

# Overview of Chant theory

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## How to read chant

When we learn music, we must understand the notation and what it indicates to us. One component of that is pitch identification – is a note higher or lower than the previous note, and by how much? Where does it fall within the scale? Another aspect is pitch duration – how long should I hold this pitch before moving to the next? Lastly, how do I intelligently read the notation so that I can sing / play it musically?

First, let's begin with how to identify pitches in the chant notation. Like modern notation, chant uses a **staff** and **clefs** to indicate relative pitch. The staff in chant notation is virtually the same as the modern staff except it consists of four lines rather than five. In chant, there are only two clefs – the DO clef and the FA clef. Chant is focused on the relative pitch indicated (the DO, RE, MI, etc.), not the absolute pitch indicated, though technically DO means middle C and FA the F below middle C. Because of the flexibility inherent in the Sol-Fege scale, we will chant a piece in the range that feels comfortable for the cantors (first) and the choir (second). Note that this is different from modern notation where two commonly used clefs (the treble clef and the bass clef) both point to absolute pitches – the treble to the G above middle C and the bass to the F below middle C. Although we can apply Sol-Fege to modern music as well, it is more complex to do so because modern music has at least fifteen different keys, whereas Chant only uses one. Additionally, modern music uses the full **chromatic** scale, chant uses the **diatonic** scale. (We'll talk more about the differences in the two scales later.)

The importance of the clefs in chant, then, is not to identify a *particular* pitch but simply *a defined point in the scale* to which the notes in the piece can be easily related – the 'DO' or the 'FA' within the major scale of the selected key signature. This is what makes Sol-Fege such an important tool in sight-singing chant. By mastering the tool, you free yourself of the encumbrance of 'translating' pitches from one key to another, rid yourself of 'crutches' like a keyboard, and begin to fluently read intervals in terms of Sol-Fege intervals.

Clef symbols will appear at the beginning of every staff. The DO clef consists of two rounded blocks joined by a curve – and surrounds the line that represents the DO. If you look at it closely, you will see that it resembles the letter C. Again, technically, the DO is middle C, although we can freely translate it as the starting pitch of any major scale that we choose.



The FA clef looks like the DO clef with a block and stem in front of it. Again, the clef surrounds the line that represents the FA. If you look closely, it somewhat resembles the letter F – a stem with two slashes. Technically, the FA is the F below middle C, although we can freely translate it as the fourth pitch in any major scale we choose.



Once you have identified the clef, pitches are determined by knowing the rest of the DO, RE, MI scale and using the alternation of lines and spaces. The scale repeats these syllables as needed: DO, RE, MI, FA, SOL, LA, TI. So for example, if the top line of the staff is the DO (as indicated in the DO clef example above), then the space below is the TI and the space above is the RE (the Sol-Fege syllables before and after the DO). Other notes are then identified in the same fashion, using the alternation of lines and spaces. Therefore the line below the TI is LA – the space below the LA is SOL and so on.

If the 2<sup>nd</sup> line is the FA (as in the FA clef example above), then the space below is the MI and the space above is the SOL. The line above the SOL is LA; the line below the MI is RE.

Although the clefs in modern notation *can* move on the staff, this is rarely encountered now-a-days by the vocal singer. However, in chant, the clefs shift relatively frequently in order to avoid the extended use of **ledger lines** (the lines that extend the staff when needed). Here is an example from the gradual of the feast of the Holy Family:

Grad. **5.**  
**U** - nam pé- ti- i \* a Dó- mi- no, hanc  
 requí- ram : ut inhá- bi- tem in dó- mo Dó- mi-  
 ni ómnibus di- ébus vítae mé- ae.  
**V.** Be- á- ti qui hábi- tant in dómo tú- a, Dómi- ne :  
 in saécula saeculó- rum \* lau-  
 dá- bunt te.

Note the clef change which takes place between the end of the third line and the beginning of the fourth line. (The DO clef moves from the top line of the staff to the 2<sup>nd</sup> line from the top of the staff).

In addition to the clefs, the **custos** (guide) is a notational device to assist in identifying pitches. The custos is the small 'note' that appears at the end of each staff when a new staff follows below. It is not to be sung – it merely serves to indicate the next pitch in the next staff... and when transitioning from one clef position to the next as in the above example. In the case of the clef shift above, note that the custos at the end of the third line indicates a FA – and the first pitch in the new clef is a FA. Because of the clef shift, the new FA is on the bottom line of the staff. In the old clef, the FA was the 2<sup>nd</sup> line from the bottom of the staff.

Another more dramatic example of a clef change is a change from one clef (FA) to another (DO). This example shows the change from one clef to another that occurs towards the end of the 2<sup>nd</sup> staff in the gradual of Advent I:

Grad. 1. *The Cantors.* *The Choir.*

U - niver- si \* qui te exspéctant, non

confundéntur, Dómi- ne. *The Cantors.* V̄. Ví- as tú- as,

Dómine, nó-tas fac

mí- hi : et sé- mi-tas tú- as

*The Choir.*

\* é-do-ce me.

Again, note the use of the custos (always occurs at a clef change in addition to the end of a staff) which indicates the next pitch in the new clef is a RE.

Beyond identifying the Sol-Fege note, both graduals also demonstrates the use of an **accidental** – the flat which occurs in several staves and which lowers pitch by ½ tone. There is only one flat in chant – the TI flat which = TE. There are only two accidentals in chant, the single **flat** and the **natural** that cancels the flat. A flat applies to the rest of the word once used (or a bar line if that occurs first), unless canceled by a natural. Rarely, a chant piece may put the flat as a key signature with the clef. In this case, the flat applies to the entire piece except where canceled by a natural.

The TE was originally used to avoid the interval of an augmented fourth. The only augmented fourth that naturally occurs in the chant scale is the FA – TI interval. By applying a flat to the TI, it reduces the interval to a perfect fourth... FA – TE. The augmented fourth was called the *tonus diabolus* and was originally avoided due to its difficulty in rendering. Some of the more modern chant melodies contain the augmented fourth. The tri-tone is still devilishly difficult as anyone who has sung Bach can attest!

Next, let's talk about pitch duration. In modern music, we can either extend the length of a pitch or divide it into smaller durations. Chant only has one basic duration which can be extended in a variety of ways although when we apply musical interpretation we'll see that the tempo is constantly shifting in chant, and that durations themselves are set in stone as "one beat" or "two beats".

To start, all notes in Chant are considered to have the same basic duration – one beat unless the note indicates an extended duration in some way. (In chant, the beat is frequently treated as an eighth note signature in modern notation.) One way to indicate extended duration is by using a horizontal **epizema** – or a horizontal line over or under the note. The more notes to which a horizontal epizema is applied, the less the value of the lengthening. (There is also a vertical epizema which is usually called an **ictus**. We'll discuss the ictus more later on, but it generally doesn't indicate a lengthening except in one situation which we will discuss in a few moments.) Another method of showing lengthened duration is a **dot**. The third most common way is a particular **neum** (a grouping of notes) called the *quilisma*. A quilisma (as we'll see shortly) is an ascending neum, usually of 3 notes, with one of the notes represented by a jagged note-head. "Quilisma" can apply to the neum (the grouping of several notes) or the particular note that is jagged in shape. The extension of duration is applied to the note just before the jagged note.

In simplistic terms, every note – regardless of shape – that is not lengthened is treated as if it is one beat. Lengthened notes are double the value, or two beats. However, as we just mentioned, when we *sing* the chant it is not nearly as straight-forward as that... the tempo of the chant is constantly speeding up or slowing down, and lengthened notes may be just slightly longer, doubled, or even more than doubled – all depending on the context of how the duration is applied (epizema, dot, quilisma) and where the duration occurs in the sense of text phrasing.

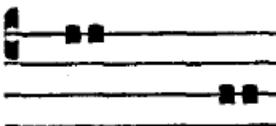
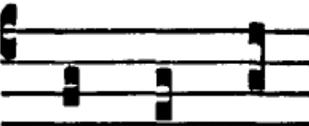
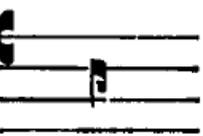
The speeding up and slowing down in chant are called **arsis** and **thesis**. Chant is cyclical – it has periods of energy, life, acceleration, getting louder (arsis) and periods of decay, deceleration, softening (thesis). **Chironomy** (from the Greek *chiro* + *nomos* or hand motion / rule) is used by the director to show a combination of melody, arsis, thesis and key icti for the purposes of interpretation and keeping the group together as the chant is sung.

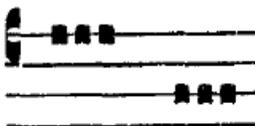
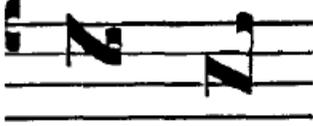
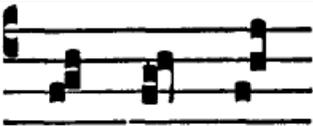
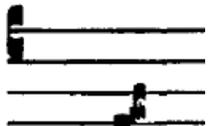
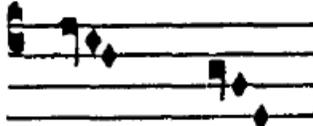
Musical interpretation plays a role in overall determination of pitch duration – things are not simply as notated. Part of that the musical interpretation comes from recognizing neums – the note groupings. Part of the musical interpretation comes from phrasing – understanding that certain note groupings frequently indicate a cadence (thesis) or a input of energy (arsis). And, of course, an important aspect of musical interpretation depends on text around which the chant is composed. More than merely a musical form, chant is a prayer – and the text must be as clear as it possibly can.

Before we discuss the neums, a quick word about phrasing. Chant uses **bar** lines (very comparable to measure lines in modern notation) to indicate phrases. There are four bar lines that are in use... the quarter bar (indicates a very quick catch-breath); the half bar (indicates a pause); the full bar (indicates a definite break between phrases); and finally, the double-bar (which indicates the end of a major section). Think of the quarter bar as a comma, the half-bar as a colon or semi-colon, the full bar as a period, and the double-bar as the end of a paragraph in musical terms.

## Basic neums and related concepts

A **neum** is a 'grouping' of notes. Some notes stand by themselves – these are still called neums, just neums of single notes. More frequently, neums will consist of 2, 3, or more notes that are treated as a small unit. Neums longer than 3 notes are composite neums made up of the simpler neums. The most important neums to recognize include these following:

One-note neums:	
Punctum	 <p>The <b>punctum</b> is a single note. It has no stem.</p>
Virga	 <p>Like the <b>punctum</b>, the <b>virga</b> is a single note. It has a stem.</p>
Two-note neums:	
Distropha Bistropha	 <p>The <b>distropha</b> is a two-note neum made of two puncta on the same pitch.</p>
Bivirga	 <p>The <b>bivirga</b> is a two-note neum made of two virgas on the same pitch.</p>
Ascending	
Podatus	 <p>The <b>podatus</b> (or <b>pes</b>) is an ascending neum of two notes, 'stacked' on top of one another. Sing the bottom note and then the top note.</p>
Epiphonus	 <p>The <b>epiphonus</b> looks like the <b>podatus</b> (a 'stacked' neum of two notes), but the smaller note indicates a 'liquescent' neum. Sing the bottom note and then the top note (liquescent note is always the final note).</p>
Descending	
Clivis	 <p>The <b>clivis</b> is a descending neum of two notes. Sing left to right.</p>
Cephalicus	 <p>The <b>cephalicus</b> looks like the <b>podatus</b> (a 'stacked' neum of two notes), but the smaller note indicates a 'liquescent' neum. Sing the top note and then the bottom note (liquescent note is always the final note).</p>

Three-note neums:	
Tristropha	 <p>The <b>tristropha</b> is neum of three punctums all on the same pitch. There is NO corresponding neum of virgas.</p>
Middle note higher or lower than end points	
Torculus	 <p>The <b>torculus</b> is a neum of three notes with the middle note always higher in pitch than the two end notes. Sing left to right.</p>
Porrectus	 <p>The <b>porrectus</b> is a neum of three notes with the middle note always lower in pitch than the two end notes. Sing all three notes left to right.</p>
Ascending	
Scandicus	 <p>The <b>scandicus</b> is an ascending neum of three notes. Sing bottom note and then top note where 'stacked', sing from left to right.</p>
Salicus	 <p>The <b>salicus</b> is also an ascending neum of three notes. It either has the second note marked with a vertical epizema (or ictus), or the first two notes are on the same pitch. Sing bottom note and then top note where 'stacked', otherwise sing from left to right.</p>
Quilisma	 <p>The <b>quilisma</b> is both the name of the ascending neum of three notes and the actual quilisma note itself – the one with a jagged appearance (it never appears alone). The typical interpretation is to hold the note directly preceding the <b>quilisma</b>.</p>
Descending	
Climacus	 <p>The <b>climacus</b> is a descending neum of three notes. Sing from left to right. The diamond shaped note is known individually as a <b>punctum inclinatum</b>.</p>

A special note on the neums: the salicus is a neum of three notes that has two variations... one variation invariably has an ictus on the middle note of the neum. **The ictus is not a translation from the ancient manuscripts of a previously existing marking. It is an interpretational mark that was largely added when Dom Mocquereau was the abbot of Solesmes, based on his theories of chant rhythm. More recent discoveries indicate that the ictus is probably overused in the Solesmes notation.**

There are other examples of interpretational markings added in the Solesmes version which are not found in the original manuscripts (Laon, Gallican manuscripts are the oldest known surviving documents and are from the early 900's). For example, there are additional horizontal epizemas and dots other than what would have originally been indicated – added to accord with the method of interpretation then in vogue. Other markings – notations to indicate speeding up or slowing down – were not communicated into the Solesmes version. This is not to say that Solesmes doesn't have a value or that the concepts were entirely wrong – but it does go to show that chant has to do with interpretation and structure. Many choirs, unfortunately, rely heavily on rules without understanding how or why those rules came about or how they may be flawed.

The last comment about pitch duration or rhythm is to observe that chant has **free rhythm**. What this really means is that notational rhythms (punctum, dotted punctum, salicus, epizemas, quilismas, etc.) are subordinated to the rhythm of the text. In practical terms this means that a punctum is not always the same length as another punctum – and most likely not the same length as a note contained within a neum. Because of variations in text, diphthongs, consonant sounds, and melismatic passages, there is a continuous variation in the real length of otherwise similar notes, even apart from speeding up and slowing down that occurs due to arsis and thesis. This is a distinction that is most likely to become apparent the longer one experiences chant. For the beginner, thinking in terms of 1/8<sup>th</sup> notes and 1/4<sup>th</sup> notes may be the best approach until more familiarity is achieved.

## Intervals and Sol-Fege

Unlike modern music, chant does not use intervals according to major and minor scales directly. Instead, the intervals are established according to eight pre-defined modes which are based on the diatonic scale.

### Diatonic Scale

DO RE MI FA SOL LA TI DO

**Diatonic** = gradation of notes where each note is either a half-tone or a full tone apart. MI-FA and TI-DO (and LA-TE) are half-tone intervals. All other intervals are a full tone apart. A half-tone is the difference in sound between a white key on a keyboard and an immediately adjacent white or black key. A full tone is the difference in sound between two white keys where there is a black key in between OR two black keys where there is a white key in between. Full tones always consist of 2 half-tones.

The DO RE MI diatonic scale is a major scale in modern music. **Gregorian Chant uses the diatonic scale, allowing one flat – TE, as the basis for the eight modes.** These eight modes create the 'mood' in a chant melody just as major scales and minor scales (and chromatism) provide the 'mood' for modern music.

An **interval** is the measure of the difference in pitch between two notes:

DO RE MI FA SOL LA TI DO

Any two adjacent tones constitute an interval of a second. Any tones with another in between – an interval of a third. Two tones in between – an interval of a fourth. So on up to an interval of an eighth (otherwise called an Octave).

**Examples (all ascending intervals):**

DO	RE	Second
RE	MI	Second
DO	MI	Third
RE	FA	Third
DO	FA	Fourth
RE	LA	Fifth
DO	LA	Sixth

There is an additional designation to most of the intervals since – depending on where they are positioned in the scale – the placement of whole and half-tones may be different. For example, a second is either **Major** or **Minor** depending on whether the interval is a whole tone or a half-tone. A third is **Major** if it does not include a half-tone; **Minor** if it does. A fourth is either **Perfect** (includes a half-tone) or **Augmented** (does not include a half-tone). An augmented fourth is also called a **tri-tone**. A fifth is either **Perfect** (includes one half-tone) or **Diminished** (includes two half-tones). A sixth is either **Major** (one half-tone) or **Minor** (two half-tones). The seventh is not used in chant. The eighth (octave) is self-explanatory and will always consist of the same number of whole and half-tones.

DO	RE	<b>Major</b> second
MI	FA	<b>Minor</b> second
DO	MI	<b>Major</b> third
RE	FA	<b>Minor</b> third
DO	FA	<b>Perfect</b> fourth
FA	TI	<b>Augmented</b> fourth ( <b>tri-tone</b> – also called <i>tonus diabolus</i> or diabolic tone)

The *tonus diabolus* was avoided by the introduction of a TI flat – the only allowed flat in chant:

FA	TE	<b>Perfect</b> fourth
DO	SOL	<b>Perfect</b> Fifth
MI	TE	<b>Diminished</b> Fifth (this was only used in more recent compositions in chant)
DO	LA	<b>Major</b> Sixth
MI	DO	<b>Minor</b> Sixth

Sol-Fege (pronounced Sol-Fesh) uses syllables to describe the intervals in the diatonic scale as found in the 1<sup>st</sup> verse of the vesper hymn to John the Baptist:

Ut qué- ant lá-xis Re-so-ná-re fíbris Mí- ra gestó-  
 rum Fá-mu-li tu- ó- rum Sól- ve pollú-ti Lá-bi- i  
 re- á-tum Sáncte Io- ánnes.  
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Ut later became DO (first syllable of the word DOminus or Lord), S I initially became SI and later TI. The Sol-Fege technique means that you sing the syllable that corresponds to the interval (DO, RE, MI, etc.) rather than the text or other technique ('ooh') when learning the melody. This technique is best learned through regular exercises such as scales and then applied to chant melodies until a fluency is achieved that makes it possible to sight-sing most Gregorian melodies.

Singing a constant vowel sound ('ooh', 'ah', etc.) is used when trying to promote consistent vocal production across the group. Sol-Fege is for learning pitches. Vowel sounds are used when trying to improve the vocal sound of the group.

Here is an example of singing Sol-Fege to the first staff of the vesper hymn of St. John the Baptist:

Ut qué- ant lá-xis Re-so-ná-re fíbris Mí- ra gestó-  
 DO RE FA RE MI RE RE RE DO RE MI MI MI FA SOL MI RE MI DO (RE is next)

Singing through several times with the Sol-Fege syllabification allows the singer to simply read the intervals in a known context (the diatonic scale) without worrying about text. It allows the singer to develop confidence in the intervals – to know the pitches in the desired key. Once the group has sung it through several times with this method, then you can apply the text and extend the interpretation of the melody.

## Chant history in brief *(mainly compiled from Catholic Encyclopedia online)*

- Church music goes through much development in the 300's (as persecutions begin to die down). **Antiphonal singing** is introduced in the East and spreads to the West. The **Alleluia** is first introduced in the East and spreads to the West. Initially it is confined to Easter – then to Paschal Time – but eventually it applies to the entire Church year (except Septuagesima through Lent) by the time of Gregory.
- Chant develops and changes in the 400's and 500's. Antiphonal singing is used at Mass, Gradual shortens but becomes more ornate (following the model of the Alleluia). **Most melodies for Mass propers are composed before the 600's.**
- Gregory the Great (Gregory I – ruled 590-604), compiles and codifies the chants into one book. There are still other forms of chant, but Gregorian Chant supplants most other forms.
- **After Gregory, new chant composition for Mass propers drops off** – only a handful of new proper melodies seem to appear after the 600's. **However, chants for the Ordinary of the Mass begin to be composed.** The **Agnus Dei** is introduced in the late 700's, the **Credo** appears in the 800's – it disappears for a while and is re-established in the early 1000's. Initially, the Ordinary is sung by the people (therefore using simple melodies), then as the schola/choir begin to take over the singing of this as well, more intricate melodies are introduced. **Tropes** are composed – musical texts set to the various melodies of the Ordinary. All chant melodies are modified and restructured according to new developments in music theory – the development of 8 modes, limitation of accidentals to the TI flat, etc..
- Around the year 1000, **Guido of Arezzo** (a Benedictine monk) develops the rest of the music staff. Initially it consists of two color-coded lines – Yellow for the DO, Red for the FA – with the various notations between, above and below the corresponding lines. Guido adds the intervening lines, finally standardizing on four lines, which are considered sufficient given the range of Gregorian melodies. **Guido also develops Sol-Fege** from the vesper hymn of St. John the Baptist. Guido is invited to Rome by Pope John XIX, who is impressed with the new notational system and who is able to learn melodies without the aid of a master.
- In the early 1000's the Benedictine monastery of Solesmes is founded.
- **Sequences** and other forms proliferate (at one point there are over 1000 sequences) but this is later reduced to just four sequences by the Council of Trent in the mid 1500's. (Stabat Mater is added in the 1700's.) The tropes are discontinued by the Council – though the Ordinaries are sometimes identified by the names of the related tropes (e.g. Fons Bonitatis).
- Polyphony starts in the 800's and Church polyphony peaks in the 1500's.
- In proportion to polyphony gaining in usage, the usage and knowledge of chant begins to decline. In part this is due to the Renaissance and the growth of Humanism. From the 1400's on, the transcriptions of chant melodies are carelessly done and the melodies are shortened.
- The Council of Trent starts a reform/revival of all liturgical matters, including liturgical music, in the mid 1500's. Unfortunately, because tradition has been lost, many of the reformers make matters worse! A Graduale is published in the early 1600's that is grossly inaccurate.
- The monastery of Solesmes is suppressed in 1791 and passes into private hands.

- In 1833, **Dom Gueranger** raises funds, buys the property of **Solesmes** and with five other priests starts a community living as Benedictines. Within four years, Solesmes is elevated to an abbey by Pope Gregory XVI and Dom Gueranger is named Abbot of a new congregation of Benedictines. Dom Gueranger becomes a noted author (The Liturgical Year) and liturgical reformer. The Gallican Congregation (Abbey of Solesmes is the mother house) focuses on liturgical reform, particularly of the chant.
- In the 1850's the SRC has the Graduale of the mid 1640's republished as the official book of chant, erroneously believing in its accuracy. This is known as the Ratisbon Graduale.
- The **Liber Gradualis** is published in 1883. **Dom Pothier** is key in publishing this first book of Solesmes though the community is banished from France several times over the next decades.
- **Dom Mocquereau** adds a more rhythmical driven interpretation of the chant.
- The **Liber Usualis** is published in 1903. The SRC withdraws former decrees in favor of the Ratisbon Graduale in 1904, and Pius X establishes a commission to prepare the Vatican edition of chant. Because of disagreements within the commission, manuscripts accumulated by Solesmes monks are not used in the Vatican edition.
- In the 1960's Dom Cardine, a monk of Solesmes, develops Gregorian Semiology. Semiology is the study of ancient chant symbols – the symbols from the manuscripts pre-dating Guido, the staff, and the corresponding development of neums. Guido's contribution was to provide a way of absolute interval identification... but the simplified approach of neums meant that rhythmic nuances were lost. Semiology seeks to restore awareness of those rhythmic nuances to the interpretation of the chant. Dom Cardine and his team have access to many more manuscripts, some of which are relatively recent finds, and improved methods of collaboration and research. The result is a more text-based approach to the chant. The new interpretations do away previous thoughts such as holding the ictus of a salicus, many horizontal epizemas no longer apply, the system of 'counting' chant developed by Dom Mocquereau is discontinued.
- In the 1970's the Graduale Triplex is published. Although aligned with the Novus Ordo liturgy, many of the chants from the 1962 Mass propers are available through the index. The Graduale Triplex is helpful – it shows the Solesmes notation in conjunction with notations from Laon and Gallican manuscripts (one above and the other below).

## Useful terms

<b>Staff</b>	<b>Dot</b>	<b>Tonic</b>	<b>Epiphonus</b>
<b>Clefs</b>	<b>Arsis – Thesis</b>	<b>Dominant</b>	<b>Cephalicus</b>
<b>Ledger lines</b>	<b>Chironomy</b>	<b>Punctum</b>	<b>Torculus</b>
<b>Custos (Guide)</b>	<b>Melisma/melismatic</b>	<b>Virga</b>	<b>Porrectus</b>
<b>Accidental</b>	<b>Free Rhythm</b>	<b>Quilisma</b>	<b>Scandicus</b>
<b>Neum</b>	<b>Diatonic</b>	<b>Distropha</b>	<b>Salicus</b>
<b>Epizema</b>	<b>Interval</b>	<b>Podatus</b>	<b>Climacus</b>
<b>Ictus</b>	<b>Sol-Fege</b>	<b>Clivis</b>	