

Odo of Cluny

A writer of the tenth century and a pupil of Remi (Remigius) of Auxerre, St. Odo of Cluny was in 899 canon and choir-singer at St. Martin of Tours and later became abbot of various French monasteries. In 927 he became head of the famous abbey of Cluny, where he died in 942.

Odo is credited with a number of important writings on the theory of music, among them the *Enchiridion musices*, also called *Dialogus de musica*. The *Enchiridion* contains the first systematic use of letters for pitches in the meaning that was to become standard for the Middle Ages—the full gamut extending from A to g, with the addition of the low Γ and the high a' .

Enchiridion musices

[ca. 935]

A book, also called a dialogue, composed by Dom Odo and concisely, properly, and becomingly brought together for the benefit of readers.

PROLOGUE

YOU HAVE insistently requested, beloved brothers, that I should communicate to you a few rules concerning music, these to be only of a sort which boys and simple persons may understand and by means of which, with God's help, they may quickly attain to perfect skill in singing. You asked this, having yourselves seen and heard and by sure evidence verified that it could be done. For indeed, being stationed among you, with God's help alone I taught certain actual boys and youths by means of this art so that some after three days, others after four days, and one after a single week of training in it, were able to learn several antiphons and in a short time to sing them without hesitation, not hearing them sung by anyone, but contenting themselves simply with a copy written according to the rules. With the passage of not many days they were singing at first sight and extempore and without a fault anything written in music, something which until now ordinary singers had never been able to do, many continuing to practice and study singing for fifty years without profit.

When you were earnestly and diligently inquiring whether our doctrines would be of value for all melodies, taking as my helper a certain brother who seemed perfect in comparison with other singers, I investigated the Antiphoner of the blessed Gregory, in which I found that nearly all things were regularly set down. A few things, corrupted by unskilled singers, were corrected, both on the evidence of other singers and by the authority of the rules. But in the longer melodies, beloved brothers, we found sounds belonging to the high modes and excessive ascents and descents, contrary to the rule. Yet, since universal usage agreed in defending these melodies, we did not presume to emend them. We noted them as unusual, however, in order that no one inquiring into the truth of the rule might be left in doubt.

This done, you were kindled by a greater desire and insisted, with vehement entreaties and urgings, not only that rules should be made, but also that the whole Antiphoner should be written in useful notes and with the formulas of the tones, to the honor of God and of His Most Holy Mother Mary, in whose venerable monastery these things were being done.

Deriving confidence, therefore, from your entreaties, and complying with the orders of our common father, I am neither willing nor able to discontinue this work. For among the learned of this age the doctrine of this art is very difficult and extensive. Let therefore whoever pleases cultivate the field further with unwilling labor and wall it in. He who of himself perceives this little gift of God will be satisfied with a simple fruit. And in order that this may be the better understood and that you may receive what is necessary in proportion to your true desire, let one of you come forward to converse or ask questions. These I shall not neglect to answer, in so far as the Lord has given me the power.

1. OF THE MONOCHORD AND ITS USE

(Disciple) What is music?

(Master) The science of singing truly and the easy road to perfection in singing.

(D) How so?

(M) As the teacher first shows you all the letters in a table, so the musician introduces all the sounds of melody on the monochord.

(D) What is the monochord?

(M) It is a long rectangular wooden chest, hollow within like a cithara; upon it is mounted a string, by the sounding of which you easily understand the varieties of sounds.

(D) How is the string itself mounted?

(M) A straight line is drawn down the middle of the chest, lengthwise, and points are marked on the line at a distance of one inch from each end. In the spaces outside these points two end-pieces are set, which hold the string so suspended above the line that the line beneath the string is of the same length as the string between the two end-pieces.

(D) How does one string produce many different sounds?

(M) The letters, or notes, used by musicians are placed in order on the line beneath the string, and when the bridge is moved between the line and the string, shortening or lengthening it, the string marvelously reproduces each melody by means of these letters. When any antiphon is marked with the same letters, the boys learn it better and more easily from the string than if they heard some one sing it, and after a few months' training, they are able to discard the string and sing by sight alone, without hesitation, music that they have never heard.

(D) What you say is very marvelous. Our singers, indeed, have never aspired to such perfection.

(M) Instead, brother, they missed the right path, and failing to ask the way, they labored all their life in vain.

(D) How can it be true that a string teaches more than a man?

(M) A man sings as he will or can, but the string is divided with such art by very learned men, using the aforesaid letters, that if it is diligently observed or considered, it cannot mislead.

2. OF THE MEASUREMENT OF THE MONOCHORD

(D) What is this art, I inquire.

(M) The measurement of the monochord, for if it is well measured, it never deceives.

(D) Can I perchance learn the exact measurements, simply and in a few words?

(M) Today, with God's help; only listen diligently.

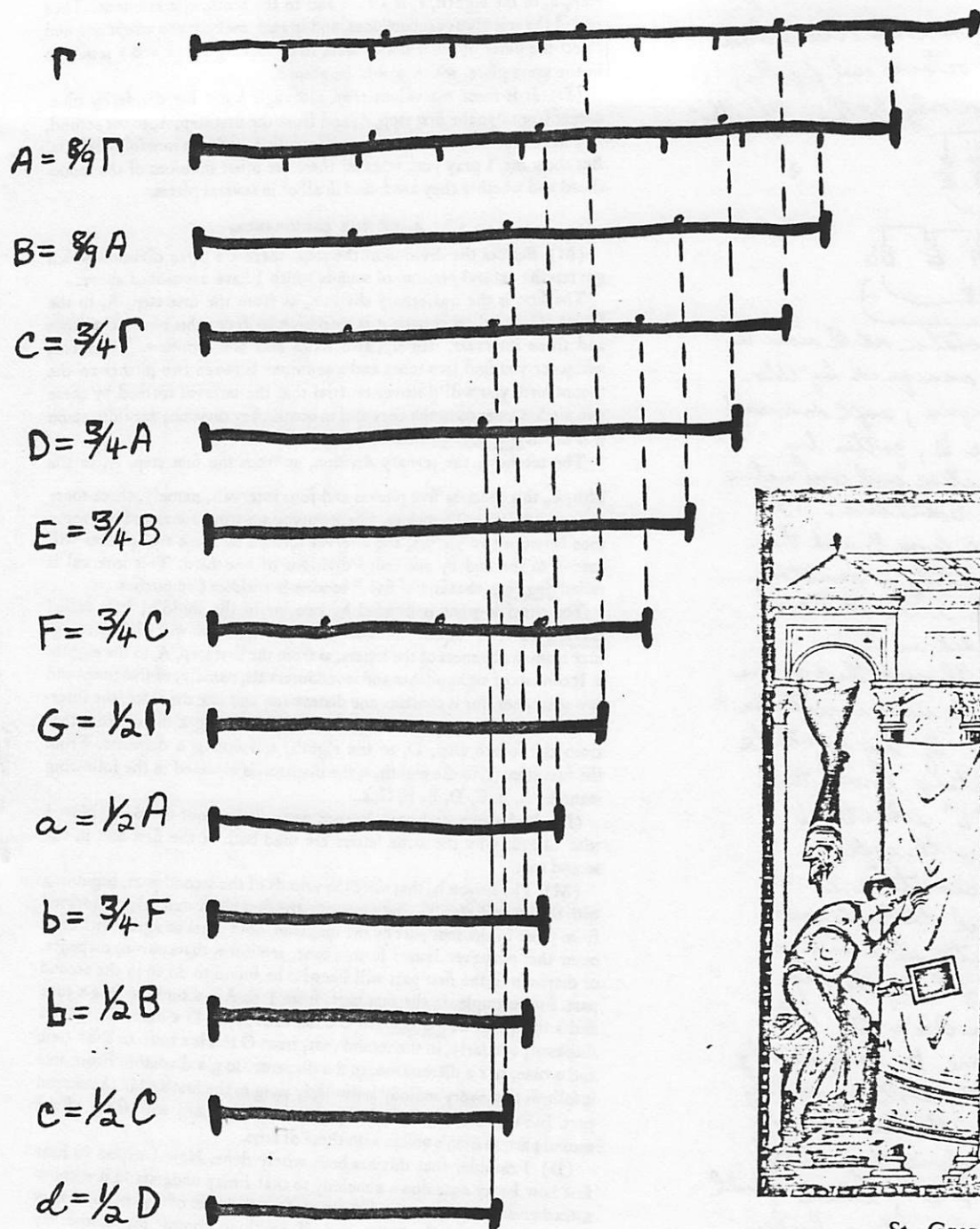
At the first end-piece of the monochord, at the point at which we have spoken above, place the letter Γ , that is, a Greek G. (This Γ , since it is a letter rarely used, is by many not understood.) Carefully divide the distance from Γ to the point placed at the other end into nine parts, and where the first ninth from Γ ends, write the letter A; we shall call this the first step. Then, similarly, divide the distance from the first letter, A, to the end into nine, and at the first ninth, place the letter B for the second step. Then return to the beginning, divide by four from Γ , and for the third step write the letter C. From the first letter, A, divide similarly by four, and for the fourth step, write the letter D. In the same way, dividing B by four, you will find the fifth step, E. The third letter, C, likewise reveals the sixth step, F. Then return to Γ , and from it and from the other letters that follow it in order, divide the line in two parts, that is, in the middle, until, without Γ , you have fourteen or fifteen steps.

When you divide the sounds in the middle, you must mark them differently. For example, when you bisect the distance from Γ , instead of Γ , write G; for A bisected, set down a second a; for B, a second b; for C, a second c; for D, a second d; for E, a second e; for F, a second f; for G, a second g; and for a, a second \bar{a} ; so that from the middle of the monochord forward, the letters will be the same as in the first part.

In addition, from the sixth step, F, divide into four, and before h, place a second round b; these two are accepted as a single step, one being called the second ninth step, and both are not regularly found in the same melody.

The figures, moreover, both sounds and letters, are thus arranged in order:

| | | | |
|--------------|----------|-------------------|-----------|
| | Γ | | |
| First step | A | Eighth step | a |
| Second step | B | First ninth step | b |
| | | Second ninth step | h |
| | | Tenth step | c |
| Third step | C | Eleventh step | d |
| Fourth step | D | Twelfth step | e |
| Fifth step | E | Thirteenth step | f |
| Sixth step | F | Fourteenth step | g |
| Seventh step | G | Fifteenth step | \bar{a} |



NOTE The figure shows the string lengths gotten by Odo's division of the monochord. By examination one will find that it conforms to the Pythagorean tuning as described by Plato and Boethius. This Pythagorean Temperament was the basis for all Medieval music and was not challenged until Renaissance times:

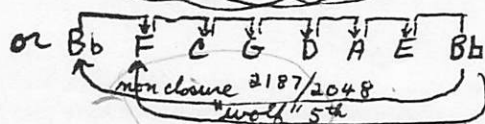
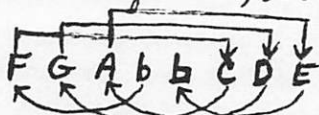
Γ A B C D E F G $\overset{9/8}{a}$ $\overset{9/8}{b}$ $\overset{9/8}{c}$ $\overset{9/8}{d}$ $\overset{9/8}{e}$ $\overset{9/8}{f}$ $\overset{9/8}{g}$ $\overset{9/8}{a} \dots$
 $\frac{9}{8}$ $\frac{9}{8}$ $\frac{256}{243}$ $\frac{9}{8}$ $\frac{9}{8}$ $\frac{256}{243}$ $\frac{9}{8}$ $\frac{9}{8}$ $\frac{256}{243}$ $\frac{9}{8}$ $\frac{9}{8}$ $\frac{256}{243}$ $\frac{9}{8}$ $\frac{9}{8}$ $\frac{256}{243}$ $\frac{9}{8}$ $\frac{9}{8}$



St. Gregory receiving the Chant melodies from the Holy Spirit and dictating them to his scribe.

Note how the Medieval gamut combines both the Greater Perfect System and the Lesser Perfect System of the Greeks.

NOTE. The same tuning would occur had Odo used only perfect octaves and fifths, or octaves and fourths, or only fifths and fourths:



NOTES. The modern notation still uses the same letter names as assigned by Odo. Note the two different signs, soft or round *b* and hard or square *b*, gotten by joining both the disjunctive and conjunctive systems mentioned by Boethius. The square *b* is the octave from B and the round *b* is approximately a semitone lower or "flatter". In later Medieval times notes not included in Odo's system were inserted through the process of *musica ficta* which used variations of the signs *b* and *b*. If they wanted a note that was a semitone lower than E, they would write "Eb" where the *b* would, by analogy with soft *b*, indicate the note a semitone lower than E. The natural diatonic note that wasn't to be flattened would sometimes be emphasized by the sign *h*, a variation from Odo's *b*. Also as one thinks of square *b* being nearly a semitone higher than soft *b*, so by analogy when they wanted a note to be raised by a semitone they added the sign #, as in "F#", which would indicate a note a semitone higher than the normal F. Clearly "#" is also derived from Odo's *b*.

3. OF TONE AND SEMITONE

But why is it, I entreat, that I see on the regularly measured monochord in one place smaller and in another place larger spaces and intervals between the steps?

(M) The greater space is called a tone; it is from Γ to the first step, A, and from the first step, A, to the second, B. The lesser space, such as that from the second step, B, to the third, C, is called a semitone and makes a more restricted rise and fall. By no measure or number may the space of a semitone amount to that of a tone, but when the divisions are made in their places by the ratio given above, tones and semitones are formed.

If you have marked all the steps to the last, you will marvel to find in all of them a ninefold division just as you found it at first from Γ to the first step, A, and from the first step, A, to the second, B. Yet the first and second ninth steps, *b* and *h*, form with respect to one another neither a tone nor a semitone, but from the first ninth step, *b*, to the eighth, *a*, is a semitone and to the tenth, *c*, a tone; conversely, from the second ninth

step, *h*, to the eighth, *a*, is a tone and to the tenth, *c*, a semitone. Thus one of them is always superfluous, and in each melody you accept one and reject the other in order not to seem to be making a tone and a semitone in the same place, which would be absurd.

(D) It is most marvelous that, although I did not divide by nine, except from Γ to the first step, A, and from the first step, A, to the second, B, I have found that all the tones are equally based on a ninefold division. But show me, I pray you, whether there are other divisions of the monochord and whether they are found in all or in several places.

4. OF THE CONSONANCES

(M) Besides the division of the tone, there are three divisions which govern the natural position of sounds which I have mentioned above.

The first is the quaternary division, as from the first step, A, to the fourth, D, so called because it is a division by four; this has four pitches and three intervals, namely, two tones and one semitone. Therefore, wherever you find two tones and a semitone between two pitches on the monochord, you will discover on trial that the interval formed by these two pitches extends to the very end in quaternary division; for this reason it is called diatessaron, that is, "of four."

The second is the ternary division, as from the first step, A, to the fifth, E, this contains five pitches and four intervals, namely, three tones and one semitone. Therefore, wherever you see three tones and one semitone between two pitches, the interval formed by these two pitches will extend to the end by successive divisions of one-third. This interval is called diapente, that is, "of five," because it encloses five pitches.

The third is what is divided by two, or in the middle; it is called diapason, that is, "of all." This, as was said above, you will plainly recognize from the likeness of the letters, as from the first step, A, to the eighth, *a*. It consists of eight pitches and seven intervals, namely, of five tones and two semitones, for it contains one diatessaron and one diapente, the interval from the first step, A, to the fourth, D, forming a diatessaron, that from the fourth step, D, to the eighth, *a*, forming a diapente. From the first step, A, to the eighth, *a*, the diapason is obtained in the following manner: A, B, C, D, E, F, G, *a*.

(D) In few words I have learned not a little about divisions. Now I wish to hear why the same letters are used both in the first and in the second part.

(M) The reason is, that since the sounds of the second part, beginning with the seventh step, G (but excepting the first ninth step, *b*), are formed from those of the first part by the diapason, both parts so agree with each other that whatever letters form a tone, semitone, diatessaron, diapente, or diapason in the first part will likewise be found to do so in the second part. For example, in the first part, from Γ to A is a tone, to B is a tone and a semitone, that is, a ditone, to C a diatessaron, to D a diapente, to G a diapason; similarly, in the second part, from G to *a* is a tone, to *h* is a tone and a semitone, to *c* a diatessaron, to *d* a diapente, to *g* a diapason. From this it follows that every melody is similarly sung in the first and in the second part. But the sounds of the first part sound in concord with those of the second part, as men's voices with those of boys.

(D) I consider that this has been wisely done. Now I expect to hear first how I may note down a melody so that I may understand it without a teacher and so that, when you give me examples of the rules, I may recognize the melody better and, if anything completely escape my memory, have recourse to such notes with entire confidence.

(M) Place before your eyes the letters of the monochord as the melody ranges through them; then, if you do not fully recognize the force of the letters themselves, you may hear them and learn them, wonderful to relate, from a master without his knowing it.

(D) Indeed I say that you have given me a wonderful master, who, made by me, teaches me, and teaching me, knows nothing himself. Nay, for his patience and obedience I fervently embrace him, and he will never torment me with blows or abuse when provoked by the slowness of my sense.

(M) He is a good master, but he demands a diligent listener.

TO THE MOST blessed and beloved Brother Michael, Guido, by many vicissitudes cast down and strengthened:

Either the times are hard or the judgments of the Divine ordinance are obscure when truth is trampled upon by falsehood and love is trampled upon by envy, which rarely ceases to accompany our order; by this means, the conspiring of the Philistines punishes the Israelitish transgression, lest if anything should promptly turn out according to our wishes, the mortal soul should perish in its self-confidence. For our actions are good only when we ascribe to the Creator all that we are able to accomplish.

Hence it is that you see me banished from pleasant domains and yourself suffocated so that you can scarcely breathe. In which plight I say that we are much like a certain artisan who presented to Augustus Caesar an incomparable treasure, namely, flexible glass. Thinking that because he could do something beyond the power of all others, he deserved a reward beyond all others, he was by the worst of fortunes sentenced to death, lest, if glass could be made as durable as it is marvelous, the entire royal treasure, consisting of various metals, should suddenly become worthless. And so from that time on, accursed envy has deprived mortals of this boon, as it once deprived them of Eden. For since the artisan's envy was unwilling to teach anyone his secret, the king's envy could destroy the artisan along with his art.

For which reason, moved by a divinely inspired charity, I have brought to you and to as many others as I have been able a grace divinely bestowed on me, the most unworthy of men; namely, that those who come after us, when they learn with the greatest ease the ecclesiastical melodies which I and all my predecessors learned only with the greatest difficulty, they will desire for me and for you and my other helpers eternal salvation, and by the mercy of God our sins will be remitted, or at least from the gratitude of so many will come some prayer for our souls.

For if at present those who have succeeded in gaining only an imperfect knowledge of singing in ten years of study intercede most devoutly before God for their teachers, what think you will be done for us and our helpers, who can produce a perfect singer in the space of one year, or at the most in two? Even if the customary baseness of mankind should prove ungrateful for such benefits, will not a just God reward our labors? Or, since this is God's work and we can do nothing without Him, shall we have no reward? Forbid the thought. For even the Apostle, though whatever is done is done by God's grace, sings none the less: "I have fought a good fight, I have finished my course, I have kept the faith. Henceforth there is laid up for me a crown of righteousness."

Confident therefore in our hope of reward, we set about a task of such usefulness, and since after many storms the long-desired fair weather has returned, we must felicitously set sail.

But since you in your captivity are distrustful of liberty, I will set forth the situation in full. John, holder of the most high apostolic seat, who now governs the Roman Church, hearing of the fame of our school and greatly wondering how, by means of our Antiphoner, boys could know songs which they had never heard, invited me through three emissaries to come to him. I therefore went to Rome with Dom Grunwald, the most reverend Abbot, and Dom Peter, Provost of the canons of the church of Arezzo, by the standards of our time a most learned man. The Pope, accordingly, was greatly pleased by my arrival, conversing much with me and inquiring of many matters. After repeatedly looking through our Antiphoner as if it were some prodigy, and reflecting on the rules prefixed to it, he did not dismiss the subject or leave the place where he sat until he had satisfied his desire by himself learning to sing a verse without hearing it beforehand, thus quickly finding true in his own case what he could hardly believe of others.

What need I say more? I was prevented by illness from remaining in Rome even a short time longer, as the summer heat in places swampy and near the sea was threatening our destruction. We finally came to the agreement that I should return later, at the beginning of winter, at which time

I should reveal this work of mine more fully to the Pope and his clerk, who had enjoyed the foretaste of it.

A few days after this, desiring to see your spiritual father Dom Guido, Abbot of Pomposa, a man highly endeared to God and men by the merit of his virtue and wisdom, and a beloved friend, I paid him a visit. When he with his clear intelligence saw our Antiphoner, he at once recognized its value and had faith in it. He regretted that he had once given counte-

nance to our rivals and asked me to come to Pomposa, urging upon me that monasteries were to be preferred to bishops' residences, especially Pomposa, because of its zeal for learning, which now by the grace of God and the industry of the most reverend Guido ranks foremost in Italy.

Swayed by the prayers of so eminent a father, and obeying his instructions, I wish first, God helping me, to confer distinction upon so notable a monastery by this work and further to reveal myself to the monks as a monk. Since nearly all the bishops have been convicted of simony, I should fear to enter into relations with any of their number.

As I cannot come to you at present, I am in the meantime addressing to you a most excellent method of finding an unknown melody, recently given to us by God and found most useful in practice. Further, I most reverently salute Dom Martin, the Prior of the Holy Congregation, our greatest helper, and with the most earnest entreaties commend my miserable self to his prayers, and I admonish Brother Peter, who, nourished by our milk, now feeds on the rudest barley, and after golden bowls of wine, drinks a mixture of vinegar, to remember one who remembers him.

To find an unknown melody, most blessed brother, the first and common procedure is this. You sound on the monochord the letters belonging to each neume, and by listening you will be able to learn the melody as if from hearing it sung by a teacher. But this procedure is childish, good indeed for beginners, but very bad for pupils who have made some progress. For I have seen many keen-witted philosophers who had sought out not merely Italian, but French, German, and even Greek teachers for the study of this art, but who, because they relied on this procedure alone, could never become, I will not say skilled musicians, but even choristers, nor could they duplicate the performance of our choir boys.

We do not need to have constant recourse to the voice of a singer or to the sound of some instrument to become acquainted with an unknown melody, so that as if blind we should seem never to go forward without a leader; we need to implant the differences and qualities of the individual sounds and of all descents and ascents deep in the memory. You will then have a most easy and approved method of finding an unknown melody, provided there is someone present to teach the pupil, not merely from a written textbook, but rather by informal discussion, according to our practice. For after I began teaching this procedure to boys, some of them were able to sing an unknown melody before the third day, which by other methods would not have been possible in many weeks.

If, therefore, you wish to commit any note or neume to memory so that it will promptly recur to you, whenever you wish, in any melody whatever, known or unknown to you, and so that you will be able to sound it at once and with full confidence, you must mark that note or neume at the beginning of some especially familiar melody; and to retain each and every note in your memory, you must have at ready command a melody of this description which begins with that note. For example, let it be this melody, which, in teaching boys, I use at the beginning and even to the very end:

Hymn.

2. T qué-ant láxis re-soná-re ffrbis Mí-ra gestó-
rum fámu-li tu-ó-rum, Sól-ve pollú-ti lábi-i re-á-tum.
Sánte Jo-ánes. Amen.

Do you not see how, in this melody, the six phrases begin each with a different note? If, trained as I have described, you know the beginning of each phrase so that you can at once and confidently begin any one you wish, you will be able to sing these notes in their proper qualities whenever you see them. Then, when you hear any neume that has not been written down, consider carefully which of these phrases is best adapted to the last note of the neume, so that this last note and the first note of your phrase are of the same pitch. And be sure that the neume ends on the note with which the phrase corresponding to it begins. And when you begin to sing an unknown melody that has been written down, take great care to end each neume so correctly that its last note joins well with the beginning of the phrase which begins with the note on which the neume ends. To sing an unknown melody competently as soon as you see it

written down, or, hearing an unwritten melody, to see quickly how to write it down well, this rule will be of the greatest use to you.

I afterwards adapted short fragments of melody to the single sounds in order. Closely examining the phrases of these, you will rejoice to find at the beginnings of the phrases all the ascending and descending progressions of each note in turn. If you succeed in singing at will the phrases of each and every one of these fragments, you will have learned, by a rule most brief and easy, the exceedingly difficult and manifold varieties of all the neumes. All these matters, which we can hardly indicate in any way with letters, we can easily lay bare by a simple discussion.

The few words on the form of the modes and neumes which I have set down, both in prose and in verse, as a prologue to the Antiphoner will perhaps briefly and sufficiently open the portals of the art of music. And let the painstaking seek out our little book called *Micrologus* and also read the book *Enchiridion*, most lucidly composed by the most reverend Abbot Odo, from whose example I have departed only in the forms of the notes, since I have simplified my treatment for the sake of the young, in this not following Boethius, whose treatise is useful to philosophers, but not to singers.

NOTE on Guido's SOLMI ZATION.

The Guidonian heptachord consists of the 1st six notes of our Major Scale: C-ut, D-re, E-mi, F-fa, G-sol, A-la. The "ut" was later changed in the 17th cent. to the more singable "doh", and the B-si was added when musicians thought more in terms of octaves and tonality rather than of hexachords and modality.

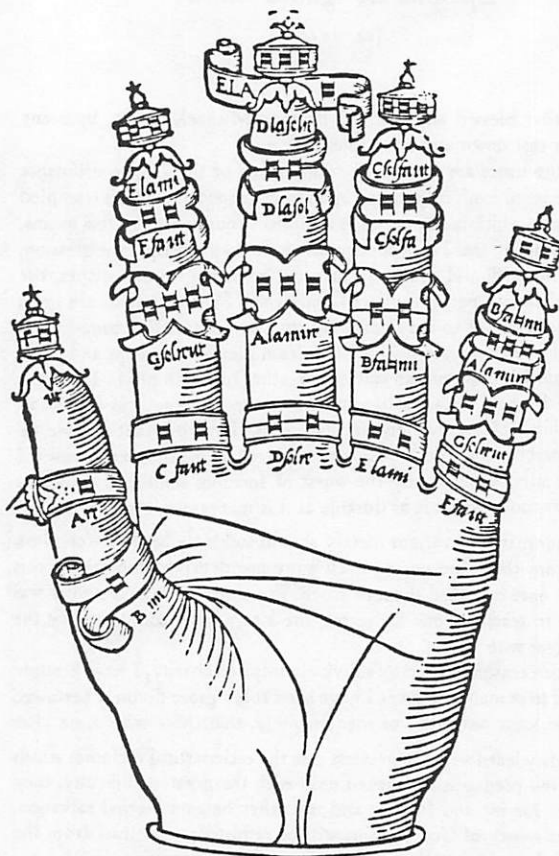
As we first see Guido's method it applies only to the notes CDEFGA, the "natural" hexachord. But it was readily extended to the notes FGABCD, the "soft" or "molle" hexachord and GABCEDE, the "hard" or "durum" hexachord. Hence it included both the disjunct and conjunct systems, from the Greeks.

This close association of G with F and C caused the addition of the G-clef to the other two privileged origin points of F and C.

Not only does a tone have its unique pitch (quantity) and its unique letter name, as given by Odo, but it now has a functional name (quality) associated with it that relates the tone intervallically within the major hexachord. Each tone has a unique position within the major hexachord and hence a unique relationship with all the other notes of that hexachord. The complete name of a note, say middle G, is given as "G sol re ut", or for low C as "C fa ut" etc.

Modulation. If in singing one had to cover a range greater than a hexachord one had to modulate or change one's hexachordal frame of reference. Suppose one were to sing the notes CDEFGA bcd. One would think of C as ut, D as re, E as mi and F as fa. But on G one would 1st think of it as sol and then modulate and think of it as ut. Then one could proceed to navigate through A re, B mi, C fa and D sol. If instead of a G one were to sing a b, one would modulate at F from fa to ut. With practice b become associated with mi and b with fa. **Does a fa sound the same as an ut?**

EXERCISE design the Guidonian syllables to Chant d of Exercise. Show modulations.



The System of Hexachords
or GAMUT (gamma-ut)

