—THE VIOLIN.

We have already seen how the laws of acoustics are applied to the manufacture of pianos and organs; we shall find the same laws applied in a similar manner to the making of each instrument of the modern orchestra. The word "orchestra" comes from the Greek, and signifies "a place for the chorus," for in

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*In this course I have judged it expedient to follow the subject of Acoustics at once with a study of the orchestral instruments. This succession is unusual, but none the less practical, since the construction of the different instruments will be more readily comprehended immediately after the acoustical principles are committed to memory, and in conservatories and schools it will be found advantageous to study the instruments in the first term, giving the pupils opportunity to apply their studies in this branch at the various orchestral concerts which are more numerous at this portion of the school-year than at a later season. Every concert attended thus becomes a supplementary lesson.

Teachers who prefer the more established order of subjects can omit the orchestral chapters until the end of the course, taking them up after the chapter on Fugue, and going directly from Acoustics to Notation and Rhythm.

the old Greek theatres the chorus was placed in the front part of the auditorium, just at the edge of the stage, as the instrumental musicians are placed in a modern operatic performance. The ancient world possessed no true orchestras, for even when they allowed many instruments to play together, they performed unison music, while our idea of orchestral work is essentially part-music. When the composition of operas began, a little before the year 1600, the orchestra also sprang into being, but in a rather primitive state. A modern grand orchestra scarcely ever consists of less than fifty members, and is practically three bands in one, a string band, a band of wooden wind-instruments, and a brass band with percussion; but these early orchestras were not only much smaller but had no such divisions; for example, "Euridice," one of the earliest of operas (A. D. 1600), had the following orchestra: one harpsichord, one large guitar, one viol, one large lute and three flutes, while the orchestra used in Berlioz's "Requiem" (one of the extreme works of the modern school), contains strings (violins, violas, violoncellos, and contra-basses) to the number of nearly a hundred, four flutes, two oboes, four clarinets, eight bassoons, one English horn, twelve French horns, four cornets, sixteen tenor-trombones, two bombardons, four ophicleides, twelve trumpets, eight pairs of kettle-drums,

two bass-drums, three pairs of cymbals, and a gong.

The difference between the orchestras of a couple of centuries ago, and those of our own time could scarcely be more strongly marked. Yet it must be borne in mind that the vast gatherings of instrumentalists which are heard in America too frequently on the occasion of special festivals, are not *orchestras* in the true sense of the word, for in orchestral work we do not aim wholly at volume and power, but at *ensemble* or precision, unity, refinement of shading, etc., as well.

The different parts of the orchestra can be classified as follows :—

The string band, or the "Strings,"—first violins (soprano), second violins (alto), violas (tenor), and 'cellos and contra-basses (bass). The harp, which has become a member of most modern orchestras, is not to be classed with the strings, but stands by itself.

The wooden wind-instruments, or the "wood-wind,"—flutes, oboes, clarinets, and bassoons, being respectively soprano, alto, tenor, and bass, of the quartette (for four-part writing is the foundation of almost all orchestral work), and an English horn, a piccolo, a contra-bassoon, a bass-clarinet, and very rarely, a basset-horn, are admitted to the ranks of this division.

In the brass band we find the French horns, trum-

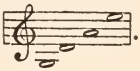
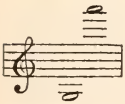
pets (generally replaced in American orchestras by cornets,—a poor substitution), tubas, and trombones. The percussion is counted with the brasses, and consists of kettle-drums, and occasionally bass-drum, side drum, cymbals, triangle, gong, and other less important instruments. The bass-drum, cymbals, and triangle are sometimes classed together under the name of "Turkish music" (even the Germans give it a similar name), which is a libel on the Turks; *Chinese* music might be a more appropriate name.

Of these groups of instruments the strings are the most important, and form the backbone of modern orchestral writing. They are the most expressive, are given the foremost position in the placing of the orchestra, and are numerically the strongest, fifty stringed instruments occasionally playing against eight wood-wind, and four or six brasses.

The violins are divided into two sections, the first violins playing the soprano, the second violins the alto; both divisions, however, using the same kind of instruments.

THE VIOLIN.

This instrument probably comes to us from the Orient, the ancient Hindoos having possessed an instrument of this class. It appeared in Europe about the eighth century or the beginning of the ninth.

Only in the last two centuries, however, was its full value as the king of instruments understood, and the true knowledge of its proportions and manufacture attained. The golden period of violin-making was from about 1650 to 1750, for within this period fall the greatest creations of the great masters of the Cremona school of violin-making,—Nicolo Amati, Stradivarius, and Guarnerius. The violin has four strings, which are always spoken of as being of cat-gut, but are in reality made from the intestines of the sheep or goat, the cat being innocent of violin music at least. The G-string is wired, in accordance with the acoustical principles already demonstrated. The four strings are tuned as follows :—  . The ordinary orchestral compass of the violin is about  although Wagner and other composers have demanded a greater compass from orchestral players. The soloist can play nearly an octave higher.

The violin is always notated in the G-clef, whence that clef is often called the "Violin clef." At times the quality of the tone is altered and its power much diminished by an appliance called the mute, or sordino. It is a weight placed upon the bridge of the instrument, and as this must cause this important

carrier of vibrations to move less freely, the entire amplitude of vibrations is lessened. When the mute is desired the composer marks "*Con Sordino*," and when it is to be removed and the natural tone restored "*Senza Sordino*" is written. All possible embellishments can be executed on the violin, and all emotions from the deepest pathos to the wildest jollity belong to it by right. It is as unlimited in its expression as the human voice. Like the human voice too, it is rather a melodic than a harmonic instrument. One can produce two tones simultaneously from the violin, and this is called "double stopping," but single stopping, or producing a single note at a time, is the real character of the instrument, which therefore, like the human voice needs the support of other instruments to obtain its full effect. At times the bow of the violin is discarded altogether and the instrument plucked like a guitar; this mode of playing is called "*pizzicato*," and is most effective on the open strings or in the middle register, since it sounds woodeny and dry in the higher register. and rather hoarse in the lowest.

The violin bow is placed upon the strings at about one-tenth of their length, but this position varies, and the careful student of the preceding chapters will understand that the nearer the bow approaches to the bridge the more of the higher overtones will blend

with the fundamental tone, and the brighter that tone will be.

High tones of a peculiar, piping quality can be produced from the instrument by placing the finger very lightly on the vibrating string at a regular proportion of its length, thus causing it to vibrate in ventral segments and give forth one of its overtones instead of its fundamental. These tones, which require considerable skill on the part of the performer, are very properly called "Harmonics." but the Germans call them "flageolet tones" because their quality resembles that instrument. They are frequently notated in diamond shaped notes where the finger is to touch the string (a feather's weight would be sufficient to produce the result) and in the ordinary notes for the actual tone which is to result.

When a string is sounded without stopping it with the finger, vibrating its entire length, the tone is called an "open tone," and is sometimes designated by an "O." When the harmonics are produced by sub-dividing an open string into ventral segments, they are called "natural harmonics;" when a stopped string is thus divided they are called "artificial harmonics."

There are seven positions used in violin playing, the easiest being those where the hand is held near the scroll at the end of the neck of the instrument.

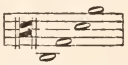
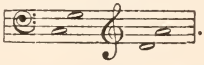
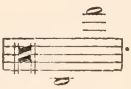
The higher positions, where the hand approaches the bridge, are more difficult.

Paganini, who died in 1840, was the greatest violin virtuoso that ever existed. Some of his brilliant cadenzas in double harmonics have never been executed by any of his successors. The probability is that he used very thin strings in his performance, as these would respond more readily to the segmentary divisions necessary to produce these high and peculiar tones, although the tone would be weakened by lessening the diameter of the strings.

CHAPTER VI.

VIOLA, 'CELLO, CONTRA-BASS, HARP, ETC.

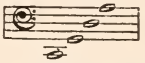
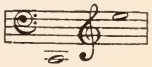
THE VIOLA.

THIS instrument is of the same shape as the violin but is about one-fifth larger. It is played in the same manner as a violin, and all points of violin execution are possible upon it, but as it is of deeper pitch, its tone-color is more sombre than that of the violin. It suits best to the expression of a tender melancholy, a dreamy brooding. It has four strings the two lowest of which are wired. It must be borne in mind that it plays the tenor part in the string quartette, and the English sensibly call it the tenor viol, although the French give it the misleading name of Viola Alto. It is notated in the alto clef and its four strings are tuned thus,  or in the more familiar clefs, thus,  . Its compass in orchestral use is about as follows:  . Berlioz

allows it a few notes more (of course in the upper register, since no instrument can go lower than its deepest string) but the higher the instrument is forced, the drier its tone becomes; it is only in the middle and lower register that the rich tone of the viola is effective. In some cases composers have attained impressive dark effects by omitting the violins from the strings, and giving the violas especial prominence. Brahms does this at the beginning of great Requiem, and Beethoven begins the slow movement of his fifth symphony with a theme for viola and 'cello in unison. In the slow movement of Mendelssohn's Italian Symphony the viola also has beautiful prominence. Gluck understood the gloom of the viola, and it is used in all his operas to good purpose. But the most important work for this instrument is Berlioz's "Childe Harold" Symphony, which was begun as a viola concerto for Paganini, and in which the most characteristic viola touches appear. In this work the instrument personifies Byron's melancholy character of Childe Harold, and has obligato passages of the most graphic effect.

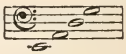
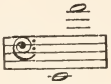
THE VIOLONCELLO.

THE violoncello, or simply "'cello," is a larger violin, which because of its size, is held between the knees while being played. All execution which is

possible on the violin can also be produced upon the 'cello, but its deeper pitch and longer finger-board demand a slower style than that of the violin. It is as expressive as the violin but is masculine where the latter is feminine, having a broader, richer tone. It has four strings, the two lower ones being wired. These strings are tuned as follows:  and the compass of the instrument is about  In some cases a good effect can be attained by tuning the C-string to B-flat, as Schumann did in one movement of his piano quartette, Op. 47. The notation of the 'cello is in the bass-clef, sometimes in the tenor-clef, and rarely in the G-clef, the last named having some peculiarities of reading, according to the passages that precede it. In orchestral passages the 'cello is united with the contra-bass, playing an octave above that instrument, in the bass part, but in soft passages (as for example, the Prayer in "Der Freischütz") the 'cello alone gives the bass, as the contra-bass would be too heavy for the effect desired. The 'cello is sometimes called the "Bass Viol."

THE CONTRA-BASS.

THIS is the largest of the violin family. It is made with three, four, and sometimes with five

strings. The four-stringed instrument is the one generally employed in orchestral works. It is notated in the bass-clef, and it always sounds an octave lower than written. In scores it appears on the lowest line. Its strings are tuned as follows:  sounding of course, an octave deeper. Its ordinary compass is about  sounding an octave deeper.

Not all points of violin execution can be given on the contra-bass. The harmonics, on account of the thick strings, sound but poorly, the mute has comparatively little effect, and double-stopping is altogether too muddy-toned to be effective. Per contra, the pizzicato is very effective, as is also the tremolo. The contra-bass is not only the foundation of the strings, but the bass of the entire orchestra, and although its solos are rather artificial products, it has been given some very important obligato effects in classical scores. The earliest of these may be found in "Ye Lightnings, Ye Thunders!" of Bach's St. Matthew Passion Music, in the second act of Gluck's "Orpheus" where the barking of Cerberus is imitated upon the instrument, and in the scores of Beethoven, who was the first to give real independence to the instrument. How well he accomplished this may be judged from the wonderful passages

(in combination with 'cellos) in the finale of the fourth symphony, the Trio of the Scherzo of the fifth symphony, and, above all, in the first part of the finale of the ninth symphony, the last the noblest passage ever composed for the instrument, and forming the bridge over which the master went from instrumental to vocal work. The color of the contra-bass can be either earnest and portentous, or it can be made grotesque and comical, and an instance of the latter use can be found in the finale of Beethoven's eighth symphony. The reverberations of thunder are produced by Beethoven in his sixth symphony, by allowing the 'cellos and contra-basses to play simultaneously, in dissimilar groupings.

THE HARP.

ALTHOUGH the harp is not reckoned as a member of the family of "the strings," it may be as well to explain it here. Although a very ancient instrument, it has been admitted into the orchestral ranks only within 125 years. The reason for this apparent neglect is that the old harp in all countries was a diatonic instrument, and could not modulate from key to key without re-tuning. In 1758, M. Simon, a native of Brussels, made an important improvement in the instrument, by giving to it a set of pedals which moving certain wheels with pins, shortened

the strings at will, by which a flat note could be changed to a natural instantaneously. This allowed such composers as Mozart and Gluck to introduce the harp, in a restricted manner, into a few scores, Mozart writing a concerto for flute and harp, and Gluck using it in his opera of "Orpheus."

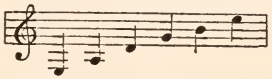
The perfection of the harp however, did not occur until 1810 when Sebastian Erard introduced a system of double-acting pedals by which any note could be raised either a semi-tone or a whole tone, at will. As the pedals could only raise, not lower, the pitch of any note, in order that the natural and sharp degrees of a tone could be gained in every case, and in a similar manner, it was necessary that each open wire should represent a flat note in the first place. This is done in tuning the modern harp, and as there is but one key in which the notes are all flat, the harp is tuned in that key — C-flat.

The harp has very nearly the compass of the piano, starting with the lowest C-flat of that instrument, and ending with its highest F-sharp. It is notated as the piano, on two staves, one treble and one bass. Its strings are of catgut in the upper octaves, of catgut wired, or of heavy wire, in the lower. The C-strings are colored red, the F-strings blue, that the performer may readily see the position of any note, exactly as the pianist is guided by the distribution of

the black keys on the piano keyboard. Beethoven only used the harp once, in one of the ballet numbers of "Prometheus," an almost obsolete work. Spohr, whose wife was a fine harp player, was the first to make use of the Erard instrument, but Berlioz, Wagner, Schumann, and a host of modern composers, have made the most important use of the instrument. The harp sounds best in flat keys.

OTHER STRINGED INSTRUMENTS.

The guitar is not admitted to the orchestral ranks, although Schumann at first thought of employing it as accompaniment to the Romanza of his D minor symphony; but finding it too light toned, he substituted violins, *pizzicato*, for it. This same substitution is made in a few other cases where composers have used guitar or similar instruments, as, for example, the serenade of Almaviva in Rossini's "Barber of Seville," or the serenade of Don Giovanni in Mozart's opera. In the latter case the composer used the mandoline. The guitar is generally tuned:



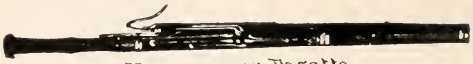
having six strings, and sounds an octave lower than written. The mandoline has eight strings, which are tuned in pairs, to the same notes as the violin strings, G, D, A and E. It is plucked, but not with

the fingers, a small plectrum of tortoise-shell or similar substance being used. The strings are made of different substances, copper, steel, brass and catgut being used.

The zither is a sweet-toned instrument of about thirty strings (some have a less number), and is plucked by the fingers, and by a hook of iron which is worn on the thumb of the performer. The finger-board of the guitar is fretted (that is, raised cross-pieces guide the player to find the place where a string must be stopped by the finger to produce the note), and so is that of the mandoline, but in the zither only five strings are thus treated, the remaining twenty-five being open strings, intended to give but a single tone apiece, and they are used for accompaniment only.

A Table of some of the Wind Instruments of the Modern Orchestra.

The Wood Wind



The Bassoon or Fagotto

Clarinette.

Bass Clarinette

Oboe.

Flute.

English Horn.

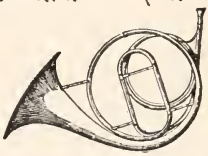
The Brass Wind.

Keyed Trumpet.

Natural Trumpet.

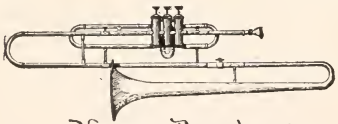
Cornet.

Keyed French Horn



Natural French Horn.

Bass Tuba.



Valve Trombone.

Slide Trombone.

CHAPTER VII.

THE WOOD-WIND.

We have already seen that the wood-wind is an independent quartette, but it is by no means always used in this manner, and combinations of wood-wind instruments with strings, in various manners, form one of the most-used means of obtaining effective tone-colors, for as the artist mixes colors on his palette, so the composer blends different instruments in his score to obtain especial effects. The soprano of the wood-wind quartette is

THE FLUTE.

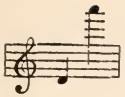
The tone-color of this instrument by itself is rather monotonous. It is plaintive in the lower register, and rather brilliant and showy in the upper. Its compass is usually 

although some flutes are made which extend to B-flat in the lower register. In 1834 a great improvement was made in the construction of the instrument by a German named Boehm.

The flute before that time was a little insecure in its pitch in the lowest tones, and some of the flat keys were very difficult, others impossible, on the instrument which was then chiefly adapted to the sharp keys. By means of a new system of keys (which have also been successfully used on the other wood-wind instruments) all the keys were made practicable, the lower octave rendered true in pitch, and greater rapidity and brilliancy attained. The flute, however, lost some of its mellowness by the change, and was thereafter made cylindrical to counteract its excessive brightness.

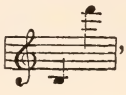
THE PICCOLO.

The full name of this instrument is Flauto Piccolo, or small flute, a name which sufficiently explains its character. It is exactly like the flute but of a smaller size which causes it to sound higher and shriller than the larger instrument. It is sometimes called the octave flute because its notes sound an octave higher than written. It is the highest and shrillest instrument of the orchestra, and is used sparingly by good composers. It is generally used to picture any wild, feverish gaiety (drinking songs, witches' revelry, etc.), in portraying anything diabolical, and Beethoven (Sixth symphony) has used it to imitate the whistling of the wind in a storm. Its compass as written is

 but it sounds an octave higher, as stated above. The piccolo is finely used in the finale of the "Egmont" overture, in the drinking song of "Der Freischütz" and in the "Infernal Waltz" in Meyerbeer's "Robert."

THE OBOE.

The wood-wind, although forming a four-voiced harmony, can be classified in groups according to the style of mouth-pieces employed, also. The flute and piccolo have open mouth-pieces, the clarinets have a single reed in their mouth-pieces, and the oboes, English horns, and bassoons have double-reed mouth-pieces. The double reed used gives to the tone a number of the higher harmonics with considerable prominence, the tone-color becoming thin, penetrating and somewhat nasal.

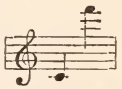
The oboe can depict direct pathos, as in the funeral march of the "Heroic" symphony; innocence and simplicity, as in the movement entitled "In the Fields," in Berlioz's "Sinfonie Fantastique;" and, above all, rustic gaiety, it being the pastoral instrument of the orchestra, and used in this manner in Beethoven's sixth symphony, and numerous other works. The compass of the instrument is about  , but the

lower notes are somewhat hoarse and the highest ones a trifle forced and screaming in quality, the best effects being attained in the middle register. The nearer we keep to the key of C, the easier and the more natural the oboe part will be. Because of its very characteristic color the oboe should not be too freely used in obligato or solo work. The orchestra usually receives its pitch from the oboe (as it is less tunable than the other instruments, with the exception of the clarinet) that instrument giving  at the beginning of each concert or composition, this note being given on an open string by all the stringed instruments, and being in medium register besides.

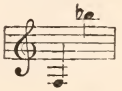
THE ENGLISH HORN.

The word "horn" must not deceive the student; there are wooden horns as well as brass ones, and the English horn belongs to the former variety. The English horn is a transposing instrument. We have already seen that the contra-bass sounds an octave lower, and the piccolo an octave higher than written, and it is natural and correct to speak of such instruments as transposing: but there are other instruments which transpose to other degrees than the octave, instruments which therefore give forth a different note from that which is written. The reason of this

puzzling practice is found in the fact that wind-instrument players frequently perform on two or more different instruments of the same family, and in order to secure uniformity of fingering and blowing, the system applied to one is applied to others; for example, the English horn, which is a larger oboe, is notated very much as that instrument, and the performer who is accustomed to the oboe will play the English horn quite like that instrument, but it will actually sound a perfect fifth below the notes which are written. The clarinets, in the same way, are all written alike, but the C-clarinet only, sounds the notes as they are written, the B-flat clarinet sounding a tone below, and the A-clarinet a minor third below the notation. The English horn then, as it sounds a fifth below the written notes, is said to stand in F, as the scale of C, written, will actually sound the scale of F. If, for example, we desired to employ the English horn in a composition in the key of E-flat, we should be obliged to write it in the key of B-flat, a fifth above, to attain the required sounds. The written compass of the English horn is



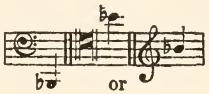
but the actual sounds thus represented are



The tone-color of the English horn is rather melan-

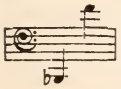
choly, a more masculine oboe. It sounds best in its middle or lowest register. Berlioz (Simfonie Fantastique) uses it to represent the voice of a shepherd. The instrument is frequently used to represent the Alpine horn, and the overture to "William Tell," Wagner's "Tannhäuser," Schumann's "Manfred," and other works present very characteristic passages of this kind.

THE BASSOON.

This is also a double-reed instrument. Its tone-color, however, is not like that of the oboe or English horn. It has a sombre, weird effect, yet can very readily be made grotesque. So much is this latter quality employed that the bassoon can be called the clown of the orchestra. Its middle register is dull and lifeless (this is splendidly employed by Meyerbeer in the incantation scene of "Robert le Diable"), and its lower tones afford a fine bass to the wood-wind. The upper notes are sometimes used to picture agony and distress. Its compass is about  and it is notated in the bass and tenor clefs. The bassoon was a great favorite with Beethoven who enjoyed its comical effects which he used copiously in his Sixth and Eighth symphonies, and in numerous other of his compositions.

THE CONTRA-BASSOON.

A larger and deeper bassoon. The humorous style vanishes from this deep-toned instrument which has the quality of a large organ-pipe. It requires much lung power, and there are few performers upon it, hence it is frequently substituted for by bass-tuba, and other instruments. Its compass is notated thus,

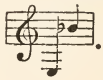


but it sounds an octave deeper than written.

Beethoven sometimes used it to give a more ponderous wind quality to the bass string part, uniting it to the contra-basses in his Fifth and Ninth symphonies (Finales). It is the deepest of orchestral instruments. Both Handel and Haydn have used it. In France the composers are beginning to replace it by a brass double-reed instrument called the Sarussophone.

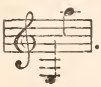
THE CLARINETS.

There are three varieties of these instruments used in the orchestra besides a bass-clarinet. These three are used according to the key of the composition. The C-clarinet, which is rather too high in pitch to have an agreeable tone-color, is called for in compositions in that key, and is a non-transposing instrument. sounding as written. Its ordinary compass is

 but good soloists can give "made notes" yet higher. The B-flat clarinet is the finest of all clarinets, and may, in fact, be called the king of the wood-wind. It sounds a whole tone lower than written and is used in the flat keys. The A-clarinet is used for compositions in sharp keys, and sounds a minor third lower than written. Its tone is rather sombre because of its deep pitch. The character of the registers of the clarinet differ so much that the instrument may almost be said to be two in one. The deepest notes belong to the chalumeau register which has the following extent:  . During the execution of these notes the so-called "twelfth key" remains untouched, but at one-lined b this key is used and the tone quality changes. The chalumeau is dark, gloomy, and spectral in its effects, and has been finely employed by Weber in the incantation scene of "Der Freischütz," and by Mendelssohn in the first part of his "Scotch Symphony," and in the beginning of his "Elijah." Berlioz gives to the chalumeau a much more restricted register, but almost all clarinettists allow the register as given above. The middle register of this instrument is very like a human voice (soprano), and the highest

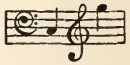
notes are fierce and cutting in quality. The clarinet is a single-reed instrument, the reed being placed in the lower part of the mouthpiece against the tongue of the player. The clarinet is quite modern. It was invented about 1690, but did not obtain entrance to the orchestra until nearly a century later. Bach and Handel did not use it, and to Mozart belongs the credit of having introduced it into symphony. His E-flat symphony, composed in 1788, first gives prominence to the clarinet in classical music. He, however, still followed the ancient custom of giving the wood-wind in three-part harmony, and turned out the oboe to make room for it. Higher-pitched clarinets, as the E-flat, and the A-flat are used in military bands, but they are very shrill and not fit for the refined order of orchestral music, although Berlioz in his "Sinfonie Fantastique" makes use of the E-flat clarinet, which instrument sounds a minor third higher than written. The clarinet is cylindrical in its bore.

THE BASS-CLARINET.

This is a much larger and deeper clarinet of solemn and organlike quality. It is notated in the G-clef, but sounds deeper than written. The C-bass clarinet transposes down an octave, the B-flat sounds a ninth lower than written. The written compass is about as follows:  . Berlioz has used the bass-clar-

inet to picture the gloom of descending night, in his "Damnation de Faust."

THE BASSET-HORN.

This instrument is now so rare that it may be dismissed in a very few words. Like the English horn it stands in F, that is, it sounds a perfect fifth lower than written. Its written compass is about, 

It has a very mournful, gloomy tone-color, which suits it well to funereal music. It plays easiest in flat keys. It was prominently used by Mozart in his great "Requiem," and in other works.

CHAPTER VIII.

THE BRASS INSTRUMENTS.

THESE are not often used as a quartette, as the strings and wood-wind are; they are frequently in unison, or in two, or three-part harmony. Tone is produced on all of the orchestral brasses by the vibration of the lips of the player as he blows into the mouthpiece, which is more or less conical, but open, only the saxophones and sarussophones being exceptions to this rule and having reeds in their mouthpieces. The use of the lips in this manner, and their position in producing the sounds, is called the *Embouchure*. Quality of tone, in the brasses, depends upon the width of the tube (wide tubes giving mellow or hollow tones, narrow ones bright and ringing tones), the shape of the mouthpiece (deep mouthpieces giving hollow tones, shallow mouthpieces bright ones), the size of the bell and the shape of the player's lips. Pitch in brass instruments depends on the length of the tube and the force of the blowing, as well as upon the rigidity

or laxity of the lips. In the chapters on Acoustics we have said that more than one tone could be produced from a single tube, and we now supplement this statement with the fact that some brass instruments are made without any keys, and by difference in blowing and *embouchure* produce part or the whole of the harmonic series. These are called natural instruments. There are natural horns and trumpets made, without any keys, but these are very rare in America, the bugle being the chief representative of the natural brass instruments among us.

The use of keys on the brass instruments is to lengthen the tube, thereby causing the instrument to produce another, deeper, series of harmonics. The natural tones, produced from any of these instruments without touching the keys, are the best in quality. It will be seen, therefore, that on a brass instrument such as horn, trumpet, cornet, trombone, or tuba, each key represents, not a single note, but a whole series, as it puts the instrument in a different pitch by lengthening the tube. The practical application of this must be derived from the teacher, but we may state that in an instrument of three keys, the first one lowers the pitch a tone, the second a semitone, the third a tone and a half (that is, a minor third), and these keys can be used in combination,

thus, the first and second would lower the pitch a minor third also; the second and third, a major third; the first and third, a perfect fourth; and all three, a diminished fifth, or augmented fourth. With all these series of tones at command a chromatic scale can be played on any brass instrument with keys.

THE FRENCH HORN.

This instrument is most frequently called simply "the horn." There are horns in all the different keys, but it is not necessary to make a special instrument in each key, for by the addition of sections of tubing, called "crooks," the horn (as also the trumpet and cornet) can be lengthened and set in another key than its natural one. The horn generally used in the orchestra is the one in F, which, in its natural state, without any added crooks, would sound a perfect fifth lower than its notation.

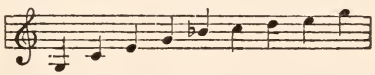
The highest horn made is that in C-alto, which is non-transposing, sounding as written. By drawing out the mouthpiece the horn can be lowered a semitone in pitch, the C-alto horn thus becoming B-alto. All the horns but the C-alto transpose downwards. In an orchestral score the horns are notated in the key of C, and the B-alto sounds a semitone deeper than notated, the B-flat alto one tone, the A-horn a minor third, the A-flat horn a major third,

etc. The C-horn is different from the C-alto, and sounds an octave lower than written. The deepest of all the horns is that in B-flat basso, which sounds a ninth lower than written. The horns from the C-alto down to the G-flat horn give the harmonic series of tones from the fundamental note  to about the ninth harmonic  , without touching the keys. The keys acting as explained above, add lower series to the natural tones, so that a chromatic scale can be played on the instrument. The horns from that in F, to that in B-flat basso, lose the fundamental tone of the series, but give the entire harmonic series of tones up to the fifteenth harmonic, although the tenth overtone is difficult to produce. The tone of the horn is modified by the player's right hand, which is placed in the bell of the instrument. When the hand is pressed very firmly in the tube, as if to prevent the escape of any air, a "stopped" tone is the result, and the pitch is lowered a semitone. The quality of the horn is mellow and tender, its tone-color suiting it to romantic effects, and woodland and forest pictures, but the stopped tones are the reverse of this, and are the most repulsive tone-color that can be produced in the orchestra. Stopped tones, therefore, should never be mingled with open

tones. Weber was probably the best master of the horn, among all the great composers, and the horn quartette at the beginning of the "Freischütz" overture may stand as a model for all time. Beethoven has also achieved beautiful effects with the horn, especially in the trio of the scherzo of the "Heroic Symphony." Wagner has frequently used the stopped tones to represent evil, as in the dragon scene in "Siegfried," the third act of "Tannhäuser," etc., etc. The harmonic series given in Chapter II, must be thoroughly studied in connection with all the brass instruments, as their series of natural tones, and the series produced in different pitches by each key, are identical with it.

THE TRUMPET.

This instrument is very frequently replaced in America by the cornet. The substitution is not a good one; the trumpet has a long, narrow tube, the cornet a wider and shorter one; the trumpet's natural tones are a harmonic series beginning on the second overtone of a deep series, while those of the cornet begin on the first overtone of a high series. The following is the natural series of a trumpet in C:



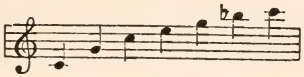
The trumpet is generally used in open tones, only

one stopped tone (two-lined F) being bearable, the others sounding absurdly like a child's toy, a fact which was taken advantage of by Wagner, in his "Mastersingers of Nuremburg," in the procession of the guilds, to usher in the toymakers. The C-trumpets are non-transposing, and like the horns, the trumpets are scored in the key of C. There are trumpets in B, B-flat, A, A-flat, and G, transposing downwards, and others in D, E-flat, E, and F, transposing upwards. There is also another trumpet in F, sounding a fifth lower than written, and bass-trumpets are used by Wagner and others, in various keys, transposing even to a ninth downward. The practical application of the trumpet, as of all the brass instruments, must be acquired through the illustrations furnished by the teacher, but it is proper to state here, that the explanations given by Berlioz in his great treatise on Instrumentation, are no longer exact or reliable, as there have been changes in the use of some brass instruments since his time, and as America and Germany do not invariably have the same manner of scoring as that used in France. The most-used trumpet is that in B-flat, transposing down a whole tone. The trumpet was very much used by Bach and especially by Handel, but some of the last-century instruments were of a different build from those of the present day, being narrower and longer.

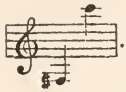
There was an interregnum in the art of trumpet-playing during the classical period, and Beethoven, Mozart, and Weber used the instrument very sparingly, and in easy passages only. A revival took place when keys were attached to the instrument, in the time of Berlioz, and the trumpet again resumed its proper prominence in the works of Wagner. Trumpets with slides like the trombone, are gradually coming into use, and have a better tone than the keyed instrument. In his fanfares in "Tannhäuser," "Lohengrin," and other operas, Wagner has used natural trumpets, without keys.

THE CORNET.

The full name of this instrument is *Cornet a pistons*, and it is always supplied with keys which make the instrument capable of producing the chromatic scale. Without touching these keys the cornet can produce the following tones, which are the harmonic series of this fundamental  :



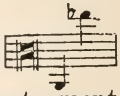
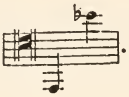
Some soloists can produce the fundamental and lower it chromatically by means of the keys, this set of tones being called the "pedal tones." There are also skillful performers who can play higher tones than we have given in the above series. The ordinary

compass used in modern works would be about  . Cornets can be made in many different keys, the C-cornet being the only non-transposing one, but the cornet most used is that in B-flat, the best-toned of all the cornets. The E-flat cornet, transposing up a minor third, is the highest of all the cornets. The cornet is a very flexible instrument and can be played with great rapidity; it is seldom called for in classical music, only Berlioz employing it in some of his symphonic and other works, in combination with the trumpets. In operatic scores the cornet frequently appears, as in "La Juive," "Lucia di Lammermoor," "Lucrezia Borgia," "Les Huguenots," etc. Cornets are sometimes made which have a fixed crook which can be opened or closed instantaneously; the advantage of this is, that a B-flat cornet can be at once changed into one in A, or an E-flat into a D, the first pitches being adapted to flat keys (since the fewer keyed tones the better the effect), the latter to sharp keys.

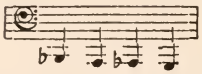
THE TROMBONE.

This instrument is built on two different systems: the valve-trombone is furnished with keys which are used exactly as those described at the beginning of

this chapter in connection with the horn; the slide-trombone has no keys, but is made in two sections, the tubes of which are caused to overlap, so that the player, by drawing them out, can elongate the instrument, and cause it to give different series of tones. The natural tones are those produced with closed slides, but in the slide-trombones there is little difference in quality between these and the tones produced with open slides. The trombone with keys is the easier to play, but the slide-trombone has much the better tone. The slides are drawn into six positions, each one being a semitone lower than the one preceding, thus lowering the pitch of the instrument in exactly the same degree as the combinations of keys, already explained,—a diminished fifth. The trombone is at present made in three pitches, alto, tenor, and bass. In former times a soprano trombone existed, but, although Berlioz pathetically deplores its obsolescence, it can readily be replaced when desired, which is very seldom, by the deep trumpets. The trombones are generally written in three-part harmony, and are treated as non-transposing. The alto-trombone is called the E-flat trombone, as, with closed slides, it gives the harmonic series of E-flat, beginning, not with the fundamental, but with the first overtone,  , and giving seven

tones of the harmonic series. The slides lowering as above stated, make the compass about  chromatically. The tenor-trombone is the instrument of this family most used; often tenor-trombones only are found in a symphonic orchestra, although this is a faulty arrangement. This is a B-flat trombone, that note being its fundamental, with closed slides. Beginning with the first overtone of this series, it gives seven natural tones, and the slides supply the intermediate tones of a full chromatic scale of this compass,  .

The bass-trombone is made in different pitches, as in G, in F, and even in E-flat, these notes representing the fundamental with closed slides in each instance. It will be remembered that we have spoken of the fundamentals as outside of the true compass of the trombones, and have begun each series with the first overtone; yet good players can attain the fundamental, by protruding the lips well into the mouthpiece, and can then lower the tone by means of the slides. These deep tones are called the "pedal tones" and must be sparingly used. The following would be the practicable pedal tones on a tenor-trombone:

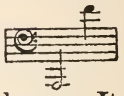


The pedal tones have a growling, unpleasant quality. As already seen, the alto-trombone is notated in the alto-clef, the tenor in the tenor, and the bass-trombone in the bass-clef. The trombone has been in use for many centuries, but it was poorly used, even in the last century. The old composers used it in unison with the contra-basses, a barbarous mode of strengthening the bass. Mozart appears to have been the first to have appreciated the instrument, and his use of trombones in his "Requiem" and in the graveyard scene in "Don Giovanni" was the beginning of real trombone-writing.

Beethoven was the first to introduce trombones into symphony, and he uses them in his fifth, sixth, and ninth symphonies. The coda of the first movement of Schubert's great "C-major Symphony," is a splendid example of masterly use of these instruments. The trombones are by no means always used in a loud manner; the trombone-chords in the third act of Wagner's "Flying Dutchman," in the sailor scene, show how impressive a soft effect can be made with this much-abused instrument.

THE BASS-TUBA.

This is the deepest and most ponderous of the

brass instruments. It is made in varying pitches, but its ordinary orchestral compass is about  It is non-transposing, and is played with keys. It was the invention of a German bandmaster named Wieprecht. Sometimes a fine effect is attained by using a quartette of tubas, in which case the euphonium and the baritone, both tubas of a higher pitch, are employed, together with bass-tubas. Bruckner, in his seventh symphony, uses this effect, and Wagner, in the expressive but barbaric "Hunding motive" in "Die Walküre," makes masterly use of the tubas. Tubas are made with three, four, and even five keys.

THE OPHICLEIDE.

This instrument is now obsolete in Germany and America, although still employed in France and England. It has about the compass of the bass-tuba, but has a more rasping and rough tone. Mendelssohn used the ophicleide very successfully in his "Elijah," and in his overture to "Midsummer night's Dream" comically expresses the snoring of the drunken weaver, Bottom, by means of it. The bass-tuba takes the place of the ophicleide in almost all modern works, but scarcely reproduces its odd tone-color.

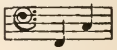
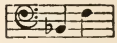
CHAPTER IX.

INSTRUMENTS OF PERCUSSION.

These are of two kinds, those having definite pitch, and those which possess no definite pitch, or are used without reference to their pitch. Of those which have definite pitch the kettle-drums are the most important.

THE KETTLE-DRUMS.

These instruments, sometimes called the tympani, are generally spoken of in the plural as they are played in pairs. The body or shell of the kettle-drum is made of thin brass or copper in the shape of a cauldron, whence the name. The two kettle-drums are of unequal size, the larger and deeper being called the G-drum, the smaller and higher the C-drum, as in the last century G and C were the notes always written for these instruments, whatever note was played. The kettle-drums, at that time, were only used as rhythmic instruments, but Beethoven, already in his first symphony (1799) brings them into prominence and independence.

The kettle-drums at present are non-transposing and are notated in the bass-clef; the G-drum can be tuned to any note in the following compass:  of course being capable of producing but a single note, and requiring retuning to give any other. The C-drum can be tuned within this compass:  The pair of kettle-drums, therefore, can give two notes in the octave between great F and small F. The tuning is done by tightening or loosening the calfskin membrane which constitutes the drumhead. This is done by means of half a dozen screws around its edge. This process is slow and laborious, and many inventions have recently been made by which the tuning can be done more rapidly, and by a single screw, but the intonation is never quite as perfect as when the drum is tuned by the slower process. As we can obtain but two notes from our pair of kettle-drums it is but natural to suppose that the two most important notes of the scale are chosen, and the kettle-drums, therefore, are generally tuned to the tonic and dominant of the key of the composition. Sometimes the tonic is on one drum, sometimes on the other, this being regulated by the exigencies of the compass. In the keys of B, C, D-flat, D, E-flat and E, the dominant is on the G-drum, the tonic on the C-drum, the instruments being tuned in fourths; in

the keys of G-flat, F-sharp, G, A-flat and A, the tonic is on the lower (G) drum, the dominant on the C-drum, and the tuning is therefore in fifths. In the keys of B-flat and F, the tuning can be either in fourths or fifths, both drums having the tonic and dominant in their compass, but the composer should indicate which way he desires them tuned.

Sometimes other notes than tonic and dominant are given on the kettle-drums, although the tonic, at least, almost invariably appears. Beethoven, in the scherzo of his ninth symphony, gives a melodic octave figure (F—F) on the kettle-drums, and has a similar effect in his eighth symphony; in the scherzo of his seventh symphony the kettle-drums are tuned in sixths. Meyerbeer, in the second act of "Robert le Diable," has introduced an entire march for kettle-drums, played by two pair of these instruments, on the four notes, G, D, C, E. Wagner used the kettle-drum, solo, very freely in the most intense moments of his operas, to picture anxiety, suspense, or dread. They are used in "Lohengrin" at the death of Telramund, in the "Flying Dutchman" at the meeting of Senta and the Dutchman, in "Die Götterdämmerung" when Hagen stabs Siegfried, and in other similar climaxes, in this manner. Many modern composers use three kettle-drums in their scores, as this gives control of the tonic, dominant, and sub-

dominant notes, and at times allows the instrument to be used through various modulations. Auber was one of the first to do this, in his "Masaniello" overture. Beethoven was the first to use a chord on the kettle-drums, in the adagio of his ninth symphony, the two drums being struck together. Brahms uses three kettle-drums in many of his scores. But the most wholesale writer for these instruments is Berlioz. In his "Childe Harold" symphony changing triads are played on the kettle-drums, and in the picture of the Judgment-day in his "Requiem," he employs eight pairs of kettle-drums and ten drummers, as four drums are used in trills. A trill on these drums is not composed of two notes, as on the piano, violin, etc., but is a roll, produced by rapidly alternating the drumsticks; there is a remarkably important one in Beethoven's fourth symphony, in the first movement. Among the points of execution of the kettle-drum may be mentioned long notes, short notes (the tone being checked by the player placing his finger on the drumhead), trills, and muted tones, the last produced by laying a cloth over the drumhead. There are three kinds of drumsticks used, one with sponge tips for soft strokes, one with leather tips for medium, and one with wooden tips for loud and sudden tones. Among especial uses of the kettle-drums not mentioned above, we may name the practi-

cal joke played by Haydn in his "Surprise Symphony" by an unexpected loud stroke in the midst of a very soft passage, the four strokes which form so important a part of Beethoven's violin concerto, the peal of thunder in Berlioz's "Sinfonie Fantastique," and the beginning of the march of the knights of the Holy Grail in Wagner's "Parsifal," acts I and III.

THE GLOCKENSPIEL.

This German name, signifying a chime of bells, is applied to a set of small bars of polished steel, which, on being struck with a mallet, give forth tinkling tones of definite pitch. The glockenspiel is only used in passages of extreme sweetness, and the instrument is scarcely used in symphonies at all. Examples of its use can be found in the Feuer-Zauber in Wagner's opera "Die Walküre," and in Mozart's "Magic Flute."

BELLS.

Sometimes full-toned bells are required in orchestral or operatic performances. Berlioz in his march of the pilgrims, "Childe Harold" symphony, produced the effect of a deep-toned cathedral bell by uniting the reverberation of the horn with the twang of the harp, and a higher-toned bell by using flute and clarinet together with harp, in a similar manner, but the general way in which a bell-tone is produced

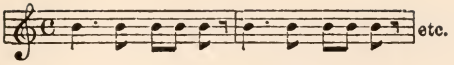
is by striking long bars of steel with a wooden mallet. Examples of such bell-tones may be found in the great bell figure in "Parsifal," in the "Huguenots," the bell in F here representing the bell of St. Germain, which gave the signal for the massacre of St. Bartholomew, and the passing bell (also in F) in the Miserere of Verdi's "Il Trovatore."

THE XYLOPHONE.

This trashy instrument consists of a number of bars of wood of different lengths, placed on a frame, and struck with a mallet. It has a definite pitch but has as much noise as tone. It is finely used, however, by St. Saens in his "Danse Macabre" where, in the revelry of the dead, the xylophone represents the bones of the skeletons knocking together.

INSTRUMENTS OF PERCUSSION WITHOUT PITCH.

These instruments, although they give no definite notes, are notated in order to show their rhythmic position, and the length of their sounds. They generally appear in the G-clef, and of course, require a a note on a single degree only. This note may be chosen at will and is generally in the middle of the staff. The following phrase, for example, might stand for a passage on any of the percussive instruments which follow it:



THE BASS-DRUM.

This is sometimes called the long drum. It can be used in loud passages to represent hurly-burly and festivity. In soft passages, as in Gounod's first Mass, and "Mors et Vita," it represents mystery. Wagner also uses it thus in the Venus music in "Tannhäuser." The bass-drum is played with a single drumstick, with a knob of chamois-skin at its end. Its tone-quality can be altered by changing the tension of the drumhead. Berlioz has used the bass-drum in a trill, with two kettle-drumsticks, and even endeavored to tune the instrument. Verdi followed this idea in the score of his "Miserere." Beethoven used this drum furiously in his tawdriest work, "The Battle of Vittoria."

CYMBALS.

These Turkish instruments are also without definite pitch. They are used for the clangor of festivity, and for rhythmic effects. They are two plates of a composition of copper (four parts) and tin (one part) and are clashed together, one being held in each hand; the custom of allowing the bass-drummer also to play the cymbals, tying one to the side of the drum, is not tolerated in the best orchestras.

When short notes are desired, the tone is stopped by pressing the plates against the chest. An especially explosive effect can be attained by hanging up one cymbal and striking it with a drumstick. The last note (if it can be called a note) of the "Sinfonie Fantastique" is of this sort. Wagner, in the Venus music, in "Tannhäuser," obtains a mysterious, sensuous effect by rattling the cymbals together, instead of clashing them.

THE TAMTAM.

This is the ordinary gong, and comes to us from China. It is only used in music at climaxes of a catastrophic nature, yet it is not always used *forte;* a good effect can be obtained by a soft stroke on the gong, and a *crescendo* is also impressive. A soft stroke is used by Meyerbeer in the opera of "Robert" at the rising of the nuns, and in Rossini's "Semiramide" at the opening of the tomb of Ninus. Even so conservative a composer as Cherubini uses a stroke of the gong, in his "Requiem Mass."

THE MILITARY DRUM.

This is called the side-drum, the tenor-drum, the snare-drum, etc. It is used in military pictures, chiefly, and is most effective in trills or rolls. It is very effective in working up a crescendo, and Meyerbeer obtains considerable power by employing it in

the Benediction of the Poignards in "The Huguenots." Beethoven uses it in many parts of his Egmont music, a military subject, but the best use of this humble instrument was made by Berlioz in his "Damnation of Faust" in the Zapfenstreich which follows Gretchen's solo, picturing the soldiers passing under her window.

THE TRIANGLE.

This is a bent bar of steel, which being struck by another bar, emits a tinkling tone of vague pitch, with a superabundance of by-tones. It is scarcely reckoned of sufficient dignity to appear in symphony, yet Schumann used it in his beautiful B-flat symphony to imitate the tinkling of the sheep-bells over the plain. It also is appropriate to gypsy music, and Weber uses it freely in his gypsy opera of "Preciosa." Beethoven has used it in the march movement in the finale of his ninth symphony, as also Wagner in "Tannhäuser," but the boldest use ever made of it is found in Liszt's piano concerto in E-flat, where the instrument stands out quite alone in a very important phrase.

THE TAMBOURINE.

The word means a little drum. In scores it is called "Tambour de Basque." It is also a gypsy instrument, and is freely used in all tropical dance-

music. It appears in Berlioz's "Childe Harold" symphony (the last two movements), in the "Roman Carnival" overture, in Weber's "Preciosa," etc.

THE CASTAGNETTES.

Two hollow bits of hard wood which are clicked together. Naturally they are only rhythmic, giving no semblance of musical sound, yet they are quite attractive when used in Spanish or gypsy dances. The castagnettes are prominently used in Bizet's opera, "Carmen."

CHAPTER X.

MUSICAL RHYTHMS, TEMPO-MARKS, AND ACCENTS.

Accent in music may be defined as that force given to certain notes or chords, greater than that upon the surrounding notes or chords; it is therefore generally relative rather than positive.

The regular recurrence of accent leads to the pulsation of music called *rhythm*.

The speed with which the accents, or pulsations, follow each other constitutes the Tempo, or "time," of the music. As the latter term is often ambiguously employed, it will be preferable to use the former. The chief marks of tempo, from slowest to quickest, are as follows:

Grave, *Largo*, *Larghetto*, *Adagio*, *Lento*, *Andante*, *Andantino*, *Moderato*, *Allegretto*, *Allegro*, *Presto*, and *Prestissimo*.

These Italian words have been given this order by custom rather than by their literal meaning. *Andantino*, for example, literally means slower than *Andante*, yet, by a misunderstanding, it is frequently

used in exactly the opposite sense. The slow tempo-marks are not so fixed in their succession as the others, and *Larghetto*, *Adagio*, and *Lento*, are used interchangeably by some composers.

The rhythms in music are classified as even, triple, and peculiar.

Even rhythms are those where the measure divides naturally into halves. 2-1, 2-2, 2-4, 2-8, 4-1, 4-2, 4-4, and 4-8, are examples of such rhythms. The following signs are also employed: 𝄵𝄵 or 𝄵𝄶 for 4-2, 𝄵 for 2-2, and 𝄴 for 4-4.

The sign 𝄴 comes to us from the middle ages when the triple pulsation of music was held to be the only perfect rhythm, as the monks held that it represented the Trinity. It was written with the following sign, O, and was called "Perfectum:" when the monks admitted an even rhythm, they called it "Imperfectum" and broke the circle in writing the sign thus: 𝄴.

When the measure divides naturally into halves or quarters and each of these sub-divisions into thirds, the result is compound even rhythm, as follows: 6-2, 6-4, 6-8, 6-16, 12-4, 12-8, 12-16, and even 24-16.

Triple rhythms occur when the measure divides itself naturally into thirds, as, 3-1, 3-2, 3-4, 3-8, 3-16, and compound triple rhythms are those where

the measure divides into thirds, and each of these thirds again sub-divides into thirds, as, 9-4, 9-8, 9-16; even 18-8 has been used.

Peculiar rhythms occur when the measure divides into fifths or sevenths, as, 5-2, 5-4, 5-8, 5-16, 7-2, 7-4, 7-8, 7-16. Sometimes when these rhythms are employed they are only an alternation of even and triple rhythms. (N. B. It will be well for the teacher to give practical examples of each of these rhythms at the piano, and also to accustom the student to identify different rhythms by ear.)

Complex or combined rhythms occur when two dissimilar rhythms are simultaneously employed. Wagner and Berlioz have used such effects to good advantage, but probably the most ingenious employment of this device is to be found in the finale of the first act of "Don Giovanni" where Mozart has combined a Minuet in three-four, a Gavotte in two-four, and a Danza Tedesca in three-eight rhythms, in a single movement. Spohr's "Consecration of Tones" affords another fine instance of combined rhythms.

Accents in music can be natural or artificial. The natural accents, explained above, constitute the rhythm of the music. They are divided into primary and secondary, the former beginning each measure. Each measure of a piece of music will be found to contain a strong part contrasted with a weaker part,

and to these the names of *thesis* and *arsis* have been given, although there is considerable doubt as to the true interpretation of these two Greek words. The former, however, is generally applied to the strong accent of the measure.

In a slow tempo the natural accents are generally less marked than in a quick one.

Artificial accents are either an intensification of a natural accent, or an accent where none was to be expected. In either case they disturb the natural rhythm for the time being. They can be divided into two classes, first, those having suddenness and force, and second, those having fullness or strength of tone, without suddenness. In piano music the first might be called the percussive accent, the second the pressing accent. The following are the chief signs of the former, ∧ >, both meaning the same thing unless used together, when this ∧ would be considered the more forcible.

Staccato marks also convey a degree of accent, and double stems are also used to express accents.

The word *Sforzando*, or *Forzando*, is also used to denote a strong and sudden accent. It is abbreviated *Sf.*, *Sfz.*, or *Fz.*, and is generally used to signify an accent on a single note or chord, being usually re-written if further accents are desired. Its superlative, *Sforzandissimo*, is abbreviated, *Sffz.*, and of course denotes great force.

The pressing accent is expressed by the word *Rinforzando*, which would denote fullness and strength of tone, without suddenness. It is abbreviated, *Rf.*, or *Rfz.*, and is sometimes applied to a single note or chord, and sometimes to an entire phrase. There are certain signs which have come into music only within a century, and which began in piano music when that instrument commenced to improve in its expressive qualities, which denote different degrees and styles of pressing accent. The tenuto-mark written thus, — signifies a clinging, soulful accent; the marcato ▾ also means the same pressing style of execution, but with each note somewhat separated from its neighbors; the portamento, ⁀ would seem to signify very much the same as the marcato, but in a less degree. Moscheles once told one of his pupils to let the notes "sob out," where such a mark appeared. Both pressure, and separation are desired in such passages. The word "Portamento" is decidedly misapplied in this case, for it means "carried over," which is by no means the effect desired when the sign is written. The fact that the singer uses the word in another, and its true, sense, would seem to make a change desirable, and we suggest that the term "Demi-marcato" be applied to this mode of execution.

The words *Forte-piano*, abbreviated *Fp.*, affect

two notes or chords; the one where the sign appears is to be played with loudness and suddenness, the one immediately following, with softness and decrease of power. The superlative of this effect would be marked *Sfp*, and would denote a very strong accent, followed, in abrupt contrast, by a very soft note or chord. The chief accents, then, may be thus classified:

Sudden, or forcible accents, ∧, >, *sf*, *fp*, *sfp*, and *sffz*.

Pressing, or expressive accents (without suddenness), —, —, , and *rf*.

Many accent signs which began in piano music have now been accepted in vocal and orchestral music.

CHAPTER XI.

ABBREVIATIONS AND SIGNS.

THE marks of dynamic force in music are represented by abbreviations of the words *Forte*, or *Piano*, and their superlatives. There are composers who hold that *pp* should be the softest, and *ff* the loudest effects used in musical marks, but, as the majority of writers use one degree both softer and louder, the list of these abbreviations may be presented thus from softest to loudest:

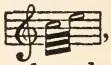
ppp, *pp*, *p*, *mp*, *mf*, *f*, *ff*, *fff*,

But there are composers who exceed even these limits, and it is not very unusual to find *ffff* marked in some works, while in Verdi's "Requiem" *ppppp* is used.

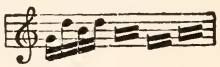
These marks continue in force throughout the phrase in which they are written, or until contradicted, but can be indefinitely extended by the addition of the word "*sempre*."

The teacher will be careful not to allow the students to associate these marks of force with the two pedals.

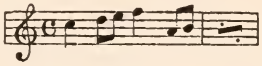
ABBREVIATIONS OF NOTATION.

The musician is frequently guided in the rapid comprehension of a passage, by its abbreviation. Most especially is this the case when a single note is to be repeated many times. If, for example, we desired the note C to be repeated in thirty-second notes throughout an entire measure, we would not proceed to write the note thirty-two times, but would write a single whole note, with the sign of thirty-second notes under it thus:  , which would show that its whole note was to be sub-divided into thirtyseconds. A half-note could be similarly divided into sixteenth notes, thus:  , and two notes could be alternated to one half their combined value, by the following notation,  , which would denote that C and E, were to be played in thirtysecond notes to the value of *one* half-note.

Repetitions of figures in eighth-notes or smaller denominations are designated by placing the flags or hooks of their denomination immediately after the figure in which they appear. This, for example, would show that the initial figure was to be thrice repeated after its first performance:



If the figure had been in thirty-second notes, three oblique bars would have been employed, if in eighth-notes, only one. The repeat of an entire measure is thus shown:



Other, simpler, repeat-marks, as "D. C." and "D. S." (which are by no means synonymous) may be left to the explanations of the teacher.

RESTS.

Few changes have taken place in this department of notation since the introduction of rests of definite length, in the thirteenth century, the chief points of difference being that the mediæval musicians used longer rests, as well as notes, occasionally. The longest rest of the middle ages was equal to eight whole-rests. The longest rest at present in use is the double whole-rest, written thus:  . One salutary change in the notation of rests has been the alteration of the quarter rest from  to , as formerly the quarter and eighth rests, written   resembled each other too closely to be readily distinguished in rapid sight-reading. We have stated that the double whole-rest is at times employed; examples of it may readily be found in Bach's "Well-tempered Clavichord." It may not be amiss to state in this con-

nection, that the double whole-note is still more freely used, and is written 𝅜 .

On the other hand, the smallest note or rest used to any extent in music is the sixty-fourth, but in Beethoven's "Sonata Pathetique" the introduction will afford examples of 128th notes, and in Dussek's Op. 10 No. 2, may be found even an example of *256th notes!!* Rests, of many bars, may be denoted by numerals placed on the staff,

ACCIDENTALS.

These are the temporary appearance of flats, sharps, or naturals, in a musical passage. The natural has received the name of "Cancel" from some theorists, and this name better expresses its function. The flat and the natural came from different forms of the letter B, in the crude notation of the eleventh century, and both were used to show the position of that letter only, a square ♮ signifying the higher position, a round one, ♭, the lower. A mistake as to the meaning of these two signs led to an error which is perpetuated in Germany to this day, the square B being mistaken for an H, and the name of that letter given to the note it represented. The sharp came in at a later epoch, and was originally a St. Andrew's cross. Accidentals are frequently over-used in modern notation, yet their over-use is not a fault, and

this fundamental rule may be strongly insisted upon:

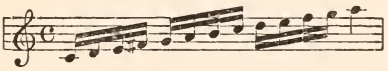
Always use an accidental before a doubtful note that its meaning may be made sure.

The two chief rules for accidentals may be stated as follows

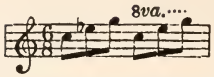
1. The effect of the accidental ceases at the bar-line unless the note affected is tied over into the next measure.

N.B. There is an obsolete rule that if the last note of the measure be affected by an accidental, and the first note of the next measure be of the same pitch, the accidental need not be re-written; but this rule is now more honored in the breach than in the observance.

2. An accidental does not affect notes of the same letter as the one raised or lowered by the sign, but in other octaves or parts. In this example,

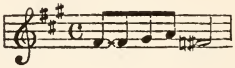


the sharp does not *properly* affect the second F, yet this rule is very frequently violated in vocal exercises, and in violin music, where a single accidental is made to do duty through an entire scale or *arpeggio* very frequently. In case, however, the octave-mark is used as in the following:



one accidental need not be re-written.

Double sharps and double flats need but a single natural for their cancellation, yet if a single flat were required after a double flat it would generally be notated with a natural preceding the flat, and the same would, of course, be the case with a double sharp followed by a single sharp, as follows·

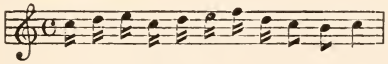


CHAPTER XII.

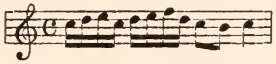
MUSICAL GROUPS, METRONOME-MARKS, ETC.

GROUPING.

GROUPS of notes are either natural or artificial. Natural groups are those in which the notes retain their normal value. In such cases the notes are grouped together merely to facilitate reading. A passage written thus,

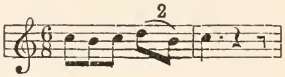


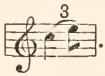
would be far more difficult to read than the same written as follows:



Yet all music anterior to the beginning of the eighteenth century was notated in the former manner. In 1660, John Playford, a distinguished English composer and music-printer, invented our system of grouping, calling the notes "tyed notes," but the new method gained favor very slowly, not being much used until after 1700.

Artificial grouping gives to the notes thus treated an abnormal value, indicated by a numeral placed above them. The smallest artificial group is of two notes only, these taking the place of three normal notes, as in the following example:

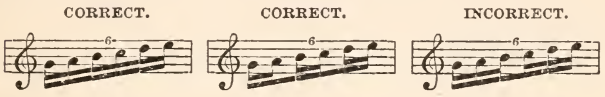


The triplet is the artificial group most used, and its three notes have the value of two normal notes of their own denomination Triplets of two notes can sometimes be used, one of the notes having two-thirds, the other one-third, of the total value, 

There are also artificial groups of four, five, six, seven, and any greater number of notes, but when a very large number of notes are to be given in a single measure, and are not of normal value, it is best to notate them in small notes, and to treat them as a cadenza.

The group most frequently written in an incorrect manner is the sextolet. The true sextolet is a group of six notes, having the value of four normal notes of the denomination it is written in, and either not divisible at all (having an accent on its first note only), or divisible into three groups of two notes

each. The sextolet which is divisible into two groups of three notes each, is not a true one, and should be written as two triplets; yet hundreds of examples of this false use of this group can be found, even in the works of some of the classical composers; these faults, however, are gradually disappearing in the carefully-edited modern editions. The following are examples of the correct, and incorrect modes of writing sextolets:



METRONOME MARKS.

The first attempt to measure the speed of music mechanically, was made by Etienne Loulié, a Frenchman, in 1696. It was the subdivision of a pendulum into various lengths, and was called "the chronometer" or "time-measurer." The invention was revived at the beginning of this century by Godfrey Weber, and was similar to the present pocket-metronome.

The metronome most generally known, however, is that which Mäelzel placed before the public (he stole the idea from a German named Winkel) in 1815. It is a pendulum with a movable counterweight which can be set at any designated figure, and

which will then swing to and fro that number of times per minute, an audible click accompanying each oscillation. When made with a bell, the sound of this appliance denotes the beginning of each measure or important rhythmic subdivision. Beethoven and Czerny were the first to use the metronome in marking their tempi.

The names of the different tempi, as "Allegro," "Andante," etc., upon the scale of the metronome, are often very misleading, and are not to be implicitly followed.

The following are examples of metronome marks: 1. M. M. ♩ = 42. 2. M. M. 𝅗𝅥. = 60. These would mean: 1. That the counter weight of the metronome is to be set at forty-two, and that each click is to represent the speed of a quarter note, or in other words, that the speed is to be at the rate of forty-two quarter notes a minute, As the metronome is not always exact in such slow movement, it would be well to double the number and allow each click to represent an eighth note, thus ♪ = 84. 2. This signifies that the metronome is to be set at sixty, and each click is to represent a dotted quarter. The metronome may be rigidly used in technical exercises with good results, but should not be so constantly employed in actual music, as a mechanical style would ensue. Yet its constant use is not a fault

with such pupils as are lax in the matter of correct time-keeping. *N. B.* The teacher would do well to supplement this lesson by procuring a metronome and explaining its mechanism, etc., to the students.

CRESCENDO AND DIMINUENDO.

Music, frequently, but by no means always, increases in power in ascending passages, and decreases in descending ones. It is impossible to mark all the signs of shading in a musical work, as it is constantly growing either louder or softer. Many points of shading must therefore be left to the taste of the performer. Almost all pupils have a tendency to hurry in *Crescendo* passages, and to lag in *Diminuendo*; the teacher should guard against this fault by early presenting passages wherein the opposite course is designated, as phrases marked *Allargando*, *Diminuendo ed accelerando*. The following general rules for *Crescendo* marks may be given, although the teacher, and good taste, must always guide the performance:

1. In a *Crescendo* occurring during the execution of a scale or grand arpeggio, endeavor to make each note louder than its predecessor, that is, grow louder note by note.

2. In a *Crescendo* occurring where the music is in figures or groups, let each group be louder than its

predecessor; let the *Crescendo* proceed by groups not by notes.

3. In vocal music, generally, each note is to be made louder than its predecessor; the *Crescendo* proceeds by notes.

4. Unless previously contradicted by some other sign, the *Crescendo* continues throughout the phrase in which it occurs.

5. The best culmination of a grand *Crescendo* is in a *sforzando*.

6. The rules for *Diminuendo* are similar to the first four given above, growing softer in the same manner that these passages grow louder.

SYNCOPATION.

Syncopation is an artificial accent, an interruption of the natural pulsation of the music.

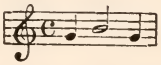
It can be produced by giving an accent where none is expected, by taking away the accent from a point where it is expected, or by both methods combined. The natural rhythm must be restored after the syncopation has been used for a short time, otherwise the ear will accept the artificial accent as a natural one and the effect of syncopation be lost.

Syncopations in accompaniments must be strong to be effective.

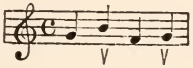
The effect of any syncopation is heightened if the note preceding it is shortened.

The chief styles of syncopation may be classified under the following heads:

1. Where a long note is written on a light part of the measure, extending over the succeeding strong part of the measure, as

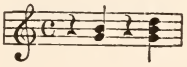


2. Where accents are written over the weak parts of the measure,

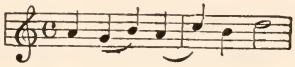


3. Where tenuto marks are written over the light parts of the measure, and staccato marks over the strong parts. This however, produces only a very light syncopation, and is not often employed.

4. Where rests are written on the accented parts of the measure, and notes or chords on the unaccented parts:

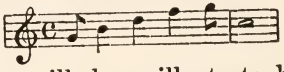


5. Where short slurs connect the unaccented parts of the measure with the accented parts, provided that the second note is not longer than the first:



6. Where notes are written between the beats of

the measure and are of sufficient length to continue over the succeeding accent or beat. This is the most used style of syncopation:



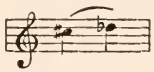
The teacher will here illustrate both vocal and instrumental syncopations, and also cause the students to write examples of all foregoing styles of syncopation.

SLURS AND TIES.

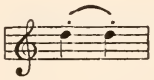
The slur first appeared in notation in connection with violin-music, and was used to show how many notes were to be executed with a single stroke of the bow. Soon after this it was also admitted into vocal notation to indicate the number of notes to be sung in a single breath. It was very sparingly used in the piano-music of the last century, since only the clavichord and the weak piano of that epoch could give a *legato* effect (the spinet and harpsichord being essentially *staccato* instruments) and because the rule that all music is *legato* unless otherwise marked was one of the principles of the eighteenth-century composers.

The tie is a curved line connecting two consecutive notes of the same pitch, and merging them into a single sound. These notes need not be written on the same degree of the staff, (although they generally

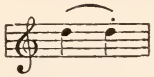
are) for in the tempered scale used by the civilized world the flat and the sharp of two contiguous notes can mean the same sound, and the following would therefore be an enharmonic tie:



If the two notes under the curved line have dots above them, the curved line is not a tie, but becomes a *portamento* (*demi-marcato*) mark. This is an example of such a mark:



If the second note only, in such an example, has a dot over it, the effect would be that of a short slur. The following,



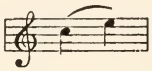
would be played as two notes, the first receiving some degree of accent, and the second being played with lightness, and a little shorter than its written value.

Slurs can be classified as long and short, a short slur extending over two notes only, and a long slur over three or more.

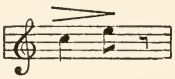
It is almost impossible to give absolute rules for the execution of the slur, there are so many exceptions. Yet the following rules may apply in general cases:

SHORT SLURS.

1. When two notes of small denomination (quarter notes or less) are connected by a slur, the first note is generally accented, the second played lightly; the tone of the first is to overlap into that of the second note; and the second note is frequently shortened. This example,



would often be played thus:

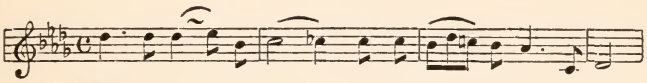


2. When the slurred notes are of a longer denomination, the second is not generally shortened.

3. When the second note is longer than the first, the effect of the slur is often nothing more than a *legato* mark.

4. Short slurs need not be especially accented in rapid running-passages. To lift the hand will be sufficient in piano music, to check the breath an instant, in vocal work.

5. In vocal music, both long and short slurs are often used merely to show how many notes are to be sung to a single syllable. This occurs when it is impossible to group the notes together by their stems also, as can be done with eighth notes and those of smaller denominations. This is an example of such grouping by slurs and stems:



SCHUMANN.

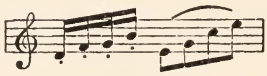
LONG SLURS.

The rules for these are yet more indefinite than those for short slurs; many modern composers use them as if they were mere flourishes of penmanship, and the conscientious teacher must always hold himself in readiness to correct the over-use and the incorrect use of these signs.

The first notes of long-slurred passages are by no means always accented, although a good effect can often be attained by shortening the note preceding the long slur. The only fixed rules that can be given regarding the use of long slurs are the following:

1. Properly used, the long slur is either a *legato* or a phrasing-mark.

2. The long slur can be correctly used to abolish the effect of a preceding *staccato*, thus:



3. In vocal music it is often only a syllable-mark, as explained above.

CHAPTER XIII.

MUSICAL EMBELLISHMENTS.

THE embellishments of music are ornamental figures which are added to any melody without forming an independent musical thought. The word is rather a misnomer, as these figures rarely embellish anything, but often cause the music to assume a frivolous and inconsequential character.

The signs of embellishment are among the most important of the abbreviations of music.

The larger part of the signs of embellishment are a bad legacy from the last century, when these ornaments were very freely used to prolong the tone of the flimsy instruments of the piano family. What began in necessity was continued and enlarged through a false taste, and there were *clavecinists* in France, a hundred and fifty years ago, who boasted of their ability to add embellishments to every note of a composition. Even then there were differences of opinion as to the interpretation of the embellishment signs, and at the present day it is almost impossible

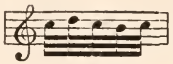
to give rules that will coincide with the views of all teachers.

The explanations and classifications which follow are collated from the best authorities, beginning with the early works of Philip Emanuel Bach, Leopold Mozart, etc., and including the most modern thought on the subject. Yet much is left to be desired, and the entire subject is one that requires the practical guidance of a teacher. Many of the signs have become obsolete, and when the same effects are desired in modern music they are notated in full, rather than represented by a doubtful sign. The works of J. S. Bach, however, which were composed at a time when these ornaments were very necessary, are full of these signs, and for this reason, if for no other, the careful study of the subject is recommended. The teacher should play some of the works of Bach, and also some of the compositions of Rameau and Couperin, to the students, before proceeding to the study of the succeeding rules, and should call especial attention to the embellishments which have been introduced into the pieces merely to sustain the tone of the clavichord or harpsichord.

THE TURN.

Among all the old embellishments none seems to have met with more favor than the turn or gruppetto.

Its sign, 𝆔, came from the neume notation of the dark ages, and showed the direction of the progression of the music. Draw a line through the following group, from note to note, and the origin of the sign of the turn will be at once perceived:



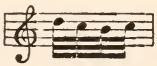
A line drawn through any sign of embellishment, 𝆔 is to denote its inversion.

The turn is generally played rapidly, but some deviation is made at times, in very slow and expressive passages.

The turn consists of three, four, or five notes according to its position, and the notes which precede or follow it, and it takes its rhythmic value from the note over or after which it stands.

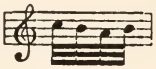
Its auxiliary notes are always the note above and the note below the principal, or printed, note.

The intervals of the turn are most frequently a tone for the upper, a semi-tone for the lower interval.

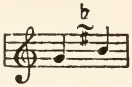


Sometimes, however, these are inverted, and the upper interval is a semi-tone, while the lower is a whole tone. This is frequently the case when the

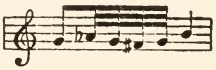
turn takes place on the third or seventh degree of the scale.



There are also turns, indicated generally, by one or more accidentals, in which both intervals are semi-tones, thus:



which would be played:

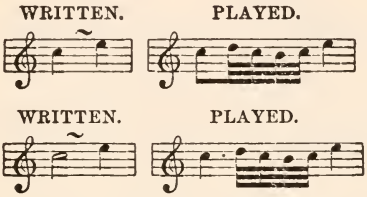


There are also turns in which both intervals are whole tones, but these are quite rare, and are generally written out, rather than represented by a sign. They almost always occur on the second degree of the scale. Schumann was fond of this effect, examples of which can be found in his Novellette Number 1, in "Der Dichter Spricht," and in some of his songs.

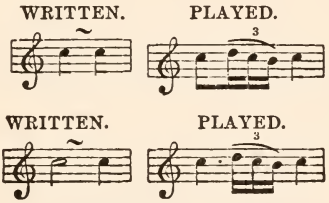
The general rules for the execution of the turn may be classified as follows:

1. When a turn follows a note, and the next note is of a different pitch, it consists of four notes (intervals as explained above,) played in the last half of

the rhythmic value of the principal note, if that be a quarter or eighth, but in a less proportion of the value if it is a longer note. Some teachers allow a turn after an eighth to dissolve the note into a turn of five notes. Examples:



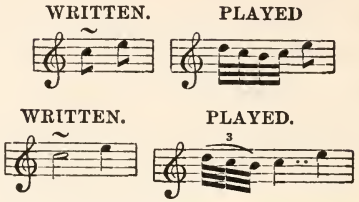
2. When a turn follows a note and the next note is of the same pitch, it consists of three notes, the rhythmic proportions being the same as in rule one. Examples:



Sometimes a triplet of thirty-second notes is used.

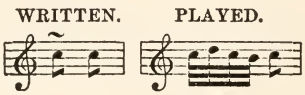
3. When a turn is written over a note, and the next note is of a different pitch, if the note is of the value of an eighth or less, it is dissolved into four notes of equal length; if, however, it is of a longer denomination, the first three notes are played rapidly

and a pause made on the last, or principal, note. Examples:



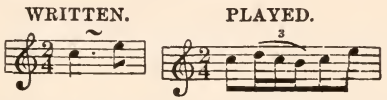
N. B. Some teachers allow such a turn to begin on the principal note, which would give five notes to the first of the above examples, but this does not occur when the preceding note is of the same pitch as the principal note of the turn.

4. When a turn is written over a note and the next note is of the same pitch, if it be of the value of an eighth note or less, it is dissolved into four notes, but now beginning with the principal note; if it is a note of a larger denomination, it follows rule three. Example:



5. When a turn follows a dotted note and the next note is a single, short, unaccented note, filling out a rhythmical division, the value of the dotted note is divided into thirds; on the first third comes the principal note, on the second third, three notes of the

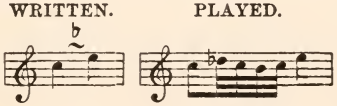
turn are played, and on the last third comes the last note of the turn. This forms a group beginning and ending with the same note, and with a note of the same rhythmic value. Example.



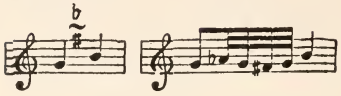
6. When a turn follows a dotted note which forms a regular rhythmic division of the measure, or when it is followed by two short notes, it is played as four notes following the principal note, as in rule one.

7. The inverted turn follows all the preceding rules, but begins with the lower auxiliary note instead of the upper. It is thus written or , but in modern editions is almost always written out in notation when it is required

8. Accidentals in turns can be written to affect either note. When it is intended to affect the upper note the accidental is written above the turn; when the lower note is to be affected, the sign is written below the turn. Accidentals can be written simultaneously both above and below, affecting both auxiliary notes. Examples:



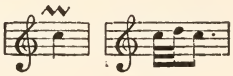
WRITTEN. PLAYED.



MORDENTS.

The word "Mordent" is derived from the French verb *Mordre* — to bite — and the mordent is really a fragment bitten out of a trill. The sign itself shows this, for in ancient days the trill was written thus ~~~~~, while the mordent, written thus ∿, represents a single beat of it. The intervals of the mordent (which is called "Praller" by the Germans), unless altered by accidentals, are according to the scale, that is, a mordent on the third or seventh degree would have a semi-tone interval, and all others would have whole tones. The rhythmic value of the first two notes which constitute the mordent, is taken from the principal note. Example:

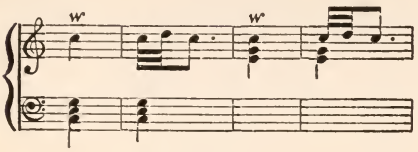
WRITTEN. PLAYED.



If there should be any accompanying note to that over which the mordent is written, it is to be struck simultaneously with the first note of the mordent.

Example:

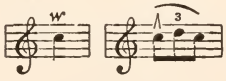
WRITTEN. PLAYED. WRITTEN. PLAYED.



The accent is sometimes upon the first note of the group, and sometimes upon the last or principal note. The Germans distinguish these two kinds by different names, calling the first *Praller*, the second *Schneller*.

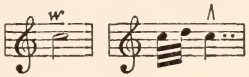
Mordents over short notes, and in rapid passages, are generally accented upon the first note of the group. (The teacher will give practical examples here, the "Sonata Pathetique," in the second subject of the first movement furnishing an admirable instance.) At times, in very rapid work, the mordent dissolves its note into a triplet.

WRITTEN. PLAYED.



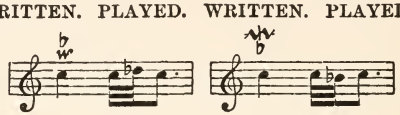
A mordent over a long note or on an unaccented portion of the measure, is generally accented on the last note, thus:

WRITTEN. PLAYED.



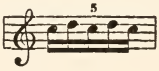
The inverted mordent*(which the Germans call "Mordent") is written thus: ∿, and follows the above rules, but takes the lower note as auxiliary.

Accidentals in mordents affect the auxiliary note only, if written against the sign. Examples:

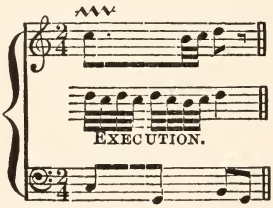


The double mordent is an incomplete trill; it is marked thus:

and executed thus:



It is also frequently used by Bach to indicate a short trill beginning with the auxiliary tone. Example:

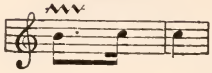


In the case of a dotted note followed by a single note, a pause is made on the last note of the double

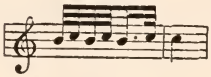
*Many teachers call ∿ a mordent, and ∾ "praller," "prall-trill," or "inverted mordent."

mordent, and the next note, if of small denomination, shortened.

WRITTEN.



PLAYED.

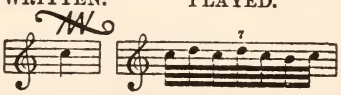


COMBINATION-SIGNS.

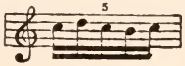
There are, especially in the works of Bach, combinations of turns and mordents, represented by single signs. These signs have given rise to considerable contention among musicians, and many different interpretations are given to them. They are very rarely used in modern piano music (in vocal music not at all), and when required are notated in full, the signs having become obsolete.

The following sign,  , or  , is a mordent, followed by a turn, in a single group. Example:

WRITTEN. PLAYED.

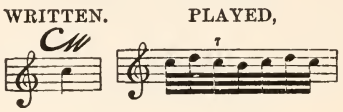


When the tempo is rapid, and there is difficulty in executing the figure in full, it can be played in five notes. Example:

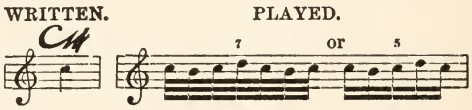


Von Bülow prefers the latter interpretation.

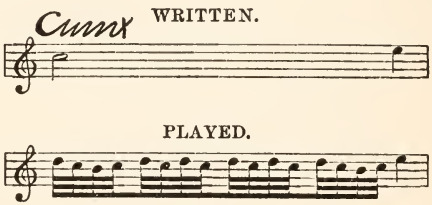
This sign, is a turn followed by a mordent, in a single group. Example:



The inversion of this figure is signified by this sign,  . Example:

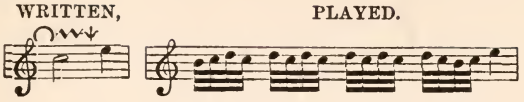


There are also combinations of turns and trill, represented by single signs. This sign,  , signifies a trill beginning and ending with a turn:

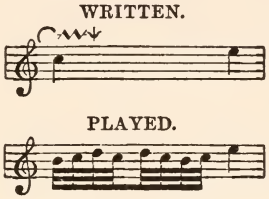


while the following, , signifies a trill beginning with an inverted turn, and ending with a simple turn.

Example:



If, however, either of these signs occur over a short note, where there would not be time to trill, the two turns alone can be played. Example:



CHAPTER XIV.

THE TRILL.

The trill is the oldest of all the embellishments. It appears in the earliest musical manuscripts of the Christian era. It was very freely used in the clavichord music of the last century to prolong the evanescent sound of the notes, and therefore we find many unnecessary trills (in the present state of the piano-forte) in the cadences of Bach, and even in the sonatas of Haydn and Mozart.

In the last century it was customary to begin all trills on the upper note, *i. e.*, the note above the principal note; Philip Emanuel Bach, in his "Versuch über die wahre Art das Clavier zu spielen" published in 1752, and the first valuable book on technique printed, speaks of the trill as beginning on the upper note; Leopold Mozart (father of the great Mozart) gives the same rule and adds many minute, and rather fanciful distinctions, among trills, almost all of which are now obsolete. Hummel, in his "Art of Playing the Piano-forte." was the first to

insist that the trill should begin on the principal note, and he was immediately followed in this opinion by Carl Czerny.

Hummel gives three reasons for this beginning: he argues, first, that the ear more readily grasps the principal note, hence the accent must fall upon it; second, the trill is easier to play in this manner; and third, as the principal note belongs to the melody, it must be made prominent, rather than the auxiliary note which is extraneous to the melody. There is but one great authority to-day, who holds to the ancient rule that the trill is to begin on the auxiliary note—Hans von Bülow—and in the various studies and sonatas that he has edited the student will find the trills invariably beginning thus (unless a false progression of harmony would be the result) but it is necessary to state that the general custom is opposed to this.

Briefly defined, a trill (the English sometimes call it "the shake") is a constant repetition of two notes, the principal (printed) note, and the note above, played rapidly in alternation (generally in thirty-second notes, or even quicker) to the rhythmic value of the note given.

The interval is according to the scale-progression unless otherwise indicated by accidentals, therefore it can be either a tone or a semitone.

The ancient sign for the trill, as that of the turn or of the mordent, was a photographic one, representing the progression of the voice to the eye, thus: ~~~~~, each bend of the line signifying one beat of the trill. If it was desired to end with an inverted beat, forming a turn, it was indicated by the usual sign of inversion, thus: ~~~~~.

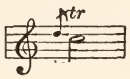
The modern sign is simply *tr*, sometimes with the addition of the serpentine line, but the latter no longer represents the number of beats, although it serves to show how far the trill is to continue unbroken, and is thus especially useful in very long, and in chain-trills.

RULES FOR TRILLS.

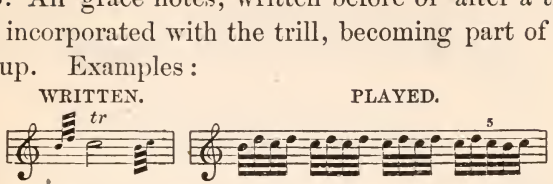
The chief rules for trills, and classification of trills, may be given as follows:

1. A trill must generally begin and end on the principal note, unless the next note is of the same pitch, in which case it ends either with the auxiliary note, or the note below the principal note: if directly preceded by a note of the same pitch as its principal note, the trill begins on the auxiliary note.

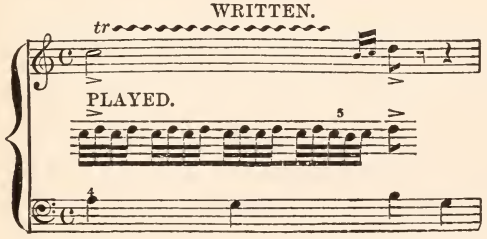
2. When, for especial reasons, it is desired to begin with the auxiliary note, that note must precede the trill as a short grace note. Example:

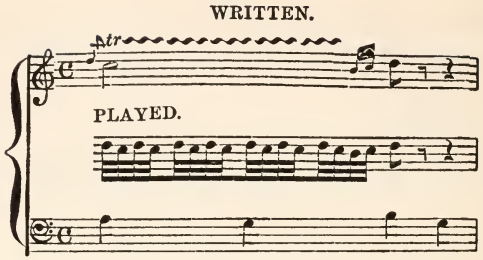


3. All grace notes, written before or after a trill, are incorporated with the trill, becoming part of the group. Examples:



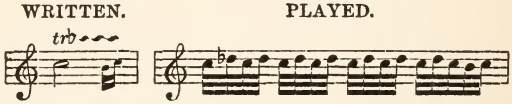
4. A trill generally ends with a turn, especially if it has the rhythmic value of a half note or more, and if it occurs in an ascending passage (in descending passages the final turn is sometimes omitted) and this turn is indicated by two grace notes, the note below and the principal note, written after the trill; these two notes, added to the last beat of the trill, form a turn, naturally. The concluding grace notes are often omitted in careless notation, therefore it is important to remember this rule. A trill without a terminating turn is called an "incomplete trill." It will also be noticed that a trill beginning and ending on the principal note has an unequal group at its close. This is not the case with a trill beginning on the auxiliary note. Examples:





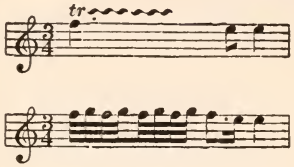
N. B. In writing out trills in full notation for pupils, the teacher will generally use thirty-second notes, although some trills are executed more rapidly.

5. Accidentals can be marked in trills either directly against the principal note, or after the trill sign; the latter notation affects the auxiliary note. Example:



6. A trill upon a dotted note, where this does not constitute a rhythmic division of the measure (see rules five and six of "Turns") has a pause upon its last (principal) note, generally equal to the value of the dot, or even in excess of it; in the latter case, when a single unaccented note follows, this is robbed

of part of its value, which is added to the rhythmic value of the last note of the trill. Example:



7. In *practising* the vocal-trill, many, but not all, teachers allow their pupils to begin with the upper (auxiliary) note. This is done to secure proper intonation, and purposely gives an accent to the less important note, where the chief danger of false intonation lies.

8. Chain-trills are a succession of trills, one leading into the other.

9. Double-trills are two trills proceeding simultaneously. There is frequently much carelessness in marking these. Two trill-signs, and two serpentine lines should be used.

10. The "false trill" is one that seems to be continuous, yet is not so, being interrupted sufficiently to allow the notes of a melody to appear, at intervals. Some teachers use the term to denote a trill beginning on the auxiliary note.

11. Double-trills, octave-trills, and even single-trills (forced-trills), in piano music, are at times

played with both hands, alternating, with wrist-action, but the trill is usually played in one hand, and with finger-action.

CHAPTER XV.

GRACE NOTES.

Grace notes can be divided into two classes, long and short.

The long grace-note is called the *appoggiatura*, which means the "leaning note," as it leans over into the melody, although not belonging to it.

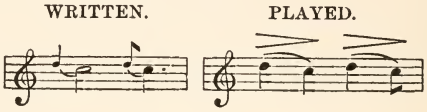
The short grace-note is called the *acciaccatura*, meaning "the crushed note," as immediately upon its appearance it is crushed into the harmony.

THE APPOGGIATURA.

This is one of the most expressive ornaments of music. Although it is a long note, and is given an accent, it is foreign to the harmony, and extraneous to the melody. It gives the effect of an unexpected dissonance, melting into a consonance, and is akin to an unprepared suspension.

The *appoggiatura* or long grace-note is generally notated in a small note which, however, represents its real value, or as near to it as possible. It gen-

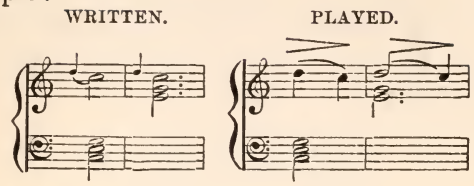
erally receives one-half of the value of the note it precedes, or, if this is a dotted note, two-thirds. Its rhythmic value is taken from the note it precedes, and, while it will not be wrong to prolong it beyond the above proportion, it must not be shortened. It receives strength as well as length, and is made louder than the note to which it is attached. Example:



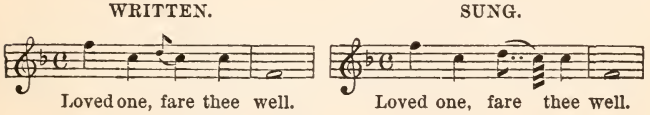
The reason that so important a note is written as a grace-note has already been stated: it does not belong to the melody, but is a dissonance or suspension, introduced for special effect; yet at the present time the *appoggiatura* is not generally notated as a grace-note, and even the *appoggiature* which appear in such works as Gluck's "Che faro senza Eurydice," or the sonatas of Haydn and Mozart, are changed into regular notes in the modern editions. This is not a fault; for the innumerable errors which have occurred in modern music in the matter of long grace-notes make a simpler notation desirable.

The *appoggiatura* is to be played simultaneously with any notes or chords which appear with its own note.

Example:



In vocal music, when an *appoggiatura* precedes a note, and the next note is of the same pitch, the *appoggiatura* receives *almost the whole value* of the note it precedes, the execution being very much like a *portamento*. Example:

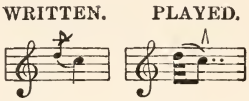


The *appoggiatura* has generally a languishing, sorrowful character, while the short grace-note (*acciaccatura*) has a crisp, bright, and joyous style, except in a few instances where it is used to represent a sobbing effect.

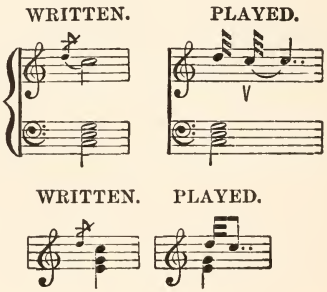
THE ACCIACCATURA.

The *acciaccatura*, or short grace-note, is the opposite of the foregoing: where the *appoggiatura* is tender, long, and accented, the *acciaccatura* is brisk, short, and never accented. It is notated as an eighth

note with a line drawn diagonally across the stem, thus, 𝅘𝅥𝅯. It receives as little value as possible, but what rhythmic value it has is taken from the note to which it is attached. Example:



The *acciaccatura* must be played simultaneously with any chord or note which is written with the note to which it is attached. Many students commit faults in this matter, playing the grace-note *before* the chord. Examples:



CHAPTER XVI.

MUSICAL FORM.

FIGURES AND THEIR TREATMENT.

Form is the basis of all arts, plastic or other, and may be defined as *contrast reduced to law*, since the foundation of form is in effective contrasts.

In poetic form, we find (proceeding synthetically) syllables combined into different feet, as the dactyl, anapæst, iambic, trochee, etc., poetic feet combined into lines, lines into stanzas, and stanzas into complete poems. In exactly the same manner we find musical notes combined into figures, figures into phrases, phrases into periods, and periods into complete movements.

Phrasing is the art of presenting these divisions with proper balance, and exhibiting their relationship to each other. A knowledge of musical form is absolutely essential to good phrasing. The figure, however, is of more importance in music than the foot in poetry, for it is frequently developed, and

often entire compositions are evolved from a simple figure, as a plant grows from a single seed.

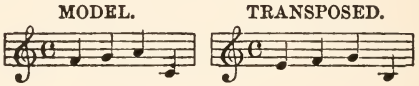
N. B. The teacher will here illustrate this point freely from different master-works. The first movement of Beethoven's fifth symphony is the best possible example. Wohlfahrt's "Guide to Composition" can also be read to good advantage by the student at this stage of study.

The figure which is used as the basis of a composition is called "the model," and should generally be characteristic, and of marked rhythm, that its changes may be easily followed.

A very simple model is, however, here used as example, in order that the following modes of transformation may be understood.

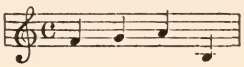
A figure may be changed in the following ways:

1. By transposition, in which case the figure appears intact, on a different degree of the scale: the intervals need not always be exactly the same as those of the model, if the new position (using the natural notes of the scale) necessitates a change. Example:

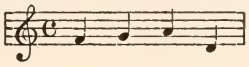


Continued and regular transposition leads to sequence.

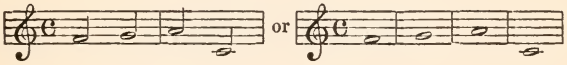
2. Expansion. This is a widening of one or more intervals of the figure. Generally the outside notes are given in a wider interval. Example:



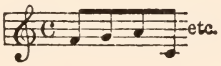
3. Contraction. This is a narrowing of one or more intervals of the figure. The reverse of the preceding method. Example:



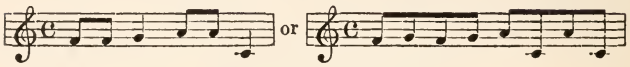
4. Augmentation. A presentation of the figure in notes of a larger denomination. Generally notes of double the original value are used, but sometimes notes of four times the original value are employed. Examples:



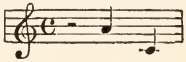
5. Diminution. Here the figure appears in notes of a smaller denomination, generally one-half of the original value. Example:



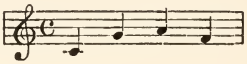
6. Repetition. Here certain members of the figure are repeated. Examples:



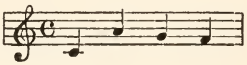
7. Omission. This is a fragmentary presentation of the figure. Example:



8. Irregular change of the order of notes. This is seldom employed as it is apt to make the figure unrecognizable. Example:

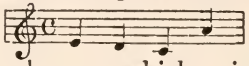


9. Reversion. This is the figure played through backwards. Example:

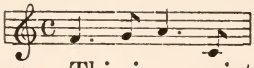


10. Contrary motion. This is the figure played upside-down. The student must be careful not to confound this with the preceding. Wherever an upward progression takes place in the original figure, a downward one is to occur in the inversion. This leads at times to notes which do not occur in the original

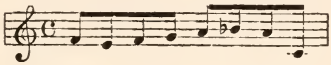
figure, even when the inverted figure appears upon the same degree as the original one. Example:



11. Rhythmic change, which might be made as follows:



12. Elaboration. This is a variation of the original figure. Example:



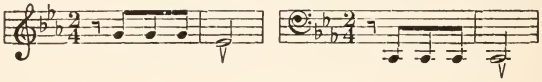
13. Simplification. This is the reverse of the preceding. With so simple a figure as the model we have taken, simplification would be impossible. Were the original figure the example next above, the model would be its simplification.

14. Ornamentation. This is the addition of the conventional embellishments: turns, trills, and mordents, to the figure. This mode of treatment is seldom employed.

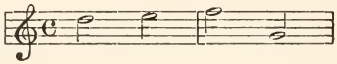
15. Rhythmic imitation. This is explained by its name. The rhythm of a characteristic model can be imitated on a single note, or by an instrument giving no note whatever, as bass-drum, or triangle. An instance of the latter mode may be found in Liszt's piano concerto in E-flat, where the triangle, which has no definite pitch, has an obligato phrase which is

purely rhythmic. But the best instance of this treatment may be found in Beethoven's fifth symphony, first movement, bass part to second subject, where the rhythm of the first figure is thus imitated. Our model is too simple in its rhythm to be used in this manner, but the Beethoven figure may furnish the example for this mode. Example:

MODEL. RHYTHMIC IMITATION.



16. Combinations of any of the foregoing methods of transformation can be used, providing the figure still remains recognizable. Example:



The above is our figure transformed by augmentation, expansion, and transposition.

In modern music a new style of figure-treatment has been introduced. This is the use of the *leit-motif*, or guiding figure. This is a musical figure to which some definite meaning is attached. It represents some person, thing, or dramatic event. This idea is found in Mozart's "Don Giovanni," composed more than a century ago, but it is used by Wagner

with such prominence that it acquires a new significance.

The *leit-motif* must be characteristic of the person or thing it is intended to represent, and must always remain very clearly recognizable. It is, therefore, not so freely developed as the ordinary musical figure. It is most frequently treated by transposition.

CHAPTER XVII.

THE SUITE AND ITS ORIGIN. THE OLD DANCES.

THE suite, which was the predecessor of our classical instrumental forms, had its origin in the ancient dance-forms. These dance-forms were, in fact, the beginning of all musical form, and the contrast of a quick dance with a slow one was the germ of the later forms. When, in the middle ages, the disesteemed secular musicians evolved contrast and symmetry, by ending with the dance-movement with which they began, giving the following succession,—quick dance, slow dance, quick dance,—they brought the first rondo form into existence, and in this may be found the basis of many of the musical forms of the present, both vocal and instrumental.

At a later epoch (about 1600) larger combinations of dances were begun, and the suite was founded. Among the dances which entered into the earliest suites the following were the most prominent:

The Chaconne. This dance is generally in triple rhythm, although 4-4 and 2-4-chaconnes are in exist-

ence. It almost always begins on the first beat of the measure, is generally major, and often slow in tempo.

The Sarabande. Triple rhythm. This is always dignified and stately in its character. It was adopted as the third movement in the best suites, and it originated in a Spanish religious dance.

The Courante. Triple rhythm. Its name is derived from the French word "courir" (to run), and its characteristic is a rapid, running style. In the suites of Bach, and other strict composers, it is the second movement.

The Passacaglia. Triple rhythm. Rather bombastic in character. It very closely resembles the chaconne, but is more generally minor than the latter.

The Minuet. Triple rhythm, and of slow tempo as a dance, but it has been so freely treated by the classical composers that its tempo is very often rapid and dashing. The name comes from the Latin "minimus" (the smallest), since it was danced with mincing, dainty steps. The minuet is the most important of the dance-forms, since it was the only dance regularly admitted into the modern sonata and symphony, and was also frequently used in the suite, while from its form is derived a musical form used almost constantly in modern music, and called the "minuet-form," in which a great deal of drawing-room, as well as some classical, music is written.

The Gavotte. Even rhythm, generally quadruple. The character of this dance should be genial and skipping. It should, properly, begin on the third beat, which results in a mild syncopation which is one of the charms of the gavotte. The phrases are generally short. Some gavottes have a *musette* as second part (or trio), the character of which should always be rustic. The musette has generally a drone-bass, which imitates the bag-pipe.

The Bourree. Even rhythm, generally quadruple. It is like the gavotte, but brighter, quicker, and heartier. It frequently begins on the fourth beat of the measure.

The Pavane. Quadruple rhythm. Slow and stately. The pavane is, among the even rhythms, similar to the sarabande among the triple.

The Rigaudon. This is in 4-4, sometimes in 2-4 rhythm. The name is spelled in many different ways, but the above is the correct spelling, as it was first brought out in the court of Louis XIII. by a dancing-master named Rigaud. It begins on the third, or fourth beat, has a lively character, and was sometimes sung as well as danced.

The Allemande. 4-4, or 2-4 rhythm. It is not certain that this was a dance. It is the first movement in the regularly constructed suite. It is cheerful, like an allegretto, in character.

The Gigue. 3-4, 6-8, 12-8, and sometimes even 4-4 rhythm. In almost every case it will be found to have a basis of rapidly-moving groups of three notes. It is the final movement of the suite, and is not unlike the modern tarantella in character, being very rapid, and possessing a rough heartiness. The loure is a slower species of gigue, which does not replace, but precedes it, when used in the suite.

Other movements used in the suite, but not derived from dances, are,

The Air, which is simply a melody. It is not fixed in rhythm, yet most of the airs of the older composers are in even rhythm, and of moderate tempo.

The Burlesca, and the *Scherzo* (not to be confounded with the modern scherzo as used in sonata or symphony) are both playful, and are in any rhythm.

There are other less important dances used in the suite, but occurring so seldom that their enumeration and explanation may be left to the teacher.

THE SUITE.

The word "suite" means "set," and it was applied to this species of composition, because the suite was at first merely a set of dance-movements. In its earliest stages it also received the name of "partita."

The contrasts of the suite were well established by Bach, and the movements gradually assumed the following order:

A prelude or not, as the composer desired, after which came the allemande, the courante, the sarabande, the intermezzi, and finally the gigue.

The intermezzi were from two to four dances, or other movements, left to the choice of the composer, as minuets, gavottes, etc. They were generally of moderate tempo, in order that they might not destroy the effect of the sarabande and the gigue, between which they came.

The suite, in the last century, had all of its movements in the same key, a uniformity which tended to monotony.

Handel left the precise order of movements prescribed by Bach, and his suites are very free,—even the dance names being discarded in some of them. Sometimes, in the old suites, a movement could be duplicated, and two courantes, two minuets, or two bourrees appear.

Variations were allowed to any movement but the first and the last, and these variations were of two kinds: if the melody were merely treated with embellishments the name "Les Agrements" was applied, but if a real variation was given, it was called "double," and in the Handelian suites it is not

uncommon to find a half-dozen of such doubles, in succession.

The modern suite is a much freer form. It is a succession of movements akin to the symphony, but with more liberty of treatment. The orchestral suites of Franz Lachner, and the so-called "Rustic Wedding Symphony" by Goldmark may serve as examples. At times, however, the modern composers reproduce the older form in their suites, in which case, of course, the shape above explained is employed.

The prelude to the suite appears under many different names in the old compositions, and "intrada," "preambule," "fantasia," "overture," "toccata," and "sinfonia," are among the names used. The last two require a word of explanation: the toccata was a technical work (from the word "toccare," "to touch"), a study in which some difficulties of execution were always present, and it generally preceded a fugue. In modern times it is still a study, but is more generally founded on the treatment of a single figure.

The word "symphony" had an altogether different signification in the first half of the last century, from that which it bears at present. It meant a prelude, a postlude, or an interlude (the pastoral symphonies of Bach's "Christmas Oratorio," and of Handel's

"Messiah" may serve as examples of this use of the word), or any instrumental passage appearing in a vocal work. This misuse of the word has been perpetuated in some modern music, and puzzles many a student. The proper definition of "symphony," at present, is "a sonata for orchestra."

The "intrada," in the old suites, frequently took the form of a march.

CHAPTER XVIII.

THE SONATA. SONATA MOVEMENT.

We now approach the form that is the finest among all the instrumental shapes. When music was contrapuntal, the suite, canon, and fugue were best adapted to instrumental expression, but in its present homophonic state, the sonata gives to it a yet more effective shape, and one that the great masters have developed in a degree that would have been deemed impossible at its inception.

A broad line of distinction must be drawn between the old sonata, that of the days before Haydn, and the sonata which that master introduced, which Mozart improved, and which Beethoven perfected. The beginning of the seventeenth century was a period of great activity in the musical world; not only was the opera beginning to dawn, but the oratorio had but just come into being, the suite was invented, and a new instrumental form, called the sonata, was engaging the attention of some of the leading composers. Not only was it a period of renascence, but

in the secular field, at least, it was an epoch of actual birth. The opera spread like wildfire from country to country; the oratorio was accepted as the most popular form of sacred music; the suite was taken up with avidity, but the sonata at that time had a vaguer standing, and experienced no such sudden growth.

The word is derived from the Italian "suonare," "to sound," and "suonata" meant simply "a sounding-piece," that is, a piece for instrumental performance. Frescobaldi was the first composer to use the word, and his sonatas were in one movement. Other composers enlarged this shape, and Purcell (the greatest composer that England has produced) wrote a violin-sonata, called the "Golden Sonata," which has five movements.

The shape, as may be conjectured from this, was a varying one, until Corelli (1653–1713) gave it two movements, of which the first one was binary in form, possessing two themes of contrasted character and keys, an episode, and a return of these themes.

From this shape was derived the so-called "sonata-movement," the first movement in the modern symphony and sonata, and the most important modern classical form for a single movement in instrumental music. It was the establishment of this form which gave to Corelli the title of "the Father of the Sonata," but it must be borne in mind that the sonata,

as a whole, did not spring from this form, but its chief single-movement form only; the idea of the succession and contrasts of movements was derived from the suite, already explained.

Gradually the form began to approach nearer to the shape which we now possess; Domenico Scarlatti (1683–1757) gave a more melodic and homophonic character to his sixty or seventy sonatas, and seemed to anticipate, in some degree, the character of modern piano-music; Kuhnau (1667–1722) first gave three movements to the sonata, and, by some historians, is said to have composed the first true sonata; but Philip Emanuel Bach was actually the first to give a modern style of treatment to the binary form, to use the movements with proper contrast, and to evolve a rondo form that could be used in contrast with the sonata-movement of Corelli.

Yet it was not Philip Emanuel Bach who produced the true sonata-form, although the germ of it can readily be discovered in his works; it is to Haydn that the world owes this great addition to the realm of music, and it is but just to give to him, and to him only, the title of "the father of instrumental form." Haydn, however, drew royally from the storehouse of Philip Emanuel Bach, and accepted his rondo-forms without any changes whatever. The development (thematic treatment) in Haydn's

sonata-forms is slight compared with the great power subsequently given to this part of the work by Beethoven. Never was there a form in music so readily accepted, so speedily brought to its culmination, as the modern sonata-form. The year 1759 saw the first clear model of sonata brought forth by Haydn, and 1824, only sixty-five years later, beheld the completion of Beethoven's ninth symphony, unquestionably the vastest and most developed sonata-form in existence.

Let us now examine the salient points of the shape introduced by Haydn. The teacher will find it best, at the beginning, to use the sonatas of Mozart to exemplify the points which he desires to explain to the students, since Haydn's piano sonatas are the weakest of all his sonata-forms, because he disliked the poor instrument of his day; while, on the other hand, Beethoven's sonatas frequently present exceptions, side-themes, etc., which are apt to puzzle the student while in the early stages of the study of form.

THE SONATA-MOVEMENT.

This is also called "allegro-form" by the German writers, as it is almost invariably used in the first movement of sonata or symphony, which is usually in a more or less rapid (allegro) movement.

The first movement of a sonata can be preceded by an introduction at the will of the composer. This introduction can serve to introduce themes when desired, and at times can furnish matter for subsequent development. It is almost always in a slow tempo, to contrast with the rapidity of the following movement.

The sonata-movement in a major key has the following divisions:

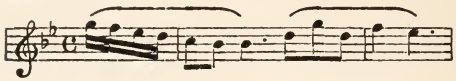
Division 1. *Chief theme*, in the tonic key, and generally ending with a cadence in that key, after which there usually follows a tributary passage, modulatory in its character, leading into the dominant key, and closing with a half-cadence in that key.

N. B. If, instead of a dependent passage, an independent theme, still following the same order of modulation, appears, it is called an *intermediate theme*.

Division 2. *Subordinate theme.* This appears in the dominant key, and ends with a full cadence in that key. It may also have a tributary passage if desired. It must be contrasted, in style, with the first theme, thus if the chief theme be bold and masculine in character (which is very frequently the case), the second theme is gentle and feminine. In extended works, even a side theme can follow the second theme.

Division 3. *Closing theme*, or themes,— for there

may be more than one. Mozart's sonata in B-flat major, beginning,—



has three closing themes, all quite recognizable, and each ending with a cadence.

The closing theme must be short, and may be either original, or derived from the chief theme of the sonata. The finale of Beethoven's Op. 2, No. 1, sonata in F-minor has a second closing theme which is derived from the chief theme.

The closing theme must end with a full cadence in the dominant key.

N. B. The English theorists generally apply the term "coda" to this division, but the nomenclature used in Germany at present, seems preferable because of its simplicity. We should advise using the word "coda" to designate the supplementary ending of the *entire movement* only. With the closing theme ends the *exposition* of the sonata.

N. B. Divisions 1, 2, and 3 are now repeated. This is done that the form may be easily grasped by the musical auditor, even at a first hearing, and that the succeeding development, which is founded on these themes, may be clearly understood. Sometimes two short, connecting passages are used here,

the first leading back to the chief theme, and called the *returning passage*, the second (after the repetition) leading on into division 4, and called *transition*.

Division 4. *Development.* This is a free *fantasie* on the themes, or any portion of any of them, contained in the preceding divisions. It is generally modulatory in character, going through many different keys, and presenting many transformations. It is, to the musician, the most interesting part of a large sonata, string quartette, or symphony, and displays the ingenuity of the composer in the best light. It ends in the key of the tonic, generally with a half-cadence on the chord of the dominant, or of the six-four.

(N. B. In this connection it may be stated that the first movement of the full sonata-form is chiefly intellectual in its character, the second emotional or romantic, the third playful, and the finale brilliant, or of *bravura* style.)

Sometimes, especially in small sonatas, there is no real development or thematic treatment present, and division 4 becomes merely an episode or middle part.

Division 5. *Return of chief theme* in the tonic, as in division 1, but with its tributary passage now altered to remain in the key of the tonic.

Division 6. *Return of subordinate theme*, as in division 2, but now in the key of the tonic.

Division 7. *Closing theme* or themes, as in division 3, but now also in the tonic.

With this recapitulation of chief, second, and closing themes (divisions 5, 6, and 7) the sonata-movement ends, but the composer is at liberty to add an appendix, in the shape of a *coda*, if he desires to do so.

The coda can be original, or founded on any subject-matter which has preceded it. It can be modulatory in character, and can present more thematic treatment. Of course it must end with a cadence in the tonic key. Beethoven brought the coda into a position of proper importance; with him it becomes, at times, a second development and a great climax to the movement. Examples can be found in the first movements of the "Sonata Pathetique," the fifth, and ninth symphonies, etc.

It remains to be stated that, during the modulations alluded to above, the signature of the composition is not generally changed.

The minor form of the sonata-movement is slightly different in the succession of its keys. While the major movement proceeds from tonic major in division 1, to dominant major in divisions 2, and 3, the minor sonata-movement begins in

tonic minor in division 1, and then proceeds to the relative major key in divisions 2, and 3,—the subordinate, and closing themes. After the development the chief theme (division 5) re-appears in the tonic minor.

Division 6, is the re-appearance of the subordinate theme, now in the tonic major or minor.

Division 7, is the re-appearance of the closing theme, or themes, generally in the tonic minor, but if there is a coda, either the tonic major or the tonic minor may be used in this division.

The coda, of course, must end in the tonic minor.

In the first movement of Beethoven's fifth symphony, for example, the chief theme appears in C-minor, the subordinate, in E-flat major, the closing theme, in E-flat major. Then follows development in various keys, after which the chief theme is recapitulated in C-minor. The subordinate theme next re-appears in C-major, followed by the closing theme in the same key. The movement ends with a brilliant coda which re-establishes the key of C-minor.

The first movement of Beethoven's sonata in F-minor, Op. 2, No. 1, can be analyzed as follows, according to the above scheme:

Division 1. Chief theme F-minor, measures 1–8; tributary passage, measures 8–20.

Division 2. Subordinate theme in A-flat major, measures 20–41.

Division 3. Closing theme A-flat major, measures 41–48. All is now repeated.

Division 4. Development founded on the chief figure of the chief theme, measures 49–93. Returning passage, measures 93–100.

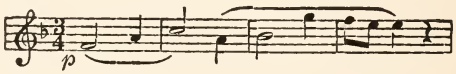
Division 5. Return of chief theme in F-minor, measures 101–108; tributary passage (modulations altered), measures 108–119.

Division 6. Subordinate theme in F-minor, measures 119–140.

Division 7. Closing theme, extended, in F-minor, measures 140–152.

There is no coda. The repeat marked at the end of this movement is not necessary, although it was frequently marked in the sonatas of the Haydn epoch. The repeat of the exposition, divisions 1, 2, and 3. must, however, always be made.

As a clear example of the major form of the sonata-movement, we can cite the Mozart sonata in F, beginning,—



Division 1. Chief theme in F-major, measures 1–22. Side theme leading from D-minor to a half-cadence in C, measures 22–40.

Division 2. Subordinate theme in C-major, meas-

ures 41–86. From measure 56 a tributary passage in different keys appears, but it ends in its proper key,— C-major.

Division 3. Closing theme in C-major, measures 86–93. All is now repeated.

Division 4. Middle part (in place of development) in different keys, measures 94–132, ending on the dominant seventh chord of F.

Division 5. Recapitulation of chief theme in F-major, measures 133–154. Return of side theme, but now altered to remain in the key of the tonic,— F-major, measures 154–176.

Division 6. Recapitulation of subordinate theme, but now in F-major, measures 177–222. Tributary passage begins measure 192.

Division 7. Closing theme as in division 3, but now in F-major, measures 222–229.

There is no coda.

Although the sonata-movement form is chiefly used in the first movement of the sonata or symphony, it can also be employed in other movements, and in separate compositions. There are sonatas in which each movement, from the first to the last, is in this form, and many classical overtures are also in this shape.

On the other hand, sometimes, but very rarely, the first movement of a symphony or sonata is *not*

in the above form. This is the case with the sonata in A-flat, Op. 26, by Beethoven, with Goldmark's "Rustic Wedding" symphony (as already stated, this is rather a suite than a symphony), and with many other well-known works. The strict succession of keys is also often departed from in modern sonatas and symphonies.

The great value of this classical form is that it gives scope both to the poetry and the skill of the composer; the former is displayed in a beautiful construction of themes, the latter in their development. In modern times some composers have endeavored to give the movement a much freer and more extended form, Schumann and Liszt especially building up a continuous development. Whatever the future may bring forth in such new forms, it would be a great mistake for the student to avoid a careful study of the forms of which Beethoven was the chief representative, or to believe that they are becoming obsolete.

CHAPTER XIX.

OTHER MOVEMENTS IN THE SONATA.

THE SLOW MOVEMENT.

THIS is generally the second of the four movements, although, for purposes of better contrast, it may at times take the third place. In the first eight of Beethoven's symphonies, for example, the slow movement is placed second, as this gives the best contrast with the opening *allegro*, but in the ninth symphony, where the opening movement is massive and rugged, rather than rapid and brilliant, the best contrast is attained by following it with a *scherzo*, and the slow movement therefore appears third.

In a three-movement sonata the slow movement becomes the central movement of the work.

The slow movement is the emotional or romantic part of the sonata, and is more free than the first movement. Some composers who are not successful in the sonata-movement form, are yet very expressive in the slow movement. Chopin is an example of this.

The slow movement is generally in a related key to that of the first movement. Beethoven frequently used the key of the submediant for this part of the sonata.

The tempo of the slow movement varies from *largo* (used by Haydn and others) to *allegretto* (used by Beethoven in his seventh symphony and elsewhere), but is most frequently either *andante* or *adagio*. In some large works rapid episodes are introduced in the slow movement, and the effect heightened thereby.

The slow movement has no fixed form, but among the forms in which it most generally appears may be mentioned,—

The sonata-movement-form, but with all its divisions shortened, and with a middle part rather than a development, as a slow tempo would not be suitable to a full development. Beethoven's B-flat sonata, Op. 106, furnishes an example of this, but is developed.

Andante con variazioni, the variation form, when used for a slow movement, has each variation in a slow tempo, which is not the case with many other sets of variations. An example of the variation-form used for a slow movement may be found in Beethoven's sonata, Op. 14, No. 2.

The second rondo-form, which is explained fur-

ther on. Beethoven's "Sonata Pathetique" furnishes a good instance of this. Other forms (song-form, sonatina, etc.) may be used.

The slow movement is often a dirge, a funeral march, a romanza, a reverie, an elegy, or any other mournful or emotional subject.

THE MINUET-FORM (OR "SONG FORM WITH TRIO").

The third movement is generally a minuet or a scherzo.

The minuet-form arose from the form used in the old dance-minuets, in which two of these were played in contrast with each other, and the first one repeated after the close of the second, as finale. Thus the second minuet became the central part of the minuet form. This second minuet being generally played in the seventeenth century by the wood-wind in three-part harmony, soon received the name of "the trio," a name which is applied to it still, although it is no longer necessarily in three-part harmony.

The trio is generally *cantabile* in character.

The minuet-form is used in many compositions which are not dance-movements, in fact, almost all drawing-room piano-music is in minuet or rondo form. The minuet-form has no development, but simply presents different themes in a fixed succession. The following is the form:

MINUET.

Division 1. Chief theme, sometimes ending with a cadence in the key of the tonic, sometimes in a related key. It is repeated.

Division 2. Second theme, or episode, in any related key, but leading to

Division 3. Return of Division 1 in tonic. Repeat Divisions 2 and 3.

TRIO, OR SECOND MINUET.

Division 1. Chief theme, in contrast with the chief theme of the minuet, and in another key. Repeated.

Division 2. Second theme, in contrast with the foregoing, and a different key is generally chosen from that used in the second theme of the minuet.

Division 3. Return of chief theme of trio. Repeat Divisions 2 and 3.

After this the minuet is repeated, but without repeats of its divisions, and this ends the movement.

When a composition or movement has the title "Minuet," it must not only be in this form, but have the minuet-rhythm, explained in a preceding chapter, but the numerous other compositions in minuet-form may have any rhythm whatever.

Sometimes the minuet may have two trios, or one trio appearing twice. Beethoven began this form in

his fourth symphony. The succession in such a case would be as follows:

Minuet, — first trio, — minuet, — second trio, — minuet.

Sometimes only a portion of the minuet appears as a coda after the second trio.

The origin of the minuet-form can be exemplified by some of the minuets in the suites of Bach, and Boccherini's minuet may serve as a good example of the regular minuet-form.

THE SCHERZO.

The word signifies a playful movement, and is found in the works of Bach and Haydn, the latter even having introduced it as a movement in two of his string quartettes, but the actual establishment of the scherzo as a musical movement was accomplished by Beethoven. Haydn, after admitting the minuet into his sonata-form, faithfully used it in very nearly each one, and Beethoven followed his example at first; but soon the constant 3-4-rhythm, and the succession of dance-themes, became irksome to the latter composer, and he determined to introduce a freer movement.

The scherzo, which first clearly appears in Beethoven's second symphony, was invented to replace the minuet, and the influence of the earlier form will be

found, not only in the first scherzos (or *scherzi*), but even at the present day. The contrast of a second movement, or *trio*, with the first, is retained in the scherzo, and although a scherzo may be written in any rhythm, the overwhelming majority are in triple rhythm, as is the minuet. All of Beethoven's symphonic scherzos are in triple rhythm, but in some of his other works 2-4-rhythms appear in the scherzo movement.

The scherzo was very much like the minuet, but the dance-like character of the minuet-themes was absent, the treatment was freer, and development was possible.

Kullak's scherzo in F may be used to illustrate part of the above statement, and the teacher will show the rise and progress of the scherzo, by examining all the symphonic scherzos of Beethoven, from the second to the ninth symphonies.

As above stated, the scherzo may be in any rhythm. The Northern composers frequently use it in a brisk 2-4-rhythm, to represent the *Halling*, the popular dance of Scandinavia, and it is not only permissible, but desirable, to represent folk-songs or dances in this part of the symphony or sonata, as the scherzo is the popular part of the classical form.

The scherzo may be written in various forms, since it has become the most elastic of movements

in modern music, representing rather a style than a shape.

Brahms has replaced the scherzo with an *intermezzo*, not always playful, but still retaining a trace of the minuet influence, in that it has a double movement. Its shape may be summarized as follows:

A movement of two themes like the principal movement of the minuet-form.

A trio, or second movement, in contrast.

Now, however, instead of repeating the first movement, as in minuet or scherzo-form, a mere reminiscence of it re-appears as coda. This is in line with the modern musical spirit, which is beginning to rebel against the many repetitions of a past generation. Even the repetitions marked by Schubert, Haydn, and others of the classical epoch, are by no means devoutly carried out by modern conductors and performers.

Chopin made of the scherzo an independent movement, and his scherzos for piano were a new departure in this field.

Mendelssohn best caught the dainty spirit of the scherzo, Beethoven frequently giving the rougher sides of musical humor in his scherzo effects.

THE RONDO.

Very frequently the sonata or symphony ends with a rondo.

The rondo-forms have long been a disputed point among theorists, some classifying them in six groups, some in five, and others in less.

We have thought it best, in this work, to follow the sensible classification used by Raff in the Frankfort Conservatory, which divides the rondo-form into *three* groups. All other of the so-called groups will be found to be derived from these three, or else from the sonata-movement with "middle part" instead of "development."

The classification alluded to is as follows:

FIRST RONDO.

This is simply formed of theme and counter-theme thus:

1. Theme. (Generally a song-form.)
2. Counter-theme or episode in a related key.
3. Theme as at first, in the tonic key.

SECOND RONDO.

This has two episodes or counter-themes.

1. Theme in the tonic key.
2. First counter-theme or episode, in any related key.
3. Theme in tonic key.
4. Second counter-theme or episode, in any other related key.

5. Theme or part of it in the key of the tonic.

Either of these two rondo-forms can have a coda. Examples of the first are too general to need mention, and the slow movement of the "Sonata Pathetique" is a clear example of the second.

It will be noticed that neither of the above have any development. As development is the cornerstone of modern classical composition, a rondo-form has been evolved which unites this with the melodic contrasts of the rondo; this is the so-called "sonata-rondo" which combines the sonata-movement with the rondo-form. It is as follows:

Division 1. Chief theme as in sonata-movement.

Division 2. Subordinate theme as in sonata-movement.

Division 3. Closing theme as in sonata-movement.

Division 4. Chief theme in tonic. (No repeat of divisions one, two, and three is made.)

Division 5. Middle part, or development; if the latter, it is not as extended as in sonata-movement.

Division 6. Return of chief theme, as in sonata-movement.

Division 7. Return of subordinate theme, as in sonata-movement.

Division 8. Return of closing theme, as in sonata-movement.

Division 9. Chief theme, or part of it, in the tonic key.

A coda can be added if desired. The final movement of Beethoven's "Sonata Pathetique" can be used to illustrate this form. It will be observed that the succession of keys is that of the sonata-movement, and that the form is exactly like that previously explained, except that there is no repeat of divisions 1, 2, and 3, before the development, and there are two additional presentations of the chief theme in divisions 4 and 9.

It may be added that the first rondo-form is the simplest in music, except the lied-form, or song-form.

THE SONG-FORM.

This generally consists of two periods in contrast. It may be simply thus:

1. Theme.
2. Episode and return of part of the theme as close.

Or it may be formed of three divisions as follows:

1. Theme.
2. Episode in related key.
3. Return of theme in tonic.

In either case it will be noticed that it bears resemblance to the first rondo-form. It has, however, smaller divisions.

THE FINALE.

The finale of sonata or symphony has undergone

some changes since Haydn's time. In the last century these forms ended with a jovial movement (frequently rondo-form) the spirit of which was evidently taken from the brisk ending of the suite — the gigue. Contrapuntal skill was frequently displayed at the end, as the best climax, but earnestness or lofty emotion, very rarely. Beethoven made a change in this, and while the finale of his first symphony is an example of the above style of geniality, the last movement of his second symphony shows a great advance in the direction of massive force and power. But in the third (Heroic) symphony he introduces a new style altogether, and grand symphonic variations make a fitting climax. In the ninth symphony Beethoven again uses variations, but adds another novelty by introducing the human voice in solos and choruses.

It will be seen from this that the finale has different shapes, the main object being to attain a climax, and give a counterpoise to the power of the first movement.

The forms most frequently employed in the finale are, —

First. *The Sonata-rondo*, as explained already.

Second. *The Sonata-movement*, but with less development than is used in the opening movement, as development should be the chief feature of the first movement, at least, in a large work.

Third. *Grand variations*, which are certainly the best offset to the development of the first movement, since variation differs from development in keeping the harmonic shape unchanged.

Examples of these modes of ending may be found in Beethoven's works, as follows:

First mode. Sonatas Op. 7, and Op. 13.

Second mode. Sonata Op. 2, No. 1.

Third mode. Sonatas Op. 109 and 111.

The "Grand Sonata," Op. 106, shows an ending in fugal form which was sometimes, but more rarely, used in the classical epoch, by Haydn and Mozart as well as by Beethoven.

CHAPTER XX.

OTHER SONATA-FORMS.

We have already intimated that the symphony and the string-quartette are of the same shape as the large sonata for piano; but there are yet other forms which are derived from this important shape, or from the sonata-movement. Among these may be mentioned the classical overture.

THE OVERTURE.

The word "overture" is derived from the French verb "*ouvrir*," "to open," and means "an opening piece." Overtures began when the opera came into existence (about 1600) and the simple instrumental preludes were of varying shape until Lulli, in the latter part of the seventeenth century, gave to the *French overture* two movements somewhat like the pre-Haydnite sonata. The overture to Handel's "Messiah" may serve to illustrate the style of this old form.

The medley overture had its origin in England,

and was not a formal shape, but merely a string of melodies taken from the opera which followed, and put together with no regard for anything save contrast. In modern days a small song form may begin such an overture. The overtures to "Zampa" and to "Fra Diavolo" are examples of the medley overture, and this style of composition precedes almost all the Italian and French operas.

The dramatic overture began with Gluck in the last century. It was not in fixed shape, but presented an epitome of the opera it preceded. Sometimes Gluck allowed it to be directly attached to the opera, leading into the first scene, and not standing as a separate composition, or movement. Beethoven followed this form by preference, although always making a separate movement of it, and his "Leonora No. 3" is one of the masterpieces of dramatic overture style. Wagner gave his adhesion to the fundamental idea of Gluck, and caused his latest overtures to become preludes, and lead directly into the opera.

But it is because of the classical overture that we speak of the overture among the sonata-forms, for it is directly founded on the sonata-movement. Mozart was the adapter of this form.

The classical overture has the shape of the sonata-movement, but makes no repeat of the first three

divisions (chief, second, and closing themes) before the development. The overtures to the "Magic Flute," "The Marriage of Figaro," etc., are illustrations of this shape.

The concert overture is also most frequently in this shape, but derives its name from the fact that it is not attached to any opera or drama but is a separate, independent work for concert performance. Mendelssohn was the chief composer of concert overtures, and his "Hebrides," and "Becalmed at Sea; and Prosperous Voyage" may serve as examples of this school of composition.

Weber wrote especially charming classical overtures, taking the themes for them directly from the opera to which they were attached, which most other composers in the sonata-movement form did not do.

THE CONCERTO.

This is generally a sonata in three movements (the scherzo or minuet being generally omitted) for the display of some instrument or instruments in connection with orchestra. There are concertos for almost every instrument, and some for two or three instruments together, as Mozart's concerto for harp and flute, and Beethoven's triple concerto for piano, violin and violoncello, both naturally with orchestra in addition.

The concerto has generally the sonata shape, with some deviations, but frequently its second (slow) movement is joined directly to its finale.

The cadenza, which occurs near the closing passage of the first or last movement, or both, is a display of technique and virtuosity, often composed by the performer, but founded on the themes of the movement.

The ideal concerto should not be a solo with orchestral accompaniment, but should interweave the solo instrument with the orchestra in a harmonious whole. Beethoven's fifth piano concerto (the "Emperor") in E-flat is a model in this respect, and so is Brahm's second piano concerto in B-flat, which has the four movements of full sonata-form.

THE SONATINA.

This is a smaller and cruder sonata, generally without any development, having two or three short movements, but preserving the general succession of keys already laid down. The song-form is often used in it, and the slow movement is frequently merely a song-form of the simplest character. The sonatinas of Clementi or Kuhlau can serve as examples wherefrom to study the shape.

OTHER SONATA-FORMS.

The symphony is an orchestral sonata. As it has

the advantage of orchestral color, its development can be more extended than would be advisable in a piano sonata.

Instrumental trios, string quartettes, classical quintettes, sextettes, septettes, etc. all belong to the school of chamber music (that is, music fitted for performance in a chamber, rather than in a very large hall), and are in the sonata-form.

It will be seen by the student that the sonata-form is more prominent in classical instrumental music than any other shape.

CHAPTER XXI.

THE VOCAL FORMS.

THE earliest vocal form was the Catholic mass, which some writers state to be as ancient as the second century. But the early masses were certainly much different in their musical form from those of today; at present, the mass is divided into three chief parts — the Offertory, the Sumption, and the Benediction.

THE MASS.

The mass contains the following numbers: "Kyrie," "Gloria," (containing also the "Qui Tollis," "Gratias," "Quoniam," and "Cum Sancto Spirito,") "Credo," (with "Et Incarnatus," "Et Resurrexit," and "Amen," as sub-divisions,) "Sanctus," "Benedictus," "Agnus Dei," and "Dona Nobis." These are in beautiful contrast in the emotions they express, and, therefore, the mass has always been a favorite form of composition.

The Requiem mass, generally shorter, omits the "Gloria," and contains a "Requiem Aeternam,"

"Lux Aeterna," and "Dies Iræ," (a picture of the day of judgment,) in addition to the other numbers.

The "Dies Iræ," is a Latin poem composed by Thomas de Celano, in the thirteenth century, and is, in large works, subdivided into "Dies Iræ," "Tuba Mirum," "Recordare," and "Lachrymosa," as separate numbers.

The "Stabat Mater" is another ancient sacred form. It pictures the Virgin Mother at the cross, and the poem was written by Jacobus de Benedictis in the thirteenth century.

The hymn, "Veni Creator," is said to be the oldest of the sacred poems used in the Catholic church at present. Among other portions of the Catholic service, we may mention that the words of the Salutation of the Host — "O Salutaris," — and the appeal to the Virgin — "Ave Maria," — have been set by hundreds of good composers. These are not strictly musical forms, however, they are rather subjects of composition, and fall somewhat outside of the technical explanations of this book. For this reason, we will also refer the student to special works on the subjects of opera, cantata, oratorio, madrigal, motette, etc., etc.

There are, however, certain vocal forms which are in a great degree definite, and these are within our province.

Generally they are derived from, or akin to, some of the instrumental forms, which are the foundation of symmetry and good contrast in music. Among these may be mentioned especially

THE ARIA FORM.

This is not unlike the minuet form, in that it contains two movements in contrast, and ends with a return to its first movement. Its general form may be summarized as follows:

First Part: An instrumental introduction; a theme generally of bold or brilliant character; an instrumental ending.

Second Part: (corresponding to trio.) A theme in contrast with the foregoing, generally *cantabile*, without ornamentation.

After this, the first part is repeated in full, sometimes with added *fioriture*, and a cadenza.

The constant *Da Capo* of the first part after the contrasted second theme, may be found in almost every solo aria of Bach or Handel, and shows how our forefathers enjoyed repetitions; but as the spirit of the present age is against them, it has become customary, in giving even such works as "The Messiah," to shorten this part, and, after the conclusion of the second part, to allow only a short portion of the first part to re-appear as coda, thus attaining the desired contrasts without unnecessary prolixity.

Robert Franz has done noble service to art, in arranging many of these abbreviated returns.

In the arias by Mendelssohn and other modern composers, the coda enters (instead of a full return of chief theme,) in the same manner. Examine "Oh, God have Mercy," or "It is enough," as examples of this mode.

THE RONDO.

The vocal rondo is generally like the second rondo form, already explained. The theme can remain unaltered at each appearance, or it can change key, and, in some degree, its harmony. Gluck's "I have lost my Eurydice," is an example of strict vocal rondo form.

OTHER VOCAL FORMS.

The operatic *scena* is an entire dramatic scene for solo voices; in it there must be many changes and contrasted emotions, and it generally contains several short vocal forms, as an aria, a cavatina, etc.

A cavatina is a simple melody, without much ornamentation, but generally very expressive.

Recitative is a musical declamation, often connecting the different parts of a scena, or preceding an aria or other vocal form. It can be *recitativo secco*, which is quite free in its interpretation, being entirely declamatory; or it can be *recitativo misu-*

rato, which is sung in proper tempo but with a chanting effect. Recitative began with Cavalieri, and Peri, in the earliest oratorio and the second opera ("Orfeo") A. D. 1600.

A caballetta is so called from Caballo ("a horse") because of the galloping style of its accompaniment.

It is impossible here to speak of the German *lied*, (the short vocal tone-picture,) the ballad, (the narrative told in music,) the folk song, or people's music, for these also have no fixed forms but must be studied practically in their various styles, yet there is one detail of the form of these short vocal works that can be specifically explained and analyzed. Either they repeat the same music to the different stanzas of a poem, (having music composed to but one stanza,) or they have music set to the poem from beginning to end.

THE STROPHE-FORM.

The strophe-form is where music is set to but one verse of the poetry, and repeated as many times as there are verses. This can be effectively done only where the verses are similar in character. Schubert used this form in his "Impatience," "The Miller's Flowers," "To Wander," etc.

THE ART-SONG.

A dramatic poem, or a poem where the verses are

contrasted in sentiment, can never be effectively set to repeating music. The Germans apply the word *Durchcomponirt* (through-composed) to a song where the music illustrates the meaning of the words throughout, and does not repeat with each verse. The term "Art-song" has been suggested for such compositions, and is certainly less awkward than a translation of the German term would be.

To illustrate the necessity of such musical treatment, let the student read Heine's poem, "The Two Grenadiers," and try to imagine the same music set to all the verses, (they are of equal length,) then let him take the wonderful setting of Schumann and study its graphic effects, and he will understand what the Art-song means. The student will find superb use of both the strophe form and the Art-song, in the *lieder* of Robert Franz. It is interesting to note Beethoven's improvement on the strophe form in the first number of "An die ferne Geliebte," entitled "Auf dem Hügel sitz' ich spähend," where the melody is the same to each verse, but the *accompaniment* is altered with each stanza. Beethoven's "Adelaide" is an example of the other, and better, school,—the Art-song.

CHAPTER XXII.

CONTRAPUNTAL FORMS.

ALL music may be divided into three styles,—monophonic, homophonic, and polyphonic.

Monophonic music is "single-sounding," that is, melody, or passages given in unison. For countless ages the world was satisfied with this species of music, the division of music into parts being scarcely more than 700 years old.

Homophonic music is "united-sounding," that is, music of different parts which, however, are blended into a single mass. Such music, represented by the modern harmonic progressions, is not 200 years old, Rameau, in 1722, being the first to try to build it into a system. Some writers make no distinction between the words "monophonic" and "homophonic," but the definition above given will nevertheless be clearly grasped by the student, and the necessity of a distinction between the two schools understood.

Polyphonic music is "many-voiced" or "plural-voiced" music, and is where the music is formed of

two or more different melodies going on simultaneously. This is contrapuntal music, which had its origin about the year 1250, and was developed into a science by the early Flemish composers, in the fourteenth, fifteenth, and sixteenth centuries.

Counterpoint can be defined as a combination of melodies in such a manner that their progressions make correct and agreeable music; in other words, counterpoint is the support of melody by *melody*, while harmony is the support of melody by *chords*.

Counterpoint is less rhythmic than harmony, as a rule, which accounts for the fact that the bar-line, and the division of music into measures, did not exist during the strictly contrapuntal epoch preceding the seventeenth century.

In the notation of the thirteenth century the notes were often written as dots or "points," and as the first application of the new mode of musical construction was in notes of equal length, the name applied to it was "punctum contra punctum" or "point against point" (note against note), afterwards shortened to "contrapunctum," whence our word "counterpoint." The subject or melody against which the counterpoint is to be written is called the *cantus firmus*, and the counterpoint itself, *discantus*.

Counterpoint can be single, double, triple, quadruple, quintuple, etc. Single counterpoint is where

the positions of the *discantus* and the *cantus firmus* are fixed, and cannot be inverted (above and below each other) and make correct music in either position.

Double counterpoint occurs where the position of two voices can be inverted, that is, they can be placed above or below each other, and make correct music either way.

Triple counterpoint is the writing of three voices or parts in such a manner that they may be placed in any order, above or below each other, yet form correct progressions in any of the six resulting positions.

The more complicated combinations, as quadruple, quintuple, etc., become rather mathematical problems than music, for in these, each note is so rigidly dictated by rule, that all the freedom of music is lost.

Counterpoint may be said to be the mathematics of music, since the proportions of its intervals, and the steps of its progressions can be calculated with arithmetical nicety.

There are five species of counterpoint, viz.—

Counterpoint of the first order. This is where note is written against note, that is, the *cantus* and *discantus* have notes which are struck simultaneously, and are of equal length.

Counterpoint of the second order. This presents two notes of counterpoint to each note of the subject.

Counterpoint of the third order. In this, four notes of counterpoint appear to each note of the subject.

Syncopated counterpoint. In this each note of the counterpoint is syncopated with each note of the subject.

Florid counterpoint, sometimes called "free counterpoint," is a combination of any or all of the foregoing orders. This is the counterpoint most usually found in classical works. It is said to have been introduced by Jean de Muris, about the year 1330, in the University of Paris, where he was Doctor of Theology.

Counterpoint consists largely of imitations, the subject being more or less freely imitated in the counterpoint.

These imitations may be,—

First. Literal untransposed, when they reproduce the phrase or figure in exactly the same notes.

Second. Literal transposed, when the figure is literally reproduced but in another octave.

Third. Strict melodic, when the figure is reproduced on some other degree of the scale.

Fourth. Free melodic, when changes are made in the reproduced figure.

The imitations may take place at any interval or at any part of the measure. They may be augmented, diminished, in contrary motion, etc.

Imitation may be prized as the very soul of contrapuntal music.

CANON.

When the imitation is strict and continuous, a canon is the result.

A canon is the complete imitation of a melody by one or more voices. The imitating voice may enter at any time after the subject has begun, but too long an interval should not be allowed to elapse or the effect of imitation would be lost. The imitation is best when entering on the even measure, as it will then have similar accents to the subject.

The imitating voice or voices can enter at any interval up or down, and the interval between the first note of the subject, and the first note of its imitation, determines the name or class of the canon; thus there are canons in the unison (these are bad because of the continual crossing of the parts), canons in the second, the third, the fourth, and so on up to the fifteenth or double octave.

If there are to be two or more imitating voices it is better that each should imitate the subject at a different interval, thus keeping the parts more distinct, and giving greater diversity

Canons can have the rondo, the song-form, and other of the shapes explained in preceding chapters, and can be blended with free harmonic parts.

Canons can be classified, in addition to the name derived from the interval of imitation, as follows:

1. Simple canon. Where one subject is exactly imitated, at any interval or distance, by one or more voices.

2. Double canon. Where two subjects are similarly imitated by two or more voices.

3. Free canon. Where the subject is imitated, but not exactly, mutations or changes taking place in the imitating voice.

4. Canon in contrary motion (*in motu contrario*). This is where the imitating voice inverts the subject, instead of exactly repeating it.

5. Endless canon (*canone infinito*). This occurs when at the close of the subject, while the imitating voice is giving the last part, the subject accompanies this with its first phrase, thus giving further matter for imitation, leading into the canon again, and making the work endless. These are useful as exercises, as the pupil has no temptation to stop, no cadence occurring.

6. Canon in augmentation. This is where the imitating voice reproduces the subject, but in notes of a larger denomination.

7. Canon in diminution. In this the subject is imi-

tated in notes of a smaller denomination. Richter does not allow this species of canon, but Cherubini and Stainer both permit it and give examples of it. Naturally it must be very short.

8. Circle canon. This is also a canon without an end, but in a different manner from that described in No. 5. The infinity here relates to modulation, the subject starting in the tonic, followed by the imitation in that key, then leading to the dominant (sometimes the sub-dominant) and thus going from key to key, via the dominant, around the circle of keys, until the player desires to cease.

9. Reversible canon, or crab canon (*canone cancrizens*), is a canon which can be made to accompany itself by reversing its melody. Canons can also be formed that read precisely the same whether played forward or backward, like the Palindrome in literature. Such canons are sometimes called mirror canons, since the reading backwards is facilitated by holding the music before a mirror, and reading the reflection.

10. The enigma canon. This is merely a musical problem with which the composers of the last century delighted to tease and puzzle each other. Only a few notes are given, and from these, without any addition (by means of changed clefs, etc.) a canon is to be evolved. A splendid example of this

kind of canon will be found in the "Räthsel" by Weitzmann, which contains twelve fine works written in this style.

Examples of the other varieties of canon may be found in Richter, Cherubini, Stainer, Jadassohn, and Gurlitt, all of whom have either written upon the subject, or have published collections of canons.

A canon in which the imitation follows the subject at the distance of only a single beat, is sometimes called a "*canone al sospiro.*"

CHAPTER XXIII.

THE FUGUE.

THE word fugue means "a flight," and it is so called because in this form of composition one part seems to fly before the other, the voices joining in a continuous chase. Constant motion is therefore the characteristic of the fugue. The name has existed for about 400 years, but the early fugues had no definite shape, and were very much like canons. Bach was the real father of the fugue, and it is to him that we owe the development of this king of musical forms.

Fugues can be classified as follows:

First. According to the number of voices appearing as "a two-voiced fugue," "a three-voiced fugue," etc.

Second. According to the number of subjects; a fugue with one subject is a single fugue, one with two subjects is a double fugue, etc.

Third. According to the exactness of the answer; an answer that exactly imitates the subject on the

degree of the dominant, constitutes a "real fugue," while an answer which has some alterations from the subject, in order to keep it in the "tone" or key of the composition, constitutes a "tonal fugue."

Fourth. According to the modulations and scale form of the composition; a fugue which keeps within the diatonic progressions is called a "diatonic fugue," while one which has chromatic progressions in its subject and answer is a "chromatic fugue." There are also fugues written in the old Greek scales (similar to the Gregorian tones) and these are called by the names of these scales, as a "doric fugue," etc.

Fifth. According to the style of the answer; which may be inverted, augmented, or diminished, producing an inverted, augmented, or diminished fugue, although regarding the last named there is the same conflict of authorities as with the diminished canon, Richter denying, and Cherubini and Stainer affirming, its existence.

Sixth. According to the general treatment of the composition; thus there may be a "strict fugue," a "free fugue," a "fugato," and a "fughetta."

The different divisions of which a fugue is composed are as follows:

1. The subject.
2. The answer.
3. The counter-subject.

These three divisions form what is called the "Exposition" of the fugue, and present the subject matter from which the remainder of the work is to be evolved. They are in the tonic key.

4. The episodes and repercussion.

These are the contrapuntal development of the exposition, and pass through many keys.

5. The stretto; this consists of the subject and answer overlapping more closely than in the exposition.

6. The organ point; this is not always present in a fugue, and is not recognized as a separate division by Richter.

7. The coda, or final episode.

THE SUBJECT.

This is the most important phrase of the fugue, yet may be only a few notes in length. It need not be beautiful in itself, since the merit of the composition depends rather on the manner in which it is treated. It should not be wide in compass as it keeps itself more distinct from the answer if narrow. The teacher will illustrate the various styles of fugal subjects from Bach's "Well-tempered Clavichord" and allow the student to identify the real, and tonal subjects, and recognize the brevity, and even the prosaic character, of some of the great fugue subjects. The subject should be a complete musical phrase, and should generally end on an accent.

THE ANSWER.

This is the subject transferred to the degree of the dominant. As already explained, it may be either exact (real), or may contain mutations (tonal). It may appear either above or below the subject. It generally enters at the end of the subject, but this rule is not invariable, for some subjects overlap with the answer (the fugue is then called a "close fugue") and some answers appear a short time after the subject has concluded, but in the latter case there must be a short connecting phrase called the "*codetta*."

THE COUNTER-SUBJECT.

This serves as accompaniment to the subject or the answer as they appear after the first entrance of the subject, in the exposition, but it is more than a mere accompaniment, for it is to be intertwined in all possible combinations with the subject and answer through the working out. It should be in double counterpoint with the subject, as it can then appear either above or below it in the subsequent treatment. It is generally in florid counterpoint.

The following is a schedule of the entrance of the different parts of the exposition of a four-voiced fugue beginning with the bass part, but it must be remembered that not only the bass part, but *any* voice can begin the fugue.

Soprano	————	————	————	Answer.
Alto	————	————	Subject	Counter-subject.
Tenor	————	Answer	Counter-subject	Free part.
Bass	Subject	Counter-subject	Free part	Free part

It will be observed that after the counter-subject has been stated by any voice in the exposition the part becomes free, that is, it does not present subject or answer, but adds free counterpoint to the other voices.

The counter-subject need not appear in the voice which enters last.

Regarding the entrance of voices in a four-voiced fugue it may be here stated that neither soprano and tenor, nor bass and alto are allowed to enter in pairs, no matter which of them comes first, nor is it well to begin with bass and soprano, or soprano and bass, as this would cause the first part of the exposition to sound empty.

The following are some good successions of voices in fugal expositions:

Bass,—tenor,—alto,—soprano.

Alto,—tenor,—bass,—soprano.

Soprano,—alto,—tenor,—bass.

It is best to end the exposition with one of the outside voices, as an interior voice would not be clearly perceptible with three other voices going on.

STRETTOS, REPERCUSSIONS AND EPISODES.

These are the body or "working out" of the fugue, and the parts in which the individuality of the composer is seen. The English composers divide the fugue into three divisions or "treatments," calling the exposition and its subsequent modulation the "first treatment," the repercussions, episodes and strettos the "second treatment," and the final stretto and coda the "third treatment."

The repercussion consists of the subject and answer, brought into new combination with each other in different keys but not over-lapping. The strettos give the same over-lapped. The episodes are the free modulations which bind these different combinations together and lead from key to key. At the end of the exposition the first episode appears and leads into the key of the dominant. This modulation is necessary since the "second treatment" is to begin (generally) with the answer, which is on the dominant degree, followed by the subject. At the end of this combination of answer and subject, another episode appears and leads into another key, in which a new combination appears. It must be remembered, however, that the cadence which closes each episode occasions no pause, but forms a starting-point for the next presentation of subject and answer in a new guise. Sometimes these presentations are of the nature of strettos (or *stretti*) but the name "stretto"

is sometimes applied only to the last presentation of subject and answer, in narrower position, which is called "third treatment" by the English contrapuntists.

Bach established a general order of modulations for the episodes; in his major fugues he frequently leads from the exposition to the dominant key, then to the relative minor, then the super-tonic minor, the mediant minor, and finally to the dominant or sub-dominant.

In minor fugues this succession is frequently used,—

Dominant minor,—relative major,—sub-mediant major,—and dominant or sub-dominant minor.

THE STRETTO.

This is the presentation of subject and answer in closer succession than they appear in the exposition. It often takes place during the working out, but the best stretto is the final appearance of all the voices, with subject, answer and counter-subject, in this narrower state, in the key of the tonic.

As the stretto is at times difficult to form, in the many ways required by fugue-writing, certain liberties are allowed to the composer. The stretto can therefore appear in any of the following guises:

Subject and answer.

Answer and subject.

Subject and subject.

Answer and answer, although this is rarely employed.

Even mutations, or changes of subject or answer, are allowed in the formation of the stretto.

The finest stretto is in canon form, and is called the *stretto maestrale*. If several strettos are made, it is considered best to introduce them in the order of their narrowness, the closest coming last. Sometimes the repercussion can be made up of strettos. Bach's fugue in C-major. No. 1 of the "Well-tempered Clavichord," is made up of seven strettos, and has no episodes.

THE ORGAN-POINT.

This often appears with the stretto, and is, naturally, a single tone sustained through the polyphonic progressions of that section of the fugue. In any case, there is generally treatment of subject or counter-subject going on above it. If the note is the tonic the organ-point appears at the very end, in the coda, after the stretto, but if it is the dominant note it may appear earlier.

Generally the organ-point is found at the close of three or four-voiced fugues. There are few organ-points in the "Well-tempered Clavichord."

THE CODA.

This appears after the last stretto, and it frequently presents the sub-dominant prominently. It ends with a *ritenuto*.

CHAPTER XXIV.

THE MODERN DANCE-FORMS, ETC.

THESE are rather rhythms than forms, the minuet-form, or a simple rondo-form, being generally used in all this school of compositions. Nevertheless it may be of practical benefit to the performer as well as the incipient composer, to become familiar with the characteristics of these popular styles of composition. Nor is dance-music to be despised, for in all ancient times it has been a great factor in the evolution of music, and if, in modern days, it is not very suitable for purposes of instruction, because of the superficiality of its thoughts and the extreme simplicity of its rhythm, in the idealizations of the dance, as found in the works of Chopin, Weber, Rubinstein, etc., these objections lose their force.

THE WALTZ.

The waltz is the offspring of the minuet, and in some of the minuets of Schubert the transition from the minuet to the more modern dance may be clearly

perceived. The works of Johann Strauss, the elder, fully established the new dance.

In the waltz, as in all the dance-forms, the phrases are rather square-cut, being of eight, sixteen, or thirty-two measures, generally.

The rhythm of the waltz is marked 3-4, but it will be found that each alternate measure only, has a strong accent; therefore almost all waltzes sound best if played as if they were written in 6-4 rhythm.

In a set of waltzes each waltz is generally in first rondo-form, but in an extended single waltz the second rondo-form, or the minuet-form can be used.

The waltz is the most flowing of the modern dances, and yields itself readily to dreamy, *legato* effects, although, to obtain the full effect of these, it is well to contrast them with a brighter, skipping theme.

THE POLKA.

This dance is derived from the Bohemian "pulka." It is a skipping 2-4 rhythm which admits of very little freedom of treatment or contrast; therefore the polka has seldom been chosen for idealized treatment by great composers. Among the most important free treatments of this rhythm may be mentioned Raff's "Polka de la Reine," and Rubinstein's

"Le Bal," while Bendel's "Invitation a la Polka" is, at least, a pretty example of what can be done with the rather ineffective rhythm.

THE MAZURKA.

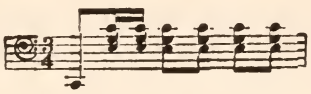
This dance, of Polish origin, is much more free than either of the above. It is in 3-4 rhythm, but more elastic and graceful than the waltz. It is somewhat slower than the waltz, and has at times a rather spasmodic style, and contains triplets, and other artificial groups in its melody. A certain springiness and skipping, as well as some degree of syncopation are characteristics of the mazurka.

THE POLONAISE.

The polonaise is the finest and freest of dance-forms.

It is written in 3-4 rhythm, and contains every contrast possible, becoming a veritable rhythmic *fantasie*. The melody contains runs, skips, and many artificial groupings, and syncopation occurs freely both in the melody and the accompaniment.

The accompaniment has many rhythmic changes in its construction, but this rhythm predominates,—



The melody is often completed with the third beat of the measure.

The polonaise, as its name indicates, is a Polish dance, and was as much of a processional as a dance, the former characteristic being clearly perceptible in some of the polonaises of Chopin and Liszt.

The bolero is similar to the polonaise, but has not its dignity and loftiness. It is of Spanish origin.

THE GALOP.

This is a tumultuous dance-movement in 2-4 rhythm. It is rapid in tempo, and while its musical ideas are rarely of any worth, it can still be used as an exercise in wrist-action and octave-work, as it generally has many passages well-suited to these studies.

None of the other dances used in the modern ball-room are available for good musical treatment.

THE MARCH.

Most marches are in the minuet-form, possessing a contrasted trio.

The rhythm of the march is generally 4-4 or 6-8, but a lofty processional effect can often be attained with 12-8 rhythm.

In the earlier days of secular composition, down to the seventeenth century, marches were written in

a triple rhythm, and Brahms has used this rhythm to good effect in a noble funeral march.

The best composers have written compositions in march-form, and among them may be mentioned Mendelssohn's "Wedding March," Beethoven's "Turkish March," Chopin's "Funeral March," Gade's "Three Duets in march-form," Wagner's very ambitious marches, etc., etc.

The reverie is a dreamy composition, frequently in song-form. It may be in any rhythm, but it will be found that 3-4 will be best adapted to quiet effects, and 2-4, least.

The rhapsodie, as its name denotes, is ecstatical in its character. It is frequently used to represent the wilder strains of folk-music. Liszt has given to the rhapsody a charming and effective character, and his Hungarian rhapsodies are among the most characteristic of modern piano-music. The Hungarian rhapsody, as represented in the gypsy music of that country, is in two movements, the first of which, called the "lassan," is tender and slow in character, serving the purpose of an introduction; the second, called the "friska," is bright and dashing, ending with a frenzied vehemence. Beyond this, the rhapsody has no regular form, and may be in any rhythm.

The romanza has generally the song or rondo-

form, and must, of course, be passionate and free in its character. It may be in any rhythm.

The song without words, and the *cavatina* (when this term is applied to instrumental music) must be singable in character, and must have a certain dramatic import, although it is not necessary that the composer should attach a definite meaning to the work.

The serenade. This word is used in different senses in instrumental music. In the last century (and at times in this) it was used to denote a rather free suite of pieces, often orchestral, and forming a short programme of music for an evening performance; such serenades generally began with a march-like movement, contained a slow movement and a minuet among their intermezzi, and concluded with a brilliant movement, but the form was not a fixed one. In another sense the serenade denoted a nocturnal love-song of soothing and tranquil character. There is also a species of serenade, intended for morning performance, which properly is called an *aubade.* Schubert's glorious "Hark, hark the lark" (composed to the Shakespearian words in a very few minutes, on the back of a bill of fare, in a Viennese restaurant) is a vocal specimen of an aubade, but there are instrumental works in this spirit also.

The tarantella. This is a very rapid dance of

Italian origin. It is running rather than skipping in character, and is most frequently written in 6-8 rhythm. *The saltarello* is like the tarantella but is a trifle slower, and skipping in style. Some of the saltarellos are in triple rhythm.

The barcarolle. The word means "boat-song," and in this composition the cradling motion of a boat, or the rhythmical swing of the oars is imitated. As a 6-8 rhythm is best adapted to do this when used in slow tempo, most barcarolles are in that rhythm and speed. The *gondoliera* is of the same school, and scarcely differs from the barcarolle.

The pastorale. A rustic composition. It should be naive and innocent in character, and frequently a drone-bass, imitating a bagpipe and giving a countrified effect, is introduced. A 6-8 or 12-8 rhythm of moderate rapidity is best adapted to producing a genial effect, and many rustic pieces have one of these rhythms. Handel most frequently used 12-8 rhythm in his pastoral subjects.

A potpourri is a medley, or set of melodies strung together with no rule as to their succession save that of contrast. Yet it may be insisted on that the potpourri should begin and end in the same key, which, unfortunately, is not always attended to by those composers who dabble in this popular style of writing.

The nocturne is a piece of gentle, tranquil character, suiting it to the calm of evening. Its Italian name, frequently used, is "*notturno*" and Schumann used the word in a German form in his "Nachtstück."

Field was the founder of this favorite form of drawing-room music, and it is to be deplored that the more poetic nocturnes of Chopin have caused the healthy, solid compositions of this composer, in this form, to be in some degree forgotten. The word "nocturne" was applied, in the last century, to a short, instrumental serenade of three or four movements.

The albumblatt, or *album leaf*, is a short, unpretentious piece, generally in first rondo, or in song-form, such as might be written spontaneously on the page of a lady's album. Among other short pieces which should have this improvisational and informal character may be mentioned the *impromptu* and the *bagatelle*.

The ballade and the *legende* should have a dramatic character, as if the music were telling a tale, although the meaning of the story in tones, may be left to the imagination of the auditor.

The berceuse is a cradle-song and represents in its regular and tranquil rhythm, the rocking of the cradle. As a moderately slow 6-8 rhythm produces this best, we find most cradle-songs thus written.

There are other names applied to certain musical works as "*sonnet*," "*poeme*," etc., but the increase of a fanciful nomenclature, which often is meaningless, is to be deplored; we need only mention one of these, the "Symphonic Poem," which Liszt brought into existence. This is a long orchestral movement with themes and episodes, and development, but the latter is generally continuous and not confined to a single section of the work, while the form has more freedom than is allowed in a sonata or sonata-movement.

CHAPTER XXV.

CONCLUSION.

THE foregoing chapters give but an outline of the work that is to be accomplished before the student has a right to the much-abused title "musician." Nor, when the teacher has filled in the details of the sketch we have given, must the true student cease his work. The art of music is continually changing, and constant study is needed to keep abreast of these changes, therefore the musician of the future must necessarily be a reader. In his reading, however, he must not be too omnivorous; it would be well to discard the sentimental side of musical literature altogether. The art is in itself so emotional that there is danger of adding sentimentality to sentiment, and in working this evil the musical novel is an important factor.

Sift well the anecdotes attached to various musical compositions: in most cases they are untrue, and may lead astray in the comprehension of the work thus fictionized; in any case, music needs no such fictitious aids.

Bear in mind that in the field of modern music there is yet much partizanship, and do not give unquestioning adhesion to a single authority without having consulted others.

Avoid pedantry. Remember that there is much very good music in existence which is not yet recognized as "classic."

Assist good native music with all your power; there must yet be a great American master in the field of music; try to hasten his coming.

Read outside of the musical field also; our art touches all the others at some points, and that musician is broadest who heartily enjoys the other arts as well.

Cultivate ensemble-playing; it should be the delight of the true musician often to sink his individuality, and perform good music for music's sake.

We have spoken of the musician throughout this book in the masculine gender; there have as yet been no leaders in the musical field, among women. The chief cause of this may have been that they have studied music too entirely with the intention of *pleasing*, merely.

The study of languages will be of vast importance to the musician who desires to read exhaustively. To the pianist and composer the German tongue may be commended as the most important, after his

own, for there are many treatises on the various branches of our art which are only accessible in German. The philosophical aspect of music, its scope, its relation to other arts, and to life, can only be thoroughly studied, at present, in German literature.

The vocalist, however, will find Italian, as the most singable of languages, to be of the first importance in the practical application of some details of his art. The practice of singing in Italian without understanding the language is too ludicrous to be seriously spoken of.

The lives of the composers should be studied, for in the character of a composer we often get some clue as to the interpretation of his music. Musical history is naturally of great importance. The older composers can scarcely be understood without knowing the causes which led up to their work.

Every musician should early form for himself a small library of reference works in his own art.

Bach should be faithfully studied by every musician, no matter what his special branch may be, for in Bach's works, the intellectual and the emotional are so well balanced that a correct taste cannot but follow a comprehension of them, but this understanding will not come all at once, and to many, at first, Bach's compositions will seem the personification of dullness.

Avoid useless speculation and reading in music. The ancient Greek music, for example, has occasioned much fruitless theorizing.

In studying musical criticism, make Schumann the model. Try to think with, not against, the composer you are judging.

Study score-reading. Begin this by thoroughly acquiring the use of the alto and tenor clefs. Then study transposition. After this read slowly some simple vocal quartettes, in the G, and F-clefs, from open score. From these proceed to some instrumental trios (Beethoven's Op. 1, for example), and then to simple string quartettes. The first actual scores attempted should be those of Haydn, or Mozart, and at first the slow movements only should be played, on piano or organ. In this study, however, it will be better to have the guidance of a thorough teacher.

As a matter of course, harmony, and some degree of counterpoint, must be studied, and here, too, self-instruction will amount to but little. It is the crying evil of musical study in America, that the student will not sufficiently acquire the rules of these branches. After thoroughly digesting the lessons of Richter, the student can advance himself greatly by examining many master-works, and seeing how the great composers apply the rules he has learned; this practical

insight into musical construction is of inestimable value in forming a composer; Wagner derived nearly all his musical knowledge by this means.

Conducting can only be learned from a teacher, and by actual experience.

It will be readily seen from these concluding remarks that the famous lines

> "Man's work is from sun to sun,
> But woman's work is never done."

may be applied with increased force to the labor of the musician; if, however, he loves his art, much of this study, after a certain grade is passed, will seem rather recreation than a severe task.

In any case the student owes it to himself and to the dignity of his art not to belong to the great army of mere drawing-room players and so-called "professors." In the hope that these suggestions may (with the assistance of his teacher) point out the road which leads to a fuller musical development, we submit to him this condensed volume of studies, which we hope may guide him to become at least an earnest musician.

THE END.