

[-<417>-] Explanation of that Problem of Aristotle's where he discusses the three tones Mixolydian, Hypodorian and Hypophrygian.

Aristotle's Problem of Lesson nineteen, where he deals with musical matters is not obscure in itself, but because of the fact that certain words that it contains, which must have been known to everyone at the time, are not known nowadays. Therefore, it has not been explained by anyone so-far, to my knowledge. Hence, I wanted to try to see if I could interpret it. This is what it says: <Donia versio deest>

[-<419>-] The entire difficulty resides in what it means to have or not to have the antistrophon. Therefore, in order to understand this correctly, let us remember what Ptolemy writes on the ancient Modes, namely that they were of different sizes because some filled the Diapason exactly, while others exceeded it and others did not complete it, as we have seen also from Aristides' description. To say that a mode does not have the antistrophon is the same as to say that a mode has not got a note which corresponds to one of its notes at the octave. We can interpret this in two ways, namely, either that a mode does not have the antistrophon when it does not span the Diapason, as a mode that has seven notes, or when it does not reach the disdiapason. Hence, in this case a mode will be understood to have the antistrophon when the mode itself which reaches completion in the octave will have another octave corresponding either above or below it, and, consequently, each note of an octave will have its correspondent which they called [antiphonon] equally at the distance of an octave, but in the first interpretation this term antistrophon will refer only to the single term, namely it will refer to the first note and not to the entire system, hence, according to the first meaning it will be absolutely impossible to sing in consonance in any way, and according to the second meaning it is impossible to sing in the way that the chorus sang, namely that all the voices sang the same melody but the highest sang an octave higher and the lowest an octave and the variety of the composition was entrusted to the instruments, although some consonance might occur. Therefore, I consider certain that Aristotle means that the Hypodorian and the Hypophrygian were not good for the music of the Choir because the octave above corresponding was located beneath them, as in the case of the Mixolydian. In which of the two meanings we interpret it, it is not important, because, as long as those two [-<420>-] modes had the Diapason complete, it did not matter that they did not reach the Disdiapason. Therefore, while the Basses (which were the main part in those two tones) sang the System specific of those two modes of eight, nine, or eleven notes, the Soprani could sing the octave of each of them. Nevertheless, they did not think that the System was enlarged, on the contrary, the one of the Basses and the one of the Soprani was used all the same according to the practice of the ancients, hence one can believe that at the two modes which were used in Tragedy (namely, for the actors on the stage, since the Chorus was made of musicians and dancers, rather than of actors) did not exceed a seventh, and musicians had planned this to keep those modes mostly in the lower register and confined to their own character without allowing them to deviate too much into the realm of the theirs. Hence one can believe that the Hypodorian was created by adding a Diatessaron under the Dorian and removing a fifth above it, and equally the Hypophrygian from the Phrygian, in this way:

[Doni, Treatise on the Genera and on the Modes, second book, 420; text: Dorio, Phrygio, a, d, c, [sqb], g, G, F, E, D, c, A, Diatessaron, Diapente Hypodorio, Hypophrygio],

[<421>-] and that at the time in practical music and the wind instruments (flutes and recorders) said modes did not exceed the interval of the seventh.

Investigation into the form and harmony of the remaining of the thirteen and fifteen Tones.

From what was said one can conclude with certainty that the Iastian Tone had the same species as the Mixolydian and the Aeolian the same as the Hypodorian. However, it will not be difficult to establish what particular difference they had in their harmony if one accepts the difference that the two large intervals produce in the Chromatic and Enharmonic, when one is placed uncompounded necessarily, the other one compounded and uncompounded from the Dorian onwards because it seems that this can be derived from the Harmony of the Phrygian and from considering the Tone of the Disjunction. Therefore, we see that in this series

[Doni, Treatise of the Genera and of the Modes, second book, 423; text: D, Tuono, E, diesi, F ditono, G, a, [[Ditono, [sqb], tuono]], c]

of the Enharmonic Phrygian, which contains the other two genera virtually, the intervals are adjusted with such artfulness that they do not mar the natural order of the Diatonic, and that the tone [<422>-] of the Disjunction occurs in the same place as in the two genera, Diatonic and Chromatic, and it is, so to speak, the mark and the distinguishing sign of the modes, as one gathers from Aristides, Cleonides and the other Greeks. Therefore, if they wanted to keep this tone in its proper place, which is the third one from the high register downwards, they take the dense as a single interval, and if they wanted to have it, or better, if we want for the Phrygian to preserve its character and to resemble as much as possible its Diatonic original, it could not have been placed in any other way, but it was necessary to leave the first tone as it is and to divide that following semitone and the others to create the dense. Also because the large interval must follow the Dense, for this reason the uncompounded Ditone was placed after it, after the Ditone there follows the tone of the Disjunction and then two dieses corresponding to the two beneath. Finally, there was only room for a single tone, because we placed its correspondent in the low register, as in the Diatonic. Now, since all the ancient tones are not limited to a single octave, if one continues this species, one encounters the tone corresponding to the first one, and, because in the Enharmonic genus it will be possible to take these two tones by leap with an uncompounded Ditone, hence it will be left to the individual judgment either to sing them separately to adjust them to the species or compounded to maintain the property of the genus. This does not happen in the case of other ditones, since, because it was in the middle, it was not placed hard but compounded. Also, since the Tone of the Disjunct ones in all the genera can be divided by interposing the conjunct Tetrachord, when one wants to make this its first semitone, [<423>-] it comes to be divided in this genus into two dieses, after which, skipping the other semitone and the dense that follows, in the disjunct tetrachord one comes to proceed to the tone and then to the other, or, to the ditone uncompounded in a single leap, since it is not less subjective that in proceeding through the Disjunct ones. This is what transposing a fourth higher the tone of the Tone of the Disjunction means, which comes to correspond to the one which occurs in the first place below D E instead of A [sqb]. However it suits the Dorian Tone to have one and the other Ditone uncompounded, because it has the Tone of the disjunction in the middle. As to the other tones, since they do not have at one extremity a tone separated from the others by a semitone in the Diatonic as in the case of the Phrygian, this necessity

of maintaining in the two genera the same tone divided in the same place does not occur, and for this reason we shall proceed to establish their harmony following another path. Therefore, the uncompounded Ditone in the lower register befits the Lydian perfected as said above, which was also placed in the Syntonolydian, while we shall place under the Hypolydian the compounded or divisible Ditone, so that it may be distinguished from the Lydian and may be as close as possible to its former form, while we shall place the Uncompounded one or indivisible above it. However, in the HypoPhrygian, so that it may be somewhat different from the Phrygian and it may contain the tone of the division in the second position, as the Greeks prescribe, we shall place the uncompounded ditone in the first place and the compounded and Uncompounded above it. Thus it shall have something of the severe and it will be suitable for the Tragedy. The two that are left are the Mixolydian and the Hypodorian, similar in part as to their species and in part opposite to each other. It appears to be suitable to order them in such a way that the uncompounded Ditone towards the low register be ascribed to the Hypodorian, so that [-<424>-] this may retain greater gravity, and in the high register to the Mixolydian, so that it may be more broken in the lower register and suited to tears and feminine laments. Thus, I will have ordered appropriately all the seven modes of Ptolemy in the enharmonic genus. Moving on to the other ones, I say that the Iastian must have necessarily the uncompounded ditone in the lower register, firstly because the most ancient has it in this way, according to Aristides, secondly, so that it may differ somewhat from the Mixolydian, and thirdly so that it may be more majestic, since it had already been used in the tragedies as report.

Equally, we shall order the Aeolian, which has the species of the Hypodorian, in such a way as to have the compounded Ditone in the lower register, in an opposite way to that one, and the Uncompounded one in the higher register. From these two we shall derive then the form of their plagal modes, Hypoastian and Hypoaeolian. We shall assign to the Hypoastian a tone separated in the lower register and then the Tone of the disjunction so that it may resemble the Hypophrygian in having the Tone of the disjunction in the second place, and the Phrygian in having that single tone in the lower register. Thus, the uncompounded Ditone will be *pari ad alto*. Conversely, we shall ascribe to the Hypoaeolian the compounded ditone in the low register and then uncompounded in the high one, so that it may be similar to the Hypolydian, except that it will have both dieses in the high register, while that one will only have one. As to the two notes corresponding above, it will be similar to the Iastian, but we shall make it start from the Uncompounded Ditone in the opposite part, while it follows in the Iastian after two dieses. We shall distinguish the Hypophrygian from the Phrygian by allotting to it not one but two tones [-<425>-] in the lower register, namely the compounded and uncompounded Ditone, and it will be similar to the Hyperastian in the position of the Tone of the disjunction, which will occur in both under the Dense in the acute register. As to the other two added by the followers of Aristoxenus, one should not consider them much, because they appear to have the same species as the others (moreover, Athaenaeus seems to confirm this as well) and if they had it, it is not easy to ascertain it. Nevertheless, if we want to assign it some form, it appears that the same one of the Aeolian may be ascribed to the Hypoaeolian with the difference that the Uncompounded Ditone shall be placed in the lower register unlike in the Aeolian. The Hyperlydian can be left to have the same form as the Lydian, partly because it is hard to find it a form of its own, and partly to follow Athaenaeus, who writes at book that he cannot see that the Hypolydian had its own rules of Harmony. Thus, it will differ only because of the tension. The same order of intervals has to be assigned proportionally to the same Modes in the Chromatic, as there is no other difference, except that one detracts a semitone from the Ditone that separates the

remaining trihemitone from the semitone that was divided in the Enharmonic genus. Finally, I believe that this is the true distribution of all the species in all the fifteen modes according to the three genera of music after having ruminated on it for a long time and since I realise in the end that they cannot be organised in a different way so that all the conditions that must be preserved are preserved.

[<429>-] Explanation of the Tables placed above

[<430>-] Nor anyone should be riled that the species of the Enharmonic Hypophrygian is almost the same as the one of the Diatonic Hypolydian.

[<431>-] Also, I consider very probable that in the ordinary Iastian (I mean the more recent, as they are all the thirteen and fifteen modes) the tone adjacent to the second dense was divided into two semitones with a Chromatic note in the middle, namely the c^{\flat} , so that if one wanted it could be used, and that this is the one that made it deserve the description of [glaphyros] according to Lucian. In fact, albeit it cannot be called any more simple Enharmonic, not even the others of the thirteen from the Dorian on can be called so with reason, because each of the ditones is divided. However, we must remember that one thing is to deal with the Tones according to the rigorous rules of the genera, while to deal with them according to their use is quite another. One must believe that Lucian had practical use in mind, since in that other meaning no particular mode is more varied than any other, since they contain the same number of notes and intervals, and such that this would be the Iastian System with the addition of the note F:

[Doni, Treatise of the Genera and of the Modes, second book, 431; text: diesis, [sqb], c, Ditono, E, F, G, A, semitono minore. tono].

[<432>-] That the Dorian Mode or Tone is the species of E la mi in the Choral tone, and what is the Choral tone.

From what was said so-far, one has been able to understand easily that the Dorian Mode is the one that spans from E la mi to e la mi, namely from the Hypate Hypaton to the Nete Diezeugmenon, which is clearly stated by the ancients, namely, Ptolemy, Aristides, Cleonides, Bacchius, Boethius and all the others who discuss the Modes. Hence, it is very surprising indeed to see that modern writers understood the matter the wrong way round, attaching to it the species of D la sol re, which is the one of the Phrygian, hence their Dorian is the Phrygiana and the Phrygian the Dorian, which is the difference between water and fire, so different are those modes and opposed to each other. Therefore, we must not be surprised if the properties that the good writers assign to them do not match those assigned by the theorists of our age. Modern writers were not to hide this matter, hence Glareano, against the universally accepted opinion, [book 2, chapter 11 in marg.] regarded the Phrygian, or, better, the Dorian, as suited to sad and funereal matters. At chapter 23 of the second book Glareano interprets the epithet of religious assigned by Apuleius to the Phrygian as meaning a certain tearful quality which is more suited to the Dorian, albeit it has more of the sad and severe than of the tearful or weepy. Moreover, he should not have interpreted that word religious [<433>-] as tearful and almost regretful and suited to lament one's sins, according to Christian practice, but as very cheerful and possessed, as they judged suitable to the sacrifices and ceremonies in honour of Bacchus according to their mad belief. However, to move on to the property of the tone, one must note that the ancients adapted each of the seven Tones to the tension of the human voice

to which ascribed fifteen notes and two entire octaves. In fact, although some people do not sing as many others exceed that number, nevertheless, on average, this number covers the natural System of each person. Consequently, the middle tone, which is the Dorian, is the only one sung without any straining of the voice, and, therefore, it is considered to be the most attractive and tranquil, and that it represents the demeanour of a serious and grounded man who does not change his emotional state and facial expression because of any event, nor he is softened by excessive cheerfulness or is overcome by fear or inflamed by ire and so on. Therefore, the ancients noted judiciously that the consequence of ire is to raise the voice and that an angry man always talks with a tone of voice which is higher than his natural one, and, conversely, who languishes in pleasures and enjoyment uses a lower and more relaxed sound, and this demeanour can be seen in those who are drunk and full of wine and sleep. Hence, they assigned to these the Hypolydian tone, which is the most relaxed and low, while, conversely, they ascribed the Phrygian to those who are burning with ire and rage, since it uses a higher and more intense tone of voice. Thus, they assigned the others [-<434>-] proportionally according their different or the same emotions, more or less strong. This is the reason why music produces different emotions according to the fact that the singer adopts a lower or higher tone, rather than because the high or low sound by itself produces different effect and that, consequently, modern compositions which use contrary motions (which were used also by the ancients) do not move almost any feeling. On the contrary, the high or low pitch per se has no effect at all, but it has to be viewed in relation to the singer, since it is natural to identify ourselves with the emotions of who speaks and sings. Therefore, that precept si uis me flere dolendum est (which means: “if you want me to shed tears, you must show pain”) comes from here, et cetera. If we hear someone using a singing tone that is not natural, we detect immediately with our imagination (apart from the expression and the effect of the words) a great feeling of discomfort in that person, and we are moved because of natural sympathy and we transform ourselves into the same emotional state. The Dorian was more highly regarded by the ancients with reason and it received the highest praise from those who lauded no other music that the sort that was consistent and serious, as opposed to the one that was introduced in the theatres to move the souls from their original state. However, nowadays –and this is why Mei says that this is the only one that we have left of so many ancient Modes – modern musicians do not heed this precaution, hence they sing mostly only in the Dorian Tone, not by choice, or because they want to keep themselves within a serious and dignified deportment (may God desire that the exact opposite was not the result) but because they are not able to do anything else and because they do not possess the art of the Erhopeia and Pachopeia [-<435>-] in music. Hence, they barely provide any other rule outside their usual habits (which is something separate from the Melopoeia) that to stay mainly in the low register when they want to express sadness, and in the high register when the subject is cheerful. Similarly, in the matter of Rhythm, they do not give other detailed advice except in relation to fast or slow speed, prescribing only to use the latter in cheerful music and the former in sad ones. Therefore, this Tone normally used for singing is called Choral, because it is convenient to the choirs of singers in the compositions for several parts and also in the Ecclesiastical ones for one voice alone, and because the voice of the singer can easily adapted to the sound of the organ, which regulates this Choral tone, which also regulates the harpsichords, Spinets and similar keyboard Instruments used commonly nowadays to accompany the voice. Also, although they do not have nowadays a note of absolute pitch that (as the <Sun> and the Ecliptic in measures the eclipse in the height of the celestial bodies) may serve as norm and boundary to define the notes, nevertheless one could do this with ease taking the note which is exactly in the middle of the Instrument, as long as it is tuned properly,

and establishing it as the middle one of the Dorian (namely, the a la mi re) which could be highlighted in every composition so that one may ascertain at sight in which tone one is going to sing. This note should correspond to the middle one of an average Tenor in one of these two ways, either considering all the notes that he can pitch absolutely, and these shall be more or less fifteen, and if they are fifteen the octave will be the middle one and the one that indicates the Choral tone, or one must consider [-<436>-] only those that are easy to sing and are constituted well (which must be noted in this tone particularly) which are normally nine, the number assigned by the most ancient musicians to the Dorian harmony. In that case the fifth shall be the middle note or Dorian Mese which shall correspond to the octave among the fifteen, because the middle note is at an equal distance from the ones at each extremity. Now, since some nations have a higher tone and others lower, and, apart from this, singers are more lazy in one place than in another, hence it follows the choral tone is not the same everywhere. It is true that, since there is no great difference among the main and most noble nations of Europe, we can say that the choral Tone is like the Mark, to which merchants in common markets (for instance at the Fair of Piacenza) reduce and compare all the other types of currency. In a similar way, the Choral tone, although it is not exactly the same everywhere, it is the one that shows the variety of the tension of the voice used in the compositions among musicians who use the same notes and the same instruments and way of using them. The northern nations usually have the deepest voices, especially those that have a similar climate to the one that one sees among the Walloons and the inhabitants of Lorraine, who have the lowest voices. This derives from the temperature of the country (this is the main reason in my opinion) from the food and the drink that are more popular in a place than in another or because of the inclination of the Air of the sky, as Vitruvius appears to believe, providing this as the reason. [-<438>-] It is enough to say that Northern nations have lower and manlier voices while the Southern ones have higher and more feminine ones. However, as to the particular Choral tone of this or that country, it is not easy to ascribe all the differences, and if one could, it would be useless. I have noted simply that in Rome one sings a good semitone lower than in the rest of Italy and in Germany a tone and a half higher, and, consequently, more than a tone higher than in Rome. Hence, if one takes the tone common in Italy as Dorian, the one used in Rome will correspond to the Hypolydian and the German to the Phrygian. It is not necessary that this Dorian Italian tone should correspond entirely to the modern or ancient Greeks so that it may be called Dorian. On the contrary, it will be more reasonable to call Dorian the one that in every province is natural and not strained, although one must take into account the natural degree of high and low pitch typical of the whole nation rather considering a single town, and measuring together what is done and what could be done. For instance, if the singers of Rome depart from the tone of the others not because a lower voice or because they are laze, but in order to achieve a particularly attractive effect, their tone will be called Hypolydian rather than Dorian, while the Dorian will be the one that is common to all Italians, although it will not suit the Lombards because they have a lower voice than the inhabitants of the Reign of Naples, or the other way round. Anyway, one must not consider the matter in such small detail, since the singers of various cities belong to different countries and nations for the most part.

[-<439>-] On the quality specific of the species of Diatessaron and Diapente.

After we have established what is the Choral tone and after we have seen that the ancient modes differed not only because of the tension of the voice, but also because of the variety of the species, it is appropriate now to consider what properties has a species more

than another one, and, because the order of the Diatonic differs from the one of the other two genera, we shall investigate that one first. To start we shall consider the different species of the Diatessaron and of the Diapente, which produce the different types of Diapason. It is easy to observe that the fourth that has the semitone in first place has a kind of attractiveness and grace more than the others have, as Glareano noted. This can be experienced by singing Mi fa sol la. When one descends singing la sol fa mi, one experience a certain cheerful seriousness, which pleases more than the other species, since it seems more than natural to start from a small interval ascending and then coming to a larger one than the other way round. Orators show this, who raise their voice little by little at the beginning of their speeches and do not start screaming at once, as this would appear barbaric and mad. Now, small intervals are commensurable with the soft voice and the large one with the loud one, since the height and the loudness are both produced with greater effort of the vocal organs, while the deep voice and the soft tone in speaking and singing strains the arteries less. However, in descending, it seems to me that the species la sol fa mi is more serious and melancholic, because, starting from the place where it arrived with the tone, it hurttles towards the low register, while the other one, fa mi re ut, starting with the semitone shows the intention of wanting to linger in the high register and for this reason (and perhaps because of other reasons of which we [-<440>-] are not aware) it appears more lively and cheerful. Conversely, the one that has the semitone in the middle, since it is mid-way between those two, we could say that it partakes of one and of the other, and it is less lively and cheerful than the third one, and less calm and majestic than the first one. However, since in everything, and especially in music, the extremes are very powerful, it follows that has the semitone almost hidden in the middle and less highlighted, is more vehement and energetic than the others. This occurs also because it has not that variety that the others have in ascending and descending, because in the first and in the third one the liveliness of the ascent or descent is compensated by the sadness contained in the contrary motion, while the liveliness of the second species is equally apparent both in ascending and in descending, which is so true that one can hear this not only proceeding by step, as one says, through these intervals, but also taking them by leap or in relation to the intervals that are left out or because of some other reason. Hence we hear that this fourth ut fa is more cheerful than mi la, and that fa ut is softer than la mi. For the same reason, the first species of diapente is similar to the first of diatessaron, the second to the second, and the third to the third. The fourth species has the same qualities of the third one but they are stronger, as, for instance, singing fa sol, re mi, fa is so lively that it is somewhat crude, because of those three adjacent tones, and even moving downwards it is more languid than the third species fa mi re ut. I do not agree with Gallilei in believing that, absolutely speaking, the fifth is sad in ascending and cheerful in descending and the other way [-<441>-] round, since I cannot see the difference, except in relation to the middle intervals actually or virtually sung. This intervals can be seen in the minor thirds better perhaps than in any other, because the first species, namely, the one that has the semitone at the bottom, it is cheerful and lively in ascending (re, fa) and malinchronic in descending (fa, re), while the opposite occurs in the second. Moreover, there other two genera differ in some way from the Diatonic, because the third species of the Diatessaron appears to be the most lively and harsh of all, which is placed between the oxypycne notes and is also the Phrygian fourth. The middle one is the first of the Barypycne, which is Dorian, while the sweetest and softest of all is the second of the Mesopycne, which is Lydian. The reason for this is that it has the semitone in the two extremes, just as the reason that the first one is sweeter than the third one is the fact that it has the two semitones towards the lower register, hence the reason is the same that exists between the first and the third diatonic species.

The same has to be understood, equally, as to the species of the Diapente also in these two genera, and from the examples shown below and singing these Chromatic fourths one will be able to consider if what I said is true. The same reasoning stands also in relation to the Enharmonic ones.

[Doni, Treatise of the Genera and of the Modes, second book, 441; text: mi, fa, la, prima specie nelle corde Barypycne, seconda Mesopycne, terza Oxypycne]

As to the intervals of the Tritone and of the Pseudodiapente or false fifth one can learn easily that the first one, ascending either by leap or step, is extremely harsh, hence modern composers avoid it usually with the high b fa, while it is equally languid in descending and in both ways it is hard to pitch. However, the false fifth is soft and tearful ascending and descending by step mi fa re mi fa fa la sol fa mi, and by step it is not different from the Tritone but in the relation of two semitone which make that leap a little more languid and feminine to the imagination of the listener. Since the Diapason is composed of these intervals as its integral parts, it follows from here that its species are the same as the ones which make it up. Hence the first species, which is the one of the Myxolidian, is sad because it begins from the semitone, and because it [-<442>-] sings two adjacent minor thirds, not only is it sad, but soft and languid, and because it ends with a tritone it is very harsh. For this reason, it expresses tears and feminine laments admirably. The fifth species of the Dorian, which is similar to that one and is placed, similarly, among stable and Barypycne notes, is certainly sad, because it has that semitone in the first place, but it is not tearful. On the contrary, it is rather severe and majestic because it begins with a small interval and the, as three tones follow, it seems as if it gains strength. Also, since the tritone is left in the middle, it does not turn out to be harsh, but generous and rather severe. The seventh species of the Hypodorian, Re mi fa re mi fa sol la, partakes of the nature of the Dorian and a little of the one of the Mixolydian because of the two minor thirds in the lower register, but also of the Phrygian, because it continues in the same way. Therefore, this more is very emotional and tearful, but not languid, sad but not austere. The third species of the Phrygian, Re mi fa sol la re mi fa sol, is very close to the Hypodorian, but it is more intense and cheerful because it has the tritone in the middle, unlike the Hypodorian. Its nature can be ascertained through its diatessaron and its diapente, which is the second one considered a little earlier. The sixth species of the Hypophrygian, re mi fa re mi fa sol, because it contains the third species of diatessaron and of diapente, partakes more of the Lydian than of the Phrygian. Since it is no longer a note of the Phrygian, it is lively, but less emotional. The second species of the Lydian, ut re mi fa sol re mi fa, has the above mentioned properties of the third species of fourth and fourth species of fifth, since it is more cheerful and lively than the others. However, because it has the semitone at its high extremity, it is sweeter and beautiful than the Hypophrygian, but not so complete and bold. Finally, the fifth species of the Hypolydian is almost the same because it was the same species of fourth and fifth, but placed in the opposite way. Also, because it has the Tritone, it is harsher from the bottom upwards, and [-<443>-] it is more languid and enervated from the top downwards. Maillard (part 2, chapter 12 in marg.) says that it is difficult to pitch, which is true because of that tritone. It is not severe and grave, unless one intends harsh as severe. [[ma]] non che sia seuro e graue se però non intende cruda per seuera.

That the nature and effectiveness of the Modes derives from their own species joined to the Tone that they require.

After we have seen what the properties of each species of octave which form the Modes are, there is no doubt at all that when each is sung in its own particular tone, which suits it and is different from the others, it shall be much more vigorous and effective in producing the effects that pertain to each of them. Therefore the modes that are lively and energetic, if they are sung in a tone which is higher and more intense than the natural one, will be much more lively and energetic without comparison, while the languid and relaxed ones, if they are sung in a languid tone and one that is lower than the natural, will become more languid and more relaxed. Conversely, if they are sung in their natural and choral tone they will lose a good part of their nature, while, if they are sung in a tone which is higher and more intense than the natural, they will change completely and will acquire an opposite character. Hence, just as a medicine that has ingredients of a hot nature and is administered to warm up some part of the body is taken cold naturally or it does not produce its effect very effectively, [-<444>-] while one that is taken to cool the body, will do this more effectively if it is cooled artificially than if it were taken hot, the same occurs in music. In fact, in antiquity the modes were sung in tones that were appropriate to them, hence they produced the effects that we read about, while nowadays they are sung all in the same tone, hence they are less effective or work in a way that is the opposite of what they should achieve, and they have almost no effect. We shall demonstrate with examples that this is true. If a melody of the fifth mode is sung with one or more voices, as it is customary, which corresponds to the ancient Dorian as to its species and produces its cadences on e, if there are no instruments, each part shall sing in its natural tone, observing the Dorian Tone, which will produce good effect. However, if the voices will be tuned to an instrument with fixed tuning, as a harpsichord – but it will be almost the same in the case with alterable intervals, such as *viola da braccio*, because the tone is not transposed in its right place, as it should be – if the instrument has the choral tone on D, as it is customary, the voices will sing a tone higher than the natural, so the Dorian mode will be sung in the Phrygian. However, if after this piece, the same singers sing a composition in the species C c, which is the Lydian, without instruments, they will sing in the usual choral tone, but, if they adapt to the tuning of the organ or of the harpsichord, they will sing it two tones under the Dorian and one under the Phrygian, which is exactly the opposite of what one should do. Hence, they will sing a very lively and cheerful species and mode in a relaxed and languid one, and a sad [-<445>-] and gentle in a tension of voice which is energetic and high. Then we are surprised that modern music is not effective at all! However, if, in order to remedy this situation, we wanted to use the species of [sqb] mi on the instrument by adding the b flat in E la mi so that it may have the species of the Dorian, another drawback would follow, because the Dorian melody would be sung a tone and a half under the choral tone and it would be too languid and relaxed. This disorder would occur more significantly in the extreme Tones, because, within the notes [sqb] mi [sqb] mi, it would result languid and soft, while it should be sung in an energetic and driven manner in order to express the acute pain and desperation of who weeps and cries. Therefore, instead of expressing these feelings it would express only a certain languid and lazy sadness. However, everything works out for the best in the ancient tones, because the Dorian, which was born to express constancy and a quiet and calm disposition, as the one of a Stoic philosopher, is placed in the natural tone in which one speaks and converses normally, edging sooner towards the lower register than the higher, as Kings and Judges do they pass a sentence or give an order. A tone of voice higher than the said interval suits the Phrygian because this mode suits who raises one's voice above its usual tone because of anger or another strong feeling or possessed by a divine and prophetic fury. Therefore, that tone would suit an actor who took the part of

the Lord Jesus in some Sacred Drama in the act of banishing the sellers from the temple. However, who is happy and jubilant in an extraordinary way as children do often raises ones voice much higher, hence the Lydian harmony, which is a Ditone higher than the Choral tone, would suit this person. Conversely, those who [-<446>-] erupt with cries and laments because of overbearing pain and desperation, as women do when something said and out of the ordinary happens, they raise their voice even more, hence a tone a fourth higher than the Choral tone suits them, which is the Mixolydian. Moving on to the low ones, those who languish because of tenderness of spirit, excessive pleasure, sleepiness, laziness and drunkenness, are used to lower their voice more than usual, hence the Hypolydian suits them, which is a semitone lower than the Dorian, or Choral tone. The Hypophrygian, which is a tone and a half under the Dorian suits someone who threatens or acts in a scary way because it mixes the low and deep sound with a pompous and threatening species. For this reason, together with the Hypophrygian is assigned often to Heroic characters on stage, since they were deemed larger than men, hence their stature was increased as well as their demeanour. Thus, we can believe that they chose large men with baritone voices to represent them in the best way. Therefore, I believe that this tone, the Hypodorian and the extremely high Mixolydian were not sung by characters with ordinary voices but the first two only by Baritones or deep Basses, and the Mixolydian by contraltos and falsettists in its middle range and as a rule by women and children with very high voices. The reason of this is that nobody will be able to sing well both the extreme tones which are at the distance of a seventh. In fact, if one has a voice that suits the low register, that voice will not suit the high register, and conversely, if one has a high voice it will not be suited to sing low tones. However, every ordinary voice will be able to sing up to two tones above the Dorian. Also, because there is also difference among the tenors and among the other voices, since one will have a higher tenor voice than another one, who has the higher voice [-<447>-] will be able to arrive to the Lydian with some effort, and it will be barely able to exceed the Hypolydian beneath it, while who has a lower tenor will be able to arrive to the Hypophrygian with the appropriate effort, but he will not be able to exceed the Phrygian in the high register, since everyone has eight reasonable notes, and we are referring to tones what will not accept more than eight or nine notes. Moreover, what has been said about the middle part must be applied also to the other ones. Conversely the Hypodorian Tone or Mode is more suited than the Hypophrygian to the Heroes' laments, since the Hypoprhygian, according to what Aristotle reports, has an active character, hence he says that the Disarmamento, namely that part of the Drama in which Hercules was represented as depriving Geryon of the arms with the Enharmonic, while the Hypodorian has a somewhat passive and pathetic character, hence it is more appropriate to laments (the serious ones though, which befit heroes) than the Hypophrygian, which has the same relation to the Phrygian as the Hypodorian with the Dorian.

[-<448>-] On the most evident property of each Mode

Therefore, we shall review briefly the nature and properties of each mode and to which matters they are suited according to the authority of good authors and experience itself. Then, we shall report the exact words of the same authors for explain better their work and to reconcile them when there appears to be some contradiction. Therefore, the Dorian is in its true character or property – this is the meaning of that term [ethos] – in serious music, where it is serious and modest, and also suave and mature. Moreover, since it is in the middle, it is adaptable to lively and cheerful emotions as well as sad and relaxed. The Phrygian is energetic and inflamed and therefore, as reports, was represented

by the colour red. It was effective in firing up the souls with divine fury and anger and, since it is also of a pliable nature, it can be adapted to sad subjects. Therefore we read <aliqua desunt>.

Monteverdi composed the laments of Ariadne with great artistry and proportion in this mode, albeit altered with frequent mutations.

[-<449>-] [<aliqua desunt> small <intervals>, it will make it softer and plangent than the other two, hence more suitable to tears and lugubrious subject, hence it is not surprising that we read that this mode is <aliqua desunt> in marg.]

The Lydian is more cheerful and festive than the others. In short it is naturally suited to dances, which are very often in this mode [[and especially the French corrente]]. It is really lively and cheerful and somewhat child-like and light, hence not very suited to serious and sad matters. In fact, if we read that <aliqua desunt>

This was because of the Tone rather than because of the harmony, which had to be also different from the ordinary Diatonic as well. Moreover, since it has the chromatic fourth and enharmonic of this Mode, the large interval between the two <aliqua desunt>

The Mixolydian is totally plangent and querulous, and the chief emotions that it provokes are pain and compassion. In short it is suited naturally to feminine laments and cries, and it is harsh as well as languid.

The Hypolydian appears to have pleasure as its object. It seems to express a languid and relaxed attitude and one that is provoked by pleasures or drunkenness.

Also, since it is the opposite of the Mixolydian and the extremes in music meet each other, it will also be apt to express sad feelings, laments and pain not without reason because in this world excessive pleasure often transforms itself into excessive pain.

However, in general it is useful in everything which suits its principal tone. And this equally <aliqua desunt>. Outside of its tone, as it is commonly used nowadays, it turns out almost as cheerful as the Lydian, with which it symo. It is less lively than the Phrygian because it does not have a tritone.

Similarly, the Hypophrygian has almost the same nature as the Phrygian, but, while that one appears to have been born specifically to express the sort of divine fury that the Greeks called Enthusiasm, thus this represents instead disdain and anger, it suits threats perfectly and it is more sad and serious than the Phrygian, thus it appears more manly.

However, sung [[in]] <aliqua desunt>

As to the Hypodorian, although it suits almost any subject as to its species, nevertheless in a specific sense it is more sad and languid than the Dorian, but with a cheerful majesty and a certain pleasing maturity. Sung by an appropriate voice, it suits perfectly [-<450>-] tragic subjects, because it is somewhat magnificent but also emotional, since it is more emotional than any others and, transposed to the Phrygian, it would produce almost the same effect, although it would not be as lively because it does not have the Tritone, hence, it is also softer than the Dorian. However, when used in the lower range of a singer who does not have a very deep voice, it will express the fear and the agony of someone who trembles and who is scared, hence the trembling fear can be ascribed to it among the emotions. However, in order to reduce these differences to their most principal points, one must know that the Greek authors list three different varieties of Melody and Melopoeia. They call one of them Hesychastika [Hesykhastika] from the term [hesykhia], which means quiet. This is the one that does not move the soul at all, but calms it and disposes it in a constant and tranquil state. Its aim is the calming of the soul. They called the Second Diastaltic [diastaltike] (although one reads it described mostly as Diastematic [diastematika] because it adopts many leaps and large intervals which are called Diastemata in Greek) from the verb [diastellein], which means to lengthen. Hence the lifting and dilatation of the arteries that is the vital virtue of the heart is called Diastole.

Those feelings that appear to enlarge our hearts, such as joy, delight, courage et cetera, belong to this species. The third species is the one that they call systaltic [systaltika] from [systellein], which means to constrict and restrict. Hence systole means the contraction of the heart and the lowering of the arteries. To this sort belong the feelings that appear to constrict our heart and sap every strength, such as fear and sadness. We can also add the Enthusiastic as a fourth species to these three. In fact, although it may be reduced to the Diastaltic, nevertheless it appears to have a different character and that it pertains more specifically to the attitude of who is irascible, while the attitude of who has strong desires belongs to the Diastaltic and to the Systaltic, since philosopher class under that category [-<451>-] the feeling of pain and sadness, as well as the one of pleasure and happiness. Now, each of the four principal modes belongs to each of these. Each of them corresponds to them perfectly and it is specifically effective in producing the required effects. In fact, Hesyhastic music suits the Dorian, Enthusiastic music suits the Phrygian, Diastaltic music the Lydian and Systaltic music the Mixolydian, while the other three are linked to one of the main ones, namely the Hypolydian to the Lydian, the Hypophrygian to the Phrygian, and the Hypodorian now to the Dorian and now to the Mixolydian. However, since one may doubt that the Phrygian is really more lively and daring than the Lydian, because, although its species is more lively than the Lydian, since the Lydian is a tone higher than that one, it will require a much greater vocal tension than that one, and will have to appear much more lively and energetic, to this I reply that, since the Lydian is much too high than choral tone, it cannot be sung easily by someone with an ordinary voice, as the Phrygian can with a little effort, hence, since it is sung by someone with a voice higher than the ordinary and approaches a woman's voice, not only it will not impress in the listeners the quality of that vehement strength, but rather the feminine property of the voice, which is naturally high in pitch.

[-<453>-] That many properties that are ascribed by modern musicians to our Modes are sophistic and imaginary.

Apart from the fact that, as I said above and as Gallilei often repeats, our modes have very little and almost no variety between them and little effectiveness in arising emotions, nevertheless many modern theorists attribute to them very singular qualities that cannot be attached to any sort of music, if one judges it correctly, if it is considered without the words, for instance, when we called the sixth Mode, which has the species of the Mixolydian [sqb] [sqb] mode of adulation, deceit and derogatory judgment, which are all categories that denote an attitude so specific that I cannot imagine which combinations of sounds and intervals they may express, if they are not described by the meaning of the words that are sung with or without gestures and scenic movements that illustrate such leanings. I leave everyone to consider if the expression of peace and tranquillity suits this mode considered in its tone.

As to the species G g, whether divided harmonically or arithmetically, I do not believe that it can be called lascivious if it is constituted in its own tone. Also, I believe that it is naive to say that a mode is placed under the other according to contemplation, and similar statements that have to much of the abstract and have nothing to do with Tones and semitones, as well as [-<454>-] to say that a type of verse suits one and another type another one, since it is hard enough to pin on them the most general differences. Now, in order to try to reach some definition as to the effectiveness of the modes in moving the emotions through the rules of philosophy, one must know that, just as there are two sorts of material quality, the first one consisting of heat, coldness, humidity and dryness, and the second ones, such as density and rarity, hardness and softness et cetera, which derive

from the first ones, thus it follows that the passions are of two sorts, which have their root in the particular complexion of men, namely, from the varied mixing of the four humours, since some are rightly first in order, such as cheerfulness, melancholy, ire and fear, others are second, such as love, envy, shame and so on, because the latter derive from the former, since someone who is naturally timid and of delicate feelings and of good and upright morals will be naturally private and reserved, someone who is timid and naturally dishonest and of dry temperament shall be envious, and thus in the other passions, which do not derive directly from the composition of the four humours, but from the reaction between them and other circumstances of particular passions and demeanours. Hence, it is not reasonable to believe that music alone and naked, namely, without the accompaniment of the text, may have any effectiveness in raising such feelings. However, it will be effective in raising the ones of the first type, because even nowadays we feel that some melody cheers us up and another one saddens us. It is also possible to believe that Alexander, whose character was red-blooded, keen on war and perhaps heated by the consumption of wine, when he heard a melody composed of energetic movements and daring and possessed harmony was moved abruptly to take up arms in his young and martial fury, especially if [-<455>-] at the time something that moved his ire or disdain occurred to his mind. However, that a melody or musical composition without words may represent adulation or move compassion and envy is something that one must not believe in any way. This suffices as far for what concerns the discussion on arising emotions through music.

What the authors say on the number and disposition of the Modes.

There are some modern writers who have paid much attention to the variety that one finds in the authors who count a larger or smaller number of Modes, and, without taking the precaution of informing the less knowledgeable that those that deal with them *ex professo*, as we say, do not disagree with each other, while one must not take into account the others who name some or all of them in passing, have almost taken aim to the ancient writers to discredit them in the eyes of those who are not experts, so that they may be regarded as useless and confused and to prove that they cannot be considered otherwise nowadays and that they cannot be used in practice. Therefore, I judge appropriate to demonstrate that the ancients do not contradict each other, and, although there appear to be some disagreement, nevertheless they concord perfectly, when one distinguishes them according to the time when they lived, the school to which they belonged and similar factors. Zarlino [Institutioni, chapter 6 in marg.] noted this difference as well where he places Euclid, or Cleonides, as he may be, Ptolemy, Gaudentius, Aristides, Boethius, Cassiodorus [-<456>-] and Martianus among those who deal with the subject *ex professo*, while he names Plato, Plutarch, Lucianus, Pollux and Apuleius among the others. I add to these Aristotle, Athaenaeus, Proclus, Iamblicus and other Platonists who wrote commentaries to the works of Plato. Therefore, starting from Plato, I say that, although he names only those six mentioned by Aristides, and not in order, but as he finds appropriate when he passes judgment upon them, this does not suit us because only those were either known or employed in this time, some were called with different names, as we have seen and others were added later. However, the fact that Julius Pollux places the Dorian before any other in two passages, as Zarlino points out, means nothing, because he names only the main ones and he starts from the most dignified. Similarly, the reason why Plutarch mentions the Dorian is because the thread of the discourse leads him towards that direction, rather than because he considered it as the first one in sequence towards the low and high register, since it is only the first one in the sequence of the three main ones.

Equally, Cassiodorus in a Letter mentions it before the Phrygian and before the other principal ones, and then in his pamphlet on music he names all the same using the same sequence as the other ones, starting from the Hypodorian and ending with the Hypolydian. Nor does it matter that Lucian mentioned the Phrygian first and Apuleius the Aeolian, because both of them mentions them in passing and as they occurred to their imagination. Martianus Capella begins with the Lydian, starting from the highest of the principals, as Alypius does as well, who does not provide a table in sequence but, starting first from the Diatonic, composes a chapter on the signs that are specific of the notes of the Lydian, the another one on the Hypolydian, a third one [-<457>-] on the Hyperlydian, and then does the same with the Iastian, which is the second of the principal ones going downwards, as the Greeks progressed. Therefore, it is not surprising if Cleonides and Gaudentius start from the Mixolydian, because, discussing only the seven accepted by Ptolemy, they had to start from the highest according to the practice of the Greeks. Apart from these Porphyry, Horace's commentator, names the seven modes of Ptolemy, starting himself from the Dorian as the main one, while Censorinus, who wrote the pamphlet 'On the birthday', in the passage where he deals with music, mentions the three modes of Aristoxenus.

[-<f.458>-] On the nature and property of the Modes according to the ancients.

Apart from what we said above, Plato reports in the third book of the Republic that the Mixolydian and Syntonolydian harmonies are plangent and funereal, while the Lydian and the Iastian are relaxed, soft and suited to the banquets. [Mixolydisti kai syntonolydisti threnodeis harmoniai; iasti kai lydisti haitines khalyrai kalountai malakai kai sympotikai]. Aristotle in the third book of his Politics, in the last chapter, distinguishes melodies and harmonies into Moral, Active and Enthusiastic, which we could call divine or inspiring fire in the soul, saying that some were fired up at the sound of the sacred chants which were used in the feasts and ceremonies in honour of Bacchus. He calls similar melodies also [kathartika mele] purifying, because they purified the soul from the affects which disrupted it, prompting it instead to the contemplation of matters concerning the divine. He also says that they produced a joy and a jubilation which was not noxious [Kharan ablaben] in the hearts of men, and that morally sound melodies, such as the Dorian is [tois ethikois ton melon khresteon; toiaute de he doristi], must be employed to educate they young [pros paideian]. He interprets as Moral melody the one that has as its aim not to provoke certain emotions, such as joy or sadness, but to accustom the listener to grave and laudable habits by inducing similar thoughts, and that the Phrygian among the harmonies [-<459>-] has the same power that the recorder or the flute has among the instruments, namely, it has a very daring and war-like character, as it is described by according to Scaligero in his Poetics. This type of flutes produces a sound which is very close to the trumpet, which is also very Phrygian in character. Therefore, Athaenaeus writes that the Horn (some sort of trumpet-flute instrument) was apt to the Phrygian melodies, as an instrument that resembles the shape and the sound of the trumpet. However, what do we believe that the Musician Agias meant when he states, according to Athaenaeus, that the storax that burnt in the orchestra of the Theatre of Athens during the festival in honour of Bacchus produced a Phrygian smell to the nostrils of the audience? Personally, I would interpret this as meaning that he wanted to express with this metaphor the height and the strength of the smell in comparison to the Phrygian melody, which resembled the Phrygian harmony more than the others, or that he meant the sweetness of the smell which that harmony appeared to him to possess, or that that particular smell was somewhat sacred and represented the festival and the temples, as the

Phrygian represents it among the other harmonies. Hence, Theophrastus writes in his book on Enthusiasm, quoted by Athaenaeus, that those who suffered from sciatica appeared to regain their health if someone played near them the Phrygian harmony on the flute. It is certain that in the Dithyrambus, which was a type of composition of a gonfio and allegoric style sung by a choir with the sound of flutes and danced with movements and gesture full of fury and lightness in honour of Bacchus, the Phrygian mode was used for the most part, hence Philoxenus, [-<460>-] who was keen on novelty and on what was unusual, as reports, despite having tried to compose it in the Dorian mode, he was not able to do so, but was forced by its nature to write it in the Phrygian mode. It is also famous the story adduced about Pythagoras (although others ascribe it to Socrates, albeit mistakenly) who, having met one night a young licentious and dissolute an who, excited by the sound of a flute which sounded in the Phrygian mode and inflamed by passion and jealousy, was about to set fire to the front door of a courtesan, ordered to the flutist to change the mode and to play the spondaeus, namely the Enharmonic melody of Olympus in the Dorian tone which was used in the sacrifices, and thus he appeased him completely and rendered him calm.

As to the Lydian, Aristotle in the above mentioned passage maintains that it is very suited to children because it has <aliqua desunt>, namely gracefulness and a good demeanour, apart from the fact, I would add, that it is pitched in the high register.

[-<461>-] As to the Hypodorian they say [[Ptolemy, book three, chapter seven, confirmed by Quintilian]] that the Pythagorean philosophers (one can note from this that they devoted themselves also to the practice of playing and singing) had the tradition to use the Hypodorian between the day, when they were tired because of their work, and the evening when they went to rest, because that mode invited tranquillity and relaxation. This is not surprising because, being sung in a languid manner by a deep bass, has the power to soften and to induce sleep, since this cannot be achieved with fast and alert movements and Rhythms. Conversely, when they awoke at night and wanted to encourage themselves to their daily work and to their studies, they used to clear what was left of the night obnubilated by the darkness and by sleep. Athaenaeus was right in considering as the Aeolian as to the species, because it was the same, but Zarlino was wrong in believing that it provoked a certain pomposity, haughtiness and high-handedness in the soul of the listener because it is rather soft in nature, and these qualities are opposed to each other, as everyone can realise. As to what some say about the Hypophrygian, namely that he has a character that is opposed to the Phrygian and that Timotheus calmed down and brought to his senses Alexander enthused and prompted by the Phrygian mode to take the arms, and that the Candiotti sounded the retreat with this mode, while they inspired the soldiers to the battle with the Phrygian, I cannot understand how this may stand because the Hypophrygian has no quality that is contrary to the Phrygian, but, on the contrary, it is similar to it. The fact that it has the tone perhaps will render it less possessed, but not completely placid and tranquil. However, considering what Cassiodorus writes on the quality of the modes, in certain aspects he appears to contrast what is curious and strange to what is probable, making Theodoricus King of the Goths write [-<462>-] (more as a licence that with appropriateness) a long digression regarding musical matters in that Asian style of his to the king of the French who had asked him for a Citharede. So, he states: “The Dorian is produces modesty and adduces chastity, the Phrygian invites fights and inflames the mind with madness, the Aeolian soothes the moods of the soul and provides rest for those who are not at peace, the Iastian sharpens the mind of the less intelligent and, as a provider of what is good, supplies the desire of celestial goodness to those who carry the weight of earthly desires, the Lydian was invented to protect against excessive worries and mental boredom, invigorates with its relaxation and fortifies with

its attractiveness.” Here one can see that he says that the Dorian mode has the power to preserve chastity because of the story or myth according to which Agamemnon left Clytemnestra to go to the Trojan war under the charge of , a musician, so that he may entertain her with his serious and morally sound singing, and some use this example to demonstrate how upright and virtuous ancient musicians were. If this is true, it should not be ascribed to the specific strength of the Dorian melody but to the prudence and knowledge of the musician and to the laudable teachings contained in the texts that he sang.

Similarly, one can gather that Cassiodorus was prompted by what we said about the Pythagoreans to write that the Aeolian, which corresponds to the Hypodorian, calms the mind and induces sleep. However, as to the fact that the Iastian sharpens the mind and elevates the intellect, I cannot find where he extracted this information. In fact one should trust Plato and the others who write that [] that mode was tender and appropriate to the banquets, rather than Cassiodorus. However, do let us see what Lucian writes about it in his Dialogue Harmonides, to which he gave the title of the name of a follower of the flutist Timotheus. Therefore, he says that Timotheus reminded this pupil of his that, when he played in this or that mode, he should observe the specific nature of each in assigning its melody, its gracefulness and its timing. He says: [kai tes harmonias hekastes diaphylattein to idion. Tes phrygiou to entheon tes Lydiou to bakkhicon tes Doriou to semnon tes ionikes to glaphyron.], which means: “One must observe the property of each harmony, namely, the possessed nature of the Phrygian, the Bacchic quality of the Lydian, the serious character of the Dorian and the beautiful one of the Ionian.” Apuleius in the first book of the Florida says: Tibicen quidam fuit Antigenidas, omnis voculae melleus modulator et idem omnimodis peritus modificator. seu tu velles Aeolion simplex sive Asium (read Iastium) uarium seu Lydium querulum seu Phrygium religiosum seu Dorium bellicosum, which means: “Antigenidas was a very sweet flute player, he was able to modulate every smallest interval and the most accomplished performer in any mode, whether you wanted the simple Aeolian, the variegated Iastian (or Asian) the plangent Lydian, the religious Phrygian or the belligerent Dorian.” Here one must make a few observations. Firstly, although Lucian ascribes to the Lydian something of the Bacchic character, it seems more suited to the Phrygian and it appears to have the same meaning as [entheon] or possessed by a God. Nevertheless, it is possible that he interpreted the term Bacchic as cheerful or full of spirit, since the high tone and the tritone that it has in the middle renders it such, as opposed to the two lower ones, the Hypodorian and the Hypoprhygian that do not have it, while the word [entheon] of the Phrygian can be translated also as divine or religious, which is how Apuleius calls it, and does not suit the Lydian because it was not used in the sacred ceremonies. Nor this prevents it [] from being also querulous, because its acuteness renders it suitable to laments, particularly those of Lovers, which are not true laments and are not as deep as those that lament deaths and extreme miseries and that were sung with the Mixolydian. Moreover, the word querulous can indicate also high and rapid passages on the flute, although they are cheerful in character. For this reason Horace calls the flute querula. That [glaphyron] referred to the Iastian means varied or beautiful, namely, varied with many intervals and ornamented rather than joyful and sweet as Glareano interprets it. Hence, one must be referred to the more recent Iastian or Ionian because the ancient one, which was also used in the tragedies, does not appear such, but, on the contrary, it rather poor and lacking of intervals. As to the fact that he calls the Aeolian simple, I do not believe that it can derive from anything else than from its having to use few notes within the octave and many large and uncompounded intervals which render the harmony large, pompous and haughty, which are qualities that suits it, just as they suit the Hypodorian,

rather than tenderness, as we said above. Another possible reason is because it used the diatonaea species in the Diatonic, which does not allow the consonances called imperfect. Hence it must have had little variety in performance. However, as to the epithet of belligerent that Apuleius ascribes to the Dorian, albeit Zarlino accepts it explaining it with the change the modes encountered in some periods because of the alteration of the systems of the nations that used them, nevertheless, although this explanation can be accepted very well in relation to the Iastian, because we do not read the Dorians changed in this way, I would not consider it inappropriate to believe that this does not contradict the other qualities ascribed to it by others, since Apuleius might have understood as belligerent what others called constant and masculine, which is really the basis of courage and expertise in war.

[-<466>-] On the notes that the ancients used instead of Ut, Re, Mi, fa, sol, la

I could never convince myself that the ancient Greeks, who are renown for their exquisite taste and extraordinary musical expertise, did not have, as we do, certain notes or syllable which they used to pitch the intervals and to practise singing before singing the complete melodies which included the words of their poems. Hence, I observed that the word [teretizein] means in their language the sort of singing that does not include meaningful words, and that, consequently, such singing was called [teretismata] among other meanings of the word, I imagined that they would have used the syllables te, re, re, so much so that I understand that even nowadays on Scyros the same tradition is still alive. Moreover, even the Greeks of our day call [tereuzimous] the melodies of a Flute or of another similar instrument, using a corrupted form of the term. However, in the end I rediscovered the true syllables that they used and I concluded that those syllables te, re, re had been created to imitate the sound of the flute and of similar wind instruments, which, according to the way the tongue hits the palate or the teeth correspond now to the syllable <aliqua desunt>

Thus it appears that the ancient used the term [teretizein], namely, 'teretise' to mean to sing a melody loosely without meaningful words in the way that wind instruments do and how is common nowadays with these syllable fa, la, ler, ra, which [-<467>-] derived, as it seems, from the six syllables of Guidone. Also, so that nobody may think that I have invented them myself, I will indicate the book from which I took them, namely the volume marked with the number in the Vatican Library, which contains, among other things some anonymous fragments of authors extracted, as one can see, from ancient and legitimate authors. This volume contains many notable things. Now, just as in our scale, each note has its letter and syllable, thus in the perfect System of the ancients they had just these syllables [to], [ta], [te], [te], which were totally sufficient as they were for all the variety of sounds that one wanted to apply them to. In fact, they followed the very beautiful sequence of the tetrachord, and some touched the stable notes and others the mobile ones. Thus, in whichever mode or tone the Proslambanomenos were called and pronounced [to], the Hypate [ta], the Parhypate [te], the Lichanos (which were called [Diatonoi] in the Diatonic) [to], the Mese [te], the Paramese [ta], the trite [te], the Paranete [to], and the Nete [ta]. These are the exact words of that author, except that the Paranete are lacking in the text, but the text can be integrated easily, because they correspond to the Lichanos, so they must have the same syllable [to]. Now, so that one may see how these syllables were useful and invented incomparably with greater reason than our own, I shall deal with their pronunciation and then of the practice of adapting them to the clefs and of pitching them. As to their pronunciation, care had to be taken so

that they would be easy and suitable to be pronounced by everyone, even those who had some speech impediment. Therefore, [-<468>-] they avoided the letter rho, which is harsh and cannot be pronounced by everyone, they sigma, which is equally harsh, the mute consonants which, are drier and less sweet, the aspirate, and, in short, all the ones that had some difficulty, they chose the tau, which was the easiest to pronounce and was common to all the nations. Moreover, in order to avoid any redundant one and the difficulty of following a syllable with another one, they confined themselves to a single vowel. Of the seven they chose the four that sounded better, avoiding the i and the u (which were pronounced like the u of the French and of the Piedmontese half-way between the common u and the i) because of their small sound and the o for its rustic character. Thus, they chose the alpha [alpha] because it has the clearest sound of all, the [omega], which was pronounced as a large o, as in these words Botto or colpo, the [epsilon], which was pronounced as a long e, as in the word cappello and pileus, and the [eta], which was pronounced as a close e, as in capello, capillus. This is of no small importance because certain vowels are so alien from music that the Masters prescribe not to sing passaggi on them because they produce a poor result. These are the u and the i. Moreover, Vicentino observed that certain friars <aliqua desunt>

[-<469>-] However, as to their application, they entailed none of the difficulties that we experience nowadays in our notes, which, for this reason, make our poor young people waste a lot of time because of the mutations of fourth and of fifth that everyone finds hard to understand, and that require long practice them to apply them effortlessly, once they have been understood. This difficulty has caused some people that I know to be of good sense and intellect to abandon the practice of singing which they had embarked on with great passion. Therefore, some have added the seventh syllable to the six of Guidone, namely, Si or Bi, to remedy this draw-back, as the very learned Ericio Puteano did showing its application in an elegant pamphlet of his entitled . Others, however, such as Keplero changed them, employing Bo, ce, di instead of these seven.

Apart from the fact that these have a barbaric sound which is ill-suited to the Latin language and to its daughters, the French, Italian and Spanish languages, and that they often use the letter i which is unpleasant, they do not avoid all the difficulties and drawbacks either, for instance, in passing from the [sqb] to the b flat, since in that case two syllables are needed in the key of the B and in its neighbour, in making a mutation from the natural notes to the accidental ones, namely from a tone to the other one, where one does not sing a different syllable, as one should, and without mentioning that the chromatic notes are marked on the same Diatonic one, which produces great confusion. All these kinds of disorder were avoided in the ancient tablature and syllables because there was no need for any mutation [-<470>-] either upwards or downwards, except in passing through the conjunct notes, which was done with great clarity and order, because, whereas in the disjunct, namely through [sqb] square, we say re mi and through the conjunct ones or through b flat we say la fa, they used to say [te] [to] through the disjunct and [te] [te] through the conjunct ones, changing only a syllable and indicating also the conjunction of the tetrachord as well as the proximity of the note with a vowel of similar sound. Hence, according to their method, they did not encounter the difficulty of the mutation of fourth and fifth and of ascending or descending. Also, in the passage from the conjunction to the disjunction, the same series of syllables represented immediately to the imagination the interposition of another tetrachord amid the tone of the disjunction and the transposition of said tone a tetrachord higher, as one can see here:

[Doni, Treatise of the Genera and of the Modes, second book, 470; text: A, B, C, D, E, F, G, a, [sqb], b, c, d, e, f, g, a a, re, mi, fa, sol, la, [to], [ta], [te], [te], Tetracordo Hypaton, Meson. Diezeugmenon, Hyperboleon]

[<471>-] Moreover, they expressed the transposition of that tone outside of its specific position by the fact that two [ta] followed one after the other.

The species of the consonances are also distinguished with these syllables because the first species of fourth is called [ta] [ta], the second [te] [te], the third [to] [to], the first of the fifth says [ta] [te], the second [te] [to], the third [to] [ta] and the fourth [te] [ta]. It is considerable in this sequence the different syllable that the three clefs

Proslambanomenos, Mese and Nete Hyperboleon have, which, because they are located at the distance of one octave, it seems that they should have the same syllables as the others. Nevertheless, the ancients named them differently, so that, since they were stable notes, there could follow no confusion, as in the case of the mobile ones. As to the fact that the gave the Mese the privilege of its own syllable which was not common to any other, I believe that this is due to the fact that it is regarded with particular consideration in the connection of the modes and it is used more than the others. Hence it was appropriate that it should have its own syllable, so that one may not employ another one instead of it when passing from a mode to the other, and so that the note of median tension, around which the melodies coalesce, might fall always onto it. It is also necessary to differentiate it from the Nete as, since the Paramese must have the same syllable [ta] in the disjunction, one would have encountered two [ta] one after the other. Therefore, to avoid this, we make the mutation in the second tetrachord by saying sol, re, changing that one to G and this one to a rather than mi. Then there follows the mi of [sqb] hard. For the same reason it was necessary to ascribe a different syllable to the Proslambanomenos so that one may not start a tetrachord in the same way as the Mese does, progressing through the disjunction. Thus, it could not have the [ta] of its corresponding Nete Hyperboleon, since the Hypate next to it had it. However, they did not ascribe to it the syllable [te] because only the mese shall have it as its distinctive sign, or in order for it to have the same syllable as the other fourths, since it sounds a fourth with the D Lichanos Hypaton. Hence one can gather that the entire disjunct System uttered with our own syllables according to the ancient practice would say Re, Mi fa, Re, Mi, fa, Re, La, Mi, fa, Re, Mi, fa, Re Mi and the conjunct System or through be flat would correspond to the sequence of syllables Re, Mi fa, Re, Mi fa, Re, la, fa, Re, Mi, Mi, fa, Re, Mi. In this way one would do without the two syllables Ut and Sol, and those who do not like to utter two Mi one after the other could pronounce the mese a la through [sqb] hard, as it is here, and Mi through b flat, and the Nete Synemmenon La instead of it. Thus, a single note Mese would have a different syllable in the sequence through [sqb] hard and b flat, because the Nete Synemmenon, to which we shall assign the la albeit it is different in name from the Paranete Diezeugmenon, does not differ in sound. One could remedy to this inconvenience by assigning to the Paramese only the note la, reserving the mi for the Mese, <which> the ancients had to distinguish better the mese. In short, who wanted to correct the scale, in my opinion, would have to leave out two syllables as redundant instead of having to add a seventh syllable, as some did, as frustra fit per plura et cetera, and because this tetrachord, among the others, is so beautiful that without it one could not restore music to its ancient splendour.

As to the six syllables of Guidone of Arezzo, it is certain that he discovered them almost by chance while singing that Hymn to Saint John the Baptist Ut queant laxis, taking them

all from the first strophe, which was later done so much better. He reports that he found them with the exact distances as they occur nowadays in the System and as they say that they are sung in the Gregorian chant. Hence one should not believe that he selected only these because of the perfection of the numbers six as Signor Puteano conjectures (who was devoid of any speculative preparation) or because he had prescience of the twelve Modes, as Maillard states in order to certify them with Guidone's authority, although each sillable is like the foundation of two.

[<472>-] On the Difference between the ancient Modes and ours.

Firstly, one must note that the species that Glareano and some others before him to the seven principal ancient modes are mainly the ones that are opposed to the true ones, as one can see from the illustration placed here, in which the parallel modes have the same species. As one can see, only the Hypodorian has its very authentic one, while modern writers ascribe the one of the Mixolydian to the Hypophrygian, and, conversely, the one of the Hypophrygian to the Mixolydian, and the same occurs in the case of the others.

[Doni, Treatise of the Genera and of the Modes, second book, 472; text: Modi degli antichi, de Moderni, Mixolydio, Lydio, Phrygio, Dorio, Hypolydio, Hypophrygio, Hypodorio]

[<473>-] However, as to the difference between the ancient Modes and ours, one must note first of all that they had their firm and stable tension of voice from which they did not depart ordinarily, since each had wind instruments suited to it, while ours are sung ordinarily all in the same tone of voice, and, although they are varied, this happens accidentally and without any order or rule, in such a way that those that should occur in the low register turn out in the high and the other way round.

Secondly, the ancients had a system of fifteen notes, so that each could sing the entire span of one's voice without changing mode, while, since ours contain only eight notes, this cannot be done. In fact, if one exceeds the limits of the octave, one exceeds the limits of the mode as well.

Thirdly, they all had (I mean the seven main ones) a specific species of diapason, hence their melodies could be varied in as many ways, while five of our twelve modes do not differ as to their species but are completely identical. The fact that they have the fifth above or below is only a nominal difference rather than an actual one because, when one sings in the two extremities of the octave, one takes the fifth and the fourth above and below when there is, while, in compositions for several voices not even this difference is observed, because it is preferred to place the fifth in the lower register rather than the fourth, albeit the species requires the fourth. It follows from this that a composition for several voices is always considered to follow a variety of modes, although in practice it belongs only to one.

[<474>-] Fourthly, the ancient modes differed because of the variety of the cadences, leaps and stepwise movements which were within the limits of their fifths, fourths, sixths and so on, and one can believe that they employed the longest notes on the main notes. Our composers, on the contrary, observe these rules hardly at all and the modes are distinguished barely at all by anything else except the final note of an individual part. Fifthly, the ancients sung and played their Modes often pure and simple, while we never do that in figured music, because all the compositions that have accidental signs apart from the [sqb] and the b flat in their key signature exceed the boundaries of the mode.

Sixthly, the ancient did not consider the act of moving from the [sqb] square to the b flat a change of mode, or the other way round, while we do, but it is not true.

Seventhly, the ancients could sing some verse or some small section of a composition in a mode, make a cadence and then move on to another mode for many bars and make its own particular cadence which were different from the ones of the first mode and then change to other modes when they wanted, and this produced great variety and delicacy in their music, while we do not know any mutations other than to grasp confusely and without a rule a note of one mode and another one of another one without being able to continue in the mode into which we move or making its cadences. On the contrary, all the mutations that one does consist simply in taking some note of the higher or lower mode, which is at the distance of a semitone from the principal which is our original theme. In this we are not able to proceed orderly, or, on the contrary, we believe that we are mixing the Diatonic and the Chromatic in doing that, which is not true.

Eighthly, one can believe that in the ancient modes the intervals of fourth, fifth and sixth were not employed ordinarily except among their specific notes according to the species of each of them, and, equally, that the passaggi were not made except within intervals contained by two principal notes of the mode.

[-<475>-] As to these accidental differences, I shall discuss one that I extract by conjecture, while I shall discuss the other ones in the discussion of the practice.

Therefore, I believe that this consists in the strength and in the density of the voice and in its opposite, which is the weak, even and languid voice. Therefore, there can be four varieties of it, one which is strong throughout, a second one which is weak and relaxed throughout, a third one which is relaxed to start with and strong at the end and a fourth one strong at the beginning and relaxed at the end. The first one suits the Phrygian, the second one the Hypolydian, the third one the Dorian and the fourth the Lydian. Aristotle seems to hint to this in his work [peri akouston] where he says that, when the trumpet was played in the entertainments and in the banquets, this was done with relaxed and sweet sound, while in war and in battles the trumpet was played with a strong and forced tone.

Eighthly, the ancient modes, at least the more general ones had a different colour, which means that they had a great variety in the same intervals of a single genus, namely, in making the semitones larger or smaller, while this is not practised in ours. This cannot be done in singing, if not by mistake or because of the difference among the instruments.

Ninthly, various Rhythms, different ways of proceeding and making cadences, different ornaments, accenti and similar features occurred, which, although they were not essential to the modes and could be left out, nevertheless, since each mode had its use and was applied to a particular sort of music, normally these differences were observed.

Tenthly, the ancient modes had more variety in the Chromatic and in the Enharmonic than in the Diatonic, but, following the ideas of some modern writers who had the intention of restoring these genera, one cannot see in them any difference from one mode to another one.

Eleventhly, the ancient modes had specific signs and a separate system or scale so that they could be employed and swapped with ease and coherence. This is hard in our modes, because they have all the same System and the same notes.

Twelfthly, the ancient Modes, since they are only seven, contain many beautiful correspondences and secrets, not only because of the property of the number seven, but because of many other things that have seven notable differences. [It is probable that those seven ancient Modes were sung often pure and simple, while those that have the species of F fa ut and of [sqb] mi among our own are not usually sung as they are, because the Tritone that occurs in the extreme part of a melody is always sweetened as a

rule by changing the mi to fa. in marg.] However, our modes, whether they are eight or twelve, have very few secret qualities and they can be associated with few physical differences. The mutations of the ancient modes illustrate even better their sympathies and antipathies between them, as one can see from the illustrations of the chapter.

[-<476>-] That the properties of the Modes are recognised also nowadays in the song of individual nations.

Although, as I mentioned above, a great mixture of languages, traditions and, consequently, of singing styles has occurred because of the mixing of different populations and of the domination of a nation on others, nevertheless we can also recognise a great difference between a nation and the other, because of certain stylistic features and melodies that have great similarity with the principal modes practised by the ancients. In fact, to mention some of the main ones, we see that the natural melodies of the inhabitants of Tuscany and Rome preserve a very grave and majestic character of the galliard which is specific of the Italians and a particular type which is the Romanesca, which I consider to have been invented a few centuries ago, as it is the calata, an ancient Florentine dance still in use, and the ballo del Granduca, although it was invented by Signor Emilio del Cavaliere, a Roman gentleman. Therefore, perhaps the Dorian is the most suited to these, while the Iastian appears to suit very much the peasants who work the land, whose melodies and villanelle, as the ones popular in Naples show, have a more tender and dissolute character both in the Rhythm and in the Melos. As to the Rhythm, Don Nicola reports that the Neapolitan villotte require speed at the beginning, which matches the Ionian verse which starts with two short syllables and are followed by two long ones. As to the Melos, they are used to tune the semitones that occur between the notes altered by accidents smaller on the harpsichord, because they sing them in that way as well. The Aeolian Harmony [-<477>-] possesses gravity together with a certain pomposity and could be associated to the older Spanish population of the north of the country (as the most southern ones, which are really inhabitants of the mountains and of the countryside, as they say, have absorbed a lot from the singing style of the Mores, and have a more effeminate style as their gavottes and sarabands show). These northern Spanish populations invented the Pavaniglia, a very slow and majestic melody, which Harmony would also suit the Portuguese, as I mentioned above, because of the language. In fact, if someone associates the Dorian Mode to the Spanish nation and the Aeolian to us, because of the severity shown by the Dorian and because the ancient Italian blood was more mixed with the Aeolian nation than with the other Greek ones, as Dionysius of Halicarnassus illustrates (something which Glareano could not understand) in my opinion one shall be right to do so, since I regard this as very appropriate, even more so because, as I learned from some Greek people, they regarded our way of singing pompous and haughty, regarding the Turkish one, which is more melancholic and relaxed, as sweeter. However, I would believe that they were very opposed in taste to their ancients in this respect. The Phrygian mode is so well suited to the German nation that no other would suit it better. Therefore, it is not surprising if they love wine so much, while the Phrygians worshipped Bacchus above all the false gods of antiquity. Hence, both nations are fervent and impetuous, but the Frisian nation (one of the most ancient and intact of the German nations) than the Phrygian. [-<478>-] It persuades me with this not only the fact that their Choral tone is a tone higher than ours, which appears to be the Dorian, but also the character and melody of their compositions, as one can gather from some Almands (this is the name of certain German compositions of cheerful character which are very popular in France) printed by Claudio Jacollot of Lyon, which are mostly in the species of D la sol

re. However, the Lydian is more suited nowadays to the French than to any other nation, because of its lively and cheerful character and for its natural inclination to the dances, for which it is more suited than any other. Hence, almost all the dances, and especially the French ones, are written in the species of C sol fa ut, which is characteristic of the Lydian. Finally, the Myxolydian mode is eminently suitable to the Sicilians, whose compositions are normally plangent and very similar one to the other.

[<479>-] What species or Mode is more frequently used nowadays and in which Instruments.

If we consider the tunings of the most noble and popular Instruments used nowadays, we shall know manifestly that any other Mode, except the Dorian is sung in the Choral tone and that the Phrygian or the Lydian (which are the most popular ones, and especially the first one which is considered almost universally as the most beautiful of all) are used instead of the Dorian, because the note D la sol re is normally exactly in the middle of the keyboard of the organ and of the harpsichord. Therefore, if these instruments are tuned correctly as it is right, said note will correspond to the middle note of a tenor. The tuning of the viols as well convinces me of this, because it is applied to the top string and to the sixth one of the soprano and of the bass. Equally, in the lute the disdiapason [the six main strings in marg.] occurs between g sol re ut and gg sol re ut, which are the ones of the Hypophrygian, subordinate to the Phrygian. On the other hand, it would appear that the Lydian species applies commonly to the Choral tone because the clef of C sol fa ut which represents the Tenor when it is placed in the middle line, as it is often, appears to show that the middle note of an ordinary tenor should have corresponded to that position. However, in the System of twenty notes from [Gamma] ut to e e la mi, one could take D la sol re as its middle note instead of C sol fa ut, if it is reduced to twenty-one notes as

. Thus, since it is placed appropriately into middle between the highest and lowest notes of the human voice, it will correspond to D la sol re placed above C sol fa ut, which is indicated in the melodies. We can also believe that the Phrygian is the most [<480>-] perfect of all because of its property of maintaining the same species, namely the same disposition of tones and semitone both upwards and downwards, as one can see here:

[Doni, Treatise of the Genera and of the Modes, second book, 480; text: D, E, F, G, A, [sqb], c, d, Tono, Semitono]

[<481>-] On the excellence of the Modes compared one to the other.

If we consider the Modes located in their own place and tone as they were in antiquity, there can be no doubt that the Dorian is the most noble and excellent of all because it is located in the most natural tension of the human voice and because it appears to be neither languid nor forced. However, if we consider them separately from the Tone and only in their species, it will not be so easy to determine this, because, on one side the Dorian shall be superior with its severity and sweet melancholy and on the authority of so many great men who thought it so great, on the other side the Phrygian will be superior because it is placed between the Dorian and the Lydian and because it is more suited to express the contrary feelings of joy and sadness than the other two, going on the authority of Boethius who calls it Prince of all the others. This effect is more natural and more commonly regarded as pleasant by almost everyone that it is not easy to decide this

matter. All the more that, if in any field human taste is more varied, this happens especially in music, hence everyone shall judge this question according to one's own inclination and complexion. As for myself, should I have to cast my vote, I would side with modern composers and would judge in favour of the Phrygian because of that property if it to partake of the extremes, although it is very considerable the property of the Dorian to have the Tone of the Disjunction right in the middle between the two tetrachords, which is something that proves very useful, apart from the fact that, when applies the numbers in this species, the proportions are easier to find. Therefore the three principal and most ancient tones which derive from the variety of the Diatessaron are certainly the most beautiful and perfect, firstly, because they do not lack the Tritone, such as the Hypodorian and the Hypophrygian do, which for this reason [-<482>-] are languid, and because they do not have it in their extremities, such as the Mixolydian and the Hypolydian have, hence they prove harsh, but because they have it in the middle, which renders them lively without harshness and sweet without being languid. In second place I place the Hypodorian and the Hypophrygian because it is better not to have the tritone at all than to have it in the extremities, and because they have the diapente and the diatessaron under and above, which does not occur in the other ones because the Hypolydian has the diapente in the lower position and the diapente above, but not the other way round. Therefore, I believe that these two are the worse of all, although each is considered beautiful on its own merit. Moreover, the modes that have a tritone in one extremity consequently have the Pseudodiapente in the other one, hence, in one respect they prove too harsh and in another they appear too soft, so they are not as well harmonised as the others. However, the Hypodorian and the Hypophrygian, although they have not got the Tritone in the middle, nevertheless they have the Pseudodiapente or two minor thirds adjacent to each other, which render them more melancholic and tender.

[-<483>-] On the notes that distinguish the Modes.

The notes that distinguish or characterise the modes can be described as the extreme notes of the Diapason of each of them and the syllable that sung above them. In the Hypodorian they are Re La, in the Hypophrygian Ut sol, in the Hypolydian Fa fa, in the Dorian Mi la, in the Phrygian Re sol, in the Lydian Ut fa and in the Mixolydian Mi mi.

Therefore, we can consider that the modes that have some notes in common have one of those two notes in common, such as the Re in the Hypodorian and Phrygian, the Sol in the Hypophrygian and Phrygian, and the La in the Hypodorian and Dorian.

The Hypodorian is a mixture of the Dorian and of the Phrygian because it has the Dorian Diatessaron and the Phrygian Diapente.

The Hypophrygian is a mixture of the Phrygian and of the Lydian because it has the Phrygian Diatessaron and the Lydian Diapente.

The Hypolydian is mixed with the Lydian because it has the Lydian Diatessaron but its own Diapente. The Myxolydian is related to the Dorian because the Diatessaron and the Diapente are the same but with the order inverted.

The Hypodorian with b flat or with the conjunct tetrachord turns into the species of the Dorian, the Hypophrygian turns into the Phrygian, the Hypolydian into the Lydian, the Dorian into the Mixolydian, the Phrygian into the Hypodorian, the Lydian into the Hypophrygian and the Mixolydian into the Hypolydian. In this way they can be turned always circularly one into the other. However, if we consider the form that a tone takes by turning it upside down, we shall see that the Hypodorian becomes Hypophrygian, the Hypophrygian Hypodorian, the Hypolydian Mixolydian and the other way [-<484>-] round, the Dorian becomes Lydian and the other way round, while the Phrygian stays the

same, as I mentioned above. This corresponds admirably to the property and the emotional character of each, since fear is ascribed to the Hypodorian, which is the opposite of courage, which is ascribed to the Hypophrygian; pleasure is ascribed to the Hypolydian, which is the opposite of pain, typical of the Myxolydian; gravity and sadness are ascribed to the Dorian, while their opposite, lightness and joy, are assigned to the Lydian. Finally, the enthusiasm or divine fury proper of the Phrygian has no opposite. Therefore, the following illustrations will be useful to remember which mode has the diapente and the diatessaron in common with which one and with which one it is similar or to which one it is opposed or is derived from changing to the conjunction.

[<485>-] That the seven Modes match the seven principal climates and that on their sympathy with the four complexions.

Ptolemy, who not only was a very subtle Mathematician, but also a very profound philosopher, as one can see from his works, not only compares the diversity of the modes with some general differences of habits, as one can see from the sixth chapter of the third book, but he also compared the Modes themselves with the course of the planets according to whether they deviated more or less from the centre which is the line of the equinox to which he ascribed the Dorian and the approach more closely one of the tropics in which he placed the extremes of the two modes Myxolydian and Hypodorian. This proceeds ingeniously and pleases the mind, but, since human music (since we cannot discuss here the music of the Universe, which is metaphoric and imaginary) must be considered principally in relation to human nature and to the diversity which is found in the traditions and feelings, namely, in the individual and in entire nations. Perhaps we shall be able to compare together with greater success one of the seven modes with one of the seven main climates of the earth, to which not only the different distances from the Pole and from the equinox are determining factors, but also the variety of natural characters of the populations which inhabit them, with this greater level of coherence than in Ptolemy comparison, because, since the two tropics are similar between each other in his comparison, it does not appear successful to ascribe the Mixolydian to one of them [<486>-] and the Hypodorian to the other one, which are one very high and the other very low in pitch. Therefore, it will be more plausible to ascribe the first climate to the Mixolydian and the seventh to the Hypodorian, imagining then that they are repeated in as many climates towards the Antarctic, since that other hemisphere is similar to our own as to the lay-out of the sky and of the circles. Therefore, the first climate is the one of Meroe according to the ancient and modern Cosmographers. It derives its name from a famous town and a city of the Nile in Ethiopia through which has its circular parallel removed from the Equinoctial degrees, which is the amount of hours more than the equinoctial, which is the longest day of hours. The Myxolydian tone, which is the highest of all, suits this climate perfectly since the celestial Axis produces the most acute angle with the horizon and the observation of the Pole is minimal. Moreover, the population who live in the parts of the world characterised by this climate, such as the Ethiops the Arabs and the Indians, have very high voices and of feminine nature. The second climate is the one of Siene, called nowadays Asna, a town situated in Egypt, but at the border with Ethiopia, under the tropic of the Cancer, hence the sun in the day of the solstice produces no shade in the middle of a stile because the sun is at the Zenith, hence Lucan says “and Siene that projects no shades in any place”. Consequently here the longest day exceeds twelve hours of . The Egyptians, a joyful people and fond of singing and dancing and much love-making are associated with this, hence the Lydian tone suits them very well.

The third climate crosses Alexandria by the sea, an Egyptian city where the longest day spans more than twelve hours and crosses the Numidia and Mauretania, which are the main provinces of Africa, [-<487>-] whose populations, according to Cicero, Leone Africano and other authors, are litigious, irascible, belligerent and very superstitious, hence the Phrygian tone suits them very well.

The fourth one crosses Rhodes, as the day of hours and suits the Dorian admirably, not only because Rhodes itself was a Dorian province, but the Peloponnese, Crete and the most part of the Dorian populations belong to this climate as well as Spain, which is home to populations of Dorian traditions or serious and severe.

The fifth one, which crosses Rome and the strait of the Hellespont, has the longest day of hours and corresponds admirably to the Hypolydian tone, not only because, as we said already, this is the same tone used nowadays in Rome, but also because it crosses Asia minor and the boundaries of Lydia itself and large part of the

Tuscany, inhabited already, according to the opinion of several writers and, according to Athaenaeus' account, by many nations very fond of pleasures that they even whipped their servants to the accompaniment of the sound of the flute.

The sixth climate is the one of the Pontus, which crosses Lombardy, Lyon in France, Thrace and Constantinople, whose nations has something of the savage, belligerent and threatening, hence the Hypophrygian tone suits them perfectly.

Finally, the seventh and last climate is the one that crosses the estuary of the river Boristene, which is called Edel and divides the Podolia from the Tartaria minor. Its longest day is and is inhabited by nation which are partly pompous and haughty, such as the Germans of the north and the Sarmatians, and in part melancholic and saturnine, such as the Tartars, the Muscovites and the original Turks, hence this climate corresponds perfectly to the [-<488>-] Hypodorian tone in itself and because it is similar in its species to the Aeolian.

However, as to the four different complexions which constitute the greatest differences that can be compared to the four main modes, the Dorian suits the melancholic complexion, the Phrygian the choleric, the Lydian the sanguine and the Mixolydian the phlegmatic.

[-<489>] On the correspondence between the seven Tones with the seven Planets.

It was the opinion of Pythagoras and of his followers that the celestial bodies, in their movement around the earth, produce, in doing so slowly, a marvellous and incomparable music which, although we cannot hear it, they maintained that this derived from the continuous habit of hearing it, and that this is why we cannot hear it. This opinion has been related by many ancient writers and very elegantly by Scipio Africanus quoted by Cicero in the sixth book of the Republic, where he tells the Dream that came to him in Africa, and this was the subject of a learned commentary by Macrobius. There was disagreement about ascribing the low and high sound to the species above or below, because some thought that the high sound was produced by the highest spheres because of their greater speed, since they presume, with most of the ancient philosophers, that the high sound is produced by high speed and low sound by low speed. Others, on the contrary, did not consider speed but only the size of celestial bodies, hence they maintained that sky the moon produced the highest sound and the sky of Saturn the lowest. This seems to be what Plato alluded to in his Republic, when he assigned its siren to each celestial Sphere, while some others ascribed to each of them one of the eight Muses, while they considered the music that is born of the other eight as the ninth, as Macrobius explains. However, leaving aside these considerations which have too much of the poetic, it has to be known that opinions on the [-<490>-] distance between each sky

and the earth and on the depth and sequence of the planets were, and still are, varied. As to the order of the skies, it appears that the opinion of Pythagoras and of the Chaldeans who invented astronomy was universally accepted. They place the sun at the centre and the other planets, as it done commonly. However, they compared the seven modes with the seven planets with great reason because they had observed that the property of the former correspond perfectly to the latter. Pliny explains the matter with these words, which I shall quote as they are because they contain some difficulties.

Therefore, this is what he states at chapter twenty-two of the second book: "But Pythagoras sometimes defines with musical proportion the distance from the earth to the Moon. From the Moon to Mercury there is half the distance and from Mercury to Venus there is the same distance and from which to the Sun there is one and a half that distance. From the sun to Mars there is a Tone, which is the same distance from the earth to the moon, from Mars to Jupiter there is half the distance and from Jupiter to Saturn is also half and it is one and a half from Saturn to the sky of the Stars. Thus six tones are completed, which they called the Harmony of the Diapason, namely the complete system of sounds." This passage suffers from this difficulty that if one adds up the intervals mentioned by Pliny, the result is seven tones, rather than six, namely a ninth rather than an octave. Giorgio Valla believed to be able to solve the conundrum by referring that one and a half not to the tone, but the Semitone, interpreting it as three of the four parts of the Semitone. However, apart from the fact that in this way they would add up to five tones and a half, rather than six, I do not like this entire explanation because the tuning of this System would be neither Diatonic or Chromatic or Enharmonic, but completely irrational. [-<491-] however, if we want to apply well the Seven Tones to the Planets, let us remember that their order was not completely stable and certain according to the ancients. In fact, it seems that the Lydian was placed above the Phrygian and the Phrygian itself above the Dorian and the ones that have the prefix Hypo- had the same distance under their principal ones. The rest, it seems, could be laid out in various ways, as long as there was some reason do so. Therefore, if one assigns the lowest sounds to the highest and largest spheres, as it is reasonable, and starting from Saturn, it seems necessary that one should ascribe the Hypodorian to it, which oversees fear, laziness and the melancholy which is typical of older people and that suits the Hypodorian Harmony. Then, we shall apply to Jupiter the Dorian instead of the Hypophrygian, which symbolises the virtue of that planet, which prompts one to great and majestic works. We shall attribute the Hypophrygian to Mars, as it is somewhat threatening, courageous and active, hence it suits the enterprises of war, while we shall attribute the Phrygian to the Sun because of its warmth and strength, and because it was commonly regarded as Bacchus himself, to which he Phrygian and the sun were dedicated. We shall assign the Hypolydian to Venus, since this mode, as we said, expresses pleasure and joy, while the Lydian will be paired with Medcuty because it is high and cheerful, and it is represented as subtle and young in age. Finally, we shall ascribe the Mixolydian to the Moon, because it is a humid planed which rules the night and this tone inspires tears, expresses the pain that occurs at the corner of every door, so speak, during the life of a man, [-<492>-] since children burst into tears as soon as they are born and they feed on tears, so to speak, for a long time. This planet governs our birth, according to the opinion of all the astrologers. Therefore, just as the ages of man have a particular planet that governs them, thus they have one of the Seven Tones that suits them more than the other. Therefore, the Myxolydian suits infancy because of the above mentioned reason and because of the hight pitch of the voice up to the age of seven years. The Lydian suits the childhood up to the age of fourteen because it is a cheerful age and suited to acquire the principles of all the arts and the sciences, and, in short, it is ruled by Mercury. The Hypolydian suits adolescence

because one is more sensitive to sexual urges and devoted to the pleasures, up to the age of twenty-five years.

The Phrygian suits youth because physical strength is at its peak. That age is suited to military training and to withstand the strains of war. The Hypophrygian suits the mature age because that age is not only suited to carry on the activities of war and to obey orders, but also to command armies, and it spans up to forty-five years of age.

The first part of old Age, or greyish age, suits the Dorian and extends up to the age of sixty-three, because gravity and coherence of demeanour is most suited to that age, and it is apt to judge, to govern and to refrain the boundless youth. Finally, the Hypodorian suits old age up to seventy years, because that age is subject to the proprieties and passions mentioned above. Also, since after the seventh tone one goes back to the first one, as it occurs in the days of the week, which are also subject to the planets, thus one continues circularly to the eighth tone, of one wants to add it, which shall be the same as the Hypodorian or Myxolydian and will express perfectly the decrepit state [-<493>-] of those last years when old people almost repeat the journey of their life. We describe this process as becoming a child again, or *repuerascere* in Latin. This confirms the ancient proverb *Bis pueri senes*, which means, "old people go back to being children". Moreover, since who has reached this term can be said to have completed his Diapason, after which one enters into an order completely new, nobody can tread beyond this point.

[-<494>-] On the correspondence between the Tones and the main colours.

So that we may not overlook anything that may shed light on this subject of the tones, we shall draw up a comparison between them and the colours, which, after the sounds, are the qualities more able to express the changing habit and property that the Greeks call [ethos]. Therefore, I state that, just as the low tones, according to Aristotle and on the basis of experience, contain the high ones, thus the colour black contains the white. Therefore, it is appropriate to assign the colour black to the lowest low and the white to the highest one. However, since the main tones are seven and the elementary colours, namely, the ones that make up the others and are not made up by any others themselves, are six in my opinion, and they are the white, the black, the yellow, the red, the green and the blue, it follows that from the mixture of the first two, which are the extreme ones, another one is created, which belongs to the secondary colours, namely those which are made up by two elementary ones. The first one of these is the Grey, to which we shall assign the Mixolydian, because it is the colour of sadness, bereavement, penance and pain. We shall assign the white to the Lydian, because it is described as a clear and cheerful tone, the red to the Phrygian, following in this the authority of the ancients, who described it as we said above. This colour is more intense than the other and expresses ire and warmth. We assign the yellow to the Dorian because it resembles the sun, which is in the middle among all the planets and because that colour has a certain hidden sadness, and the green to the Hypolydian because it is the most pleasing of all, hence tired eyes are refreshed by it, [-<495>-] the blue to the Hypophrygian because of the correspondence between this colour and the red and because it has a certain profound cheerfulness engrained in its character and mixed with great gravity and decency, and the black to the Hypodorian because of its profundity and melancholy, hence deep sounds, as well as dark colours, represent darkness. However, if we want to leave black and white aside as elements of colours rather than colours in their own right, we will be able to assign to the modes the main mixed and secondary colours in this way: the gray to the Mixolydian, the green to the Lydian, the red to the Phrygian (as no change is required here) the orange to the Dorian because it is deeper than the yellow but represents the sun as well, the

aquamarine, called the Venetian colour by the ancients, to the Hypolydian, so that it may resemble the Lydian, as this mode resembles the colour green, since it is a mixture of green and blue, and finally the purple to the Hypodorian, because it relates somewhat to the orange and because it is a grave and majestic colour and typical of the purple dye, which in the most ancient times was reserved for great personalities. Alternatively, we shall be able to assign the grey to the Mixolydian, the yellow to the Lydian, the red to the Phrygian, the blue to the Dorian, the green to the Hypolydian, the aquamarine to the Hypophrygian and the black to the Hypodorian. In fact, should we want to accept even the tertiary colours, we shall be able to assign one of them to each of the thirteen modes of Aristoxenus or to the fifteen of Ptolemy. Therefore, we were saying that the secondary colours are the ones that derive from the mixture of two primary or elementary colours in equal measure, while the tertiary are the ones that are made up of two of those mentioned above, or by the equal [-<496>-] mixture of three of them. In fact, the secondary ones are the aquamarine, which is composed of green and blue, the orange, which is made up of red and yellow, [[the Incarnate of Red and white, the pink colour of red and green, the hay-ish colour of white and yellow, the turquoise of white and blue]], the green-yellow of the colours contained in the name, the purple of red and blue, the ground colour of black and yellow and the grey of white and black. However, the tertiary ones are the turquoise, which is mostly blue with a little white, the incarnate that is mostly red with a little white, pink which is mostly red and a little green and the hay-ish that is mostly yellow with a little white. We shall say that we should give the primary colours or the secondary to the principal tones and the tertiary to the others, preserving the property of each, so that the subordinate tones have a colour corresponding to the one of the principal ones and the high tones have lighter colours and the lower ones darker ones. Therefore, if we want to assign its colour to each of the fifteen, we will do it in this way: we shall assign the turquoise to the Hypolydian, the incarnate to the Hyperaolian, pink to the Hyperphrygian, the hay-ish to the Hyperiasitan, the grey to the Mixolydian, the blue to the Lydian, the orange to the Aeolian, the red to the Phrygian, the green-yellow to the iastian, the yellow to the Dorian the green to the Hypolydian, the aquamarine to the Hypoaeolian, the purple to the Hypoprhygian, the colour of the ground to Hypoiastian and the black to the Hypodorian. Moreover, if we do not want to leave out the green-ish or the light green, so that all the conceivable colours may be used, as the others that can be called quaternary are almost infinite, and that each of the six principal and median Modes and median should have its correspondent both above and below, we shall add above all of them the Hypermixolydian ascribing to it the light green, and thus we shall have sixteen tones and as many colours, all noble and different one from the other.