PRACTICAL

INSTRUMENTATION

BY

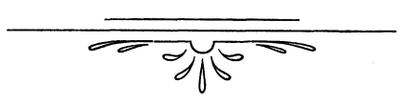
RICHARD HOFMANN.

TRANSLATED BY

ROBIN H. LEGGE.

PART VI.

THE TRUMPETS, CORNETS, TROMBONES, TUBAS AND INSTRUMENTS OF PERCUSSION.



LONDON
AUGENER & Co.

NEW YORK
G. SCHIRMER.

Sole Agents for The United States and Dominion of Canada.

The Boston Music Company

26 & 28 West Street Boston, Massachusetts

PRACTICAL INSTRUMENTATION

BY

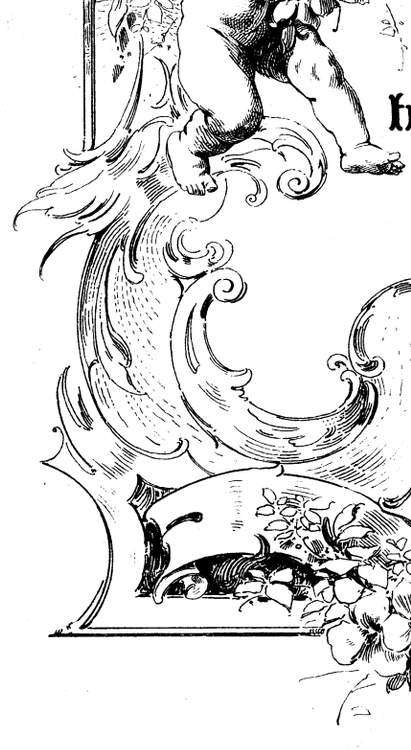
RICHARD HOFMANN.

TRANSLATED BY

ROBIN H. LEGGE.

Part VI.

The trumpets, cornets, trombones, tubas and instruments of percussion.



LONDON, AUGENER & Cº

NEW YORK, G. SCHIRMER.

INDEX.

Part I.

The strings.

Part II.

The wood-wind.

Part III.
Strings and wood-wind combined.

Part IV.
The Horns.

Part V.
The Combination of Strings, Wood-wind and Horns.

Part VI.

The trumpets, cornets, trombones, tubas and instruments of percussion.

(Explanation of their compass, tone character, capabilities and use.)

Part VII.

Harp, Mandoline, Zither, Guitar, Piano (Cembalo), Cymbal, Organ and Harmonium.

PART VI.

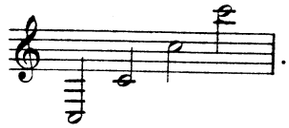
The trumpets.

(Tromba or clarino, trompette.)

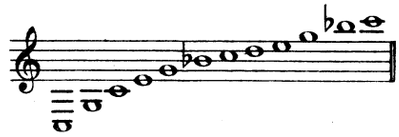
1) The natural and ventil trumpet; 2) alto-; 3) tenor-; 4) bass-trumpet.

The natural- and ventil-trumpet.

The trumpet occupies an important position in the group of brass instruments in the orchestra. Music for it is written in the violin clef, and its compass is from

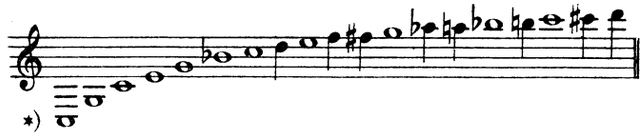


The tone of the trumpet is, *f* or *ff*, clear, brilliant and ringing; *mf* expressive, and *p*, tender and even noble; it is particularly useful in expressing exaltation, pride, chivalry, warlike and joyous feelings. The trumpet occurs in various pitches, like the horns; at every pitch the following are playable:



since these are the open or natural tones. The trumpet has been in use since the beginning of the 17th century Monteverde wrote the overture to his opera *Orpheus* for 5 trumpets. It was the earliest wind instrument to be used regularly at the end of the 17th century in the orchestra in combination with the strings, but it was not then very prominent. It was first used a due or a 3 in brilliant passages by Bach and Handel, as well as a solo instrument and with the human voice.

From that day to this the trumpet has been much altered and improved, not only mechanically and technically, but in the actual use made of it. The older masters were limited in its use to the deep and medium open tones (cf. table s. v. 'Horn' pt. IV) and the artificial tones of the upper octave of the D or C trumpet; thus:



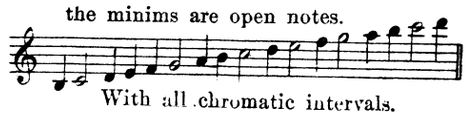
Nevertheless the instrument was very effectively used by these immortal masters in the following works:

Handel,	Alexander's Feast.	**J. S. Bach,**	B-mi. Mass.
„	Judas Maccabaeus.	„	Christmas Oratorio.
„	Israel in Egypt.	„	St. Matthew Passion.
„	The Fire and Water music.	„	Cantata 'Ein feste Burg'.

In these works the trumpet part often goes up to notes which cannot always satisfactorily be played by modern players on the C- and D-trumpets because of the technical difficulty and the great strength and endurance required. This may be due to the fact that in past times the pitch was lower than now, the nature of the instrument and of its mouthpiece may have differed, and the players trained with a view to their performing such music.

*) The crotchets can only be produced by a particularly good embouchure on the C- and D-trumpets, the former of which sounds as written for, the latter a tone higher.

**) In order to play such passages now players use a specially constructed trumpet in D whose compass is from,



This sounds a major 2nd higher than written for:

In the latter half of the 18th century the trumpet fell into comparative disuse and its brilliancy waned; players neglected the higher octave in which they could have played melodies, and thus the instrument became as it were subordinate.

An advantage accrues from the use of crooks, whereby the beauty and characteristic quality of its tone is enhanced, and the number of practicable keys increased. This use of crooks began with the lower pitched trumpets; thus the trumpet in C had B♮, B♭ and A crooks. Later the trumpets were constructed shorter (the tube wound more) in E♭ with D and C crooks; then followed the *F*-trumpet with E, E♭ and D and even D♭ and C crooks. A trumpet in G was constructed with F, E, E♭ and D crooks.

Through these means the use of the trumpet was naturally extended. Haydn used the D, C- and B♭-trumpets, Mozart that in E♭, Beethoven that in *F* (Egmont), Weber that in E (Jubel-Overture). Trumpet parts in A and B♮ are not often found; still less often those in D♭ or F♯.

Of these variously pitched trumpets the open tones only were utilized. By means of the above-mentioned shortened form of the trumpets the player was enabled by stopping (cf. Horn part IV) to play diatonic and chromatic scales. But this stopping destroyed the original trumpet tone, and left in its stead one of a duller quality. So far as I am aware the classical masters made no use of these stopped tones, yet they were apparently frequently used by the *virtuosi* of their period.

The Ventil trumpet.

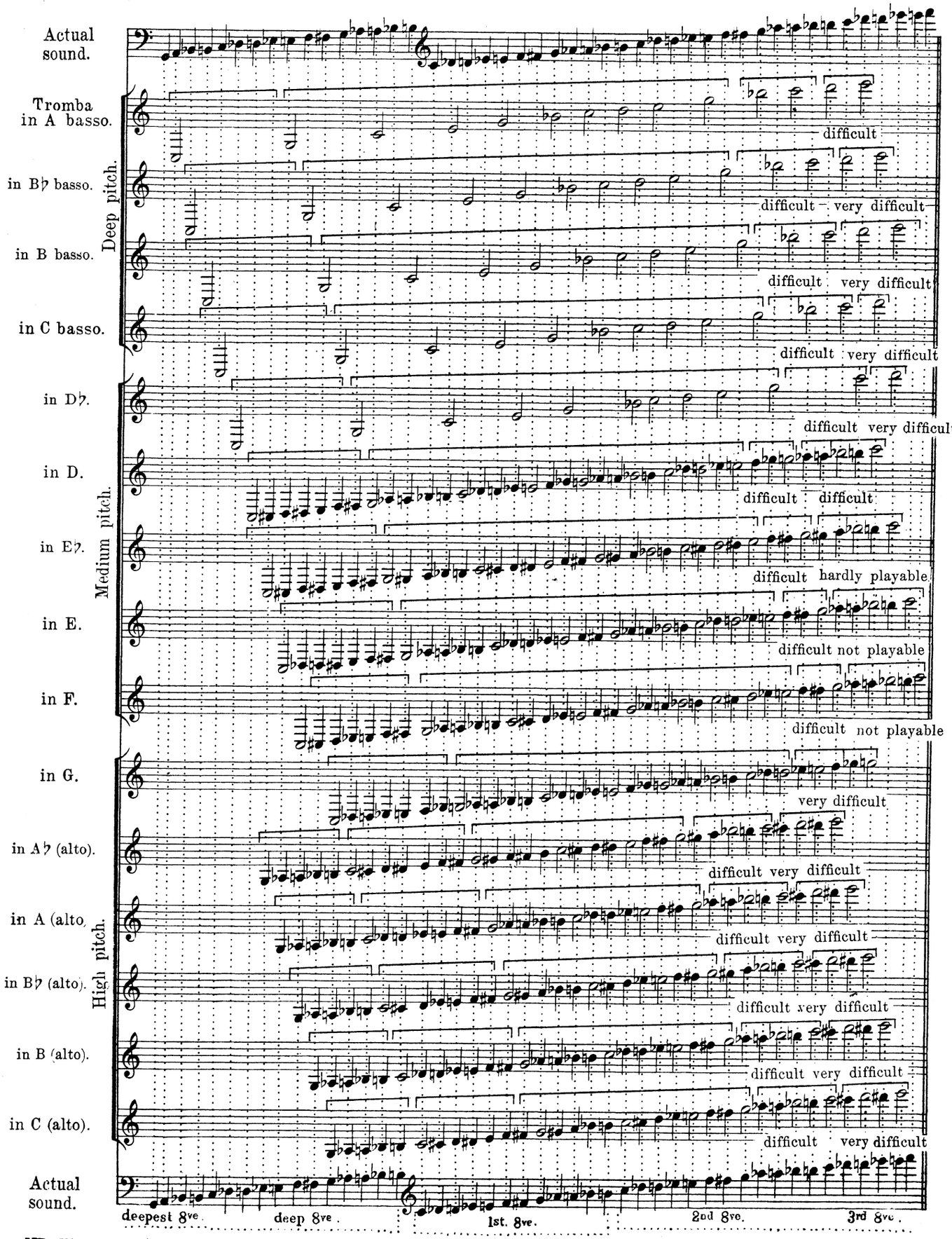
A great advance was made by the discovery of the ventil, which was introduced to the shortened trumpet. Now the intervals which lay between the open tones could be produced of like strength with the open tones themselves. Since the discovery of the ventil the natural trumpet has gradually disappeared from our orchestras; yet it is still occasionally found in operatic music and in marches and in cavalry bands, where it is used for trumpet calls, which are constructed of open tones only.

On the following table 15 different pitched trumpets will be found, which are divided into three classes, deep, medium and high. The tone in the deeper octave of those in C, B♮, B♭ and A is full yet not very clear; of the middle octave it is clear and noble; and of the higher octave very bright and penetrating. Horns in F, E, E♭ and D are quite different from the above in tone-colour. In the deeper octave they are clear and full, in the middle brilliant, and in the upper the practicable tones are sharp and piercing. The high-pitched horns C, B♮, B♭ and A, the deep register sounds similar to the same register of the deep C-, B♮- and B♭-trumpets from c^1 to g^1; and from g^1 to g^2 the tone is clear. The more difficult tones from g^2 to c^3 are sharp and disagreeable.

The tone of the rarely found trumpets in D♭, G and A♭ is as follows. On that in D♭ it resembles that of the D- and C-trumpet. The G-trumpet is sharper and harder than that in F. The A♭-trumpet is the dullest of the three.

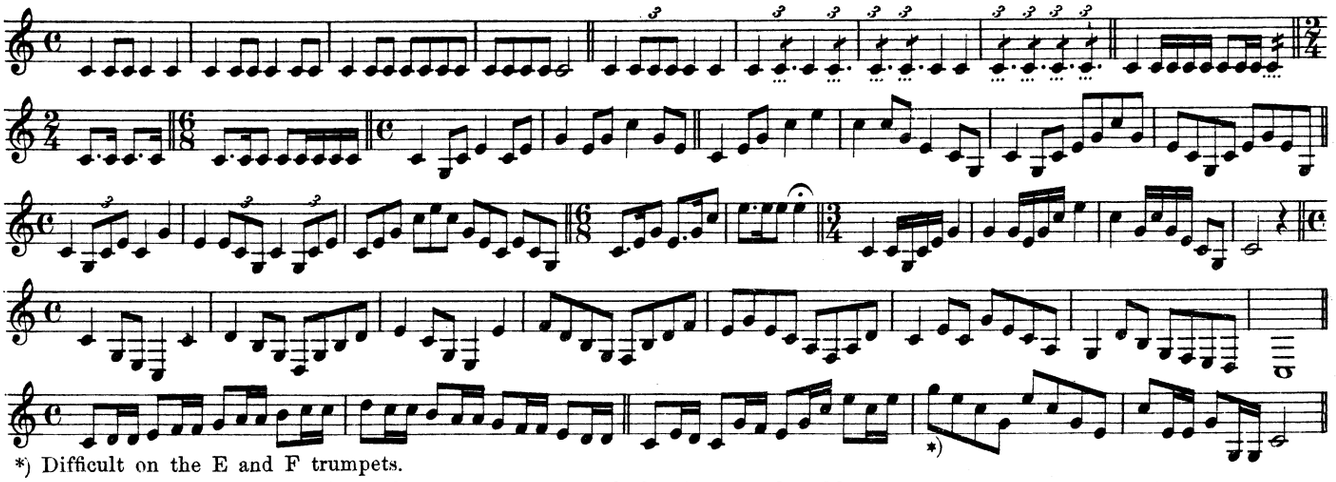
On the following table the minims are the open tones. The small brackets (⌐¬) show the deeper notes which are not clear: the large brackets show the best register: the following two small brackets over the higher notes show these which are difficult — which are generally only used *f* or *ff*. The first of the two brackets over the deep tones shows these which are dull and hollow; these are not included in the notes for higher trumpets.

Method of writing for (and actual sound of) trumpets in all keys.



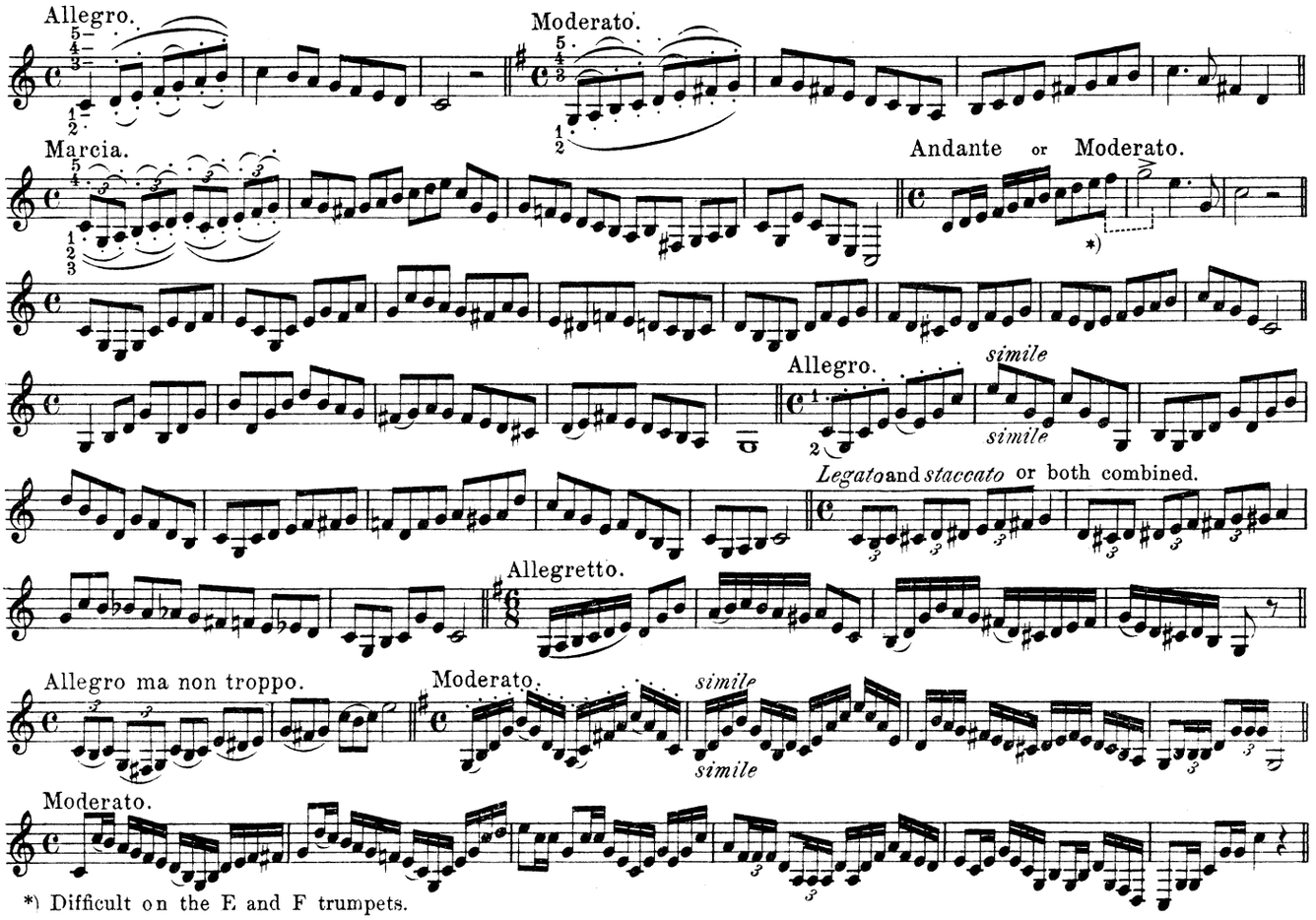
NB. The notes c♯, d, d♯ and e in the 3rd 8ve are not written. D. & F. 6

Almost all the intervals in the above table, if written too high nor too low, can be played in all grades of strength; and most rhythmic figures can be played in slow or quick time and in any key.

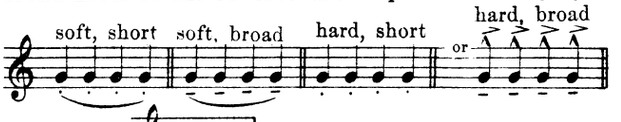
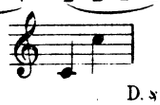


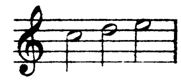
*) Difficult on the E and F trumpets.

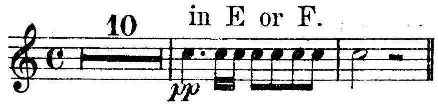
Diatonic and chromatic scales and passages of chords are playable *legato* or *staccato* and with all nuances. as the following example shows. But rapid successions of notes in keys having more than two sharps or flats often offer considerable difficulties.

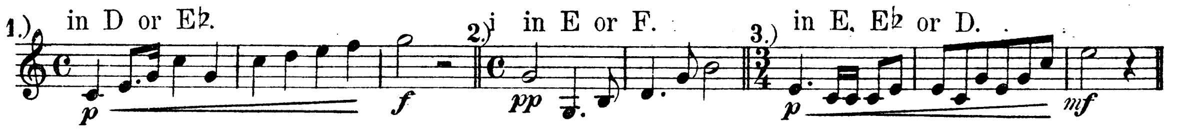


*) Difficult on the E and F trumpets.

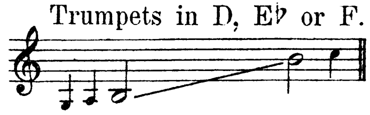
If quite short or moderately broad notes or the reverse are required to be played they must be so described as in the annexed example:  etc. A leap of an octave in the higher positions  is difficult in D, E♭, E or F,

as also it is to attack a passage *p* or *pp* beginning so high as  especially in E and F,

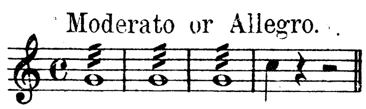
Thus this e. g 

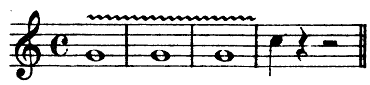
would be dangerous for many players. The following are easier: *) 

Ornaments can be played by clever trumpeters both neatly and well on any interval between



Shakes are also playable within this compass, but are rarely of good effect. Double-tongueing is used often instead — that is a rapid repetition of the same note. This tremolo or vibrato is produced by the player speaking, as it were, the syllable tike, tike or teke, teke into the instrument. This effect is notified thus in the score:



or


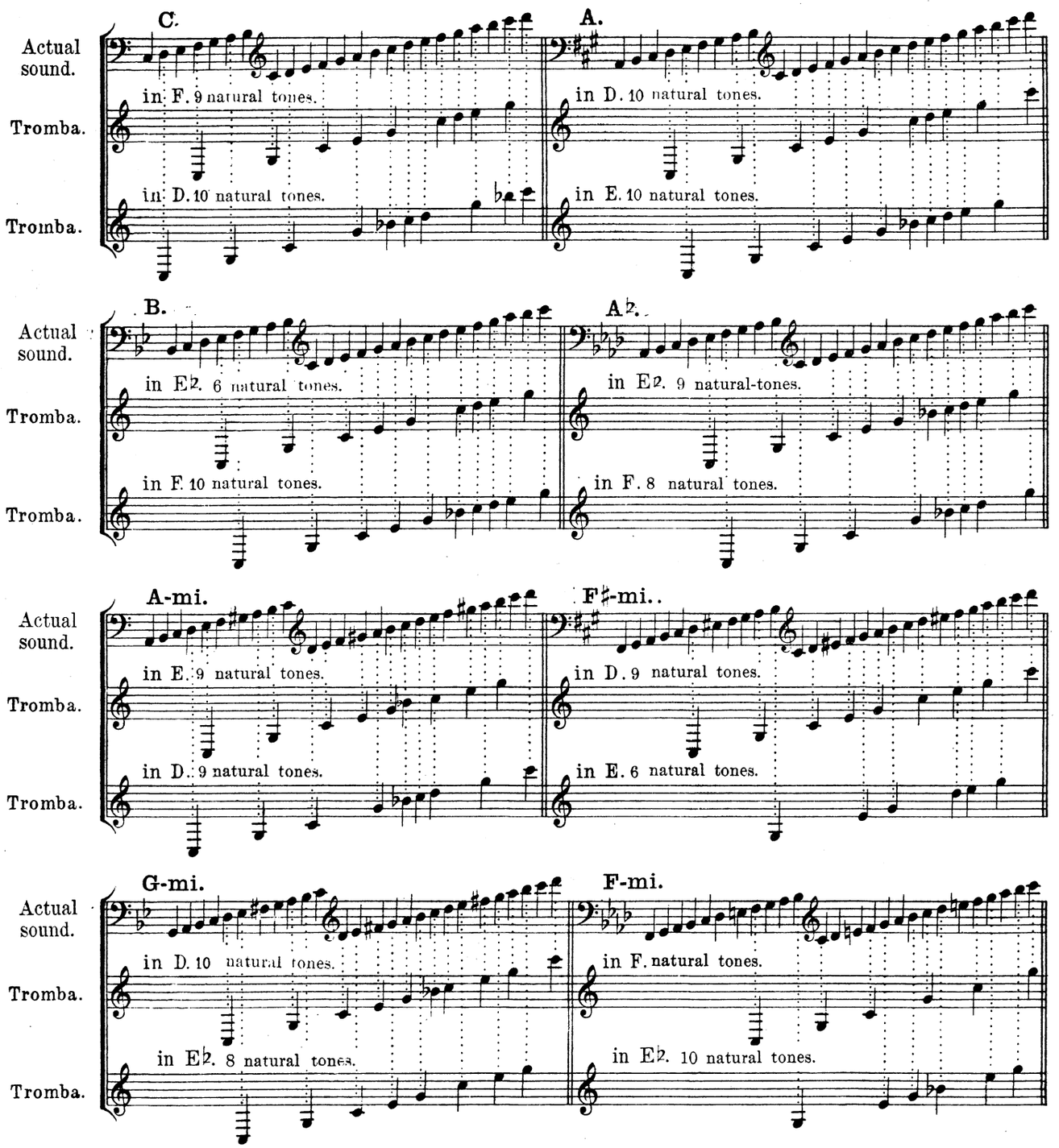
Not infrequently the sign *tr* is placed over a note. But as a shake is not meant, obviously the other method, which leaves no doubt as to its meaning, is the better. These ornaments are only used in solos and generally even then only in the middle register. Still, the tremolo can be played on other notes which lie neither too high nor too low. Open or natural notes should be used where possible. Efficient players can make use of this tongueing in all grades of strength from *p* to *pp*.

Although all keys may be used for the trumpet yet it were better only to use those with less than 2 or 3 sharps or flats if possible. In our work the orchestral ventil trumpet is that which we have studied. By using the trumpets in D, E♭, E and F other keys with more sharps and flats become comparatively easy; the following table will be of use to the student.

For a piece in	C-major:	Trumpet in	F	playing in	G-major,	or in	D	playing in	B♭-major.
" " " "	G- "	"	D	" "	F- "	" "	E	" "	E♭- "
" " " "	D- "	"	D	" "	C- "	" "	E	" "	B♭- "
" " " "	A- "	"	D	" "	G- "	" "	E	" "	F- "
" " " "	E- "	"	E	" "	C- "	" "	D	" "	D- "
" " " "	B- "	"	E	" "	G- "	" "	D	" "	A- "
" " " "	G- "	"	E♭	" "	E♭- "				
" " " "	D♭- "	"	E♭-	" "	B♭- "				
" " " "	A♭- "	"	E♭	" "	F- "	" "	F	" "	E♭- "
" " " "	E♭- "	"	E♭	" "	C- "	" "	F	" "	B♭- "
" " " "	B♭- "	"	F	" "	F- "	" "	E♭	" "	G- "
" " " "	F- "	"	F	" "	C- "				
" " " "	A-minor:	"	E	" "	F-minor,	" "	D	" "	G-minor.
" " " "	E- "	"	E	" "	C- "	" "	D	" "	D- "
" " " "	B- "	"	D	" "	A- "	" "	E	" "	G- "
" " " "	F♯- "	"	D	" "	E- "	" "	E	" "	D- "
" " " "	C♯- "	"	E	" "	A- "	" "	D	" "	B- "
" " " "	G♯- "	"	E	" "	E- "	" "	D	" "	F♯- "
" " " "	E♭- "	"	E♭	" "	C- "	" "	F	" "	B♭- "
" " " "	B♭- "	"	F	" "	F- "	" "	E♭	" "	G- "
" " " "	F- "	"	F	" "	C- "	" "	E♭	" "	D- "
" " " "	C- "	"	E♭	" "	A- "	" "	F	" "	G- "
" " " "	G- "	"	D	" "	F- "	" "	E♭	" "	E- "
" " " "	D- "	"	D	" "	C- "	{ " "	F	" "	A- "
						" "	E♭	" "	B- "

*) Nos. 1 and 3 are difficult *f* > *p*. No. 2 is playable in all grades.

The following table shows the actual tones produced by the various trumpets, and their open notes. The more open notes the better the effect produced.



Cf. in the following the uses made of the different pitches.

Haydn, Symphony in B♭-major, movement I, III and IV, B♭-major 2 trumpets in B♭ (basso), 2 horns in B♭ basso.
movement II, F-major 2 trumpets in C (basso), 2 horns in F.
„ „ „ G-major, movement I, III and IV, G-major 2 trumpets in C (basso), 2 horns in G.
movement II, C-major 2 trumpets in C (basso), 2 horns in C.

Mozart, Symphony in E♭-major, movement I, III and IV, D-major 2 trumpets in E♭, 2 horns in E♭.
„ „ „ C-major, movement I, III and IV, 2 trumpets in C, 2 horns in C.

Beethoven, Symphony in E♭-major, movement I, III and IV E♭-major, 2 trumpets in E♭, 3 horns in E♭.
movement II C-minor, 2 trumpets in C, horn 1 and 2 in C, horn 3 in E♭.
„ „ „ B♭-major, movement I, III and IV B♭-major, 2 trumpets in B♭ (basso), 2 horns in B♭ basso.
movement II E♭-major, 2 trumpets in E♭, 2 horns in E♭.
„ „ „ C-minor, movement I and III C-minor, 2 trumpets in C, 2 horns in E♭.
movement II A♭-major, 2 trumpets in C, 5 horns in C.
movement IV C-major, 2 trumpets in C, 2 horns in C.
„ „ „ A-major, movement I and IV A-major, 2 trumpets in D, 2 horns in A.
movement II A-minor, 2 trumpets in D, 2 horns in E.
movement III F-major, 2 trumpets in D, 2 horns in D.**)
„ „ „ F-major, movement I, III and IV F-major, 2 trumpets in F, 2 horns in F.

Weber, Overture 'Euryanthe' E♭-major, 2 trumpets in E♭, horn 1 and 2 in B♭ alto and horn 3 and 4 in E♭.
„ Jubel-Overture, E-major, 2 trumpets in E. horn 1 and 2 in E. and horn 3 and 4 in C.

Schubert, Symphony in B-minor, movement I B-minor, 2 trumpets in E, 2 horns in D.
movement II E-major, 2 trumpets in E, 2 horns in E.

Mendelssohn, Overture 'Ruy Blas', C-minor, 2 trumpets in C, horn 1 and 2 in C and horn 3 and 4 in E♭.
„ „ 'Fingals Cave', B-minor, 1 trumpets in D, 2 horns in D.
„ „ 'A calm sea', D-major, 2 trumpets in D. 2 horns in D.
„ Reformation-Symphony, movement III B♭-major, 2 trumpets in E♭, 2 horns in B♭ basso.
movement IV D-minor, 2 trumpets in D. 2 horns in D.

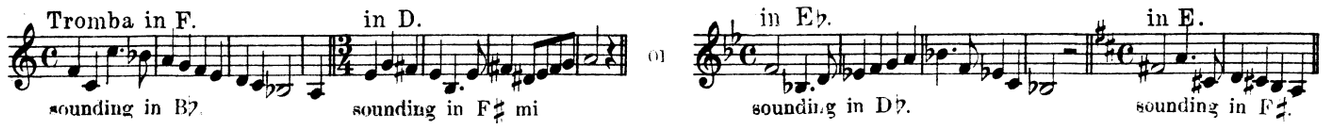
Schumann, Symphony No. 4 in D-minor, 2 trompets in D, horn 1 and 2 in F, horn 3 and 4 in D.
„ „ No. 3 in E♭-major, movement I and IV E♭-major, 2 trumpets in E♭, 4 horns in E♭.
movement II C-major, 2 trumpets in F, horn 1 and 2 in E. horn 3 and 4 in C.

Volkmann, Overture 'Richard III', F♯-moll, 2 trumpets in E, 4 horns in E.

Brahms, Symphony in C-minor, movement I C-minor, 2 trumpets in C*), horn 1 and 2 in C, horn 3 and 4 in E♭.
movement II E-major, 2 trumpets in E, horn in E.
movement III A♭-major, 2 trumpets in B,*) horn 1 and 2 in E♭, horn 3 and 4 in B basso.
movement IV C-major, 2 trumpets in C, horn 1 and 2 in C, horn 3 and 4 in E.
„ „ „ D-major, movement I and IV D-major, 2 trumpets in D, horn 1 and 2 in D, horn 3 and 4 in E.
movement II B-major, 2 trompets in B, 2 horns in B basso.
„ Academic Fest-Overture, beginning C-minor, now C-major, 3 trumpets in C, horn 1 and 2 in C, horn 3 and 4 in E.

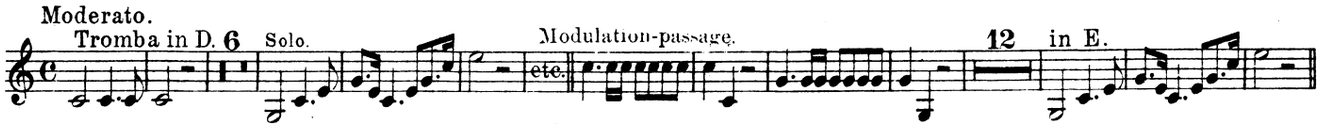
Wagner, Overture 'Tannhäuser' in E-major, 3 trumpets in E, 4 horns in E.
„ Faust Overture in D-minor, 2 trumpets in F, horn 1 and 2 in F, horn 3 and 4 in D.
„ „ „ in C-major, trumpets 1 and 2 in F, trumpet 3 in C. 4 horns in F.

Trumpet music is always written in C; the necessary sharps or flats of the prescribed key are often given at the beginning of the trumpet part. But as many players are unused to the signature being placed at the beginning, the sharps and flats should also be placed as accidentals in the music itself. Thus



If in the course of a piece a modulation occurs, or the movement continues for any time in a key other than the original, no alteration of the trumpet pitch need be made, but that retained with which the player began. In such long excursions into foreign keys no particular signature is written for trumpets, accidentals being utilised instead. But if a solo part occurs in a foreign key, to which that of the original trumpet is not well adapted, a new crook should be used, and to allow of the change being made comfortably, the trumpeter should have several bars rest.

The following table will be of service in showing such changes.



After a time, as necessity requires, the change back to D may be made.

The high C-, B♮-, B♭- and A-trumpets, which have been adopted in the orchestra, are introduced by the player, not by the composer or conductor. They are in fact rarely noted by the composer in the score for their tone is not the full, brazen trumpet tone of the lower trumpets; as conductors have done little if anything at all against this certainly not advantageous innovation, no good purpose would be served by fighting the battle of the trumpets here. The following examples show clearly enough that it is better to retain the trumpets of medium pitch (including those in C basso. B♮ and B♭), more especially in the works of the old masters.

Beethoven, 'Leonore', overture No. 2.

*) The notes marked thus are produced by means of the ventils; the original consists entirely of natural tones.)

Trombi in E♭.
Tromba in B♭

Beethoven, 'Eroica', symphony.

Trombi in E♭.
Trombi in B♭

Mozart, 'Don Juan', overture.

Andante.

Trombi in D.
Trombi in A.

Weber, 'Oberon'. Act II. des Rezia.

Andante.

Tromba in C.
Tromba in C alto.

Trombi in B basso
Trombi in A.

Meyerbeer, 'Robert the Devil', Act III.

Moderato.

Auber, 'Fra Diavolo', overture.

Allegro.

1. 2.

Tromba in D.
Tromba in C.
Tromba in A.

Trumpets can be used alone, doubled or trebled and as solo instruments, as well as as for rhythmic, or decorative purposes, for filling in harmony, accompaniments. Examples of these uses will be found later in the scores in part VII.

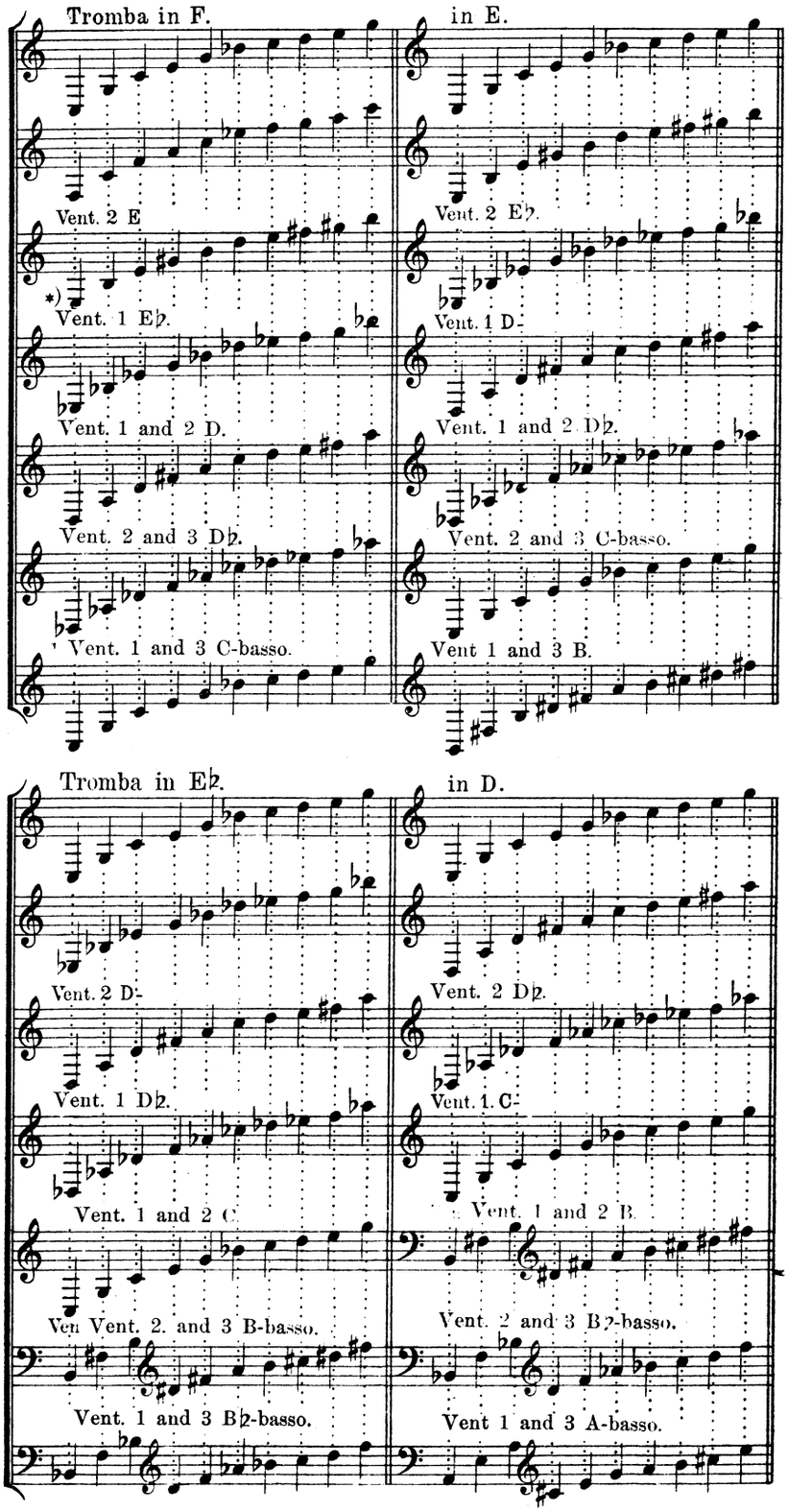
The tone of the trumpet is quite noticeable even when produced with little power among strings and wood-wind, and in the full orchestra *f* or *ff* if too much power be used, it is obtrusive and overpowering; and again, when an interval which should be subordinate, is given out *f* by the trumpet. A study of the scores of Haydn, Mozart and Beethoven's symphonies reveals the fact that these masters used the trumpet for rhythmic figures and in *f* passages to mark the strong beat. Beethoven, however, extended the use of the trumpet, as may be seen in his symphonies in A-, C-minor and in the ninth, while still further have modern writers extended its use.

Rapid change and pitch.

By depressing certain ventils the player can immediately change the pitch by lowering it. Thus the trumpet in *F* can be altered as the following table shows in this manner. But it must be noted that the free ventils may not now be used. The 2nd ventils lowers the pitch a semi-tone, the 1st a tone, the 1st and 2nd or

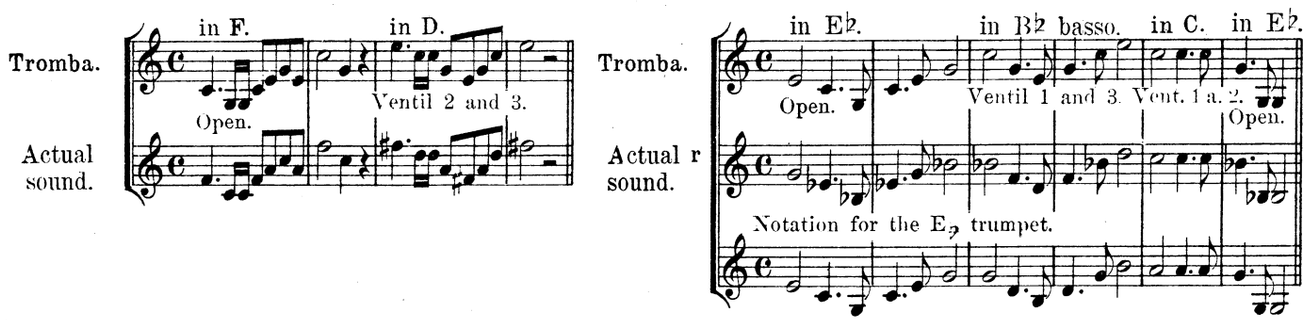
*) The symphonies of Haydn, Mozart and Beethoven are the safest for studying the use of more or less easy intervals.

3rd a tone and a half, the 2nd and 3rd two tones, and the 1st and 3rd two and a half tones. The following table shows four different original pitches with 5 variations created by the ventils.

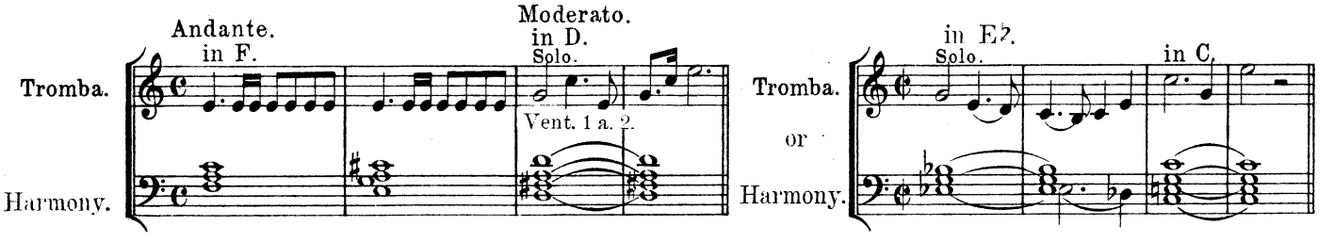


*) The notes are always written in C (as in the original), where the new pitch is given, where it should enter; and the notes then sound as under "Actual sound."

As may be seen from the above table each of the pitches can be lowered five degrees, and from the 4 trumpets, F, E, E♭ and D, nine different pitches may be obtained. On all four of these the deep octave (1 and 2, 2 and 3, or 1 and 3 ventils) is of poor and thin tone, as in that of the deeper notes of the high trumpets; and such sudden changes of pitch can only be satisfactorily accomplished by a thoroughly competent player. A few examples of how this rapid change is worked will be of use. They are written in C with the new key written above the music. The ventils are not given.



Here the most rapid change does not occur; it is given in the following example.



The mute or *sordino* — a reed of wood and metal  , (the dark colour shows its bore) is inserted in the bell. It causes the tone, *p*, to be nasal and weak; *f*, also nasal but penetrating. The mute has often been used with splendid effect in especial cases, as, for example, by Wagner in the *Meistersinger*, Cornelius in *The Barber of Bagdad*, and by Lumbye in his 'Traumbilder' fantasia. If the mute is required the words *con sordino* must be written in the part, but care must be taken to allow the player sufficient time to insert the mute.

Trumpet parts occupy one line in the score unless there are 3 or 4 trumpets.

The following examples in score show the different uses of the trumpet alone and *a due, a tre,* etc., and in combination with other instruments.

These and those under *c* and *e* etc. may serve as exercises in score-reading. When hearing any of the works from which these examples are taken, particular notice should be taken of the passages.

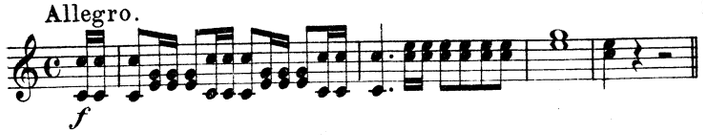
Examples in score[a].

NB. The following trumpets in C, B♭ are deep pitch.

1. Mehul, 'Joseph'.

Allegro.

2 Trombi in E♭.

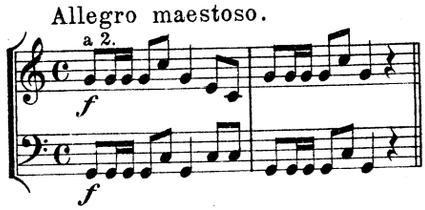


2. Mozart, 'Magic Flute'.

Allegro maestoso.

2 Trombi in C.

Timpani in C, G.

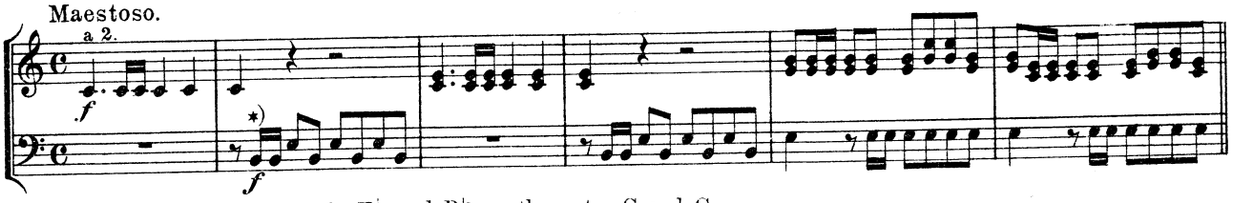


3. Mozart, 'Titus'.

Maestoso.

2 Trombi in E♭.

Timpani in B, E♭.

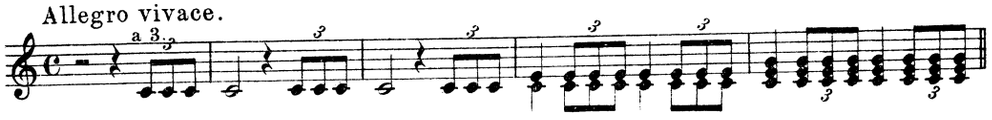


*) In the old scores, drums in E♭ and B♭ on the notes C and G.

4. Mendelssohn, 'A Midsummer Night's Dream'.

Allegro vivace.

3 Trombi in C.

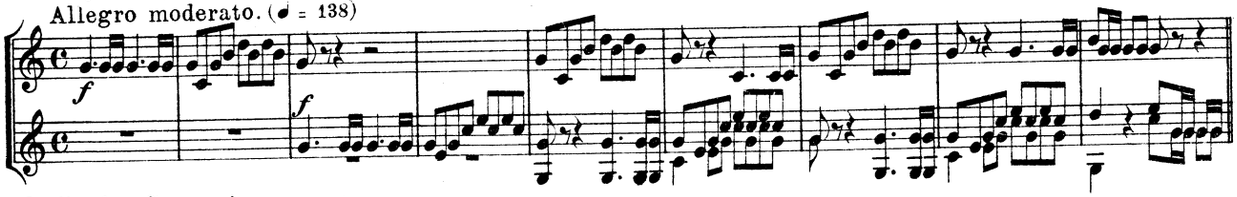


5. Meyerbeer, 'Huguenots'. (By permission of Breitkopf & Härtel, Leipzig.)

Allegro moderato. (♩ = 138)

Tromba I in D.

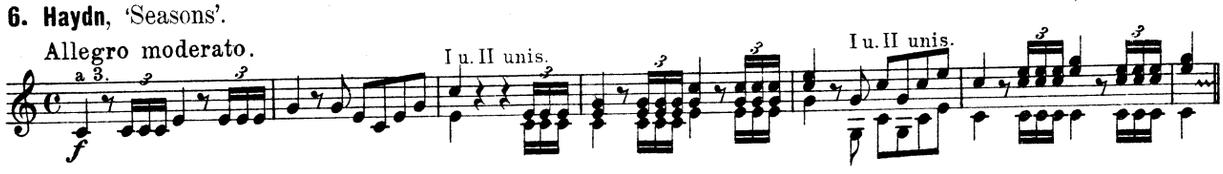
Tromba II. III. in D.



6. Haydn, 'Seasons'.

Allegro moderato.

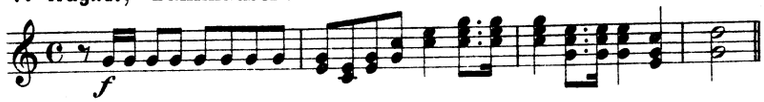
3 Trombi in C.



7. Wagner, 'Tannhäuser'.

3 Trombi in B basso

Instruments on the stage.

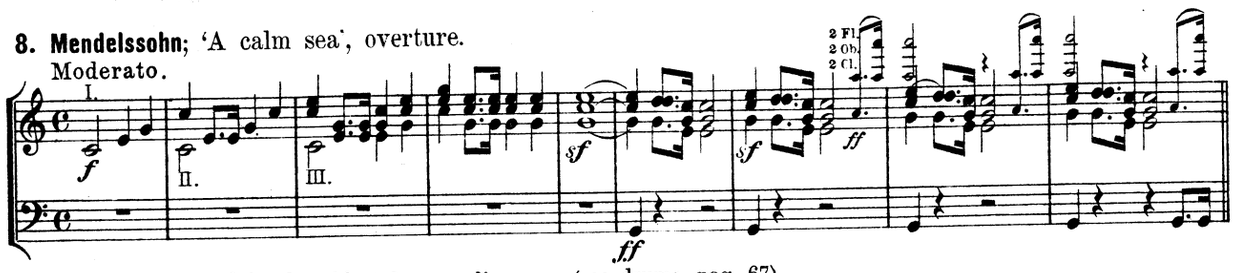


8. Mendelssohn; 'A calm sea', overture.

Moderato.

3 Trombi in D.

Timpani in A.

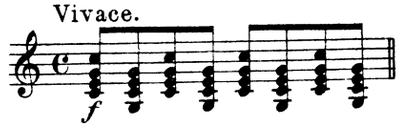


NB. The drums scored in the old style, sounding g, a (see drums, pag. 67).

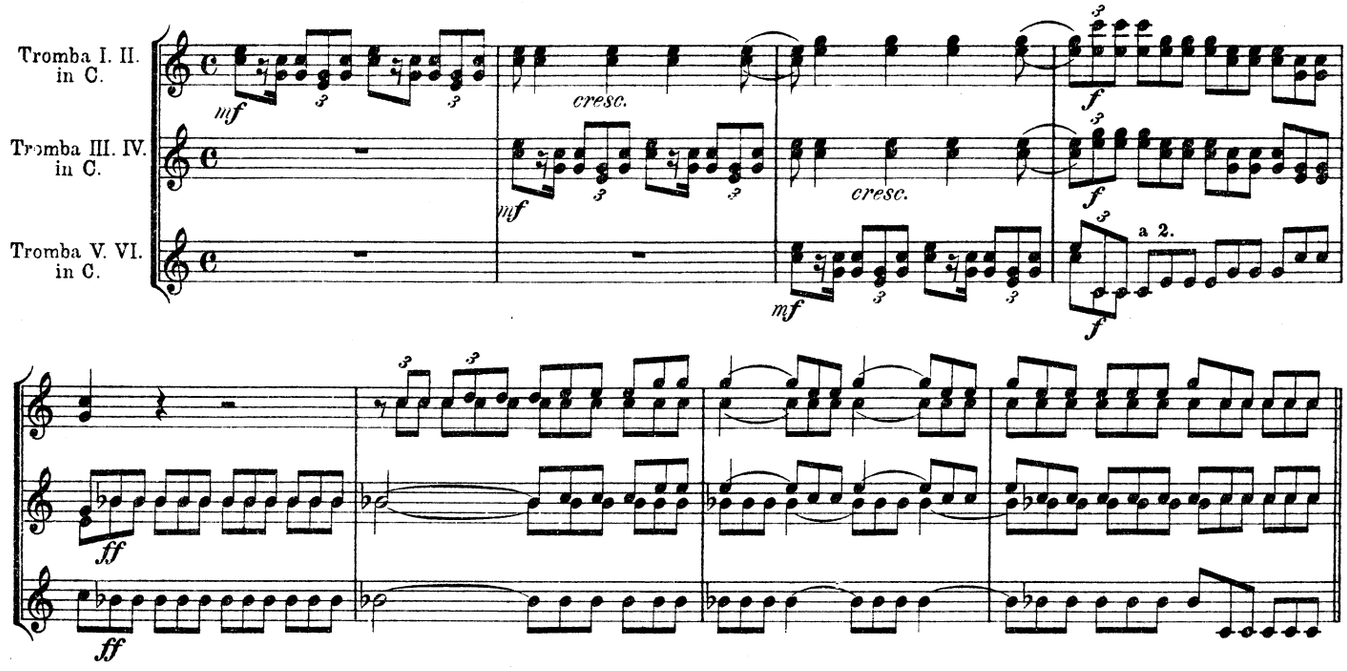
9. Weber, 'Euryanthe'. Act I. Finale.

Vivace.

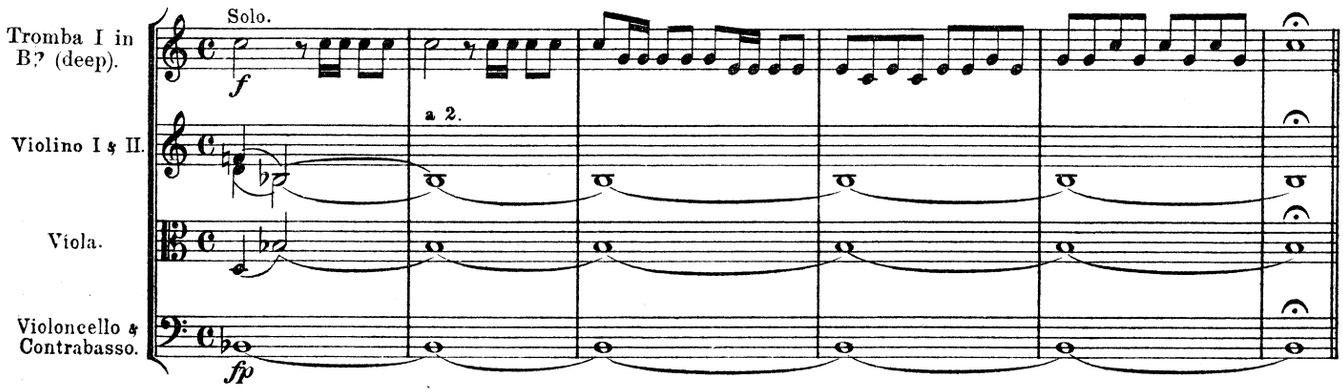
4 Trombi in D.



10. Verdi, 'Othello', Act III.

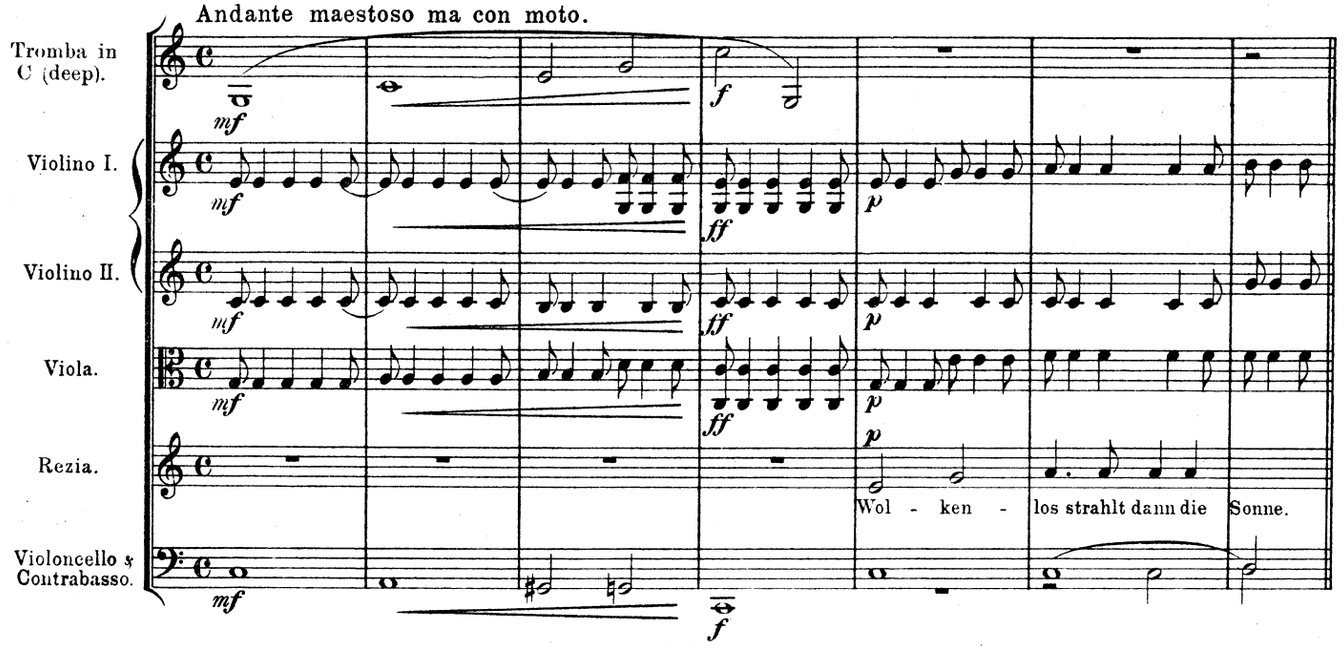


11. Beethoven. 'Leonore', overture No. 3.



12. Weber, 'Oberon', Act II.

Andante maestoso ma con moto.



13. Beethoven, 'Leonore', overture No. 2.

Un poco sostenuto.

Solo (on the stage).

Tromba I in E?.

Violino I.

Violino II.

Viola.

Violoncello & Contrabasso.

a 2.

fp

14. Auber, 'Fra Diavolo'.

Allegro.

Tromba I in D.

Violino I & II.

Viola.

Violoncello.

Solo.

pp

a 2.

1. 2.

15. Lumbye, Traumbilder Fantasia..

Gallopp.

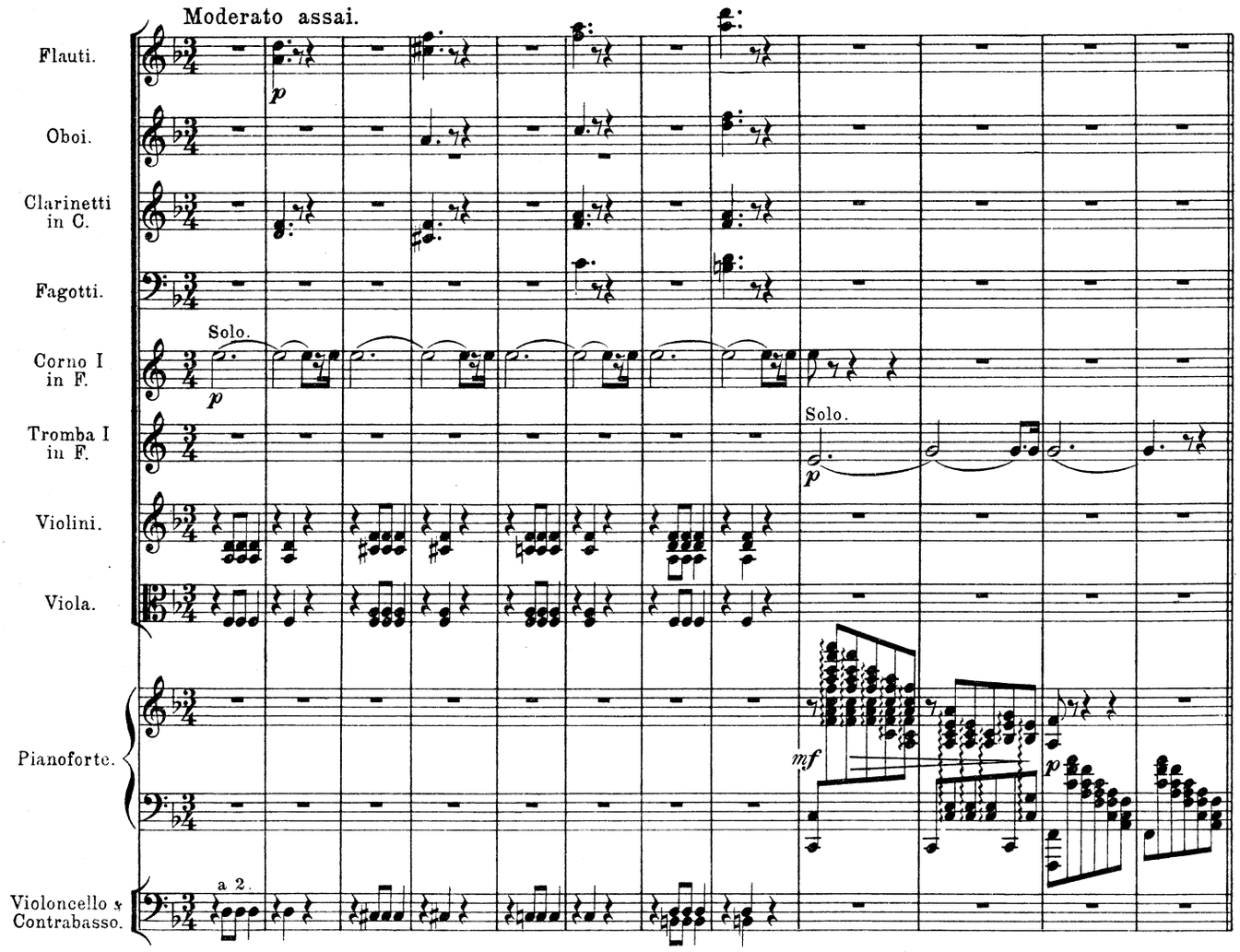
con Sordino

Tromba I in E.

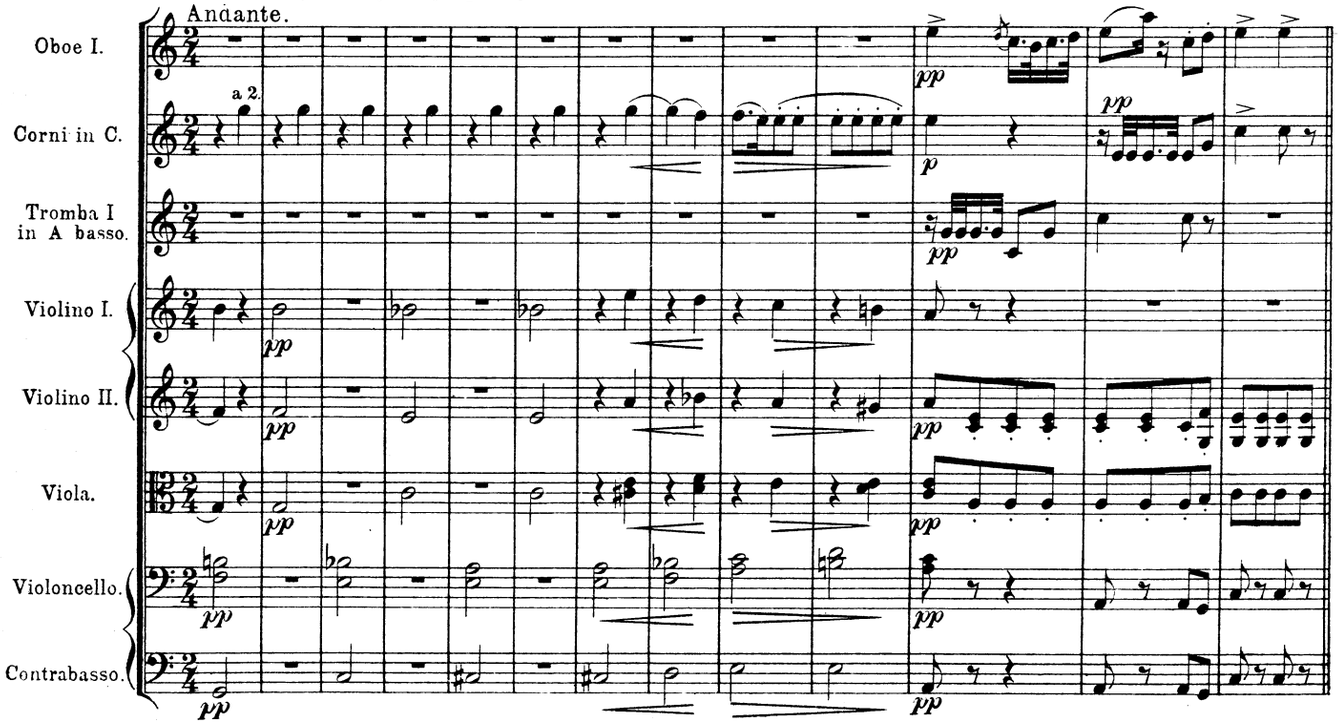
Clarinetti in A.

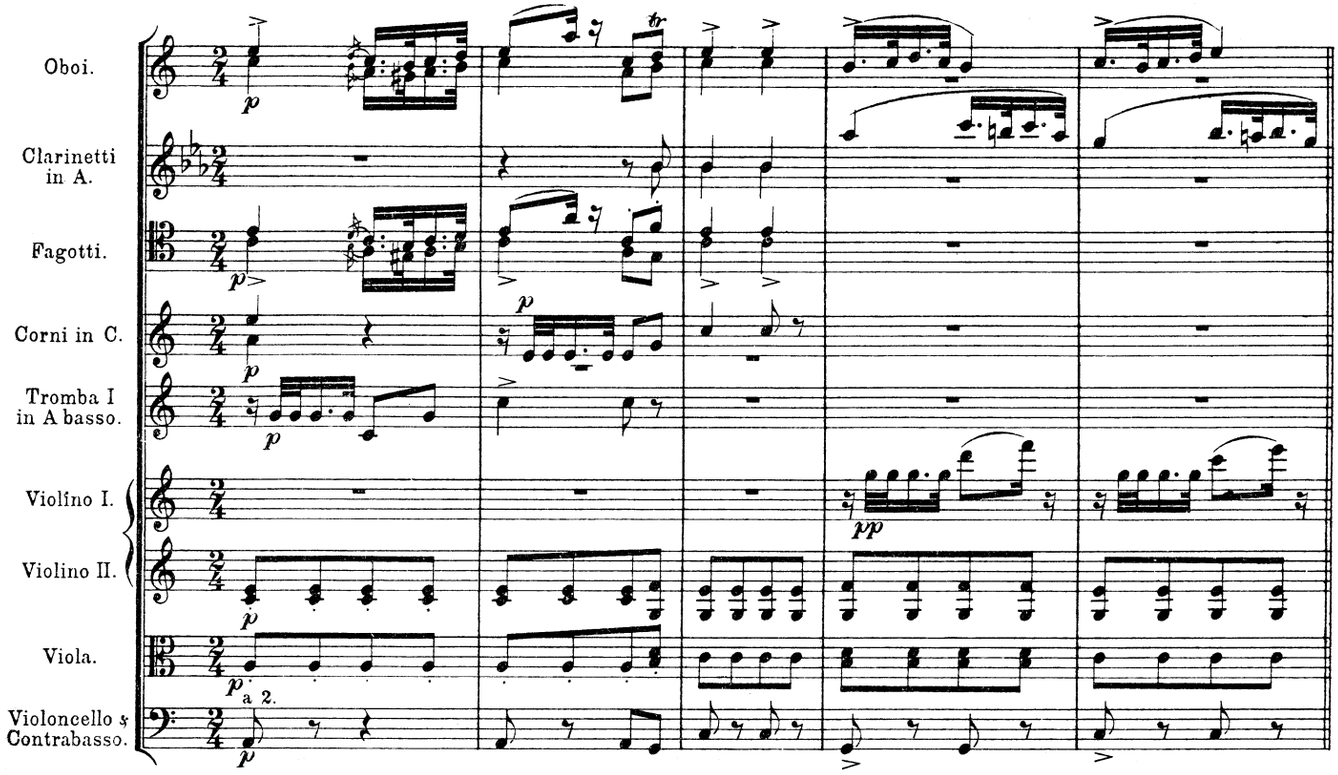
Fagotto I.

16. Rubinstein, 4th Concerto. (By permission of Bartholf Senff, Leipzig.)

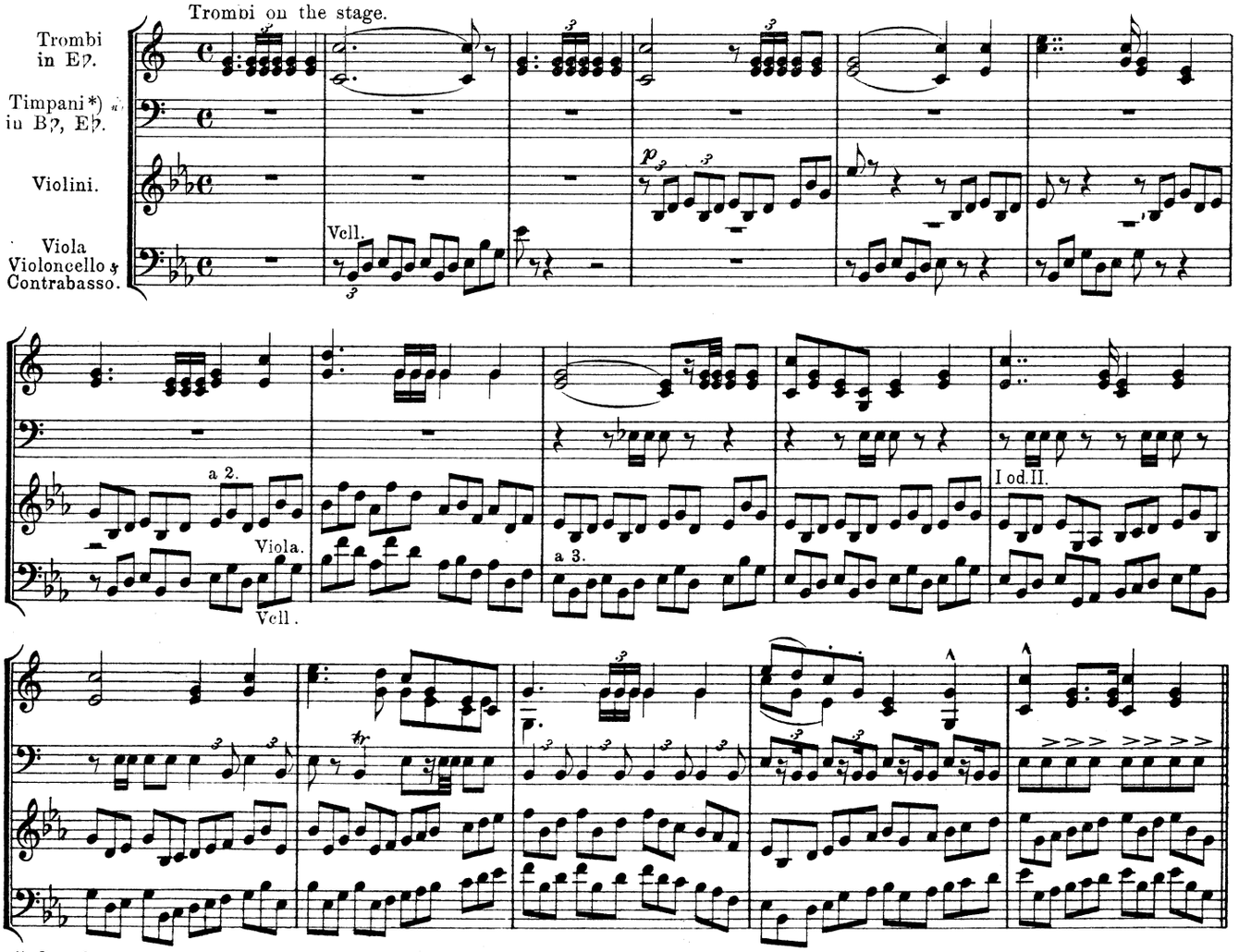


17. Schubert, C-major symphony. 2nd movement.



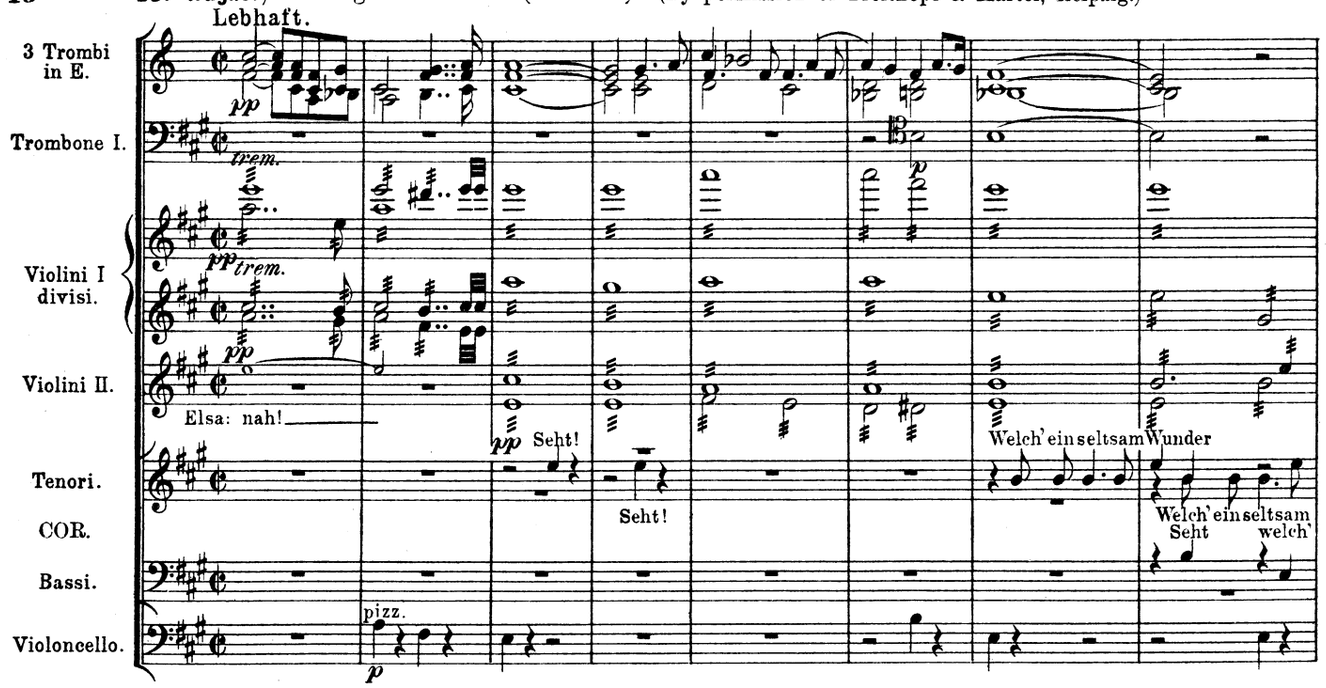


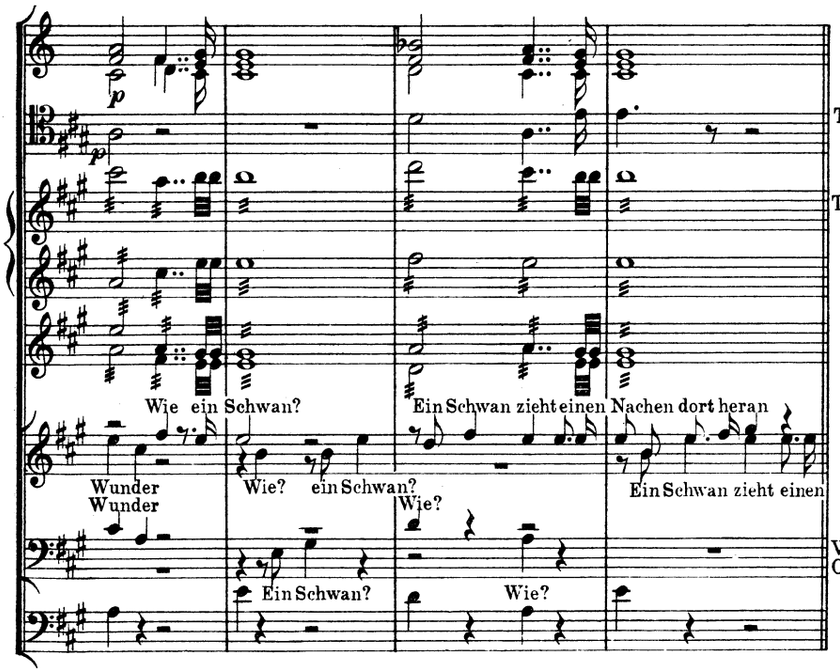
19. Wagner. 'Lohengrin'. Act III. (By permission of Breitkopf & Härtel, Leipzig.)



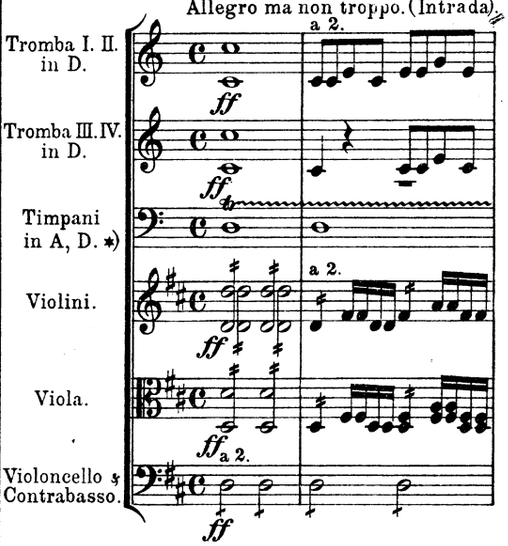
*) See drums pag. 67.

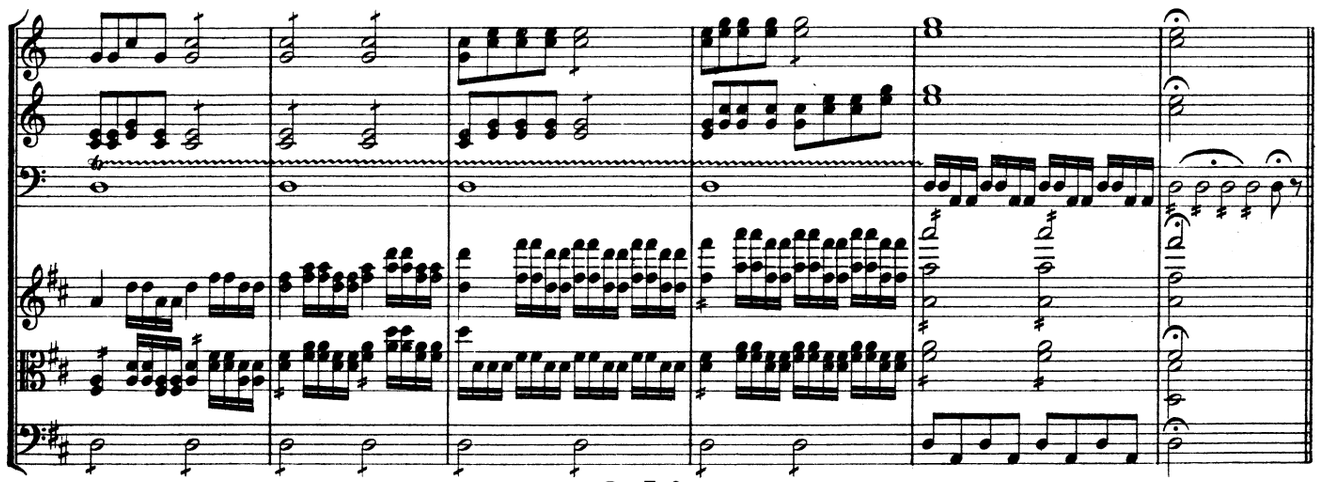
20. Wagner, 'Lohengrin'. Act I. (Scene 2.) (By permission of Breitkopf & Härtel, Leipzig.)





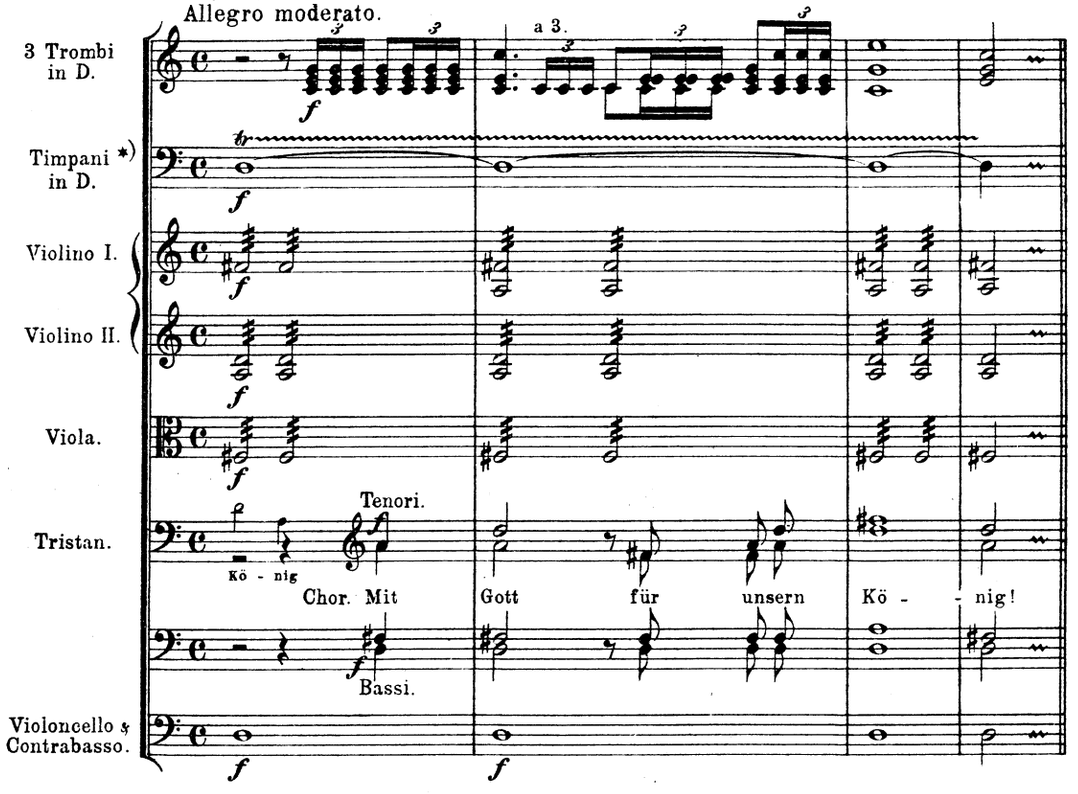
21. Beethoven, 'Schlacht bei Vittoria'.
Pt. II. Siegessymphony.
Allegro ma non troppo. (Intrada).



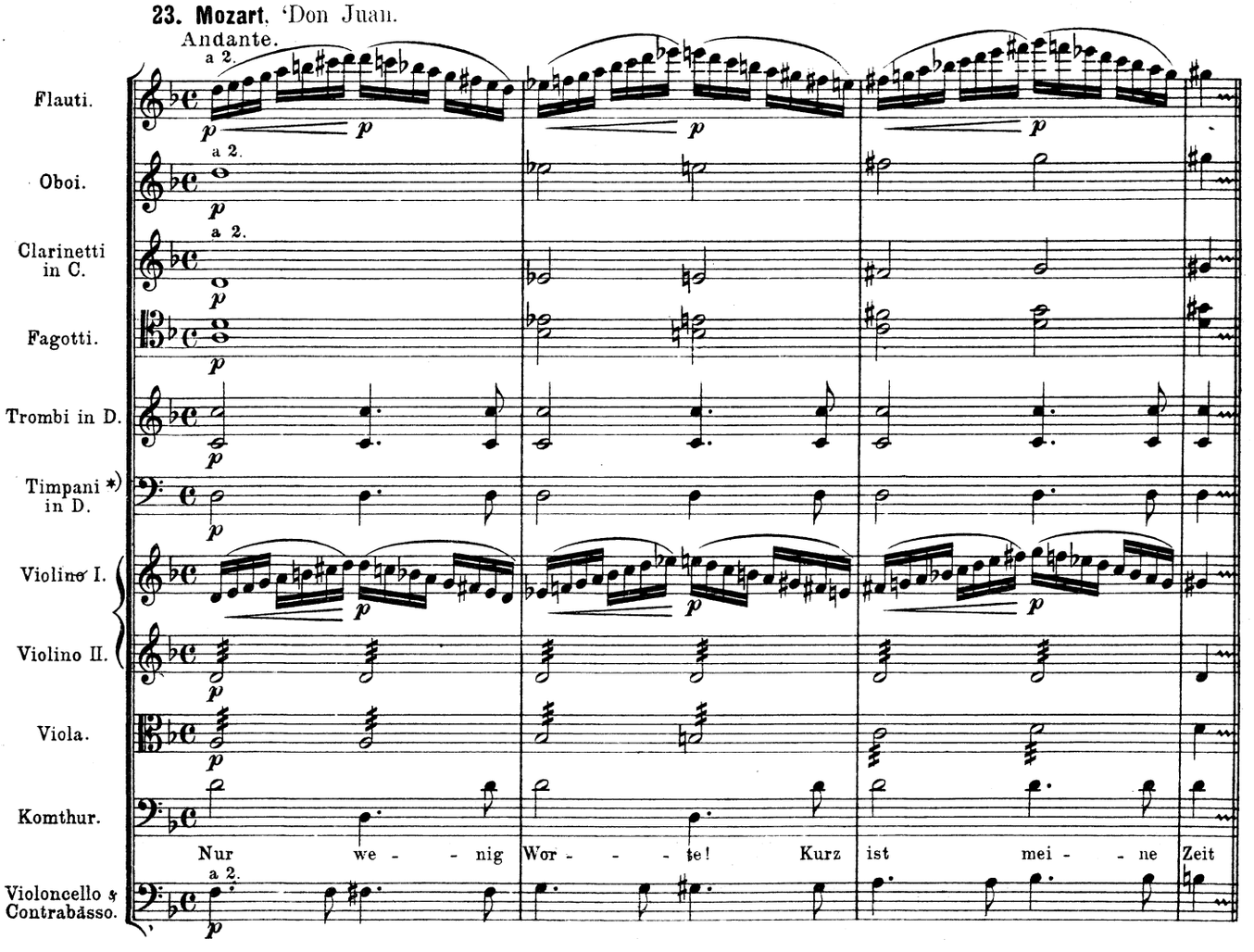


*) See drums pag. 67.

22. Spohr, 'Jessonda'. Act II.

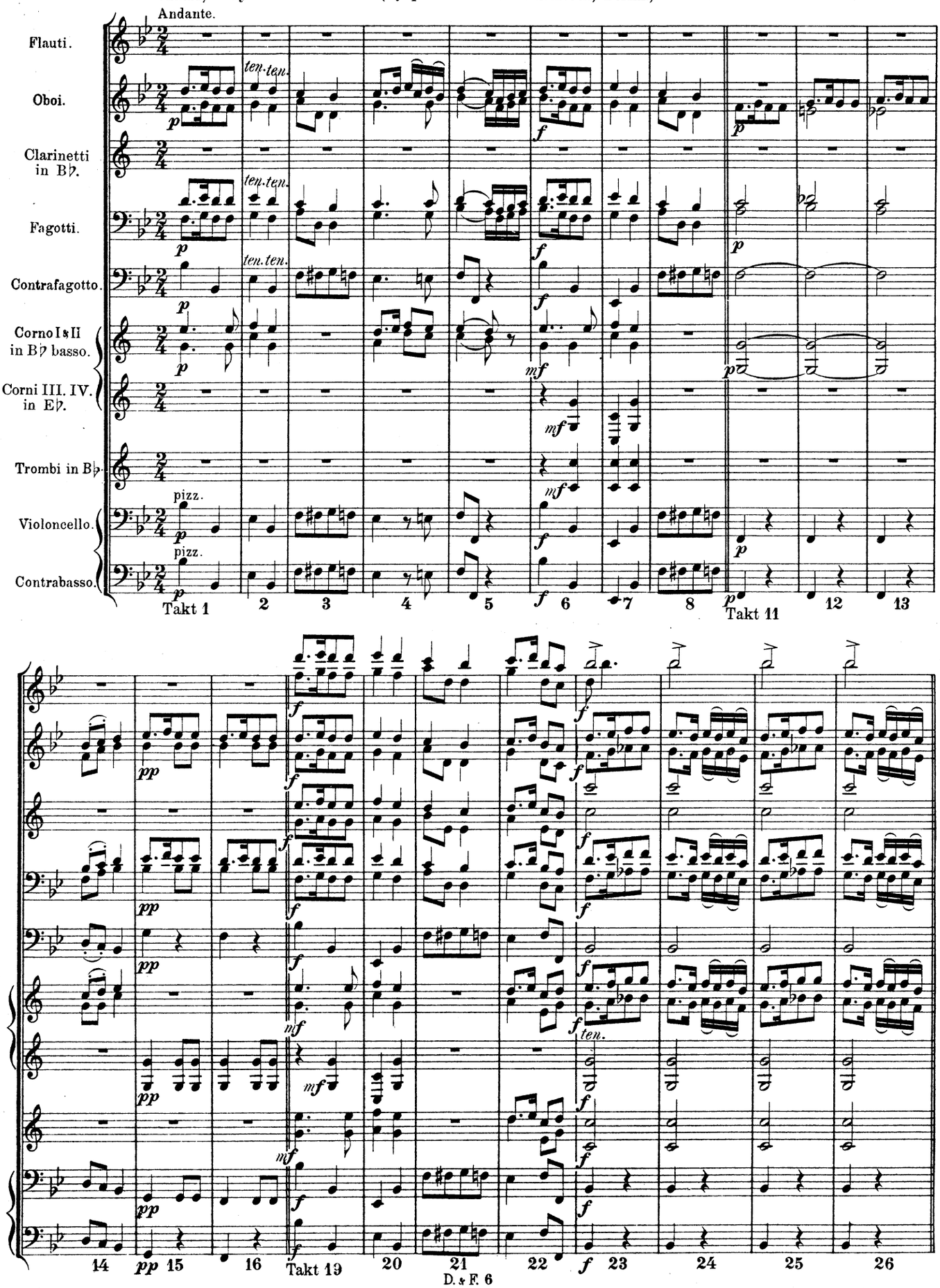


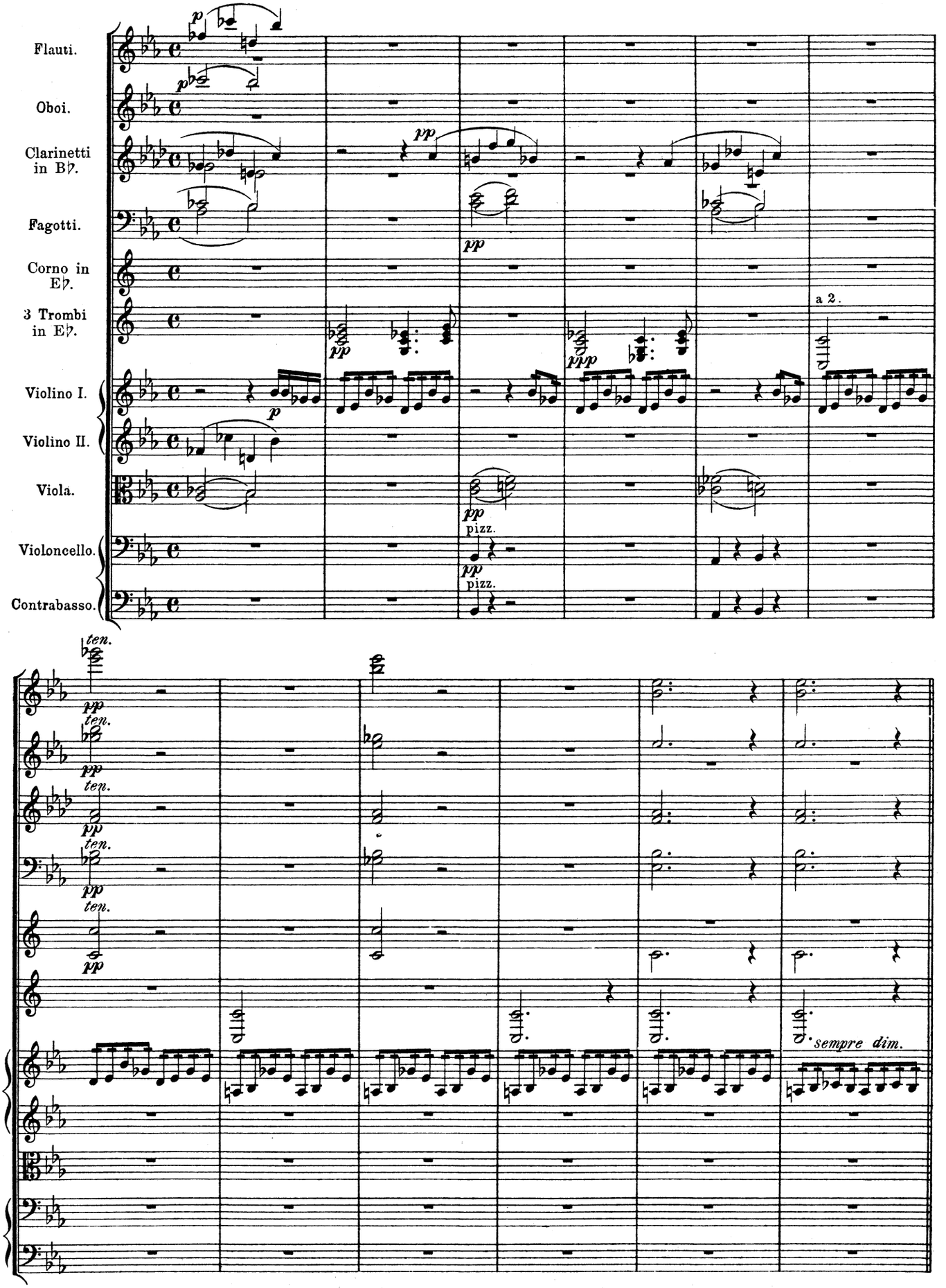
23. Mozart, 'Don Juan.



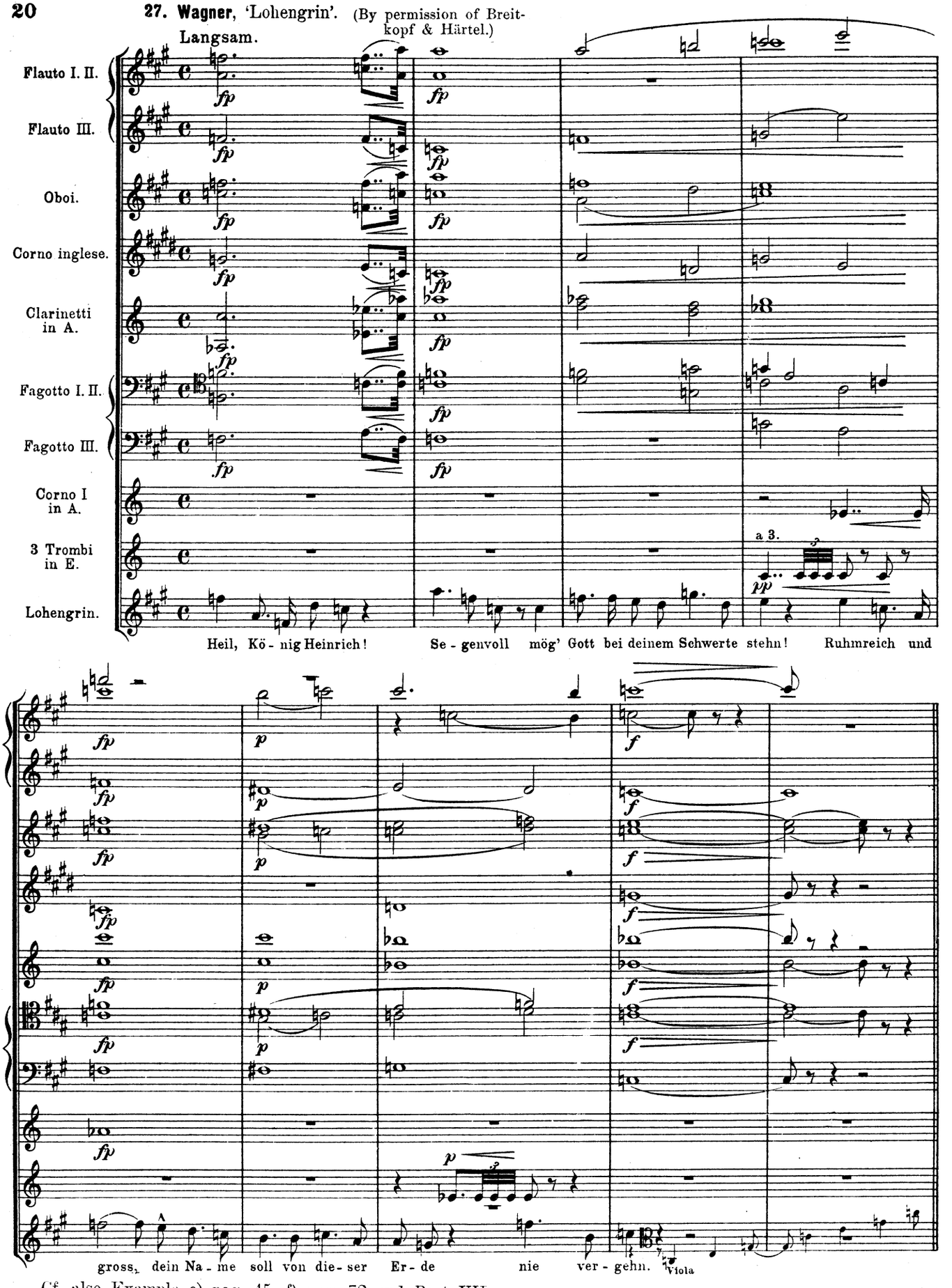
*) See drums pag. 67.

24. Brahms, Haydn Variations. (By permission of N. Simrock, Berlin.)




Flauti.
Oboi.
Clarinetti in B♭.
Fagotti.
Corno in E♭.
3 Trombi in E♭.
Violino I.
Violino II.
Viola.
Violoncello.
Contrabasso.
a 2.
pizz.
pizz.
ten.
sempre dim.

27. Wagner, 'Lohengrin'. (By permission of Breitkopf & Härtel.)

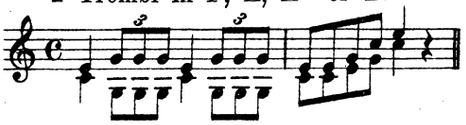


Cf. also Example c) pag. 45, f) pag. 72 and Part VII.

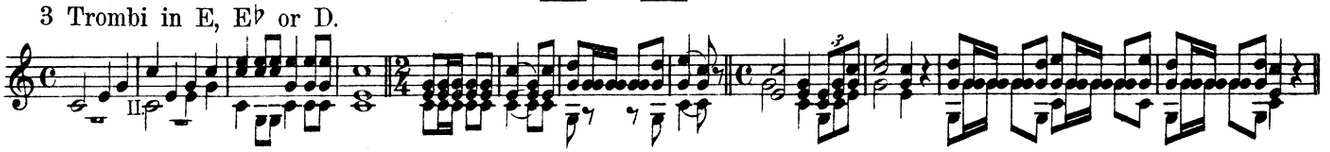
Exercise I.

When a thorough comprehension has been acquired of the capabilities and use, tone and so forth of the trumpets, the simplest examples, such as small fanfares for 2, 3 or 4 trumpets, (in which only natural tones occur) may be practised.

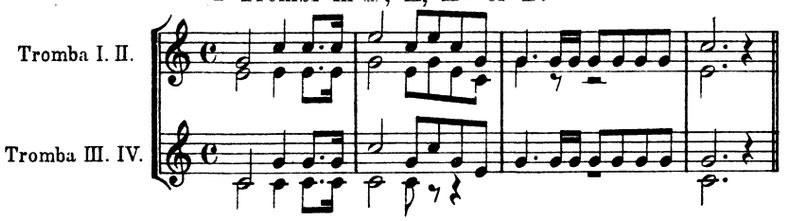
2 Trombi in F, E, E♭ or D.



3 Trombi in E, E♭ or D.



4 Trombi in F, E, E♭ or D.



After a few of these have been worked let the pupil attempt small pieces for 3 or 4 trumpets with or without drums in the old simple style. The drums give the bass of the harmony — the tonic and dominant.

Modern use of 4 trumpets and drums,

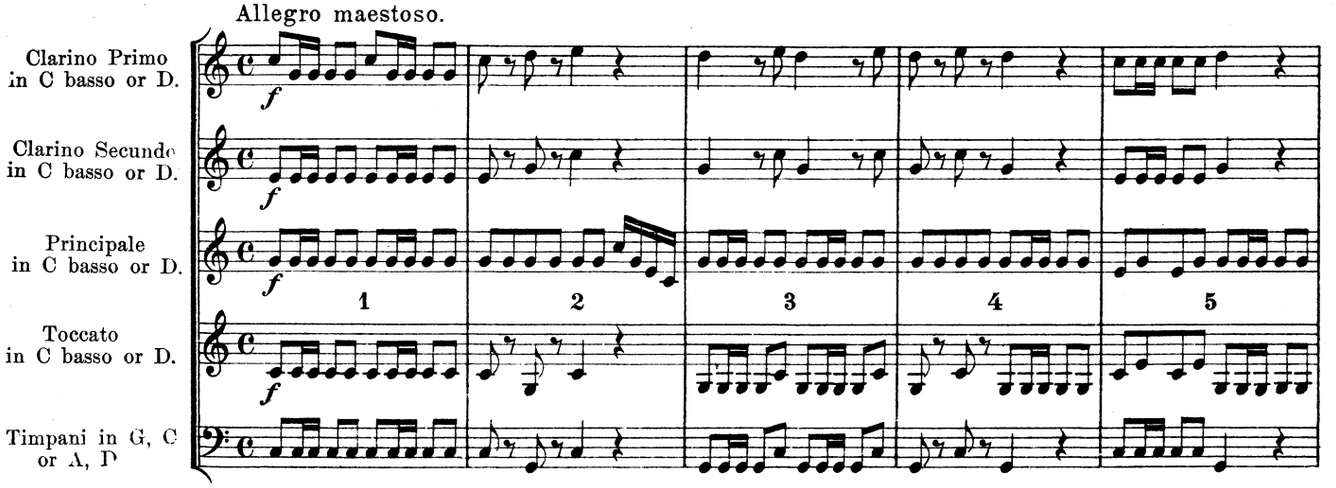
As in festival music.

Clarino; (old title of the trumpet) a short, narrower curled trumpet than the older sort; used in chorus for 1 and 2 parts.

Principale; a middle part, sometimes used as the deepest (3).

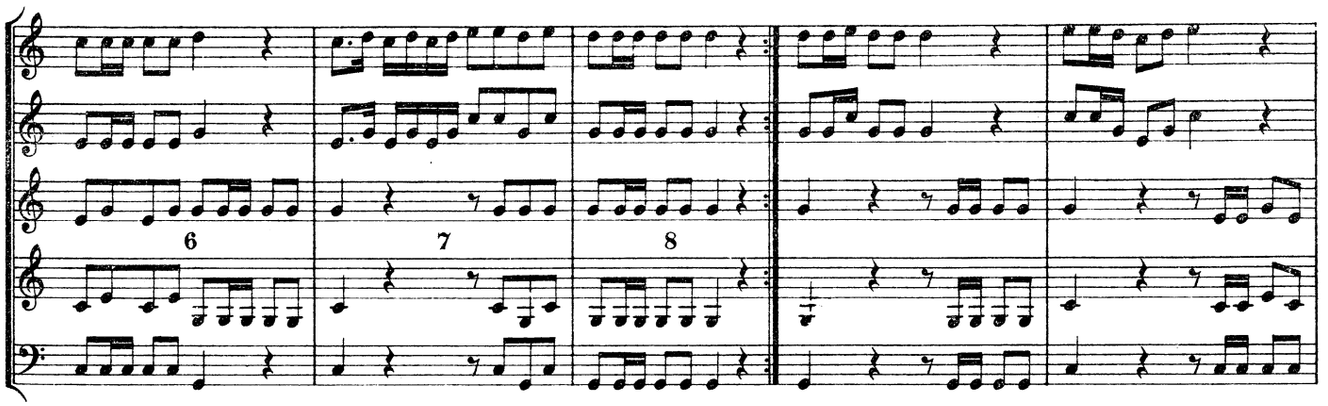
Toccato; the 4 trumpet parts; when drums are absent, their part is often played in the higher octave.

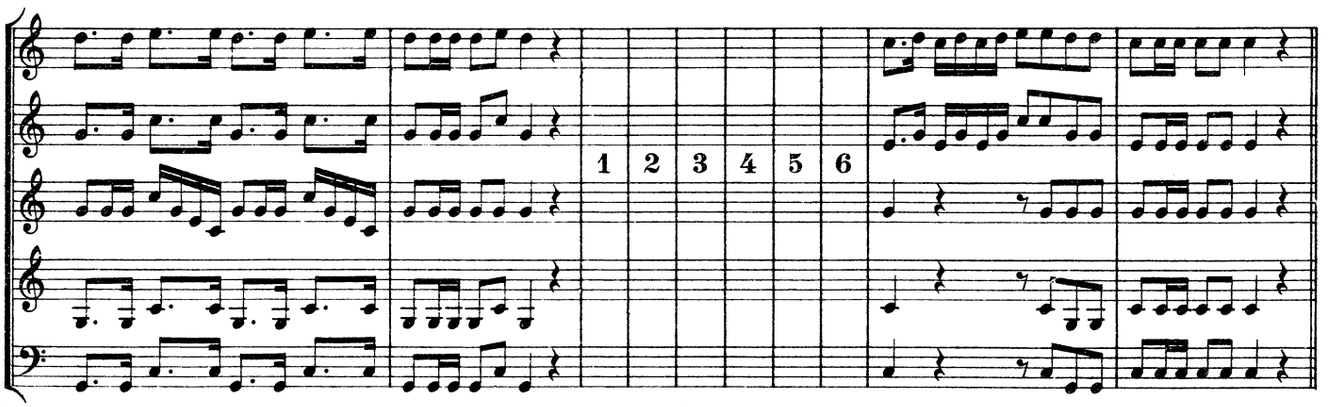
Allegro maestoso.

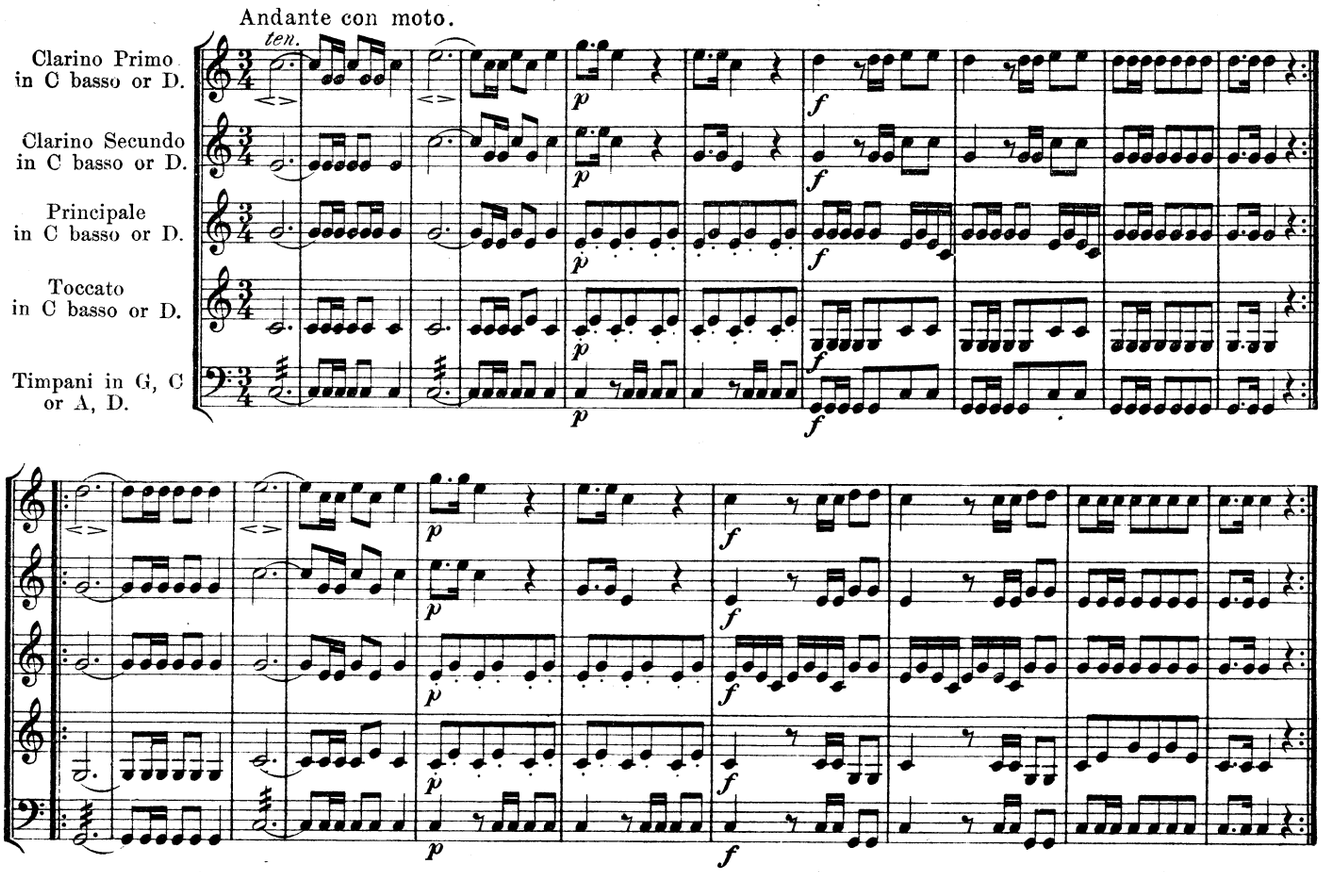


NB. For D-trumpets the drums must be tuned to A and D.

*) See drums pag. 67.



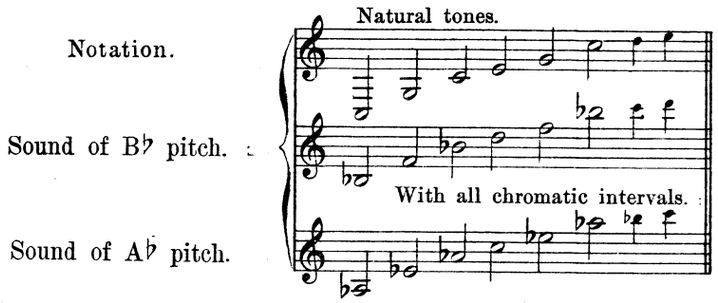




The further use of the trumpets is explained in the later examples.

The Alto Trumpet.

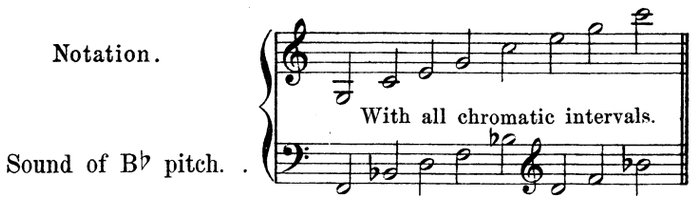
This instrument used to occur in cavalry bands in B♭ and A♭, and was written for in the violin clef. It is in fact the same as the present high B♭ trumpet already described. The notes written sound on the B♭ trumpet a diminished 7th higher, and a minor 6th on the other, thus:



Nowadays we write for the B♭ trumpet as for the B♭ clarinet.

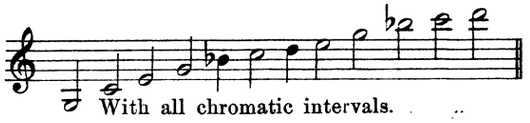
The Tenor Trumpet,

which formerly was only found in military bands, was in B♭, and written for in the violin clef also. It had the same compass as the high B♭ trumpet, but the notes sounded a 9th deeper than they were written. Thus:

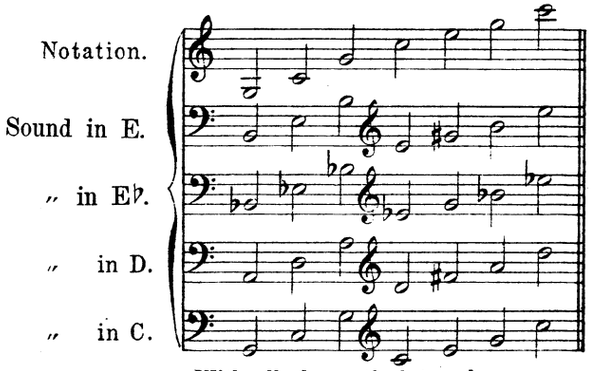


The Bass Trumpet,

which in many countries occurs only in military bands, was introduced by Wagner as a newly contrived instrument into the theatrical orchestra. Those used in the Wagner dramas have 3 ventils, and are pitched in E, E♭, D and C. They are written for in the violin clef and their compass is



This full compass was used by Wagner, as may be seen in the following examples. The E bass trumpet sounds a minor 6th lower, E♭ a major 6th; D a 7th; C an octave deeper. Thus:



With all chromatic intervals.

The tone resembles that of a valve trombone, and has little of the noble colour of the trumpet, and not the ring of the trombone. It is always written for in C and alterations in the key by modulating must be notified by sharps, flats or naturals.

In Bavaria and Austria the old bass-trumpet in the larger form in E♭ and D is still sometimes found in cavalry bands, wherein it is usually treated as a bass instrument. (See example in score part VII.)

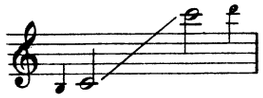
The Cornet.

(Piccolo cornet in E♭, cornet à pistons, alto-cornet or E♭ cornet or alt-horn.)

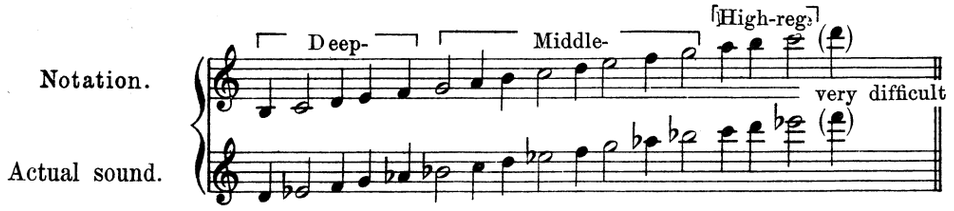
These three kinds, which in Germany are indigenous and are found in various orchestras and bands, differ largely from each other in compass and tone colour.

The Piccolo Cornet,

or high E♭ cornet, is formed like a small trumpet, but its tube is broader and shorter and the bore of its mouth-piece is 'Kettle shaped'. It is written for in the violin clef, and has this compass. Ex.



It is generally pitched in E♭, the notes written sounding a minor 3rd higher, as the following table shows:



Its tone is generally hard and sharp, raw in the deeper register, and best in the middle. The upper notes are difficult to produce, and are sharp and piercing. This cornet is only used in military or brass bands where it plays the melody in the middle and higher registers.

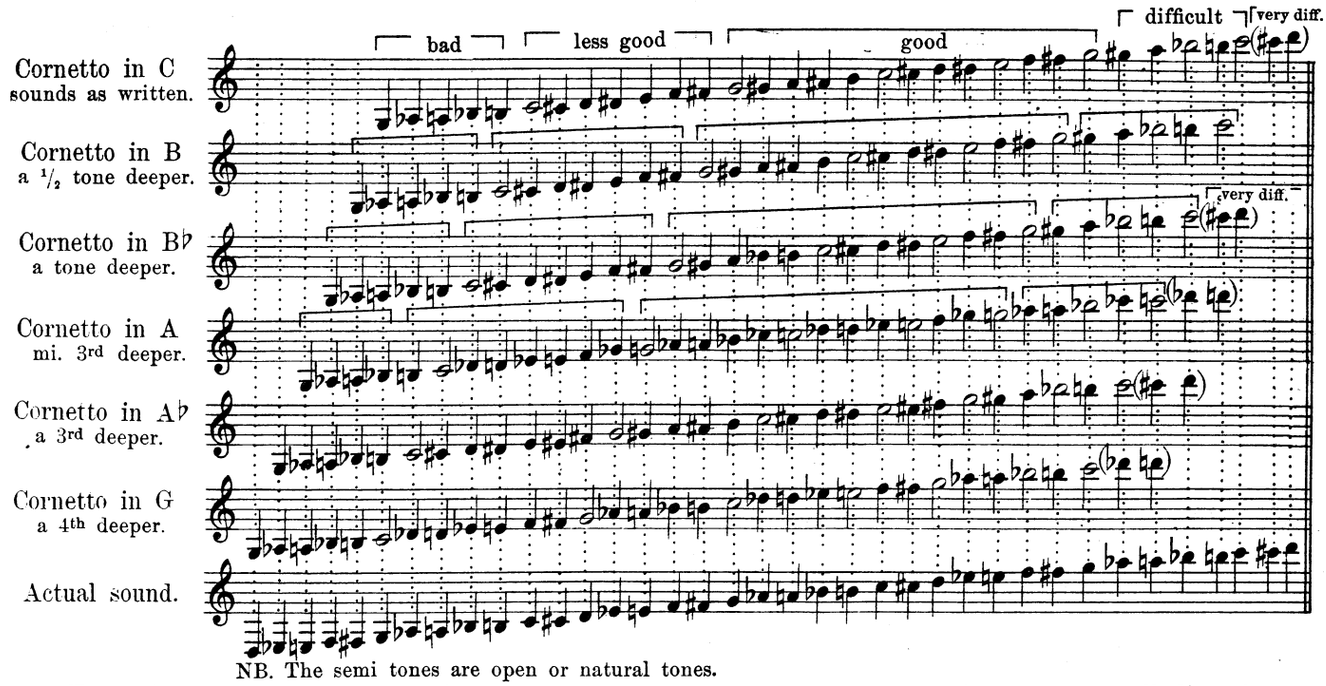
The cornet à piston

or B♭-cornet in most used of the series, since amateurs as well as professionals play it. It is a sort of post-horn but trumpet shaped, with bell and mouthpiece like the piccolo cornet. Its tone lies between that of the horn and trumpet. It is written for in the violin clef. It occurs (1) in C, when crooks are used to alter it for the B♮, B♭ and A pitches: (2) for B♭ with 3 crooks for A, A♭ G. In its original form in C only B♭ and A were used, and in the second, in B♭, only A. In German military bands it is used in B♭. In France, Belgium and Spain, and in the French Switzerland, it occurs in all orchestras, where it has displaced the trumpet. In large orchestras there, however, the trumpet is still occasionally found, but by no means to the same entent as in Germany. It is handier than the trumpet, speaks more easily, and is better adapted for higher music; and it can play the same figures and passages or melodies, without becoming obtrusive. Still it should never replace the trumpet.

In Germany, it has already been said, the cornet occurs in military bands, and but rarely in the larger orchestras. Meyerbeer, Berlioz, Gounod, Delibes, Massenet, Bizet and others have used it *a due* in their works. In such orchestras as have no cornets, the trumpets take their place; but this is often not of good effect, since they are often used for playing a melody, for which the trumpet is too sharp and hard.

*) By Janissarie or Harmony music an orchestra is un deestood in which occur, wood, brass and percussion instruments.

The following shows the compass, the best registers, the method of writing and actual sound of these instruments, with the various pitches.



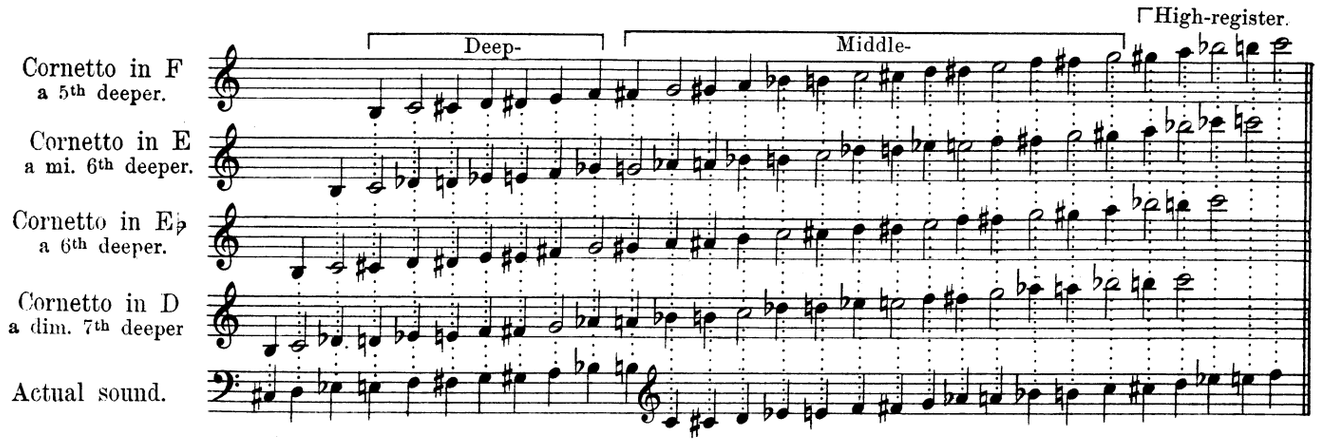
NB. The semi tones are open or natural tones.

Every interval, if neither too high nor too low, is playable in all grades of tone, as are all diatonic and chromatic passages in various rhythms, all kinds of ornaments, and the rapid repetition of a tone (cf. trumpet, 'double-tongueing'). Slow, flowing melodies and decorative figures of accompaniments are often very effective.

(Cf. score Exs. part VI, and part VII).

The Alto Cornet

or E♭-cornet (or alt-horn) is like a trumpet, but its orifice is slightly wider, its bell broader. It occurs in F with the two varieties of crooks for the E♭ pitch, and in E♭ with crooks for D. Music is written for it in the violin clef: its compass is as follows: —



The tone of this cornet is generally raw, hard and rough, and the instrument is usually used in cavalry or brass bands *a due* (in E♭), instead of the natural or valve horns. The alto cornets are used to accompany or to fill in the harmony. In some infantry bands 2 E♭-cornets are found as well as 4 horns.

*) generally in E♭.

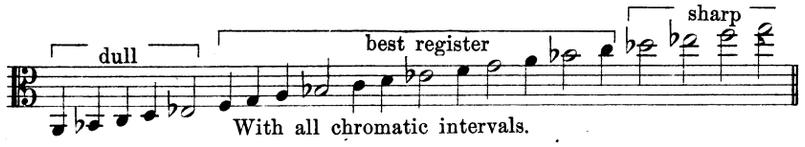
The Trombones.

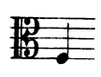
The trombones are the oldest and most sonorous of the brass. The double slide can easily be lengthened or shortened by the player with the right hand, whereby notes of various pitches can be produced. The trombone is a non-transposing instrument, the notes sounding as written.

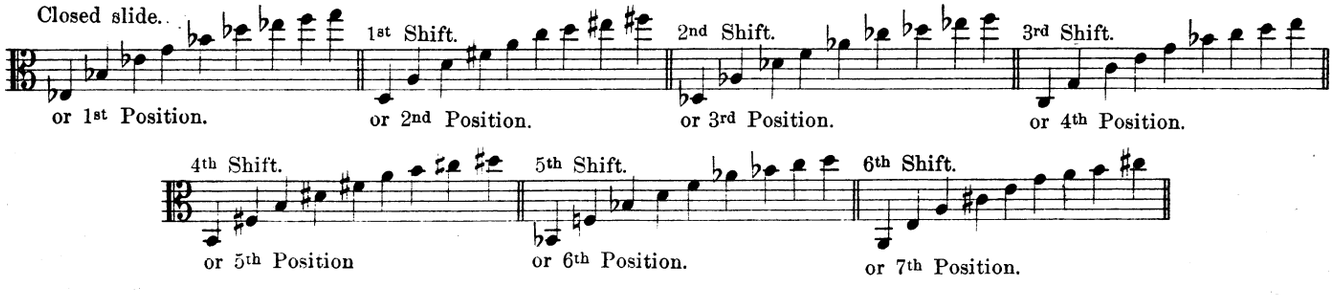
There are four kinds of slide trombones, called like the various human voices, soprano or discant, alto, tenor and bass. In more recent years a 5th kind, the double-bass trombone has been brought into use, for example, by Wagner in the *Nibelungen-Ring*. The discant and real tenor trombones have now disappeared, but the alto and tenor-bass and bass trombones still are used, the last with a variety of compass. Often 3 tenor-bass or 2 tenor-bass and 1 bass trombones are found.

The alto trombone

is the smallest and most easily handled of the trombones now in use, and is written for in the alto clef. It is usually said that the instrument is in E♭, which implies that it is a transposing instrument, like the horns; this however, is not the case, as will be seen. Its compass is:



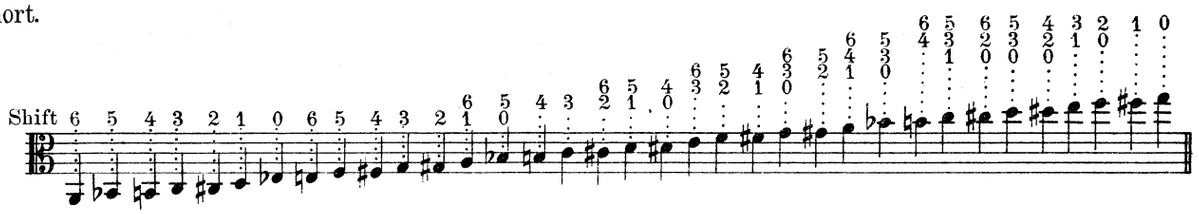
The minims are the ordinary open tones. In tone the alto trombone is between the horn and trumpet, and in comparison with the other trombones is rather sharp and piercing *f*, and dull *p* or *mf*. The deep *a*—*c* are less effective; the best register from *f*  to *c*  The high register from B♯ to E♭ and E can be used effectivively enough in the right place. It is not invariably written for in the alto clef. If in the score this instrument has a line to itself, the alto clef is used, but when it is playing with the tenor trombone on the same line, the tenor clef is used. Very rarely is the alto clef used in this case. The bass clef would be unpractical.



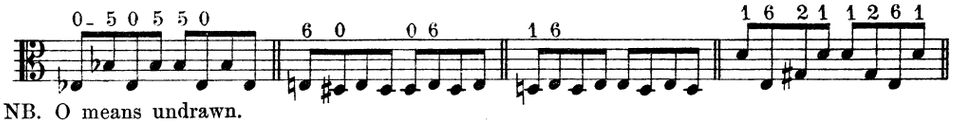
To the player there are 7 positions or shifts, the first of course being that with slide undrawn.

*) See pag. 33.
**) The real tenor trombone has a somewhat narrower tube, which produces a more "lyric" character of tone.

All notes in the above good register can be played in all grades of strength and shade. Rapid passages can also be played if the intervals lie so that the player is not constrained to make too long leaps in shortening and lengthening the column. Still rapid music is not that best suited to the trombone, and such is rarely found in the classics. The following table will serve to show at a glance if the leaps between 2 intervals are long or short.

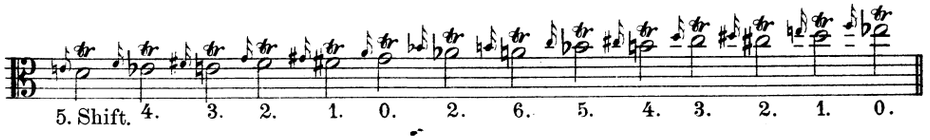


The following intervals are difficult and only playable in slow tempo.



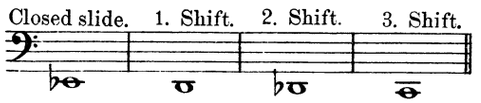
NB. O means undrawn.

Trills are playable by a competent player in the higher octave, but only with a major 2nd.



They are rarely used.

Besides the compass described deeper tones are also available, called contra or pedal tones, written in the bass clef. These are in the undrawn and following 3 shifts: in 4, 5, 6 they are hardly possible, and these tones are of bad quality.



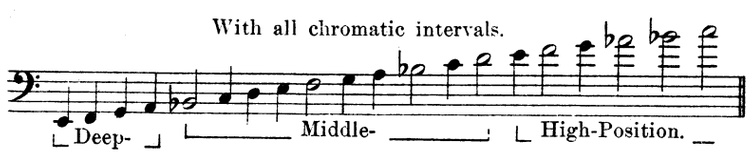
As the pedal tones are difficult to produce, and have no very high quality of colour, they had better be disregarded.

Cf. Ex. in score, pts. VI and VII.

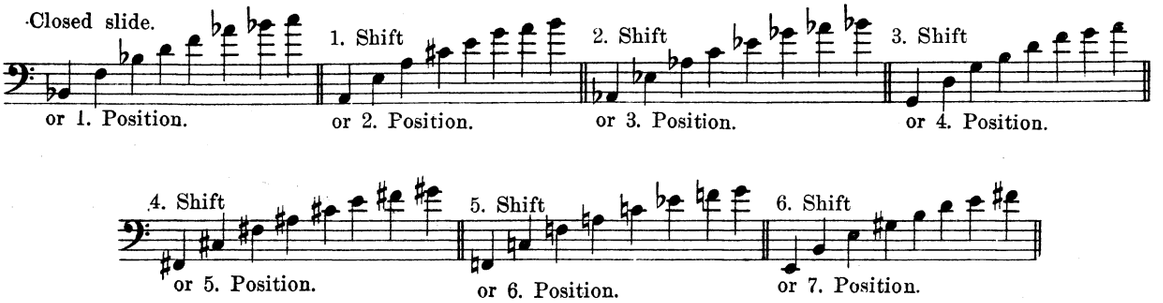
The Tenor-Trombone.

The real tenor trombone, which formerly existed, had the same compass as the present one. But that now used has often been more correctly described as the 'tenor-bass' or baritone trombone. As this has a wider bore, an entirely different tone is produced, more like that of the bass or baritone voice in character in the middle and deeper register.

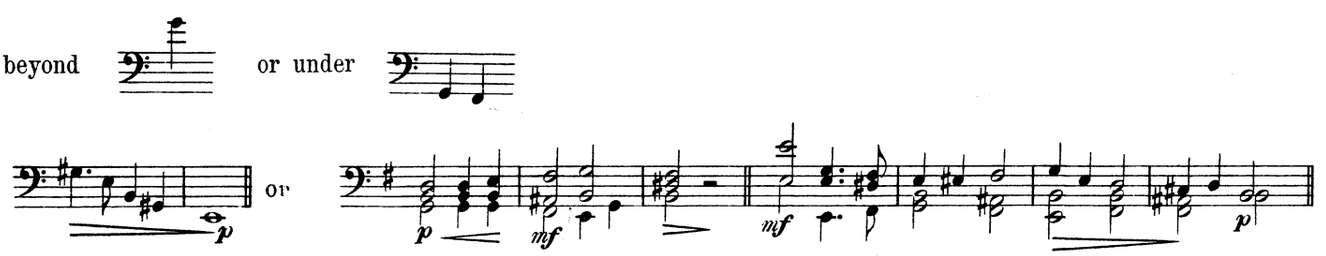
This tenor-bass trombone is the most sought after of all the family because of its easy handling and common use. It is said to be in B♭, but this is because in the undrawn position many of the notes are in that scale. It is treated as a non-transposing instrument. It is written for in the tenor and bass clefs, but the latter is preferable. Its compass is.



As before noticed, the various notes are produced by shifts, of which there are 6, as follows:



The tone-character of the instrument alters somewhat with the various dynamic grades and registers. The deeper is, *p*, sad and mysterious; *f*, rough: the middle, *p*, mild and tender; *f*, powerful, majestic, heroic; the higher, *p*, tender but penetrating; *f*, sharp, brilliant and piercing. The higher compares with that B♭ and C bass horn-tone *p* or *mf*, but *f* the horn has not the power and sharpness of the trombone. With the exception of a few deep and very high lying intervals all notes can be played in any grade of strength. The deepest notes are difficult *f* or *ff*, while the highest are difficut *p* or *pp*. In orchestral music the tenor trombone rarely goes

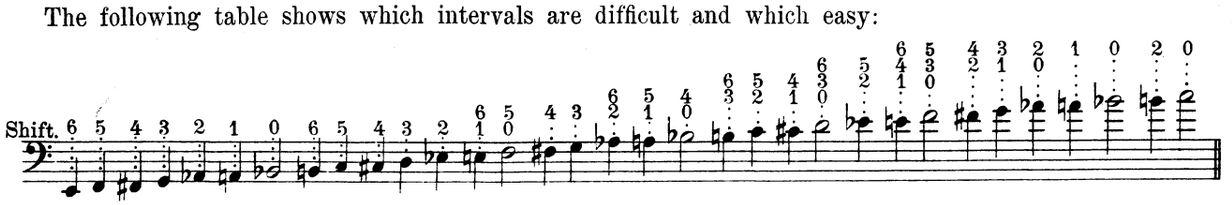


though the lower E is used with good effect.

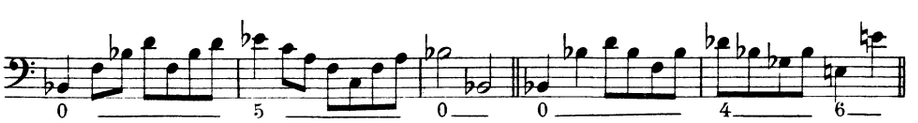
Rhythmical figures are playable in great variety on one or more notes, and cantabile, legato or staccato passages also.

Rapid successions of different intervals are often difficult since the player cannot change the positions with very great quickness.

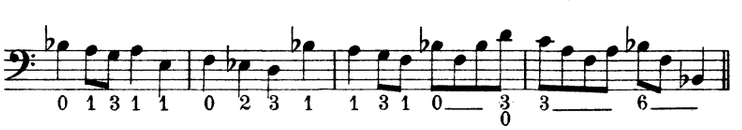
The following table shows which intervals are difficult and which easy:



Of course the easiest rapid passages are these whose intervals occur in one position thus:

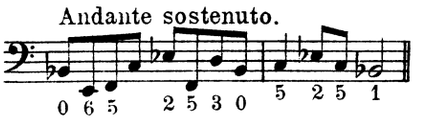


The nearer the new shift lies to the old the easier the performance. Thus:



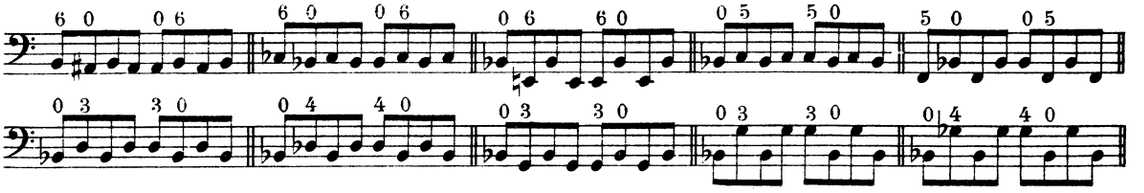
When, especially in rapid *tempo,* the player is called upon to make wide shifts difficulties and even faulty intonation arise.

But in slow *tempo* broken chords can be played with wide shifts.

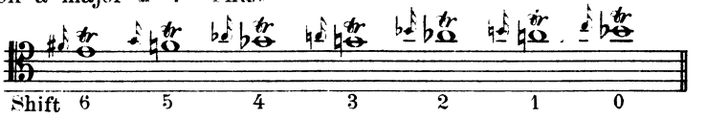


The use of the sixth shift or 7th position is dangerous in-as-much-as the tubes are so far apart that they may come apart, and moreover the deeper notes do not resound like the higher.

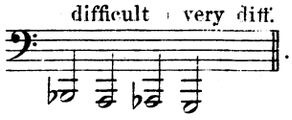
Especially difficult progressions are the following in quick tempo.



Accomplished players can play shakes by means of the breath on the tenor-bass trombone on notes of the higher positions only, and on a major 2nd. Thus



But shakes are never used in orchestral music.

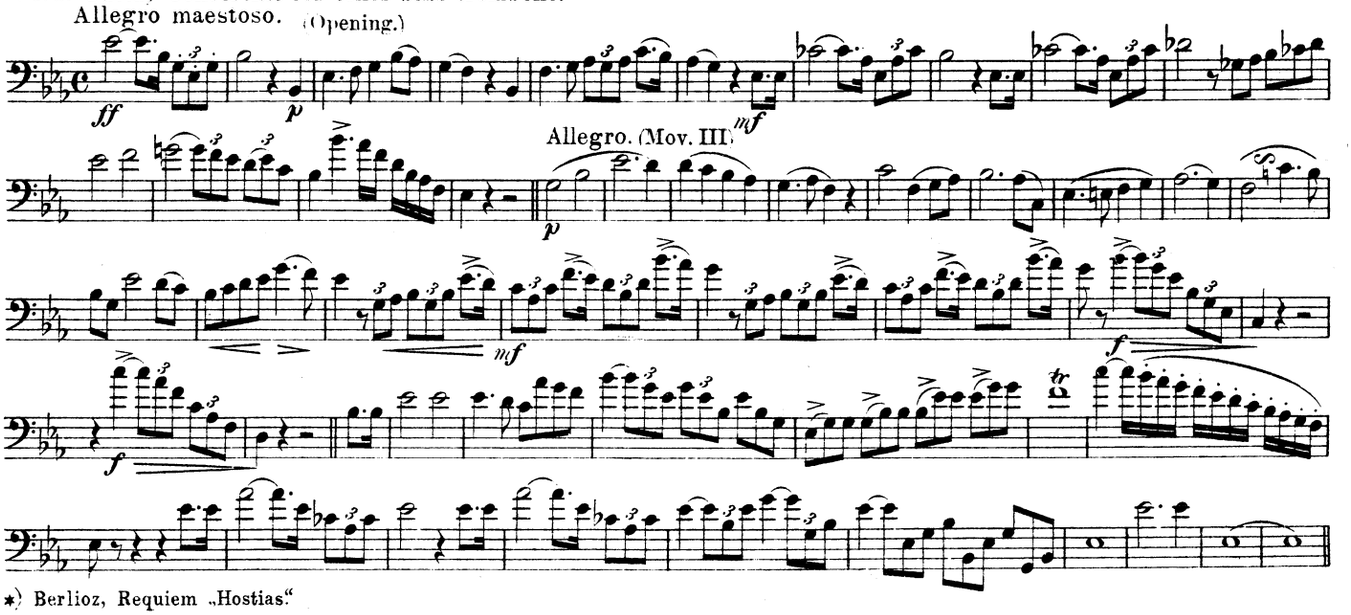
Pedal notes are also playable. These artificial notes do not proceed direct from the lowest note (*e*), but begin at the *b♭*, thus. 

They resemble organ tones, and are only playable *p* or *pp* in very slow time, and are difficult to produce because of the strength and breath they require. Berlioz has made use of them very effectively in his *Requiem*, and in Herold's opera *Zampa*, in the first finale the *b♭* occurs. Whether this is meant for a pedal tone or to be played by the E♭ Bass trombone (see later) in the 5th position is not stated.

The tenor-bass trombone is used in the various orchestras thus; to give the bass, to fill in harmony or strengthen it, to accompany, for decorative purposes, as well as as a solo instrument. In dance music etc. it plays the melody and is often used to strengthen the bass.

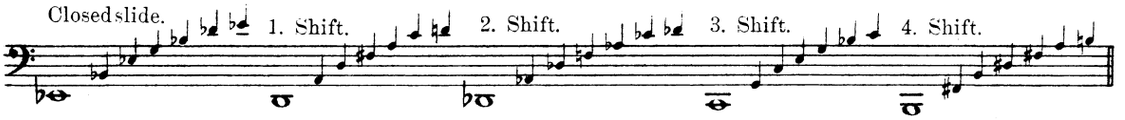
The following examples show what can be done on the trombone as solo instrument.

Ferd. David, Concertino for tenor-bass trombone.

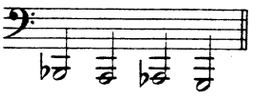


*) Berlioz, Requiem „Hostias."

The improvements in the tenor-bass trombone. By the addition of a curved tube and a valve, worked with the left hand, notes can be produced deeper than these of the ordinary compass. By depressing this valve the breath passes through the tube and the trombone pitch falls a fifth. Thus the following notes can be played with and without the valve.



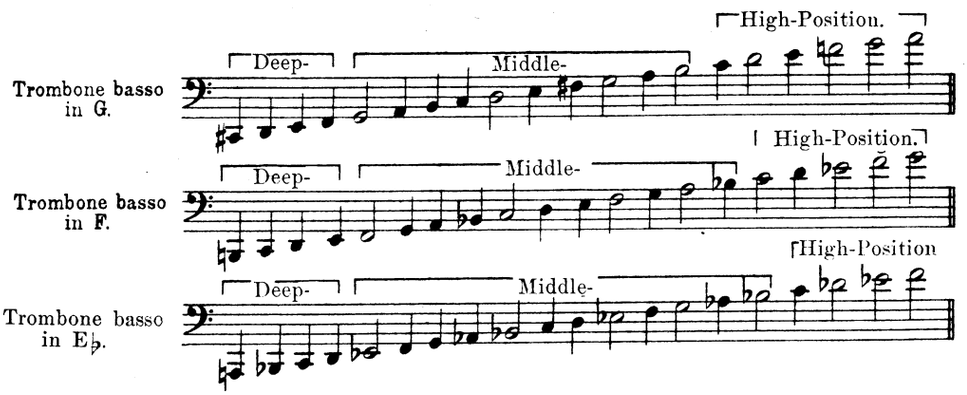
Here are the pedal notes of this trombone in B♭ without the use of the valve.



The discovery is useful in that in many orchestras there is no genuine bass trombone, and the player plays the low notes an octave higher than they are written, which of course is of poor effect. Moreover the difficulties of the bass trombone are removed. But the tones produced with the aid of the valve lack the fullness and colour of those of the bass trombone. In almost every orchestra such a trombone may now be found (see Exs. in score Pts. VI and VII).

The Bass-Trombone.

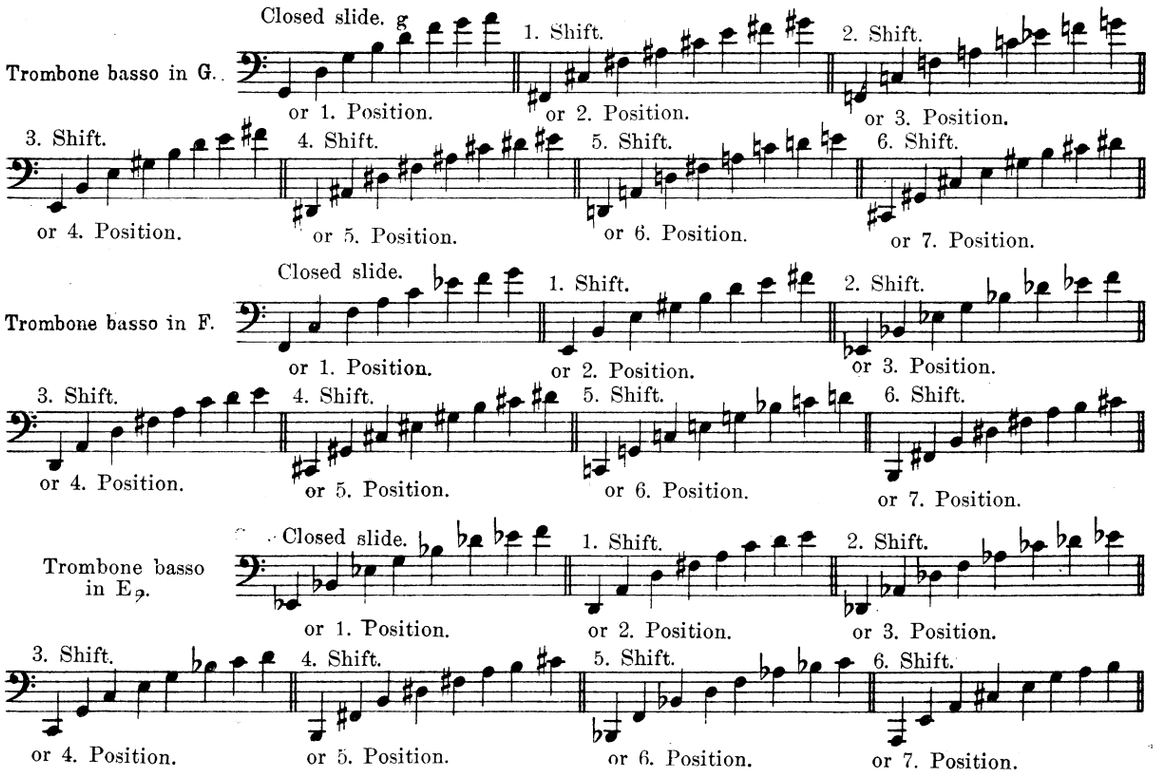
In the group of trombones the bass is the largest and most powerful, and is used for playing the bass parts usually. In former days there were two kinds of bass-trombones, known as the Quart and Quint bass-trombones. These still exist, but under a different name — bass-trombone in F (Quart) and in E♭ (Quint). On the former, notes sound a 4th deeper and on the latter a 5th deeper than written, in the closed position. There was another kind, in G, whose tones were a minor 3rd lower than the tenor-bass trombone. These are found usually in English orchestras, while in Germany that in F is commonest. All are written for in the bass clef, and are not transposing instruments. The compass is



The minims shon the notes produced with closed slide.

The shifts or positions are as before.

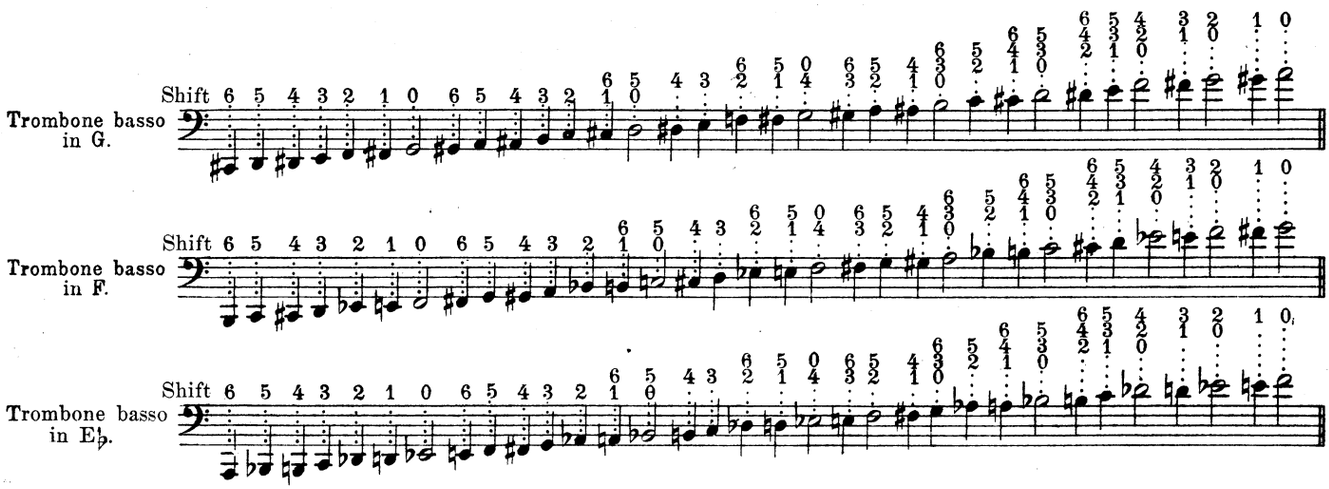
The following shows the intervals playable in the various positions.

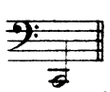


The tone of this trombone is fuller and stronger than that of the tenor-bass-trombone, and in the 3rd position in all registers is thick and full in colour.

On all these trombones the following tones can be played in all grades, except the lowest and highest; and the same remarks as were applied to the tenor-bass-trombone apply equally here, in regard to practicability. Further, it must be said that the bass-trombone is more difficult to play because of its superior size, and greater requirements of breath and power. Neither rapid nor long passages are advisable.

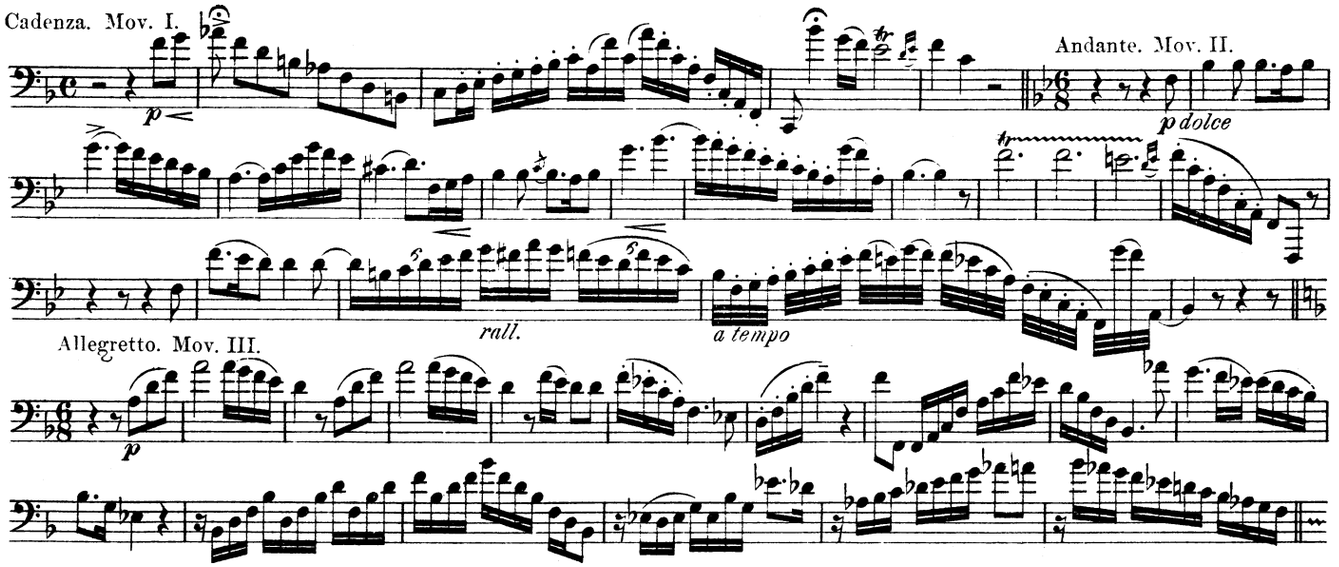
The following table shows the compass of the 3 bass-trombones, their shifts, and so, those which are easy and those difficult.



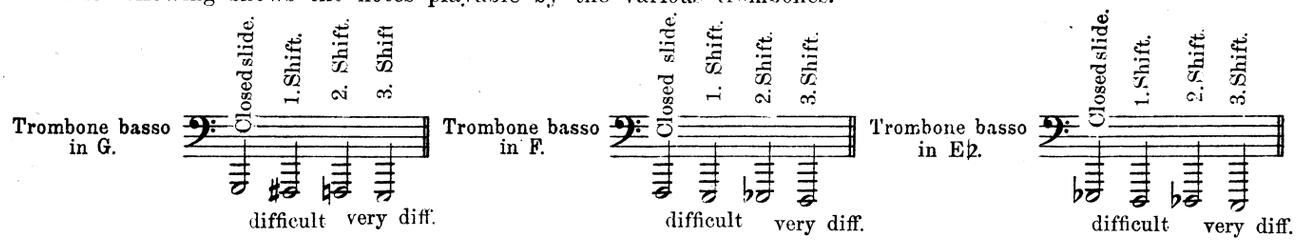
Notes lower than  should not be written, because usually one or other of the trombones is missing. Shakes and ornaments are practicable only in the higher position, but they are not used.

The following shows what is practicable.

C. Belke, Concertino for bass-trombone.



Pedal notes are also playable, but only by accomplished players.
The following shows the notes playable by the various trombones.

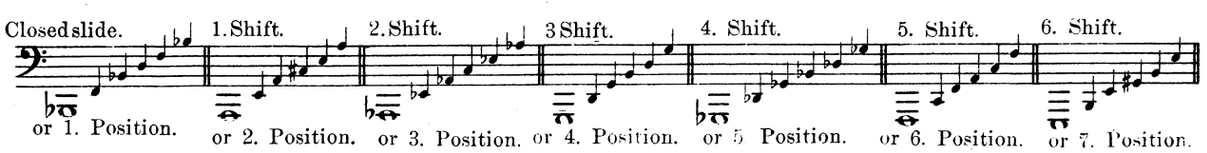


The pedal notes of the bass-trombone require even more breath than those of the tenor-bass-trombone, and they can only be used in slow tempo, and then not for any length of time.

The Double-bass Trombone.

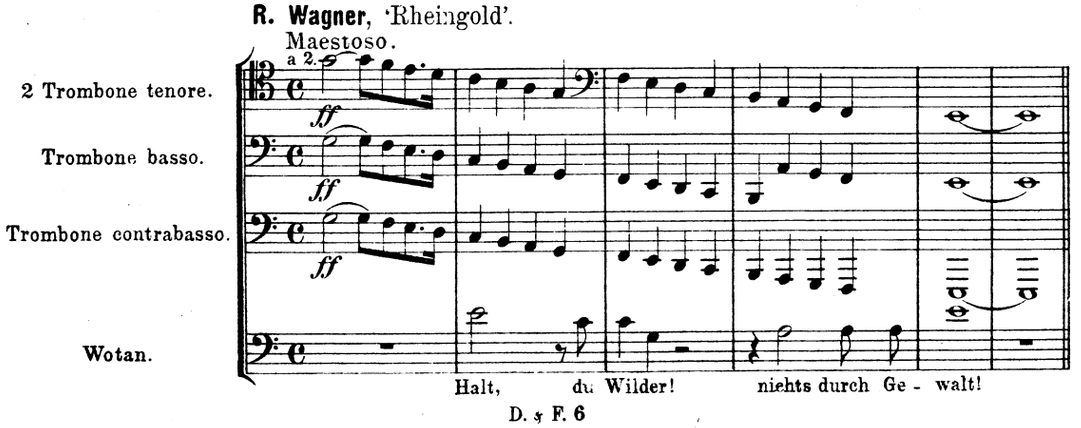
This monster among the brass, the terror of all trombonists, has been used by Wagner to characterise Wotan in the *Ring*. It lies an octave lower than the tenor-bass-trombone in B♭; yet its shifts are the same. It requires a great deal of breath and strength to play; its tones *f* or *ff* are fearsome and much more powerful than those of the other trombones.

The following table shows its positions.

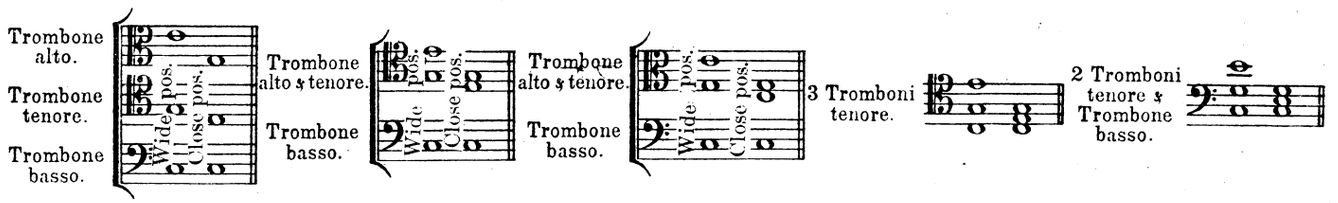


Cf. Ex. in score, Pt. VI and VII

R. Wagner, 'Rheingold'.



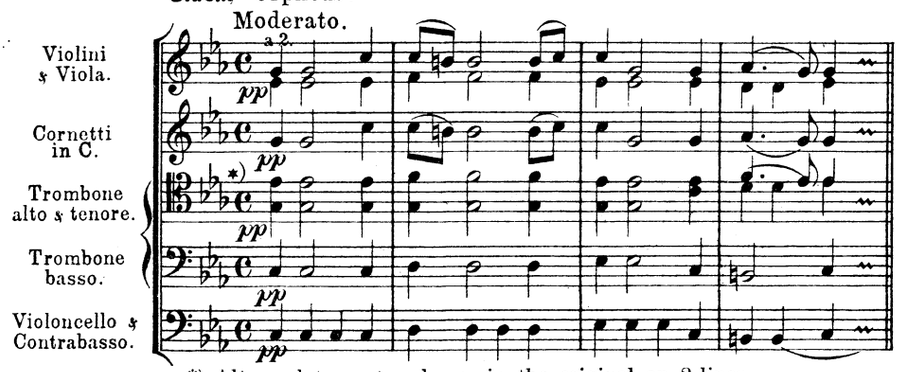
Various systems of writing for trombones are found, of which the following are a few.



If only 2 trombones (tenor-bass and bass, or 2 tenor-bass) are used, their music is written on one line in the bass clef; that of one tenor-bass-trombone is also written in the bass clef.

In older compoisitions the trombones rarely are used alone, but usually in combination with other instruments, and the four kinds already described are found in the works of Bach and Gluck, though here the discant trombone is described as cornetto and the part played in a cornet.

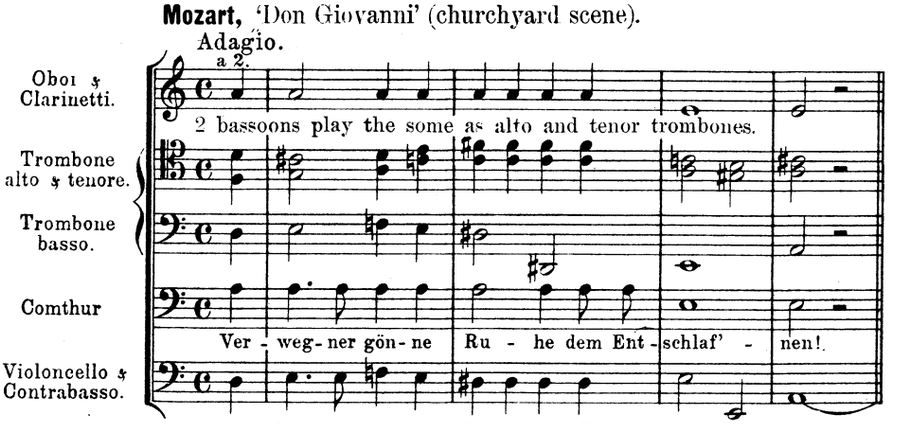
Gluck. 'Orpheus'.



*) Alto and tenor trombones in the original on 2 lines

Among later composers Mozart used 4-part trombones and instead of the discant trombone he employed the oboe or clarinet in unison with the soprano.

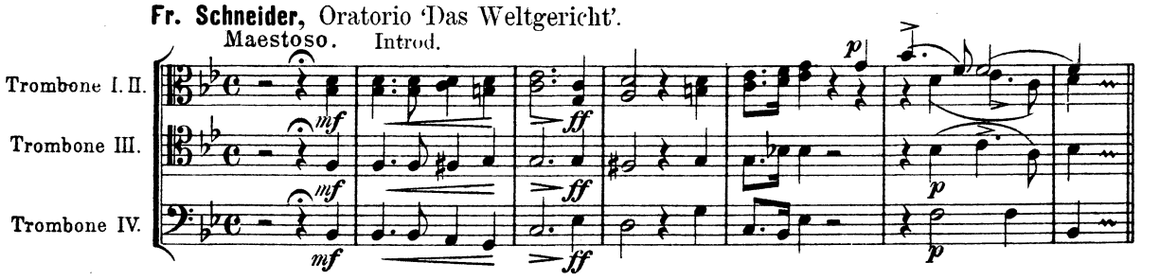
Mozart, 'Don Giovanni' (churchyard scene).



In Original alto and tenor trombone on 2 lines, in also and tenor clefs.

Schumann has used 4 in his *New-Year's Song,* as Schneider has in his oratorios *Das Weltgericht* and *Absalom*, though without the discant trombone (1· alto, 2 tenor and 1 bass).

Fr. Schneider, Oratorio 'Das Weltgericht'.

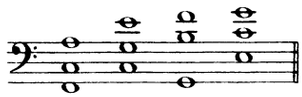


*) A small discant trombone was used in later times generally to play Protestant chorals on sundays in the churches and from watch-towers.

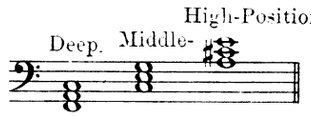
**) These cornets existed in various sizes, straight and curved, of wood or horn, and played by means of a mouth-piece. There were 6—7 holes opened and closed with the fingers.

In larger orchestras three trombones are usually found, in Germany and England, alto, tenor and bass 2 tenors and 1 bass or 3 tenors. In France the alto and bass-trombones do not exist — there are 3 tenor-bass-trombones used as I, II and III not as alto, tenor and bass. In recent times this has become more general (through composers and players alike) in Germany, whether advantageously or otherwise is a moot point. It is certain, however, that when the composer has written, alt, tenor and bass-trombones — if indeed composers trouble themselves about the effects of these trombones — they have obtained other effects than those of 3 tenor-bass-trombones. It is necessary in reality to arrange the trombones as described by the composer, and especially should the bass-trombone be preseved since its deepest tones are not obtainable elsewhere. Even when the tenor-bass-trombone with valve is present its notes are neither so rich nor so full.

The three-trombone music can be written in close or extended harmony and in various combinations — as 1) alt-, tenor and bass-trombone, 2) 3 tenor-bass-trombones, 3) 2 tenor-bass-trombones and 1 bass-trombone. The first, *p* or *pp* is dull and poorish in the lower and medium register, but in the higher sorrowful, yet tender and rather penetrating. In *mf* these three registers gain in colour and power and brilliancy: *f* or *ff*, the lower is hard but not so full, the middle powerful and fuller, the higher sharp, clear and piercing. If the alto-, tenor-, and bass-trombones are used, close harmony is not often met with. In extended harmony this combination resembles somewhat the tone-colour of alt, tenor and bass voices.



The 2nd and 3rd sound in close harmony in the deeper register *p* or *pp* full, yet tender and dark: the middle full, festive and mysterious: the higher mild, yet clear. *Mf* they gain in power and fullness — *f* or *ff* the deeper is fearsome, the middle majestic, full and dignified, but the higher is sharp, piercing and rather harsh.



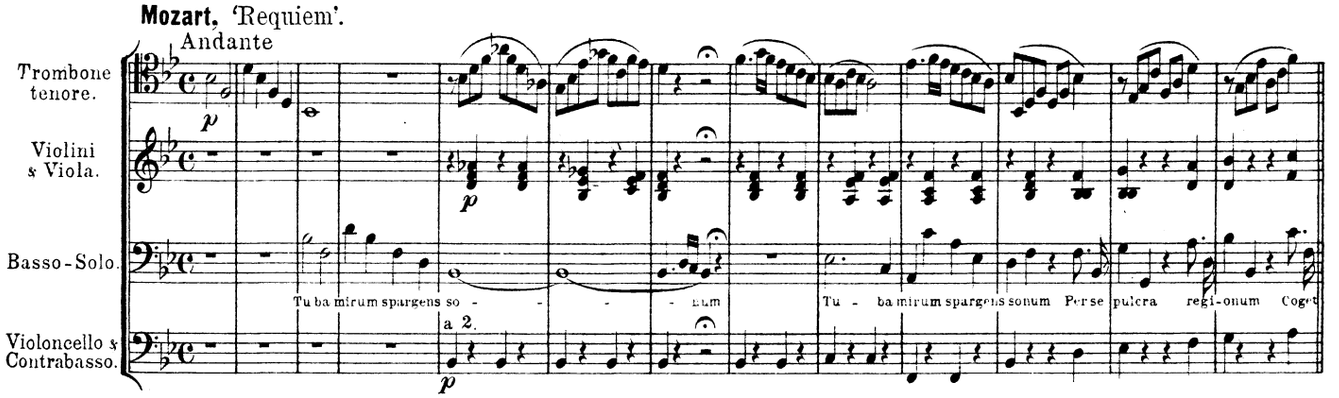
Extended harmony, or that for 3 various trombones is generally freer in effect. Since this arrangement implies a wider compass, and the trombones resound in their best registers, the variety of colour and character is enhanced. If the trombones enter as independent factors, (especially 3 tenor-bass or 2 tenor-bass and 1 bass-trombone), extended harmony is less used, and the trombones must combine with other brass. In using the alt-, tenor- and bass-trombones in extended harmony the effect is better, as already stated, the nearer it approximates to the choral character. Even better is the effect when a trumpet or cornet in C or B♭ is added to the 4 trombones as discant trombone; a horn, *p*, may also be used.

Generally the 3 or 4 trombones are most commonly used *f* or *ff*, for a sudden *forte*, sustained harmony, melody, in unison or octaves: yet they can be used *mf*, *p* or *pp* alone or with other instruments, with splendid effect.

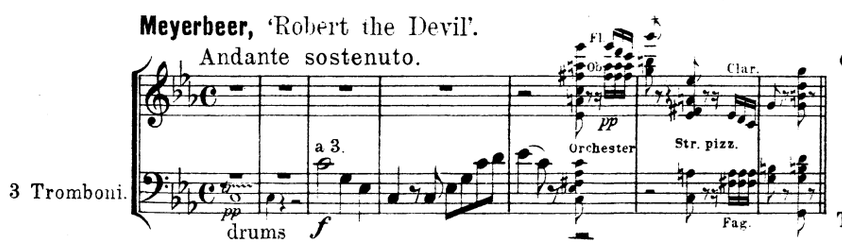
It must not be imagined that only 3 or 4 trombones can be employed. We find places in various works of all sizes where only 1 or 2 trombones are used, and that, too, where 3 are written for, but not all employed simultaneously, that is in passages where 1 or 2 are transitorily used for some special effect.

In the following examples the trombone is used as solo and bass instrument.

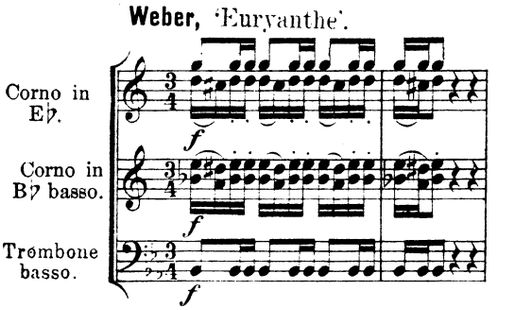
Mozart, 'Requiem'.

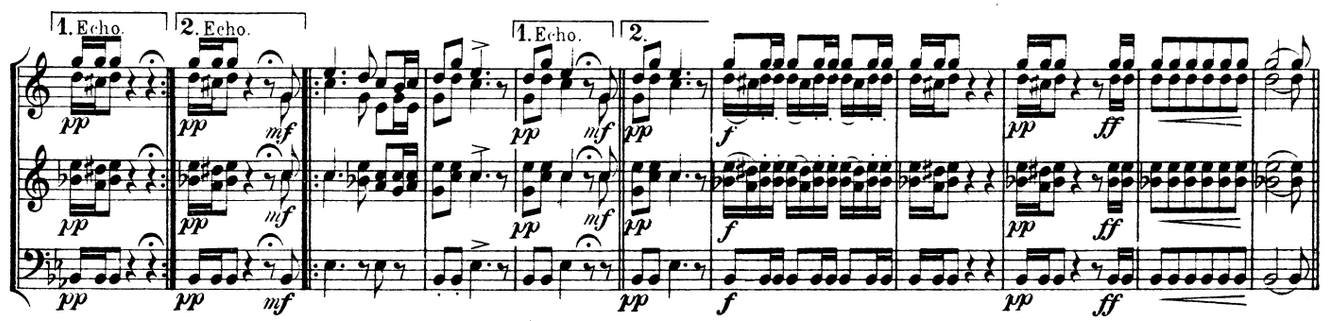


Meyerbeer, 'Robert the Devil'.



Weber, 'Euryanthe'.

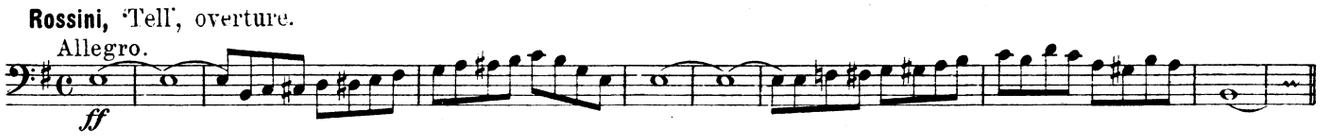




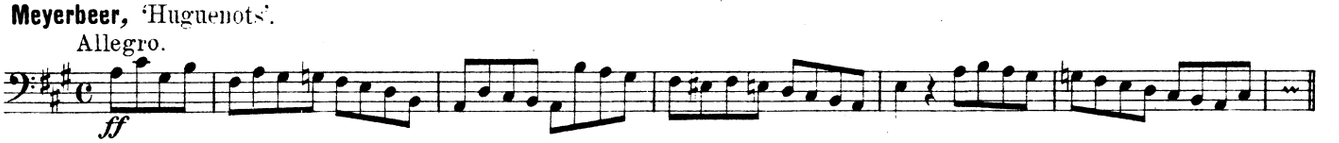
In small orchestras, where only 1 (tenor-bass) trombone occurs, it is employed, for example in dance music and marches, to strengthen the bass, to play the melody or a secondary melody: in combination with 2 horns, or trumpets and horns it is used for sudden effects or sustained harmonies. Also as a solo instrument, to play the melody of a transcription.

In larger orchestras, where usually are 3 trombones, they are less used for solo purposes, or for strengthening the bass. Yet they are found in this latter capacity — though it is a pity in better class music. The following examples show this kind of strengthening of the bass.

Rossini, 'Tell', overture.



Meyerbeer, 'Huguenots'.

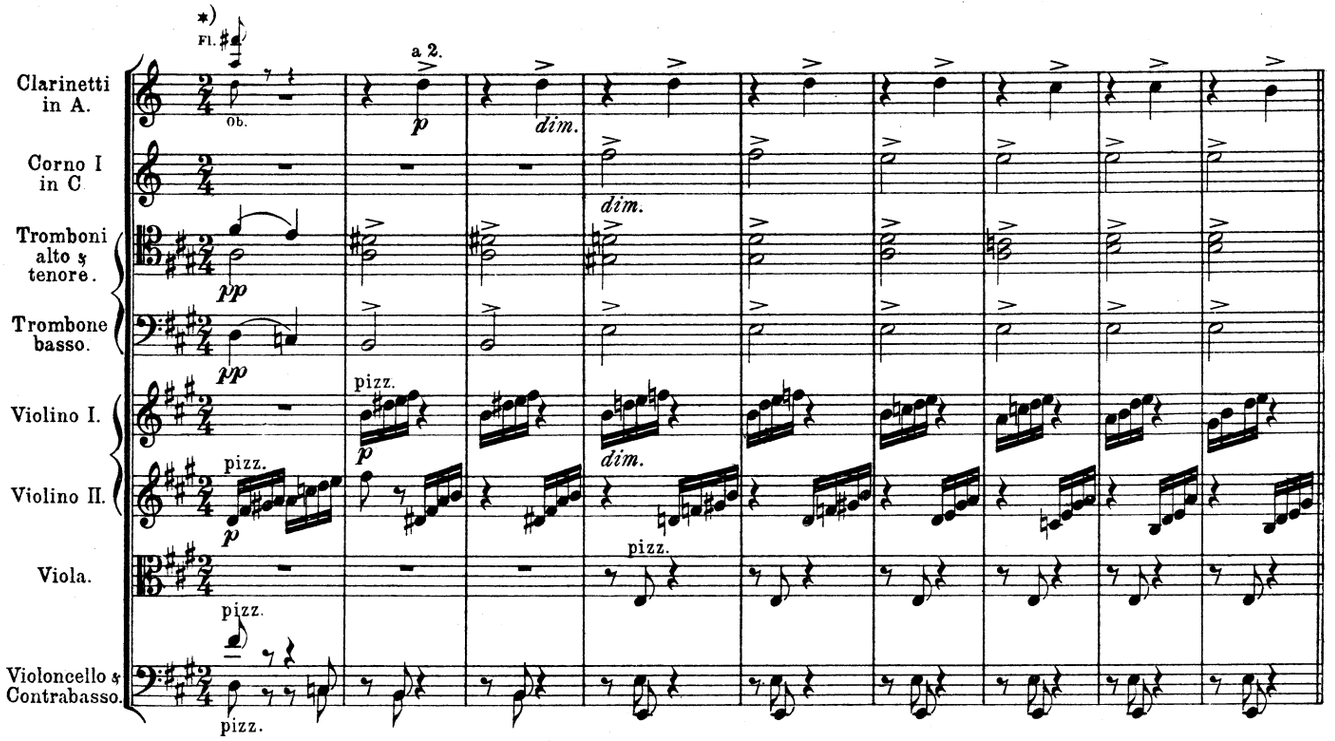


Cf. Schumann D-mi symph.

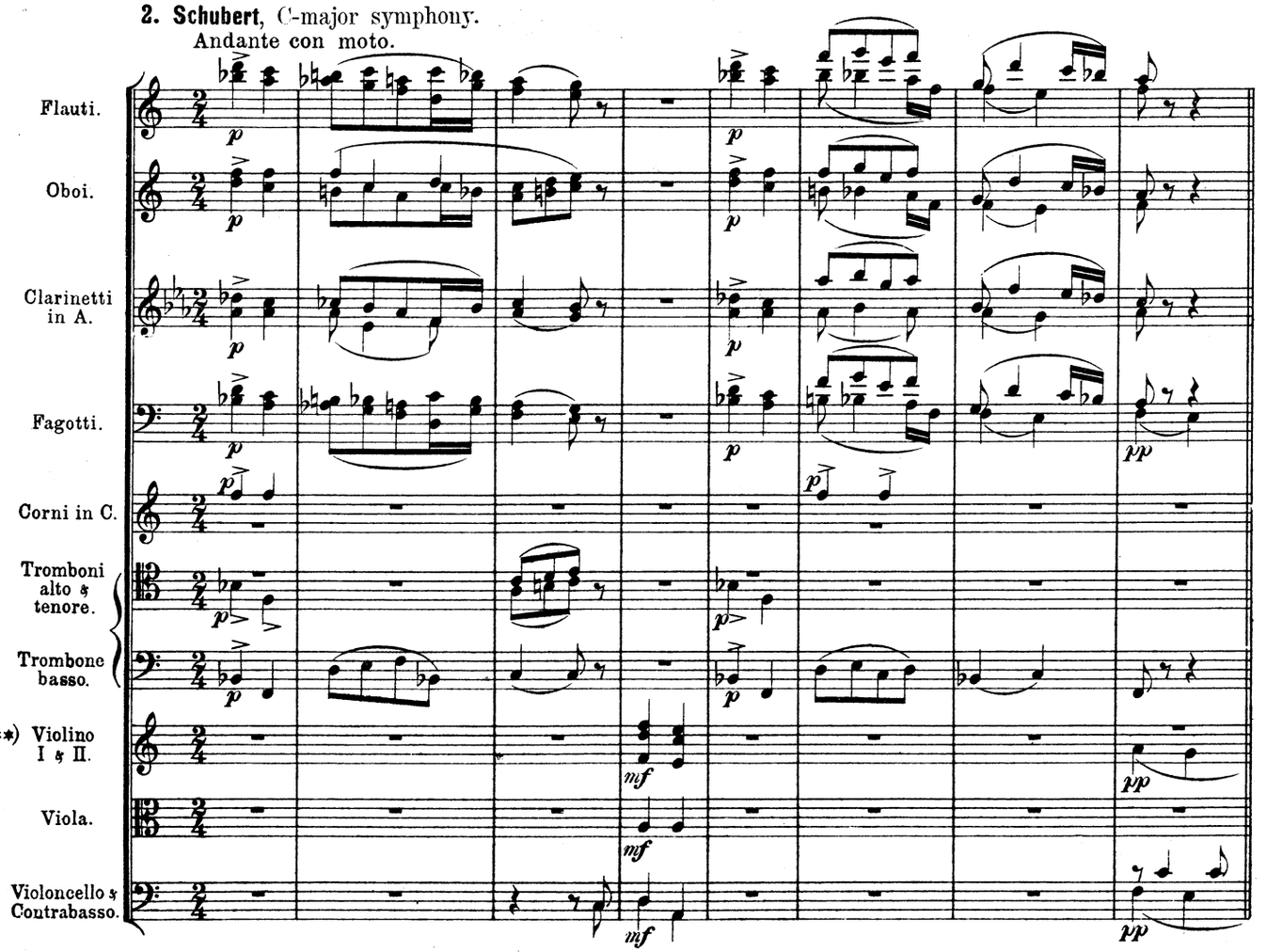
In the following examples in score the most effective of the trombones will be seen. (Cf. also Ex. in score Pt. VII).

Example in score[b].

1. Schubert, C-major symphony.

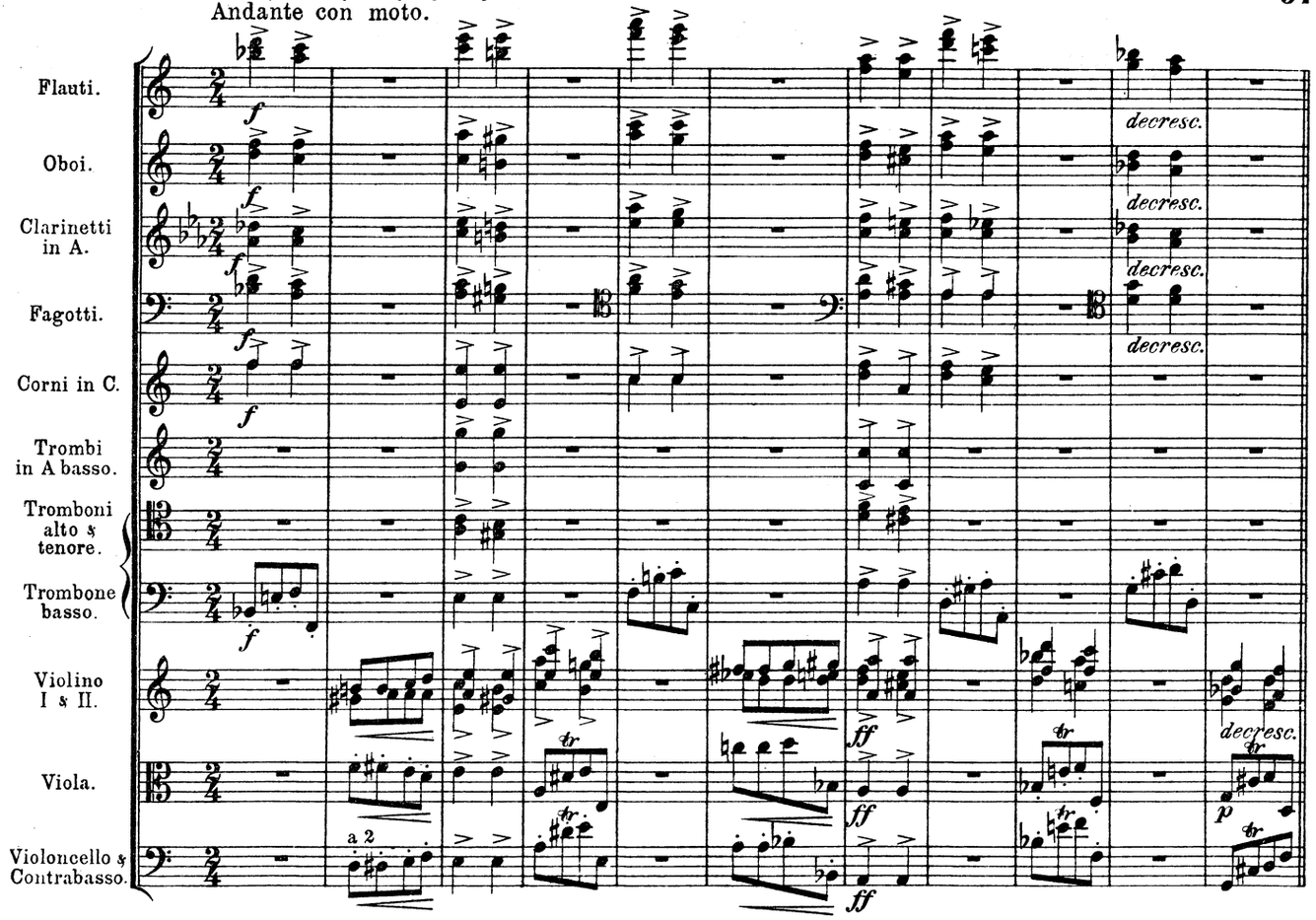


2. Schubert, C-major symphony.
Andante con moto.

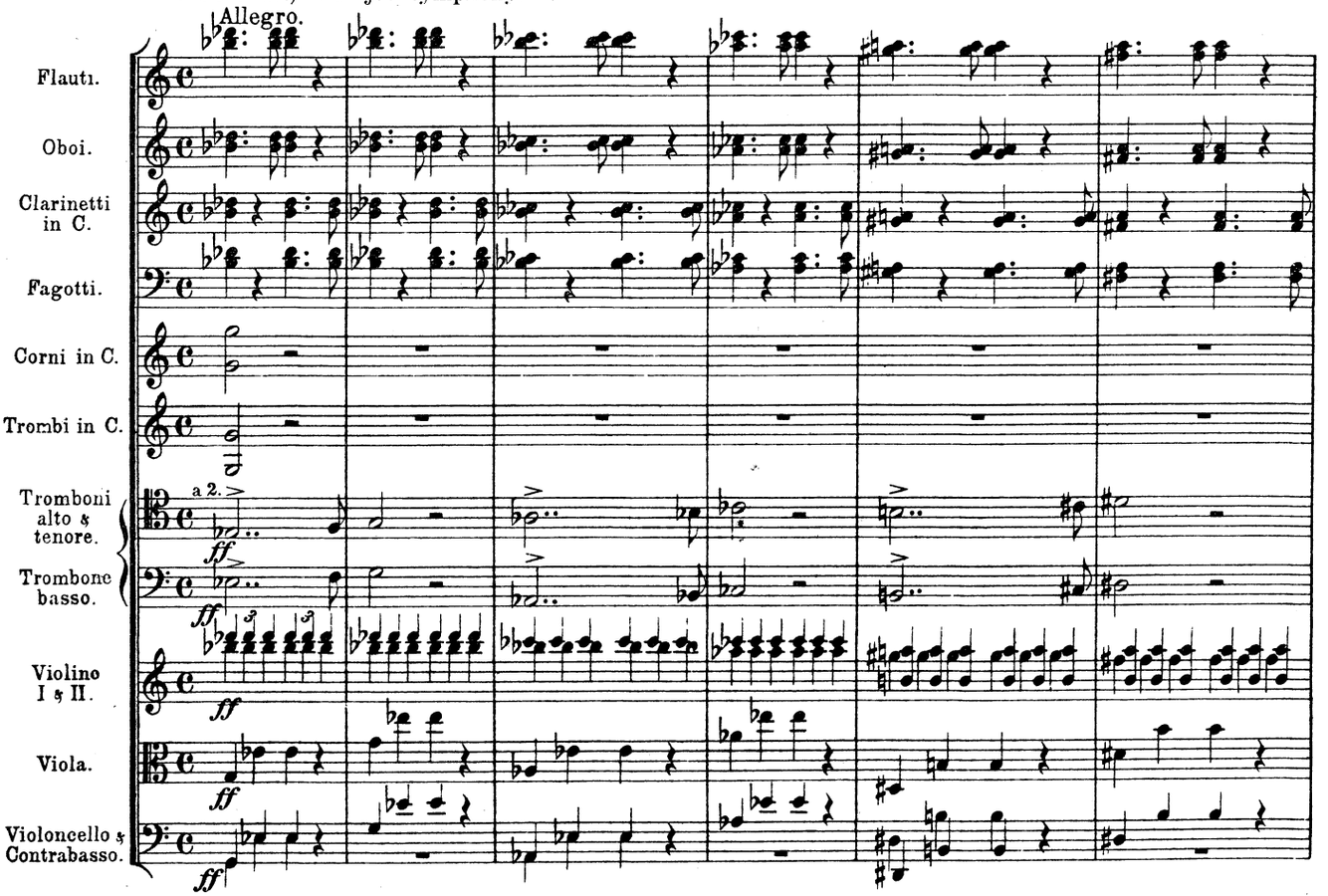


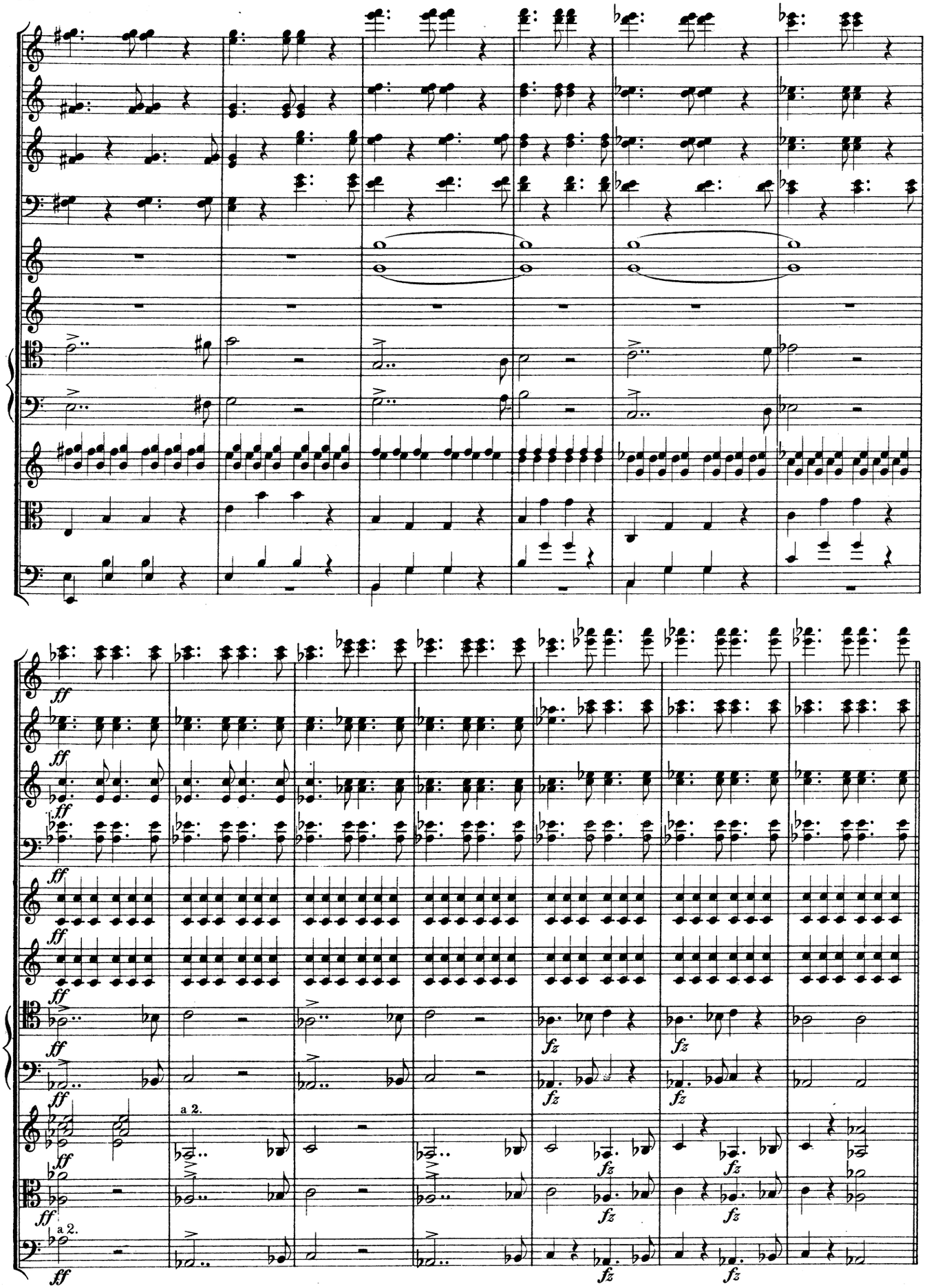
*) Fl. and Ob. sound as written. **) Violins 1 and 2 are on 1 line to save space.

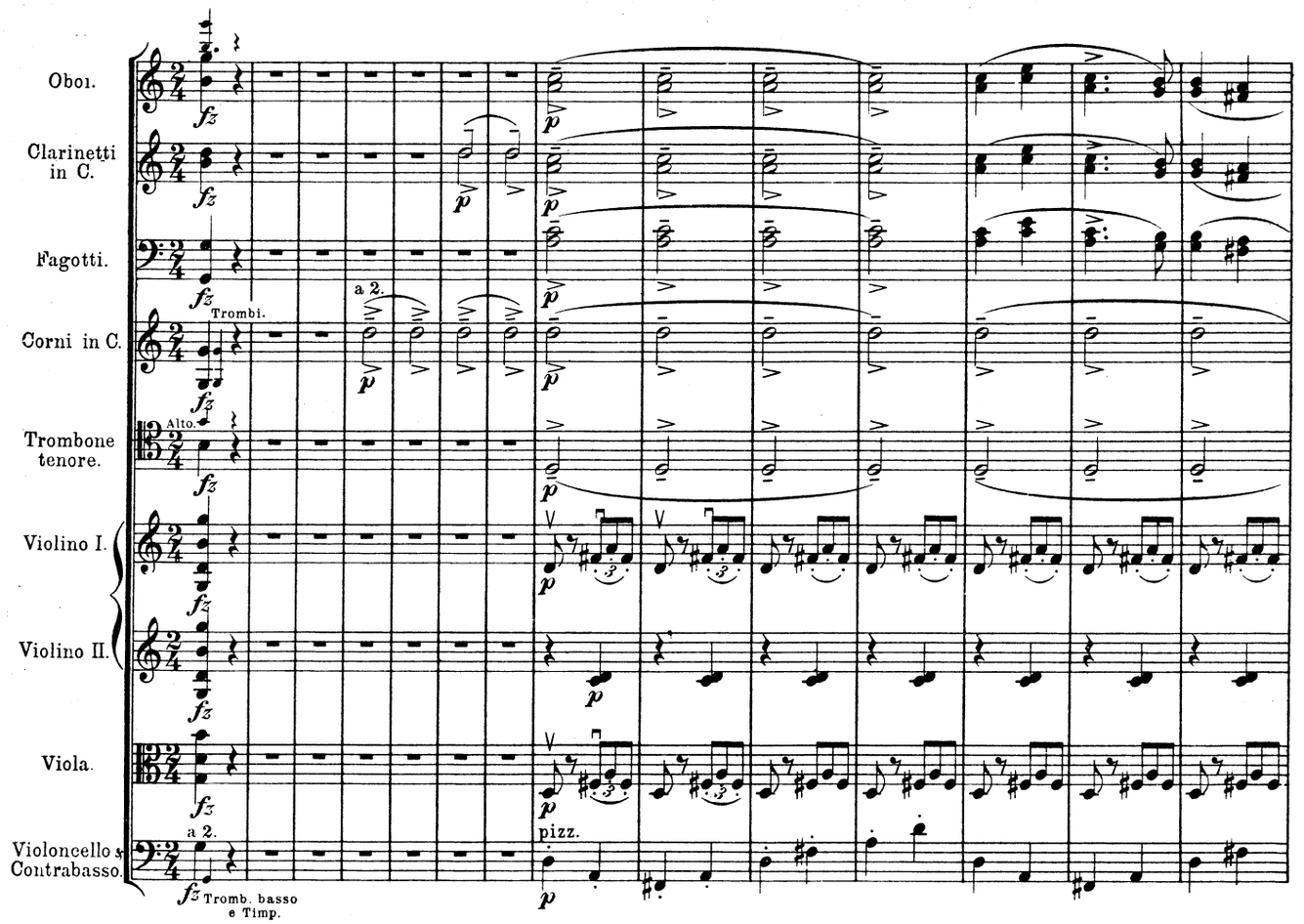
3. Schubert, C-major symphony.
Andante con moto.

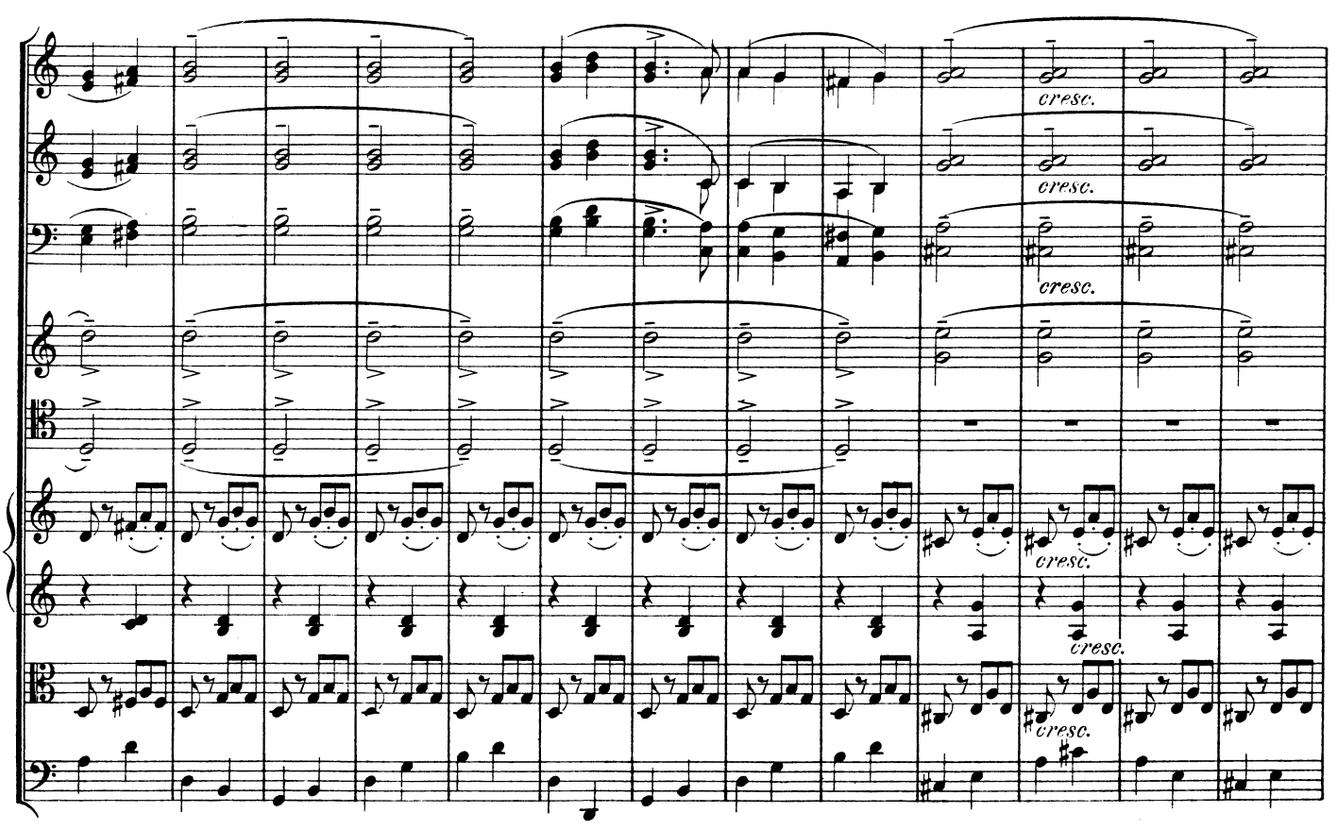


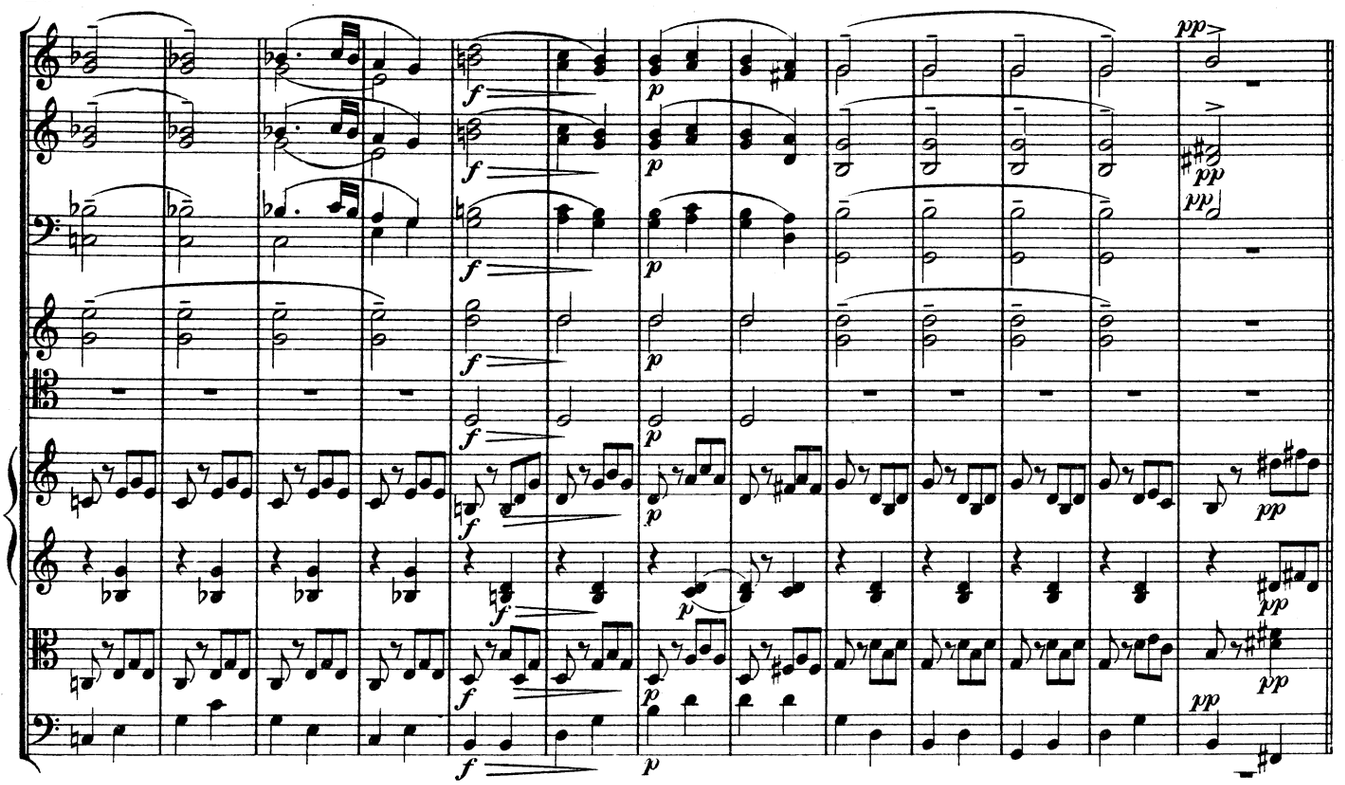
4. Schubert, C-major symphony.
Allegro.



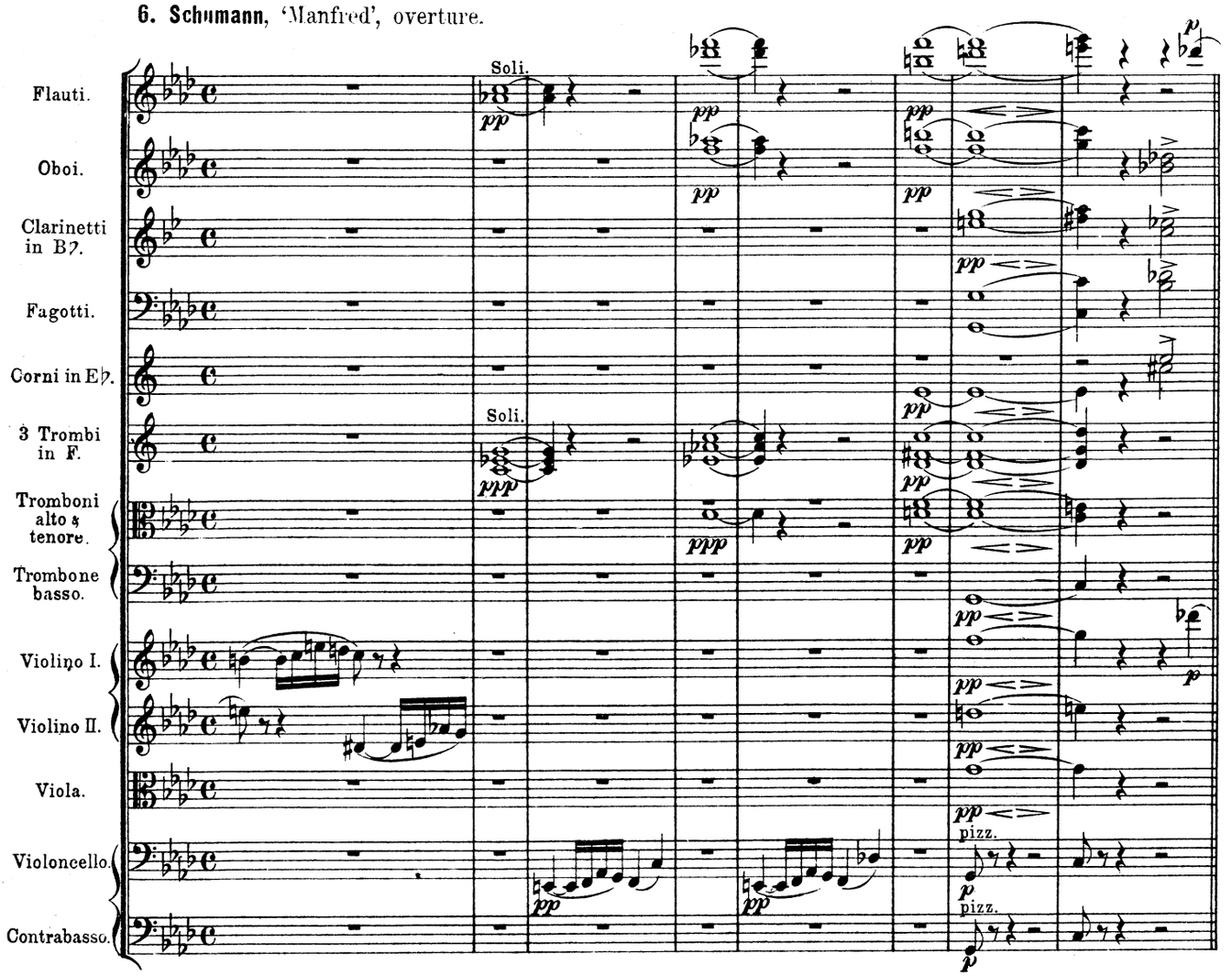

ff
fz
a 2.

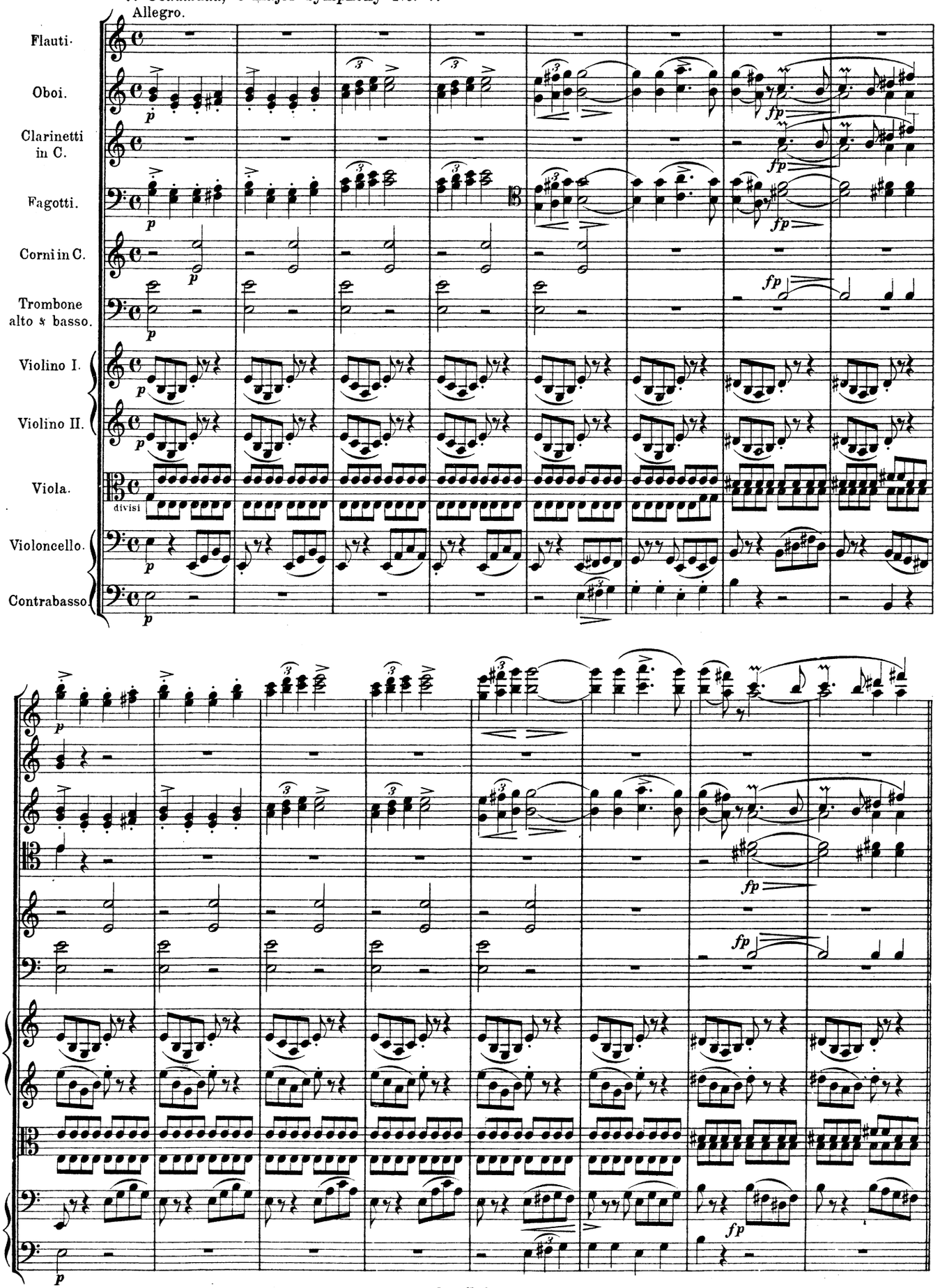

Oboi.
Clarinetti in C.
Fagotti.
Corni in C.
Trombone tenore.
Violino I.
Violino II.
Viola.
Violoncello e Contrabasso.
Trombi.
Alto.
a 2.
pizz.
Tromb. basso e Timp.


cresc.



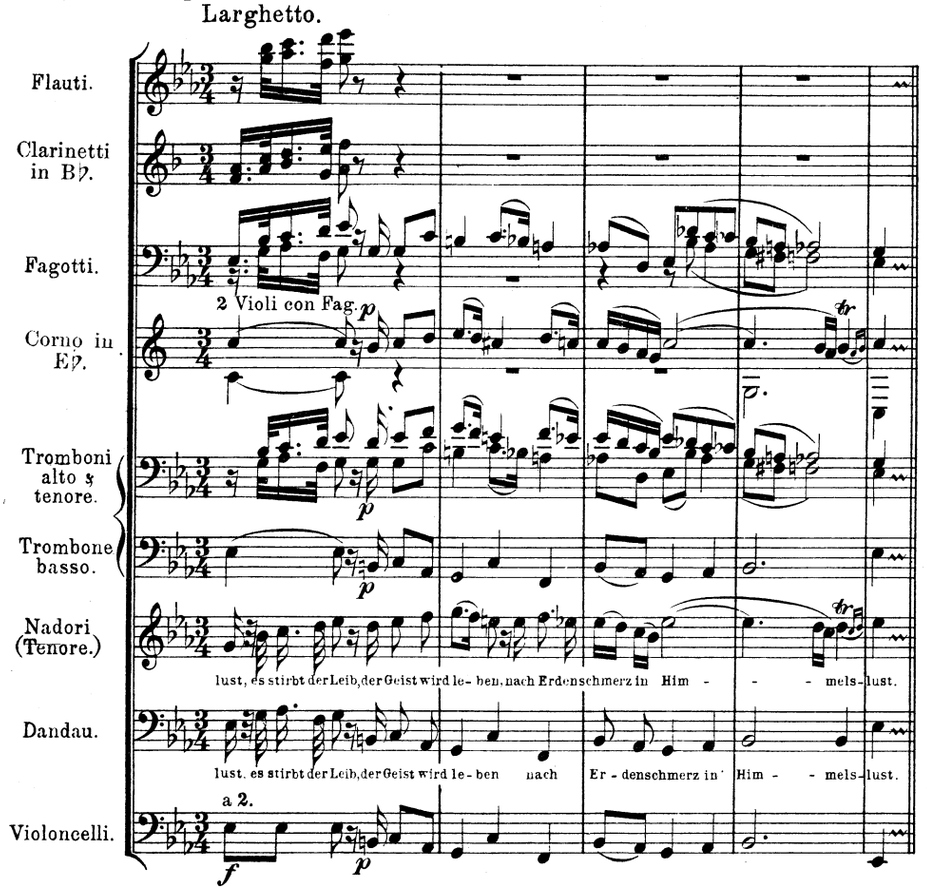
6. Schumann, 'Manfred', overture.




Allegro.
Flauti.
Oboi.
Clarinetti in C.
Fagotti.
Corni in C.
Trombone alto & basso.
Violino I.
Violino II.
Viola.
divisi
Violoncello.
Contrabasso.
p
fp

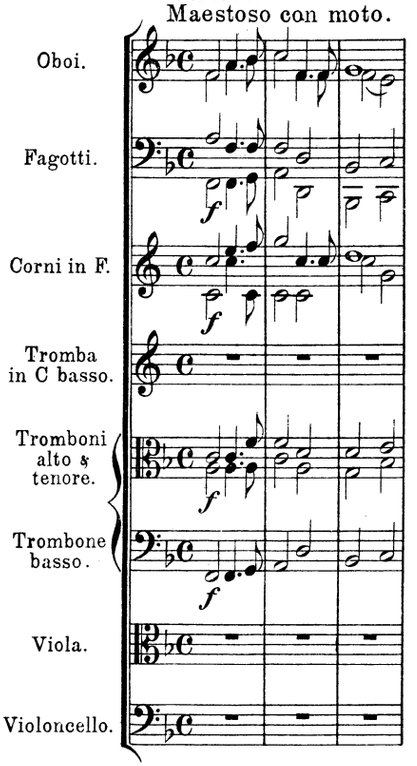
8. Spohr, 'Jessonda'.

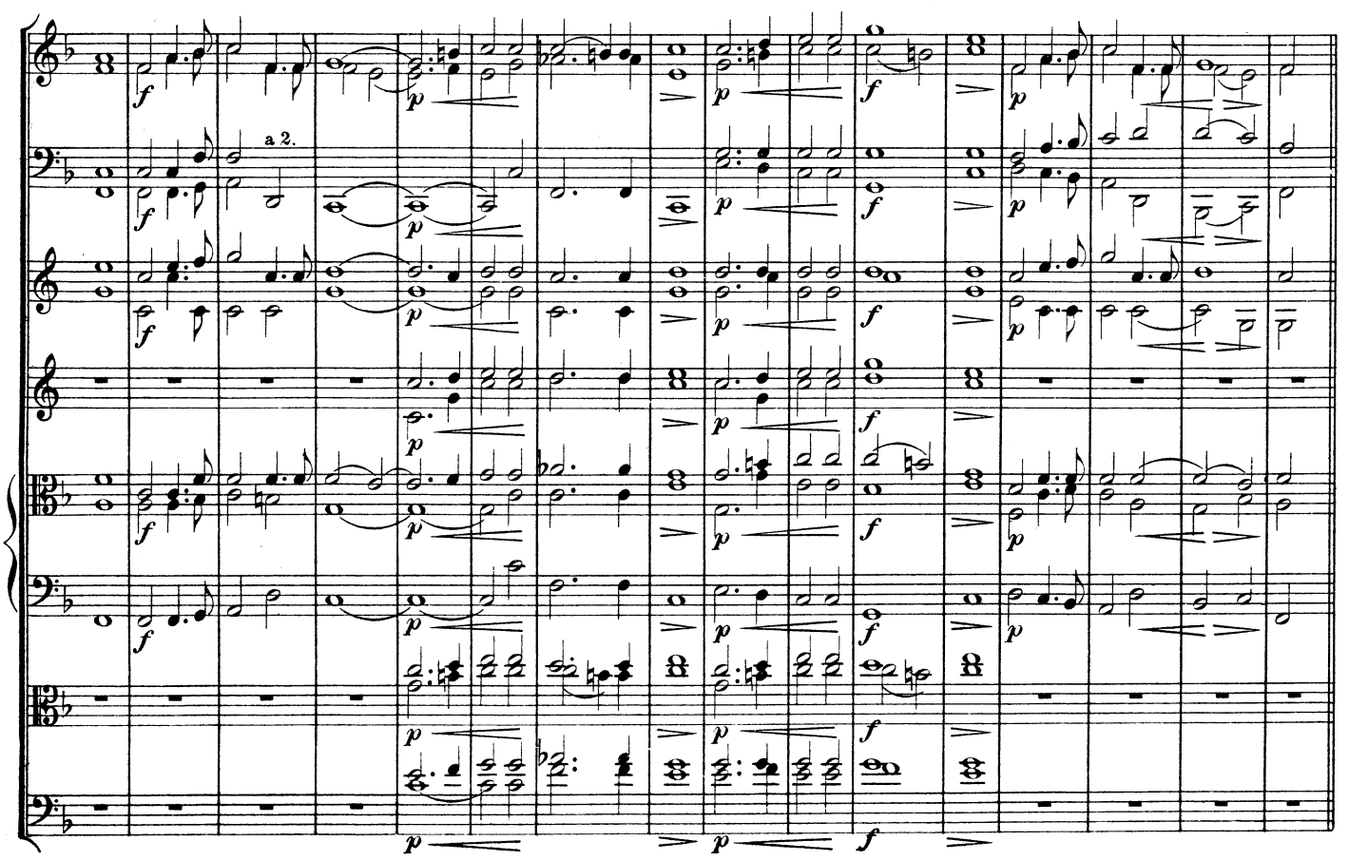
Larghetto.

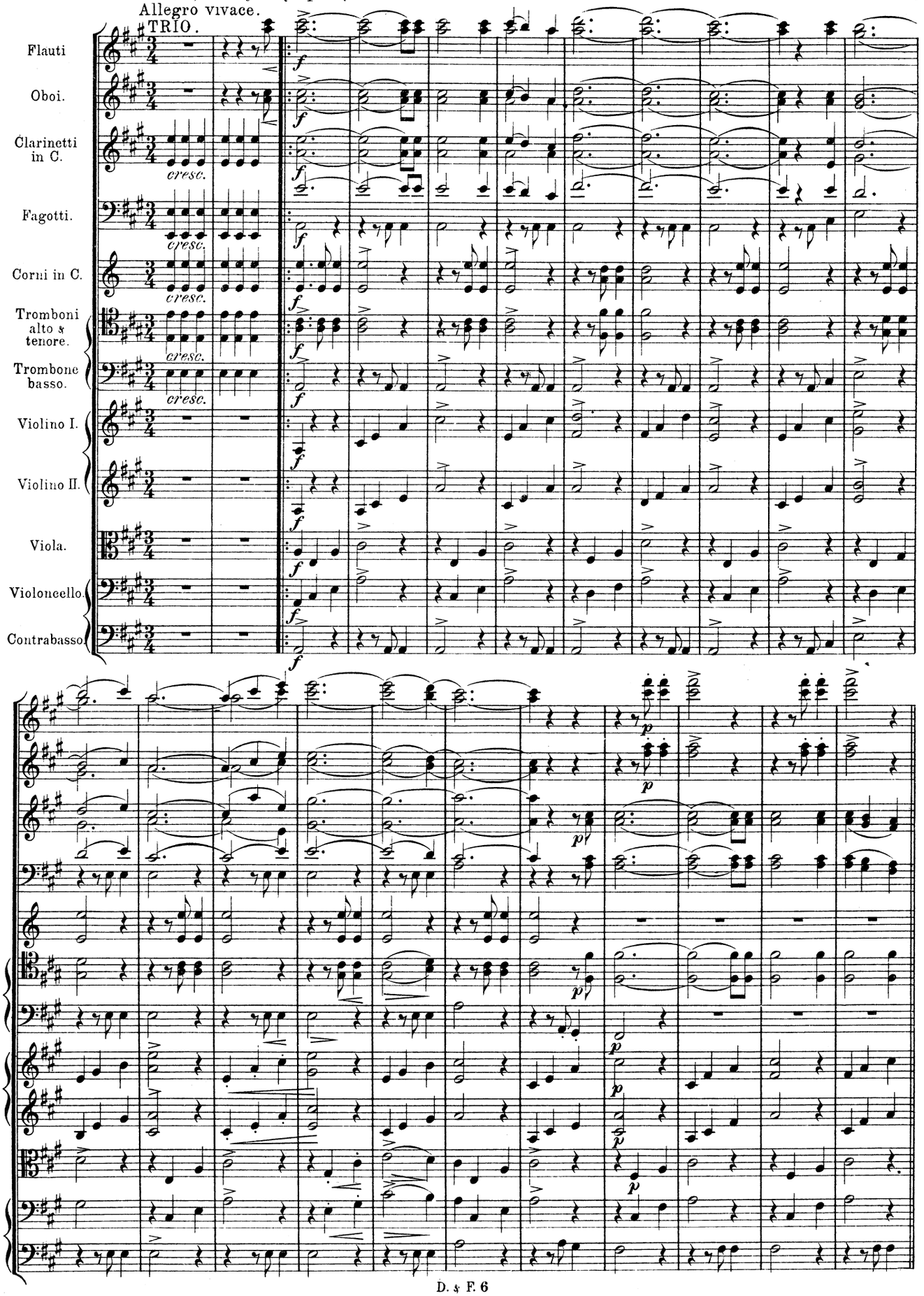


9. Mendelssohn, 'Athalia', e overture.

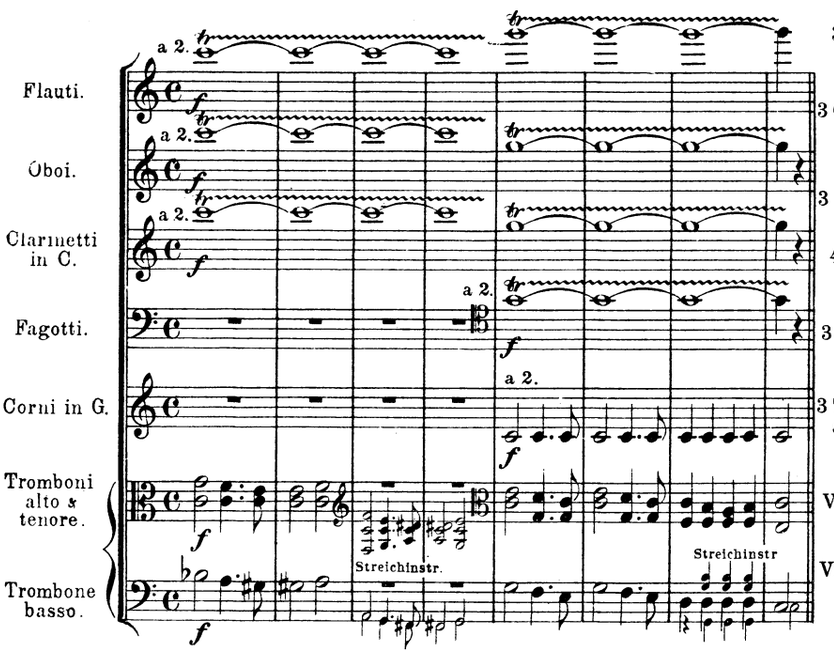
Maestoso con moto.






Allegro vivace.
TRIO.
Flauti
Oboi.
Clarinetti in C.
Fagotti.
Corni in C.
Tromboni alto & tenore.
Trombone basso.
Violino I.
Violino II.
Viola.
Violoncello.
Contrabasso
cresc.
f
p

11. Mendelssohn, 'A Midsummer Night's Dream'.



12. Wagner, 'Lohengrin'. Act III. *)

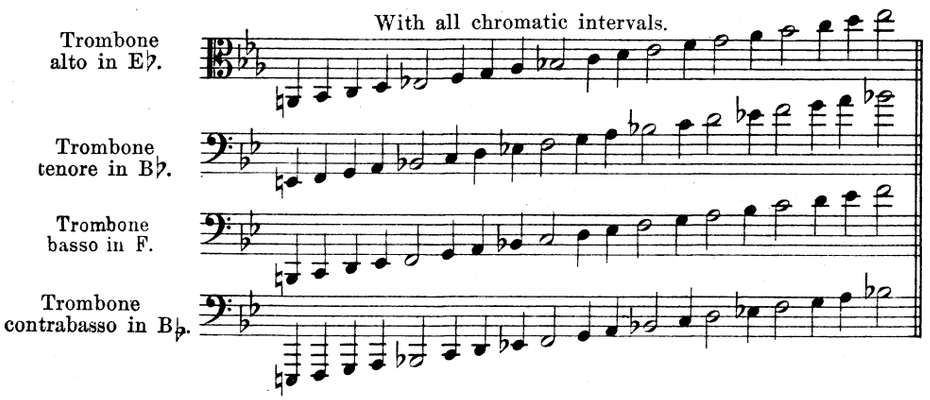
Sehr lebhaft.

*) By permission of Breitkopf & Härtel, Leipzig.

The Valve-Trombone.

These instruments are useful in that the shifts can be made quicker, yet they often leave much to be desired on the score of purity of intonation, and are not equal in the character of their tone to the ordinary trombone, they resembling rather the trumpet. They might, in fact, be described as alt-, tenor-, bass- and contra-bass-trumpets. They may be necessary, but are only used when the slide trombone is absent. In spite of certain obvious advantages these instruments have not found much favour in our better bands. The alto-trombone with valves is found in E♭: music for it is written in the violin and alto clefs, and it is treated as a transposing instrument. (See Pt. VII.) The tenor trombone with valves is written for in the tenor or bass clefs, the notes sounding as written. The bass and contrabass trombones with valves are written for in the bass clef and are non-transposing.

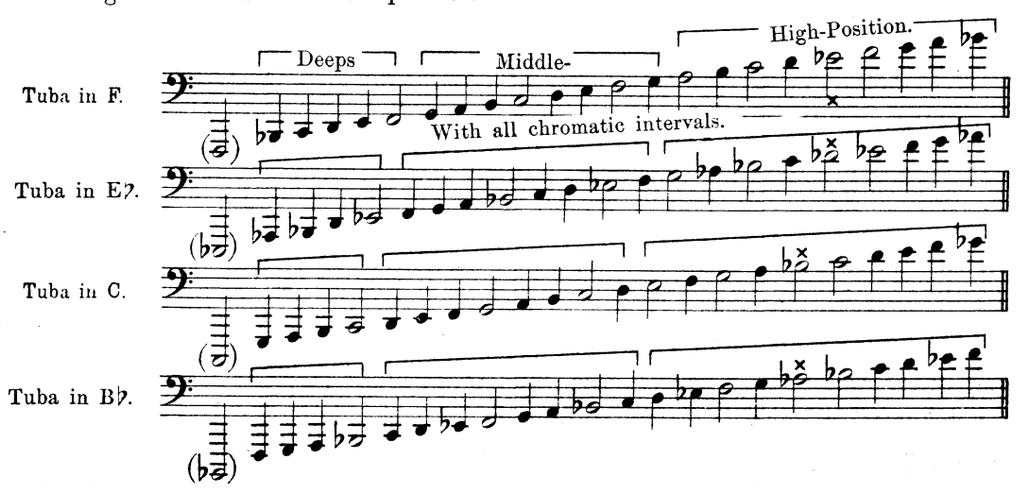
The following is their compass, the minims showing the open or natural tones.



The Tubas.

Next to the contra-bass-trombone the tuba is the largest and deepest of the brass already described. It is said to be a development from the improved bombardon, which it has superseded with the serpent and ophicleide, because of its superior tone and larger compass. Its tone is full and round, and combines better with the other brass. Its tone colour resembles that of the trombones, but is not so noble, wherefore it may be compared with the cornet, but of course is much deeper in pitch and fuller in tone. The bass and contra-bass-tubas are written for in the bass clef, the notes sounding as written. They are in various forms sizes, in F, E♭, C and B♭, each requiring a separate instrument.

The following table shows their compass etc.

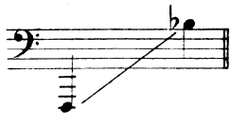


*) Cf. (use of method of writing for this inst.) Pt. VII, pp. 61—62.

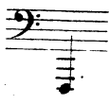
The pedal notes in brackets are difficult to produce and weak. On each tuba the missing notes are only playable in very slow tempo and *p*. The natural tones marked × are not in tune.

In concert and opera orchestras the tuba in E♭ or contra-bass-tuba in C are preferred; in military bands these in F, E♭ and B♭, while that in C is not often found. The tubas in F and E♭ have this compass:

in C and B♭:



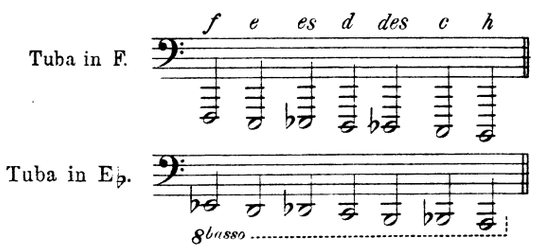
the notes below



speak badly and slowly, and must therefore be used with extreme care.

Accomplished players can play in all grades of strength in the tuba's best register: and in any key. Rhythmical figures of all sorts are playable if the *tempo* be not too rapid; and even in very slow tempo quavers and triplets should be used sparingly since they require much breath. The rapid repetition of the same or different notes is difficult, too, and used in the wrong place they can be completely ineffective. Leaps of an octave, tenth etc., scales and broken chords in various forms are playable *legato* or *staccato* within the good compass of the instrument. Rapid passages are not well suited to the instrument, but rather slow, broad, sustained tones, and these not quite so slow which progress by easy steps; and even short, abrupt notes are good *f*. In military bands, where the tuba takes the place of the double-bass, the player must execute diatonic chromatic and chordal passages, which would be deemed difficult and not very effective in the ordinary concert orchestra. For tender and delicate passages the tuba is not well suited, yet it can be used characteristically in all dynamic grades alone or in combination.

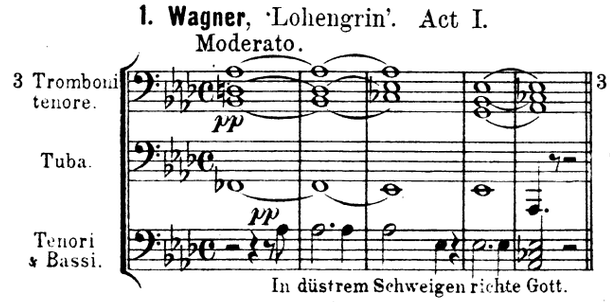
Pedal notes can be produced on the tubas in F and E♭. On the contra-bass tubas in C and B♭ they are perhaps hardly possible, since they require more than human breath. The following shows the possible pedal notes on the F and E♭ tubas.



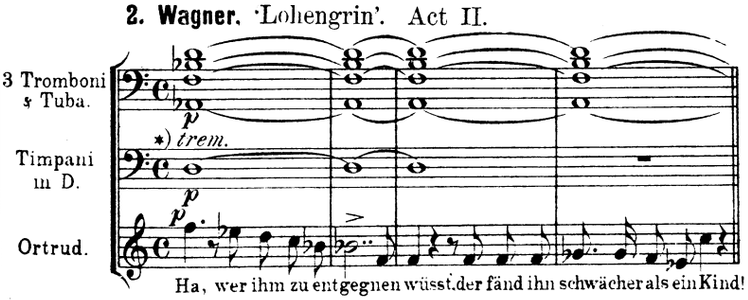
Cf. also the following Exs. in score, and in Pt. VII.

Example in score.

1. Wagner, 'Lohengrin'. Act I.



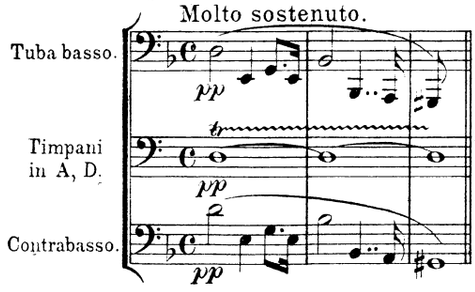
2. Wagner. 'Lohengrin'. Act II.



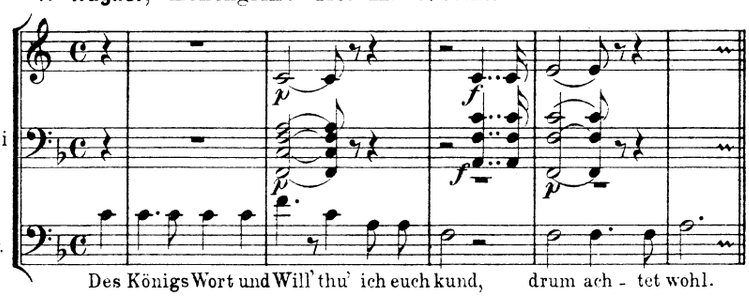
*) Cf. Tymp. p. 67.

3. Wagner, 'Faust-Overture'.

Molto sostenuto.

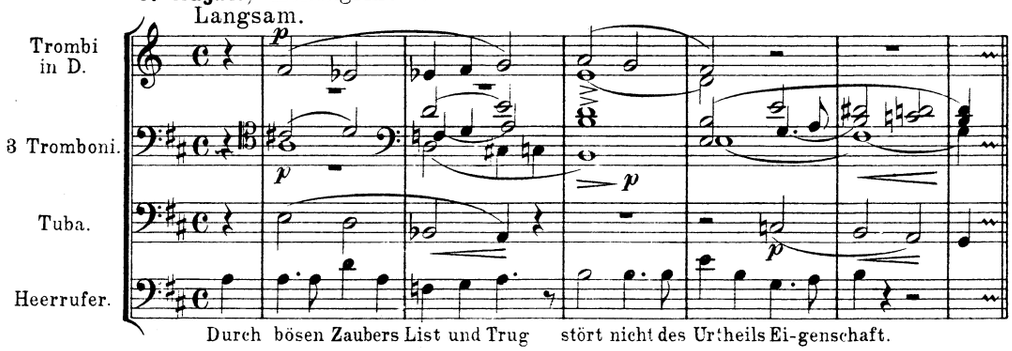


4. Wagner, 'Lohengrin'. Act II. 3. Scene.

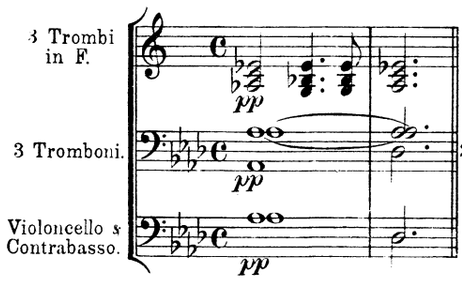


5. Wagner, 'Lohengrin'.

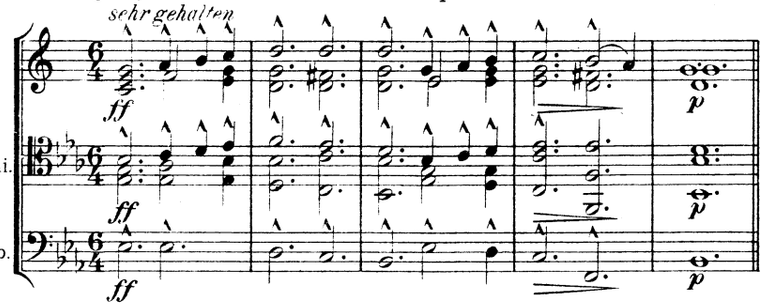
Langsam.



6. Schumann, 'Manfred', overture.

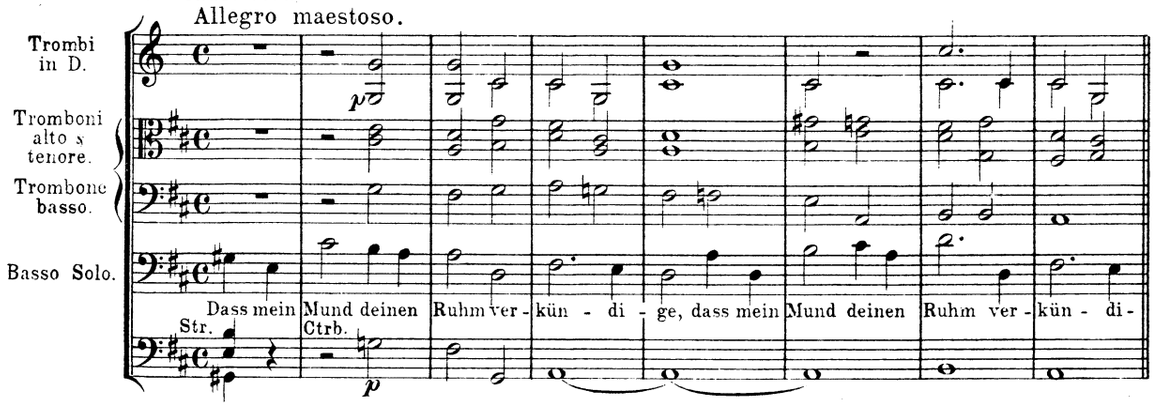


7. Wagner, 'Tannhäuser'. Full score p. 376.



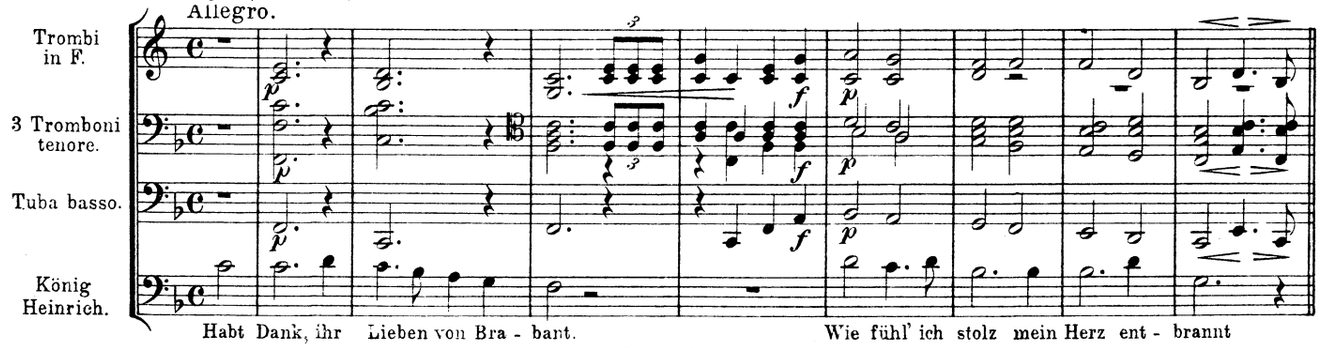
8. Mendelssohn, 'S. Paul'.

Allegro maestoso.



9. Wagner, 'Lohengrin'. Act III.

Allegro.



10. Schubert, 'Fierrabras', overture.

Andante.

Corno I. II. in F.
Corni III. IV. in E♭.
Tromboni alto & tenore.
Trombone basso.

*) **11. Wagner**, 'Die Meistersinger'. Act III.

Sehr feierlich.

Corno I. II. in D.
Corno III. IV. in D.
Fagotti.
Trombi in D.
3 Tromboni & Tuba basso.

Viol. I.
Vcll.
Viol. II. Viola.

12. Gounod, 'Faust'.

Moderato maestoso.

Fagotti.
Cornetti in A.
3 Tromboni.
Viola.
Violoncello & Contrabasso.

a 2. tr
a 2.
pizz.

13. Gounod, 'Faust'.

Moderato.

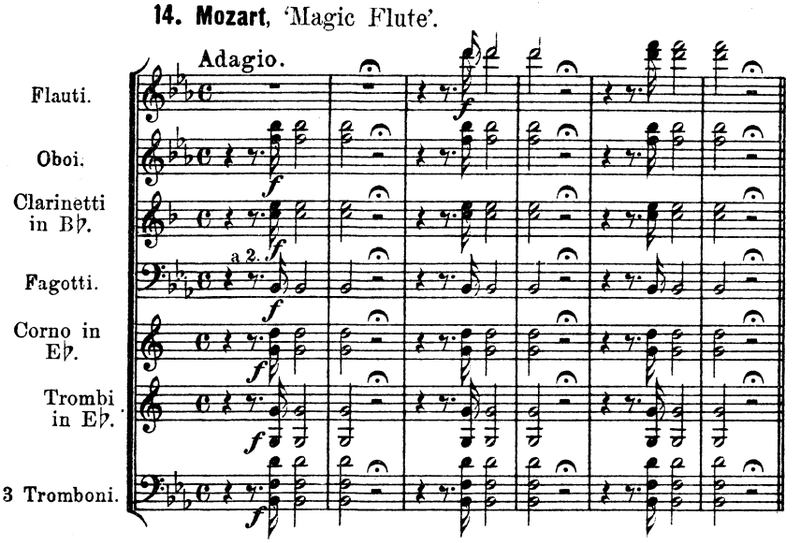
Cornetti in B♭.
3 Tromboni tenori.
Violini.
Viola.
Valentin.
Violoncello & Contrabasso.

O hei-liges Sinn - bild, das mir Gretchen einst gab, den

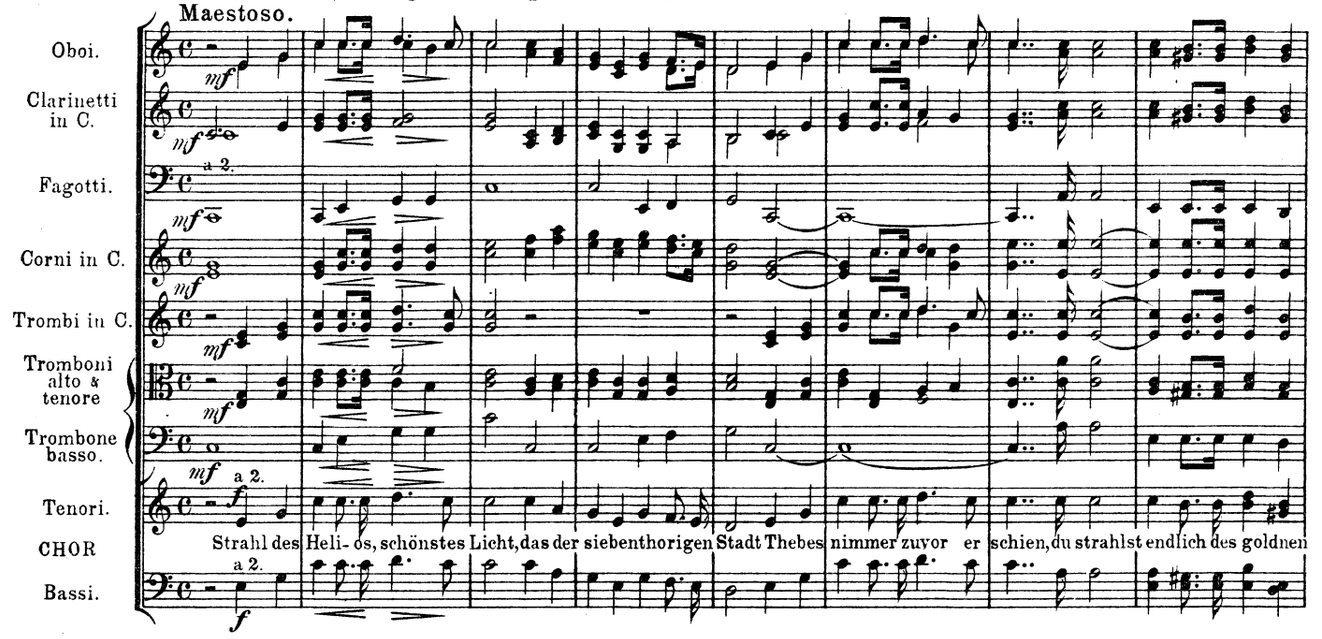
a 2.

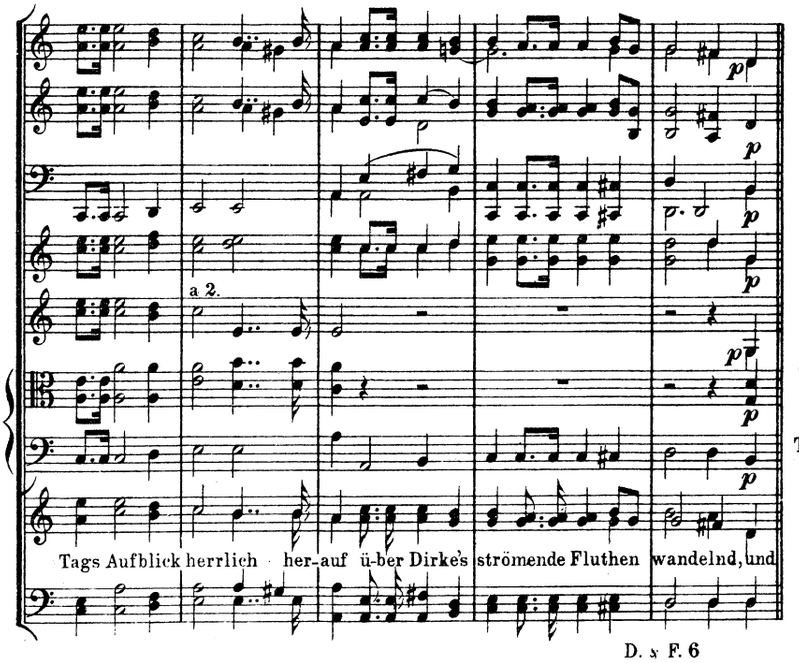
*) (By permission of Schott's Söhne, Mainz.)

14. Mozart, 'Magic Flute'.

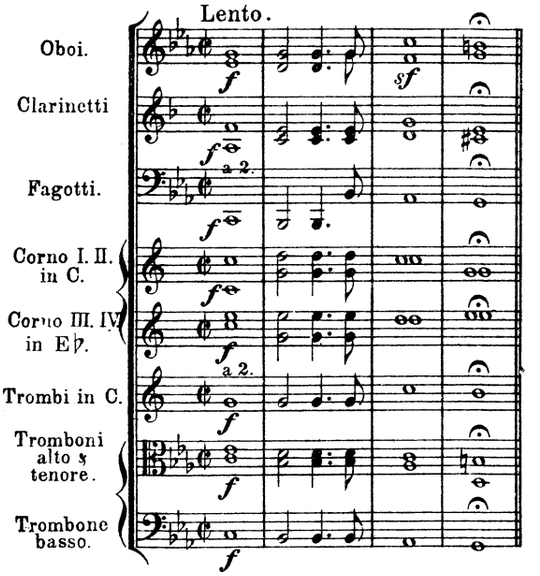


15. Mendelssohn, 'Antigone of Sophocles'. Chor I.

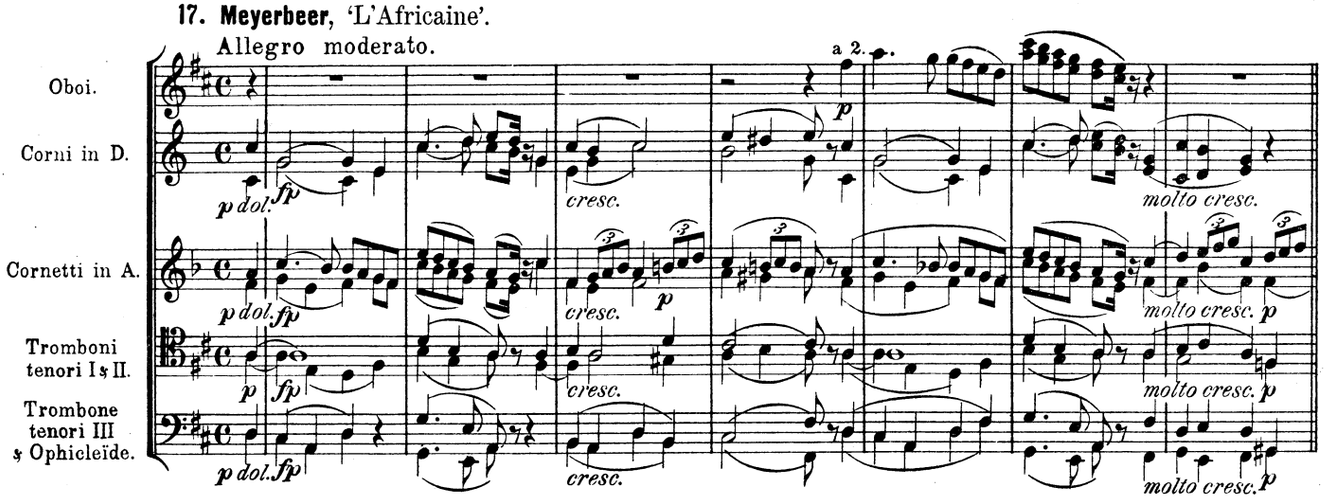




16. Mendelssohn. 'Ruy Blas', overture.

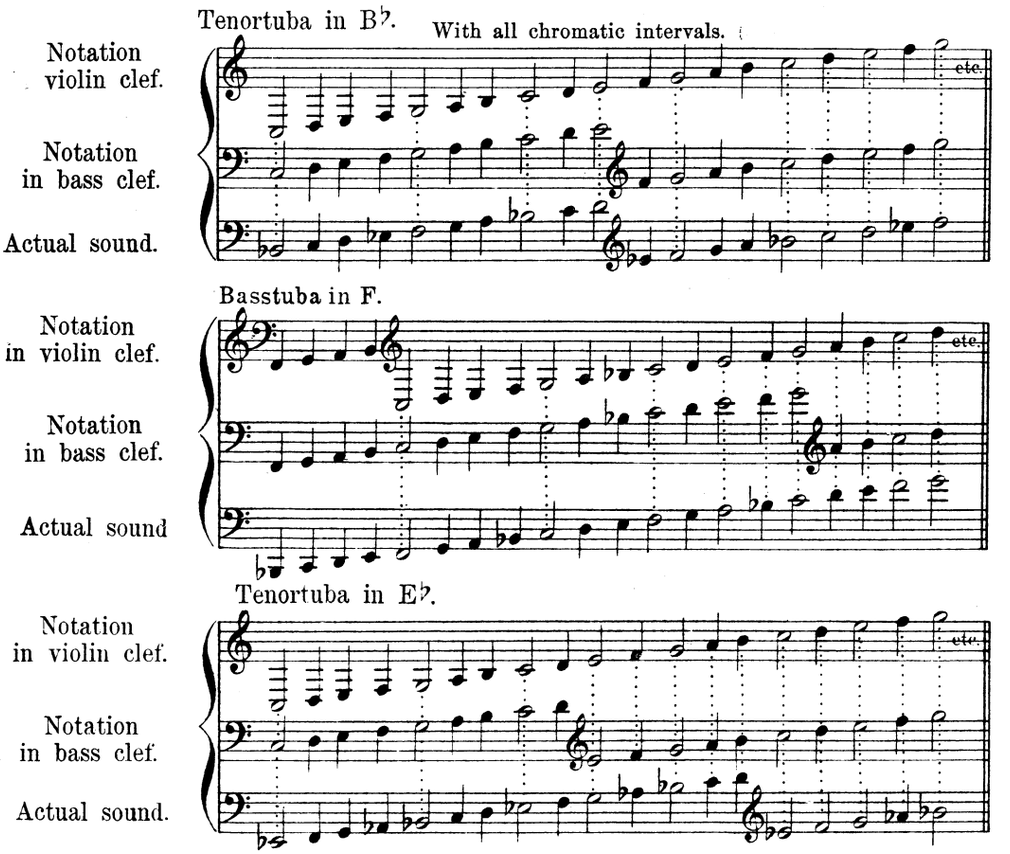


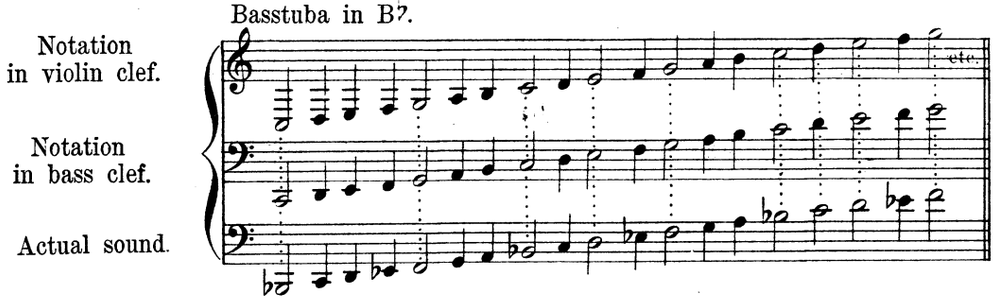
17. Meyerbeer, 'L'Africaine'.



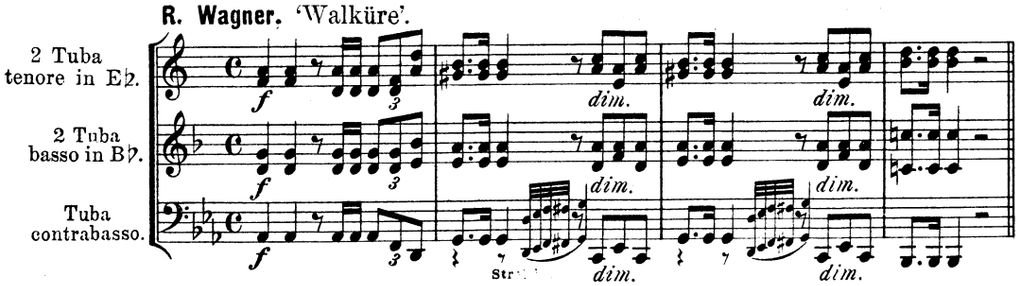
The Tubas in Wagner's 'Ring des Nibelungen'.

These tubas are introduced to attain a better combination and completeness in the tone-colour of the brass. They resemble a small tuba in shape, and in tone a tenor-horn in B♭ or alto-horn (cornet) in E♭. The 4 tubas used in *Das Rheingold* and in the first scene of *Götterdämmerung* are 2 tenor-tubas in B♭ and 2 bass-tubas in F, the first of the same compass as the horn in B♭-alto, the second as the horn in F. In the other dramas of the *Ring* the tenor-tubas are in E♭, and the bass-tuba in B♭, the first like the horn in E♭, the second like that in B♭-basso. The composer uses both violin and bass clefs. In the case of the B♭-tubas the tone sounds a minor 2nd lower; on the other hand the F-tubas a fifth lower in either clef. The tenor-tubas in E♭ sound a perfect 6th deeper in both clefs, the bass-tubas in B♭ a major 9th deeper in the violin clef, and in the bass clef a major 2nd deeper, as may be seen in the following table:





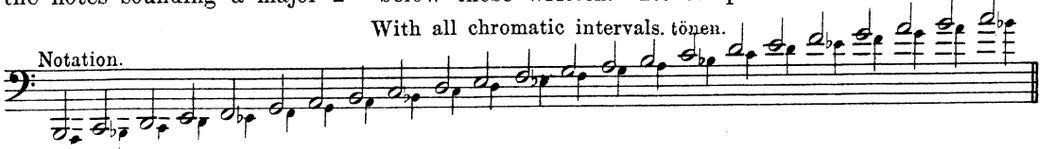
In the score of the *Walküre* Wagner notes that the change of pitch of the tubas (B♭ to E♭, and bass tuba F to B♭) in made easier to read thus.



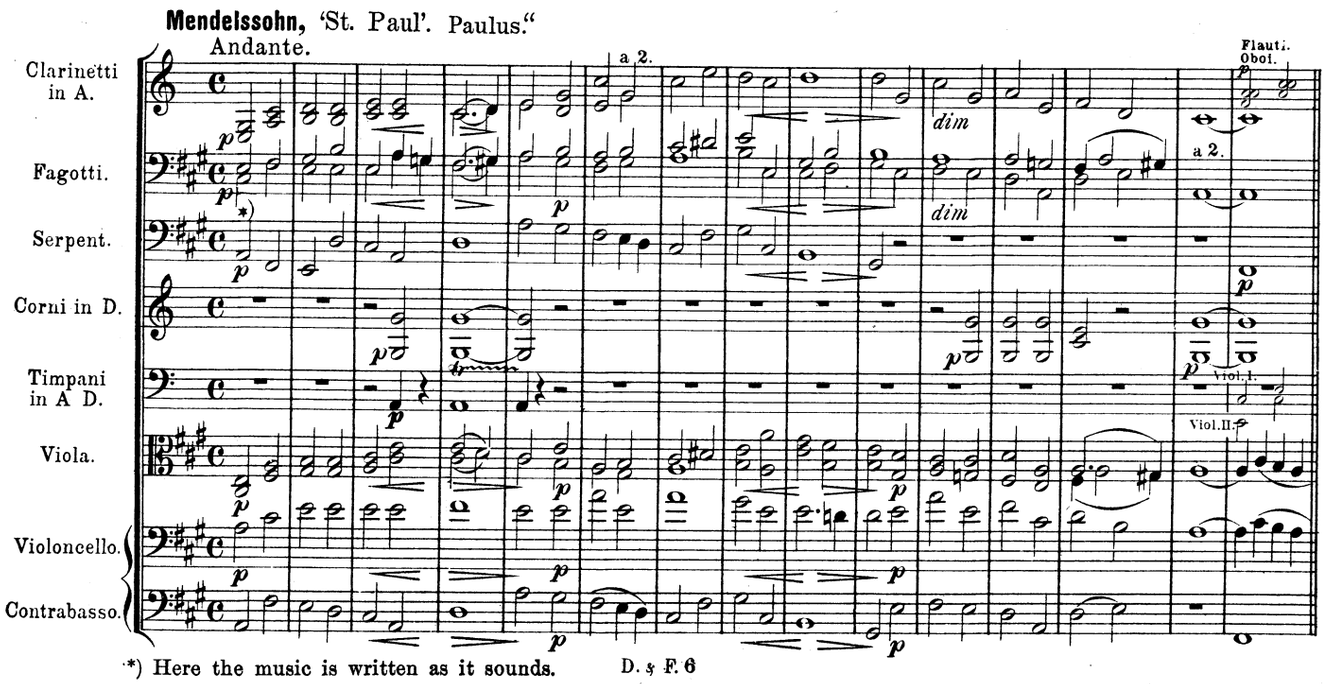
Cf. Ex. in score Pt. VI, P. 90.

The Serpent.

This instrument, which has now completely vanished from our bands, was S shaped, of wood covered with leather, and played by means of a mouth-piece. The bass clef was used, it was in B♭ and was a transposing instrument, the notes sounding a major 2nd below those written. Its compass was:



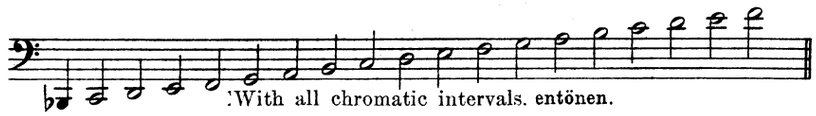
The tone of the serpent was powerful, cold, raw, its intonation was never above reproach. It was difficult technically, and quite unsuited to rapid passages. Before the ophicleid it served as the bass instrument and was formerly used by various masters.



*) Here the music is written as it sounds.

The Bass-horn.

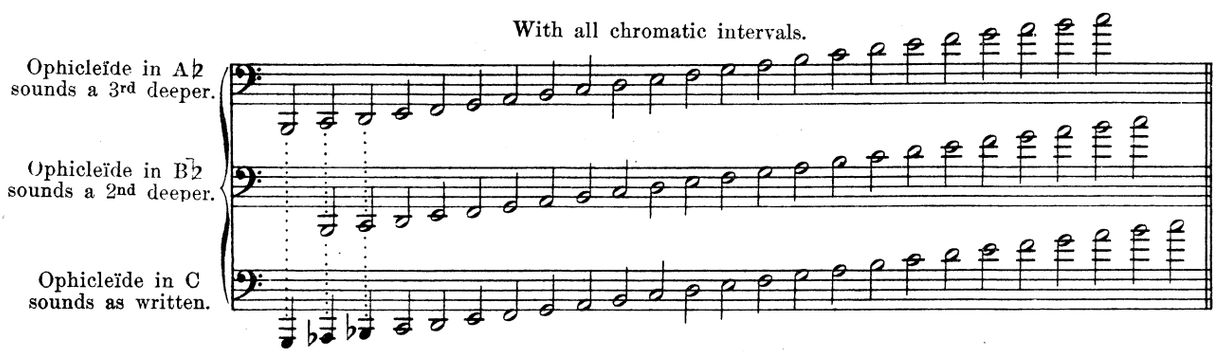
Known as the English bass-horn, resembles the bassoon. Its body was of wood, with brass bell. Between the body and the bell rose an S from the chief tube, into which a mouth-piece was inserted like that of the trombone, made from ivory or horn. In the body were 6 holes over which were keys. Its compass was



the notes sounding as written. Its tone was powerful but rather dull and penetrating. Scales with many sharps or flats were difficult, as were rapid passages. The instrument was used chiefly in military bands to strengthen the bass. It vanished when the ophicleid and bombardon appeared.

The Bass-Ophicleïd

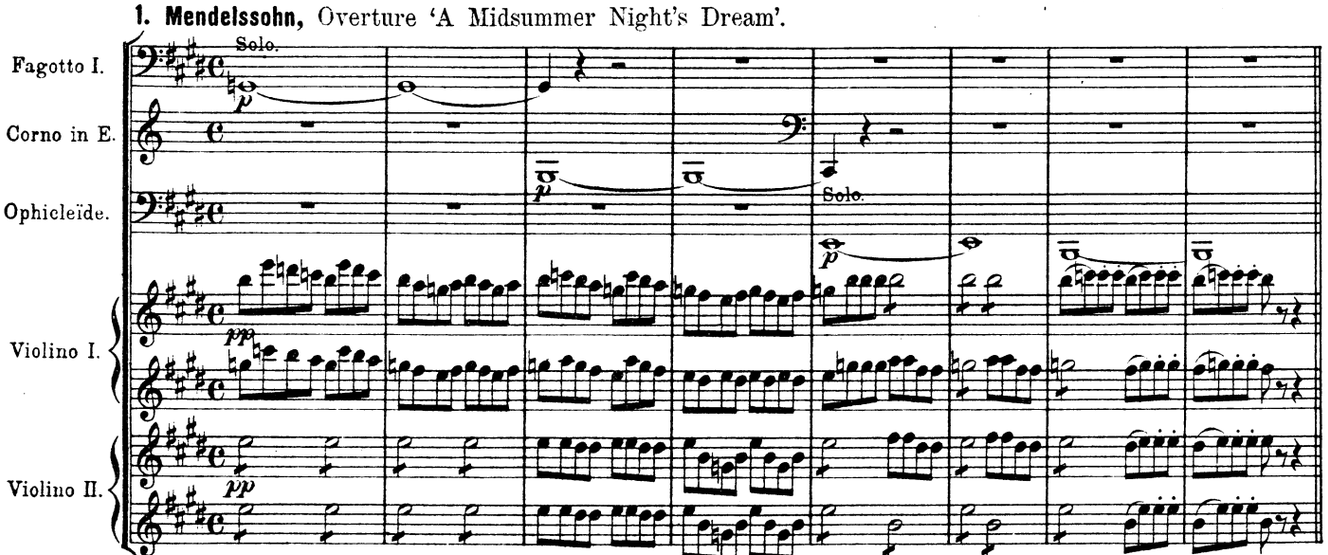
resembled the above instrument, from whose shape it was developed. Its body was of brass, with holes and keys and a mouth-piece like that of the trombone. The bass clef was used for its music, and it occurred in C, B♭ and A♭, in the two latter of which it was a transposing instrument. Its tone in the higher register was piercing and sharp; in the middle powerful but not noble; in the lower full but raw. Its-compass was



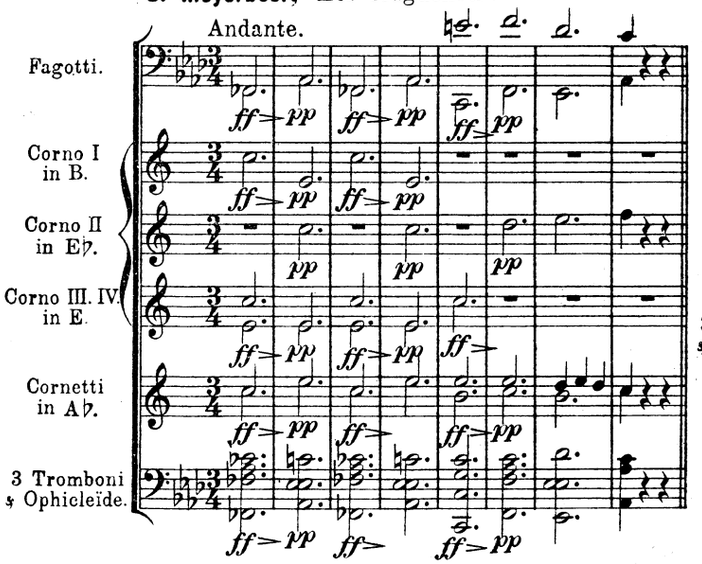
Diatonic and chromatic progressions from *f* were possible if not too rapid. Shakes were practicable on a major or minor 2nd in the two upper octaves. It was found in both military and concert orchestras; Mendelssohn used it in 'A Midsummer Night's Dream', and Meyerbeer in 'Les Huguenots' to strengthen the trombones. In Germany it has now disappeared in favour of the contra-bass-tuba.

Examples in scored.

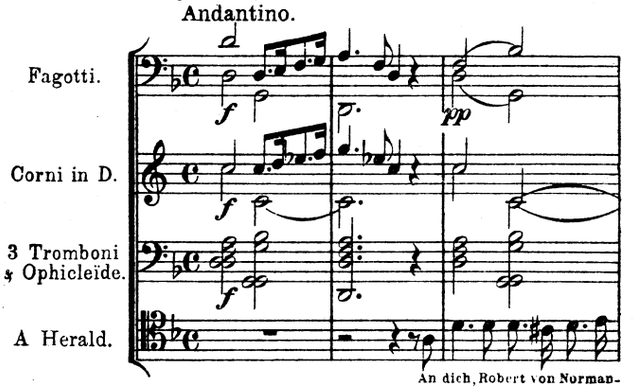
1. Mendelssohn, Overture 'A Midsummer Night's Dream'.



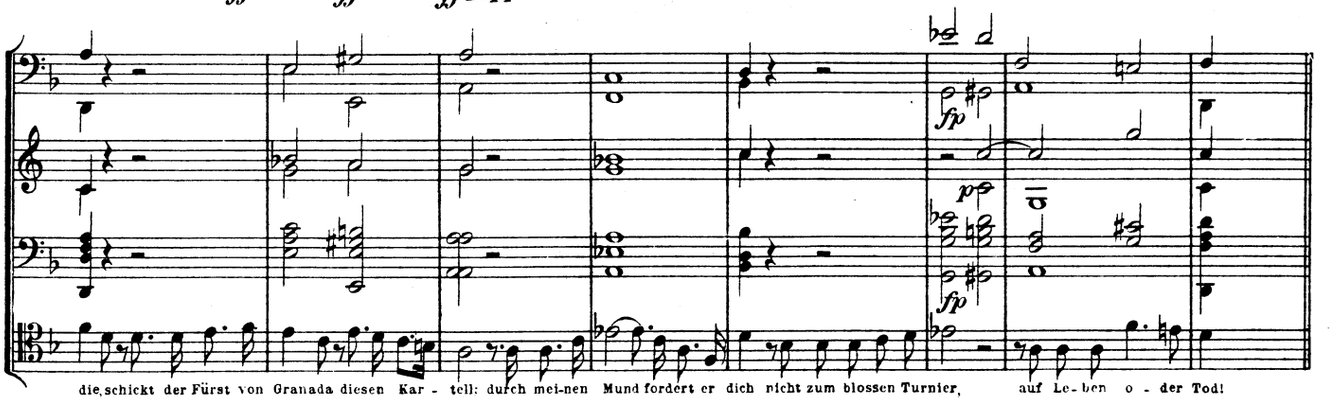
2. Meyerbeer, 'Les Huguenots'.



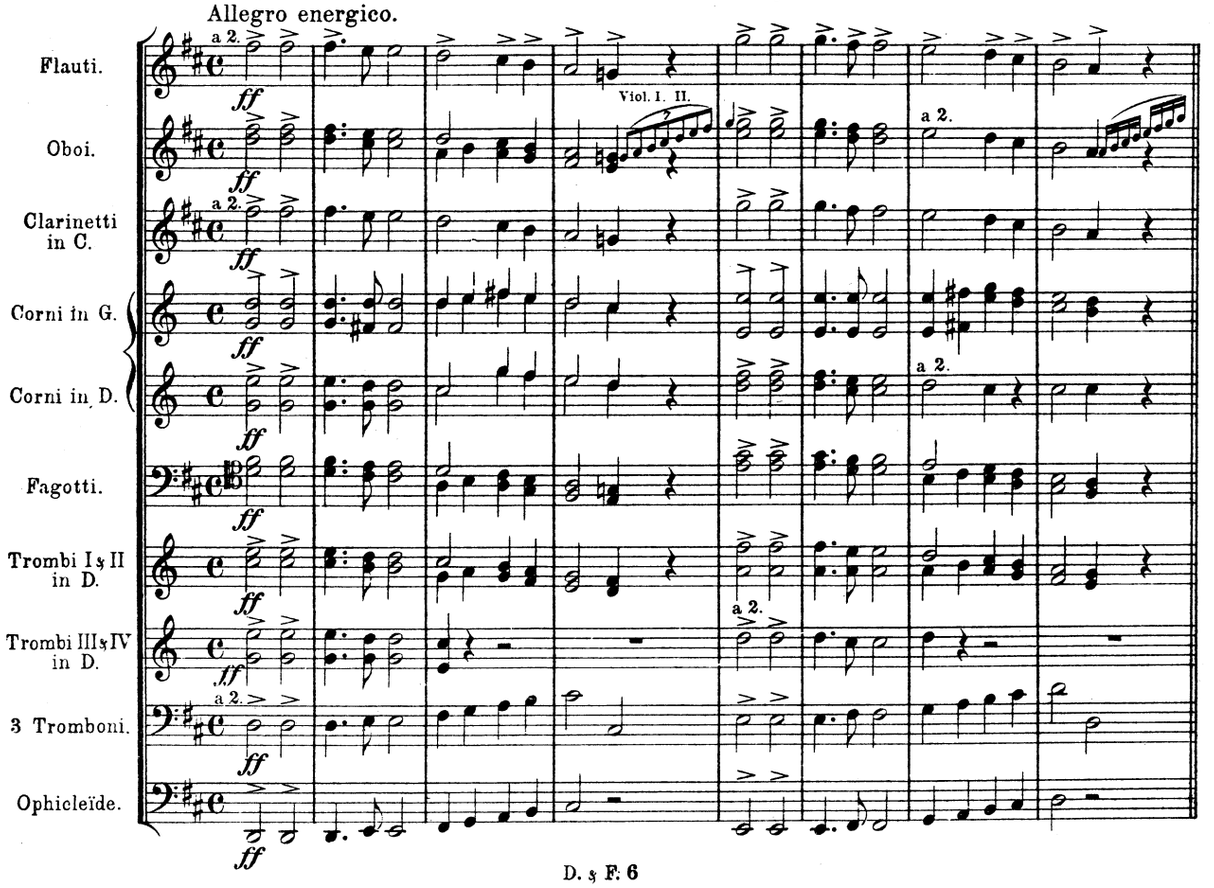
3. Meyerbeer, 'Robert the Devil'. Act II. *)



*) By permission of Schlesinger, Berlin.

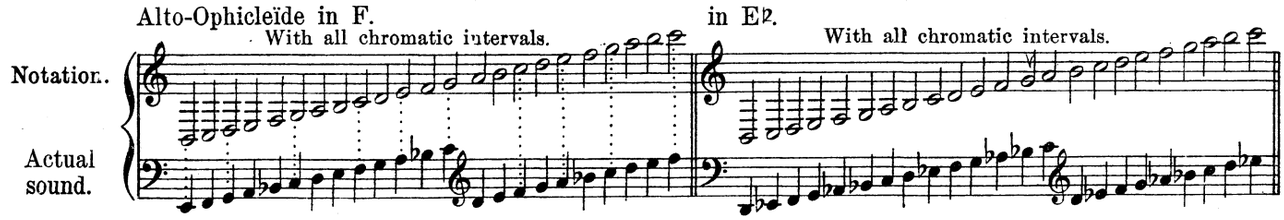


4. R. Wagner, Overture 'Rienzi'. (By permission of Adolph Fürstner, Berlin.)



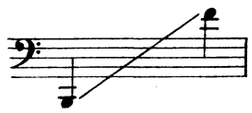
The Alto-Ophicleïd,

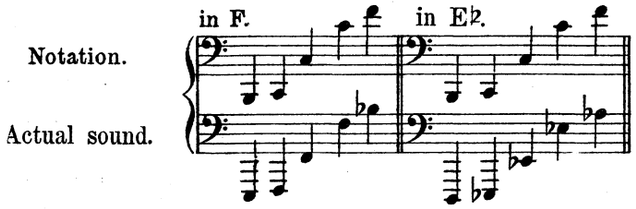
a development from the former, was only used in military bands; it was smaller in form, and was in F and E♭, in both of which it was a transposing instrument and written for in the violin clef. Its compass was as follows: in F the notes sounded were a 5th lower than written, in E♭ a minor 6th.



Its tone-colour was not very effective, and it was often out of tune; now it has disappeared.

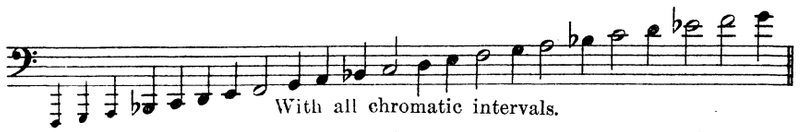
The Double-bass Ophicleïd

was never much used even in France, its native place, where it used to occur in F and E♭; it transposed as the above. Its compass was  and it sounded as the alto-ophicleid.



The Bombardon

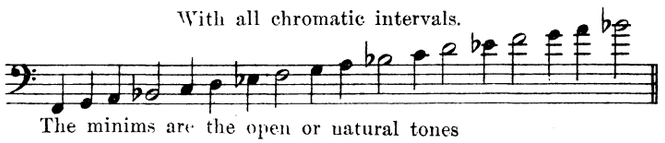
resembles the bass-tuba in form and tone: music for it is written in the bass clef: it is in F and its compass is:



In France it is a transposing instrument, but in Germany not. It has disappeared from German military bands. Its place is taken now by the

Tenor-bass*) or Euphonium,

a small tuba with rather wider tube than that of the tenor-horn and rather narrower than that of the bass-tuba. The bass clef is used for its music. In Germany it is used much in military bands as a non-transposing instrument. Its compass is:



Its tone is fuller and more powerful than that of the tenor-horn, and resembles more that of the tuba; its best register being from *b* to *f* or *g*. Scales, chromatic and diatonic, and broken chords can be played on it by accomplished players.

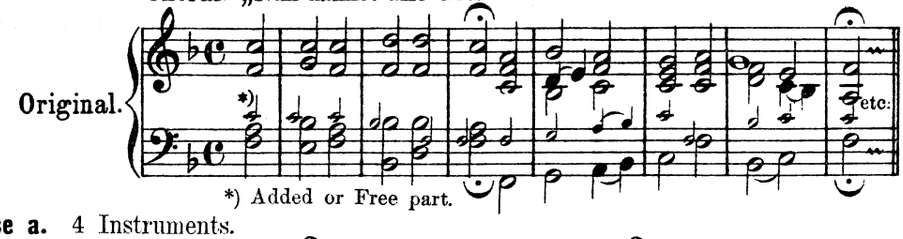
*) The title Bassflügelhorn is only found in Austria.

Exercise II.

Chorals with use of trumpets, cornets, trombones and tubas in 4 parts.

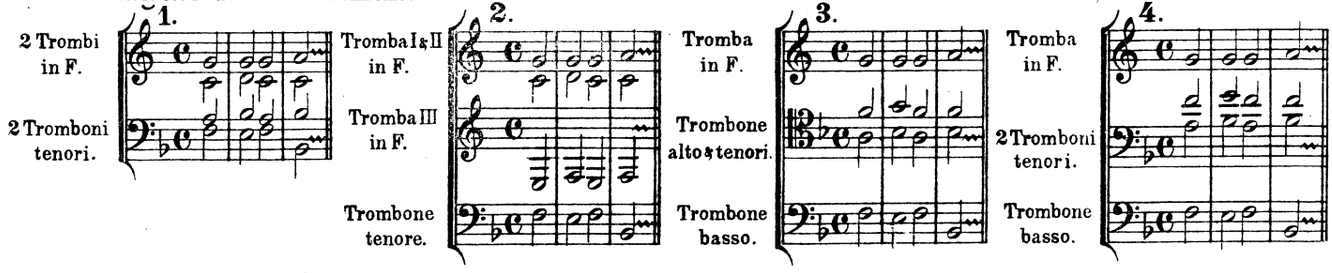
The brass is less effective for contrasts than the strings and wood owing to its smaller capacity for modulation. Yet the various brass instruments differ considerably among themselves in colour, as has already been stated, and the following analogies or comparisons may be made. The tenstet horn resembles the flute, the trumpet with its sharp and bright tone, the oboe; the clear and even tender cornet the clarinet; the trombone the bassoon, and the contra-bass-tuba the double-bassoon.

Choral: „Nun danket alle Gott.



*) Added or Free part.

Exercise a. 4 Instruments.



No. 1 is for 2 trumpets and 2 trombones arranged as in the original and sounds, *f*, clear and powerful.

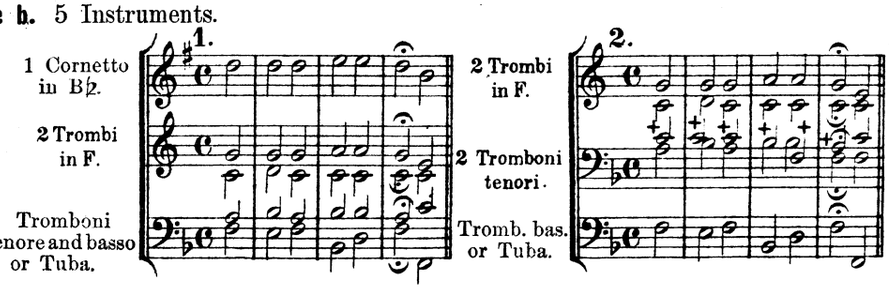
No. 2 for 3 trumpets and 1 trombone is sharper.

No. 3 1 trumpet and 3 different is milder because of the variety of colour.

No. 4 is, like 2, rather powerful because the extended position for 3 deep trombones is not the best; it resembles a chorus of one soprano and 3 male voices.

All of these examples could occur in other keys; thus 2 trumpets in E (C), trombone in F; 2 trumpets in E♭ (C), trombone in E♭; 2 trumpets in D (C), trombone in D. The choral moreover could be written in D with these pitches, whereby still more keys could be used. We selected the original key because in that the choral is suitable for church use.

Exercise b. 5 Instruments.



No. 1. By adding the cornet, a higher instrument, which is softer than the trumpet, the soprano is doubled in unison, the other instruments remaining as before.

No. 2 shows the choral for 2 trumpets, 2 tenor-bass-trombones and bass-trombone or tuba with a free added part, taken here by the first tenor-bass-trombone, which in the second strophe is succeeded by the 2nd. This last strengthens the bass in the octave before taking up the added part. If no free part were to be used, the 2nd tenor-trombone would take the bass in unison, or the bass-trombone or tuba would play the bass an octave lower.

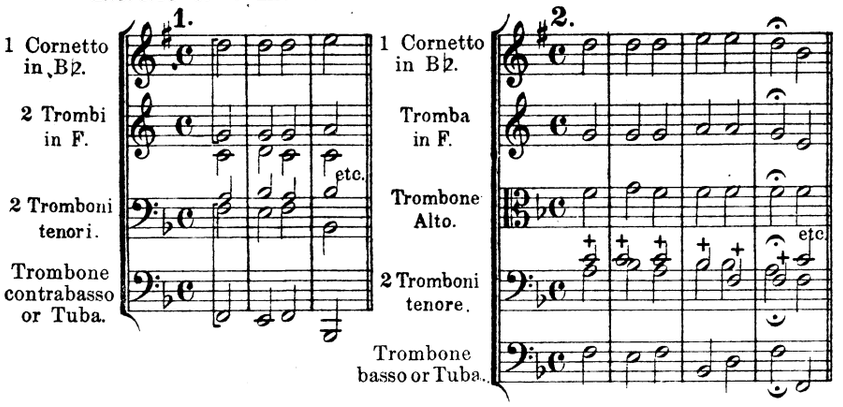
The following combinations may be tried:

1) **a)** 2 cornets in B♭ (soprano and alto): 2 tenor-trombones (Add. Pt. and tenor): bass-trombone or tuba (B).
b) 2 „ „ „ („ „ „ 2 „ (tenor and bass): bass-trombone or tuba (B).

2) **c)** 3 trumpets in F (soprano, alto and Add. Pt.): 1 tenor-trombone (tenor): bass-trombone or tuba (B).
d) 3 „ „ „ („ „ „ tenor): 1 tenor-trombones (bass): bass-trombone or tuba (B).

**) In Strophe II note the octave doubling.

Exercise c. 6 Instruments.

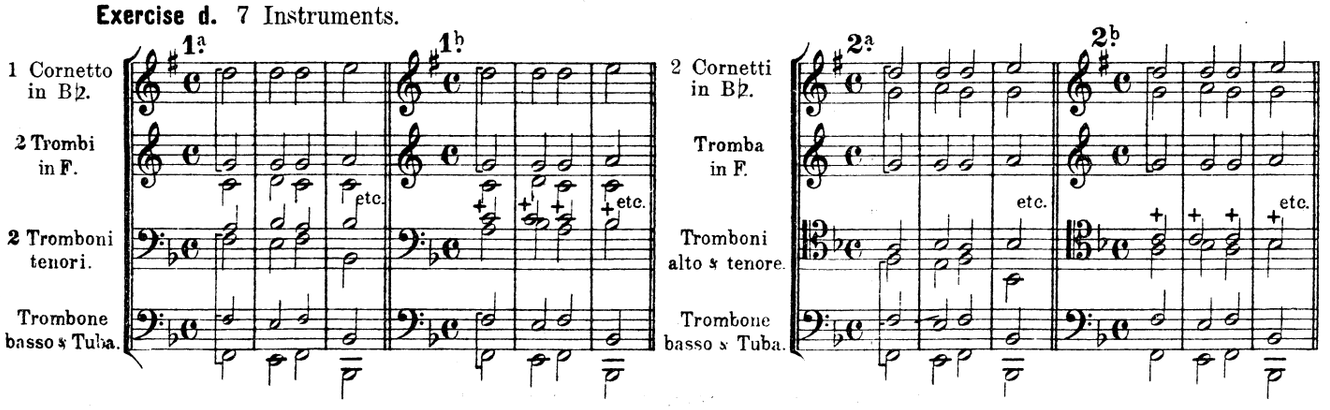


Here 2 parts must be doubled, or one and an added part.

No. 1. Soprano strengthened by the cornet, with trumpet in unison: bass doubled by bass-trombone or tuba in lower octave.

No. 2. Soprano doubled, though here the 1st tenor trombone takes the free part in strophe I; the 2nd in strophe II.

Exercise d. 7 Instruments.

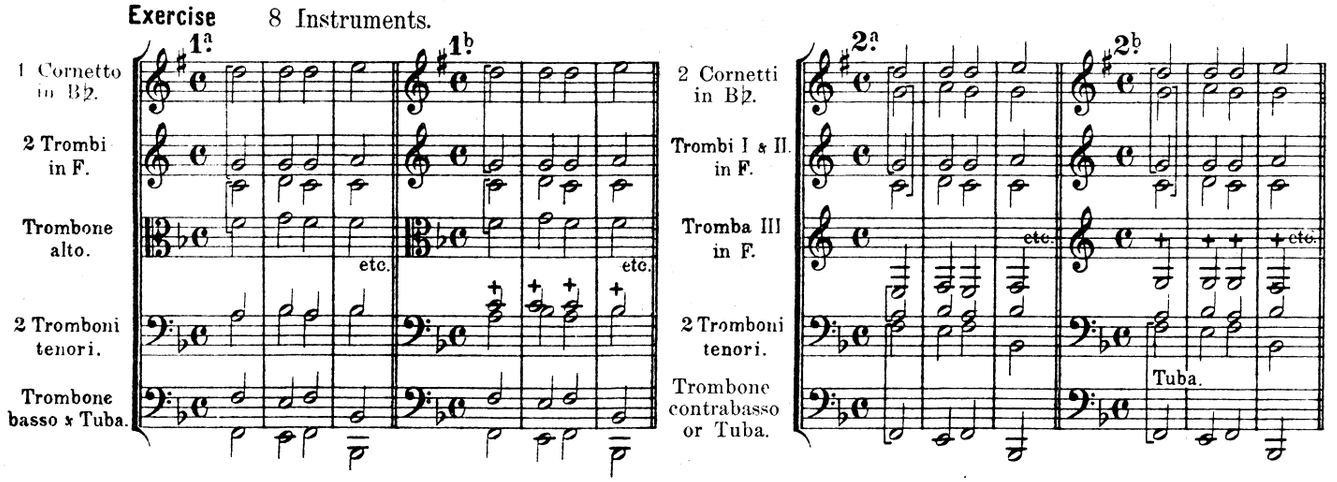


In Ex. 1a the S is doubled in unison by cornet and trumpet, the bass occurs 3 times, by tenor trombone II, bass-trombone and tuba, the bass-trombone playing with 2nd tenor-trombone.

Ex. 1b is similar, but outer parts doubled, and an added part is played by tenor-trombone I.

Exs. 2a and 2b are different in instrumentation but parts arranged as in Ex. 1a and 1b.

Exercise 8 Instruments.



Here in Ex. 1a all parts are doubled, three in unison and bass in the octave. The tenor is taken by 2 tenor-trombones because 2 different instruments would be poor in effect.

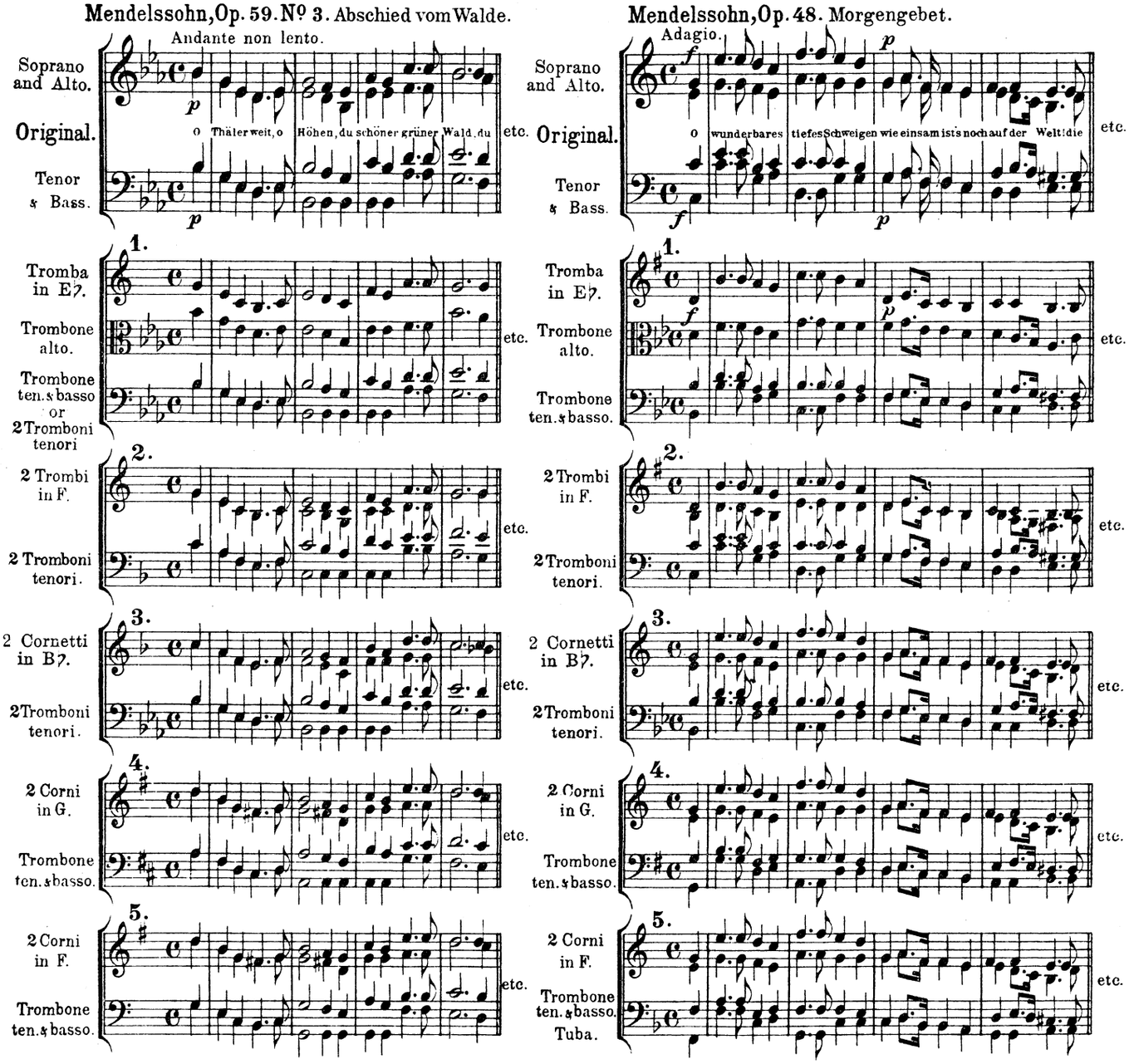
Ex. 1b resembles 1a but tenor is single, and an added part occurs.

Ex. 2a is fuller in tone, all parts except the bass being in unison.

Ex. 2b is similar to 2a, but differs in that 3 trumpets in poor registers take the added part, the tenor going to the tenor-trombone. In strophe 2 this takes the added part and trumpet III the tenor.

Exercise III.

Use of Trumpets, Cornets, Horns and Trombones in 4 parts.



Ex. 1 shows the song in the original key, tender and noble in effect.

No. 2 sounds in F (a tone higher than the original) through the pitch of the trumpets; the piece will sound rather sharp.

No. 3 sounding in the original key; with the cornet à pistons in B♭ the effect of the combination with trombones is better and milder than in 2.

In No. 4 a semitone below the original, the horns in G lend a sharpness to the effect of the 2 trombones. Therefore, having regard to the character of the piece, these particular horns are not good here.

No. 5 although a tone deeper sounds as the original, and the effect of the 2 horns in F with 2 trombones is good.

Arrangement 1 is a tone deeper in order to obtain a milder tone-colour by the trumpet in E♭. Were the piece to be played in the original with E♭-trumpet, this latter must have played in A and the 3 trombones in C; and if the prescribed key of the E♭-trumpet were to be given to trumpet in F, the 3 trombones must still be in C, as in Ex. 2, which sounds a tone deeper; its character is like

No. 3 in the other arrangement.

No. 4 and 5 are as in 4 and 5 of the other and are similar in effect.

All of such transcriptions may be made in the original key but the best registers of the various instruments must be chosen.

Exercise IV[a].

Examples for trumpets, cornet à pistons, or trombone solo with pianoforte-, strings- or wood-accompaniment, or the last alone.

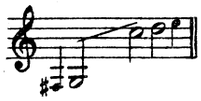
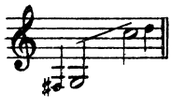
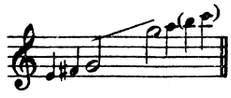
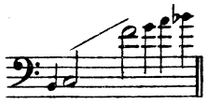
In arranging a song etc. for a solo brass instrument with accompaniment of the above care must be taken that

1) the key is neither too high nor too low
2) there are not too many accidentals (especially with valve instruments).
3) the original key is not too remote.

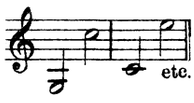
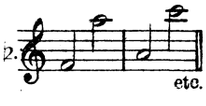
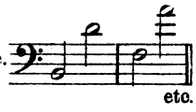
But in arranging such a piece effectively the original key is more or less disregarded in favour of that best suited for the solo instrument. In most cases this key will be found not far from the original, as will be seen later.

Trumpets of middle pitch (D, E♭, E and F) will most generally be used and of these that in F, and of the high trumpets that in B♭, which is treated like the cornet à pistons. Of the trombones the tenor-bass will be selected as a rule, and care must be taken to arrange the music for it to the best advantage.

The following show the best registers at a glance.

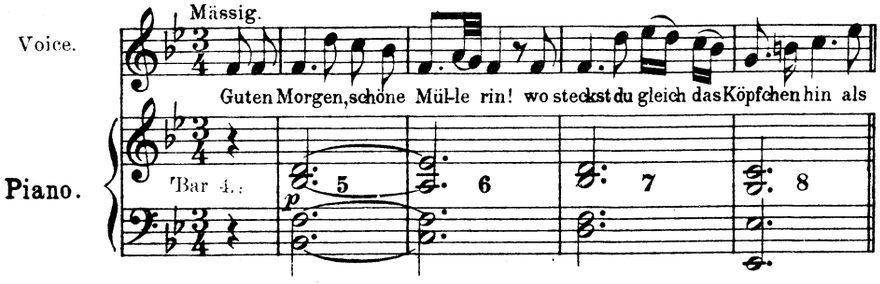
Trumpets in D or E♭.  Trumpets in E or F.  Cornet à piston or trumpets in high B♭.  Tenorbass-trombone. 

The above crotchets are hardly necessary in song arrangements, and the notes in brackets are unpractical, and only occur in *bravura* pieces. It is always dangerous to attack a high passage *p* or *mf*; so also are the leaps.

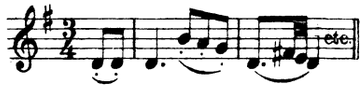
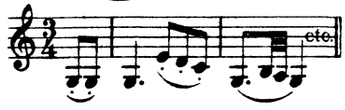
Trumpets in F.  Cornet in B♭.  Trombone.  which are difficult in quick tempo.

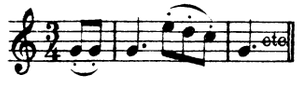
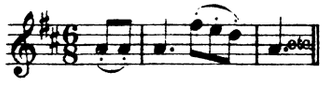
The following snatches of a song will be of assistance.

Frz. Schubert. 'Morgengruss'.



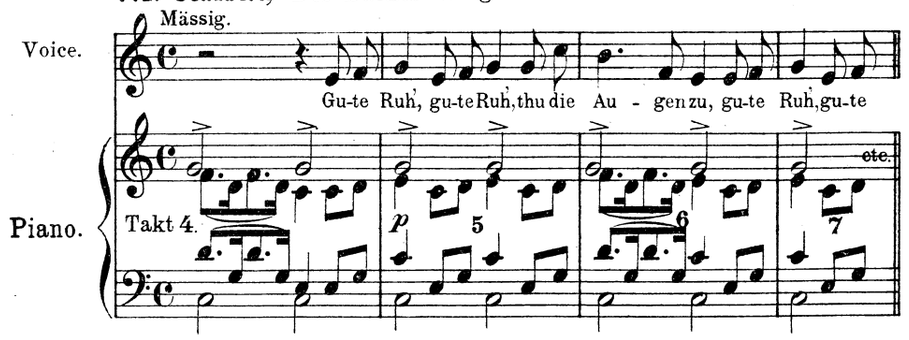
The accompaniment to this song can be played by strings or wood and 2 horns, or strings and wood and horns. It must be treated tenderly.

For trumpet solo in F this song would sound well in F  (accompaniment in B♭), in G  (accompaniment in C); but in C  (accompaniment in F) the effect would not be so good because of the depth of the pitch.

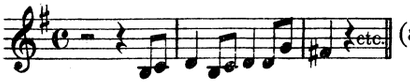
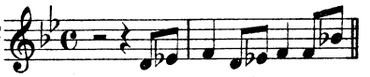
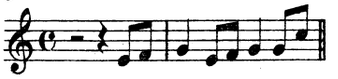
It is also well adapted for cornet in B♭, C  (accompaniment in B♭) or in D  (accompaniment in C); here the former would be preferable.

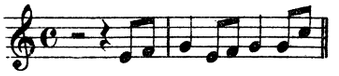
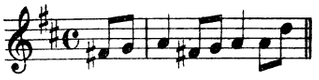
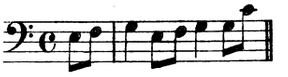
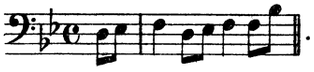
In a transcription for trombone in B♭ or C the following would be the best register  (accompaniment in C) or  (accompaniment in B♭).

Frz. Schubert, 'Des Baches Wiegenlied'.

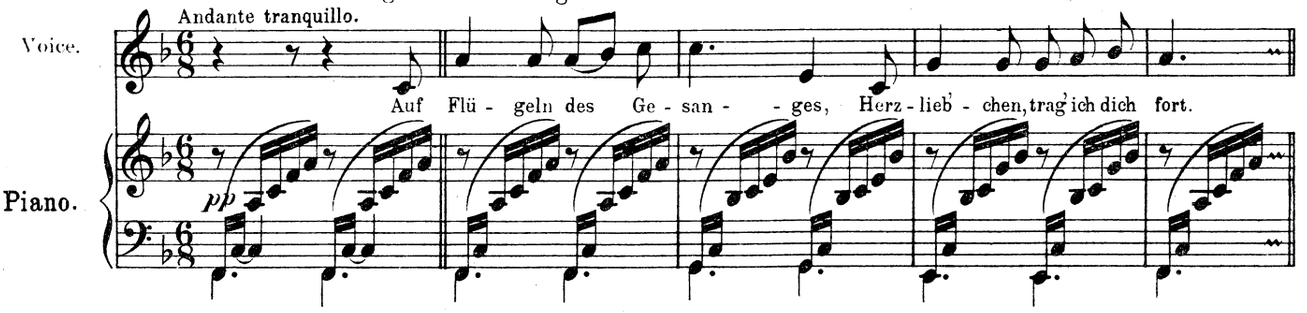


The accompaniment to this song can be arranged in a variety of ways in respect of the disposition and choice of instruments.

The song would be easy for F-trumpet in G  (accompaniment in C), sounding in the original key. If the same trumpet playing in B♭  (accompaniment in E♭) be chosen the colour is bright; and even brighter is it if the F-trumpet plays in in C  (accompaniment in F), but the character of the piece is gone.

For the cornet in B♭ the piece would be effective in C  (accompaniment in B♭) or D  (accompaniment in C); and for trombone the key of C  is best; D is less brilliant and B♭ still less  .

Mendelssohn's 'Auf Flügeln des Gesanges'.



This can be transcribed for trumpet in F 1) in C, accompaniment inF; 2) in D, accompaniment in G; 3) in F, accompaniment in B♭. 2) and 3) are preferable to the others.

For cornet in B♭; 1) in F, accompaniment in E♭; 2) in G, accompaniment in F; 3) in B♭, accompaniment in A♭. This last is most effective.

For trombone 1) in A, accompaniment in A; 2) in G; 3) in B♭, are all good, though 2) and 3) are each better than 1).

The following songs can also be arranged thus:

Exercise IV^{b}.

The similar transcription of a pianoforte piece, as a nocturne, song without words, etc., is more difficult, for here not only must the register be looked to, but the very possibility of playing the piece on one instrument. If it must happen, whether good or bad, whole passages and the key itself must in many cases be altered, if not the actual melody to bring the piece within the compass of the chosen solo instrument.

A few pieces may be mentioned here which can be played with but slight alterations for trumpets of the medium or high pitch, and for cornets and trombones:

Mendelssohn. 'Songs without words', 1, 7, 14, 19, 20, 30. **Field,** Nocturnes in B♭ and E♭.
Chopin. Nocturne in E♭, op. 9.

The accompanying instruments may be selected by the pupil himself.

Exercise V.

Chorals with trumpets, horns, trombones and tuba.

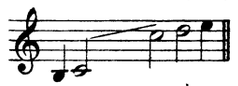
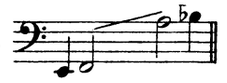
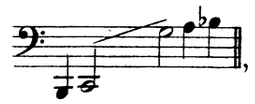
In this exercise the various combinations of brass instruments — trumpets, cornets, horns, trombones and tuba — are to be used in connection with chorals in order that the pupily ma acquire security and facility in the method of writing for them. The following examples will assist him.

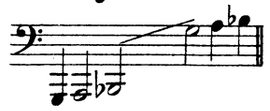
In these exercises regard must be had as to their ultimate use. If a choral is to be played at a festival where the instruments assist the congregational singing, it must be transcribed in the original key, the trumpets and horns playing the voice parts. But if this is not the case, bright or mild effects may be sought and the best register or key selected. The character of the words, too, should not be disregarded.

The following chorals, 'Nun ruhen alle Wälder', and 'Wer nur den lieben Gott' must be treated as it were gently, whilst, on the other hand, 'Ein' feste Burg' must be powerfully scored.

Before transcribing a choral for brass the compass of the two outer parts should be tested to find the best register for the instruments and that which offers the fewest difficulties to the player.

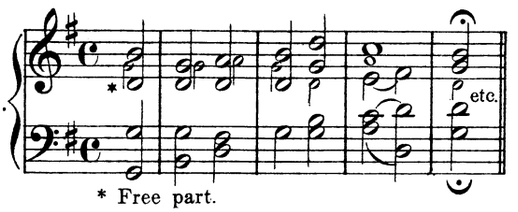
Thus for trumpets in C, D, E♭, E and F (S) the best compass lies within

for tenor-  trombone (B)  for bass-trombone  ,

for tuba.  The middle parts, trumpet II, cornet II, horns, alto and tenor-trombones,

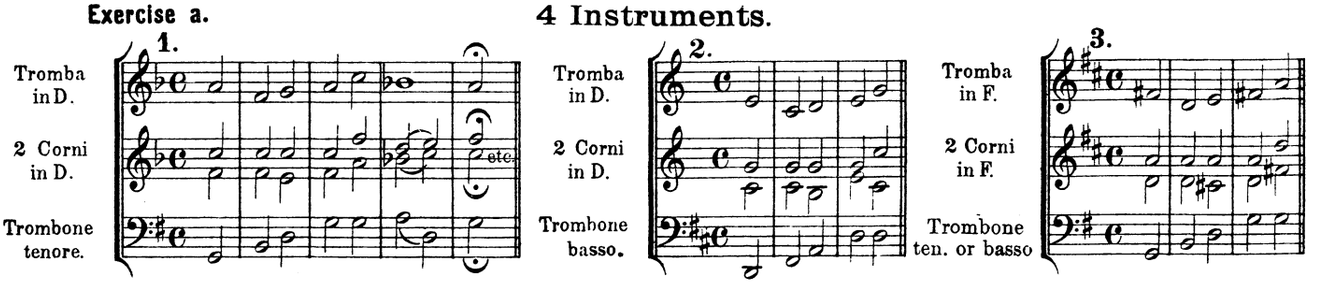
accomodate themselves thus to what is required of them.

Choral. 'Nun ruhen alle Wälder'.

Original. 

* Free part.

Exercise a. **4 Instruments.**



Ex. 1 gives the choral arranged for the selected instruments in the same register as the original. The character of this arrangement in D for trumpets and horns is, *p*, mild and tender; *mf* or *f* it is harder and more heroic.

No. 2 is somewhat similarly arranged so far as the instruments are concerned, but the bass is not given to the bass-trombone because of its depth. The sound of this combination is, *p*, dull and gloomy, and *f* or *mf*, dark yet full, because of all the parts being lower.

In No. 3 the trumpets and horns are in D; the actual sound is in the same register as the original, but the tone colour is rather brighter than in No. 1, because of the F pitch.

Exercise b. **5 Instruments.**

In Ex. 1 an added or doubled part becomes necessary because of the 5th instrument; here the bass part is strengthened by the tuba in the lower octave. The choral is in a higher pitch on account of the retention of the first notation (4 instr. Ex. 1), and of the use of the F-pitch for trumpets and horns. The tone colour is bright *p*, and *f*, rather sharp.

No. 2. Although trumpets and horns are in F and play in D, the sound is in the same register as the original: the added part is given to 1st horn. The effect is less bright *p*, and *f*, rather hard.

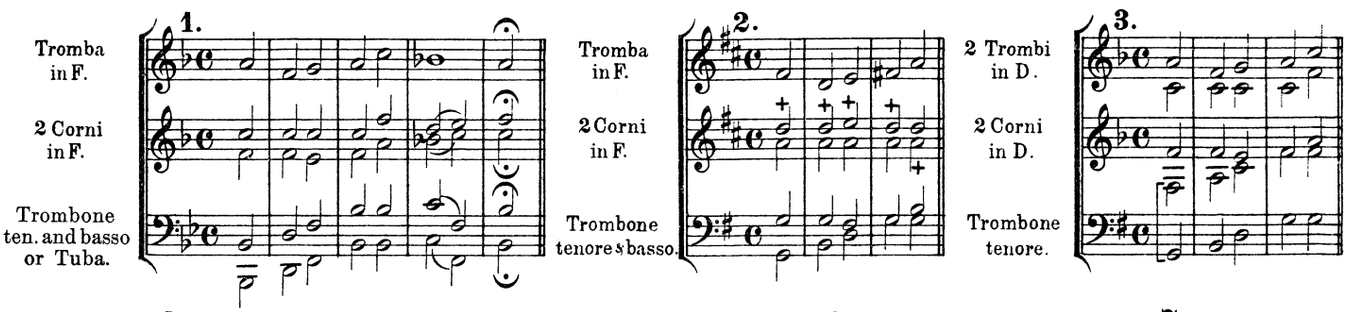
In No. 3 (trumpets and horns in D) the bass is strengthened by the 2nd horn in unison with trombone, the general effect being, *p*, very gentle, *f*, powerful and full.

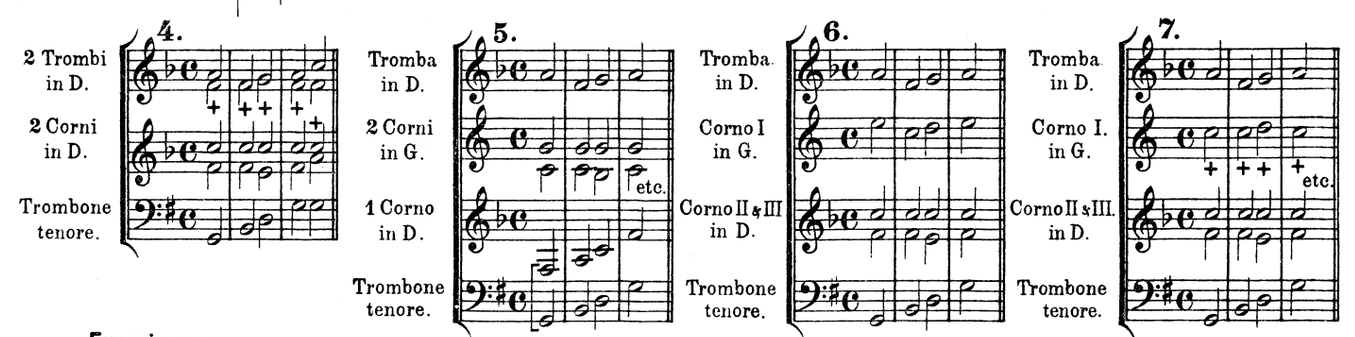
In Nr. 4 is an added part, which is given to 2nd trumpet, yet which seems out of place because of the rather sharp tone of the instruments; the added part, when few instruments are used, should be given to a mild-toned instrument

No. 5 res mbles No. 3, but differs in that here 2 horns in G are used, whereby the colour is brightened.

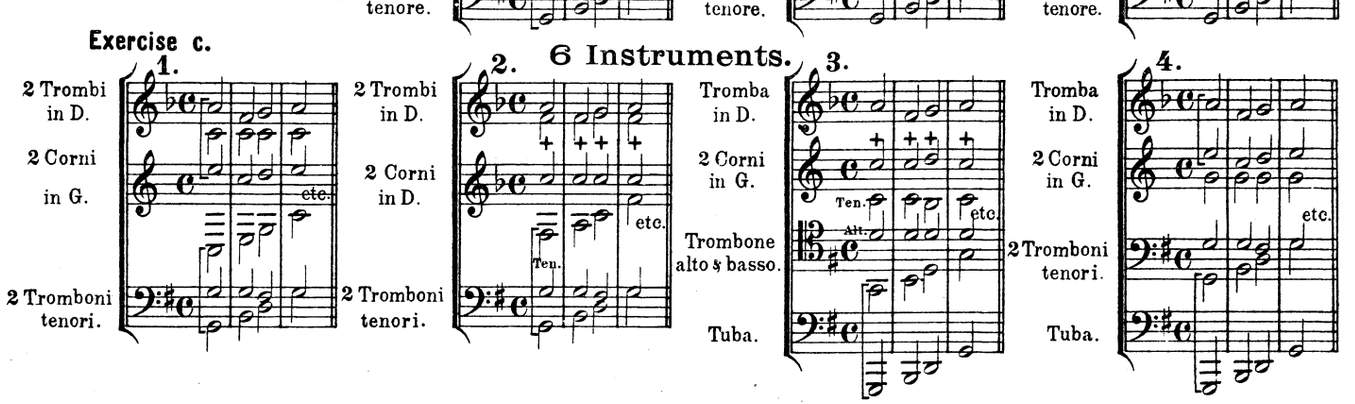
In No. 6 the soprano trumpet is strengthened in unison by horn in G. In order to effect a satisfactory doubling a higher pitched instrument must be used, since the melody is not happy in the deep pitch. The soprano here will be rather prominent because of the trumpet tone and the bright colour of the G-horn.

No. 7 is written like No. 6, but the G-horn takes the added part; such an arrangement is not happy because of its clear tone in this register.





Exercise c.



Here two parts must be doubled, or one doubled and one added part.

In Ex. 1 the soprano is doubled in unison by trumpet 1 and horn 1 in G, and the bass by tenor-trombone and 2nd horn in G. In the 4-part horn exercises we have noticed that extended harmony for 2 or more horns of the same pitch is not effective; yet it is used here. But by using the higher sounding instruments (trumpets), and because of the parts which lie between the horns (alto and tenor), this objection does not now apply. The effect is rather clear and hard.

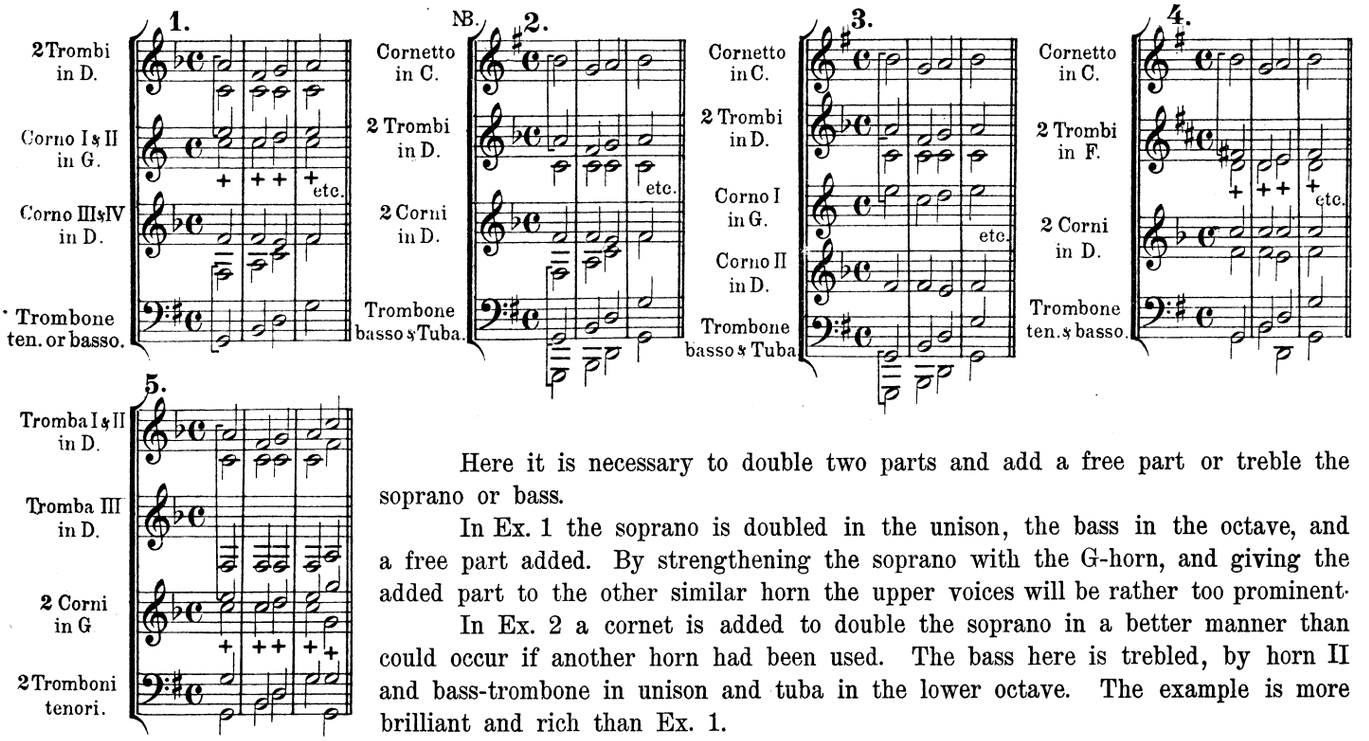
Ex. 2 with 2 trumpets and horns in D is tender, *p*, and full and powerful, *f*, in spite of the added part of the 2nd trumpet.

Ex. 3 is an improvement in colour by using the G-horn, and doubling the bass by the tuba in the lower octave.

Ex. 4 is brighter and fuller than any of its predecessors because of the G-horns and tenor-trombone. Yet it would be even better if the 1st horn were in G and the 2nd in D.

Exercise d.

7 Instruments.



Here it is necessary to double two parts and add a free part or treble the soprano or bass.

In Ex. 1 the soprano is doubled in the unison, the bass in the octave, and a free part added. By strengthening the soprano with the G-horn, and giving the added part to the other similar horn the upper voices will be rather too prominent.

In Ex. 2 a cornet is added to double the soprano in a better manner than could occur if another horn had been used. The bass here is trebled, by horn II and bass-trombone in unison and tuba in the lower octave. The example is more brilliant and rich than Ex. 1.

In Ex. 3 the soprano occurs in 3 parts in unison — cornet, trumpet I and horn I. The bass is doubled by the bass-trombone and tuba in octaves. The two differently pitched horns are used, however, to allow of the soprano being trebled. The soprano is rather prominent.

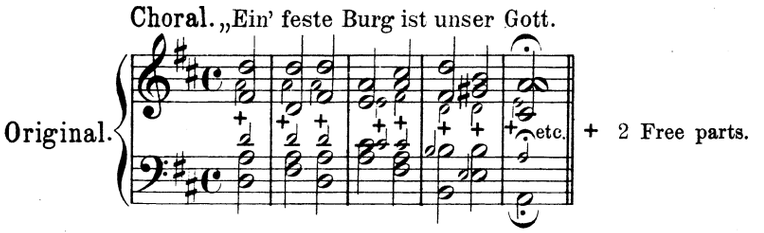
In Ex. 4 soprano and bass are doubled, and the trumpet II takes a free part. This example is less powerful and full than the others. D-trumpets might have been used here to obtain a brighter colour.

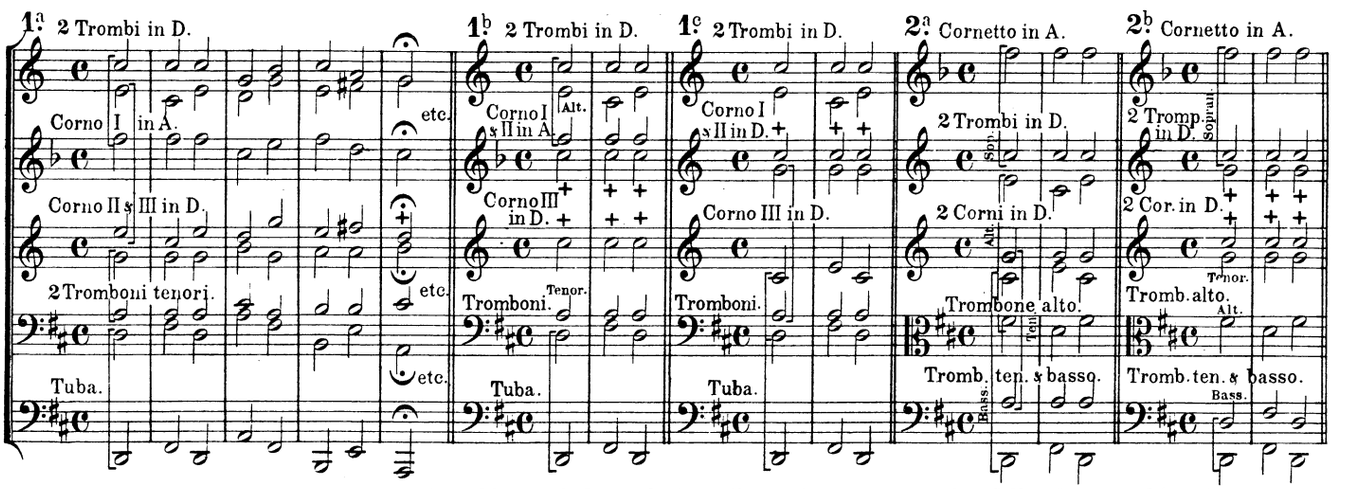
Ex. 5 is inferior to 4 in colour because of its 3 trumpets, 2 horns and 2 trombones, soprano doubled and added part and bass sometimes in octaves.

NB. In Exs. 2, 3 and 4 cornet in B♭ (playing in A) might have been used.

Exercise e.

8 Instruments.





The pupil himself should now be able to judge of the effect of these and the following combinations

The following notes will be of use in arranging for 9 or more such instruments.

S, A, T, F, B denote soprano, alto, tenor, free, bass. The numbers show how the different parts are doubled or trebled. The F can, as we know, remain between alto and tenor. The pupil will find few difficulties now in dividing the parts among the various instruments. He must remember that in using three or four of the same instruments, as horns and trumpets, two different pitches may be employed to obtain a better division of the parts.

Exercise f.	**9 Instruments.**	S. A. T. F. B.
3 trumpets, 3 horns, 2 tenor-bass-trombones, 1 bass-trombone or tuba.		3 2 2 — 2
1 cornet, 2 trumpets, 2 horns, alto-trombone, tenor-bass-trombone, bass-trombone and tuba.		2 2 2 — 3
2 cornets, 2 trumpets, 2 horns, 2 tenor-bass-trombones and tuba.		2 2 2 1 2

Exercise g.	**10 Instruments.**	S. A. T. F. B.
3 trumpets, 4 horns, 2 tenor-bass-trombones and tuba.		3 2 2 — 3
1 cornet, 2 trumpets, 3 horns, alto-, tenor-bass- and bass-trombone and taba.		3 2 2 — 3
2 cornets, 2 trumpets, 2 horns, 2 tenor-bass-trombones, bass-trombone and tuba.		3 2 2 1 2

Exercise h.	**11 Instruments.**	S. A. T. F. B.
3 trumpets, 4 horns, alto-, tenor-bass-, bass-trombone and tuba.		3 2 2 — 4
1 cornet, 3 trumpets, 3 horns, 3 tenor-bass-trombones and tuba.		3 2 2 1 3
2 cornets, 2 trumpets, 3 horns, 3 tenor-bass-trombones and tuba.		3 2 2 1 3

Exercise i.	**12 Instruments.**	S. A. T. F. B.
2 cornets, 2 trumpets, 4 horns, 3 tenor-bass-trombones and tuba.		3 3 3 — 3
1 cornet, 3 trumpets, 4 horns, 3 tenor-bass-trombones and tuba.		4 2 2 1 3
		3 2 2 1 4

Exercise k.	**13 Instruments.**	S. A. T. F. B.
2 cornets, 3 trumpets, 4 horns, 3 tenor-bass-trombones and tuba.		4 3 3 — 3
2 cornets, 3 trumpets, 4 horns, alto-, tenor-, bass-trombone and tuba.		3 3 3 — 4
		3 3 3 1 3
		4 2 2 2 3

Exercise l.	**14 Instruments.**	S. A. T. F. B.
2 cornets, 4 trumpets, 4 horns, 3 tenor-bass-trombones and tuba.		4 3 3 — 4
2 cornets, 3 trumpets, 1 bass-trumpet, 4 horns, alto-, tenor-, bass-trombone and tuba.		4 3 3 1 4
		3 3 3 1 4
		3 3 3 2 3

By studying the following the use to be made of brass in connexion with male voices and something of core-reading may be learnt.

Mendelssohn, Op. 68. 'Festgesang an die Künstler'. 2 trumpets in E♭, 2 trumpets in B♭ basso, 4 horns in E♭. 2 horns in B♭ alto, alt-, tenor- and 2 basstrombones, ophicleïde and tuba.

Mendelssohn, Op. 55. Musik to Antigone, Cor No. 4. 2 trumpets, 2 horns, 3 trombones and drums.

Franz Lachner, Op. 118. 'Bundeslied'. 6 trumpets in E♭, 6 horns in E♭, 2 bassoons, 3 trombones, ophicleïde, bombardon and drums.

Handel, 'Halleluja'. 2 trumpets, 2 horns, 3 trombones and drums.

Tschirsch, Op. 42. 'Hymne': 'Gott, Vaterland and Liebe'. 2 trumpets in C, 2 horns in E♭, alt-, tenor- and basstrombones.

Franz Abt, Op. 201. 'All Deutschland'. 2 cornets in B♭, 2 trumpets in B♭, 4 horns in F, alt-, tenor-, and bass-trombones, 2 tubas and drums.

Franz Abt, Op. 202. 'Festgesang': 'Dem Vaterland'. 2 trumpets in E♭, 2 trumpets in B♭, 2 horns in E♭, 2 horns in B alto, 3 trombones, basstrombones and tuba.

Ed. Kretschmer, Op. 27. 'Festgesang' with brass.

Max Bruch, Op. 19. Heft II.

No. 1. 'Das Wessobrunner Gebet'. 2 trumpets in E, 2 horns in E, 3 trombones and trums.

No. 2. 'Lied der Städte'. 2 trumpets in C, 2 horns in F, 3 trombones and trums.

No. 3. 'Schottlands Thränen'. 2 trumpets in D, 2 horns in D, 3 trombones and drums.

W. Schauseil, 'Festgruss' with brass.

Dregert, Op. 59. 'Festgesang'. 2 cornets, 3 horns, 2 trombones, 2 tubas and drums.

Carl Isenmann, Op. 107. 'Lobgesang'. 3 trumpets, 3 horns, basstrombones and drums.

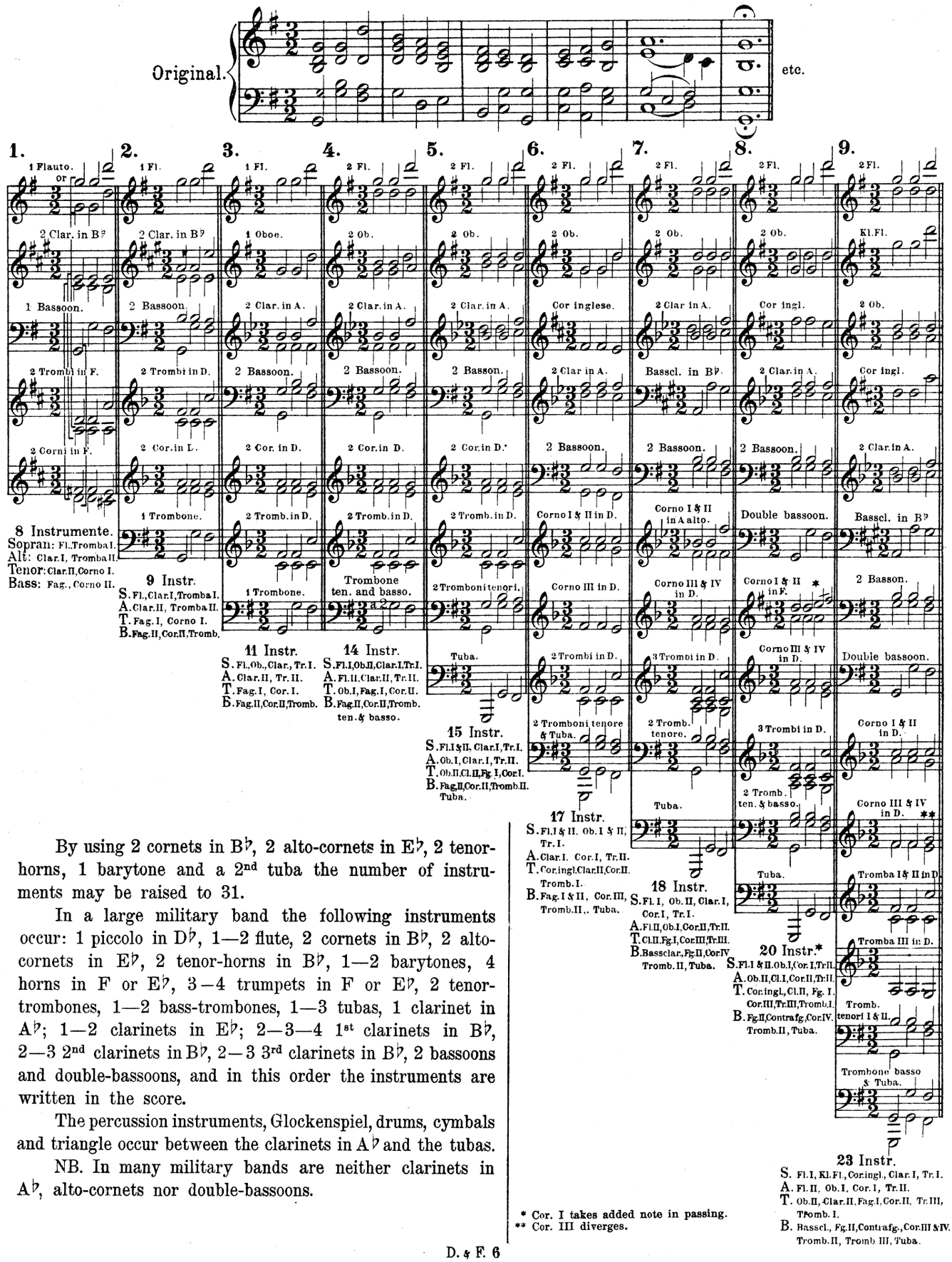
H. Zöllner, Op. 38[d]. 'Dem jungen Kaiser'. 1 piccolo in E♭, 3 cornets in B♭, 2 cornets in E♭, 4 trumpets, 2 tenorhorns, bariton, tuba and drums.

H. Zöllner, Op. 52. 'Preis der deutschen Musik'. 1 piccolo in E♭, 2 cornets in B♭, 2 cornets in E♭, 3 trumpets, 2 tenorhorns, bariton, 3 trombones, tuba and drums.

Exercise VI.

Of the use of all the wood-wind and brass.

Choral. 'Lobe den Herren'.



By using 2 cornets in B♭, 2 alto-cornets in E♭, 2 tenor-horns, 1 barytone and a 2nd tuba the number of instruments may be raised to 31.

In a large military band the following instruments occur: 1 piccolo in D♭, 1—2 flute, 2 cornets in B♭, 2 alto-cornets in E♭, 2 tenor-horns in B♭, 1—2 barytones, 4 horns in F or E♭, 3—4 trumpets in F or E♭, 2 tenor-trombones, 1—2 bass-trombones, 1—3 tubas, 1 clarinet in A♭; 1—2 clarinets in E♭; 2—3—4 1st clarinets in B♭, 2—3 2nd clarinets in B♭, 2—3 3rd clarinets in B♭, 2 bassoons and double-bassoons, and in this order the instruments are written in the score.

The percussion instruments, Glockenspiel, drums, cymbals and triangle occur between the clarinets in A♭ and the tubas.

NB. In many military bands are neither clarinets in A♭, alto-cornets nor double-bassoons.

* Cor. I takes added note in passing.
** Cor. III diverges.

All of these arrangements are in the original key and rather powerfully orchestrated because of the solemn character of the text.

No. 1 shows the use of the wood and brass in four parts, each part being doubled. This arrangement of the wood offers nothing new, but the combination of horns and trumpets does, though the former entering by themselves (as has already been seen) do not unite well with the trumpets because of their tone-colour. Their union with the wood gives a much better effect. If the flute plays the soprano with the trumpet in unison the prominent tone of the latter would be somewhat veiled by the duller tone of the lower flute; but if it is wished to make the soprano more prominent, the flute can take the soprano an octave higher. The trumpets and horns would here be better in D, as in the later Examples.

No. 2. Here the soprano is trebled by clarinet I, trumpet I (unison) and flute in the higher octave: the middle parts are doubled, the bass trebled in unison. The outer parts will be sufficiently prominent. The brilliancy caused by the flute in the higher octave can be toned down by flute and clarinet playing in unison. If a trombone be employed, this arrangement gains in individuality and dignity.

In No. 3 the soprano is quadrupled, the middle parts doubled, and the bass trebled. The soprano here will be more prominent than before, but can be toned down by the flute playing an octave lower. With the exception of the soprano, which is somewhat prominent, this example is similar in effect to the foregoing. If a milder effect were desired the parts might be divided thus: Soprano: flute, oboe, trumpet I. Alto: clarinet I, trumpet II, horn I. Tenor: clarinet II, bassoon I, horn II. Bass: bassoon and trombone.

No. 4 differs from the preceding in that the alto and tenor are strengthened in the upper octave by gentle-toned instruments (flute II and oboe I). This doubling does not occurr before the bass is strengthened in the lower octave, which does not indeed happen here. The bass-trombone could not play with the tenor-trombone in octaves, because of the former's compass; it were indeed possible only if the tuba were used. The doubling of alto and tenor in the upper octave would be inferior. The example may be scored thus: Soprano: flute I and II in octaves, oboe I and trumpet I. Alto: oboe II, clarinet I, horn I, trumpet II. Tenor: bassoon I, clarinet II, horn II. Bass: bassoon II, tenor- and bass-trombone. Here also the alto seems too sharp, wherefore clarinet I may play with the soprano. The somewhat hard tone of oboe II (alto) is veiled by horn I.

No. 5. The addition of the tuba to the arrangement of the wood in No. 4 is good; but as we want a sharper and more prominent effect in the upper octave of soprano, alto and tenor, the arrangement was made as it stands. The example is, *mf* and *f* sharp and full.

No. 6. Here we have 17 instruments. The English-horn with its veiled colour (in the tenor) could also be allotted to the soprano or alto in the original key. The 3 horns play at the same pitch the alto, tenor, bass. If a horn and trumpet are required to play the soprano in unison, a higher pitch (A. e. g.) must be used to obtain an easy and effective register, and the 2 and 3 horns can then take alto and tenor. A still greater strengthening of the soprano was, however, quite unnecessary here. The flute, oboe and clarinets could be written as in 4 and 5, when the soprano would be less prominent.

In No. 7 the bass-clarinet is added to strengthen the bass, but it might also be used for the alto or tenor parts on account of its great compass and not too prominent character. And though it will not be particularly noticeable, yet its tone will be both mild and strengthening. The flute, oboe and clarinets are disposed here in a different manner from the preceding examples, but still the soprano will be prominent. The horns appear four-fold in two pitches to allow of the choral sounding in extended harmony in four parts. The two horns are very different in colour (see horns), but here their effect will be by no means unpleasant. The added trumpet 3 plays the tenor.

No. 8. Soprano, alto and tenor in the upper octave are here doubled in unison, thus: — Soprano: 2 flutes, Alto: oboe I, clarinet I. Tenor: English-horn. If the double-bassoon be added, to play in unison with the tuba, the bass gains in power and fullness. The horns are again of two kinds, in F and D, that they may play the choral in 4 parts. But as the tones above are not only difficult to play but also of doubtful quality, the 1st horn in F takes only part of the soprano in the original key, and diverges at that point where the music goes beyond the above *g*, and takes up a free part for the time being. Horns 2, 3, 4 play alto, tenor, bass. If 3 trombones and 3 trumpets be used the effect is still more powerful and massive, but the wood is thereby somewhat over-powered. Nevertheless the soprano, alto, tenor in the higher register (2 flutes, 2 oboes, 2 clarinets) lend brilliancy.

No. 9. The small flute, added here, plays the melody or soprano in a rather bright-sounding register an octave above flute I. The high wood and English-horn are divided among soprano, alto, tenor; horns 1 and 2 in D take the alto and tenor throughout; horn 3, tenor, bass and added part, and could even take the alto; horn 4 strengthens the bass in the original. Nothing need be said of the remaining instruments which take the parts as in the preceding examples. The effect here, *f* or *ff*, is full, majestic and mighty; *p* tender yet full and bright.

The following may serve as a guide for the use of wood and brass in conjunction with male-voices, and as an aid in score-reading.

Beethoven, 'The Heavens declare'. 2 oboes, 2 clarinets, 2 bassoons, 2 trumpets, 2 horns, alto-, tenor- and bass-trombone, tuba and drums.

Metzger, 'Ein deutsches Kriegslied'. 4 clarinets, 3 trumpets, 2 horns and 2 trombones.

W. Tschirch, 'Deutscher Männer-Festgesang'. 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, 4 horns, 2 trumpets, 3 trombones, 2 tubas and drums.

W. Tschirch, 'Die Waffen des Geistes'. 2 flutes, 2 oboes, 4 clarinets, 2 bassoons, 4 horns, 4 trumpets, 3 trombones, tuba and drums.

W. Tschirch, 'Im Maien'. 1 flute, 2 clarinets, 2 horns and bass-trombone.

Franz Lachner, op. 89. 'Warrior's Prayer'. Wood and brass with percussion.

Exercise VII.

Arrange small pianoforte pieces for the following four kinds of combinations of wood and brass.

a) 1 flute.
1 oboe.
2 clarinets.
2 bassoons.
2 horns.
2 trumpets.
1 tenor-bass-trombone.
1 bass-trombone or tuba.

b) 2 flutes.
2 oboes.
2 clarinets.
2 bassoons.
2 horns.
2 trumpets.
2 tenor-bass-trombones.
1 bass-trombone or tuba.

c) 2 flutes.
2 oboes.
2 clarinets.
2 bassoons.
1 contra-bassoon *(ad lib.)*
3—4 horns.
2—3 trumpets.
3 tenor-bass-trombones.
1 tuba.

d) 2—3 flutes.
2 oboes.
1 English-horn.
2 clarinets.
1 bass-clarinet.
2 bassoons.
1 contra-bassoon.
3—4 horns.
3—4 trumpets.
2 tenor-bass-trombones.
1 bass-trombone.
1 tuba.

The combination of instruments both in regard to number and effect may be arranged in divers other ways, and even here drums may be used. It were better, however, first to read the chapter on drums (p. 67). For such work small pieces of either a serious or gay character may be used.

The pupil will find no difficulties in arranging for the above combinations, and he may compose expressly for any of them.

Let him also compare the following works:
Haydn's, Mozart's and **Beethoven's** (1—8) Symphonies, and then proceed to the works of modern writers.

Instruments of Percussion.

(Drums, cymbals, triangle, tam-tam, tambourine, castagnets, Glockenspiel, bells, xylophone).

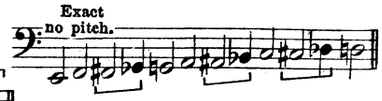
The Kettle-Drums.

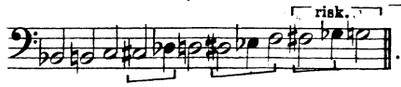
(Ital. Timpani, French Timbales).

The kettle-drums, which must be accounted among the most important and effective of the percussion instruments, have this advantage, that by means of screws affixed to their copper frame, tones of a certain height or depth of pitch may be obtained. All other of the drum species lack this attribute.

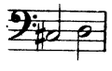
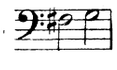
Their music is written in the bass clef and sounds as written.

The pair of drums found in every orchestra are practically the same size, that which is a shade larger being for the deeper notes and the other for the higher. The former is placed on the player's right, the latter on his left.

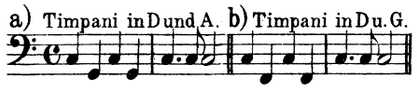
The former can be tuned to any of these tones: 

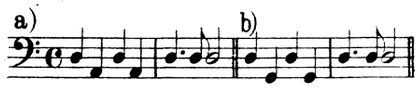
The latter to 

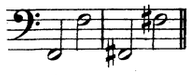
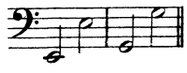
.

 on the large drum is dull, and $c\sharp$ and d  on this drum, and $f\sharp$ and g  on the other have little tone, and, moreover, the player must take care not to break the skin by over-tightening it. Yet composers have often used these notes, as will be seen later.

In the earliest times drums were used to give the bass in trumpet music, and were tuned to the tonic and dominant of the original key, rarely to the tonic and subdominant; and these intervals were those most generally in use in the orchestra almost to the present day. Formerly they were played *f* or *ff* in combination with strings and wood and as solo, to mark rhythmic figures, rolls and tremolos. With this folk were content. From this habit of using only tonic and dominant or subdominant arose the custom of writing for drums always the notes C and G or F and treating them as transposing instruments, by marking at the beginning of a score in (say) D, (where in the drum parts were the notes C and G or F) the words 'drums in D' and 'A' or 'G' as the case might be. Thus:

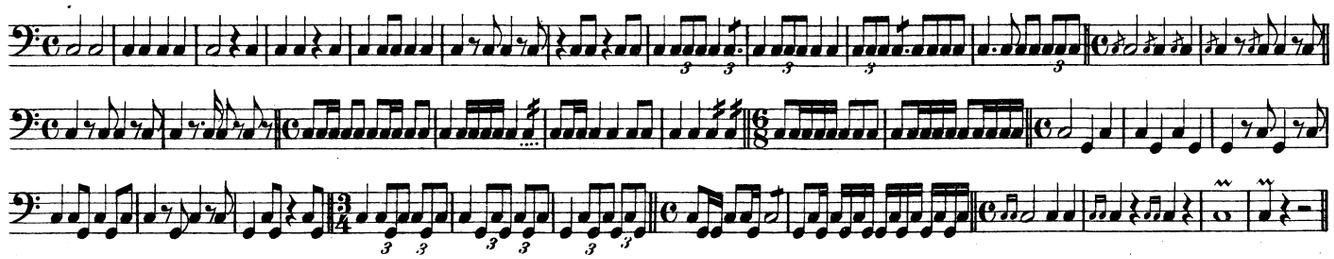


; the real sound being. 

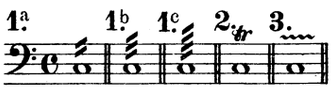
A more independent use and treatment of the drums came first with Beethoven and the later composers. From his day the drum parts have been written as they sound, and they can include according to requirement major or minor seconds, thirds, fourths, fifths, sixths, sevenths and an octave. But drums of the ordinary form could only execute these octaves;  or in special circumstances: 

The *f*  has been used by Beethoven in the scherzo of his 9th and in the F-symphonies (No. 8); and exceptional uses of the higher tones are to be found in 'St. Paul', Schumann's 'Paradise and the Peri', (in both of which $f\sharp$ occurs) and Bellini's 'Norma', (where *g* occurs).  . Although by their means especial effects can be obtained, yet it is always risky to write too high notes. It would be well if two sizes of drums could be constructed to give, the one, the notes from *d* to *c*,  and, the other, from D to C. But such inventions are fraught with difficulty.

The player can perform all kinds of rhythmical figures, rolls or tremolos of, comparatively, any duration by means of a pair of drum-sticks, as the following examples testify:

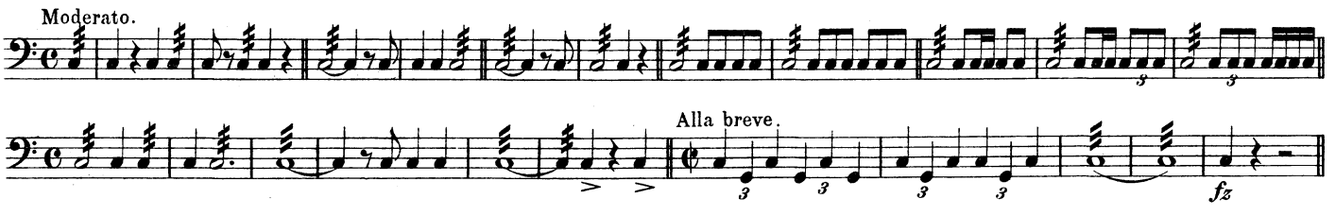


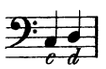
The roll or tremolo is written thus:

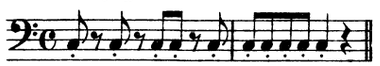


In 1^a, 1^b, 1^c it depends upon the tempo how many actual notes are to be played in one roll or tremolo. In *presto* or *allegro*, 16th notes; *moderato* 32nd notes, and *adagio* 64th or 128th notes would be played. The second kind, with *tr* marked is often found, but 3 ~~~ only rarely.

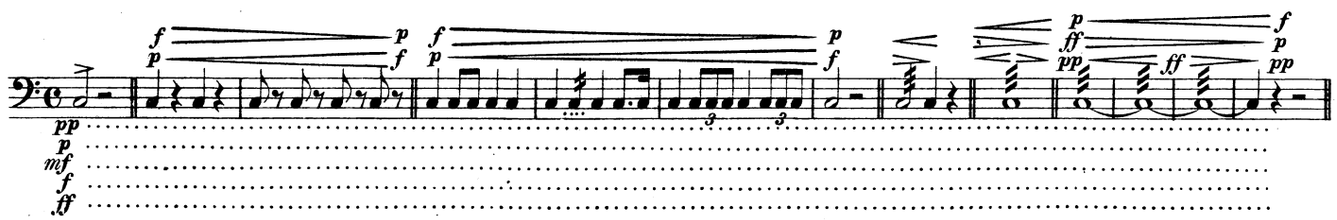
Rolls of varied length and in conjunction with other rhythmic figures are:



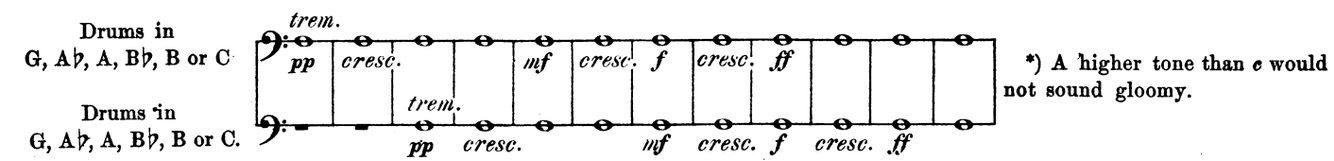
The tone of both drums *pp* and *p* is mysterious, but *f* or *ff* on the contrary it may be awe-inspiring, powerful and stirring. The tones of a small drum from  upwards are clearer.

These notes which are to be played short, as  must be struck on the edge of the drum-head, where the tone is most resonant if also shortest and most pointed.

Drum-tones can produce one short note, rhythmic figures and tremolos in all varieties *pp*, *p*, *mf*, *f* or *ff* rolls. Thus:



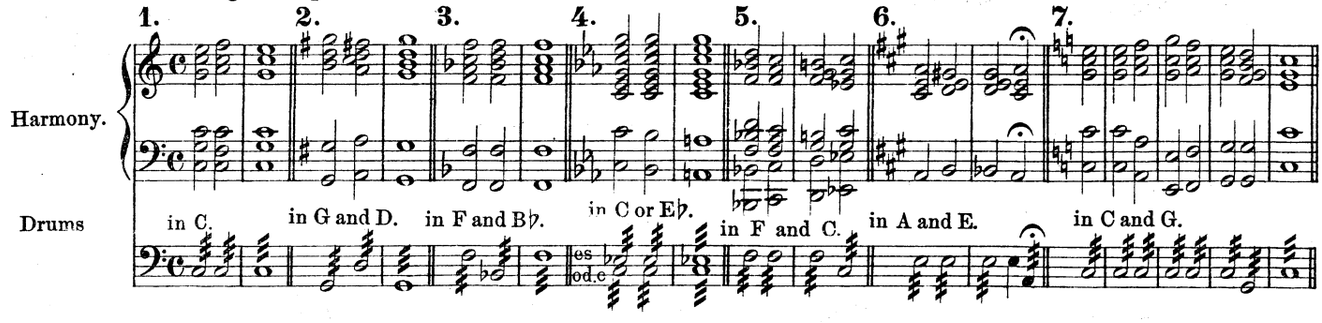
If an even greater *crescendo* is required in one roll, both drums must be tuned together and a player to each. Thus:



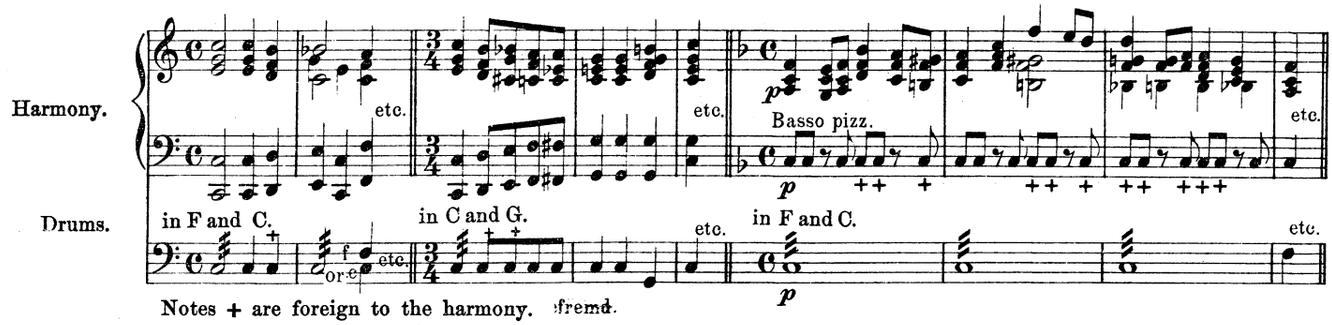
And, again, if a still greater *ff* is demanded the big drum may enter *ff* (see p. 95) after a few bars on the 2nd drum.

When drums are used they should, when possible, play the most important note as the bass note of the principal chord, or at least one belonging to the harmony; and for this, any note of a triad or chord of the 7th will serve. But care must be taken that the drum note is not deeper than the bass note of the chord, whereby a disarrangement of the actual chord would arise.

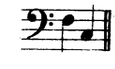
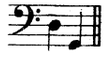
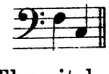
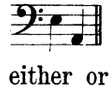
The following examples show the correct use:



It can happen, too, that the drums play a note which is not in the harmony of a passing chord, as:

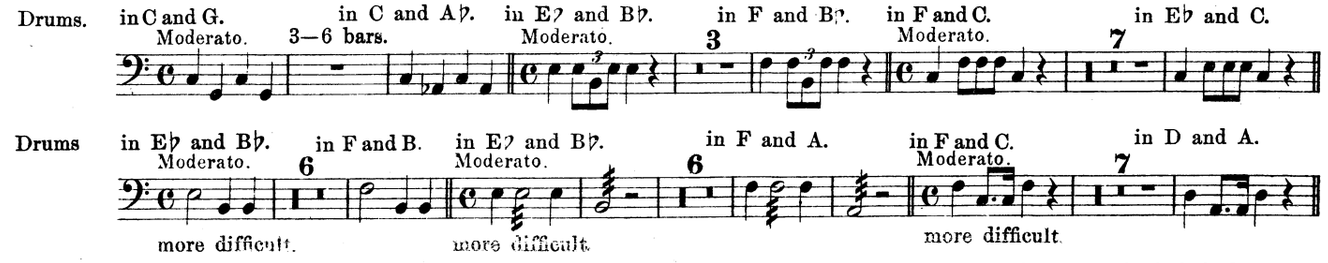


Some composers have used the drums more or less for noisy purposes alone — a by no means uncommon practice nowadays. Thus Donizetti in the overture to the 'Daughter of the Regiment', wherein (in the middle movement) the drum plays a foreign B♭ throughout. See also Halévy's introduction to 'La Juive'.

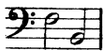
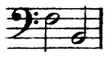
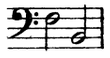
The pitch of both drums is given at the beginning of the piece, thus for C, drums in C and G or C and F; for A-minor, drums in A and E or A and D etc. The first letter denotes the tonic, the second the dominant or subdominant or some other interval, the choice of pitch lying with the composer. In modern times one finds at the beginning of a score letters and small notes given thus in the drum parts: F and C  or in D and G  etc. This is very important since various changes of either interval may be made. If an accidental occurs in the key it is not written by the notes but at the beginning, thus: Drums in F♯ and C♯  or in E♭ and A♭ 

The pitch may be changed in either or both drums in the course of a piece, but a few bars rest must be allowed, to enable the player to screw up or down the drum head. In changing the pitch the composer must have a care that the new pitch is tonically not too far removed from the old, so that no more difficulty than necessary is offered.

The following table shows the changes of pitch which are easy difficult to make in a brief space.

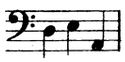
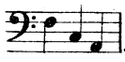


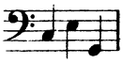
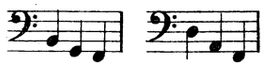
In a more rapid tempo than this the alteration of pitch on the older kind of drums is infinitely more difficult; in fact a rapid alteration generally implied impure intonation.

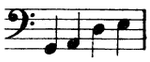
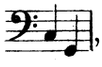
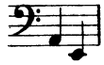
If the original keys for drums at the beginning of a piece were F and B,  and the player were required to change to a sharp or flat key in a brief space, e. g. to B or B♭, the change would be notified thus; F♯ and B  or  and not  or 

The former requires very little alteration of the drums, while both of the others require a very great deal of screwing and tuning, to make the alteration from F to B and from B to F below. Such difficulties the composer should do all in his power to avoid when they are not absolutely necessary, and more especially since all orchestras do not possess the newest form of drums, by which many of the older difficulties are removed.

Als already mentioned, more than two drums are often used, as may be seen in the following examples:

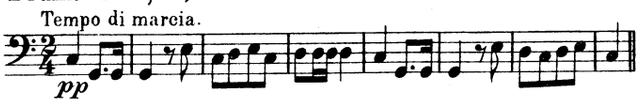
Weber, Overture 'Ruler of the Spirits'. D, E and A.  **Lachner,** F, C and A. 

Mendelssohn, 'Trumpet overture'.  **Schumann,** B♭-symphony. G♭ and A. 

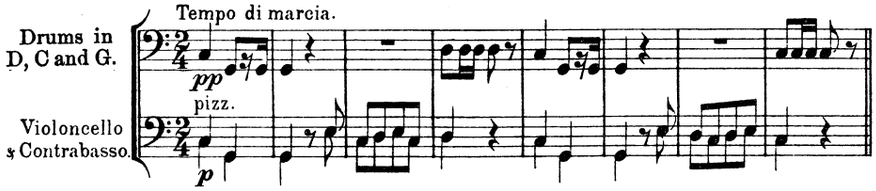
Mozart, Divertissement für 2 flutes, 4 trumpets, 4 drums, by one player.  **Wagner,** 'Parsifal', 2 pair of drums, the 1st in  , the 2nd in  , for two players.

In 'Robert the Devil' Meyerbeer has used four drums for one player:

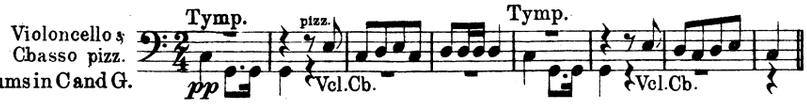
Drums in E, D, C and G.



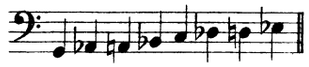
These bars are also played by 3 drums aided by violoncellos and double-basses, thus:



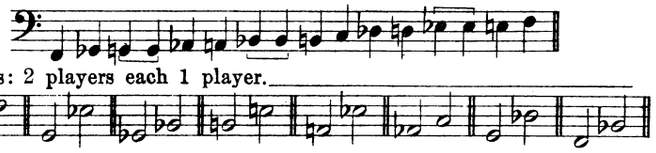
If only 2 drums are handy, it is played thus:



And even thus: the violoncellos and basses play the 8 bars *pizzicato*, and the drums play in bars 1, 2, 5 and 6, the notes C and G, marking the rhythm.

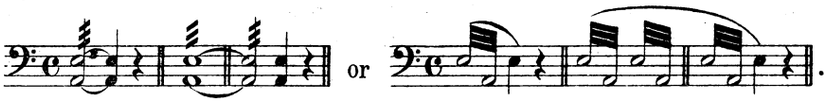
Reicha in the 4th volume of his treatise on 'Composition' shows a chorus with string accompaniment and 8 drums, played by 4 players and tuned thus:  He also writes the number of players and how many are to take each part. So **Berlioz** was not the first to use such peculiarities.

Berlioz in his 'Requiem' (tuba mirum) has used 16 drums, played by 10 players and tuned thus:

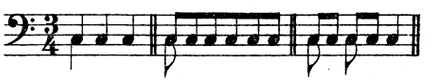


The player can strike both instruments simultaneously, but of course only to mark rhythmical figures and this only in moderate tempo. Thus:

It has repeatedly happened that a composer has written a roll for two drums but only one player, thus:

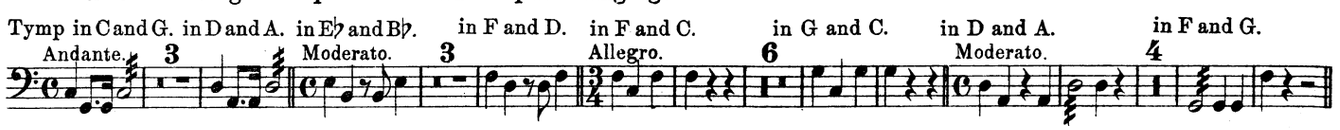


In this way the effect cannot be so good as when the player uses but one drum. The notation and tone of such a double roll can only be really effective when numerous other instruments are playing *f* or *ff*. If one note is to be struck by two sticks on one drum (to obtain greater power) it is written thus:

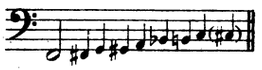
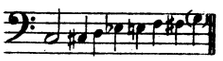


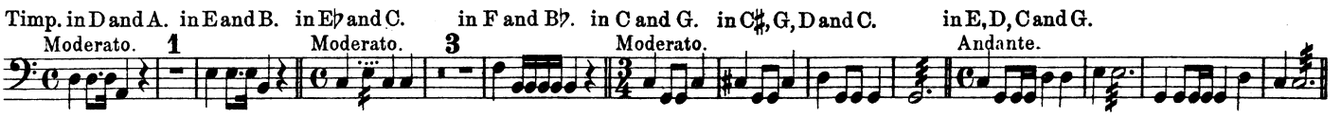
The discovery of the machine drum has saved the player much difficulty and tribulation in tuning: before beginning the music he must tune the deep drum in F, and the small drum in C. Then by means of a lever he can easily alter the pitch, for this lever is easy to turn and acts with equal power over the skin, whereas formerly many screws had to be turned.

The following examples show this rapid changing:



It is quite feasible even in rapid tempo.

The most recent inventions in connexion with machine drums offer even greater advantages. On each is a pedal by depressing which with the foot the skin of the drum can be tightened or loosened at pleasure, that is the pitch is raised or lowered. By means of on apparatus fixed into the upper frame of the drum the player can see at once to which tone the drum is tuned when the pedal is depressed, and this without being obliged to test it in the older fashion by tapping. These drums are tuned before the beginning of the performance, by depressing the pedal the big drum can be made to play any of these notes::  and the smaller: Thus it is possible to effect these rapid changes: 



For playing all the above examples an accomplished player is required. Small orchestras usually own only the old fashioned drums, but in more important bands the first mentioned machine drums are found, though the pedal-drum is not yet so well known as it should be. Therefore great care must still be exercised in demanding a rapid change of key.

To effect a variety of tone-colour on the drum, the drummer uses several sticks. 1 has a sponge-head: 2 is covered with felt: 3 is of wood. The first two are the most gentle in 'touch' of course: 2 is rather hard, though it need not be; it depends upon the mass of tone called for. 3, which Berlioz has used, serves to produce a hard, blunt sound. The composer can find the clapper-style of stick in scores.

A dull, dead sound can be produced by 'muting' the drum; this is effected by covering the skin with a cloth, whereby the vibrations are stopped. It is, however, but rarely used; the word *coperti* should be written over the music.

In small as well as great orchestral compositions the parts for small drum, triangle and Glockenspiel etc. are written in the drum part and assigned to one player, if the chief rôle admits of his undertaking them. But time must be allowed him to change from one instrument to the other.

Above the parts the words, 'drums, small drum and triangle' etc. must be written.

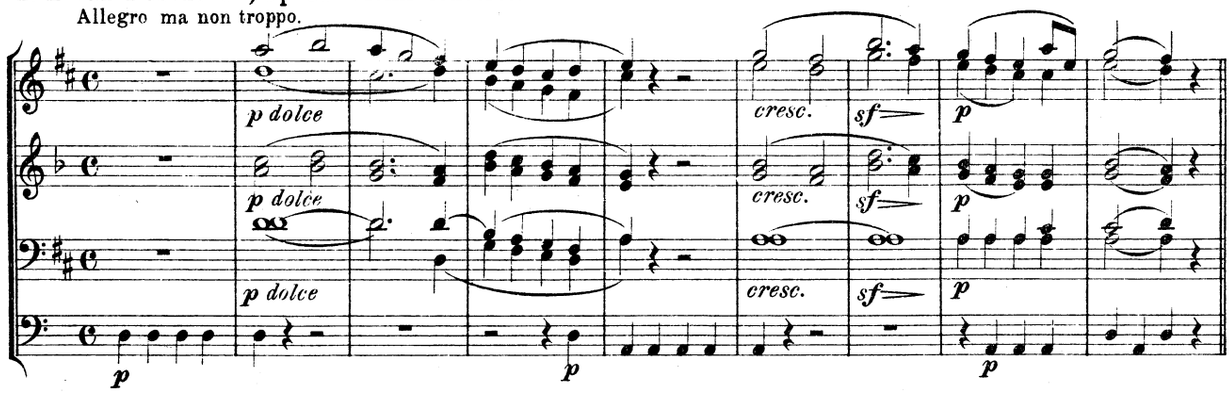
The following examples in score show the use of the drums. See also Pt. VII.

Examples in scoreᶜ.

Use of drums with wood and brass and strings.

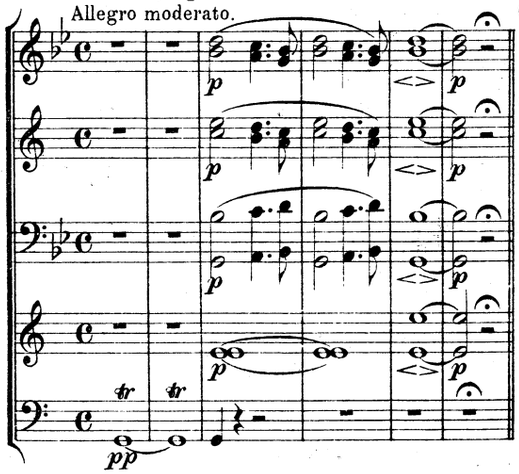
1. L. van Beethoven, Op 61 Violin concerto.

Allegro ma non troppo.



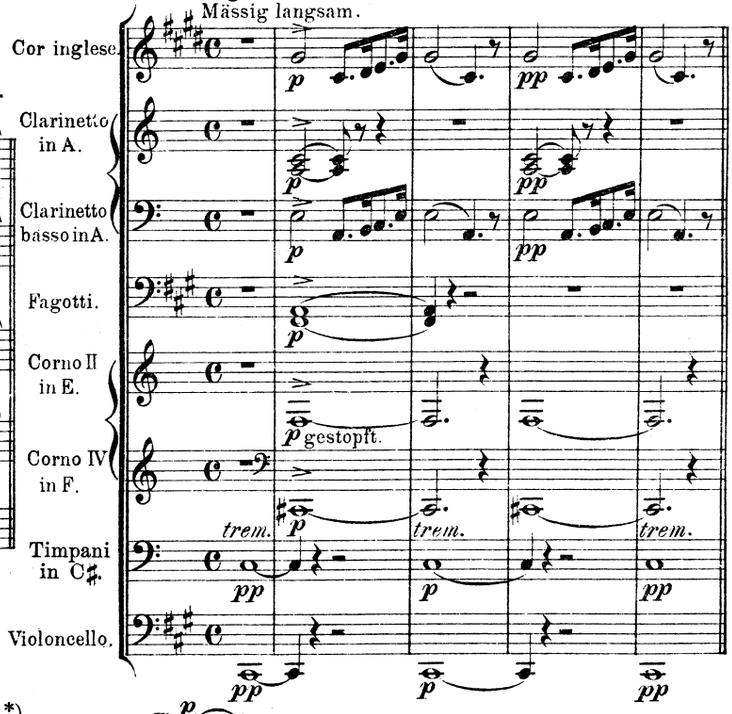
2. M. Bruch, Op. 26. Violin concerto Introd.

Allegro moderato.



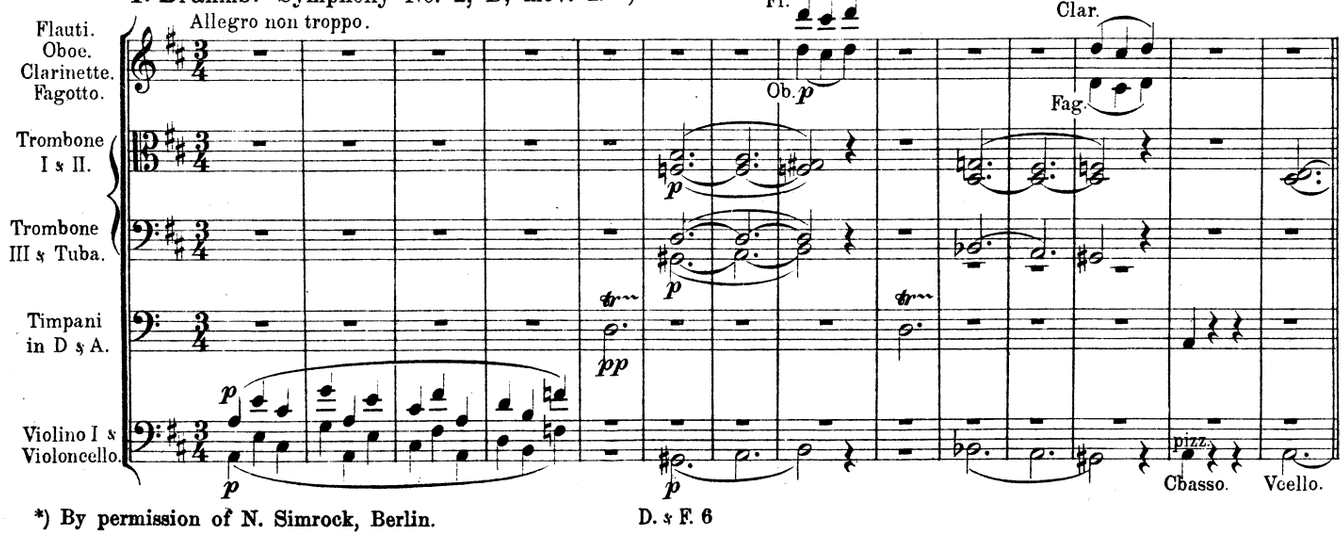
3. R. Wagner. Lohengrin Act II, 1. Scene.

Mässig langsam.



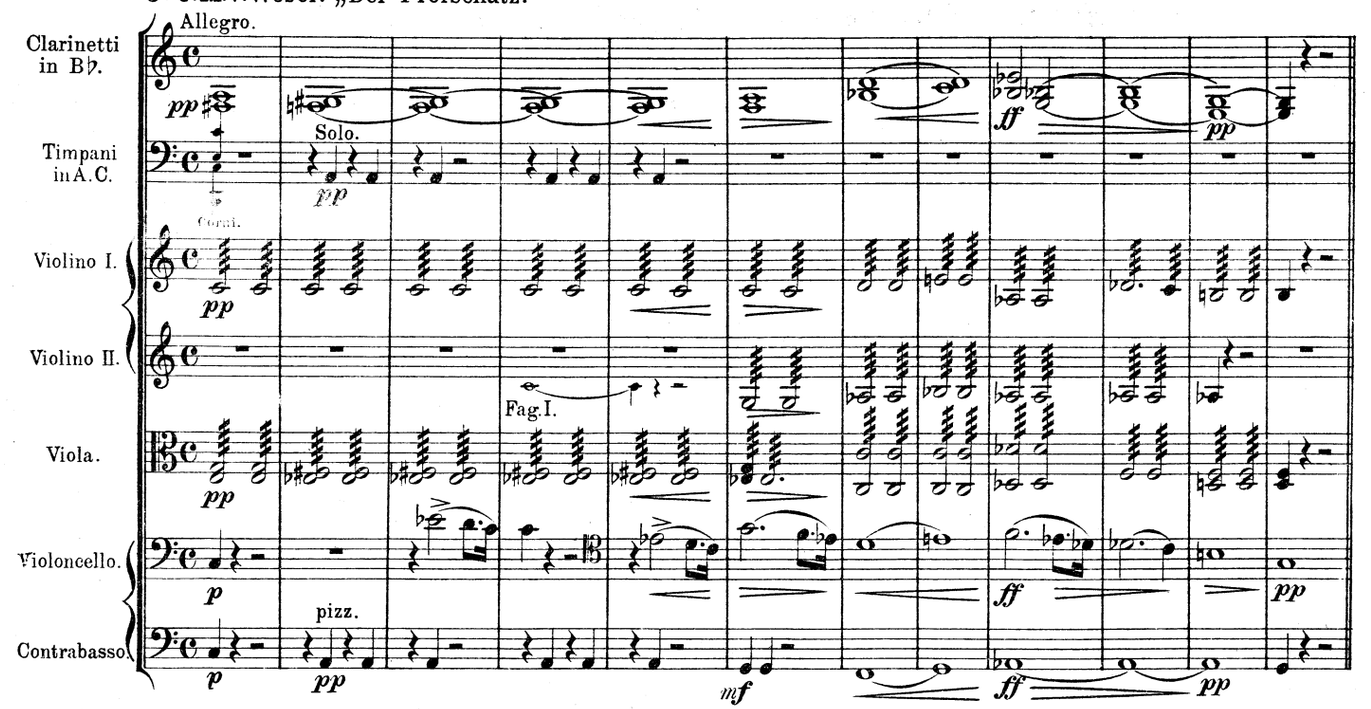
4. Brahms. Symphony No. 2, D, mov. I. *)

Allegro non troppo.

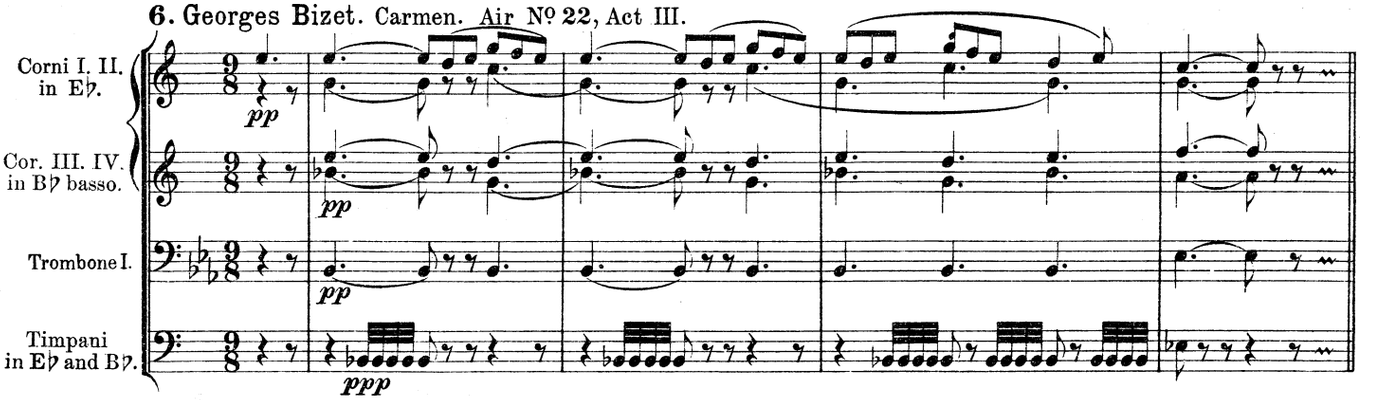


*) By permission of N. Simrock, Berlin.

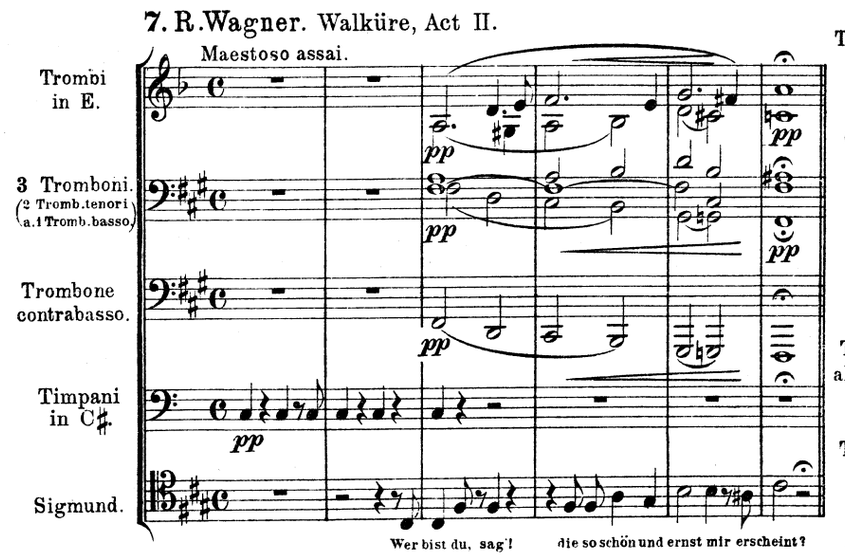
5. C.M.v.Weber. „Der Freischütz."



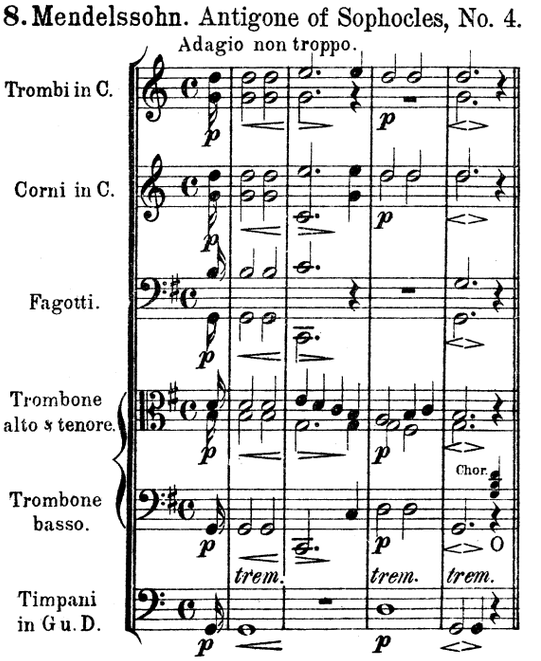
6. Georges Bizet. Carmen. Air Nº 22, Act III.



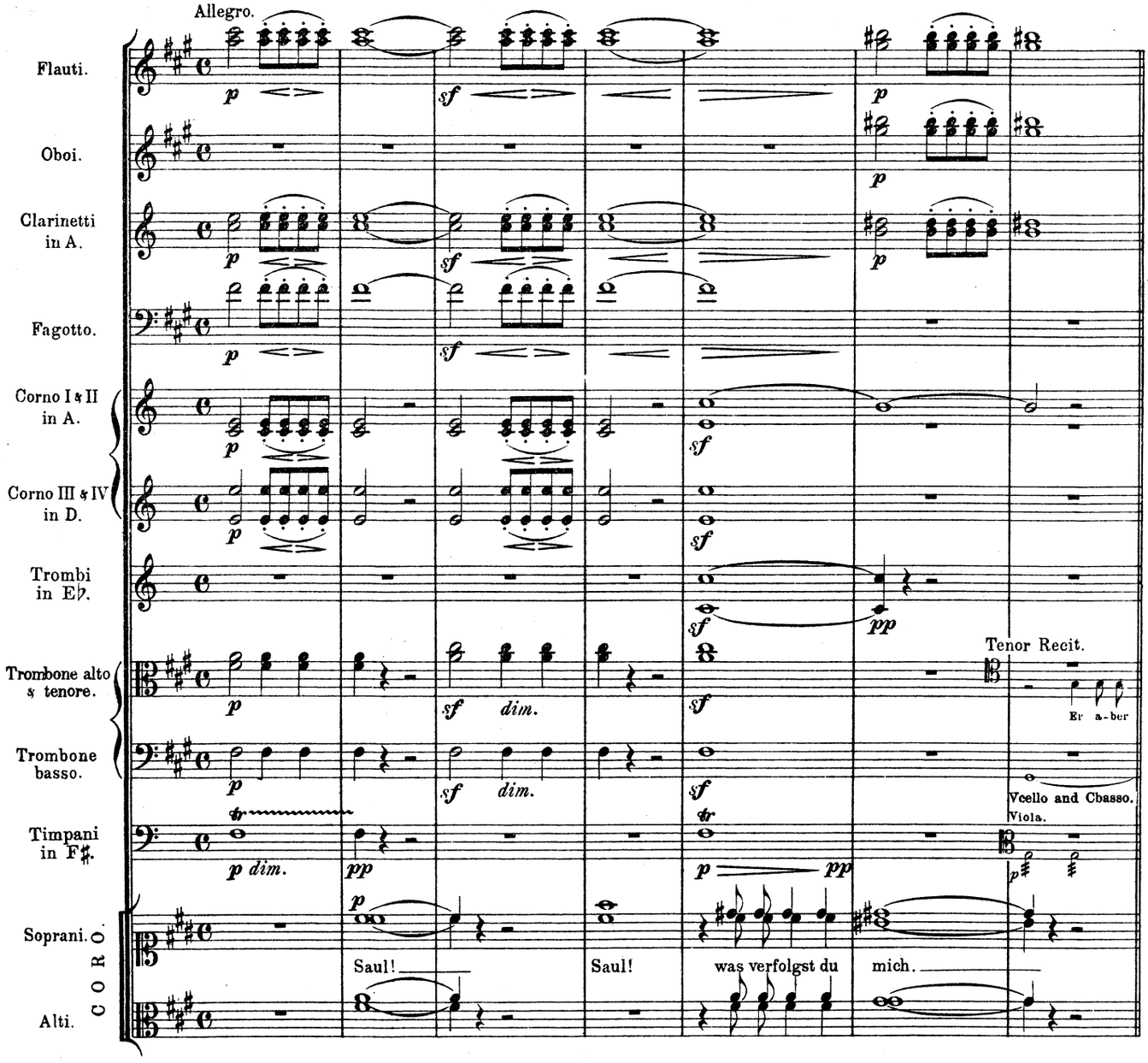
7. R.Wagner. Walküre, Act II.



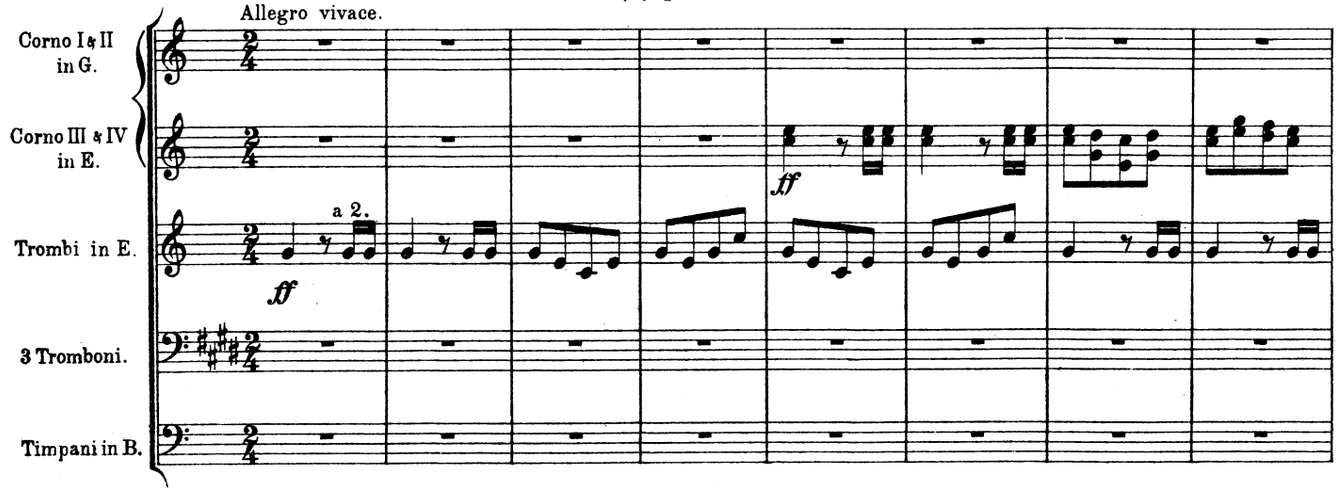
8. Mendelssohn. Antigone of Sophocles, No. 4.

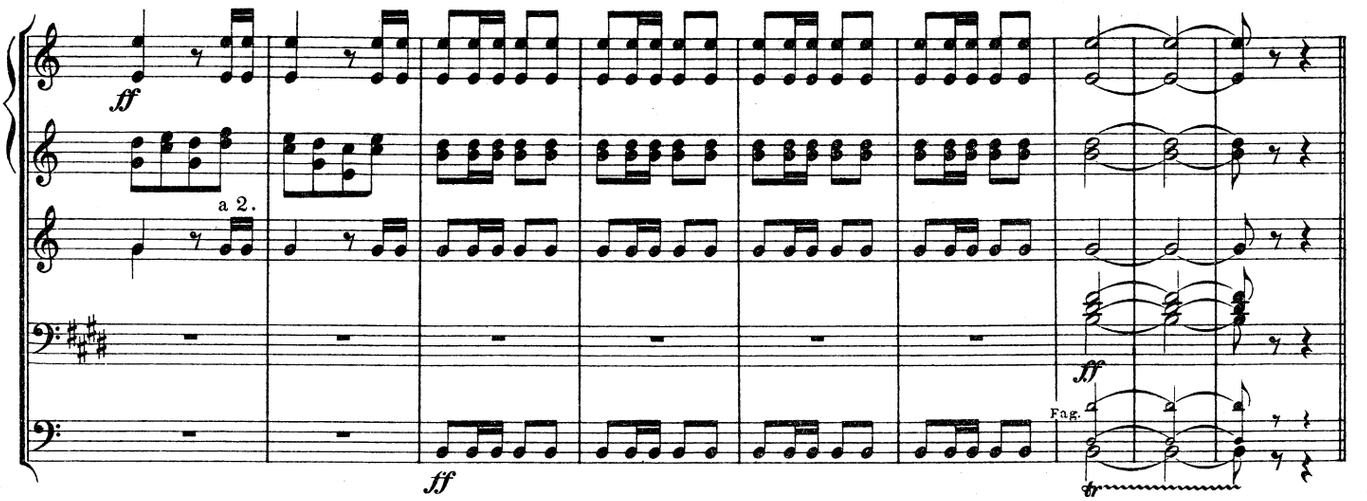


9. Mendelssohn. Oratoro: St. Paul, No. 14 Recit and Chor.

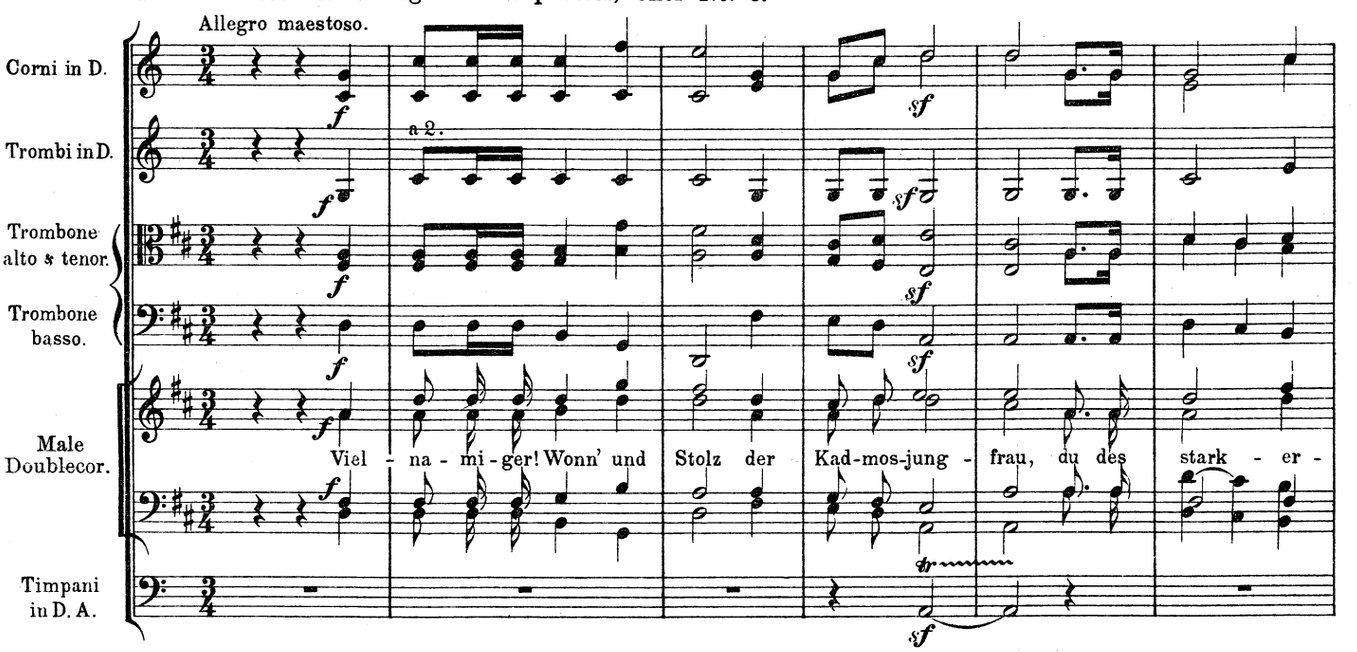


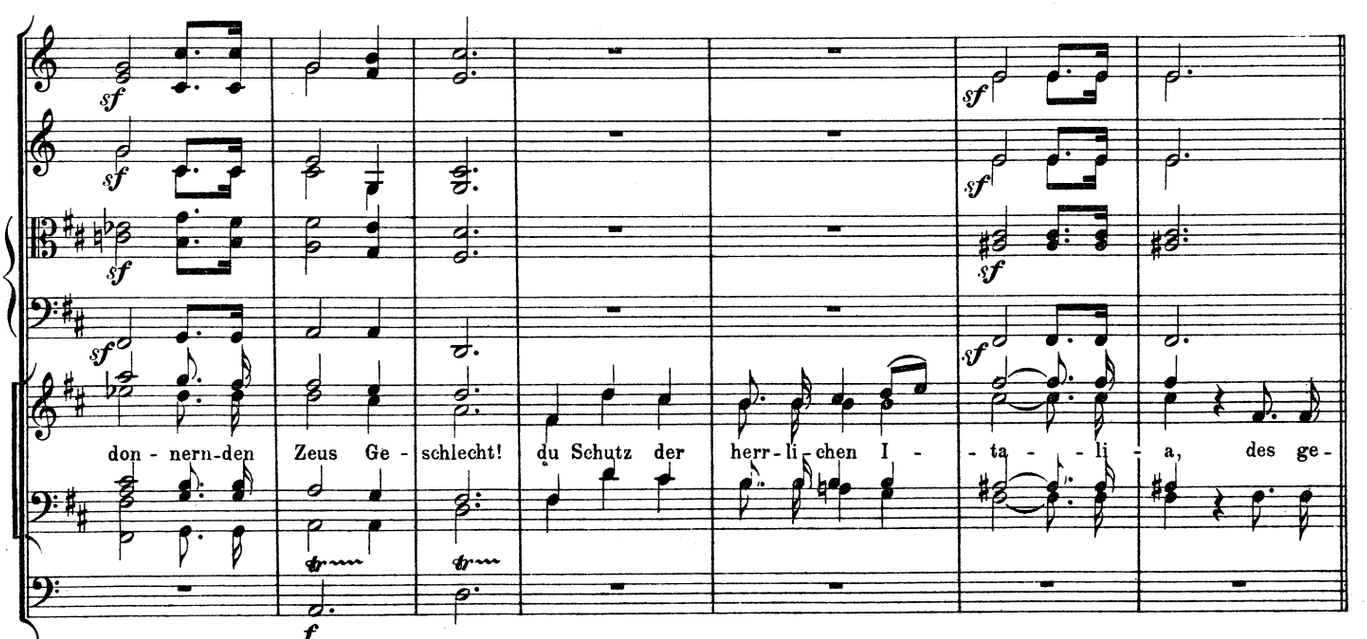
10. Rossini. Overture 'William Tell'. (By permission of Schott's Söhne, Mainz.)



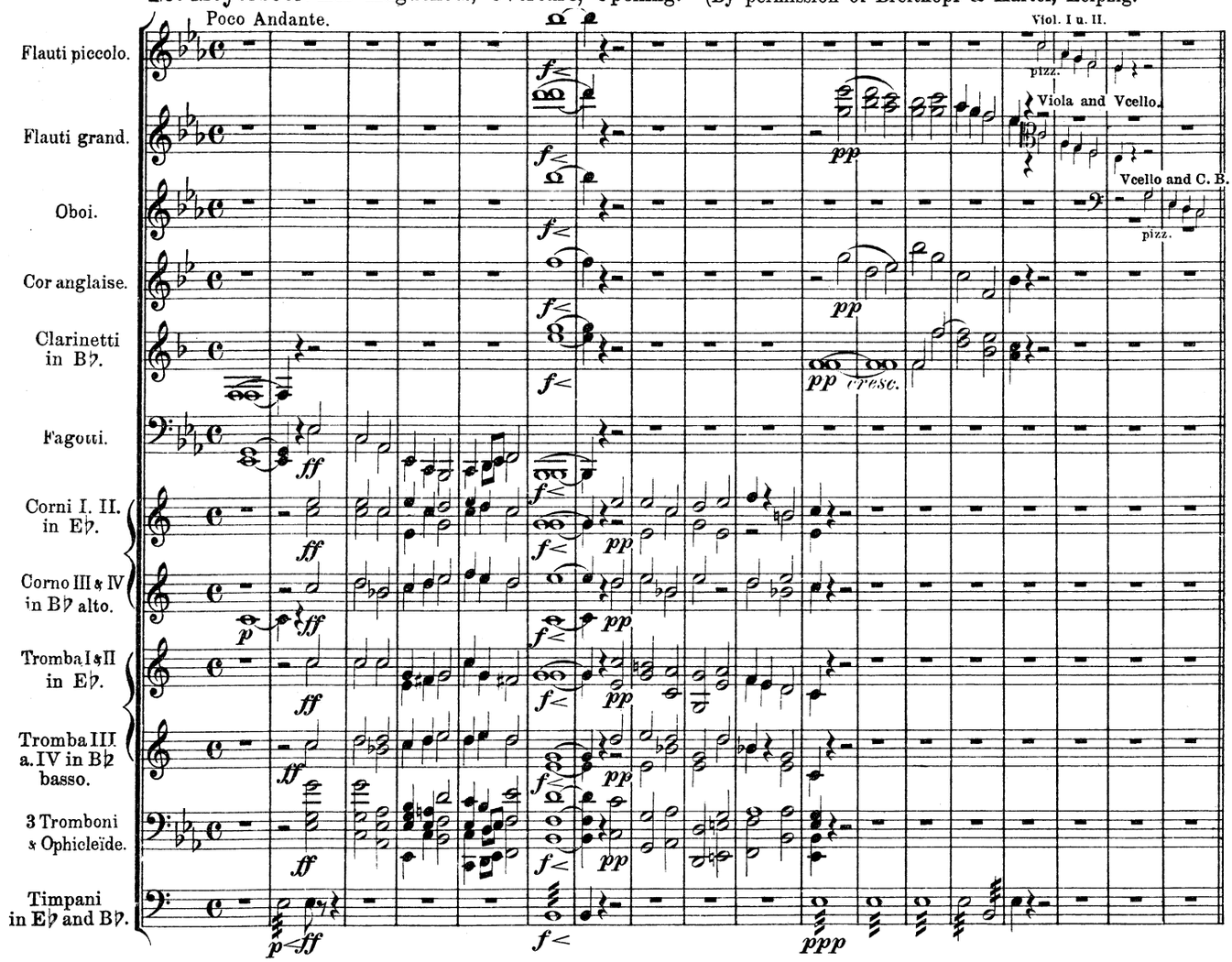


11. Mendelssohn. Antigone of Sophocles, Chor No. 6.

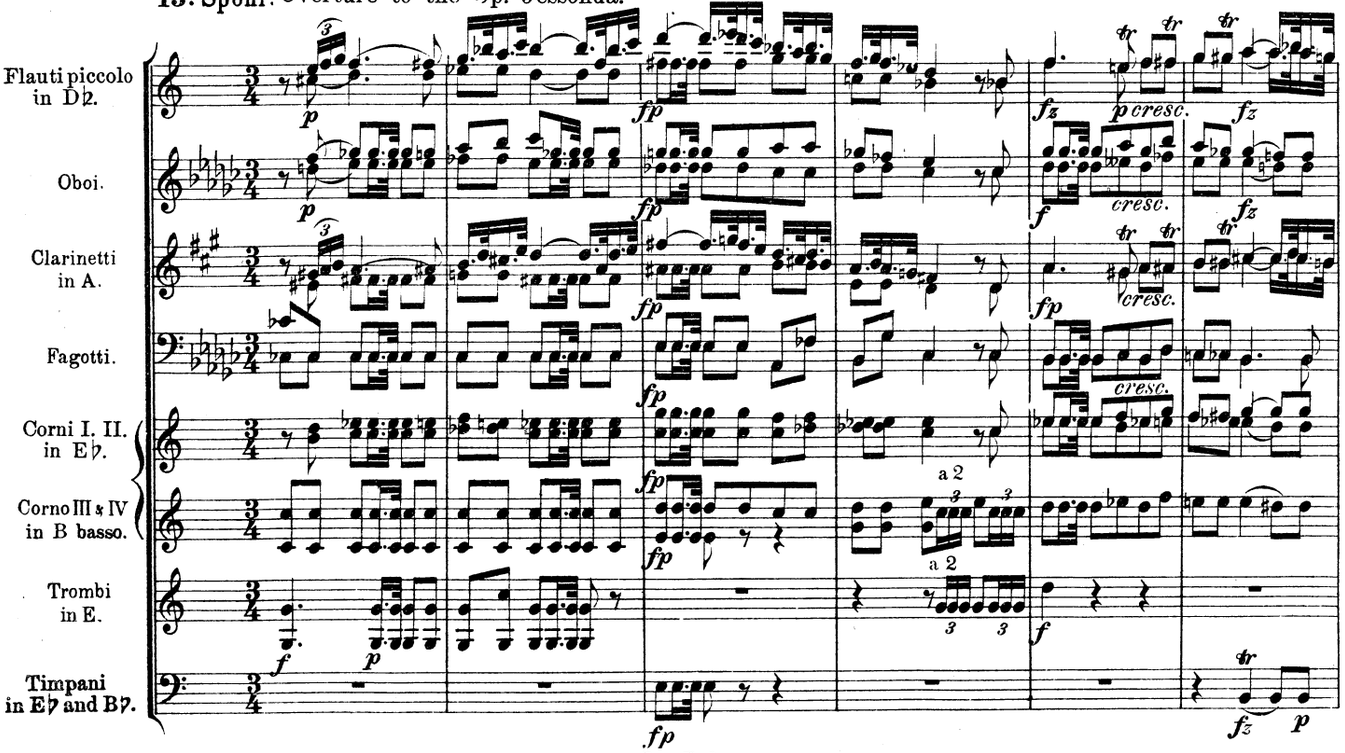


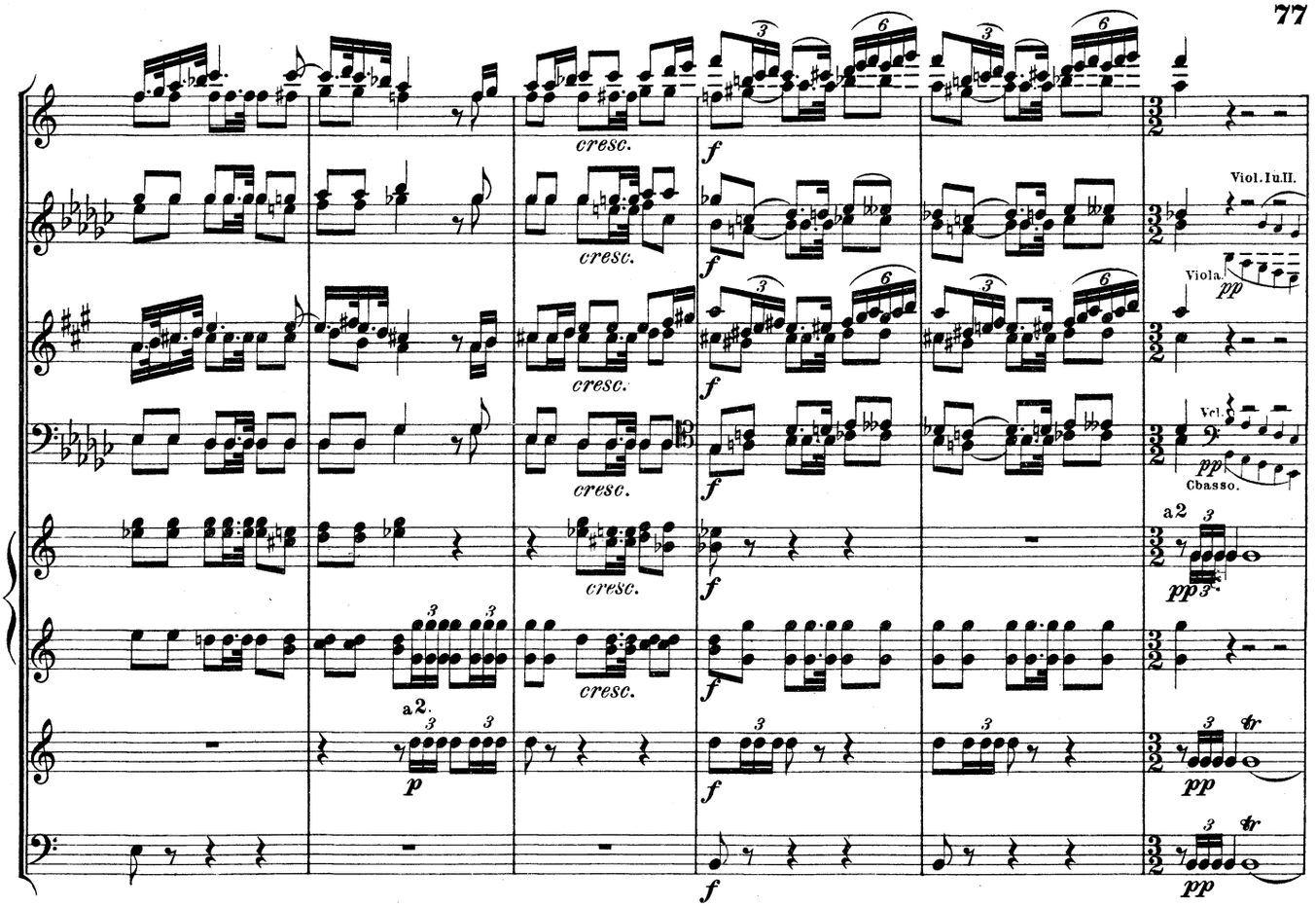


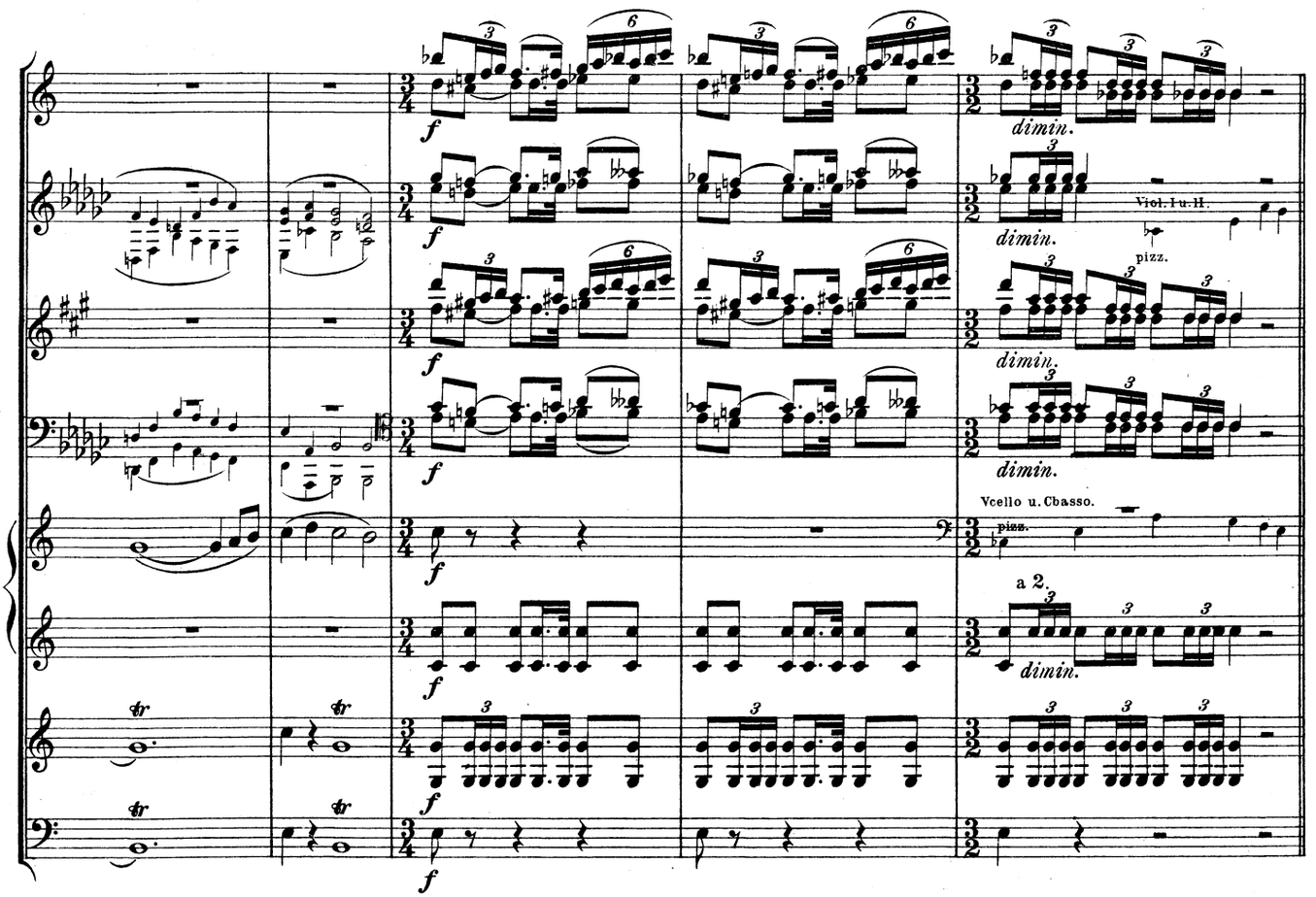
12. Meyerbeer. Les Huguenots, Overture, Opening. (By permission of Breitkopf & Härtel, Leipzig.



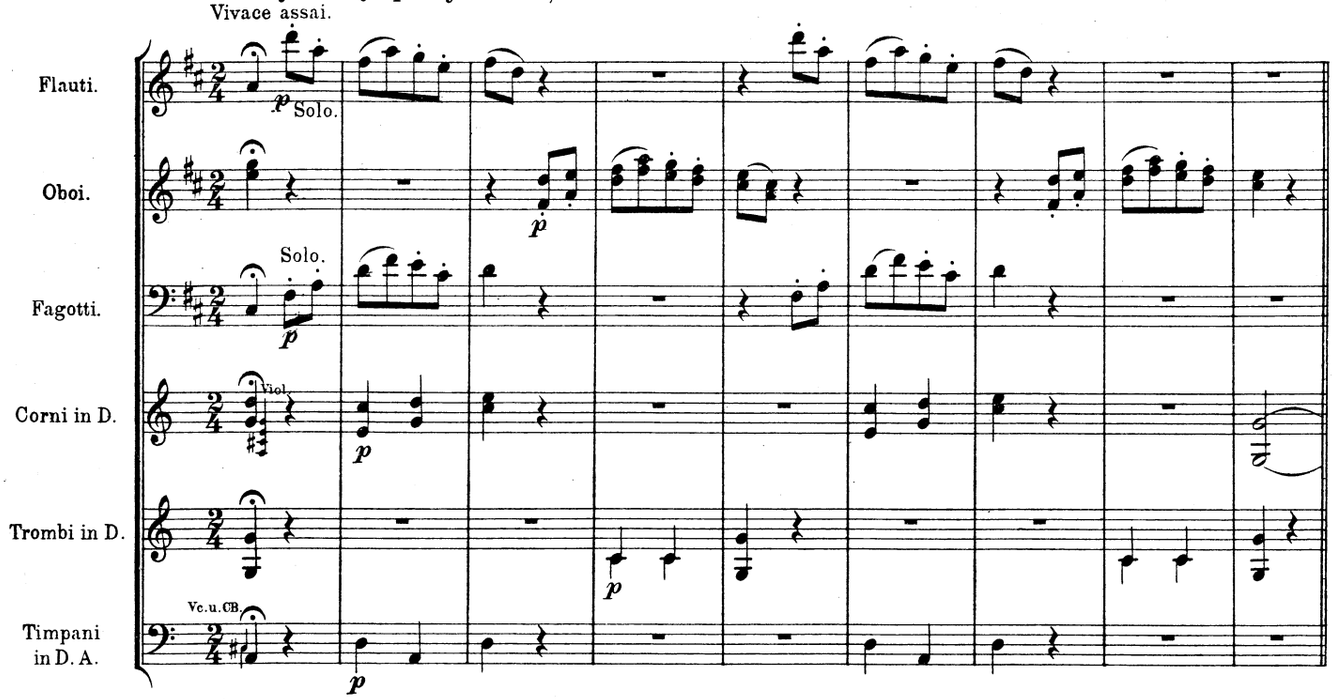
13. Spohr. Overture to the Op. Jessonda.



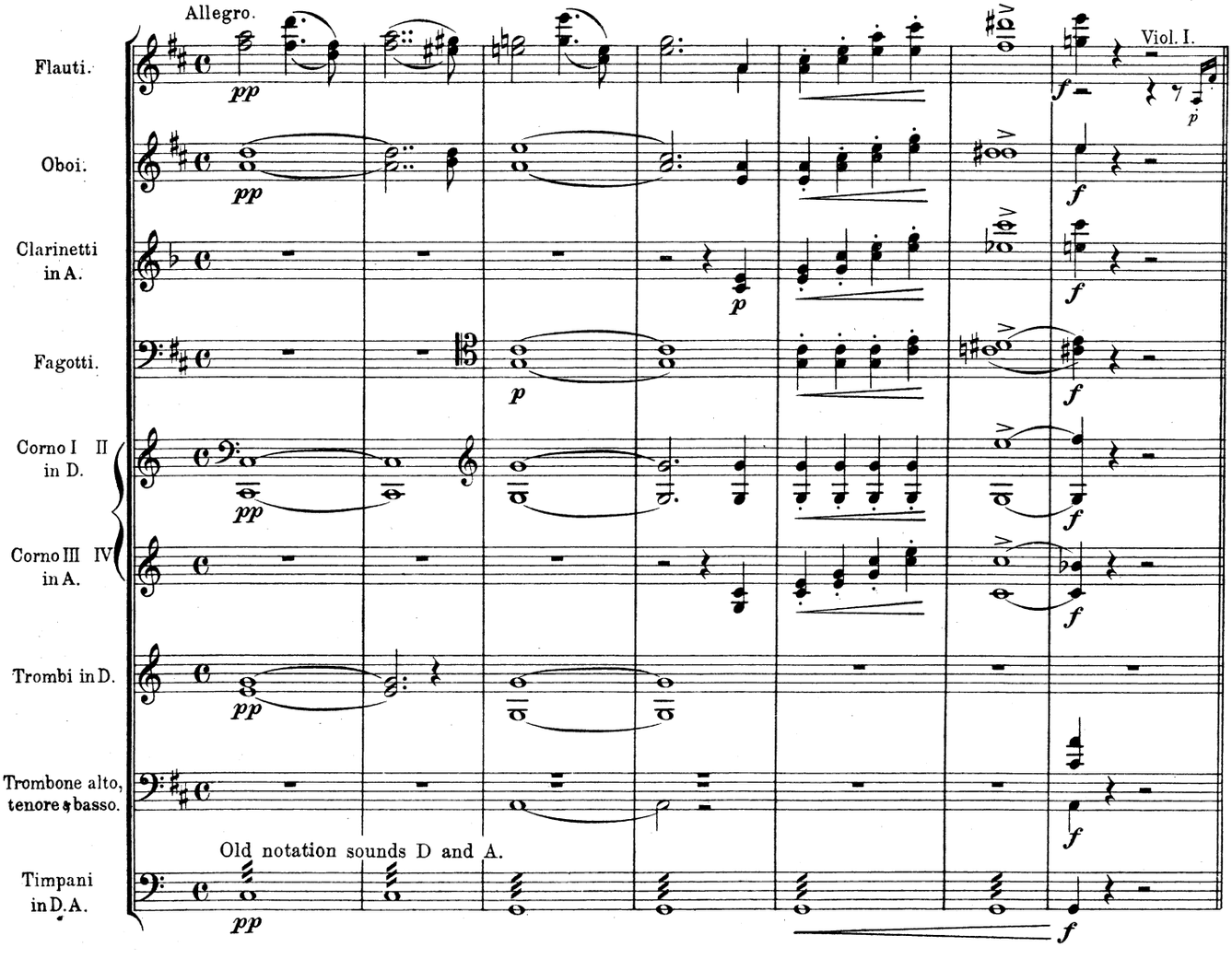

cresc.
f
Viol. I u. II.
Viola.
pp
Vcl.
Cbasso.
a2
pp
p
a2.


f
dimin.
Viol. I u. II.
pizz.
Vcello u. Cbasso.
a 2.

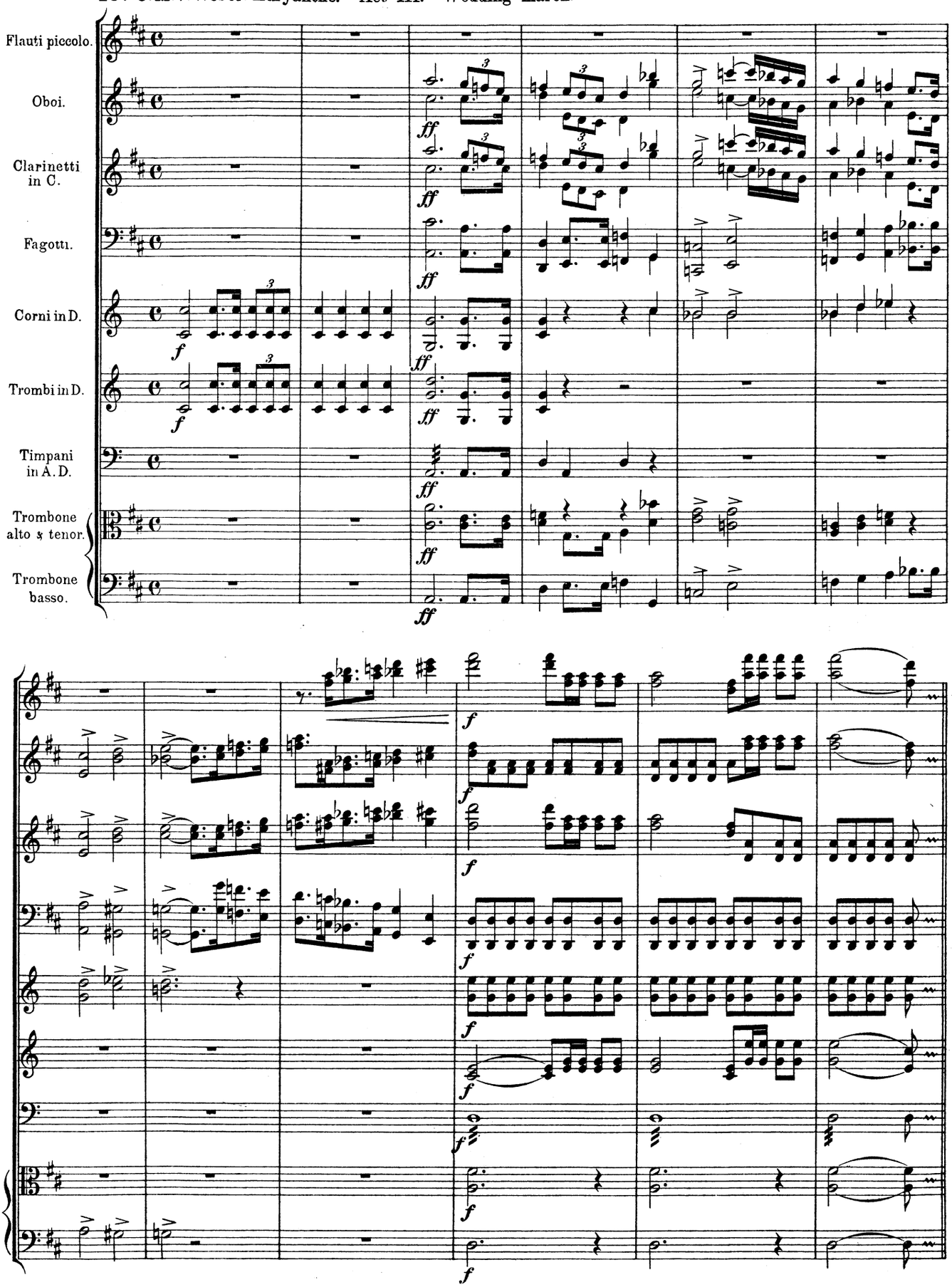
14. Jos. Haydn. Symphony No. 10, D. Mov. IV. Finale.



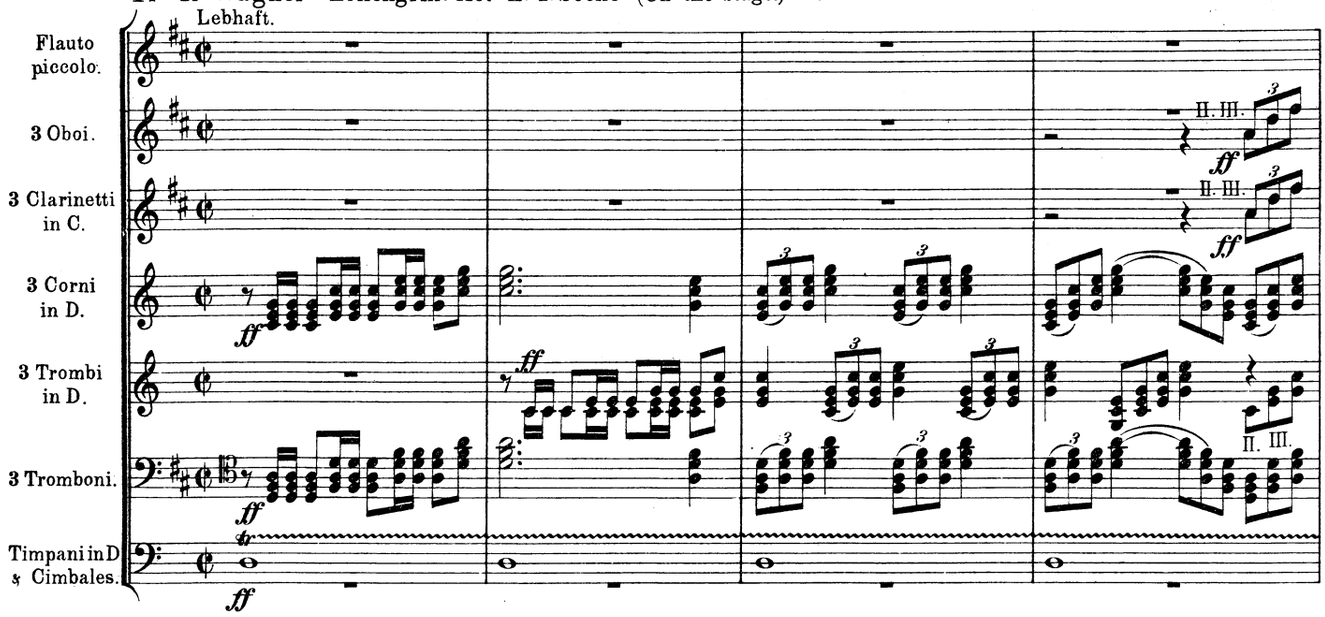
15. C. M. v. Weber. Overture 'Oberon'.

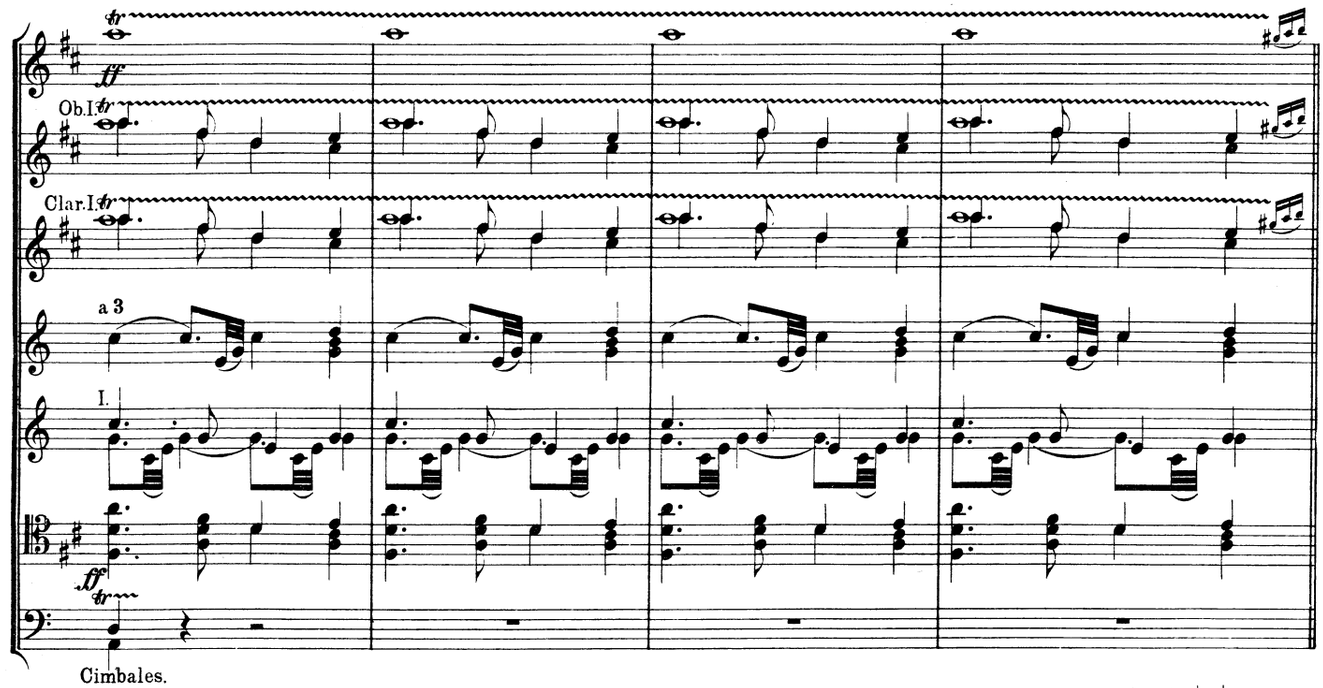


16. C.M.v.Weber. Euryanthe. Act III. Wedding march.

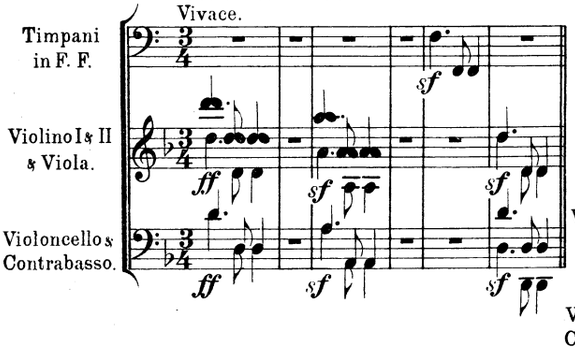


17. R. Wagner. Lohengrin. Act II. 1. Scene (On the stage.) *)

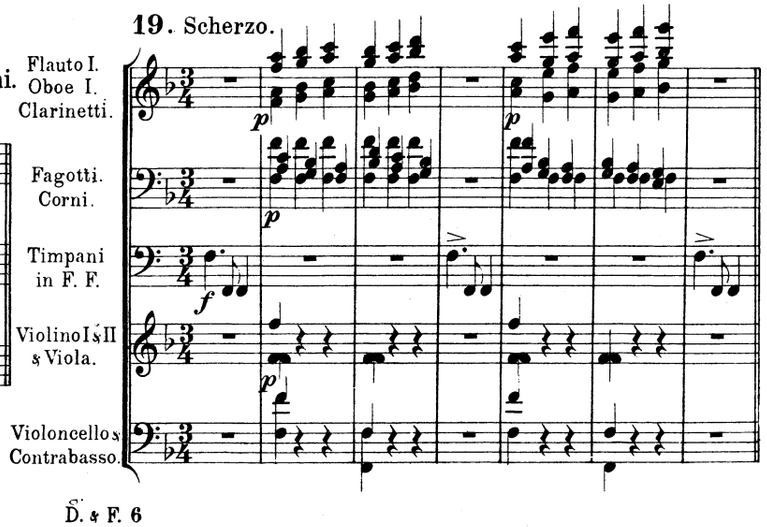




18. Beethoven. Symphony No. 9. D-mi. Scherzo. Mov. III.

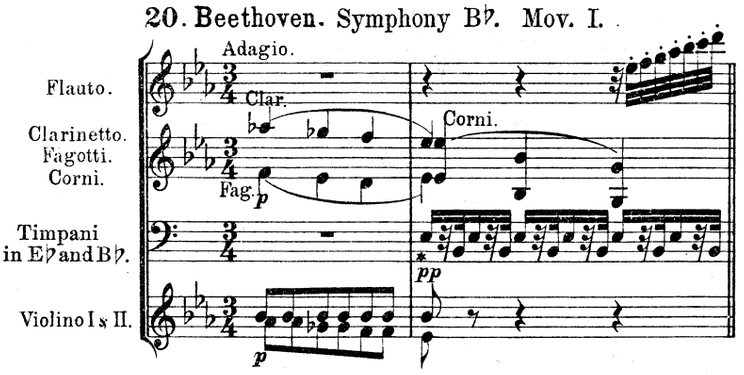


19. Scherzo.



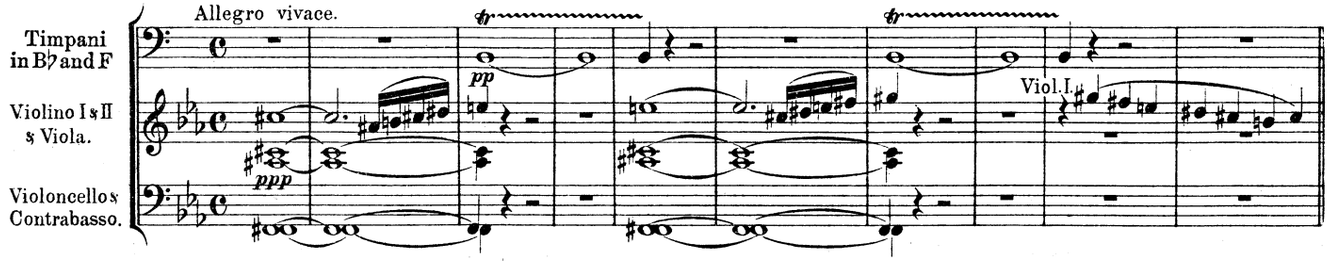
*) By permission of Breitkopf & Härtel, Leipzig.

20. Beethoven. Symphony B♭. Mov. I.

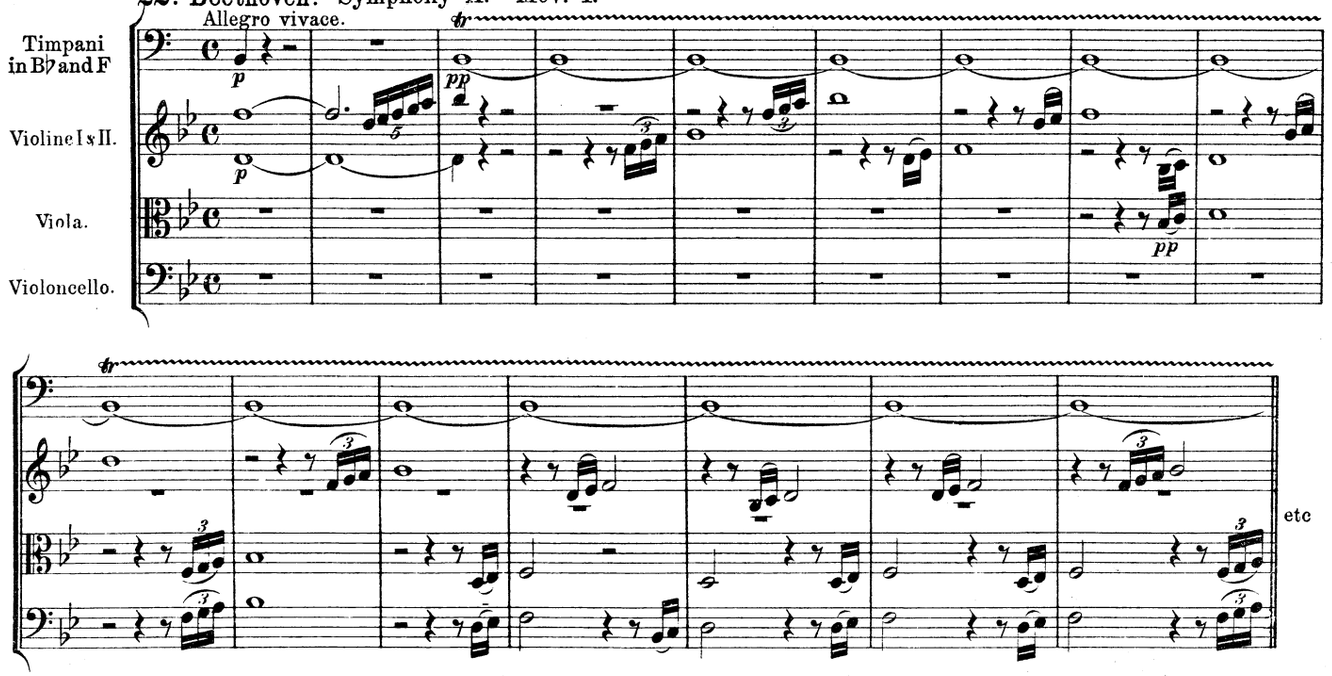


*) At the close of this movement the drum figure appears alone.

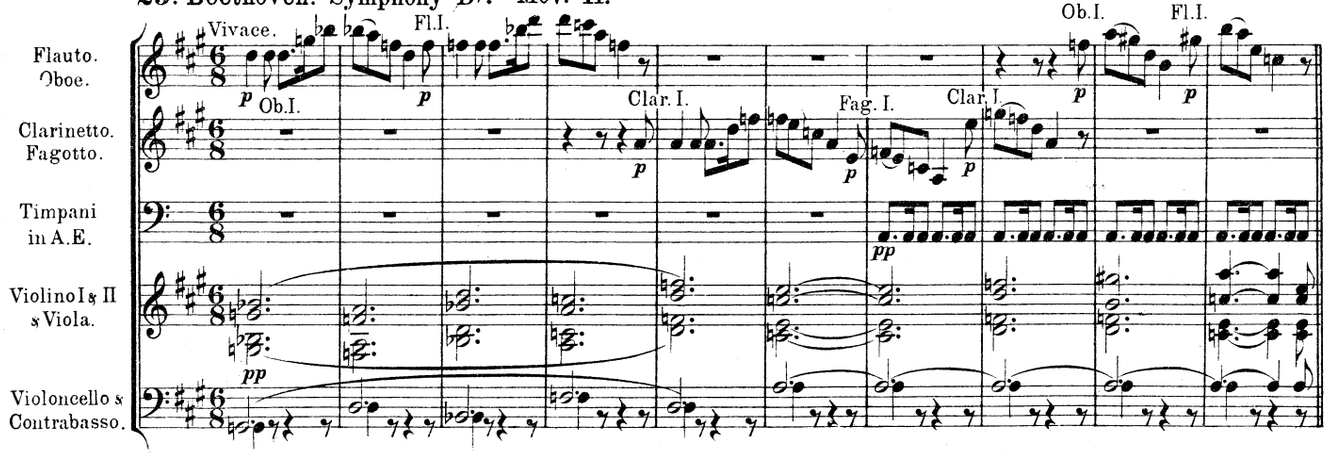
21. Mov. I.



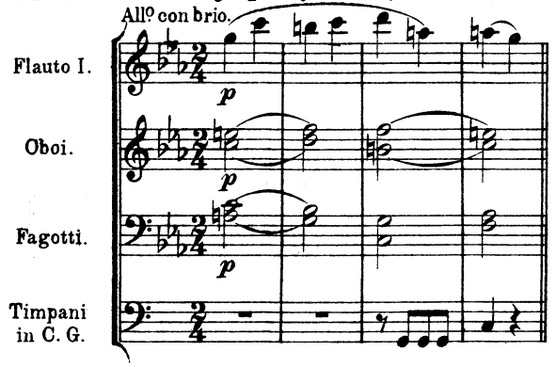
22. Beethoven. Symphony A. Mov. I.



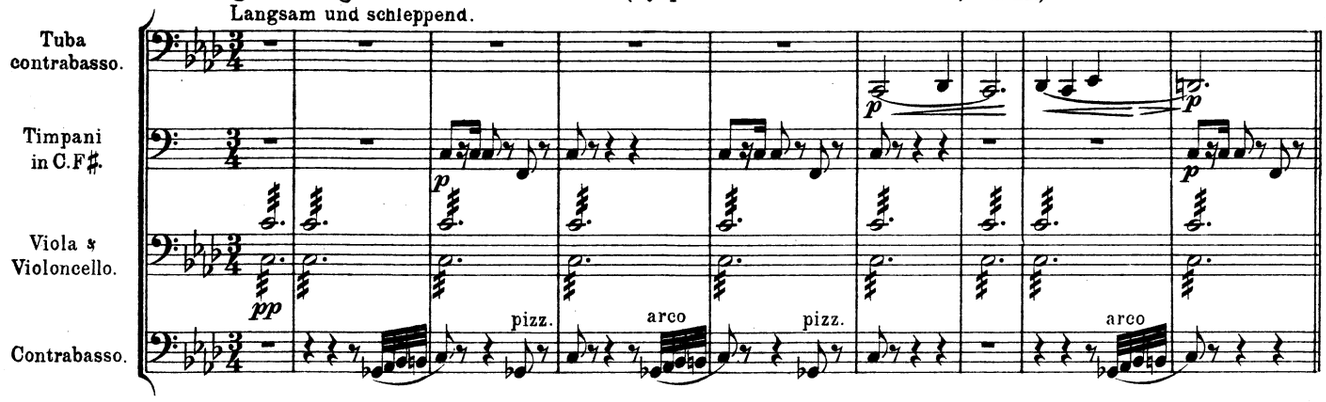
23. Beethoven. Symphony B♭. A Mov. II.



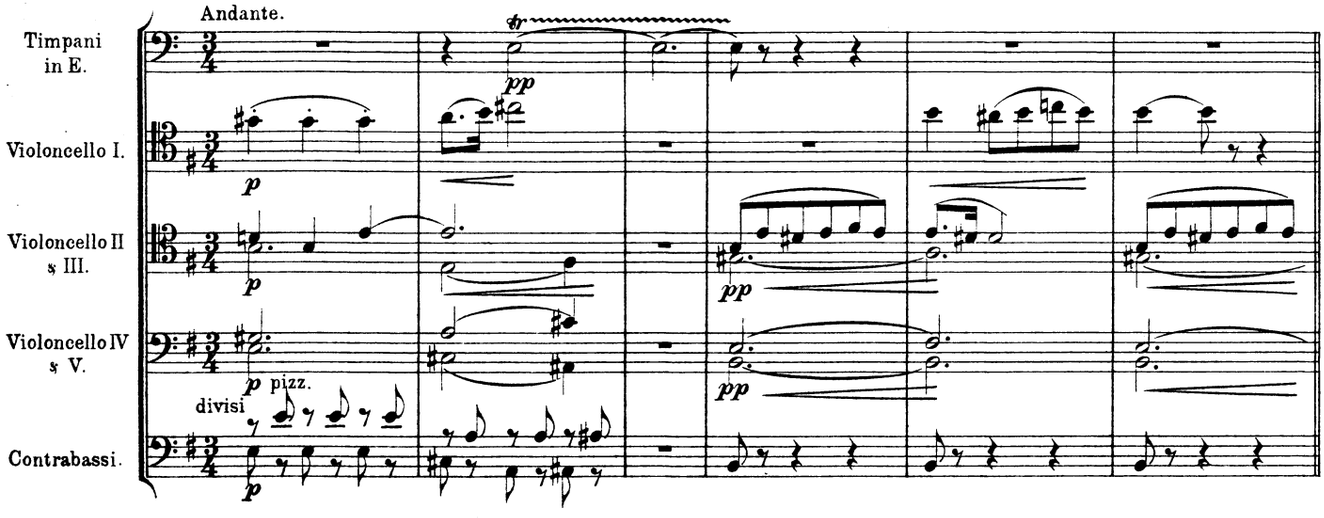
24. Beethoven. Symphony No. 5, C-minor. Mov. I.



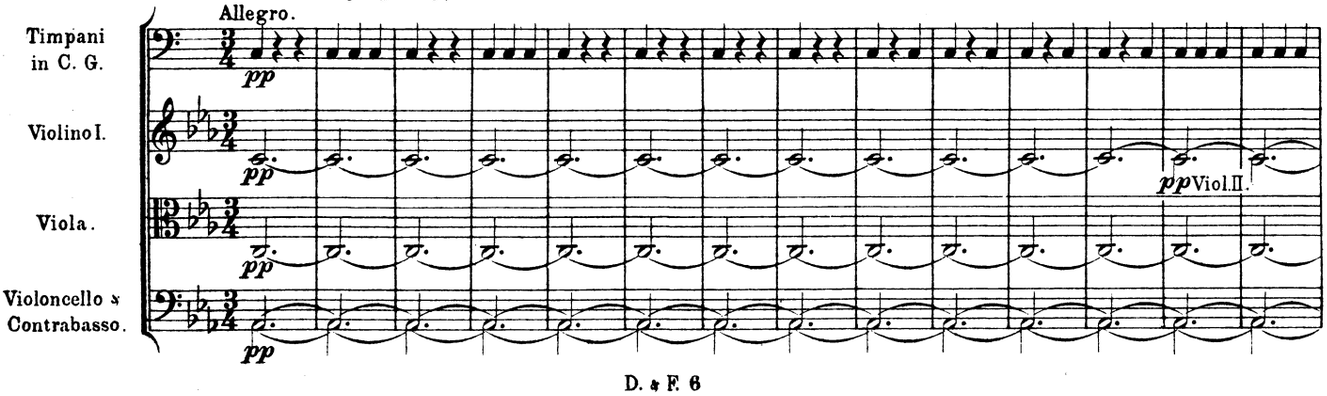
25. Wagner. Siegfried Prel. to Act II. (By permission of Schott's Söhne, Mainz.)

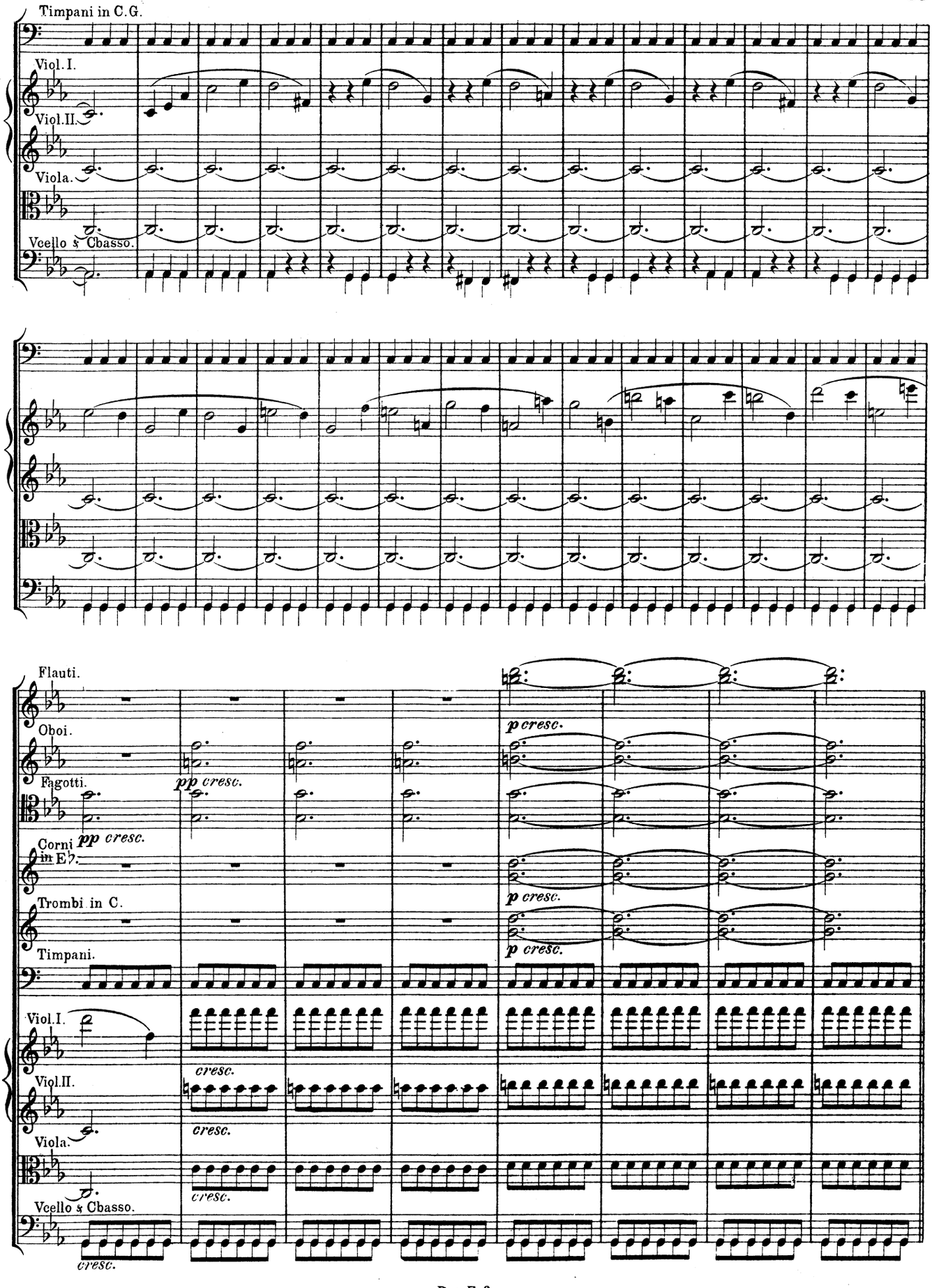


26. Rossini. Tell-Overture.



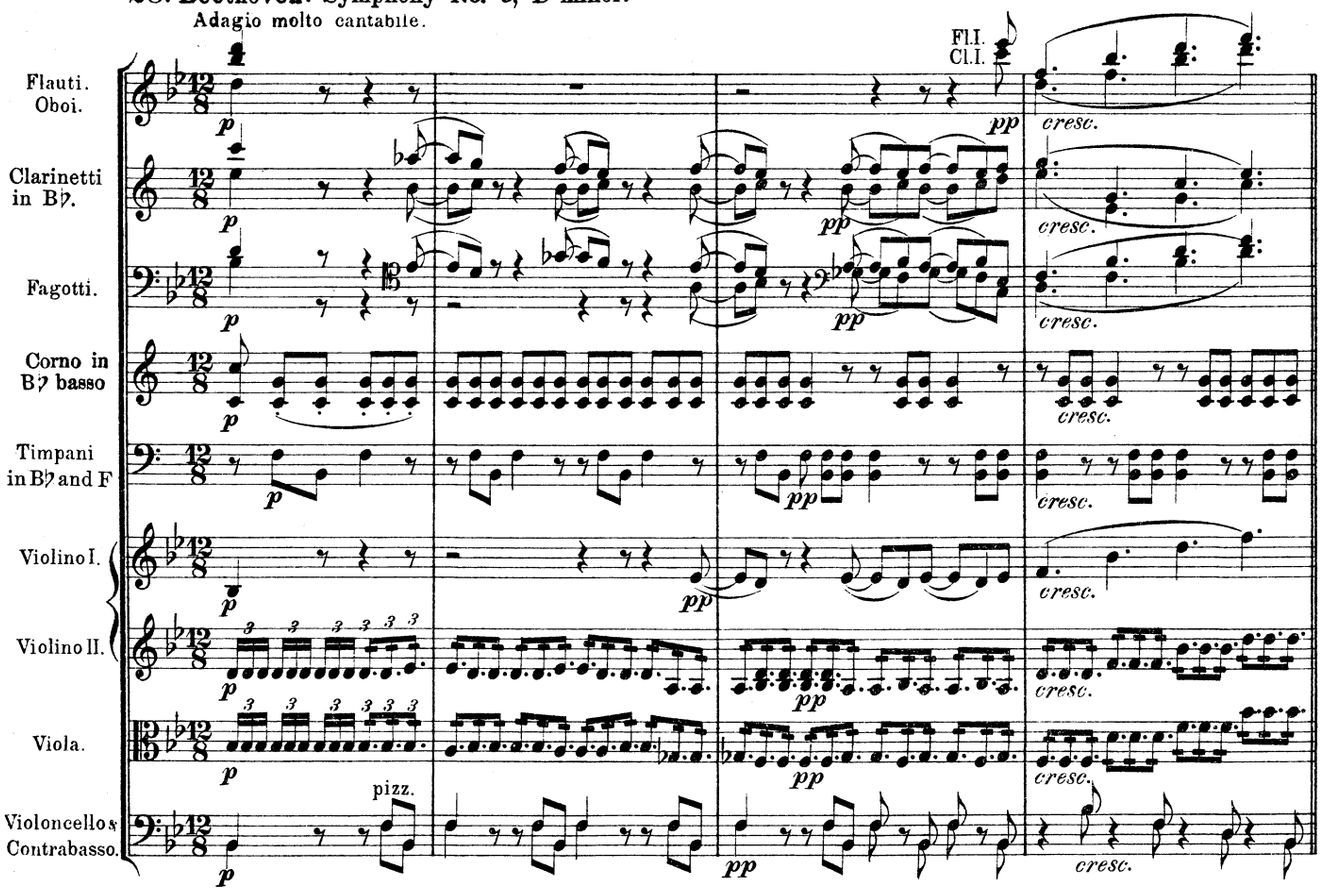
27. Beethoven. Symphony, C-minor. Mov. III.




Timpani in C.G.
Viol.I.
Viol.II.
Viola.
Vcello & Cbasso.
Flauti.
Oboi.
Fagotti.
pp cresc.
Corni in E♭.
Trombi in C.
Timpani.
p cresc.
Viol.I.
Viol.II.
Viola.
Vcello & Cbasso.
cresc.

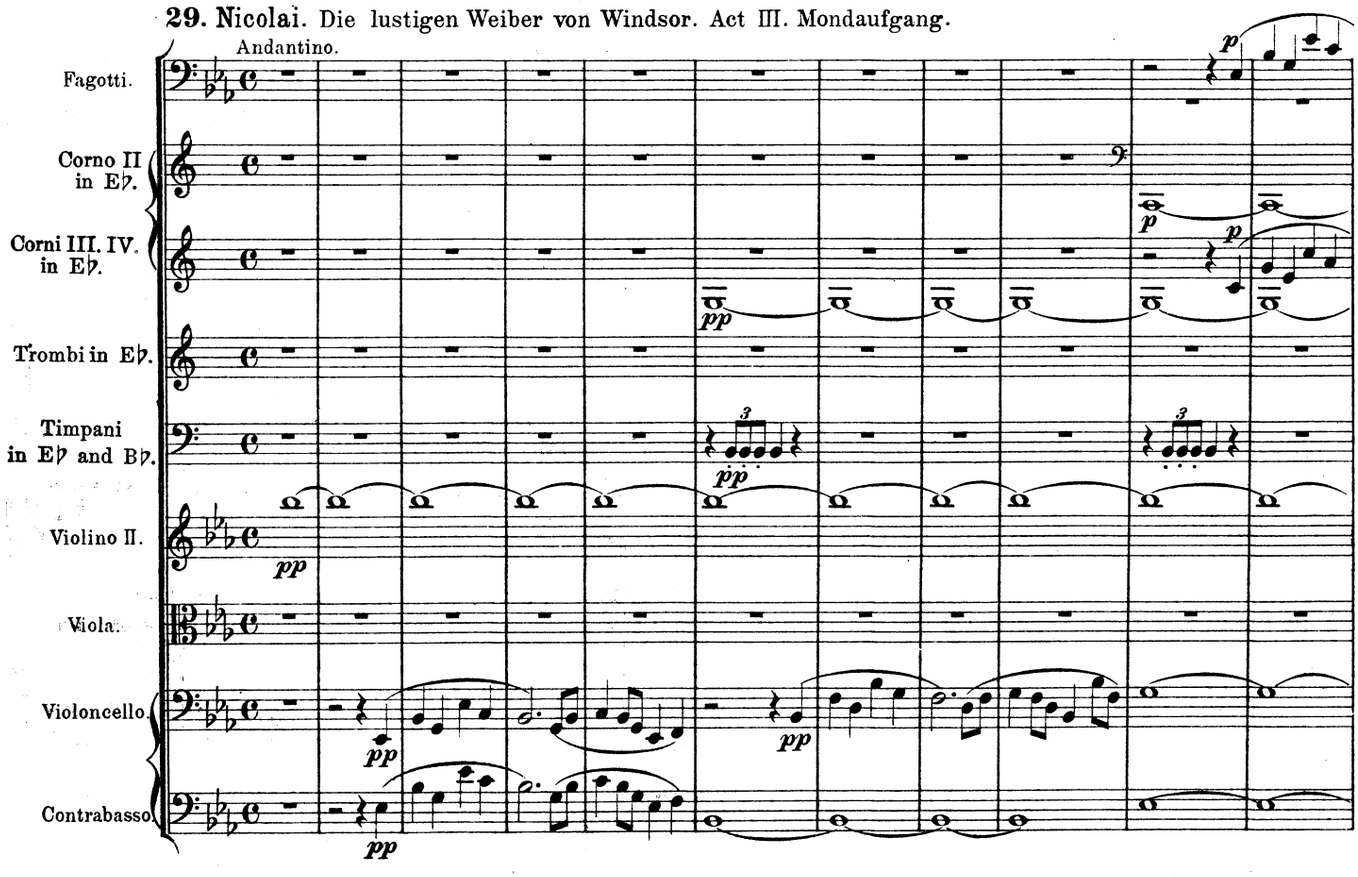
28. Beethoven. Symphony No. 9, D-minor.

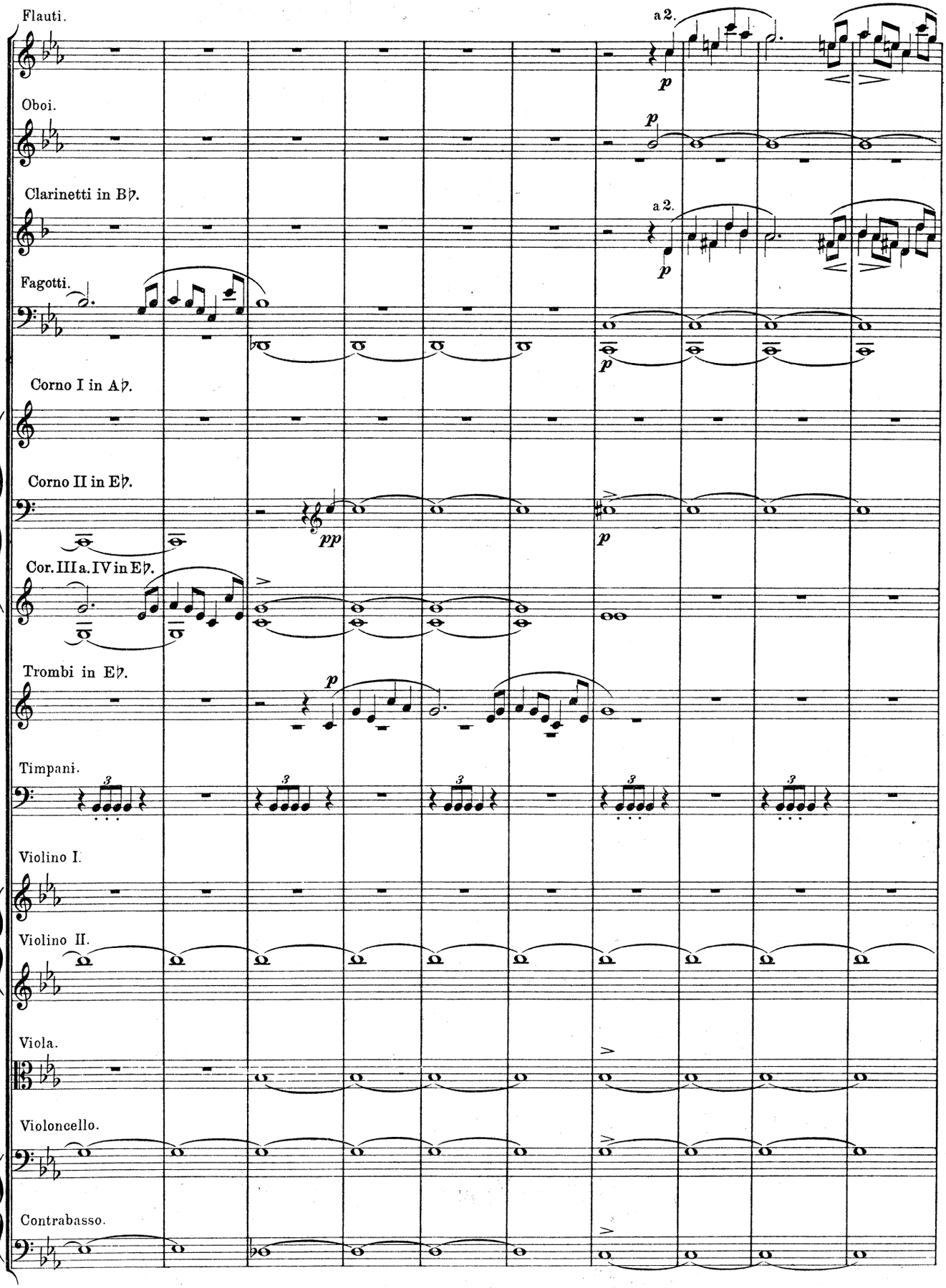
Adagio molto cantabile.

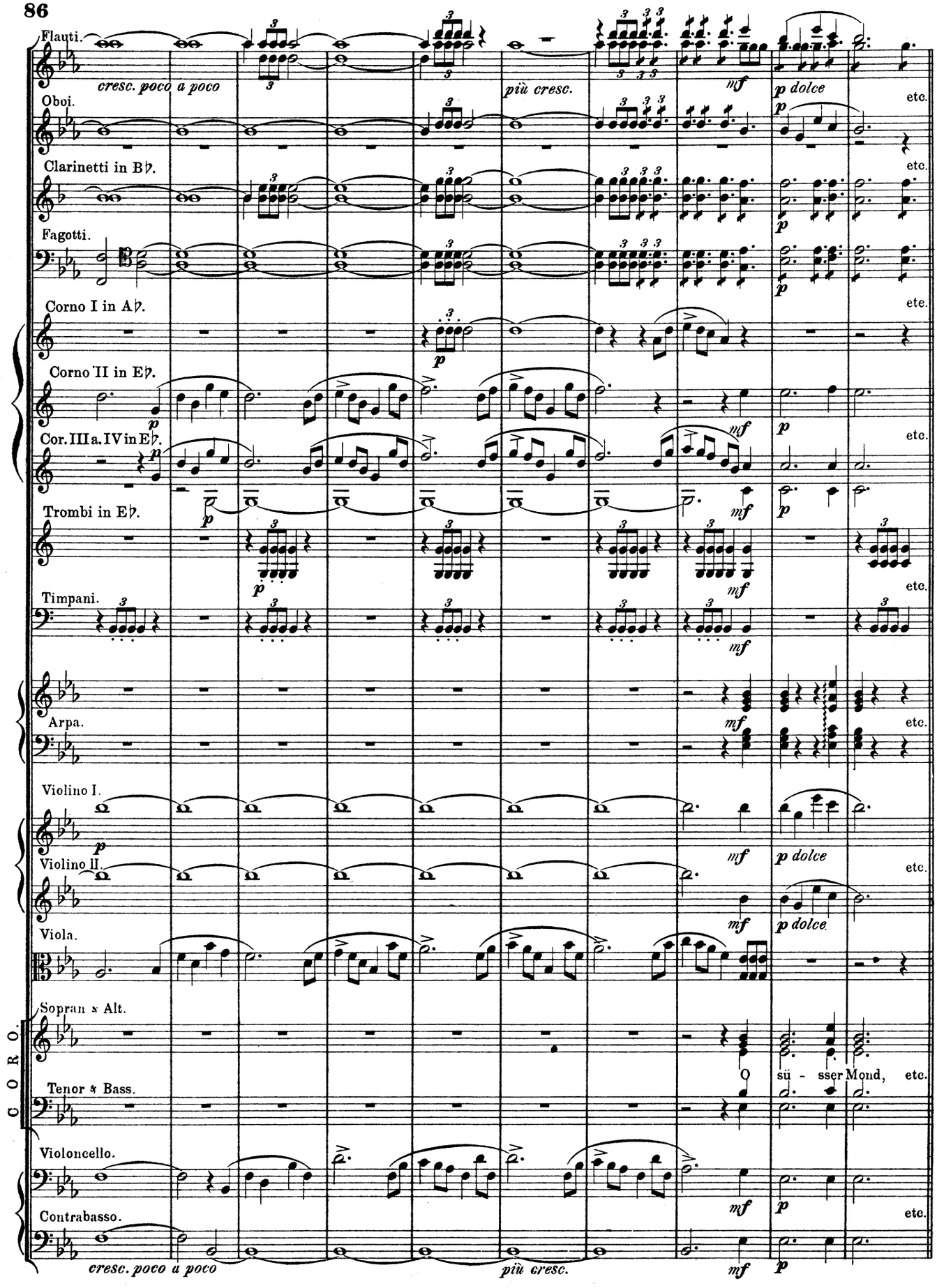


29. Nicolai. Die lustigen Weiber von Windsor. Act III. Mondaufgang.

Andantino.

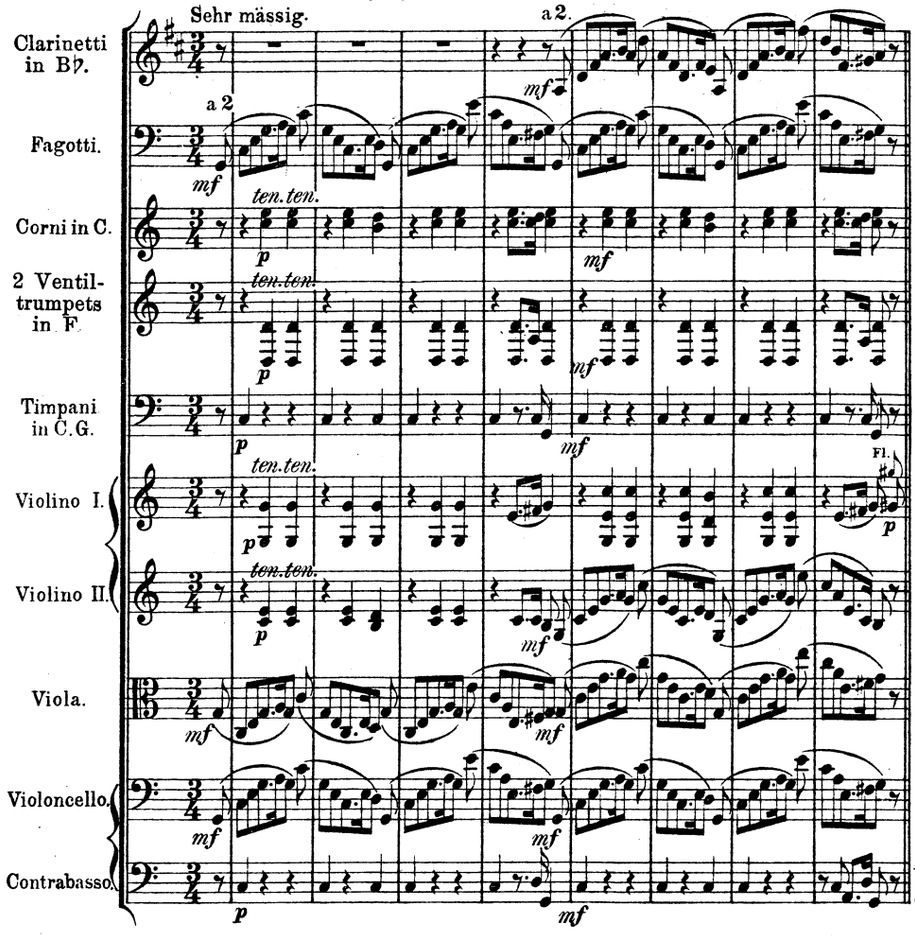



Flauti.
a 2.
Oboi.
Clarinetti in B♭.
a 2.
Fagotti.
Corno I in A♭.
Corno II in E♭.
Cor. III a. IV in E♭.
Trombi in E♭.
Timpani.
Violino I.
Violino II.
Viola.
Violoncello.
Contrabasso.


Flauti.
cresc. poco a poco
più cresc.
mf
p dolce
etc.
Oboi.
Clarinetti in B♭.
Fagotti.
Corno I in A♭.
Corno II in E♭.
Cor. III a. IV in E♭.
Trombi in E♭.
Timpani.
Arpa.
Violino I.
Violino II.
Viola.
CORO.
Sopran & Alt.
O sü - sser Mond, etc.
Tenor & Bass.
Violoncello.
Contrabasso.
cresc. poco a poco
più cresc.

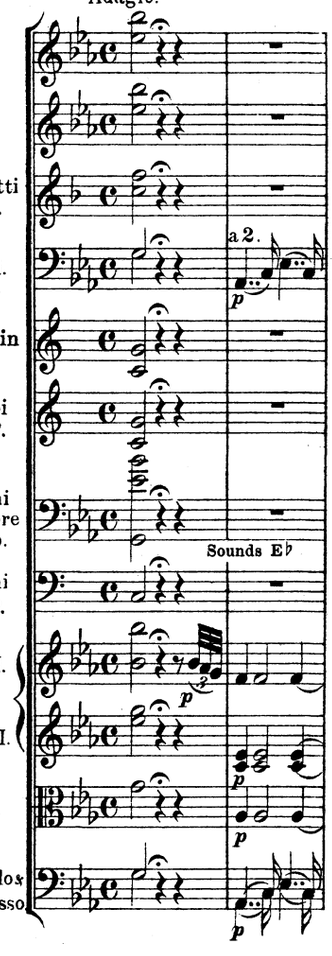
30. R. Schumann. Symphony No. 3, E. Mov. II. Scherzo.

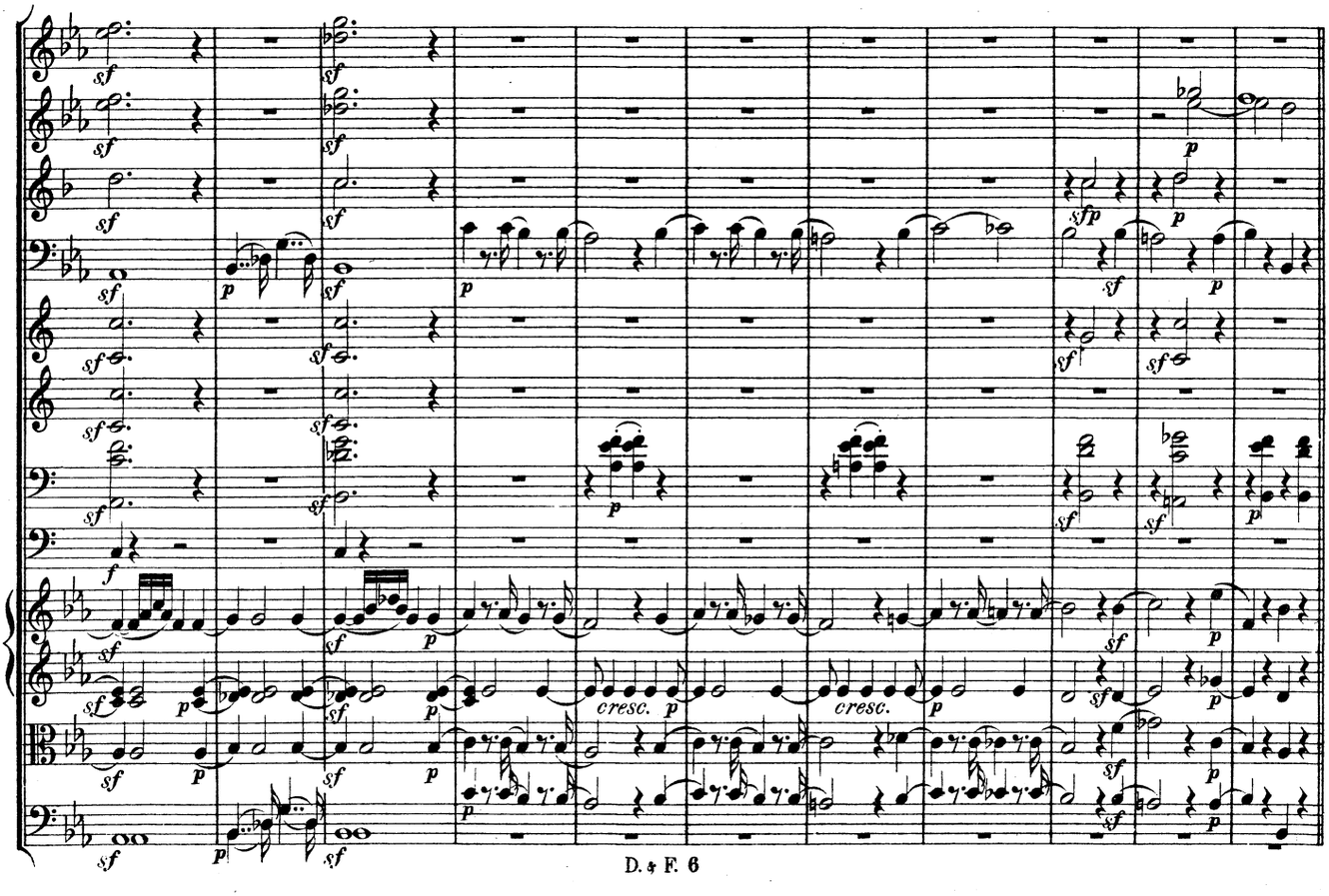
Sehr mässig.



Magic Flute.

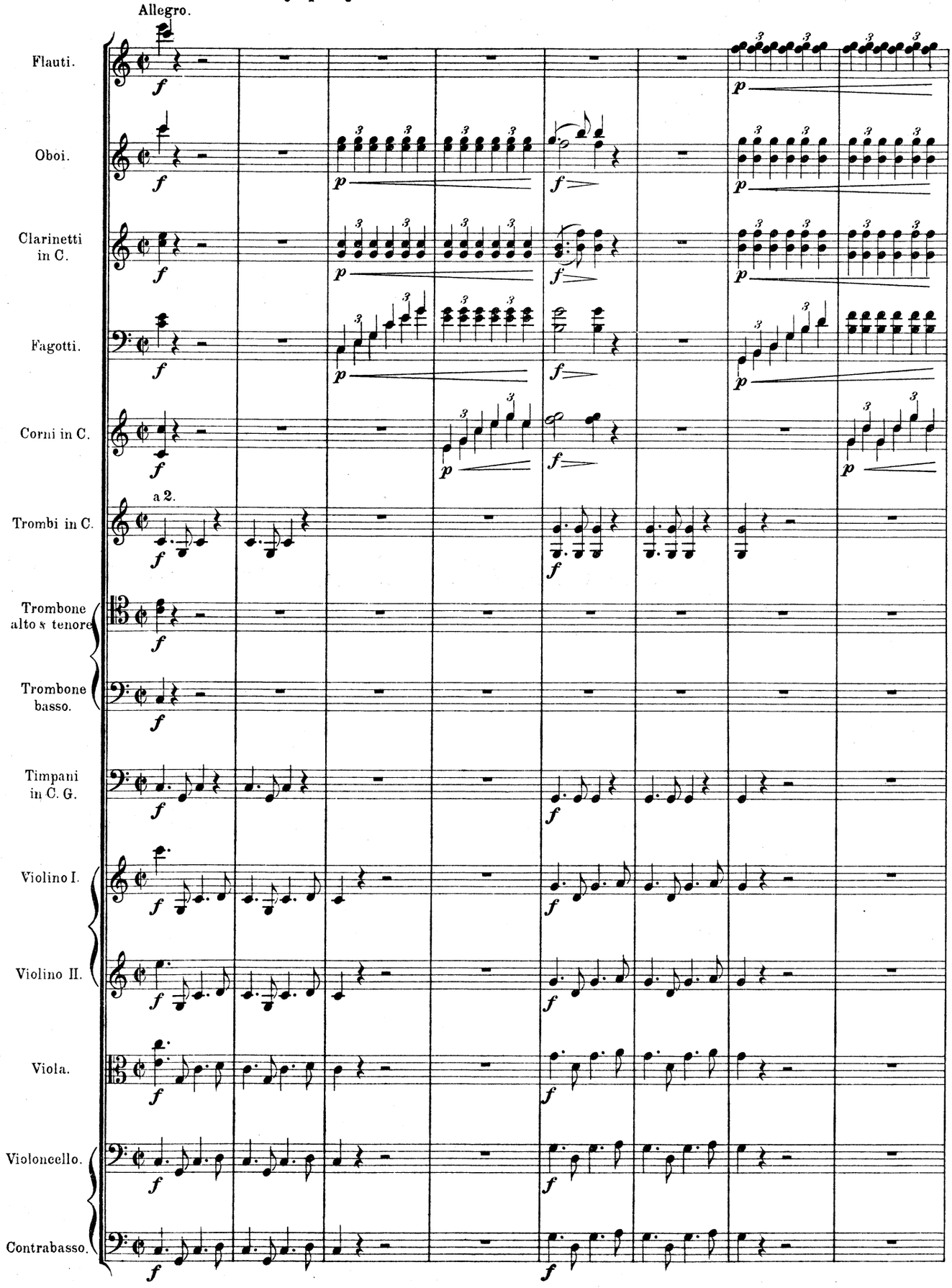
Adagio.

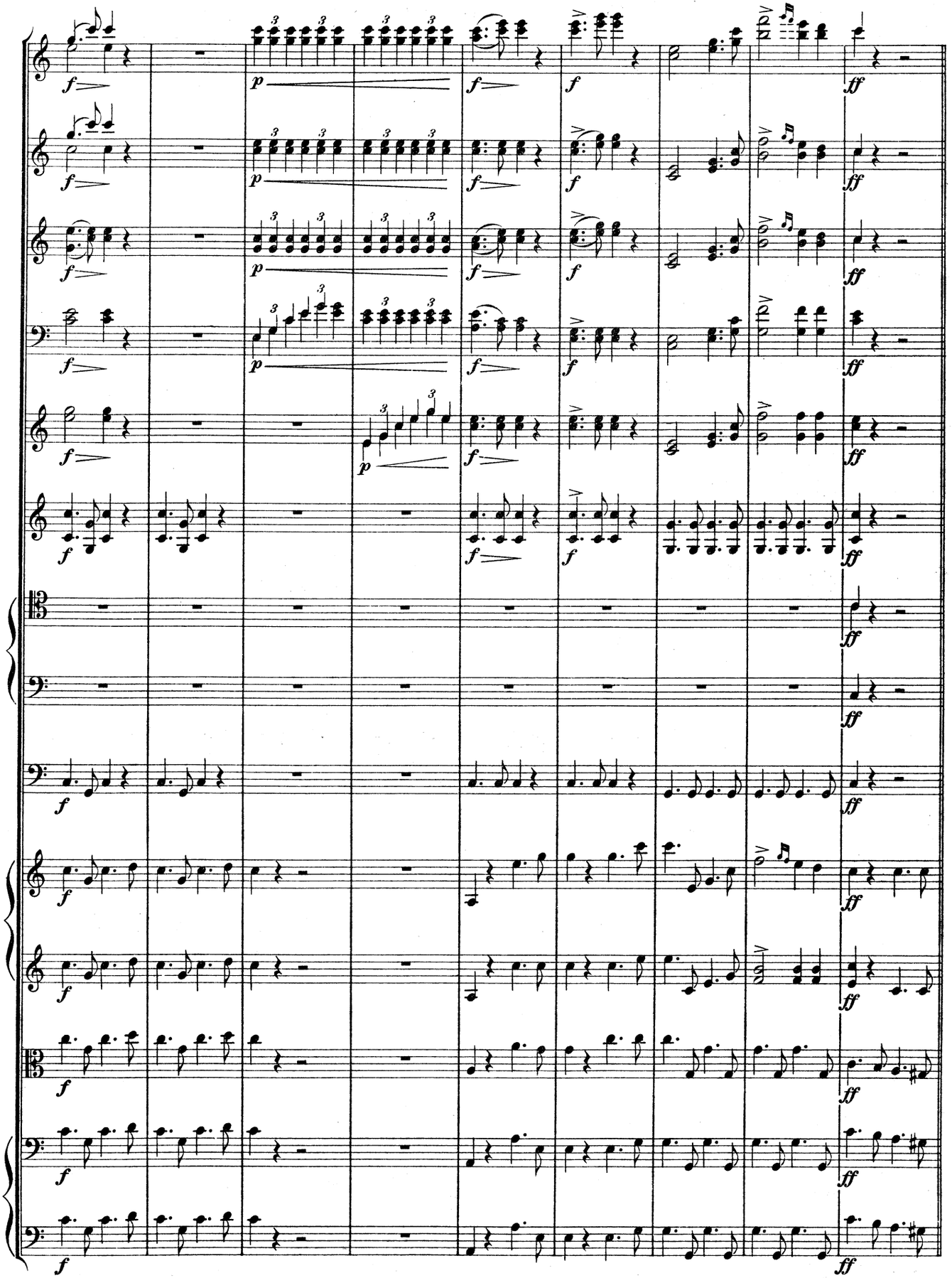




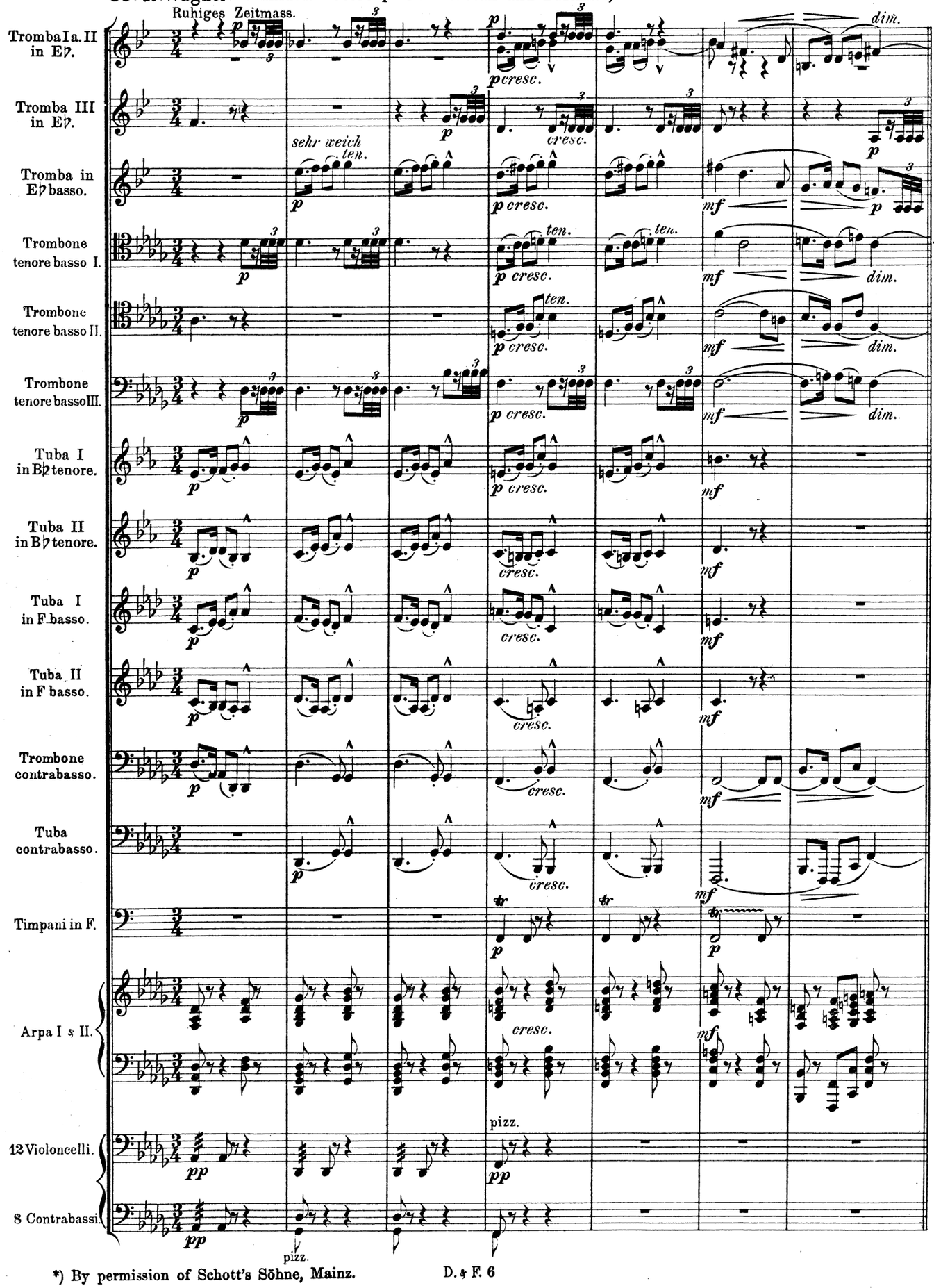
32. Frz. Schubert. Symphony No. 7, C. Mov. I.

Allegro.





33. R. Wagner. Walküre. Score p. 84. Wotan and Fricka.*)



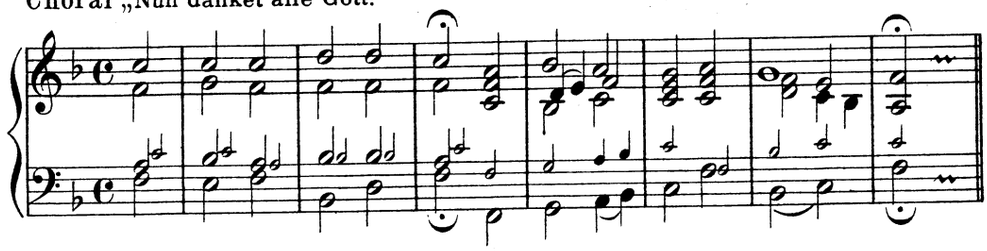
*) By permission of Schott's Söhne, Mainz.

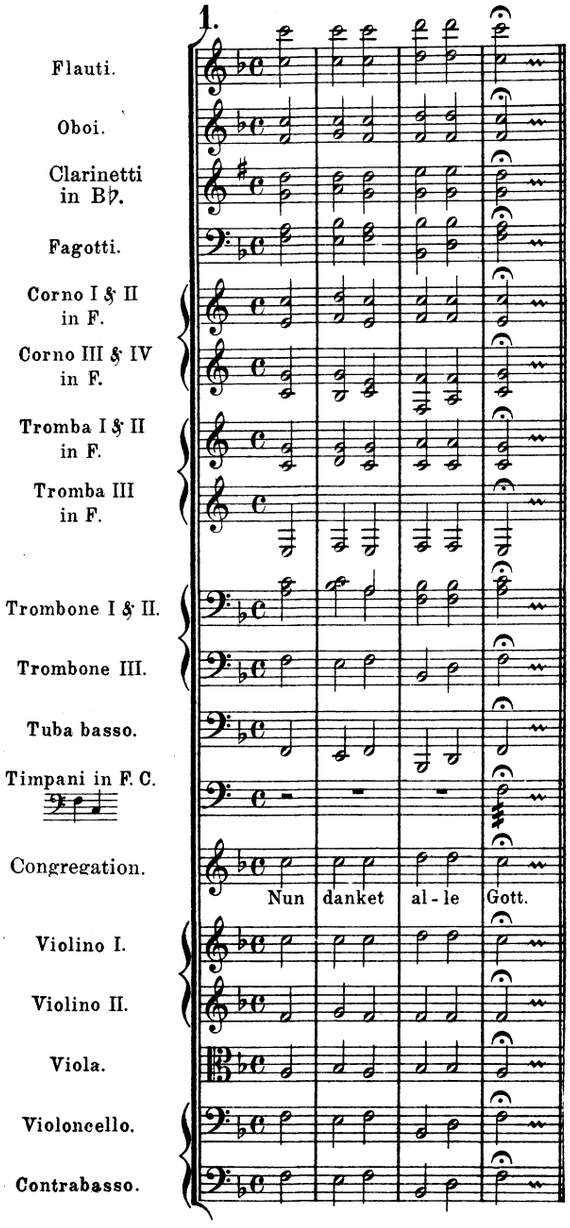
Exercise VIII.

Choral for full orchestra.

Choral „Nun danket alle Gott."

Original.





Ex. 1 shows the choral arranged for orchestra after the fashion so often heard at health-resorts in the mornings. (Often, indeed, no free part is found.) As the previous method of doubling I have used, (shown by the brackets) might lead here to errors, I have shown under each example how the parts are divided among the various instruments. In No. 1 the flute 1, double-bass and tuba are an exception to the other parts, for flute 1 plays an octave higher, and double-bass and tuba an octave deeper throughout. If both flutes are required to play like flute 2, neither would really be noticeable; as I have arranged matters, the soprano derives same brilliance from them. The 2nd trombone (tenor) takes in bar 2 a passing 2nd added part, but returns in the following bar to the tenor part. The drums, which are not often used in chorals, are introduced here to show the method of using them; and this method is probably the best, especially when the congregation sings with the orchestra. The introduction of the drums at the pause (𝄐) will mark the close of the strophe for the congregation who are singing in unison, and, moreover, will tend to prevent drawling.) If in Ex. 1 the free part is omitted, the 3rd horn will take the horn or bass part, and the 1st trombone the alto. In this example the 2 violin and viola might be written as in Ex. 2. If in Exs. 1, 2, 3, the piccolo, English-horn, bass-clarinet and double-bassoon take a part, the first would play in unison with flute 1, English-horn the alto or tenor, bass-clarinet tenor or bass, and double-bassoon play in unison with double-bass. In strophe 2 in the original a 'vacuum' occurs between the tenor and bass. To obviate this the bass is doubled in the higher octave until the pause, where there is a free part.

This choral can also be played by the following various groups of instruments alone:

1) string-quartetto, quintetto or string-orchestra.
2) 2 clarinets and 2 bassoons.
3) flute 1 or oboe 1, 2 clarinets and 2 bassoons.
4) flute 2, 2 clarinets and bassoons 2.
5) All the wood-wind.
6) trumpet 1 and 2, drum 2 and 3.
7) trumpet 1, horn 1, 2 and 4 (not to be recommended; the combination should only be used when the necessary number of horns is not available).
8) All the brass. (Here trumpet 1 is too weak to take the soprano alone.)
9) Strings and wood.
10) Wood and brass.
11) Strings and brass (not good).
12) Small orchestra 1 flute, 1 oboe, 1 bassoon, 2 clarinets, 2 horns, 2 trumpets, 3rd trombone and strings, the last as in Ex. 1 and 2. If even less instruments take part, oboe 1 and bassoon 1 can be omitted.

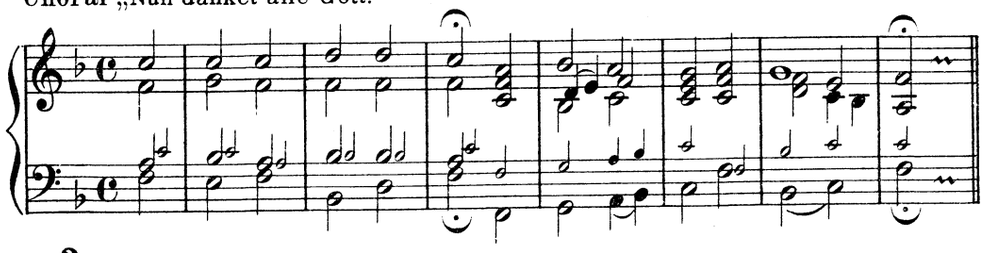
Division of the parts.

Sopran.	Alt.	Tenor.	Free part.	Bass.
Flute 1 a. 2.	Oboe 2.	Fag. 1.	Horn 3.	Fag. 2.
Oboe 1.	Clar. 2.	Horn 2.	Pos. 1.	Horn 4.
Clar. 1.	Horn 1.	Tromp. 3.		Pos. 3.
Tromp. 1.	Tromp. 2.	Pos. 2.		Tuba.
Viol. 1.	Viol. 2.			Violonc. C. Bass.

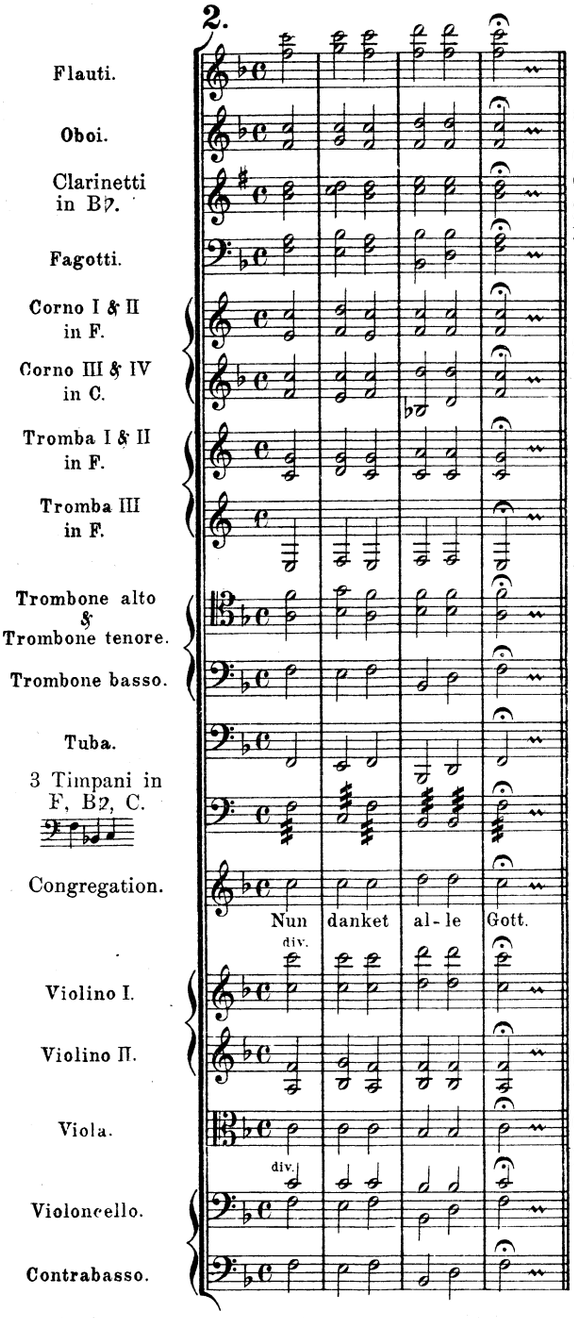
*) When a choral is sung in the open air at a festival, this end may be gained by using one beat of the big drum at each pause.

Choral „Nun danket alle Gott."

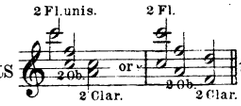
Original.



2.



Ex. 2 shows a few alterations from Ex. 1.

1) the soprano, alto and tenor are taken by flute 1, flute 2 and clarinet 2 an octave higher. If all parts are played *f* or *ff*, these parts would be somewhat veiled and so scarcely perceptible; but if the other instruments play *p* or *pp*, but the 2 flutes and clarinet 2 *f* or *mf*. the tone of the upper parts would be clear and distinct. In the following notation for 2 flutes, 2 oboes and 2 clarinets 

the 3 upper parts in the higher octave would be much more prominent, because of the more powerful tone of the instruments.

2) Here the horns differ from the first in so far as they are differently pitched (F and C); and the 3rd horn plays the soprano an octave below the original. This is only advantageous when the melody lies in the higher and more penetrating register of that particular pitched horn. For F-horn the strengthening of the horn thus is not very happy; moreover, the tone of the C-horn here is mild and tender and combines more easily with the other melody-instruments.

3) The trombones used here are not 3 tenor-trombones, as before, but alto-, tenor- and bass-trombones playing these parts. Although a tenor-trombone can play the alto part, yet the character of the part would be forced.

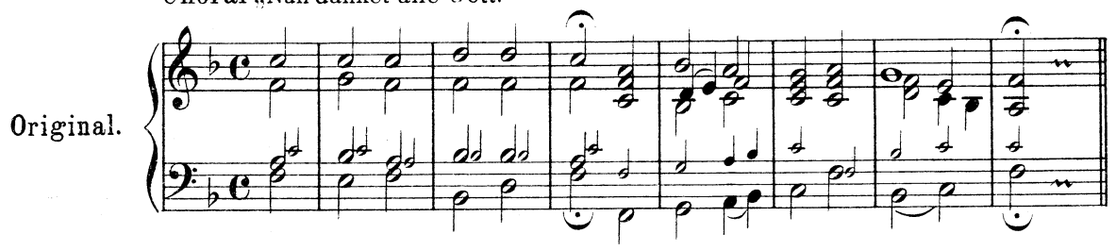
4) Here the drums are used. In strophe I, C- and F-drums could be used as bass and harmonious added parts; but in the following strophes are pauses wherein the drums cannot play, and so the scheme is disarranged.

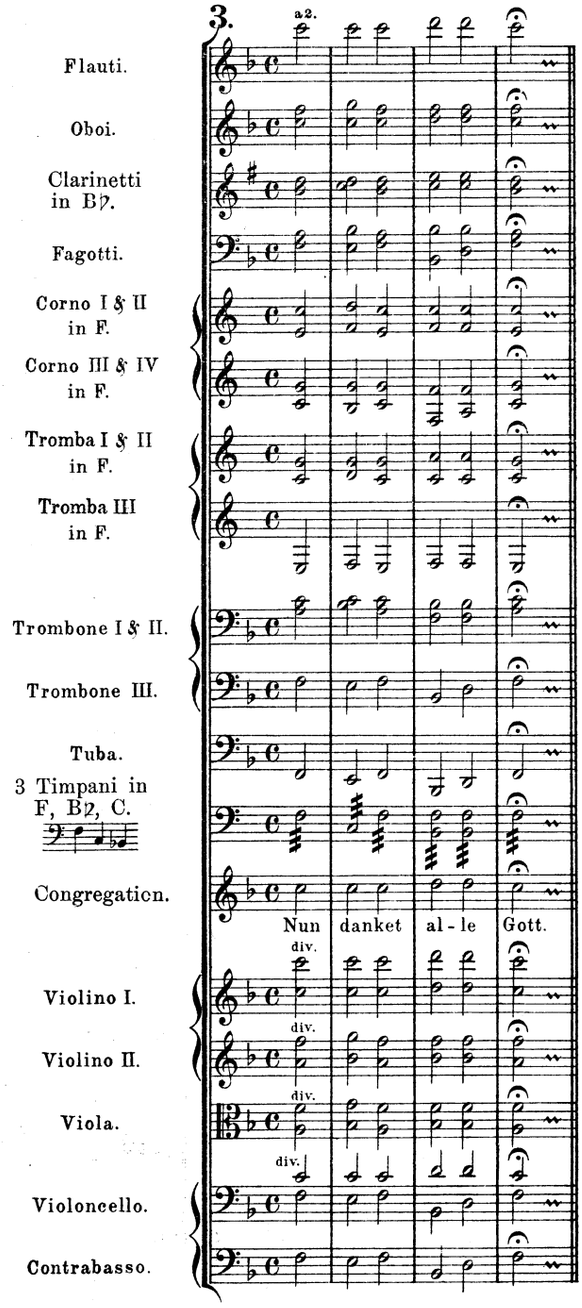
5) Violins I and II again differ from the Ex. 1. The violins I play in octaves (divisi) the 2nd takes the original alto and tenor; and the viola the added part. In some circumstances when the 2nd violin cannot take the tenor part because of lack of depth the viola may step in, and violin II take the added part. This orchestration lends a more solemn grandeur, fullness and power to the choral than Ex. 1.

Division of the parts.

Sopran.	Alt.	Tenor.	Free part.	Bass.
Flute 1.	Flute 2.	Clar. 2.	Viola.	Fag. 2.
Oboe 1.	Oboe 2.	Fag. 1.	Violonc. 1.	Horn 4.
Clar. 1.	Horn 1.	Horn 2.		Basspos.
Trump. 1.	Trump. 2.	Trump. 3.		Tuba.
Viol 1 in 8ve	Altpos.	Tenorpos.		Violonc. 2.
Horn 3.	Viol. 2.	Viol. 2.		C Bass.

Choral „Nun danket alle Gott."

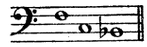




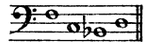
Division of the parts.

Sopran.	Alt.	Tenor.	Free part.	Bass.
Flute 1 a. 2.	Oboe 1.	Clar. 2.	Horn 3.	Fag. 2.
Oboe 2.	Horn 1.	Horn 2.	Pos. 1.	Horn 4.
Clar 1.	Trump. 2.	Trump. 3.		Pos. 3.
Trump. 1.	Viol. 2.	Pos. 2.		Tuba.
Viol 1 in 8ve	Viola.	Viol. 2.		Violonc.
Violonc.		Viola.		C. Bass.

Exs. 3 shows the choral scored as fully and powerfully as possible. The 2 flutes, 2 oboes and 2 clarinets, could play as in Exs. 1 and 2. The 4 horns and 3 trombones are as in Ex. 1, but might be as in 2). The drums are 3, tuned,



and can be played by one person; here, too, they cannot be used uninterruptedly throughout because of a deficiency of harmonious notes. If 4 drums were used, in B, C, D and F,

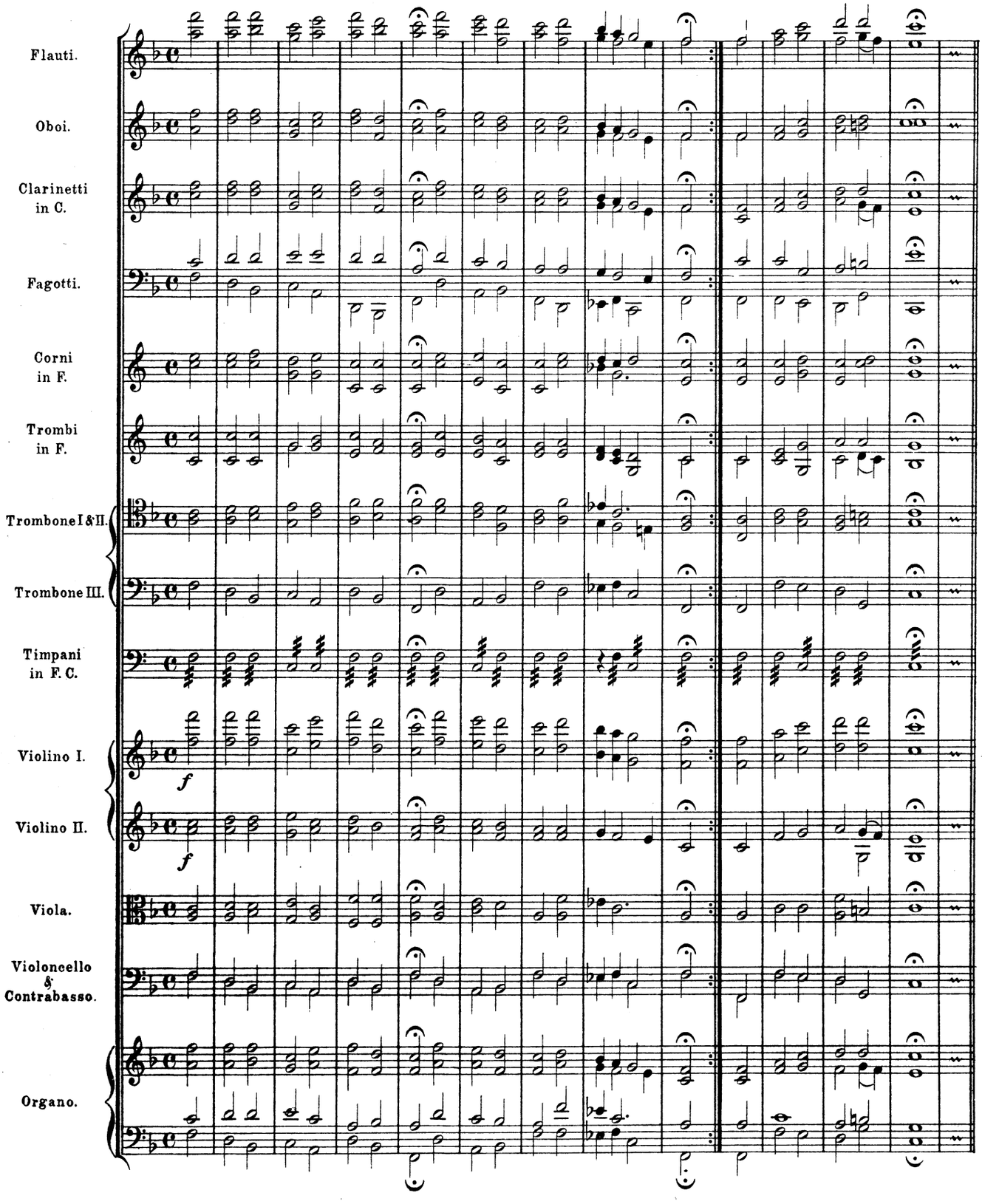


they could play a harmonious note throughout. But since from most orchestras the 3rd drum is lacking, it is better either to omit the drums altogether, or score them as in Ex. 1).

It must not be understood that for every full orchestra chorals must be arranged exactly as in Exs. 2 and 3. The arranger may score his tunes according to the meaning of their text.

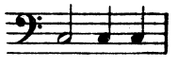
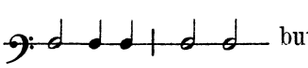
The following example may serve to show a very effective, powerful and full score of a choral.

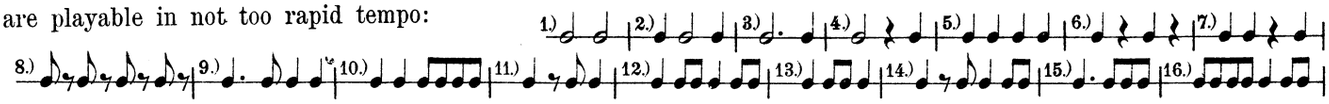
Otto Nicolai Op. 31. Kirchliche Fest-Overture on the Choral 'Ein feste Burg ist unser Gott'.

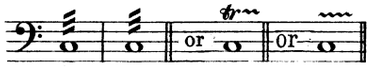


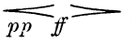
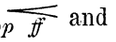
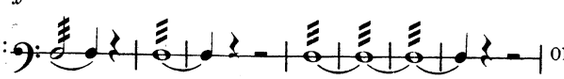
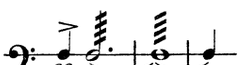
The big Drum.

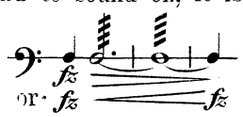
(Ital. Tamburo grand, Gran Cassa, Franz. Grosse caisse).

This is found in all sorts of orchestral music; it plays a particular rôle in dance and military music, where it is generally used to mark the strong beat. Its music is written in the bass clef, on one line, thus.  In scores it is often written thus, to save space,  but never in the parts. Its tone varies according to the power used to produce it. Thus *pp*, *p*, *mf* are dull but penetrating: *f* and *ff* on the other hand are ringing and powerful. Although each stroke sounds on after the stick has left the skin, yet it is not noticeable. When a breve (*c*) is written andante or moderato, this cannot be said; in *alla breve* it is better to note that the tone is to be allowed to sound on its proper length of time. Rhythmical figures as the following are playable in not too rapid tempo:



These numbered 10 to 16 are difficult in rapid tempo. No particular effect accrues from a rapid repetition of the same note. Sometimes a tremolo or roll is written. The latter is obtained by the player grasping the stick in the middle of the grip and by means of the wrist striking the upper and lower ends of the drum with great rapidity. The notation is: 

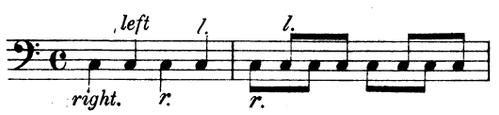
(The first in the best). It can be executed *pp*, *p*, *mf*, *f* or *ff*,  or  and in a variety of tempi. If an especially powerful stroke is required and to sound on, it is written thus:  or thus; 



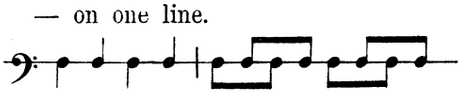
In simple music the big drum is used, as has been said, chiefly to mark the rhythm, as may be seen in Pt. VII, p. 40, Ex. d. In more important works it also serves the same purpose, but it is used as well for more characteristic purposes. Such composers as the following have used the big drum very effectively:

Beethoven, 'Schlacht bei Vittoria', 9. Symphony.
Haydn, 'Militaire-Symphony'.
Mozart, 'Entführung'.
Spontini, 'Vestalin' and 'Ferdinand Cortez'.
Auber, Overture 'Sirene'.
Meyerbeer, 'Les Huguenots'.
Berlioz, 'Requiem' and 'Benvenuto Cellini' etc.
Mendelssohn, 'Walpurgisnacht'.
Schumann, 'Paradise and Peri'.
Liszt, Faust-Symphony and other symphonic poems.
Verdi, 'Requiem' etc.

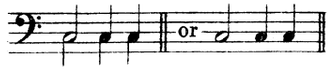
The big drum may be played with two sticks, one being in either hand of the player, with which he strikes both ends of the drum. These, however, must not fall together. This use in rarely found, (Berlioz's Requiem 'Tuba mirum') but its part is written thus:

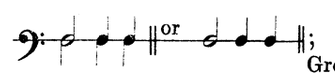


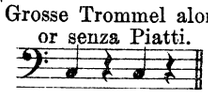
— on one line.

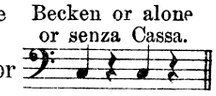


Since in many orchestras there are not one player for the big drum and one for the cymbals, these instruments are written for on one line, and all played by the same person, the cymbals being affixed to the left

side of the drum. The player uses his right hand for the drum and his left for the cymbals, striking the fixed one with the other. The notation then is this. In the score the words' 'Grosse Caisse' or 'big drum and Cymbals' are written. 

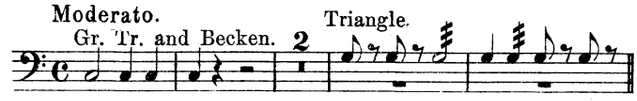


; If when using this latter notation either drum or cymbals is alone to be played the words *senza Piatti,* 

or 

senza Cassa are written; and when both are again required together, add the words *Grand cassa con piatti.* This notation is usually found in dance music.

The big-drum player, when time allows, also undertakes the triangle (see p. 99), whose part is often written in the drum part. But a few bars' rest must be given him to change instruments; thus:



Above the part must then be written

'Grand cassa, piatti e triangolo'.

See the following examples in score, f; and Pt. VII Exs. d and e.

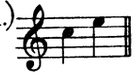
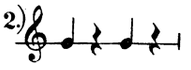
The Cymbals (Piatti, Cymbales).

Cymbals, which are two metal plates, have a hollow in the middle with a small hole through which a string is drawn, and so fastened that the hands ma holdy the cymbals fast. They are not struck flat, but as it were stroked, whereby a sound, sharp and piercing is produced. which pervades the whole orchestra. Cymbals can be played in all grades of tone, but they are most effective *f* or *ff*. Their part is written in the violin and bass clefs, the former being used when the cymbals have one line to themselves; and the latter when they play with big drum and triangle, their parts then being combined. But few rhythmic figures are playable on the cymbals, for rapid blows or strokes are not only difficult, but objectionable because they resound so greatly. In writing for them the notes should be of the precise length required. Thus:

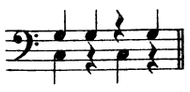
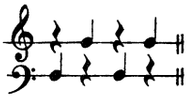
If a short, sharp stroke is required without the after-sound, the player presses the cymbals to his body. The use of cymbals is this: When a tamtam (see later) is required, cymbals are used, their edge being held free and struck by means of a stick. The effect can be of 3 kinds; if produced by a big-drum stick, *f*, it resembles the tam-tam; if a kettle-drum stick be used, it is gentler; but if a wooden stick be employed it is sharp, ringing, piercing. Still another effect can be produced on a free swinging cymbal by playing a roll round its edge by means of a pair of small-drum sticks in all grades of tone, *crescendo* or *diminuendo.* The tone, *p* and *mf* is penetrating and metallic; *f* or *ff* it is mysterious and fearsome — an effect enhanced by a simultaneous roll of the drums.

See the following example f and Pt. VII, p. 40: Ex. a.

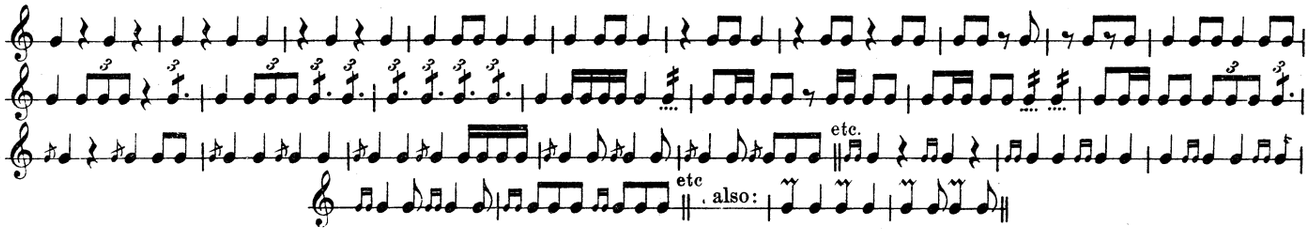
The military drums

are clear and rattling in sound. They are used in concert and theatre orchestras, but more frequently in military and dance bands; their music is written in the violin clef on *c* or *e*, 1.)  or on one line. 2.) 

This latter occurs only in the score; the former in both scores and parts. Sometimes the military drum part is found in a score with that of the big drum on one line, both then being written in the bass clef: thus,

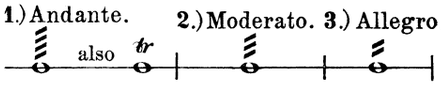
 or in score, thus:  the latter only, however, to save space.

On this drum the most varied and complicated rhythmical figures are playable, (tremolos or rolls in all grades of strength from *pp* to *ff* or vice versa), by means of two sticks. Here follow a few of these, which can be played in almost any tempo.

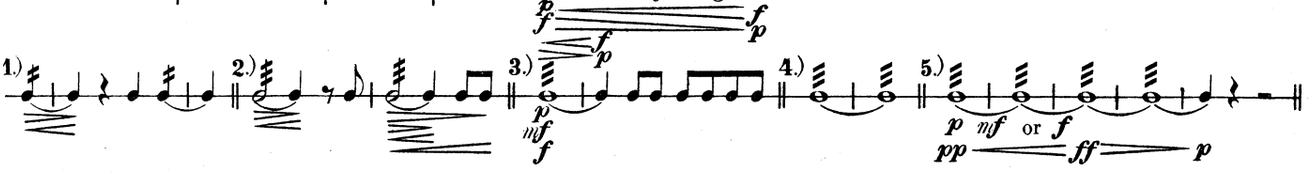


The roll is written thus:

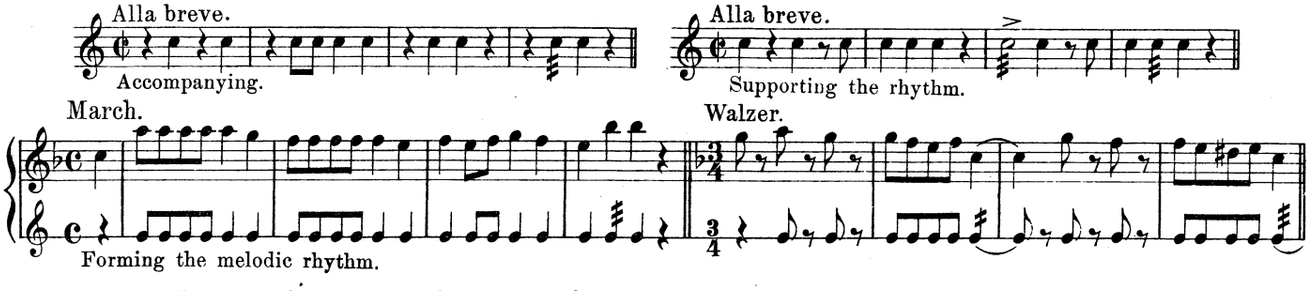
1.) Andante. 2.) Moderato. 3.) Allegro.



It can be for any length and with the shades here shown.



If whole or half notes are written in a not very rapid tempo they have not the correct effect if executed by one stroke. If, however, the note is to sound longer — which can only arise from a roll — the notes are written as a roll in the fit tempo. The method of writing for this drum is difficult in that great care must be taken with regard to the alteration of the rhythmic figures. In marches and dances this drum is used to accompany and to mark the rhythm of the melody: e. g. (accompanying — supporting the rhythm — supporting the melody rhythmically).



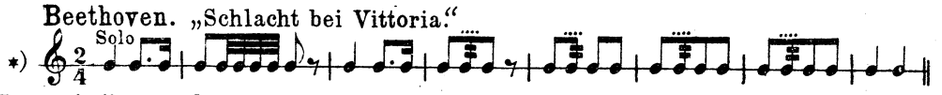
A dull colour can be produced by means of a 'mute', or piece of cloth placed between the under skin and the snares, so that the vibrations are stopped. The tone is then like that of the drum to be described next, dull and mild, but not so strong as that of the latter. The 'muted' drum is not often used. If the tone is required to be dulled, notice should be written in the parts, and a few bars rest allowed before its introduction in the middle of a piece.

The following and other composers have used the small drum in their works:

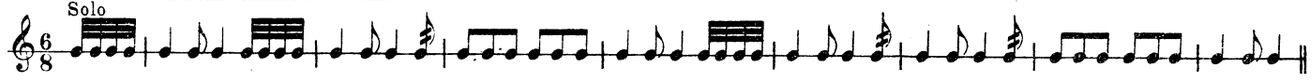
Auber. „Die Stumme." „Fra Diavolo."
Donizetti. „Die Regimentstochter."
Rossini. „Belagerung von Corinth." „Die diebische Elster."
R. Wagner. „Rienzi" etc.
Meyerbeer. „Afrikanerin" „Prophet" „Nordstern" etc.

The following solos from well known works will be of use and interest to the student.

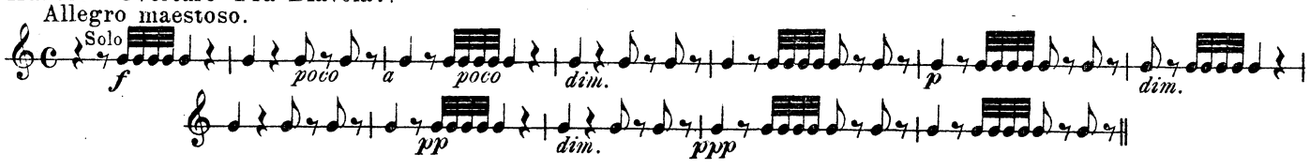
Beethoven. „Schlacht bei Vittoria."



Beethoven. From similar works.



Auber. Overture 'Fra Diavola'.



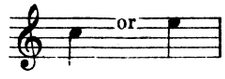
In the small-drum part those for triangle, Glockenspiel and other instruments can be included, provided that the player has time to undertake them. The names must be written over the part. The player requires but little time to change from one instrument to the other.

See Pt. VI Ex. in score f: and VII, Ex. d p. 40: and Examples in score e p. 58.

The roll drum (Caisse roulante)

differs from the small or military drum in that its body is of wood, it is larger and longer, and has no snares on the under skin. Its tone is dull, resembling somewhat that of a 'muted' small drum, but deeper, or a medium kettle-drum. It is written for precisely like the small drum. It is very rarely found in orchestras, but occurs as a stage instrument in opera. Berlioz has used it in the 'Tuba mirum' of his Requiem, and Wagner in 'Rienzi'.

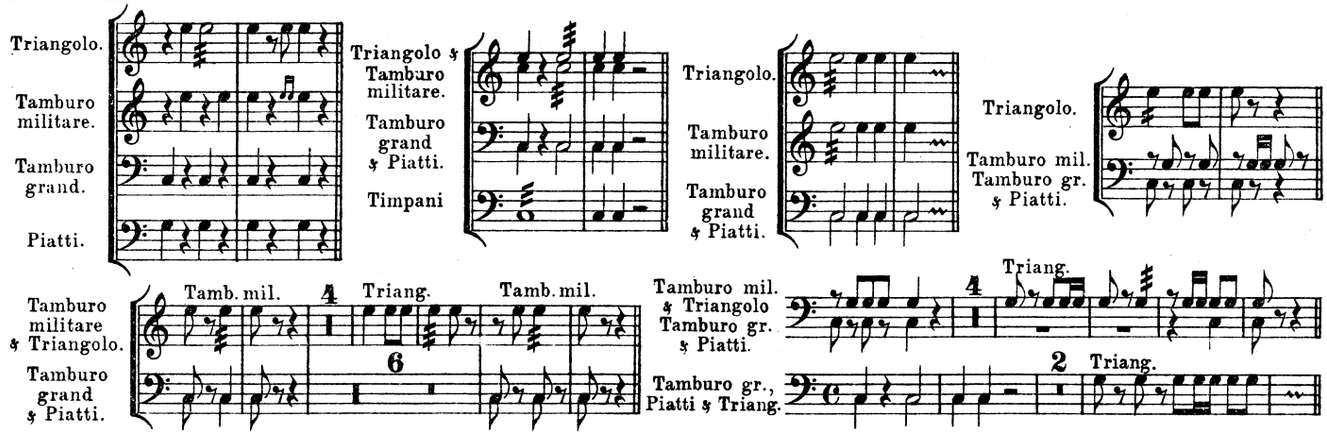
The triangle

is of thin steel bars, hung upon a string, and made to vibrate by means of a steel rod. It has a clear, bell-like tone in a high but uncertain pitch. Its notation is in the violin clef 

but sometimes (as will be seen) the bass clef is used. Many kinds of rhythmic figures are playable, as well as rolls and tremolo, without any difficulty and in many grades of tone. (See small drum). All these are written like those of the small drum. It can be used alone or in combination with other instruments; but its chief use is for decorative purposes. Its effect may be very graceful and happy, but also if used in the wrong place, trivial. The triangle has been used by many composers, many of whom, again, through want of knowledge, produce an effect entirely different from that intended. In the works of some of the masters, it is used for characteristic purposes, in opera and concert music, as will be seen. But the triangle is most often found in simple music of the dance kind, where, truly, it can do but little damage, for the great public likes a little tinkling.

*) Put on one line to save space.

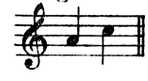
The different modes of writing for the various percussion instruments already described in score and parts are as follows:



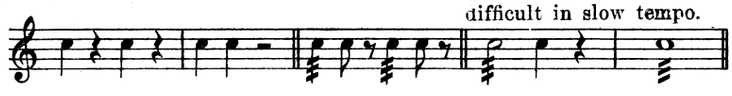
See Ex. f in following Exs. in score: and Pt. VII, p. 52, 64.

The basque drum or tambourine

s an instrument dear to the heart of some southern folk, for whom it heightens the rhythm of dances. It is wood-rimmed with a tanned skin drawn tight: on the edge or in the middle of the frame are small pieces of imetal which sound together when the instrument is struck. This last is effected by the back of the right hand on the skin, the ends of the fingers 'stroking' the skin. Its notation is in the violin clef thus;



and its tone resembles that of the small drum (muted) without snares. The noise of the tiny metal plates, which mix well with other instruments, can have a very happy and characteristic effect. As, however, only two kinds of noise are possible on this instrument, its notation is of the simplest, thus:



Its music may also be written on one line.

The instrument rarely occurs in the orchestra; but it is used characteristically by Weber in 'Preciosa' (see score-Exs.), and Donizetti 'Don Pasquale' and Bizet 'Carmen'.

See Ex. f, p. 104, 105, 111—112.

The tambourin

proper is a small drum in a narrower though longer form and is struck with a clapper. It is used for precisely the same purposes as the above, but here only single strokes may be used; it is always played in conjunction with a small pipe, or flageolet, both being taken by one player, the pipe with the right hand and the drum with the left. It never occurs in the orchestra. Its effect can, more a less be reproduced by the piccolo in the middle register and the muted small drum.

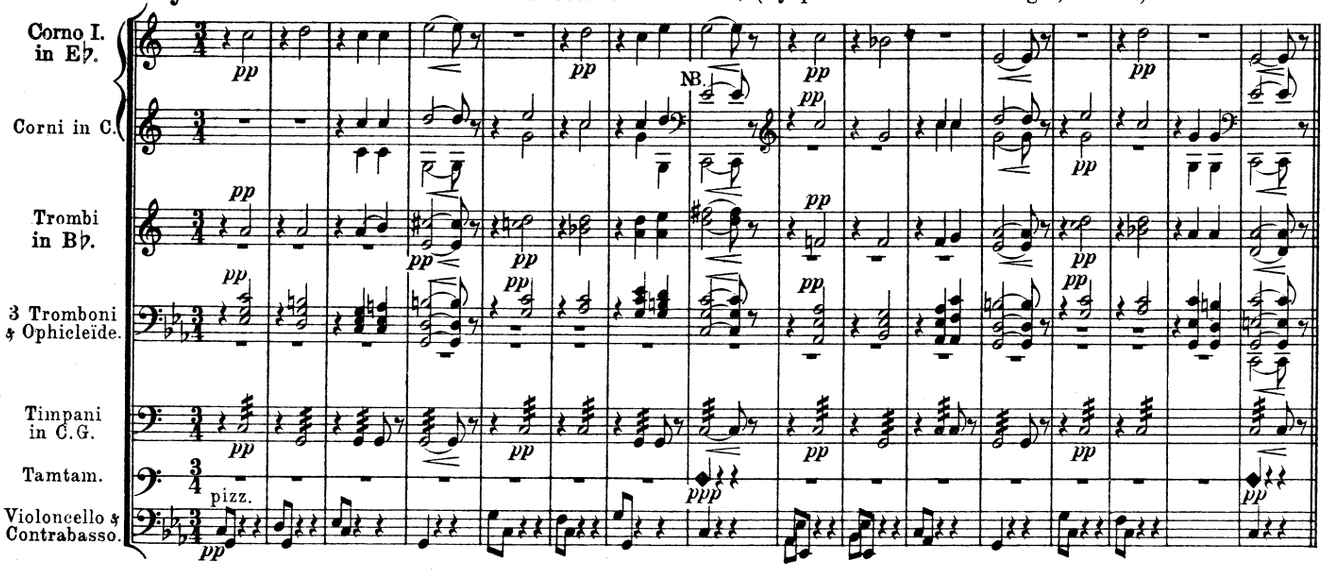
The tam-tam

is a metal instrument resembling a very large plate, with small edge, hanging from a string and caused to sound by means of a wooden clapper.

The bass clef is used for it, and notes formed thus if possible ♩ 𝅗𝅥, to be more easily seen. Short notes are not practicable, for the instrument resounds too much, which indeed is its characteristic effect. Single tones *pp, p* or *mf* sound sad and gloomy, but these *f* or *ff* are powerful, fearsome things. It is used in funeral music and for dramatic effects, where awe and the horrible an required to be expressed.

The Tam-tam can play alone or in combination. It is of fearful effect when it plays *f* with the brass, but it can be used *p* or *pp* for dark, gloomy effects. See the annexed example.

Meyerbeer. 'Robert the Devil'. Procession of Nuns. (By permission of Schlesinger, Berlin.)



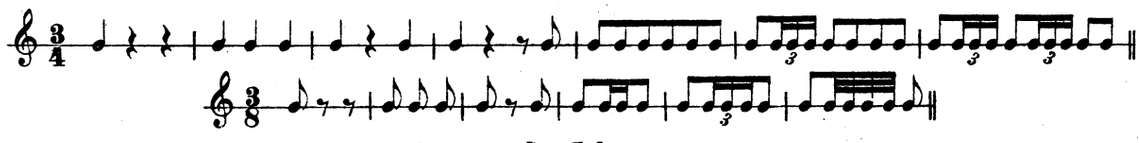
NB. The horns in C in the bass clef sound as written.

The following composers have used the tam-tam: Cherubini (Dies irce of his Requiem in C-mi:) Gounod Faust'; Bellini in 'Norma'; Spontini in 'Fernand Cortez'; Halevy 'La Juive'; Berlioz 'Requiem'; Volkmann 'Richard III'.

The castagnets

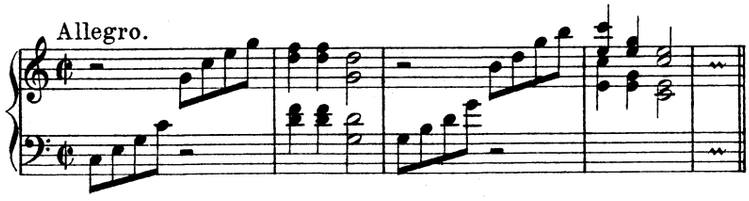
are used in the orchestra for rhythmical effects and a peculiar colour. They are of Spanish origin, are always used in pairs, and are played by dancers. Orchestral castagnets differ from the former. The original material of the dance-castagnets is hollow wood shaped like a pear, two of which fit together; at the narrow end they were tied by a piece of string. They were fastened to the thumbs of both hands, laid in the hollow of one, and made to sound with the fingers, a sharp click being the result. Those used in the orchestra are constructed (for easier playing) in the same shape, but between the shells, as it were, is a wooden tongue of the same breadth to which the back pointed end of the shell is fixed, so that the foremost part can move. These are sounded by rattling or shaking rhythmically with the hand or arm; but their sound is inferior to the other. They are used in ballets, or spanish music; and are written for, like the small drum, yet without the same amount of rhythmical variety.

The following shows the rhythm of spanish dances.

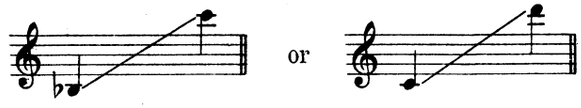


The Glockenspiel

is used by Mozart in the 'Magic Flute', wherein the most is made of its compass and practicability. It was a cymbal with key board, had octaves of compass and was written for on two lines, thus:



It sounded, however, an octave higher than written. On the present Glockenspiel this is impossible since the instruments have not always the necessary compass, and, moreover, are constructed differently. Those used in orchestras consist of a number of pieces of steel tuned diatonically or chromatically, and sounded by means of one or two small hammers with steel heads. The tone is crystal clear and penetrating. They are built in varies shapes: 1) lyre-shaped, in which keys are fastened by or hang from strings: 2) steel notes placed in rows on pieces of wood in a box, and struck with hammers: 3) the same but having a key board. The 1) is used in military bands chiefly: 2) in orchestras generally: 3) is rarely found any where in spite of its being the easiest to play. Its music is in the violin clef; compass, with chromatic intervals;



and it sounds an octave higher than the written notes. Since in music the whole of the compass does not often occur, the player plays the notes as seems best to him.

It is well to add at the beginning of a score the notes required thus:

The signature of a key is not given, accidentals being placed in the music itself, as in the above example.

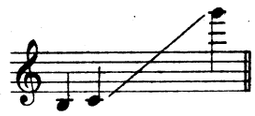
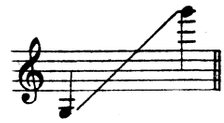
Rapid rhythmical figures are not often found, but as a rule only diatonic or chromatic progressions, which may be played slowly or rapidly according to the skill of the player. In military and dance music the Glockenspiel is used frequently, both to take the melody and to suggest it rhythmically. It is rarely met with in more important music, but Meyerbeer has used it in 'L'Africaine', and Wagner in 'Die Walküre'.

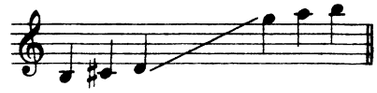
It is generally undertaken by the drum players, and its part often, therefore, written in that for drums. See Pt. VII No. 75.

The Xylophone

consists of a number of various sized semi-circular pieces of wood arranged in order, arranged on and bound by two strings; these are laid on two straws so that each is disconnected from the next; they are sounded by one or two small wooden hammers.*) Their music is written on one line in the violin clef, and sounds an octave higher than written.

*) Nowadays they are differently constructed.

Their compass varies, thus:  or  with the chromatic intervals.

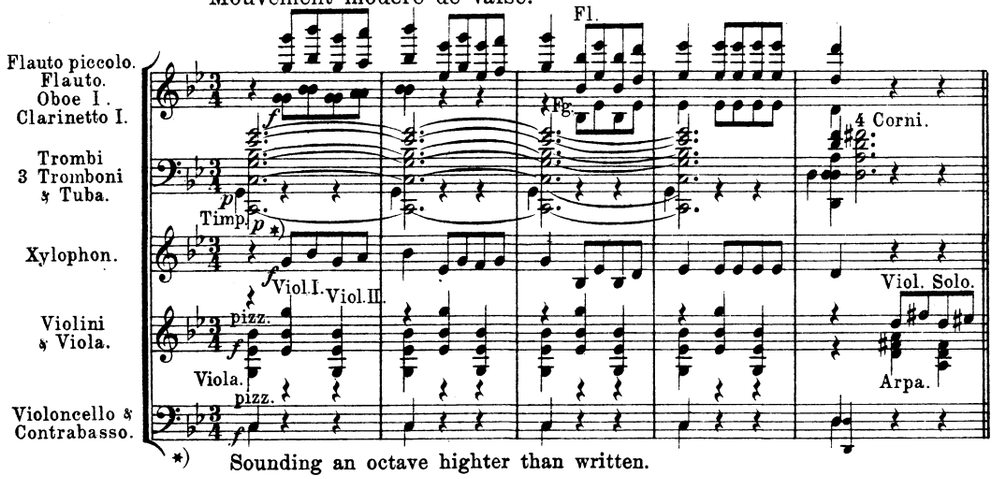
The best register is 

Many rhythmical figures, passages and ornaments are playable. The instrument is chiefly used in dance music, though there exist solos for it.

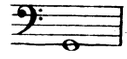
Saint-Saëns has used it effectively enough in his 'Danse Macabre'. The notes sound an octave higher than they are written.

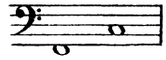
Saint Saëns. „Danse Macabre."

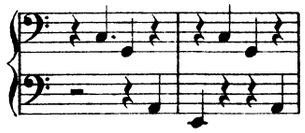
Mouvement modéré de Valse.



For certain characteristic purposes other means of producing sounds are used, which can hardly be described as musical instruments. Beethoven, in his 'Battle symphony' has used two rattles to describe the small fire of the fighting hosts; and Weber in 'Preciosa' has bells for his Gipsy music. There are also large bells, in many operas, which often are wongly written for by composers.

Rossini in 'Tell' has for a bell: 

Meyerbeer uses two in 'Les Huguenots; 

Wagner in 'Parsifal' has four: 

Since bells, which emit these deep tones, are rarely bought by theatrical managers owing to their cost, their size and weight, many experiments have been tried to obtain the same tone from another source, or to substitute smaller bells of a higher pitch.

The following table shows the weight and size of a bell for a given tone.

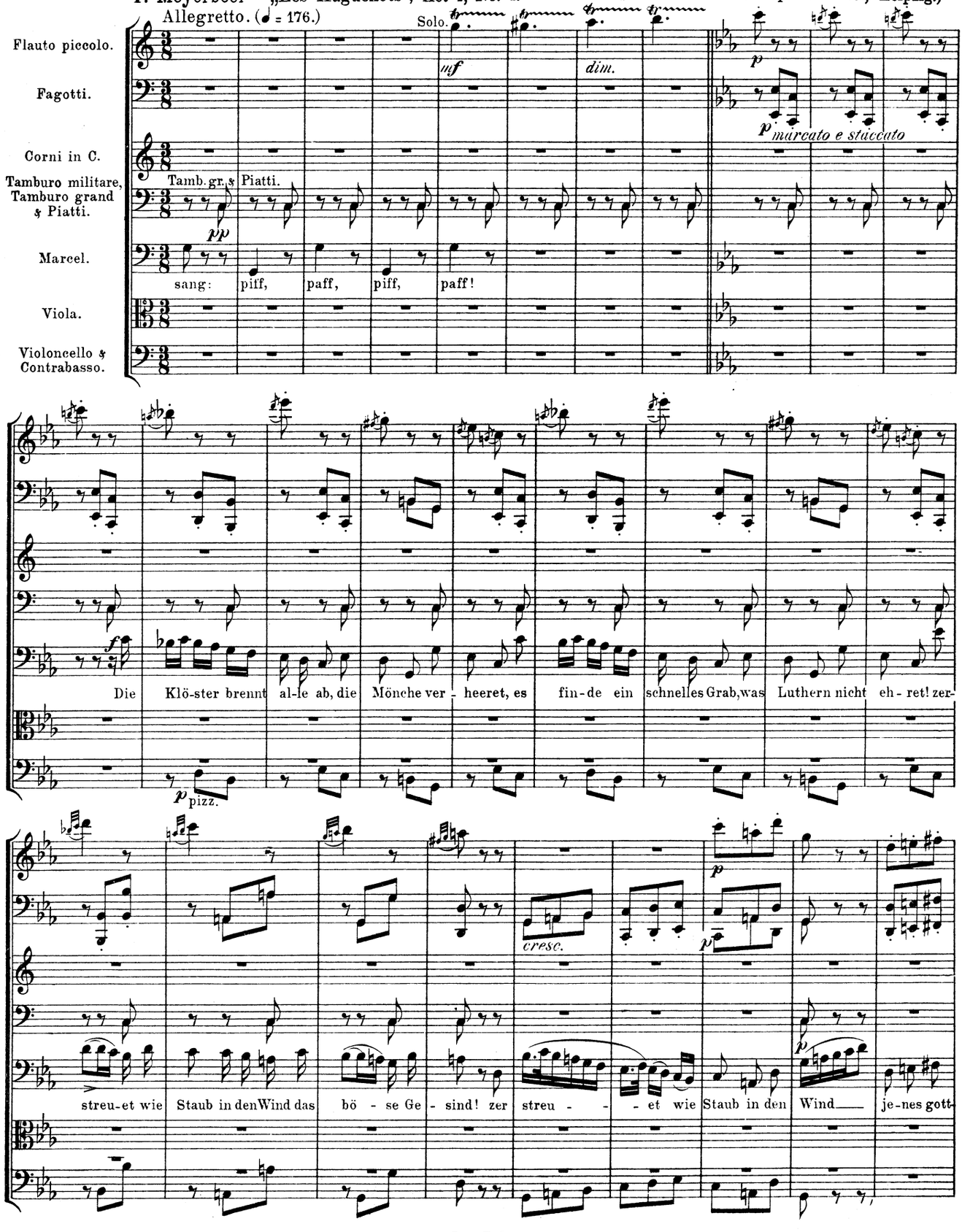
Great,	**E**	lower	Diameter	ser	**2**	Meter	**35**	Centimeter	**8**	Millimeter,	Weight	**128**	Centner.
„	**F**	„	„		**2**	„	**21**	„	**2**	„	„	**107 5/8**	„
„	**G**	„	„		**1**	„	**96**	„	**9**	„	„	**76 1/8**	„
„	**A**	„	„		**1**	„	**75**	„	**2**	„	„	**53 3/4**	„
Small	**c**	„	„		**1**	„	**47**	„	**5**	„	„	**32**	„

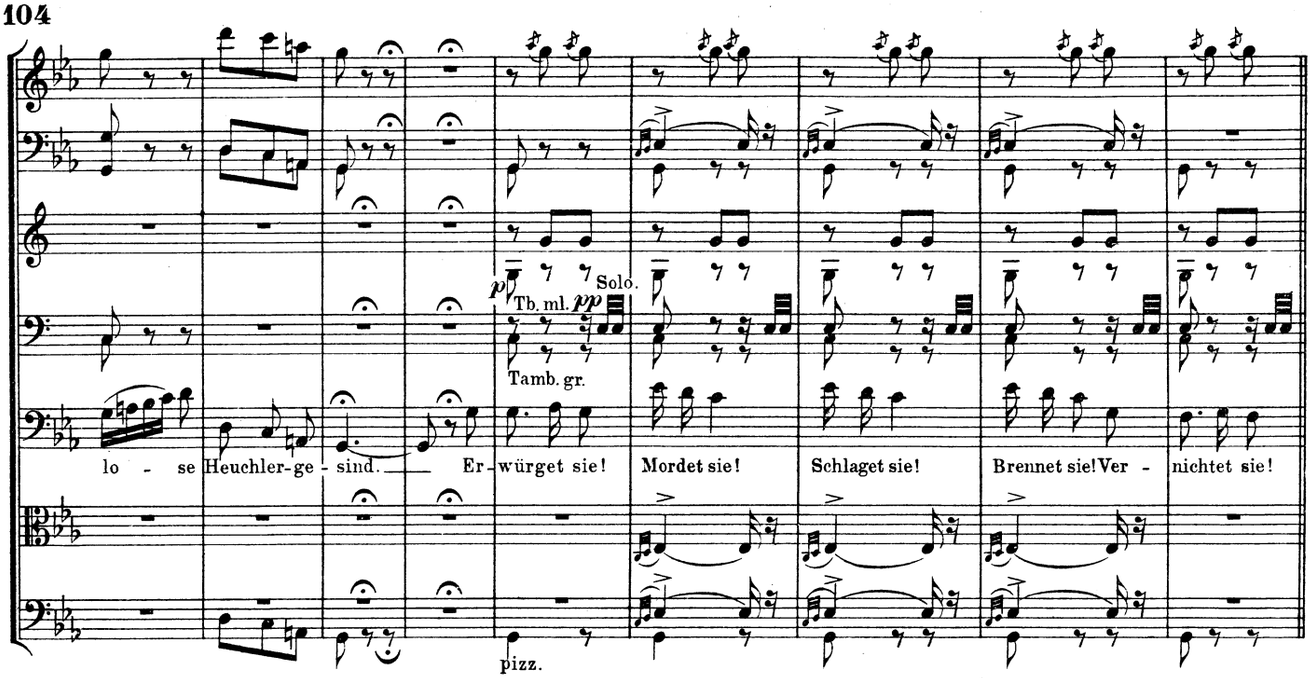
All such instruments as are used in Beer-Garden Concerts for comic and similar effects need not be described here.

Examples in score[f].

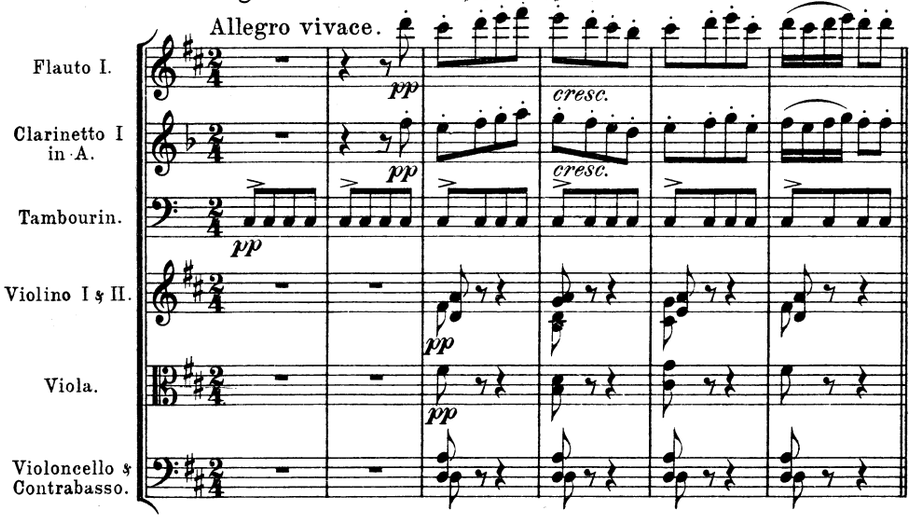
Percussion instruments in combination with strings, wood and brass.

1. Meyerbeer „Les Huguenots“, Act 1, No. 4. (By permission of Breitkopf & Härtel, Leipzig.)

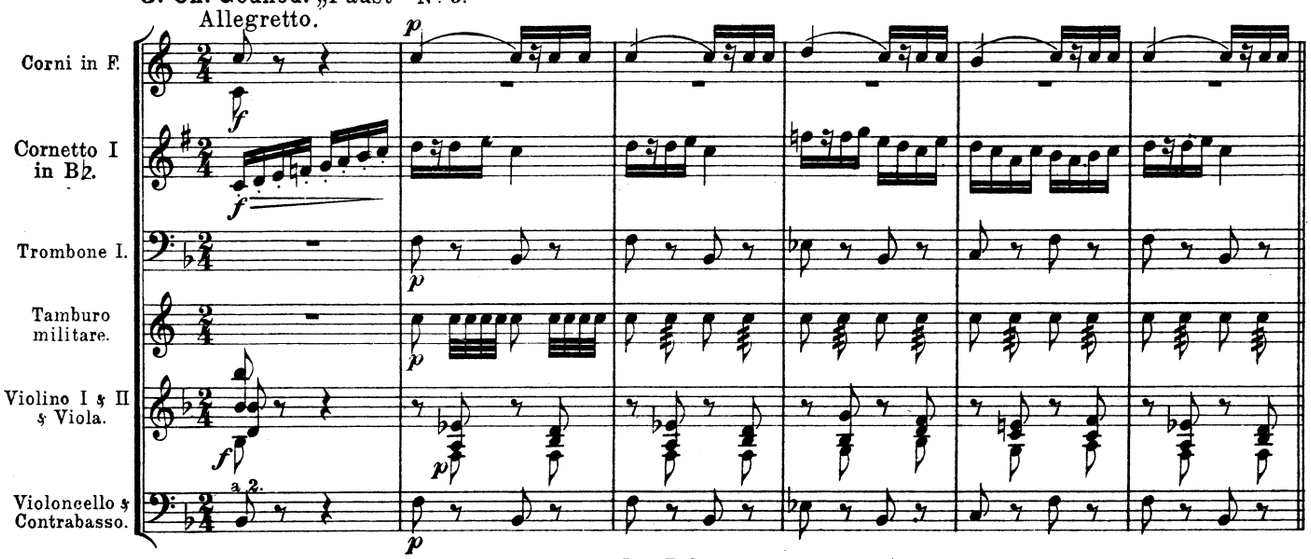




2. George Bizet. "Carmen", Act IV, No. 25b.

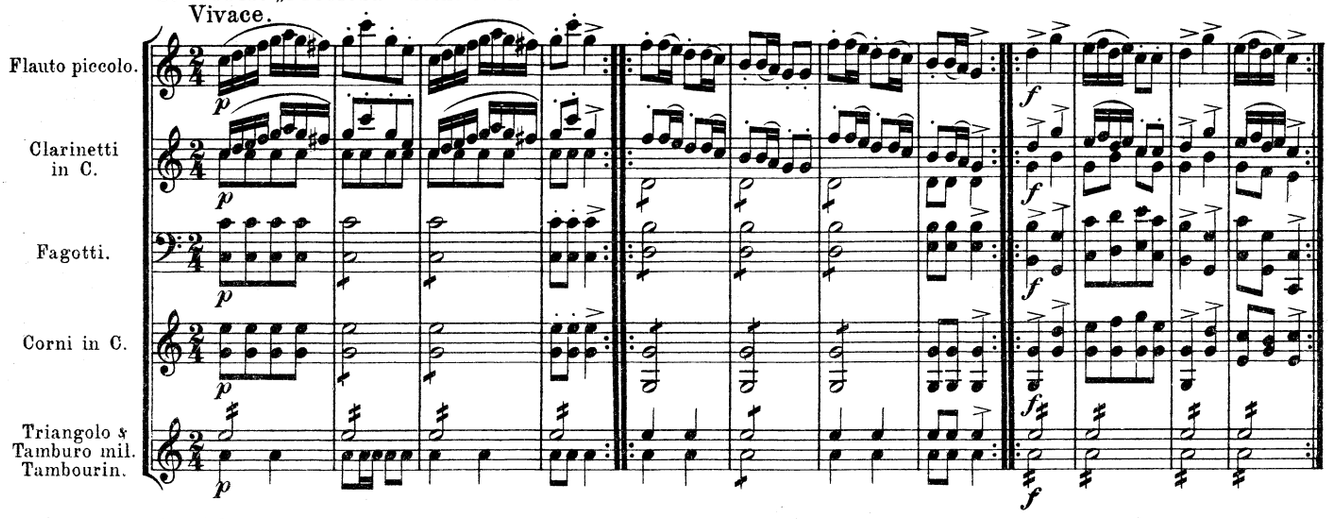


3. Ch. Gounod. „Faust" No 5.



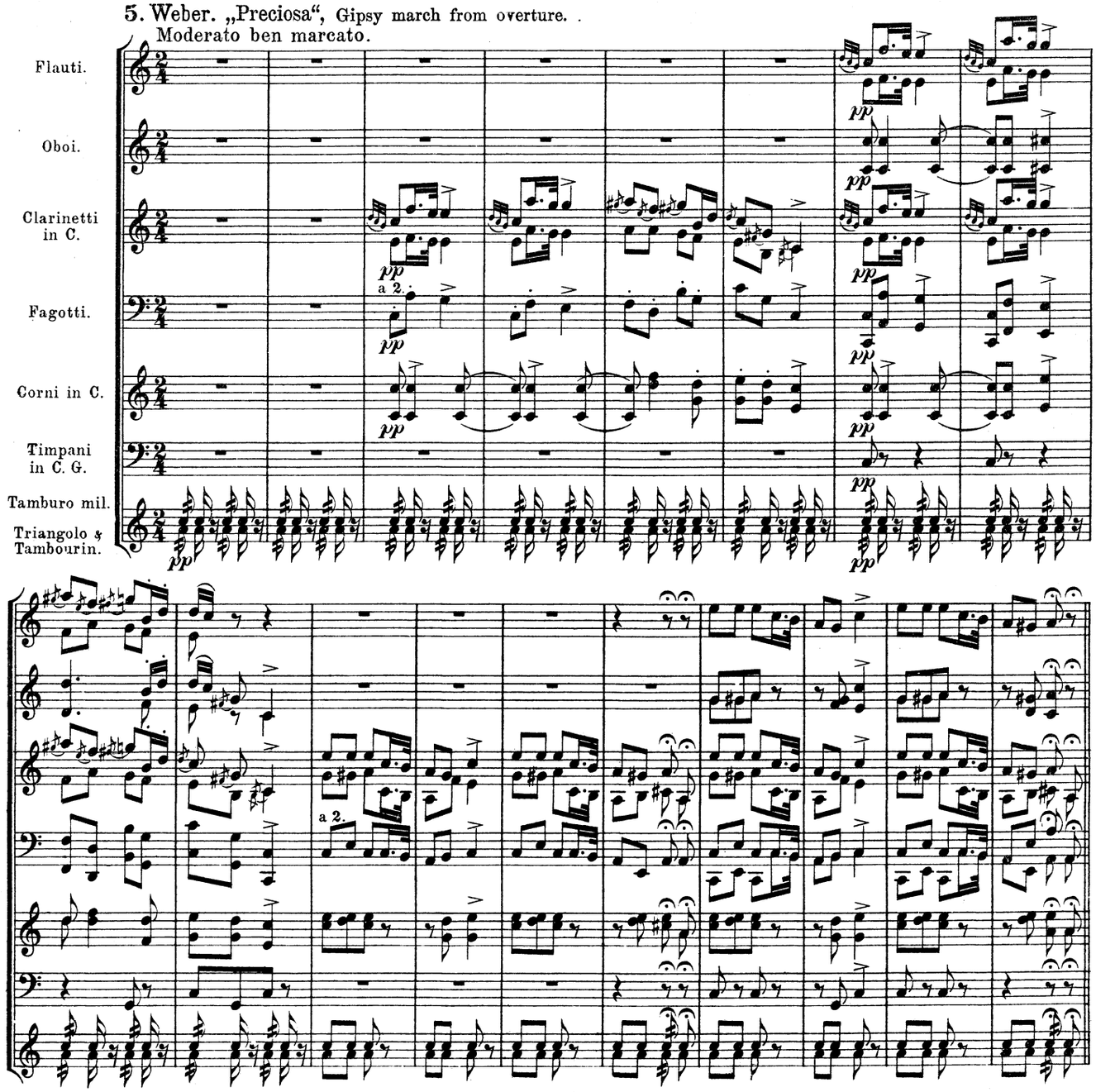
4. Weber. „Preciosa“ Scene № 7.

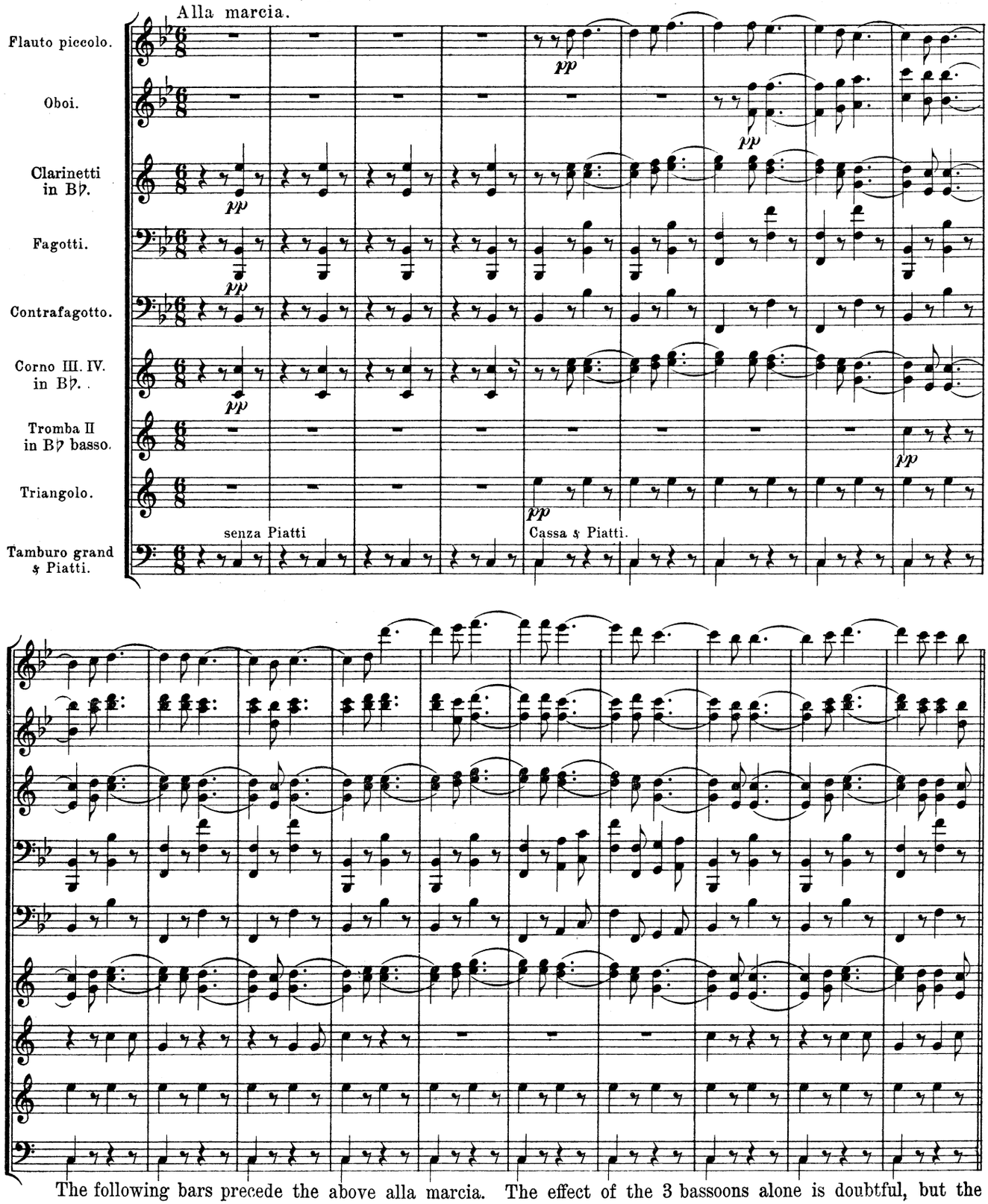
Vivace.



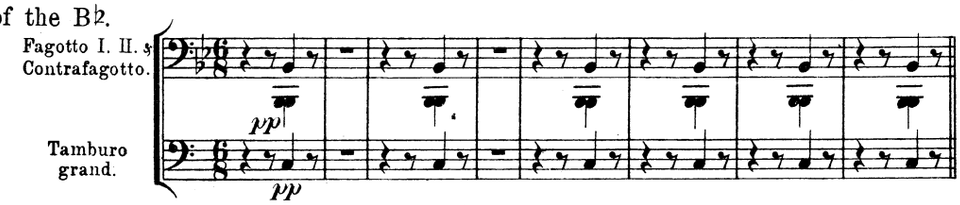
5. Weber. „Preciosa“, Gipsy march from overture.

Moderato ben marcato.



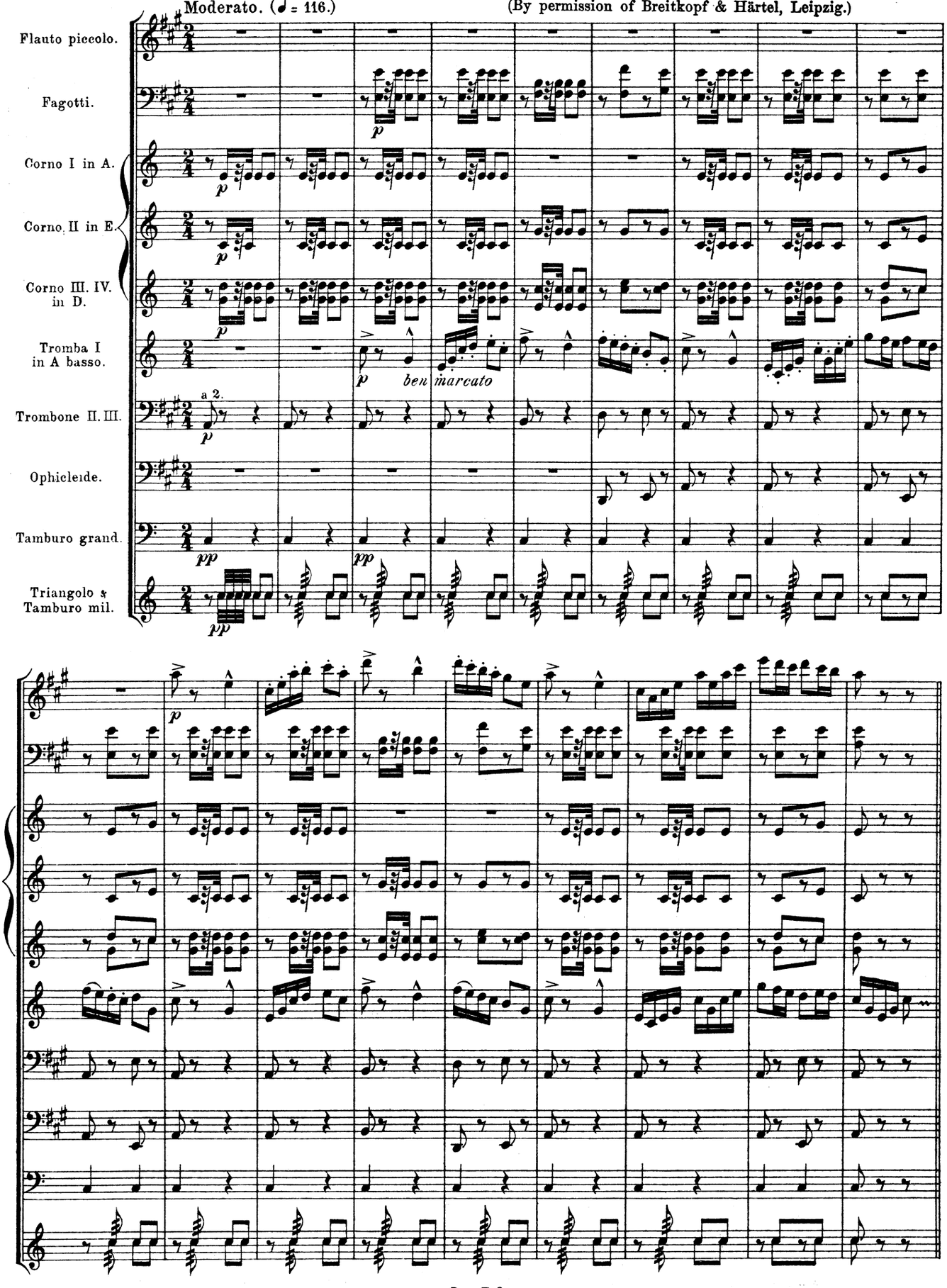


The following bars precede the above alla marcia. The effect of the 3 bassoons alone is doubtful, but the big drum increases the power of the B♭.



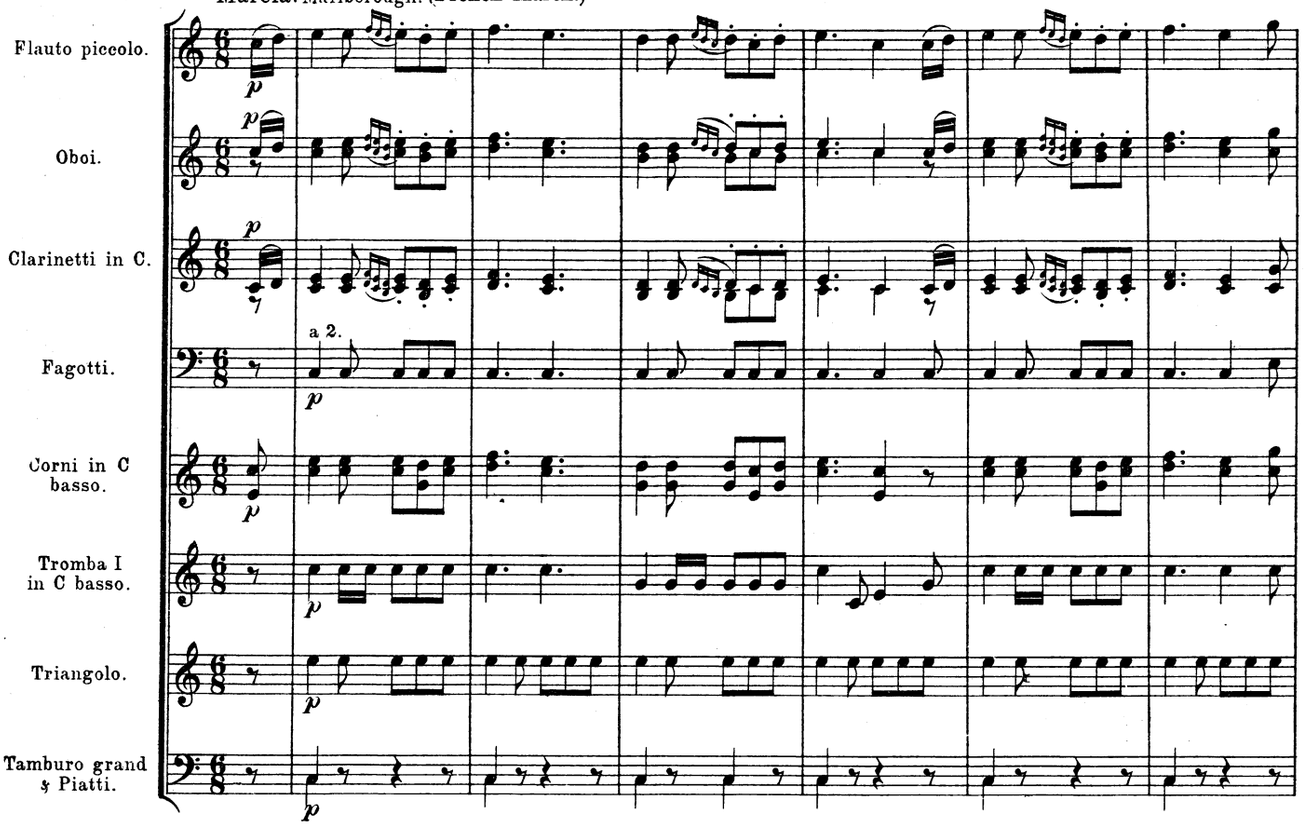
7. Meyerbeer. „Les Huguenots". (Gipsy Dance.)

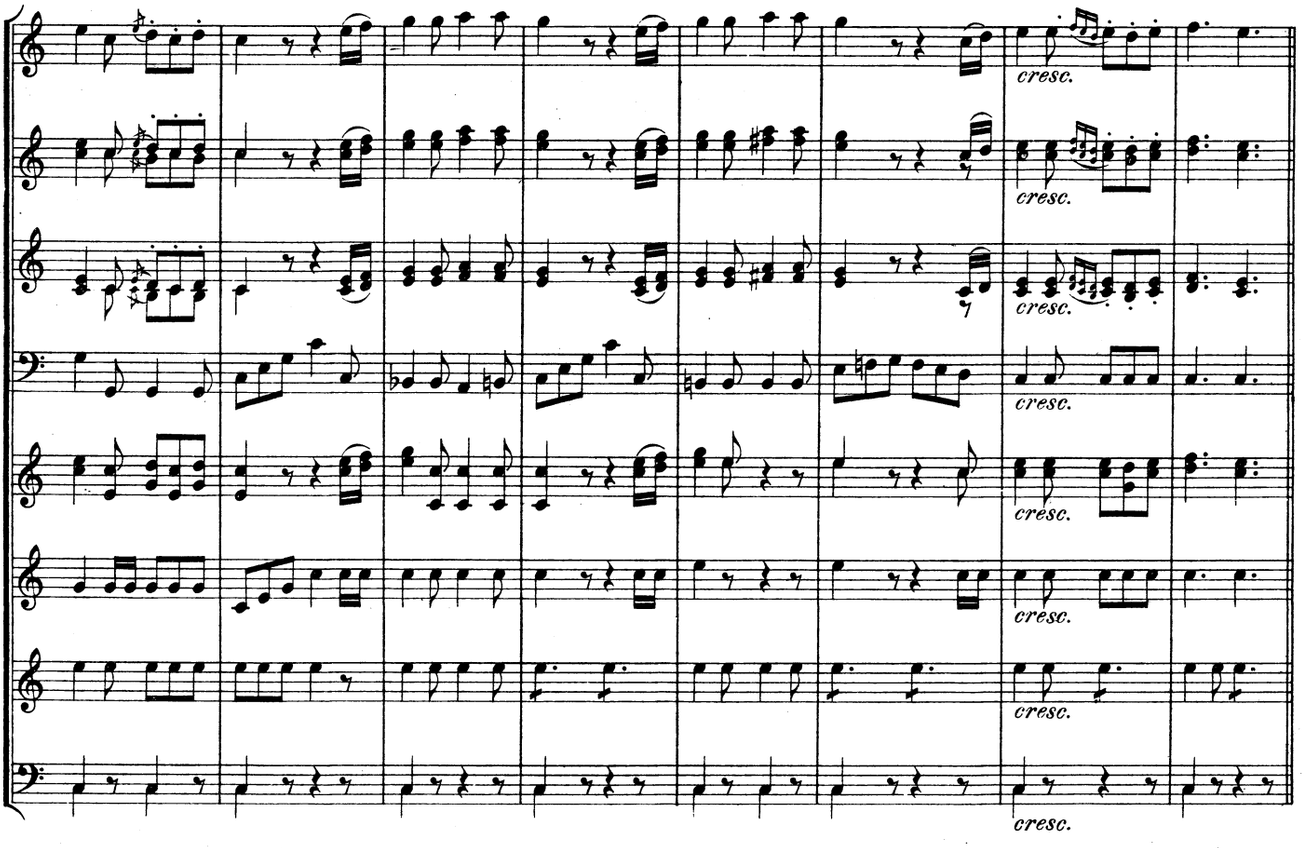
Moderato. (♩ = 116.)



8. Beethoven. „Wellingtons Sieg“ or „Die Schlacht bei Vittoria“ Op. 94.

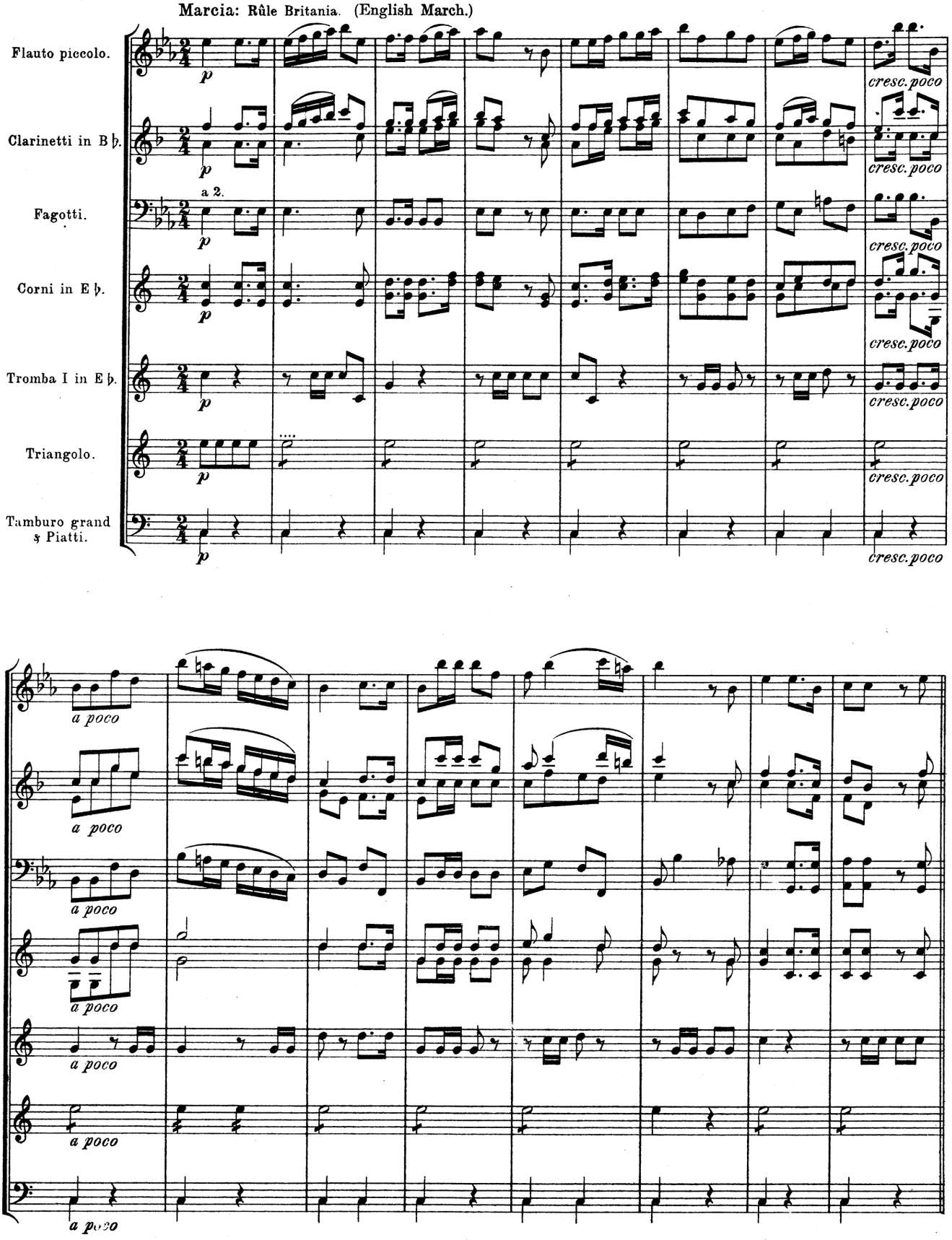
Marcia: Marlborough. (French March.)





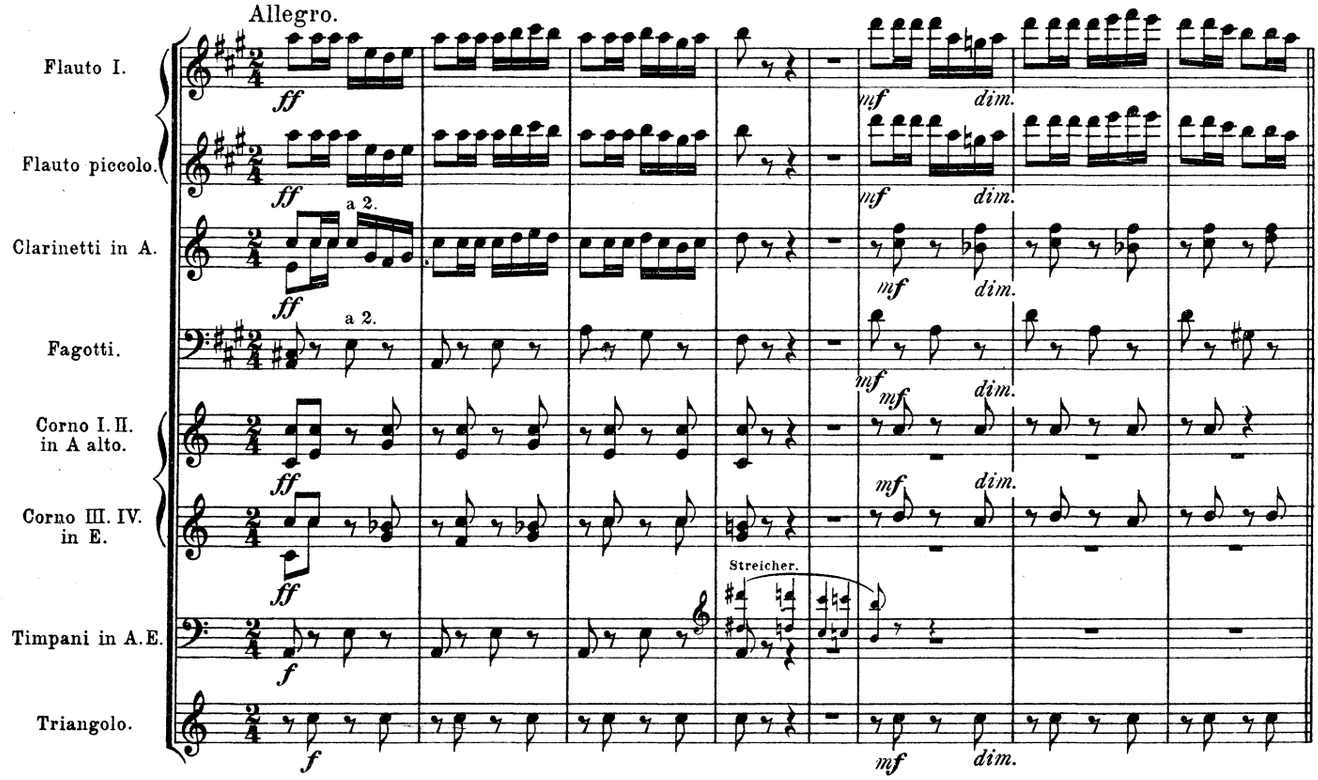
9. Beethoven. „Wellingtons Sieg“ or „Die Schlacht bei Vittoria“ Op. 94.

Marcia: Rûle Britania. (English March.)



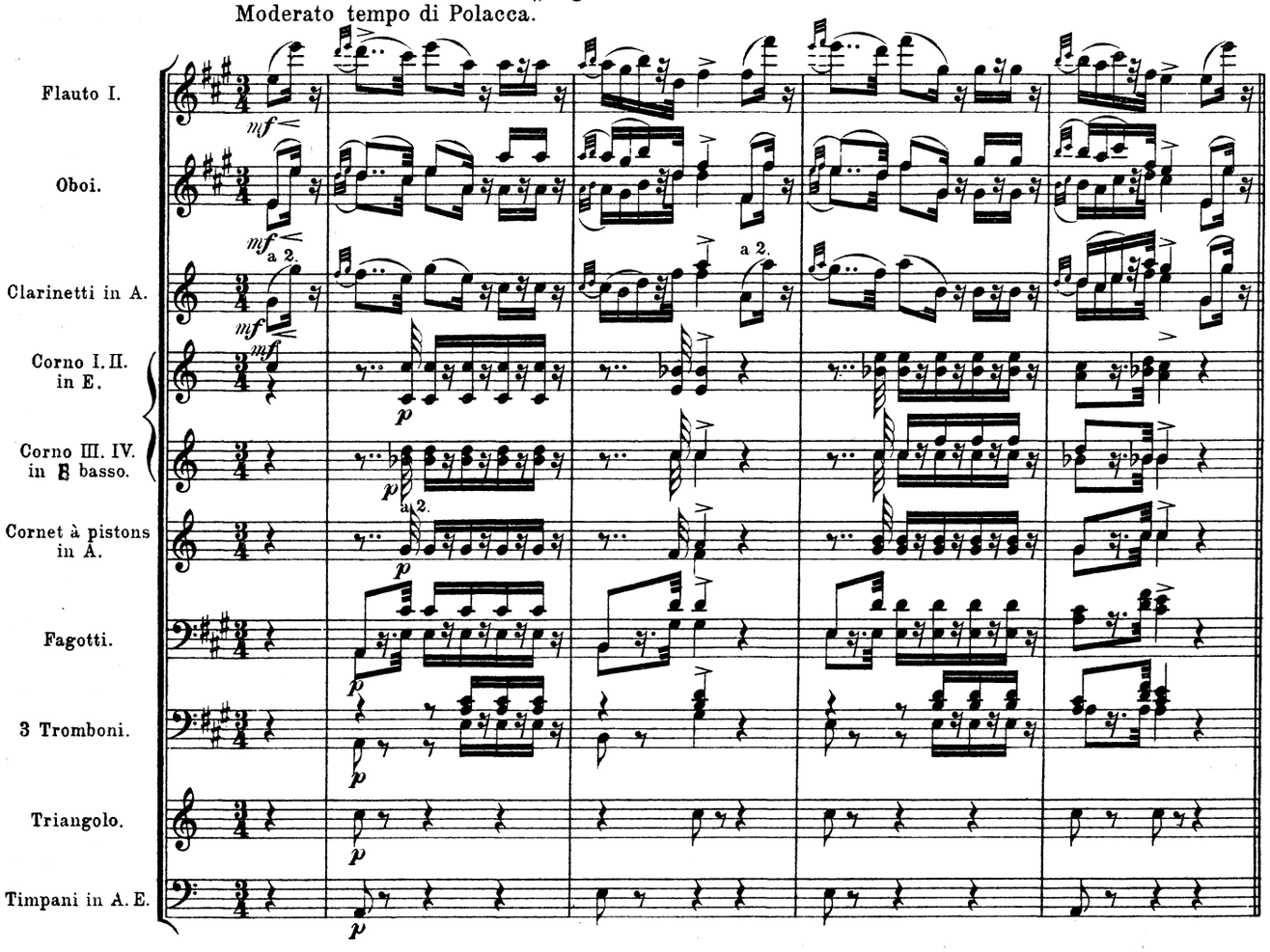
10. George Bizet. „Carmen", Act IV, No. 26. March and Chor.

Allegro.

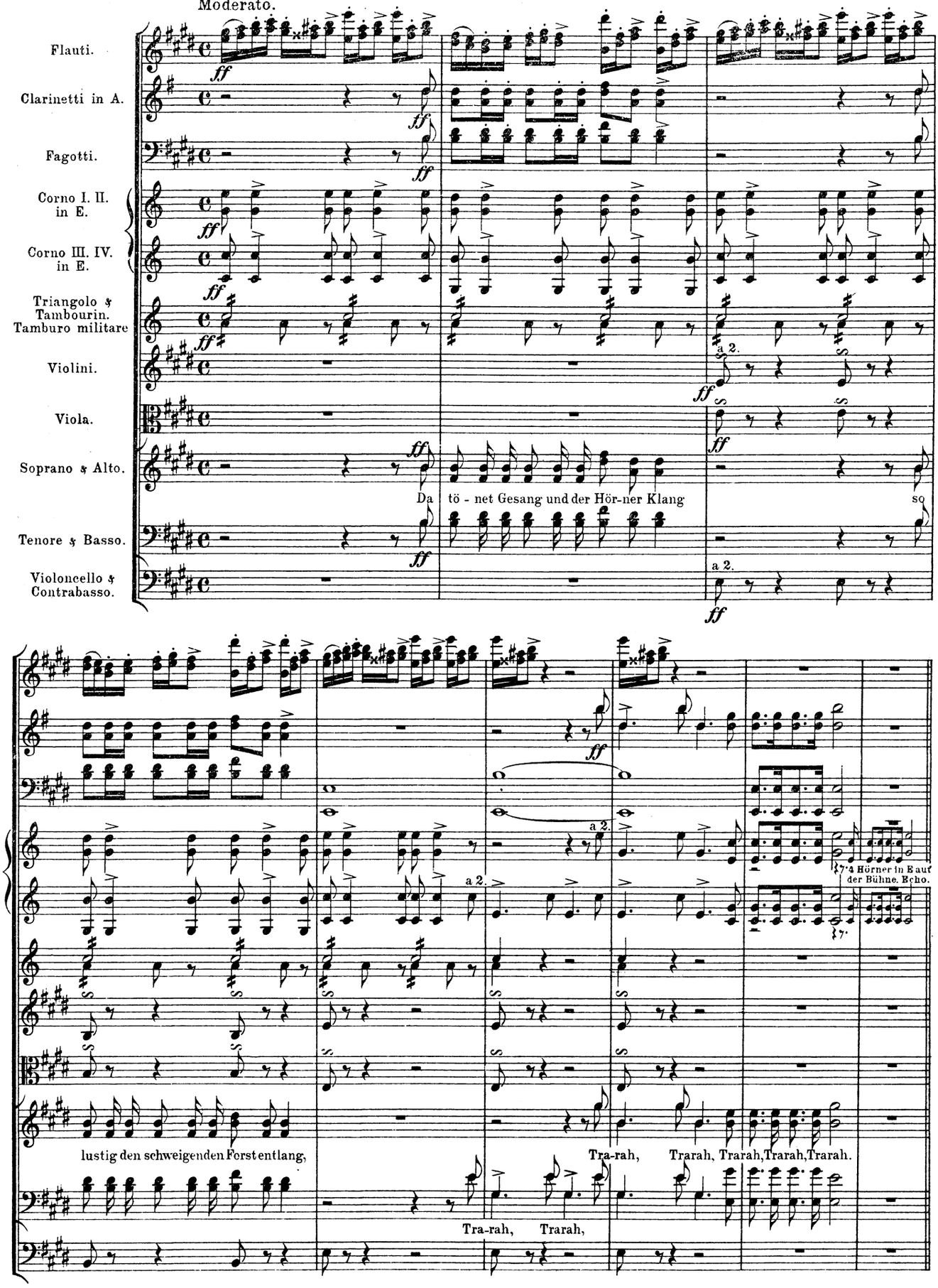


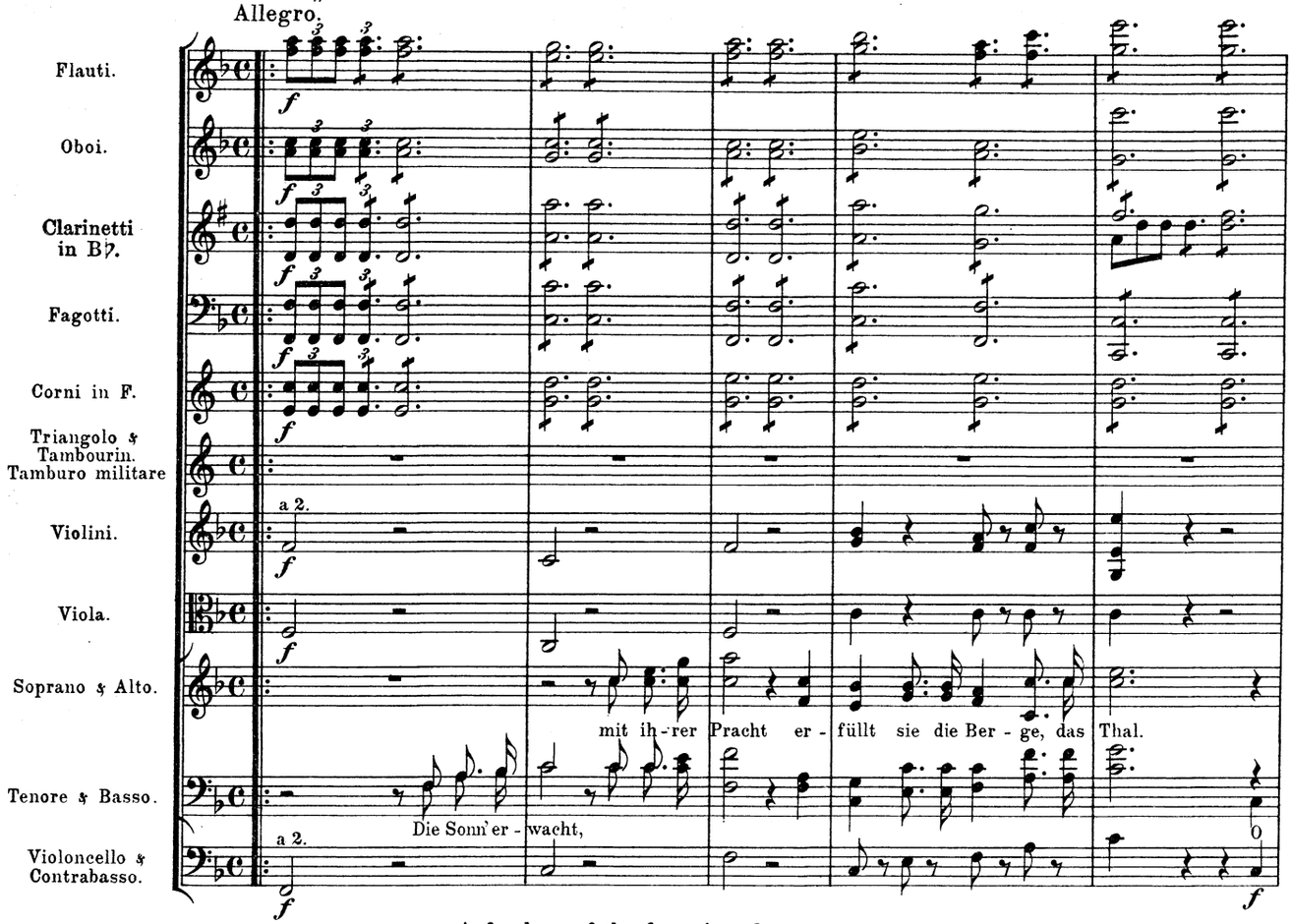
11. Ambroise Thomas. Overture „Mignon".

Moderato tempo di Polacca.

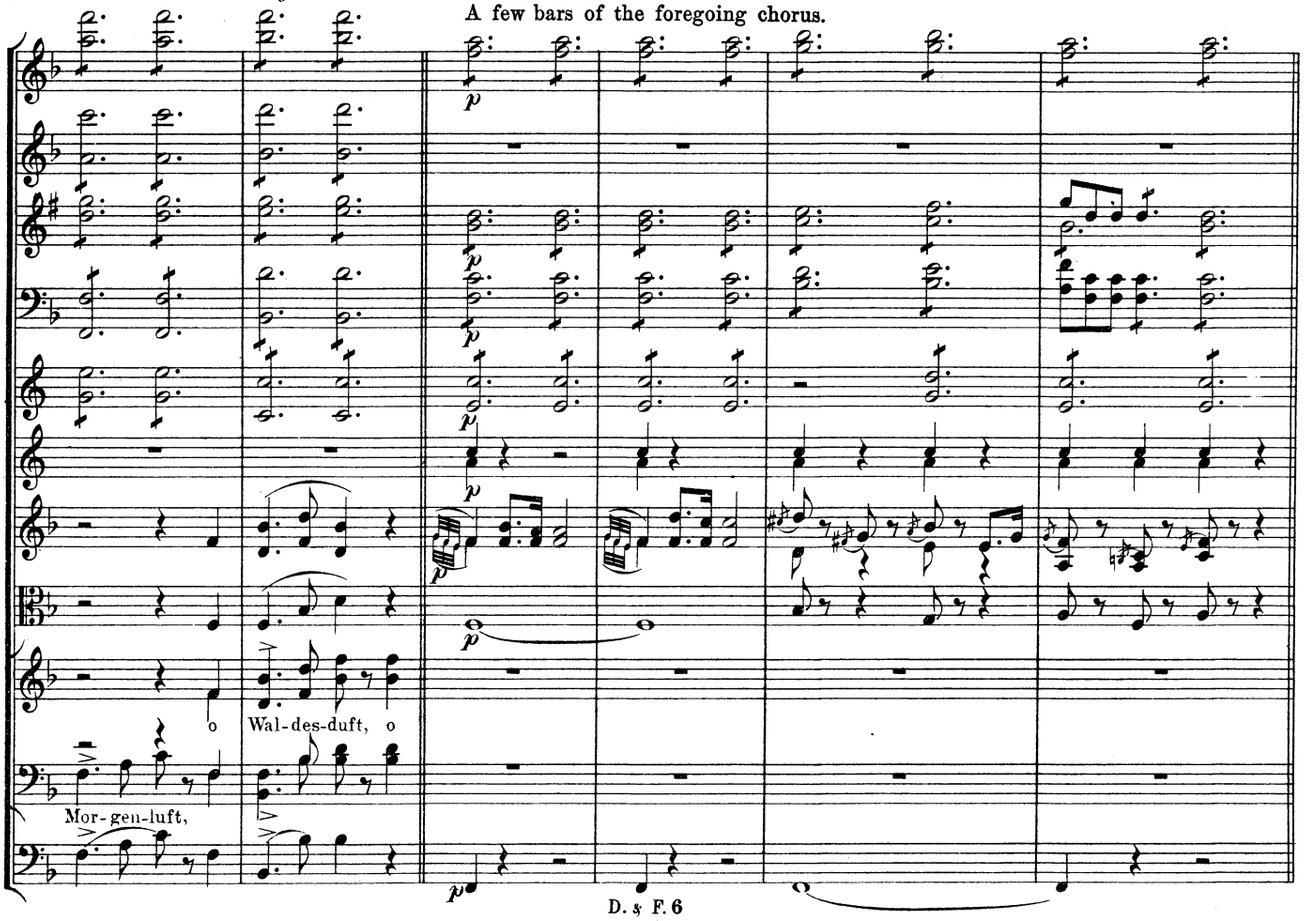


Moderato.


Flauti.
Clarinetti in A.
Fagotti.
Corno I. II. in E.
Corno III. IV. in E.
Triangolo
Tambourin.
Tamburo militare
Violini.
Viola.
Soprano & Alto.
Tenore & Basso.
Violoncello & Contrabasso.
ff
a 2.
Da tö - net Gesang und der Hör-ner Klang so
lustig den schweigenden Forst entlang,
Tra-rah, Trarah, Trarah, Trarah, Trarah.
Tra-rah, Trarah,
4 Hörner in E auf der Bühne. Echo.



A few bars of the foregoing chorus.



14. R. Wagner. „Lohengrin“, Act III, Scene I.

Mässig bewegt.

(On the stage.)