

Chapter III.

HARMONY.

General observations.

The art of orchestration demands a beautiful and well-balanced distribution of chords forming the harmonic texture. Moreover, transparence, accuracy and purity in the movement of each part are essential conditions if satisfactory resonance is to be obtained. No perfection in resonance can accrue from faulty progression of parts.

Note. There are people who consider orchestration simply as the art of selecting instruments and tone qualities, believing that if an orchestral score does not sound well, it is entirely due to the choice of instruments and timbres. But unsatisfactory resonance is often solely the outcome of faulty handling of parts, and such a composition will continue to sound badly whatever choice of instruments is made. So, on the other hand, it often happens that a passage in which the chords are properly distributed, and the progression of parts correctly handled, will sound equally well if played by strings, wood-wind or brass.

The composer should picture to himself the exact harmonic formation of the piece he intends to orchestrate. If, in his rough sketch, there exist any uncertainty as to the number or movement of harmonic parts, he is advised to settle this at once. It is likewise essential for him to form a clear idea as to the construction and musical elements of the piece, and to realise the exact nature and limitations of the themes, phrases and ideas he is going to employ. Every transition from one order of harmonic writing to another, from four-part harmony to three, or from five-part harmony to unison etc., must coincide with the introduction of a new idea, a fresh theme or phrase; otherwise the orchestrator will encounter many unforeseen and insurmountable difficul-

ties. For example, if, during a passage written in four parts a chord in five-part harmony is introduced, a fresh instrument must needs be added to play this particular fifth part, and this addition may easily damage the resonance of the chord in question, and render the resolution of a discord or the correct progression of parts impossible.

Number of harmonic parts—Duplication.

In the very large majority of cases harmony is written in four parts; this applies not only to single chords or a succession of them, but also to the formation of the harmonic basis. Harmony which at first sight appears to comprise 5, 6, 7 and 8 parts, is usually only four part harmony with extra parts added. These additions are nothing more than the duplication in the adjacent upper octave of one or more of the three upper parts forming the original harmony, the bass being doubled in the lower octave only. The following diagrams will explain my meaning:

A. Close part writing

Four part harmony. Duplication of 1 part.

Duplication of 2 parts. Duplication of 3 parts.

The diagram illustrates close part writing on a single treble clef staff. It shows four-part harmony (two pairs of notes) and its duplication in various ways: doubling the top part, doubling the middle two parts, and doubling all three upper parts. Vertical lines separate the different examples.

B. Widely-divided part-writing.

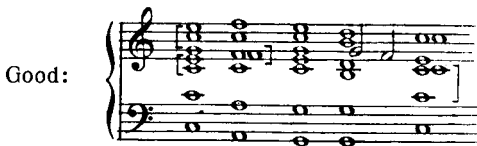
Four part harmony. Duplication of 1 part. Duplication of 2 parts.

The diagram illustrates widely-divided part-writing on a grand staff (treble and bass clefs). It shows four-part harmony with wide intervals and its duplication in various ways: doubling the top part, doubling the middle two parts, and doubling all three upper parts. Vertical lines separate the different examples.

Note. In widely-spaced harmony only the soprano and alto parts may be doubled in octaves. Duplicating the tenor part is to be avoided, as close writing is thereby produced, and doubling the bass part creates an effect of heaviness. The bass part should never mix with the others:



On account of the distance between the bass and the three other parts, only partial duplication is possible.



Note. Notes in unison resulting from correct duplication need not be avoided, for although the tone in such cases is not absolutely uniform, the ear will be satisfied with the correct progression of parts.

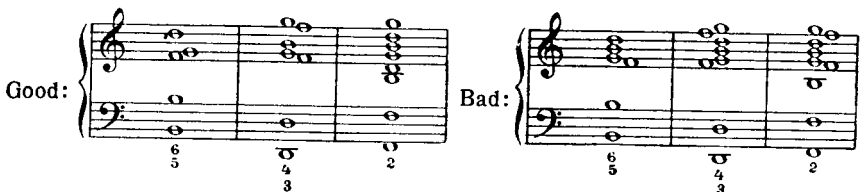
Consecutive octaves between the upper parts are not permissible:





Consecutive fifths resulting from the duplication of the three upper parts moving in chords of sixths are of no importance:




The bass of an inversion of the dominant chord should never be doubled in any of the upper parts:



This applies also to other chords of the seventh and diminished seventh:

Bad:  Good: 

The rules of harmony concerning sustained and pedal passages apply with equal force to orchestral writing. As regards passing and auxiliary notes, *échappées*, considerable licence is permitted in rapid passages of different texture:

One texture:  etc.
A different one: 

One texture:  A different one: 

A certain figure and its essentials, in simplified form, may proceed concurrently, as in the following example:

One texture:  A different one:  A third: 

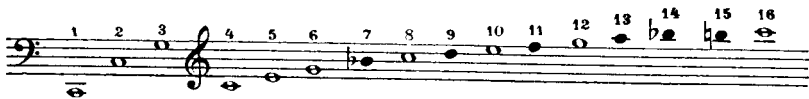
Upper and inner pedal notes are more effective on the orchestra than in pianoforte or chamber music, owing to the greater variety of tone colour:



In Vol. II of the present work many examples of the above methods will be found.

Distribution of notes in chords.

The normal order of sounds or the natural harmonic scale:



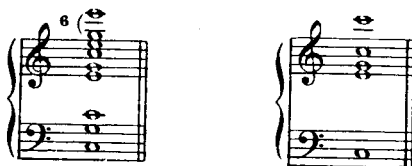
may serve as a guide to the orchestral arrangement of chords. It will be seen that the widely-spaced intervals lie in the lower part of the scale, gradually becoming closer as the upper register is approached:



The bass should rarely lie at a greater distance than an octave from the part directly above it (tenor harmony). It is necessary to make sure that the harmonic notes are not lacking in the upper parts:



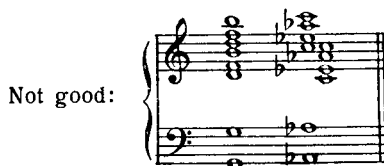
The use of sixths in the upper parts, and the practice of doubling the upper note in octaves are sometimes effective methods:



When correct progression increases the distance between the top and bottom notes of the upper parts, this does not matter:



But it would be distinctly bad to fill in the second chord thus:



Hence it follows that the distribution of intermediate parts is a question of the greatest importance. Nothing is worse than writing chords, the upper and lower parts of which are separated by wide, empty intervals, especially in *forte* passages; in *piano* passages such distribution may be possible. Progression in contrary motion, the upper and lower parts diverging by degrees gives rise to the gradual addition of extra parts occupying the middle register:

Schematic
Example:



When the voices converge, the middle parts are eliminated one by one:

Schematic
Example:



String harmony.

It is an incontrovertible rule that the resonance of different harmonic parts must be equally balanced, but this balance will be less noticeable in short sharp chords than in those which are connected and sustained. Both these cases will be studied separately. In the first case, in order to increase the number of harmonic parts, each instrument in the string group may be provided with double notes or chords of three and four notes. In the second case, the resources are limited to double notes *unis*, or division of parts.

A. *Short chords.* Chords of three or four notes can only be executed rapidly on the strings.

Note. It is true that the two upper notes of a chord can be sustained and held a long time; this, however, involves complications and will be considered later.

Short chords, *arco*, only sound well when played *forte* (*sf*), and when they can be supported by wind instruments. In the execution of double notes and chords of three and four notes on the strings, balance, perfect distribution of tone, and correct progression of parts are of minor importance. What must be considered before everything is the resonance of the chords themselves, and the degree of ease with which they can be played. Those comprising notes on the gut strings are the most powerful. Chords played on several strings are usually assigned to 1st and 2nd violins and violas, the different notes being divided between them according to ease in execution and the demands of resonance. On account of its low register the 'cello is rarely called upon to play chords on three or four strings, and is usually allotted the lowest note of the chord in company with the double bass. Chords on the latter instrument are even more uncommon, but it may supply the octave on an uncovered string.

Examples:

No. 97. *Snegourotchka* [171]; cf. also before [140] and before [200].

* *Spanish Capriccio*, before [V] (cf. Ex. 67).

Shéhérazade, 2nd movement [P] (cf. Ex. 19.)

* No. 98. *Tsar Saltan* [135]; cf. also [141] and before [182].

Isolated chords may be added to a melodic figure in the upper part, accentuating, *sforzando*, certain rhythmical moments.

Example:

No. 99. *Snegourotchka*, before 126; cf. also 326.

B. *Sustained and tremolando chords.* Chords sustained for a shorter or longer period of time, or tremolando passages, often used as a substitute, demand perfect balance of tone. Taking for granted that the different members of the string group are equal in power, the parts being written according to the usual order of register, (cf. Chap. I), it is patent that a passage in close four-part harmony, with the bass in octaves will also be uniformly resonant. When it is necessary to introduce notes to fill up the empty middle register, the upper parts being farther distant from the bass, doubled notes on the violins or violas should be used, or on both instruments together. The method of dividing strings, which is sometimes adopted, should be avoided in such cases, as certain parts of the chord will be divided and others will not; but, on the other hand, if a passage in six and seven-part harmony be written entirely for strings divided in the same manner, the balance of tone will be completely satisfactory, e. g.,

$$\begin{array}{l} \text{div. } \left\{ \begin{array}{l} \text{Vn}^{\underline{s}} \text{ I} \\ \text{Vn}^{\underline{s}} \text{ I} \end{array} \right. \\ \text{div. } \left\{ \begin{array}{l} \text{Vn}^{\underline{s}} \text{ II} \\ \text{Vn}^{\underline{s}} \text{ II} \end{array} \right. \\ \text{div. } \left\{ \begin{array}{l} \text{Violas I} \\ \text{Violas II} \end{array} \right. \end{array}$$

If the harmony in the three upper parts, thus strengthened, is written for divided strings, the 'cellos and basses, playing *non divisi* will prove a trifle heavy; their tone must therefore be eased, either by marking the parts down or reducing the number of players.

In the case of sustained chords or *forte tremolando* on two strings, the progression of parts is not always according to rule, the intervals chosen being those which are the easiest to play.

Examples:

No. 100. *The Christmas Night* 161 — Full *divisi*.

No. 101. " " " 210 — $\left. \begin{array}{l} \text{Violas div.} \\ \text{'Cellos div.} \end{array} \right\} 4 \text{ part harmony.}$

No. 102. *Snegourootchka* [187—188] — Four-part harmony, Vn^s I, Vn^s II, Violas and Violoncellos.

„ [243] — 4 Solo 'cellos *divisi*.

Shéhérazade, 2nd movement, beginning. — 4 D. bass soli div. (cf. Ex. 40).

The Tsar's Bride [179] — Chords on all strings (cf. Ex. 243).

No. 103. *Legend of Kitesh* [8] — Harmonic basis in the strings.

„ „ „ [240] — (cf. Ex. 21).

„ „ „ [283] — Harmonic basis in the strings (cf. Ex. 2).

No. 104. *The Golden Cockerel* [4] — Basis in the strings.

„ „ „ [125] — Undulating rhythm in the strings as harmonic basis (cf. Ex. 271).

In a *forte* or *sfp* chord, where one or two of the upper notes is held, either sustained or *tremolando*, the balance of tone must still be maintained, as in the following example:

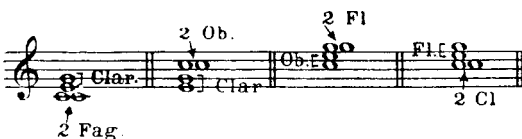
The image shows a musical score for four string parts: Vn^s I, Vn^s II, Violas, and D. basses. The score is divided into two measures. In the first measure, all parts play a chord marked *sfp*. In the second measure, the upper notes (Vn^s I and Vn^s II) are held, while the lower notes (Violas and D. basses) are marked *f*.

Wood-wind harmony.

Before entering upon this section of the work I would remind the reader of the general principles laid down in the beginning of the chapter.

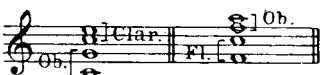
Harmonic texture, composed of plain chords or ornamental designs, simple or contrapuntal in character, must possess a resonance equally distributed throughout. This may be obtained by the following means:

1. Instruments forming chords must be used continuously in the same way during a given passage, that is to say they must be doubled or not throughout, except when one of the harmonic parts is to be made prominent:

To be avoided: 

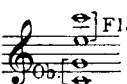
The musical notation shows a single staff with a treble clef. It contains a chord of six notes. Above the notes are labels for instruments: '2 Clar.' above the first two notes, '2 Ob.' above the third note, '2 Fl' above the fourth note, 'Fl.' above the fifth note, and '2 Cl' below the sixth note. Below the first two notes is a label '2 Fag'. The notes are in various registers, with some being high and some low.

2. The normal order of register must be followed, except in the case of crossing or enclosure of parts, which will be discussed later on:

To be avoided: 

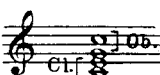
The musical notation shows a single staff with a treble clef. It contains a chord of three notes. The middle note is labeled 'Ob.' and the highest note is labeled 'Fl.'. The Oboe note is in a higher register than the Flute note, which is not the normal order.

3. Corresponding or adjacent registers should be made to coincide except for certain colour effects:

To be avoided:  The second flute will sound too weak and the oboes too piercing.

The musical notation shows a single staff with a treble clef. It contains a chord of two notes. The higher note is labeled 'Fl.' and the lower note is labeled 'Ob.'. The two notes are in adjacent registers, with the Flute note being higher than the Oboe note.

4. Concords (octaves, thirds and sixths) and not discords (fifths, fourths, seconds and sevenths), should be given to instruments of the same kind or colour, except when discords are to be emphasised. This rule should be specially observed in writing for the oboe with its penetrating quality of tone:

To be avoided: 

The musical notation shows a single staff with a treble clef. It contains a chord of two notes. The higher note is labeled 'Cl.' and the lower note is labeled 'Ob.'. The two notes are in discordant registers, with the Clarinet note being higher than the Oboe note.

Four-part and three-part harmony.

Harmonic writing for the wood-wind may be considered from two points of view: a) instruments in pairs, 2 Fl., 2 Ob., 2 Cl., 2 Fag.; and b) instruments in three's, 3 Fl., 2 Ob., Eng. horn, 3 Cl., 2 Fag., C-fag.

A. *In pairs.* There are three ways of distribution: 1. *Superposition or overlaying* (strictly following the normal order of register),

2. *Crossing*, and 3. *Enclosure* of parts. The last two methods involve a certain disturbance of the natural order of register:

Overlaying. Crossing. Enclosure.

In choosing one of these three methods the following points must not be forgotten: a) the register of a particular isolated chord; the soft and weak register of an instrument should not be coupled with the powerful and piercing range of another:

Overlaying. Crossing. Enclosure.

Oboe too piercing Low notes of the flute too weak Bassoon too prominent.

b) In a succession of chords the general progression of parts must be considered; one tone quality should be devoted to the stationary and another to the moving parts:

When chords are in widely-divided four-part harmony notes may be allotted in pairs to two different tone qualities, adhering to the normal order of register:

Good: etc.

Any other distribution will result unquestionably in a grievous lack of relationship between registers:

To be avoided: etc.

If one tone quality is to be enclosed, it must be between two different timbres:


Good:  etc.

It is possible to lend four distinct timbres to a chord in widely-divided four-part harmony, though such a chord will possess no uniformity in colour; but the higher the registers of the different instruments are placed, the less perceptible becomes the space which separates them:



Fairly good Better Still better

The use of four different timbres in close four-part harmony is to be avoided, as the respective registers will not correspond:



Bad Better Still slightly better

Note. In *Mozart and Salieri*, which is only scored for 1 Fl., 1 Ob., 1 Cl. and 1 Fag., wood-wind chords in four-part harmony are of necessity devoted to these four different timbres.

The same rules apply to writing in three-part harmony, which is the most customary form when it is a question of establishing a harmonic basis, the lowest register of which is entrusted to another group of instruments (strings *arco* or *pizz.*, for example). Chords in three-part harmony are generally given to two instruments of one timbre and a third instrument of another, but never to three different timbres. Overlaying of parts is the best course to adopt:



etc.

The use of crossing and enclosure of parts (which in a way amount to the same thing) must depend on the manner of their progression:

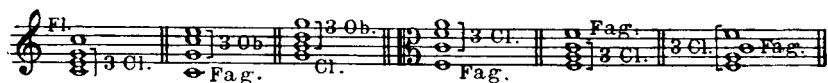
Enclosure:



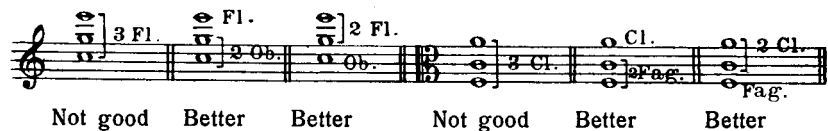
B. *Wood-wind in three's*. Here the distribution of chords in close three-part harmony is self-evident; any grouping of three instruments of the same timbre is sure to sound well:



Overlaying of parts is the best method to follow in writing close four-part harmony; three instruments of the same timbre with a fourth instrument of another. Crossing and enclosure of parts may also be employed. Correspondence of timbres and the progression of remote parts must be kept in mind:



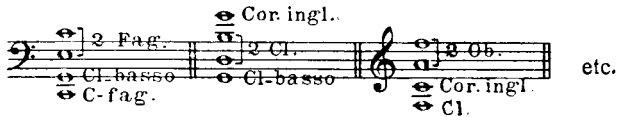
The method of using three instruments of the same timbre in widely-divided three-part harmony is inferior:



But if the third instrument is of low register (Bass Fl., Eng. horn, Bass cl., or C-fag.), the resonance will be satisfactory:



In chords of four-part harmony, three instruments of the same timbre should be combined with a fourth instrument of another:



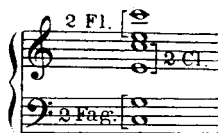
Harmony in several parts.

In writing chords of 5, 6, 7 and 8 part-harmony, whether they are independent, or constitute the harmonic basis, the student should follow the principles outlined in the previous chapter, dealing with the progression of wood-wind instruments in octaves. As the 5th, 6th, 7th and 8th notes are only duplications in octaves of lower notes of the real harmony (in 4 parts), instruments should be chosen which combine amongst themselves to give the best octaves. The process of crossing and enclosure of parts may also be used.

A. Wood-wind in pairs (close distribution):



In widely-divided harmony chords in several parts are to be avoided as they will entail both close and extended writing:



Note. In the majority of cases this distribution is employed when the two upper harmonic parts have a special melodic duty to perform — this question is discussed above.

B. Wood-wind in three's:

3 Fl.
2 Cl.
Fag.

3 Cl.
Fag.

2 Ob.
Cor. ingl.

3 Fl.
2 Ob.
Cor. ingl.

3 Cl.
Cor. ingl.

Cl. basso

C. fag.

C. fag.

etc.

Overlaying of parts is the most satisfactory method in dealing with close three-part harmony. Crossing of parts is not so favourable, as octaves will be produced contrary to the natural order of register:

3 Cl.
Fag.

Here the arrangement

Fag.
Clar.

is bad.

Duplication of timbres.

A. If the wood-wind is in pairs it is a good plan to mix the doubled timbres as much as possible:

2 Fl.
2 Ob. 2 Cl. 2 Ob. 2 Fl. 2 Cl. 2 Ob. 2 Cl.

Excellent

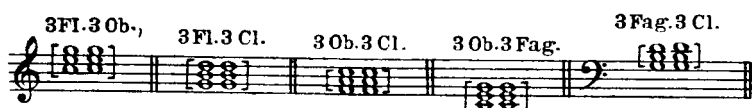
also: 2 Fl. 2 Cl. 2 Fag. 2 Fl. 2 Cl. 2 Ob. 2 Fag.

In chords of four-part harmony the classical method may be adopted:

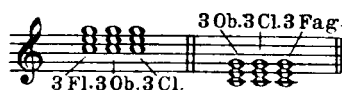
2 Fl. 2 Ob.
2 Cl.

In this case, though the high *C* in the flute is fairly powerful, the resonance of the *G* and *E* in the oboes is softened by the duplication of the 2nd flute and 1st clarinet, while the *C* in the 2nd clarinets (not doubled) is feeble in comparison with the other notes. In any case the two extreme parts are the thinnest and weakest in tone, the intermediate parts the fullest and strongest.

B. *Wood-wind in three's* admit of perfectly balanced mixed timbres in chords of three-part harmony:



These timbres may even originate from three-fold duplication:



Remarks.

1. Modern orchestrators do not allow any void in the intermediate parts in writing close harmony; it was permitted to some extent by the classics:



These empty spaces create a bad effect especially in *forte* passages. For this reason widely-divided harmony, which is fundamentally based on the extension of intervals, can be used but seldom and only in *piano* passages. Close writing is the more frequent form in all harmony devoted to the wood-wind, *forte* or *piano*.

2. As a general rule a chord of greatly extended range and in several parts is distributed according to the order of the natural scale, with wide intervals (octaves and sixths), in the bass part, lesser intervals (fifths and fourths) in the middle, and close intervals (3^{rds} or 2^{nds}) in the upper register:

3. In many cases correct progression of parts demands that one of them should be temporarily doubled. In such cases the ear is reconciled to the brief overthrow of balance for the sake of a single part, and is thankful for the logical accuracy of the progression. The following example will illustrate my meaning:

In the second bar of this example the *D* is doubled in unison on account of the proximity of the three upper parts to their corresponding parts an octave lower. In the fourth bar the *F* is doubled in unison in both groups.

4. The formation of the harmonic basis, which is essentially in four parts, does not by any means devolve upon the wood-wind alone. One of the parts is often devoted to the strings, *arco* or *pizz.* More frequently the bass part is treated separately, the chords of greater value in the three upper parts being allotted to the wood-wind. Then, if the upper part is assigned to a group of strings, there remains nothing for the wind except the sustained harmony in the two middle parts. In the first case the three-part harmony in the wood-wind should form an independent whole, receiving no assistance from the bass; in this manner intervals of open fourths and fifths will be obviated. In the second case it is desirable to provide the intermediate parts with a moderately full tone, choosing no other intervals except seconds, sevenths, thirds or sixths.

All that has been said with regard to the use of wood-wind in the formation of harmony, and the division of simple and mixed

timbres applies with equal force to sustained chords, or harmonic progressions interchanging rapidly with *staccato* chords. In short chords, separated by rests of some importance, the arrangement and division of timbres is not so perceptible to the ear, and progression of parts attracts less attention. It would be useless, nay, impossible to examine the countless combinations of tone colour, all the varieties of duplication and distribution of chords. It has been my aim to denote the fundamental principles upon which to work, and to indicate the general rules to be followed. Once having mastered these, if the student devote a little time to the study of full scores, and listen to them on the orchestra, he will soon learn when certain methods should be used and when to adopt others. The pupil is advised, generally, to write for wood-wind in its normal order of distribution, to take heed that each particular chord is composed entirely either of duplicated or non-duplicated parts, (except in certain cases resulting from progression), to use the methods of crossing and enclosure of timbres with full knowledge of what he is doing, and finally to concentrate his attention on close part-writing.

Examples of wood-wind harmony:

a) Independent chords.

No. 105. *The Christmas Night* [148] — Cl., 2 Fag.

No. 106. " " " beginning — Ob., Cl. Fag. (crossing of parts).

Snegourotchka [16] — 2 Cl., Fag.

" [79], 5th bar. — 2 Ob., 2 Fag. (cf. Ex. 136).

* No. 107. *Snegourotchka* [197] — Picc., 2 Fl. (*tremolando*).

No. 108. " [204] — 2 Fl., 2 Ob. (high register).

No. 109. *Shéhérazade*, beginning — Total wood-wind in different distribution.

* *Russian Easter Fête* [A] — 3 Fl. *tremolando* (cf. Ex. 176).

* *Tsar Saltan* [45] Ob., 2 Fag.

No. 110. *Tsar Saltan*, before [115] — mixed timbres.

No. 111. " " [115], and other similar passages—very sweet effect of wood-wind in three's.

" " [177] — 2 Ob., 2 Fag.

Sadko, Symphonic Tableau [9] — Ob., 2 Cl., Fag.

* *Sadko*, Opera [4] — Eng. horn, 2 Cl.

„ „ „ before [5] — Total wood-wind.

No. 112. *Sadko* [72] — Chords in three-part harmony; simple and mixed timbres.

* No. 113. *The Tsar's Bride* [126] Full wind.

* No. 114. *Legend of Kitesh*, before [90] — Enclosure of parts (Ob. I in the high register).

No. 115. „ „ „ before [161] — Wind and brass alternately.

No. 116. „ „ „ [167] — Full wind except oboe, with chorus.

Legend of Kitesh [269] — Fl., Cl., Fag.

* *The Golden Cockerel* [125] — Various wind instruments, 4 part harmony (cf. Ex. 271).

„ „ „ [218] — Ob., Eng. horn, Fag., C-fag.; cf. also [254].

No. 117. *The Golden Cockerel*, before [236] — Mixed timbre; 2 Fag. form the bass.

b) Harmonic basis (sometimes joined by the horns).

The May Night, Act III [L] — 2 Fag., Eng. horn (cf. Ex. 18).

Antar [68] — 3 Flutes.

Snegurotchka [20] — 2 Cl., high register.

„ before [50] — 2 Fl., Fag.

„ [187] — 2 Ob., 2 Fag.

„ [274] — 2 Cl., low register (cf. Ex. 9).

„ [283] — Fl., Eng. horn, Cl., Fag. (cf. Ex. 26).

No. 118. *Snegurotchka* [292] — Widely-divided harmony and doubling of parts in the wind.

No. 119. „ [318—319] — 2 Flutes.

Shéhérazade, 2nd movement [B] — 2 Cl., Fag. (sustained note in the horn) (cf. Ex. 1).

The Christmas Night [1] — 3 Cl.

Sadko [1] — Cl., Bass cl., Fag., C-fag.

No. 120. *Sadko* [49] — Ob., Cl., Horn, Fag.

„ [99] — 2 Cl. (cf. Ex. 289, 290).

- No. 121. *Sadko* [144] — Cl., Fag.
- No. 122. „ [195—196] — 2 Cl., Bass cl.
- The Tsar's Bride* [80] — Cl., Fag.
- „ „ „ [166] — harmonic parts in motion, Fl. and Cl. (cf. Ex. 22).
- Servilia* [59] — Cl. (low. register), Fag.
- * No. 123. *Kashtcheï the Immortal* [80] — Ob., Fag. muted.
- * No. 124. *Legend of Kitesh.* [52] — Fl. Fag.
- „ „ „ [55] — Fl., Ob. (cf. Ex. 197).
- „ „ „ [68] — Eng. horn, Fag., C-fag. (cf. Ex. 199).
- No. 124. „ „ „ [118] — mixed timbre: 2 Ob., Eng. horn and 3 Cl.
- „ „ „ [136] — harmonic parts in motion:
- „ „ „ before [185] — 3 Fl. (low register) and 2 Cl.
- „ „ „ [223] — Fl., Ob., Cl. (cf. Ex. 31).
- * No. 125. „ „ „ [247] — 2 Cl., Bass cl.
- „ „ „ [273] — Eng. horn, 2 Cl. and Bass cl., Fag.
- * No. 126. „ „ „ [355] — Eng. horn muted, Cl., 2 Fag.
- * No. 127. *The Golden Cockerel* [3] — Cl., Bass cl., Fag., C-fag.
- „ „ „ [40—41] Bass cl., Fag.; Fl., Cl.; Cl., Bass cl.
- * No. 128. „ „ „ [156] — harmonic parts in motion: Fl. and Cl.

Harmony in the brass.

Here, as in the wood-wind, part writing should be of the close order with no empty spaces in the intervals.

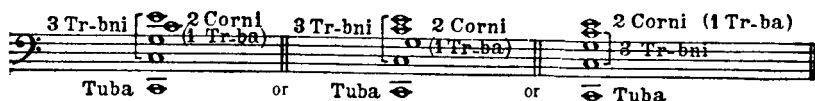
Four-part writing.

It is evident that the quartet of horns presents every facility for four-part harmony, perfectly balanced in tone, without doubling the bass in octaves:

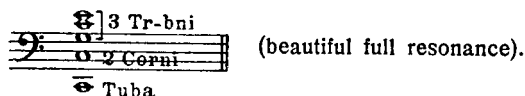


Note. In the diagrams of the present section the actual sounds of horns and trumpets are given, as in a piano score, for the sake of simplicity.

When it is found necessary to double the bass in octaves, the too resonant trombone and tuba are seldom used, the duplication being effected by the bassoon, as explained further on. The quartet of trombones and tuba is not often employed in close four-part harmony; the third trombone and the tuba usually form the bass in octaves, and the three upper parts are generally allotted to the two remaining trombones reinforced by a trumpet or two horns in unison, so as to obtain a perfect balance of tone:



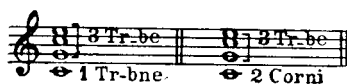
I have often adopted the following combination of brass instruments, and consider it eminently satisfactory: 2 horns and tuba to form the bass in octaves, the three other parts given to the trombones:



In the higher registers, four-part harmony, of which the two upper parts are given to the trumpets, may be completed by two trombones or four horns in pairs:



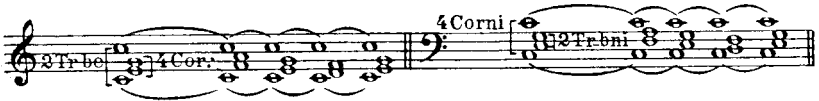
When 3 trumpets are available the fourth part should be allotted to one trombone, or two horns in unison:



Enclosure of parts may be used in single chords:

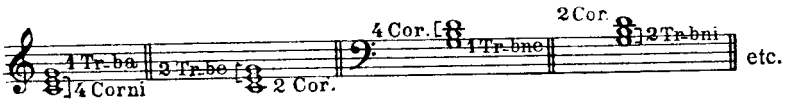


or in progression:



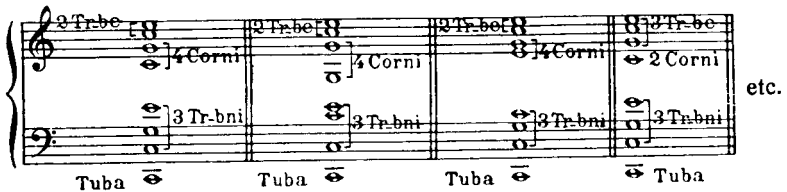
Three-part writing.

The best combination is trombones, horns, or trumpets in three's. If the instruments are mixed the number of horns should be doubled:

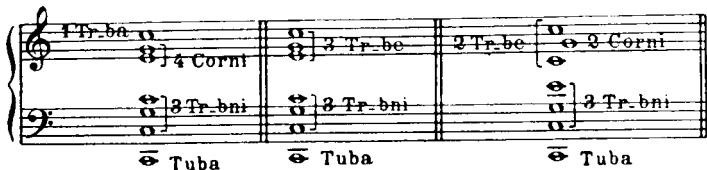


Writing in several parts.

When the whole group is used the number of horns should be doubled:



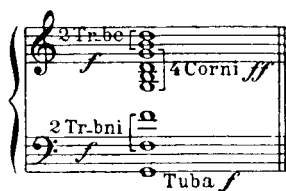
In seven, six, or five-part harmony certain instruments must be omitted:



Discords of the seventh or second are preferably entrusted to instruments of different tone colour:

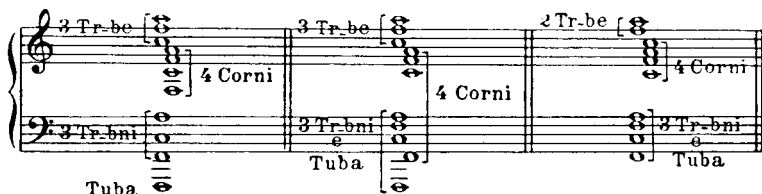


When such chords are written for an orchestra which only includes two trumpets, it is impossible for the horns to proceed in pairs. In such cases the following arrangement may obtain, the horns being marked one degree louder than the other instruments, to secure balance of tone:



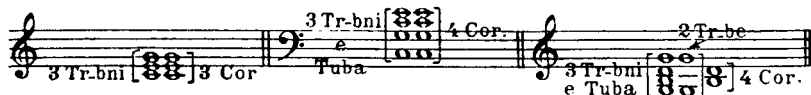
The same method should be followed whenever the use of horns in pairs fails to produce satisfactory tone.

When chords of widely-divided harmony are distributed throughout several harmonic registers, the register occupied by the horns need not be doubled; the arrangement of the chord will resemble that of a chorale written for double or triple choir. For example:



Duplication in the brass.

Duplication in the brass group is most frequently effected by placing a chord for horns side by side with the same chord written for trumpets or trombones. The soft round quality of the horns intensifies the tone, and moderates the penetrating timbre of the trumpets and trombones:

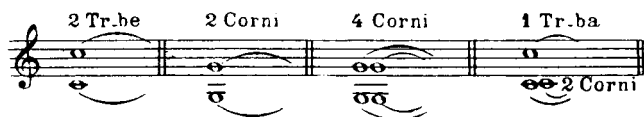


Similar juxtaposition of trumpets and trombones:



is not so common, as this unites the two most powerful agents in the group.

In handling an orchestra the brass is frequently employed to sustain notes in two or three octaves; this sphere of activity must not be ignored. The *tenuto* is generally given to two trumpets, or to two or four horns in the octave, (in double octaves). The octave is sometimes formed by trumpets and horns acting together:



The trombone with its ponderous tone rarely takes part in such combinations. Sustained notes in double octaves are usually apportioned thus:



The imperfect balance arising from the duplication of the middle note is compensated for by the mixture of timbres, which lends some unity to the chord.

Examples of harmony in the brass:

a) Independent chords:

- Snegourotchka* [74] — 3 Trombones, 2 Horns.
- „ [140] — 3 Trombones, 2 Horns. Chords in different groups alternately (cf. Ex. 244).
- „ [171] — Full brass; further on 3 Trombones (cf. Ex. 97).
- „ [255] — 4 Horns (stopped).

- No. 129. *Snegourotchka*, before [289] — 4 Horns.
 „ [289] — Full brass.
 * *Sadko*, before [9] — Full brass (enclosure of parts).
- No. 130. *Sadko* [175] — Mixed timbres (juxtaposition) 3 Horns
 + 3 Trumpets.
 „ before [338] — Full brass except Tuba.
- No. 131. „ [191—193] (Full brass).
- No. 132. *The Christmas Night*, before [180] — Full muted brass.
 „ „ „ [181] — 4 Horns + 3 Trombones
 + Tuba (cf. Ex. 237).
 * *The Tsar's Bride* [178] — Strings and brass alternately (cf. Ex. 242).
- * No. 133. *Tsar Saltan* [102], 7th bar. — 2 Trumpets, 2 Trombones + 4 Horns (juxtaposition).
 „ „ [230] — Full brass, thickly scored (cf. Table of chords No. II at the end of Vol. II, Ex. 12).
 * *Servilia* [154] — Various brass instruments.
 * *Legend of Kitesh* [130] — 3 Trumpets, Trombone and Tuba.
- No. 134. *Legend of Kitesh* [199] — Short chords (juxtaposition).
- * No. 135. *The Golden Cockerel* [115] — Horns, Trombones (enclosure).
- b) Harmonic basis:
- No. 136. *Snegourotchka* [79], 6th bar. — 4 Horns.
 „ [231] — 3 Trombones, soft and sweet (cf. Ex. 8).
Antar [64—65] — 4 Horns; later 3 Trombones (cf. Ex. 32).
 * *Shéhérazade*, 1st movement, [A], [E], [H], [K], [M] — Harmonic bases of different power and timbre (cf. Ex. 192—195).
- No. 137. *Servilia* [93] — Full brass.
- * No. 138. *Tsar Saltan* [127] — 4 muted Horns + 3 Trombones and Tuba *con sord. pp.*
 „ „ before [147] — Full brass *ff* (the 2 Oboes and Eng. horn are of no particular importance).
 * *Pan Voyevoda* [136], 9th bar. — 4 Horns, then Trombones, 2 Horns.
- * No. 139. *Legend of Kitesh* [158] — Trumpets, Trombones.
- No. 140. „ „ „ [248] — 3 Trombones.
 „ „ „ before [362] — Full brass.

Harmony in combined groups.

A. Combination of wind and brass.

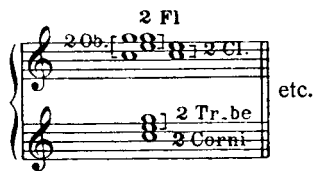
Wind and brass instruments may be combined by the method of placing a chord in one timbre side by side with the same chord in another timbre, or by any of the three methods already described: overlaying, crossing and enclosure of parts.

1. *In unison (juxtaposition or contrast of tone qualities).*

This class of combination possesses the same features as combinations in the melodic line (cf. Chap. II). Wood-wind reinforces the brass, softens it and reduces its characteristic qualities. Arrangements such as the following are possible:

2 Trumpets + 2 Fl.; 2 Trumpets + 2 Ob.; 2 Trumpets + 2 Cl.
 3 Trumpets + 3 Fl.; 3 Trumpets + 3 Ob.; 3 Trumpets + 3 Cl.

Also



as well as:

2 Horns + 2 Fag.; 2 Horns + 2 Cl.;
 3 Horns + 3 Fag.; 3 Horns + 3 Cl.; and:

2 Horns + 2 Fag. + 2 Cl. etc.

The combinations 3 Trombones + 3 Fag., or 3 Trombones + 3 Cl. are very rare.

A chord scored for full brass doubled by the same chords scored for full wood-wind (in pairs) produces a magnificent and uniform tone.

Examples:

Snegourotchka [315] — 2 Horns + 2 Cl. and 2 Horns + 2 Ob. (cf. Ex. 236).

No. 141. *The Tsar's Bride* [50] — 4 Horns + 2 Cl., 2 Fag.

No. 142. " " " [142] — Juxtaposition of full wind and brass.

Ivan the Terrible, Act II [30] — Juxtaposition and enclosure (cf. Table of chords II, Ex. 8).

No. 143. *The Christmas Night* [165] — 4 Horns + Fl., Cl., Fag.

*No. 144. *Sadko*, before [79] — Horn, Trumpet + doubled wood-wind (1).

No. 145. „ [242] — Full brass + Fl., Cl.

Legend of Kitesh, beginning — Horn, Trombones + Cl., Fag. (cf. also [5] — Ex. 249).

*No. 146. *Legend of Kitesh* [10] — Eng. horn, 2 Cl., Fag. *legato* + 4 Horns *non legato*.

„ „ „ [324] — Full brass + wind.

*No. 147. *The Golden Cockerel* [233] — Trumpets + Ob.] 8.
Horn + Cl.

Stopped or muted notes in trumpets and horns resemble the oboe and Eng. horn in quality; the combination of these instruments produces a magnificent tone.

Examples:

No. 148. *Russian Easter Fête*, p. 11. — Horn (+), Trumpets (low register) + Ob., Cl.

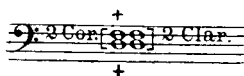
* *The Christmas Night*, before [154] — Full muted brass + wind.

*No. 149. *Tsar Saltan* [129] — 2 Ob., Eng. horn, + 3 Trumpets muted (3 Cl. at the bottom).

*No. 150. „ „ [131], 17th bar. — Same combination with added horns.

*No. 151. *Antar* [7] — Ob., Eng. horn, 2 Fag. + 4 Horns (+).

A beautiful dark tone is derived from the combination of middle notes in stopped horns and deep notes in the clarinet:



If bassoons are substituted for clarinets the effect loses part of its character.

Examples:

* *Kashtcheï the Immortal* [29], 11th bar. — 2 Ob., 2 Cl. + 4 Horns (+).

„ „ „ [107], 6th bar. — 2 Cl., Fag. + 3 Horns (+).

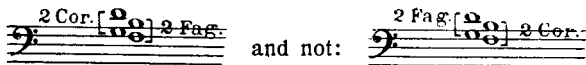
* *The Christmas Night*, p. 249 — Cl., Fag. + 3 Horns (+).

* *Mlada*, Act III [19] — 3 Horns (+) + 3 Fag. and 3 Horns (+) + 3 Ob. (cf. Ex. 259).

(1) In the full score a misprint occurs in the clarinet part; it is corrected in the example.
(Editor's note.)

2. *Overlaying (superposition), crossing, enclosure of parts.*

It has already been stated that the bassoon and horn are the two instruments best capable of reconciling the groups of wood-wind and brass. Four-part harmony given to two bassoons and two horns, especially in soft passages, yields a finely-balanced tone recalling the effect of a quartet of horns, but possessing slightly greater transparency. In *forte* passages the horns overwhelm the bassoons, and it is wiser to employ four horns alone. In the former case crossing of parts is to be recommended for the purposes of blend, the concords being given to the horns, the discords to the bassoons:



Bassoons may also be written inside the horns, but the inverse process is not to be recommended:



The same inseting of parts may be used for sustained trumpet notes in octaves. In soft passages, thirds played in the low register of the flutes, sometimes combined with clarinets, produce a beautiful mysterious effect between trumpets in octaves. In a chain of consecutive chords it is advisable to entrust the stationary parts to the brass, the moving parts to the wood-wind.

Clarinets, on account of their tone quality should rarely be set inside the horns, but, in the upper register, and in the higher harmonic parts, a chord of four horns, (*piano*), may be completed by clarinets as effectively as by oboes or flutes; the bassoon may then double the base an octave below:



Played *forte*, the horns are more powerful than the wood-wind; balance may be established by doubling the upper harmonic parts:



Examples:

a) Superposition.

- * *Sadko*, Symphonic Tableau [1], [9] — Fl., Ob., Cl., Horn (basis).
- „ before [14] — 2 Fl., Cl., Horns.
- „ final chord — Fl., Cl., Horn.
- * *Antar* [22] — Fl., Cl., Horns (basis).
- No. 152. *Antar* [56] — 3 Fl., 4 Horns (basis).
- * *Snegourotchka* [300] — Full wind and horns.
- * *Shéhérazade* — Final chords of 1st and 4th movements.
- * *Russian Easter Fête* [D] — Fl., Cl., Horn; later trumpets and trombones in juxtaposition (cf. Ex. 248).
- * No. 153. *The Christmas Night* [212], 10th bar. — Wind and Horns; trumpets and trombones added later.
- „ „ „ [215] ^{3 Fl. + 3 Cl.} _{3 Horns}] 8.
- * *Sadko*, Opera [165] — Juxtaposition and Superposition.
- No. 154. *Sadko* [338] — Same distribution.
- No. 155. *Servilia* [73] ^{3 Fl. + 2 Ob., Cl.} _{4 Horns.}
- * No. 156. *Legend of Kitesh*, before [157] — 3 Flutes, 3 Trombones.
- „ „ „ final chord (cf. Table III of chords, Ex. 15).

- * *The Golden Cockerel*, before [219] — Mixed timbre of wood-wind, 4 Horns.

b) Crossing.

- * *The Christmas Night*, before [53] — Horn., Fag.
- „ „ „ [107] — Clar., Horn., Fag.
- * *Legend of Tsar Saltan*, before [62] — Horn., Fag.
- * *The Golden Cockerel* [220] — 3 Trombones, 2 Fag., C-fag. (cf. Ex. 232).
- * No. 157 *Antar*, before [30] — Wood-wind, Horns, then Trumpets.

c) Enclosure:

No. 158. *Ivan the Terrible*, Act I [33] — Flutes within horns; later horns within bassoons.

No. 159. *Snegourotchka* [183] — Trumpet
Fl., 2 Cl.
Trumpet

* *Sadko*, symphonic tableau [3] — Cl. + Fag.
4 Horns
Cl. + Fag.

* *Antar* before [37] — Fag.
2 Horns (+)
Cl.

* *Sadko*, Opera [105] — Harmonic basis; oboes within trumpets (cf. Ex. 260).

* No. 160. *Sadko*, Opera, before [155] — Flutes within trumpets.

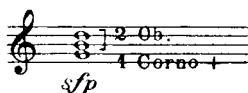
* *The Tsar's Bride*, end of Overture — Bassoons within horns (cf. Table III of chords, Ex. 14).

* No. 161. *Tsar Saltan* [50] — Trumpets within wood-wind doubled.

No. 162. „ „ [59] — Flutes within trumpets; clarinets within horns.

* No. 163. *Legend of Kitesh* [82] — Oboes and clarinets within trumpets.

The relationship which has been shown to exist between stopped horns and oboe or Eng. horn authorizes the simultaneous use of these instruments in one and the same chord, played *p* or *sfp*:



Examples:

* *The Christmas Night* [75] — 3 Horns (+) + Oboe.

The Tsar's Bride [123] — Ob., Eng. horn, Horn (+) (cf. Ex. 240).

* *Legend of Kitesh* [244] — Cl., 2 Fl., + 2 Ob., Eng. horn, 3 Horn (+).

* Nr. 164. *Legend of Kitesh*, before [256] — 2 Ob., Eng. horn] 8.
3 Horns (+)

* Cf. also *Tsar Saltan*, before [115] — Horn (+)
2 Fl. + 2 Fag. (Ex. 110).

If trumpets and trombones take part in a chord, flutes, oboes and clarinets are better used to form the harmonic part above the trumpets. The following should be the arrangement:

2 Ob. + 2 Fl.
2 Clar.
2 Tr. bc
4 Corni
3 Tr. bni
3 Tr. bc
2 Ob. + 2 Fl.
2 Clar.
4 Corni
3 Tr. bni
3 Tr. bc
Fl. + Ob.
Fl. + Cl.
Ob. + Cl.
4 Cor.
Tuba
C-fag

3 Fl. + 3 Ob.
+ 3 Clar.
2 Ob. + 2 Fl.
2 Cl.
3 Tr. bc
3 Tr. bc
4 Cor.
3 Tr. bni
3 Tr. bni
Tuba
4 Cor.
etc.

2 Fl. + 2 Ob.
2 Ob. + 2 Cl.
2 Fl.
2 Fl. + 2 Ob. + 2 Cl.
2 Tr. bc
2 Cor.
2 Cor.
4 Cor.
2 Tr. bc
2 Tr. bc
2 Fag.
3 Tr. bni
3 Tr. bni
Tr. bni
4 Cor.
2 Fag.
Tuba

Examples:

* *Sadko*, symphonic tableau [20].

* No. 165. *The May Night*, Act I [Ee] — 3 Trombones, 2 Ob. + 2 Cl. + 2 Fag.

” ” ” p. 325. — Final chord, C maj. (cf. Table I of chords, Ex. 1).

* No. 166. *Snegourotchka* [198]; cf. also [200] and before [210].

* *Shéhérazade*, 1st movement [E], 2nd movement [P], 3rd movement [M], 4th movement p. 203 (cf. Ex. 195, 19, 210, 77).

No. 167. *The Christmas Night* [205]; cf. also [161], [212], 14th bar. (Ex. 100, 153).

* *Mlada*, end of Act I (cf. Chord Table II, Ex. 13). Act II [20].

No. 168—169. *Sadko*, Opera, before [249], [302]; cf. also Ex. 120).

No. 170. *Sadko*, Opera [244] — Chord of widely extended range; bassoons at the limit of low compass.

” ” [142], [239]; cf. also [3] (Ex. 86).

* *The Tsar's Bride* [179] (cf. Ex. 243).

Antar [65] — Alternation of notes in horns and wood-wind on trombone chords (cf. Ex. 32).

General observations. It is not always possible to secure proper balance in scoring for full wood-wind. For instance, in a succession of chords where the melodic position is constantly changing, distribution is subordinate to correct progression of parts. In practice, however, any inequality of tone may be counterbalanced by the following acoustic phenomenon: in every chord the parts in octaves strengthen one another, the harmonic sounds in the lowest register coinciding with and supporting those in the highest. In spite of this fact it rests entirely with the orchestrator to obtain the best possible balance of tone; in difficult cases this may be secured by judicious dynamic grading, marking the wood-wind one degree louder than the brass.

B. Combination of strings and wind.

1. We frequently meet with the combination of strings and wood-wind in the light of comparison of one timbre with another, either in long sustained notes, or *tremolando* in the strings. Apart from the complete or partial doubling of the string quartet (two methods frequently used), the general and most natural arrangement is:

Fl. Ob. (Cl.) + Vn^s div.; Clar. Fag. + 'Cellos + Violas div., etc.

Examples:

* *Sadko*, Symphonic Tableau before [4], and [4], 9th bar.

* *Shéhérazade*, 1st movement [M] 6 Vn^s soli + 2 Ob. (2 Fl.), Cl.

* *Antar* [7] — String quartet *divisi* + wood-wind (cf. Ex. 151).

* No. 171. *Antar* [57] — Vn^s II, Violas div. + Fl., Horn (florid accompaniment in the Clar.).

* *Legend of Kitesh* [295] — the same; rhythmic motion in the wind, sustained harmony in the strings (cf. Ex. 213).

2. Owing to the complete absence of any affinity in tone quality, the combination of strings with brass is seldom employed in juxtaposition, crossing, or enclosure of parts.

The first method may be used however when the harmony is formed by the strings *tremolando*, and the brass is employed in sustaining chords, also when the strings play short disconnected chords, *sforzando*. Another possible exception may be mentioned; the splendid effect of horns doubled by divided violas or 'cellos.

Examples:

Snegourotchka [242] — Full brass + strings *tremolando* (cf. 1st Table of chords, Ex. 6).

* *Legend of Kitesh*, before [240] — the same (Horn, Trumpet +).

* *Sadko*, Opera, before [34] — Horn + Violas *div.*, Trombones + 'Cellos *div.* (1).

C. Combination of the three groups.

The combination of strings, wood-wind and brass instruments, set side by side, produces a full, round and firm tone.

Examples:

No. 172. *The Tsar's Bride*, before [145] — Ob., Fag. + Horns
+ Strings.

„ „ „ final chord (cf. Table I of chords,
Ex. 5).

* No. 173. *Sadko*, end of 1st tableau — short chords. Last chords of the 1st, 3rd and 7th tableaux (cf. Table I and III, Vol. II, Ex. 9, 10, 18).

* No. 174. *The Christmas Night* [22] — Wind + Brass *c. sord.* + *tremolo* strings.

Legend of Kitesh [162] (cf. Ex. 250).

Snegourotchka — end of opera, (cf. Table III in Vol. II, Ex. 17) and a host of other examples.

(1) A splendid example of the combination of strings and brass may be found in the introduction to the 2nd scene of the 4th act of "*Khovanstchina*" by Moussorgsky, orchestrated by Rimsky-Korsakov. (Editor's note.)

General Observations. Balance and correct distribution of tone is much more important in dealing with long sustained chords or those of rhythmic design; in the case of short, disconnected chords resonance is a minor consideration, but one which should not be entirely neglected.

I have endeavoured to outline the general principles to be followed, but I do not profess to deal with all the countless cases which may arise in the course of orchestration. I have given a few examples of well-sounding chords; for further information I advise the reader to study full scores with care, as this is the only method to acquire perfect knowledge of the distribution and doubling of various instruments.
