

[<361>-] On the inventors of the modes.

The seven principal modes are the ones of which we know the name of the inventor, albeit with some discrepancy. The Hypophrygian is the one of which we do not know the name of the inventor. Therefore, we shall progress to tell in brief the names of each according to the reports of Plutarch, Athenaeus, Clement of Alexandria, Pliny the elder and Apuleius. Therefore, the Dorian, to start with, is the most noble and ancient and it is ascribed to Thamyras of Thrace [[as Plutarch, Clement of Alexandria, Pliny and others state]]. This confirms what I was saying, namely, that music itself, although cultivated and perfected by the Greeks, had its beginnings elsewhere, not to speak of Iubal who was the first musician in the world, as the Sacred Scripture attests. They say, about this Thamyras or Thamira, whom is called with various names, that he excelled above everyone else of his age for his singing ability and beautiful voice, and for this reason they invented the legend that he participated in a contest with the Muses. After him there came the Phrygian Harmony, which was discovered by Hyagnis, Marsyas' father, who was Phrygian or by Marsyas himself, according to Pliny. Pliny ascribes the Lydian harmony to Amphion, son of Geon, or as some others say, of Mercury and Anthiope, but it attributed by Clement of Alexandria to Olympus of Mysia, a flute player. This information was taken from a work by Aristoxenus who, quoted by Plutarch, states that Olympus played a lugubrious melody according to the Lydian fashion on the death of Python. However, Pindar, in his Paeans, quoted by Plutarch himself, reports that that Harmony was used for the first time at the wedding of Niobe. Others name Torebus or Atoremus, as one wants to say, as the author, among whom a Dionysius nicknamed Iambus by Plutarch, [[while Pollux ascribes it to a certain Anthippus]]. [-362-] Anyway, from what one can gather, it is clear that the melodies of Olympus and Marsyas, which lasted for many centuries, were in the Phrygian and Lydian modes, as Pollux and Plutarch report. The most ancient after these is the Mixolydian, which is the Myxolydian which is ascribed commonly to the poet Sappho who, as a woman, had a higher voice than the Lydian Tone which up to that time was used in funeral chants and, having little lack in her lover relationship, composed many tearful and graceful poems on her misfortunes and sang them in this particular harmony which she discovered, which was a semitone higher than the Lydian and was called Mixolydian, namely mixed with the Lydian, because it was nearer to it than to the other three. This is what Aristoxenus reported in his writing. However, in the anonymous History of Music it was said that it had been discovered by the flutist Pythocles, while Lysis, quoted by Plutarch, reported in his writings that its author was Lamopocles of Athens, who also recounts on which occasion this happened, namely, that he observed that the one of the Disjunction was not where it was seen commonly, namely in the middle, as it occurs in the Dorian, but towards the higher register, hence he established its System and species, as it is, between the note Paramese [sqb] mi and the Hypate Hypaton [sqb]. I make two deductions from this; firstly, that he confirms very strongly the form which Ptolemy and the other Greeks ascribe to this Tone, namely that the Myxolydian Mode derives from the Dorian Diapason laid out through b flat, as he says, namely, with the conjunct Tetrachord, because it is really nothing else but the Dorian System through b flat transposed by a fourth. There is also the third, and from this description one can gather that Lamopocles was not its first inventor, [<363>-] but the person who described it and who produced its illustration. In this way, one can recognise that the apparent contradiction which appears to exist in the invention of the modes is not really there, because sometimes the invention of something is attributed to the first person who

laid its foundations, some other time to who communicated it to the world and sometimes to the person who improved it and increase it. The invention of the Hypolydian mode, as Plutarch reports, is ascribed to Damon of Athens, whom I consider to be the person who taught Socrates music. Others ascribe it to Polymnestus or Polymnastus, which is the same, according to Plutarch. However, the inventor of the Hypodorian mode was Philoxenus of Cythera, a famous Dythirambic poet and excellent musician who introduced several innovations into this profession. This mode was also called Locric or Locrian, because he must have been used a lot by the Locri, a Greek population of Dorian origin. [The Locrian harmony was the same as the Mixolydian as Zarlino writes in the Institutioni, Part 4, Chapter 3 in marg.] The same was confirmed by Pollux. It was very popular, as Athaenus writes, at the time of Pindar and Simonides, but then fell out of use almost completely. The last one to have been adopted seems to have been the Hypophrygian, although it is not the last one in the sequence. One can gather this from a passage in Athaenus, where he illustrates that this mode began to be used again at that time on the basis of the witness account of some earlier author. Nevertheless, one can be confident that the last one was the Hypodorian because, as Aristide Quintilianus states, as well as Briennius after him, the Hypophrygian tone was called also [barys], which means low, because, before the invention of the Hypodorian, it was the lowest of them all. However, it is possible that the Hypodorian Harmony was invented before the Hypophrygian, although [-<364>-] not in its own Tone, which is a fourth under the Dorian, but in some other one, and perhaps in the Aeolian, which according to Heraclides was the same as the Hypodorian. However, this must be understood in relation to the species rather than to the tone, which, as we have seen, was between the Phrygian and the Lydian.

In fact, if Lasus of Hermione, who wrote about music before any other, called the Aeolian Mode [Aiolida barubroton harmonian], namely, “the Aeolian lowest Harmony”, perhaps he refers to the Hypoaeolian, which is tone lower than the true Aeolian. However, Pratinas, in a certain poem of his, hints to the fact that the Aeolian mode was neither too high or too low:

[Me syntono dioke met'aneimenon
Iasti ousan alla tan mesan neon
Arouran aiolize to mele], which means:
“Do not follow the intense and high Lydian
Nor the relaxed and too languid Ionian,
but choosing your path in mid-air,
sing in the Aeolian tone.”

Therefore, we can say that Philoxenus was the first author or regulator of the Aeolian mode. As to the Aeolian, the matter is more obscure, except for the fact that Athaenus reports that Pythernus of Teus, an Ionian island, composed certain Ionian verses in the particular style of singing specific of that population, which was very close to his own tradition and was of admirable gracefulness. However, one must be aware that it is same to say Iastian Harmony or Mode as Ionian, although the first adjective is more used in the writings of good authors, because the word [iasti] is a Greek adverb that means simply [-<365>-] in the Ionian way, because [ias, iados] means the Ionian style, both in music as in other subjects, and the adjective Iastian derives from that adverb. I am very surprised that Glareano did not notice this. As to

the fact that Athenaeus that the form of the word Hypodorian or Subdorian is similar to that one of the one of words such as subdulcis, subvultus et cetera, and that it means a type of Harmony which has some features and partakes of the Dorian, but that it is not truly Dorian, he cannot be justified in this except because he was not an expert in practical music, because that prefix [hypo] in that place means that it lays in the lower register below the Dorian. This is so clear that it requires no further proof. I wanted to make this clear because it appears that our Mei was prompted by Athenaeus' authority to believe that where Aristotle in the musical problems mentions the Hyperphrygian and Hypodorian modes (where he says that they were adopted in the tragedy by the main actors, while the Mixolydian was used in the Choruses of the same tragedies) one should correct the text to read Phrygian instead of Hyperphrygian and Dorian instead of Hypodorian, because Aristotle called them in that way in the Politics, or that we should consider as Hypodorian and Hypophrygian the Modes that have something of the Dorian and of the Phrygian, according to Athenaeus' interpretation. Let me say this without rebuking Mei: the matter does not lay in these terms, as I shall explain elsewhere the reason why tragic actors used the Hypodorian and Hypophrygian rather than Dorian and Phrygian. In fact, if Aristotle named those in the Politics and these in the Problems, this does not cause any contradiction because the principal modes (as Dorian and Phrygian are) as they are the source and the origin of their subordinates, they contain them in a certain way, as the genus contains the species. Hence, in the Politics, as [-<366>-] a philosopher he makes a general statement, while in the Problems, as a musician, he deals with specific features. Moreover, in the Politics he talks about the modes which were used in the common melodies, and these are the Dorian and the Phrygian, while in the Problems he talks about the melodies which were used specifically in the tragic Monodies. Moreover, the fact that he ascribes the same properties to those as to these does not make any difference, because just as the Hypodorian and the Dorian and the Hypophrygian and the Phrygian have similar names, thus they are also similar in their nature, and if there is some difficulty, it merely a quantitative difference. Also, if the Hypodorian did not partake of the nature of the Dorian, that name would not suit it, and equally in the case of the Hypophrygian and of the Phrygian. It seems to me that this is so certain that to doubt it is naivety, in my opinion. Therefore, we can believe with certainty that the three principal Modes were created by nature than by man and that those who are named as their inventors simply ordered them and reduced them to a form that could be used in art, as Thamyris must have done with the Dorian, and imported them into Greece, as *Phrygians* did, who imported the Phrygian, and *Lydians*, who imported the Lydian. As to the others, it seems to me that they were added in this way, namely by adding a tone underneath each one of them and progressing through the Conjunction rather than through the Disjunction, since it is possible to see that if one adds a Tone under the Dorian and changes the [sqb] mi to b fa, and does the same in the others, these tones are transformed into their corresponding plagal.

[-<367>-] On certain other Modes mentioned by the ancients, Chapter

Apart from the aforesaid Modes, one finds that others are mentioned, which, because they might produce confusion and make one believe, as it happened to many, that this subject of the modes is very confused, full of contradictions, and that everybody adjusted them according to their whim, as Glareano says, it will be good that we proceed reporting and examining diligently the passages of the authors who mention

them. Once one is aware of this, one shall see manifestly that, if there is come contradiction, this occurs only in appearance rather than in substance, and that there is no doubt that this contradiction can be resolved for the best. Therefore, Plato in the *Republic*, where he examines what sorts of music has to be accepted and what types must be rejected as useless to the Republic, mentions only these six: Dorian, Phrygian, Iastian, relaxed Lydian, Syntonic Lydian or intense and the Mixolydian. Finally, he concludes that those that have too tearful and sad character, such as the Syntonic Lydian or Mixolydian or the ones that are too relaxed or languid, such as the simple Lydian or the relaxed Lydian [aneimene], which are more suited to banquets and celebrations must not be accepted. On the contrary, the Dorian must be retained because it has a honest, modest and serious character, and it is apt to preserve good and laudable habits in the young. Also, the Phrygian must be preserved because it has a masculine, inspiring and war-like character, and, [-<368>-] because it is suited as Proclus says in his Commentary on Plato's *Republic* to sacrifices and enthusiasm, namely to fire up the mind with divine fury. What shall we say about those two species of Lydian which he mentions, namely the Relaxed and Intense or Syntonic, which is also called Syntonolydian and [syntonolydisti] with a single word, which was not understood by the translator of Pollux? Here Aristides Quintilianus dispels any doubt teaching us also with which intervals these Harmonies were composed, because

[to men oun lydion diastema synetithesan ek dieseos kai tonou kai tonou kai dieseos kai dieseos kai tonou kai dieseos; kai touto men oun teleion systema; to de dorian ek tonou kai dieseos kai dieseos kai [[tonou]] [tonou kai add. supra lin.] ditonou kai dieseos kai dieseos kai ditonou. Oun de touto tono tod diapason hyperekhon; to de phrygion ek tonou kai dieseos kai dieseos kai ditonou kai tonou kai dieseos kai tonou. oun de kai touto teleion diapason. to de Iastian synetithezan ek dieseos kai dieseos kai ditonou kai triemitoniou kai tonou. oun de touto tou diapason elleipon tono; to de mixolydion ek duo [-<369>-] dieseon kata to exes keimenon kai tonou kai tonou kai dieseos kai trion tonon. oun de kai touto teleion systema; to de legomenon syntonolydion oun dieseos kai dieseos kai ditonou kai triemitoniou diesin de noun eti panton akousteon ten enarmonion],

which means: “Therefore, they composed the Lydian Interval (namely, the harmony) of a diesis, another diesis, a tone and another diesis, and this was (its) perfect system. They created the Dorian with a tone, a diesis, another Diesis, a ditone and another tone, of a diesis, another diesis and a Ditone, and it exceeded the Diapason by a tone. They created the Phrygian with a tone, a diesis, another diesis, a ditone, a tone, a diesis and a tone, and it corresponded to an entire diapason. They constituted the Iastian with a diesis, another diesis, a Ditone, a Trihemitone and a tone, and this was a tone short of a full Diapason. The Mixolydian was formed of two dieses one after the other, a tone, a tone, a diesis and three consecutive tones, and this was the perfect system. However, the one called Syntonolydian was composed of a diesis, another diesis, a Ditone and a Trihemitone. Diesis must be always understood here as the Enharmonic one.” I wanted to quote this passage in its entirety as it is because [-<370>-] it is worth a treasure, and I can derive a lot of important information from it. The reader must be aware that there is a mistake in Zarlino's text [Institutioni part 4, chapter 6 in marg.], because the fourth interval of the Dorian must be a Ditone, as it is in the manuscript copies, and not a tone. This is also proven from the fact that Aristides says that this mode exceeded the Diapason by a tone, which otherwise

would not turn out to be true. Let us place here the table of all of them:

[Doni, Treatise on the Genera and the Modes, second book, 370; text: Lidio. Dorio. Frigio. Iastio. Missolidio. Sintonolidio. Tuono Ditono. Diesi. Trihemituono].

Thus the Lydian was sung only through a minor sixth or Diatessaron and trihemitone, the Dorian through the span of an octave and a tone, the Phrygian through an octave exactly, according to what Aristides says, although the description of the intervals is short of a diesis, which, I believe, was lost because of the copyists, as it is not plausible, moreover, that a diesis may stand alone, except at the extremities of a mode, otherwise it would cause everything to be in disarray and very few consonances would be found even across an entire octave. Therefore, it is certain that after the sixth interval of a Diesis there should be another one. Equally, in the Mixolydian that Diesis in the middle cannot stand alone, but must be accompanied by another one which completes the octave. The Iastian, instead, was sung across the span of a minor seventh, namely a fifth and a minor third, while the Sintonolydian, as the Lydian [-<371>-] across a minor sixth. Aside from the above mentioned elements Alexander mentions the Mixophrygian attributing its invention, as well as of the Mixolydian and of the Phrygian to Marsyas. However, I do not find it mentioned in any other author, so I do not know what to believe, unless we want to say that the Myxophrygian has to be understood as the one that Aristoxenus called the lower Hyperphrygian, namely the Hyperastian, and that it was called thus because it was close and almost mixed with the Hyperphrygian, as the Mixolydian is with the Lydian. Athenaeus also mentioned the music of Caria ascribing to it [mele kateagota] and [rhythmos goerous], namely, dissolute melodies and airs and querulous movements, hence perhaps it had a particular sort of harmony suitable mostly for funereal and erotic subject, with frequent and interrupted intervals, as I interpret that [mele kateagota]. The Carians were the population in that corner of Asia which is contained between Lydia and Lycia towards Rhodes, part of whose territory was occupied by the Dorians mentioned above, especially the peninsula called Doris. The main city of this population was Halicarnassus, which was famous for Mausolus' tomb. These people were also more different from the Greeks than the Lydian were and spoke a stranger language, hence Solo calls them [barbarophonous] or speaking the language of a barbarian population. One can believe that the Carians, the Mysians and similar Asiatic populations of those surroundings had particular styles of singing, which have not been regulated under specific Harmonies, hence one cannot discuss them on the basis of solid evidence. However, since we use [-<372>-] this term Harmony almost indifferently to mean tone or mode, one must be aware that we do it following the example of all the best ancient authors like Plato, Aristotle, Aristoxenus, Ptolemy and others of this kind, who use this term as well as the others indifferently, and even more frequently. However, one must be aware that it indicates not only the sequence of the notes and intervals produced with musical reason in general, but the foundation and the matter which creates the Melos will be, more particularly, a specific species of notes and interval ordered to produce the melody according to a particular tone appropriately selected and according to this type of melody which as used in the Melopoeia, and in this meaning it is the same as Tone or Mode. However, if one wants to keep to the appropriate use of the words, the term Harmony shall have even a more particular meaning and it shall indicate a particular group of notes or intervals occurring in this or that tone with the obligation to sing no more and no less

than the number indicated, as in the example of the Syntonolydian where one places two dieses, then an uncompounded ditone and an uncompounded Trihemitone. This strict rule not to divide the ditone or the semiditone and not to exceed this interval must be called Harmony rather than Tone or Trope. Thus, we can say in general that any specific disposition of notes will not reach the Diapason or, if it does complete the octave, it will have more than eight and less than nine and it will have to be called Harmony rather than mode, although it follows one of the seven species and that it has its specifically regulated instrument sounding and built like a flute, in order to play on it and [-<373>-] sing certain notes rather than others. Therefore, harmony will be a specific from of Mode. From this we can derive the corollary that, if we place all the Diatonic, chromatic and Enharmonic notes in one of the tones, for instance in the Dorian from E to e in this way:

[Doni, Treatise on the Genera and the Modes, second book, 373, 1; text E, F, G, A, [sqb], c, D, Tuono, diesis, diesi, Semituono],

which are twelve notes, not counting the conjunct tetrachord so that they may be played all at will a genus after the other or mixed together, it will be possible to called it tone, mode and Dorian Harmony according to the three genera. However, the lower of the two tetrachords is laid out only Diatonically and the one above Chromatically or Enharmonically, thus:

[Doni, Treatise on the Genera and the Modes, second book, 373, 2; text: Semituono, tuono, Semiditono, E, F, G, A, [sqb], C e],

the name of Harmony will suit it better, because it implies the restriction to play only these or those notes specifically rather than all the ones of the Mode, in such a way that the meaning of Harmony in some sense is wider and in some other sense it is more restricted. Therefore, if one lays out only the Chromatic notes, thus:

[Doni, Treatise on the Genera and the Modes, second book, 373, 3; text: E, F, A, [sqb], c, c, e, [signum]]

one can call it Dorian Chromatic Harmony or according to the chromatic genus or Chromatic Harmony of the Dorian tone, or on the Dorian tone or mode, rather than Chromatic Dorian Mode or Tone. Similarly, should I force a composer to write some melodies in the Dorian tone without exceeding this major sixth E, F, G, A, [sqb] c, this will be the same as ascribing to it [-<374>-] a particular Harmony or Harmonic species, however we want to call it, just as if who assigned a Melos, with or without words of so many bars (it will not make any difference how many you will choose) but with this restriction that after two of binary or dactylic measure, there should follow one of ternary or iambic measure and thus he should proceed always with two bars, two binary and one ternary, this would amount not only to prescribing him what type of Rhythm he will have to use, but also which aggregation of Rhythms in particular, which are Rhythms composed of a larger number and almost incomprehensible in comparison with the simple ones. Thus, the Harmonies in this sense can be rendered very varied and almost without rhythm, but the modes can only be seven and the Tones equally seven, as to the principal ones, although the ancients employed thirteen, or even fifteen of them. There is also this other difference, namely,

that the mode appears to be more properly exactly of the size of a Diapason without any relation to the others, while the use of the word tone implies always a relation to the others. Also, Harmony indicates mainly some variety of intervals, as one shall see more clearly further on.

[-<375>-] On the number of the Tones

I will prove that this is true not only on the basis of the authority of some ancient writers and of Alypius' notes. It is clear that one can one can built instruments, flutes for instance, divided not only according to Ptolemy's seven tones, but according to Aristoxenus' thirteen and even according to the fifteen of his followers and more, if one wants, because we could separate them one from the other not only according to tones and semitones, but also according to quartertones. Thus, although they shall always be one of the seven modes, taken according to the species of the octave, nevertheless they will always be different tones and they shall also have different harmonies as we vary the distances of the holes and their size according to the three genera and also according to the colours of each one. This shall be clearer when we see that the tones were placed not always with the same intervals one from the other and with the same order, as Aristoxenus illustrates in the secondo book, where he talks about the Tones nor on purpose but in passing, saying these words: [Pempton d'esti ton meron to peri tous tonous eph'hon tithemena ta systemata melodeitai; peri hon oudeis ouden eireken; oute tina tropon lepton, oute pros ti blepontos t'arithmon auton apodoteon estin. Alla pantelos eoike te ton hemeron agoge ton harmonicon he peri ton tonon apodosis; hoion hotan [-<376>-] Korintihioi men dekten agosin, Athenaioi de pempten, heteroi de tines ogdoen; houto gar hoi men ton harmonikon legousi barytaton men ton Hypodorion ton tonon hemitonio de oxyteron touton to Mixolydion. Toutou de hemitonio ton Dorion; tou de doriou tono ton Phrygion; hosautos de kai tou Phrygiou ton Lydion hetero tono; Heteroi de pros tois eiremenois ton Hypophrygion aulon prostitheasin eti to bary. Hoi d'au pros ten ton aulon trypesin blepontes treis men tous barytatous trisi diesesin apallelon horizousi ton te Hypophrygion kai ton Hypodorion kai [[tes]] ton Dorio; ton de Phrygion apo tou Diou tono; ton de Lydion apo tou Phrygiou palin treis dieseis ahistasin; hosautos de kai ton Mixolydion tou Lydiou. Ti d'esti pros ho blepontes outo poieistai ten diastasin ton tonon protethymenai oude'eirekasin; hoti d'estin he katapyknosis ekmeles kai panta tropon akhrestos phaneroi ep'ahtous estai tes pragmateias], which mean: "The fifth part (of Harmonics) deals with Tones in which the Systems are laid out and sung. Nobody has written anything about them, on how they are taken and on what basis their number is established. On the contrary, it appears that the tradition of the Harmonics in relation to the Tones corresponds precisely to the succession of the days, as a day which is counted as the tenth by the Corinthians is the fifth according to the Athenians [-<377>-] and the eighth according to others. Similarly, some theorists say that the lowest of all the Tones is the Hypodorian, that the Mixolydian is higher than the Hypodorian by a semitone, that the Dorian is also higher than the Mixolydian by a semitone, while the Phrygian is higher than the Dorian by a tone, and similarly the Lydian is higher than the Phrygian another tone. Moreover, others added the Hypophrygian flute in the lower register. Others, however, considering the holes of the flutes separate the three lowest Tones, namely the Hypodorian, the Hypophrygian and the Dorian one from the other with three dieses, but they separated the Phrygian from the Dorian with a tone and the Lydian from the Phrygian, as well as the Mixolydian from the Lydian, with the other three Dieses. Nevertheless they say

nothing about what they considered when they established those distances between the Tones. However, we shall make clear that the thickening ([katapyknosis]) is impossible to sing and totally fruitless when we reach this topic.” It will be appropriate that we examine this passage in sections because it enlightens us about many notable details of the Music of the ancients, after we have provided the illustration of the Tones according to Aristoxenus’ description:

[<378>-] [Doni, Treatise on the Genera and on the Modes, second book, 378, 1; text: Ordine de suoni secondo alcuni musici auanti Aristosseno, Lidio, Frigio, Dorio, Missolidio, Ipodorio, C, c, D, d, E, e, [sqb], A, a],

which can be illustrated also in this way:

[Doni, Treatise on the Genera and on the Modes, second book, 378, 2; text: D, #, C, c, b, [sqb], G, F, E, D, C, A, g Hypophrygio agigunto da altri].

[<379>-] Distribution of the tones according to other authors

[Doni, Treatise on the genera and on the Modes, second book, 379; text: Missolydio, Lydio, Phrygio, Dorio, Hypophrygio, Hypodorio, 3, diesi, Tono]

From this we gather many conclusions, firstly, that there was never any variation within the three principal tones, whether with regard to the sequence of one with the other one, or because one of them was left aside, nor as to their distances because those six dieses which are placed between the Phrygian and the Lydian can be considered a whole tone. However, the same has not happened in the case of the others which have been laid out in different ways, as they are less principal. Secondly, I notice from the first order that they placed those three (Dorian, Myxolydian and Hypodorian) next to each other because of the resemblance that they have in their species and, consequently, in their nature, and that the Myxolydian under the Dorian has the same position as the Hypolydian, to which is very similar, since it is nothing but an inverted Hypolydian. Thirdly, I observe that not all theorists held necessary that the tones with the prefix Hypo- corresponded to their principals being placed at the interval of a fourth lower, and that, equally, not all of them, as one can see, separated the Hypodorian and the Dorian and the Hypophrygian and the Phrygian at the distance of a tone. Nor all of them had to be at the distance of a Diatessaron in the same way, as one can see that they placed the Hypodorian at the distance of a tone from the Dorian, although [<380>-] Aristoxenus does not say so. I notice also that the practical musicians of that time and the builders of instruments, such as those who made flutes and recorders (of which there was a great number at the time, and they were built exquisitely) used normally the measurement of a Diesis or quartertone to divide the intervals, just as nowadays we are used to garnish a note more or less, but much more imperfectly and without even distinguishing the tones from the semitones. Moreover we gather that each tone had its particular flute, as I always believed and as I shall illustrate further on. Also, we learn that the Hypolydian Mode must have been less highly regarded than the others because it does not appear among the others in any of these two distributions. I observe also that to locate the Hypodorian above and below the Dorian by the distance that we can see, namely, a semitone, is not otherwise

uncomfortable. On the contrary, it facilitates very much the mutations from a tone to the other, since the note b flat in the Hypodorian is the first natural note of the Mixolydian, which is, however, very different from that one, as the notes written according to the modern system show, since they are almost all altered with the sign #. Hence, I presume that that position of the Mixolydian was mostly practised in tragedy because, if the Hypodorian and the Hypophrygian were swapped by Tragic actors, who chose a low and low voice to represent the Heroes and changed when they wanted to move on to lamentations and tears, to which the Mixolydian is most suited, as Aristotle teaches us in the Problems, they could do this more easily as it was closer to their own, [-<381>-] had they had to do it a sixth or a seventh higher. In this Distribution one moves with great difficulty from the Hypodorian to the Dorian, because, as one can see from the note, only the fourth interval is altered, which turns from a semitone into a tone with the addition of the # to the F. From Aristoxenus' words where he states that the thickening ([katapyknosis]) is impossible to sing and useless, I also gather that they believed that the System had to be divided into a large number of small particles, as modern theorists do, for instance, Zarlino and Salinas from a theoretical standpoint, and Don Nicola from a practical one. However, they do this because they do not have knowledge of the true Tones which renders that thickening useless rather than for any other reason. Therefore, it is criticised by Aristoxenus with good reason.

[-<382>-] On the musical notes of the ancients, chapter

Although I had decided not to discuss the notes of the ancients to avoid being too longwinded, nevertheless, since from the complete Diagram of the conversion of the Modes one can derive very important information to understand them, and because it would be redundant to present them without knowing the notes that compose them, hence I considered it necessary to explain them before I move any further. Therefore, it has to be known that the ancient Greeks did not use the lines and the spaces that we use, but placed their musical notes above the syllables and the words themselves of the verses with great ease, because, where it was needed for a syllable to be lengthened by several subdivisions of the note, as one does in the *accenti* and *passaggi*, as they call them, they separated it from the other syllables of words with a space sufficient to contain all the notes and sounds that they wanted to be sung under one and the same vowel. This is what Boethius means when he says: <Boethii verba desunt>

They had to sorts of these notes [(against the opinion of modern theorist who make no mention at all of these)], namely, some which were used for the sung melody and indicated the intervals and the notes to be sung or the steps of the System, whether Diatonic, Chromatic and so on, and others that were used to represent the Rhythm or the timing within which each note [-<383>-] had to be uttered. Although modern theorist write and think commonly that the ancients had no other ways to indicate timing than the metric quantity, nevertheless I, who never considered the ancient as so unsophisticated and simple, could not convince myself of this. Therefore, after long research, I found them in an anonymous ancient text belonging to the Vatican Library. However, since they are not of interest for our current purpose, I leave them out for now, planning to publish them within the treatise that I am writing at the moment on the Rhythm and Rhythmopoeia. I have learned from the same author that they had a

specific sign to divide the bars, which is something very useful indeed and of great help to those who sing or keep time because they did not place any sign on the downbeat, or thesis, but they added a dot to the note which happened on the rising of the hand or of the foot, which was called arsis. However, they had two sets of notes to indicate the sound, as Aristides Quintilianus and Gaudentius report, because the ones that were used to the sound of the instruments, which we would call basso continuo, were different from the ones used for the singing of the voice, which is what Boethius means when he says: <Boethii verba desunt>

I remain surprised that Zarlino did not understand this matter, since he believed, as he states, that the first indicated the Notes and the other ones their length, long or short, although they could gather their duration, whether long or short, from the syllable placed in the verse, which was long or short. Zarlino, however, must not have remembered that [-<384>-] [krousis] in Greek means the sound or the voice of an instrument, whichever it may be, so that it has the same meaning as percussio in Latin, which is how Boethius translates it. Therefore, the notes to be sung by the human voice were placed above the verse, while the ones that were played by the instruments were placed underneath, as the same writers state. Moreover, if someone is surprised by the fact that they did not use the same notes for the voice and for the sound of the instruments, one must know that they did so because it would have produced confusion in certain situation.

It has to be known also that they used to build a table or Diagram containing all of the eighteen Tones, dividing them into as many columns as they are and at the distance of a semitone one from the other. All this span was divided into seventy-seven equally distant lines containing seventy-six intervals or Enharmonic Dieses. In fact, since the distance between the lowest note of the Hypodorian, the lowest tone of all, to the highest of the Hyperlydian, the highest tone, covers three octave, and they assigned to each diapente twenty-four dieses, twenty-four dieses with added with the four of the tone reach that number. The tones were laid out in such way so that [-<385>-] the musician may detect the distance from a tone to the other and of each note of one to each note of the other at a glance as well as understanding which notes and sounds are the same in two or more. In short, this table allowed the musician to have in front of his eyes the entire complex of almost all the notes which can be produced humanly. Some of them used the letters of their alphabet to mark them, and, since twenty-four were not enough, apart from the letter themselves as they were, they wrote many altered in a way or another, either back to front, or upside-down or distinguished with some line and similar devices, while they tried to keep their number as small as possible. Therefore, they used the same in the Diatonic and in the Chromatic except for the addition of one or two lines. This had a very positive result, because a note that was Chromatic in a mode was Diatonic in another one. These characters are described in brief by Alypius, an ancient musician, in a brief Introduction of his, in which he names them chapter by chapter according to the three genera and fifteen modes, arriving to the number of forty-five chapters, although he last ones of the Enharmonic genus are missing, both in the manuscripts that I have see as in the one published by Meursio in Holland, although he did not publish the characters of the notes, as he recognised them to be very incorrect. However, having worked on them for a while and having compared them to other Greek writers, and in particular with a very ancient anonymous text contained in the Vatican Library, which deals with the thickening of the notes [peri tes katapyknoseos] [-<386>-], and particularly, by examining side by side the ones of one mode with the ones of another one, I corrected

them to such an extent that nowadays one would be able to decipher any ancient melody not only in the Diatonic, but also in the Chromatic, although they are more incorrect than the Diatonic ones in Alypius' text. However, I have not been able up to now to correct the Enharmonic ones, because Alypius is completely useless in this matter, because I have seen that the manuscripts do not correspond to the printed version entirely in the modes that have come down to us, and that, equally, the same notes are that are placed in the Diatonic and Chromatic are repeated in all of them without adding lines or other circumstantial signs. This is due only to the negligence of the copyists and because it is very easy to make mistake in such precise detail and when there are some repetitions. For this reason the notes appear to be incorrect also in Aristides' text, although he does not display them separately tone by tone. I shall order them here as I ordered them in the two genera with this addition of a line under the specific Chromatic notes, as the ancients used. However, it would be better to distinguish them with a red colour, as I did in my original table and as some believe that it was the case in antiquity, and this would be the reason why this genus was called Chromatic. Nevertheless, they are really mistaken in this. Aristides himself states that the Diagram of the Tones was similar to A and A , which is exactly how I laid it out, hence we can be sure that this was how the ancient distribution appeared. Moreover, Gaudentius teaches us that the ancient disposed these notes starting from the lowest to the highest without distinction of modes in three general sequences, one by tones, another one by semitones and a third one by dieses, and after the A they started again adding only the sign of the acute accent, [-<387>-] which indicated that a particular note belonged to the part above and was higher than the one below which did not have said sign. Aristides himself placed these series in his book as well, but they are all full of mistakes in both the characters and their disposition in the texts which we have seen, which are all modern in writing and were copied from a single original archetype, as far as one can tell, hence they are of little use. [[May the courteous reader enjoy the illustration which I share with him, which is laid out as best as I could, and in which, as in a compendium, one sees the content of the music of the ancients.

Diagram and connection of the fifteen Tones according to the two genera Chromatic and Diatonic.]]

However, the Gaudentius' words which I mentioned above are these and they follow the small passage referred to above: [Oukh'enos dei oun semein kath hekaston ton phtongon hekastos dynatai; to men oun hstis parauxanesthai dynatai ton phtongon hekastos hemitoniois ou radion aphorissai; pros gar tas kataskeuas ton organon kai ten dynamin tes anthropeias phones ta toiauta orizetai; to de hopos parauxanomenon en diaphorois semeiois aposemainetai [-<388>-] ek ton diagrammaton en tais mousikais radios an tis katamathoi; theoreteon de <reliqua desunt>], [-<390>-] which means: "A single sign is not enough for each note or sound, but it is not easy to determine by how many semitones each one can be increased (or raised) because this depends on the (different) way in which instruments are built and on the power (namely, the tension of the human voices). However, how each one is increased (or raised) with different signs, this can be gathered easily from the musical illustrations and Diagrams. However, for now do let us consider only how the series of the notes laid out by semitones. Therefore, let us place a note which is, by its nature, the lowest of all and the first one that can be sung and be distinguished by the ear. The ancient notated it with half a [phi] written sideways [signum]. It is clear that this sound cannot

occur on another note than the Proslambanomenos, because, should we place it elsewhere, where shall we place the proslambanomenos, which is the lower by its nature than the sound of this halved [phi]?

Then, place a note a semitone higher than this one. The ancients marked it with the letter tau [Tau], and it is certain that the tension or sound of it can correspond only to a proslambanomenos, because, if it is associated with the Hypate hypaton, where shall the Proslambanomenos be placed, which must be a tone lower than the Hypate, but here there is only the distance of a semitone. Now, place another note [-<391>-] in the same way, so that it is a semitone higher than the [Tau], which the ancients marked with a double sign [epsilon]. This one can be the Proslambanomenos and the Hypate Hypaton of some System because it is at the distance of a tone from the lowest voice. Thus, raising the following note always a semitone more than the previous one they arrived to the thirtieth box of the semitones, and above these they marked the other notes raised by a semitone with the same signs used starting from the beginning adding only the mark of the acute accent, starting from the nineteenth box which has the note indicated by the [omikron] and kappa [omikron. Kappa]. They placed two notes in each place, since the ones above indicated the melody of the voice and the ones underneath the sound. Then, they disposed the ones that are called Unisons, of which we can use one or the other without difference, because it will make no difference to use more notes in unison with this or that one. These unisons have also another use, because the Diesis in the Enharmonic and Chromatic genus are expressed with these placed in succession, as we have explained in our introduction. Therefore, we shall place in a small table the notes of the semitones with their sounds in unison, which are placed in the same boxes, as well as the notes one a semitone distant from the other in consecutive succession.

The first box, which is assigned to the lowest note of all has the half oblique phi and the half phi upside down [signum]

The second box, which is at the distance of a semitone from the one of the first note, contains this sign, namely the turned gamma and the straight one [signum]. The hooks on these, [-<392>-] which indicate the same power [dynamis] and tension, are the turned tau and the straight [Tau] [sign].

Similarly, the third box belongs to the third note, in the same way, namely, it contains a note which is a semitone higher than the previous one, and it contains a double turned sigma and a straight sigma [signum]

The fourth box contains the Rho turned upside down and the double Sigma turned upside down [signum]. Its unisons are the pi upside down and the double Sigma turned.

Equally, the fifth is a semitone higher than the fourth and contains these notes, namely, the [omikron] with a line beneath it and the [eta] [signum].

The sixth one has the double chi turned upside down [signum] [signum] and has the turned hy and the double p as its unison Proslambanomenos, [Omikron] [Kappa] with a line beneath them and the eta [signum] [Eta], et cetera.”

He continues to describe the notes of the Hypolydian and Lydian in this way (which was used mostly by the ancients to provide their examples, as one can see from Boethius) without any other notable observation, but with many errors caused by the copyists. Therefore, this shall suffice.

So, although one can see only the beginning of one of the three general series and the particular notes of each tone in the copies of Gaudentius' text that can be found nowadays, they are even more lacking than the one of Alypius. Nevertheless, we could withstand this loss had Aristides' text been better preserved in this section, but,

because of a fateful accident, this text is more deficient in that part than in the rest. Therefore, it will be always impossible to extract much useful information, unless another very ancient text were to be discovered.

I want to highlight also what he says about the diesis, namely that they only had twenty-four, which means that twenty-four were needed for a whole Diapason, hence they were placed in sequence in the first twenty-four spaces of the lowest system, which was the Hypodorian, and then they repeated them in the higher registers.

[<393>-] Observations on the same Diagram

First one must note that the ancients ordered these letters in alphabetical order to maintain a good sequence and to aid the memory, but they started from the high register downwards, according to the distance of the semitones, so that, in a System, two notes next to each other and at a distance not wider than a semitone are notated with two letters of the alphabet that are next to each other, while the notes that are at a distance of a tone are not marked with successive letters, but, if one is notated with the first letter, the other one will have the third one. One must note also that they applied the full and straight letters judiciously to the notes in the middle between the high and low register, as it was appropriate, because they were more used [Hence one can see that in the lower modes the letters from the Mese upwards are intact, and conversely in the upper ones in marg.] and that the same letter fashioned in the same way is used sometimes for the notes of the voice and of the instrument, but not it does not indicate the same sound. The notes that are to the right in each column are the notes of the Conjunct Tetrachord, of which the first one (Trite) is b fa, as we said already, which corresponds to the space contained between the mese (a la mi re) and Paramese. The others follow on in corresponding fashion.

One must note principally that the notes that have the sign in the same box are really in unison, while the ones that do not have the same sign are not really [<394>-] in unison, if not when these intervals of Tones, Semitones and dieses are placed equally divided, and, in short, equal both in Theory and in practice. That this occurred only in Theory, as I said above, and these very notes demonstrate it to us because the ancients, who were so diligent and precise in everything and did not add anything that was redundant, would only have placed in a box a type of notes, if they used to sing and play in practice equal intervals, as Aristoxenus describes them and the others, as it is believed commonly nowadays, because it would mean adding a difficulty and signs without meaning. Nor the fact that the signs that are placed in the same box and are called unisons [homotona], as Gaudentius says, for this reason must be considered only in Theory, in which we imagine that all this content of notes and interval is divided into equal parts. To prove that this is true, note that the nete Diezeugmenon and the paranete synemmenon, which we call with the same name of d la sol re, is represented with the same notes throughout, as indeed they are in unison, since there is the same distance from a la mi re [(mese)] to d la sol re both through [sqb] square as through b flat, which in the perfect temperament would be a fourth with a comma added, or two larger Tones and a larger tone, except for the fact that one can see openly that the ancient placed two d separated by a comma at least in [<395>-] practice, as finally modern theorists have realised that it should be done by acquiring that fourth, although Zarlino and Salinas mark it in their demonstrations. Now, on this basis, the same interval of a perfect fourth occurs between a and d through [sqb] square and through b flat, with this difference, that, through [sqb] square the semitone falls in the first place, and through [sqb] flat in the second one. Then, taking the

example from the Dorian through [sqb] square o in the disjunct tetrachord, the Mese marked in this way [signum] [signum] is removed from the paramese [My] [Pi] by the distance of a larger Tone (let us remember that this tone is always immutable and sesquioctave) the Paramese from the Trite Diezeugmenon [Lambda] [signum] a larger semitone 16/15. Therefore, consequently, the difference from that one to the Nete Diezeugmenon [Eta] [signum] is only a smaller tone 10/9. Conversely, in the case of the conjunction, or b flat, it is certain that the distance between the Mese and the Trite Synemmenon has to be the same as from the Paramese to the Trite Diezeugmenon, namely, from [sqb] mi to sol fa and the same from b fa to [sqb] mi, which is a larger semitone. Therefore, if there is the same distance from the Trite Synemmenon b fa to the Paranete synemmenon c sol fa ut as from the mese a la mi re to the Paramese [sqb] mi, the Trite Diezeugmenon and the paranete synemmenon, namely, the c sol fa ut through [sqb] and b flat, should be in unison and at the same distance of a minor third from the Mese a la mi re, according to that rule of equivalence (aequalibj aequalem) et cetera. However, the fact that these two notes Trite Diezeugmenon and Paranete Synemmenon do not appear to be marked with the same note as the Paranete Diezeugmenon and the Nete Synemmenon points argues in favour of the fact that they are not in unison. This is true, because the fact that one can see [-<396>-] that the paranete Synemmenon is marked with the [Kappa], which is a higher note and nearer to the [Eta] than the lower and further removed [Lambda] with which the Trite Diezeugmenon is marked demonstrates that the Paranete Synemmenon, which is the c of Synemmenon, is more removed from the Trite b fa than the Paranete Diezeugmenon d la sol re is removed from the Trite Diezeugmenon c sol fa ut through [sqb] square. Hence, one sees that there is a smaller tone from b fa to c sol fa ut through b flat (I use Didymus' division because this diagram itself shows that it was more popular than Ptolemy's one) and also from the same c sol fa ut to d la sol re through b flat. However, through [sqb] the larger Tone is placed between a la mi re and [sqb] mi and the smaller one from c sol fa ut to d la sol re, and this is why because the Trite Diezeugmenon and the Paranete Synemmenon do not have the same signs and are not in unison. This indicates also that Didymus' division proves more comfortable when one moves from the Disjunction to the conjunction and that it ensures that the paranete diezeugmenon and the nete synemmenon are in unison, while the trite diezeugmenon and the paranete synemmenon are not in unison, as they are here without producing a different sequence of intervals in these two tetrachords. It is also meaningful that, since these two diatessaron cannot have the same sequence of intervals, the natural order (namely the one that exists in all the tetrachord of the Disjunct System) is ascribed to the conjunct Tetrachord which is whole and is attached to the one of the Mese as the one of the Mese is attached to the one of the Added-on ones rather than to the fourth from the Mese a la mi re to the Paranete Diezeugmenon d la sol re, which is not a natural tetrachord. Hence one can see that Didymus placed the smaller tone in his tetrachords after the smaller semitone, because in practice the same happened sometimes. I believe that this is a very useful observation and that this illustrates the exquisite diligence of the ancients. From it we can gather [-<397>-] this rule, that, when two notes are in the same box they will be regarded as in unison in the participate temperament, but in the perfect temperament, which used to be sung and is still sung partly nowadays, the letter nearer to the next one above indicated the higher sound. However, for this reason we shall illustrate a little further how in some tones the paranete synemmenon has the same notes as the Trite Diezeugmenon. One must also be aware that the tones that have some affinity and share the same name, like the Dorian and the Hypodorian, the most part of the

notes are the same not only in the Diatonic, but also in the Chromatic because they proceed almost in the same way, and, as to the species, they have only the difference which lays between those through [sqb] and through b flat among the modern ones. Note that, after the [omega] mega, one starts again from the alpha [alpha].

It is also very worth considering the gradual ascending not only of the mese of a Tone but also gradual one of the next ones which are higher. However, in the Mese (which are considered mostly) one must notice that from the one of the Hypodorian [Omega] to the one of the Hypoiastian, although they are placed at the distance of a semitone, as the other ones are, there is a letter in between, namely the [psi] trite synemmenon of the Hypodorian. However, the [Khi] mese of the Hypoiastian and the [Phi] mese of the Hypophrygian are adjacent to each other, indicating that in the perfect temperament this middle tone is nearer to the Hypophrygian than to the Hypodorian. Therefore i believe that Aristoxenus called it also lower Hyperphrygian rather than higher Hypodorian. Equally, the Mese of the Hypophrygian does not have a letter adjacent to the one of the Hypoaeolian, but the one of the Hypolydian is indeed adjacent to the one of the Hypolydian, because the Hyperaeolian has more in common with it than with the Hyperphrygian, both in terms of interval and of name. For this reason the one of the Hypolydian is also not adjacent to the one of the Dorian. [-<398>-] Moreover, I do not want to omit to inform the reader than the notes of the Lydian System are very well represented in the Solitario of Pontus du Tiard, although he does not say that they belong to the Lydian Tone, and he does not seem to have known that each Tone had its particular ones and that Alypius described them. On the contrary, he says that he found them in an ancient manuscript, and that they differ in some detail from the ones of Boethius'. Now, note that in the printed text of Boethius' work they are very incorrect, so they can be of little use to correct Alypius' text. However, the ones of the Solitario correspond very well to the one that I reported and I have disposed in my diagram, although one can see weel that the Tiard wanted that the notes should be simply written down and not described with their names. In fact, for instance, he calls the paranete Diezeugmenon a turned M, rather than a turned [omega], as it is in fact, with little change in its shape [signum]. The mention of this manuscript makes me hope that perhaps there are other copies of it in others parts of the world, and that one day they will be made public. As to the relationship between the Dorian and the Iastian, although it should be the same as the one that exists between the Hypodorian and the Hypoiastian, nevertheless this sequence is not observed. Moreover, the fact that letter which indicates the Mese of the Iastian is adjacent to the one of the Dorian, rather to the one Phrygian must occur, in my opinion, because one will produce a mutation more frequently from the Dorian to the Iastian than from the Phrygian. Nevertheless, because one cannot have continued in this way, since the letters of the Mese Hypolydian are far removed from the Dorian, because perhaps the appropriate distance that the notes within the same System must have would not have been realised in the other Tones and notes.

Other Considerations on this Diagram.

One must be also aware of something very notable, namely, that this Diagram indicates to us very precisely the species of each mode. In fact, we shall observe that where the species of each Mode begins, there the whole letters begin, as if to indicate that from there upwards the melody must start, according to the species though, rather than the tone of the voice. Thus, we see that in the Hypodorian system the mese is the first whole note that one finds ascending, which is indicated by the [Omega], where

the species begins. Moreover, since the notes of the six other principal modes, parallel or equidistant from this one (the Mese of the Hypodorian) are at the beginning of the species of each, [-<399>-] therefore, they are the first in their orders which are found whole going upwards. For instance, the Lichanos Meson of the Hypophrygian G sol re ut from which its species begins corresponds to the Hypodorian Mese and therefore it is the first whole, and the same occurs to the others that have in that box the [omega] mega as the Hypodorian. It is true, however, that the Hypolydian and the Lydian do not agree in having the [omega] mega, as they have the Beta, but this will not be of use to demonstrate, I believe, that these two modes do not begin their species in the same note in different genera. Hence, they are more out of the ordinary than the others. We can also believe that the Nete Hyperboleon, the last note of the Hypophrygian is [Omega], thus showing that this was the last one towards the lower register, hence it was called [barys], as we said, just as the Hypolydian, the last and highest tone has also the l'[Omega] mega.

One can see also that, from the Hypophrygian upwards inclusive, the Mese and the Nete Hyperboleon has the same note, hence one sees that they must ascribe the same letter to the note or letters corresponding at the octave, when the nature of this Diagram allowed it. However, in the two tones under the Hypophrygian this is not observed, possibly because, since they were added at a later stage, it was not possible to maintain the same strict sequence without disturbing the entire order, or it is possible that they did this to assign the same note [Gamma] [Ny] to the Nete Hyperboleon of the Hypodorian and of the Hypophrygian, which correspond to each other at the octave, as it occurs also to the other Tones that have the same relation, like the Hypoastian with the Hyperaolian, the Hypophrygian with the Hypolydian and so on. [-<400>-] We also added, between a mode and the next one towards the high register, the proportions of the proportion of those intervals that we do not think that belong between the Tones in the perfect temperament, namely, a larger semitone between the Hypodorian and the Hypoastian [$16/15$ add. supra lin.], a median tone between the Hypoastian and the Hypophrygian, as between [sqb] and b $135/128$ and between the Hypophrygian and the Hypoaeolian, another larger semitone between the Hypoaeolian and the Hypolydian and between the Hypolydian and the Dorian, and a smaller semitone $25/24$ between the Dorian and the Iastian and between the Iastian and the Phrygian a larger one, and so on. Thus, it appears plausible what I was saying that in practice a smaller interval was paced between the Dorian and the Iastian than between the Hypodorian and the Hypoastian, and that the repeated occurrence of the median semitone $135/128$ between among these intervals derives from the fact that within an octave they are more numerous than the smaller tones. Now, a larger and a median semitone compose the larger tone, and in this way the various dissonances between two sounds are maintained, as well as the interval of a diapason which must occur between the Hypodorian and the Hypophrygian, and the sequence consisting in adding a tone up to the Hypolydian.

[-<401>-] On the general Difference among Tones

As general differences one has to understand the ones which distinguish a genus of Tones or Modes from the other. Moreover, since this way of speaking will appear new, I state that I describe as genus several modes which derive almost from the same source and beginning and agree with each other in some general distinguishing feature and that differ from the others because of it. However, I noted how the most ancient and principal modes are the Dorian, the Phrygian and the Lydian, and thus

they have some difference between them which will not belong to subordinate and special tones which do not derive from one of those three. I am moved to think so also from the words of Aristides Quintilianus who says that: [Eisi de to genei tonoi treis Dorios, Phrygios. Lydios], which means, but the genera of the Tones are three, namely, Dorian, Phrygian and Lydian. Hence all of them can be reduced under three classes or groups headed each by one of those three. Now, therefore, I have considered that just as those three populations differed very much in every respect, thus they must have differed very much in their style of singing, not only as to height of pitch, in carrying the voice in different ways and in employing different melodies and species of octaves, but also in the intervals, because, as I said above, although Zarlino always considers the Syntonic as natural Diatonic, considering that all the nations adopt it in the same way, nevertheless the reality is difference because one will find that many nations differ in this respect. [-<402>-] Hence, although all of them use the Diatonic as it is natural, nevertheless one will be closer to one species and another to another one, so that one shall sing the syntonic, another one the diatonaeus (I do not enquire whether the intervals shall be exact or not) and some other another species. If we observe the natural songs of several nations with diligence, we shall find that this is very true. Moreover, according to the information extracted by the most erudite Father Mersenne from the Relations on the country of Canada, in America, which was visited by the French, it has been observed that those populations use different intervals from ours. I consider very probable that, if someone observes these matters in detail, one shall find that the less civilised and more belligerent nations shall use the smaller diatonic interval larger than the other one, and, for instance, larger than half, as it is the sesquidecimoquinto semitone, called larger and similar intervals to that one, while effeminate and more gentle populations will use the semitone smaller than the median one, such as the 25/24 or the 28/27, and the nations with a character between those two perhaps will use the semitone which is equally divided and median between the two. Also, since we know that the Dorians (to which the Spartans, the Arcades, the Candiots and similar were related) were a belligerent and stern population, and one more devoted to hard work and war than to pleasures, hence we can conjecture that they used the Syntonic (which, although it is described as Ptolemy's, was not invented by him) rather than [-<403>-] another species of Diatonic. That that species is very similar to their nature is demonstrated by its name, which means intense and vehement, which are the qualities that Athaenaeus attributes to that population. That they had something of the rustic and austere, is confirmed by <aliqua desunt>

We can gather that this species is less sophisticated than the others from the fact that it is closer than the others to Ptolemy's *aequabilis* which he himself describes as a little unsophisticated, although he invented it. It seems also appropriate to think that this species, although it is the sternest, it is also the most attractive, because it has the most harmonious intervals, and that it was chosen by the Greeks, who had good taste in all things, rather than by the Asiatic populations. In fact, if Pythagoras, who lived among the Dorian nation established the musical system that is heard played and sung in the Diatonic Diatonaeus, this should not be a nuisance to anyone, since, although he was a great man, he could not know everything, as nothing was begun and completed at the same time, as, had he foreseen everything, neither the followers of Aristoxenus or those of Ptolemy would have noted those known mistakes in the Pythagoras' Harmonic dispositions. In fact, if he constituted the fourth of two larger tones and a smaller one, this happened because he heard them sung as equal in reality, and, since

only the sesquiottavo was known, he presumed as certain that they were all sesquiottavi, although they were participated instead. Therefore, on this basis, [-<404>-] there was no other interval left to him to complete the Diatessaron that the Limma. Thus he was not aware of the Syntonic nor of the consonant Ditone or semitone. The fact that the Lydians used the minor Semitone also in the diatonic natural is suggested to me by the fact that that nation was very dissolute, lascivious and very effeminate, as many ancient historians report, and by the fact that that interval expresses great delicacy and lasciviousness, as all the smaller interval do, proportionally speaking, compared to the larger ones. Thus, we hear that the minor thirds and sixths are more languid and soft than the major ones. On the other hand, as to the Phrygians, who were more fervent than the Lydians, but not as harsh and serious as the Dorians, I believe that they used commonly the middle interval and specie, namely the Diatonic Diatoneus or a melody similar to that one. However, as to the Ionians and the Aeolians, at least after they moved to Asia, I believe that they adapted for the most part to the customs and style of singing of that climate and of those populations with which they mixed, and although in the past they were not different in this matter from the Dorians, later on, because of their familiarity and frequentation with the Phrygian, they lost part of their own style and they adopted a style that was closer to the Phrygian (at least the Aeolians who lived closer to that population) than to the Lydian style. Therefore, as the grey is made up of black and white as a third colour, thus they created a third [-<405>-] style by adopting little by little the use of the middle-size semitones, as the Phrygians did. Nor this conjecture of mind is based on thin air, but it is based on the authority of important writers who confirm me in this belief. I believe that for no other reason Ptolemy in the last chapter of the first book states that the numbers that demonstrated the interval assigned by him to the Diatonic Diatonea species in the Hypophrygian Tone corresponded to the melody or harmony Iastiaean, which was interpreted, as one can gather from several passages of Ptolemy, by the Citharedes as meaning certain mixtures of the Iastian mode with the Aeolian, which they used mostly as a form of mutation, as in moving from the Dorian or another principal mode to that one, and therefore they called them [metabolika ethe], which means melody of the mutation. He states further on that the Lydian Harmonies and their combination of sounds of those citharedes corresponded to numbers or divisions of the diatonic Tonia species located by him in the Dorian tone, which species specie as from a interval $28/27$, which is very small. As to the fact that in effect even in his time the Citharedes used to sing the Diatonic Diatonea species, he shows it in the first chapter of the second book where he says expressly that the Citharedes tuned their instrument in such a way that they had two sesquiottavi tones within the fourth, and the remainder was in proportion $256/243$, which is the limma. This occurred in the Harmonies or Systems which they called Iastioaean. In the last chapter of the first book he states that the mixture of the syntonic diatonic suites the modes of the mutations called Lydian and Iastian by the citharedes, except that they tuned their instrument in such a way that they had two exact tones and what was left was similar to the half which they called semitone, but which was really the interval of the limma. Therefore it is not possible to doubt that [-<f.406>-] that system (which is the Diatonic diatoneus) was the one of the Iastian modes, while the Diatonic Toniaeus (which was mixed together by placing a fourth of one sort and a fourth of the other within the octave) was the one of the Lydian. We can also believe, and perhaps it is even more probable, that, of the principal modes, which are Dorian, Phrygian, Lydian, Mixolydian, Iastian and Aeolian, the Phrygian will correspond in harmony with the Dorian, namely in rendering the semitone larger,

since the character of the Dorians is severe and vehement and the one of the Phrygians possessed and fervent. The Lydian and the Mixolydian used the smaller semitone, as I said; the Iastian and the Aeolian the one of middle size, since it was very appropriate that the Ionians and the Aeolians, as Greek populations, approached the Dorian strict character and, as Asian populations, the Lydian softness. Therefore, it appears that there cannot be even the slightest doubt in the case of the Phrygian. However, I believe more plausible this second opinion, because I see that in the diagram the Phrygian tones, namely the Phrygian, Hypophrygian and Hyperphrygian have the Paranete Synemmenon and the Trite Diezeugmenon different, which shows that they are not in unison in the perfect temperament. Also, as to the Phrygian modes, albeit they used the middle –size semitones in they original form and in the way in which those populations sang them naturally, nevertheless it is not improbable that Greek musicians used to adapt them to the style of the Dorians with the larger Semitone so that they would have two of the three combinations of the six main ones and for greater ease in the mutations they had Dorian and Phrygian (which are at the distance of a tone) divided by the Iastian which has a different tuning from those two. I believe this to have happened after the Iastian and Aeolian were accepted and inserted among the first three. As to those that placed the Dorian, Aeolian and Iastian as the three principal Harmonies and Modes, I believe that they assigned the middle-sized Semitone to the Aeolian and the smaller to the Iastian.

Now, the following illustration explains how the Paranete and the Trite of the disjunct of the system are in unison in the Diatonea species and not in the others derives from the insertion of the compound tetrachord into the System. We have limited ourselves to adducing the examples in the three main species, taking the Syntonic of Didymus or Ptolemy the one that has the Semitone larger than one half, the Diatonea species as the one that has it measuring one half and equally divided, and the Toniea as the one that has it smaller. Hence one can gather that the Dorian mode is appropriate and is normally to the Syntonic, the Phrygian to the Toniea, the Lydian and mixolydian to the Lydian and the Iastian and Aeolian to the Diatonea, placing the subordinate ones in the same class as their principal ones.

[<f.407>-] [Doni, Treatise on the Genera and the Modes, second book, 407; text: Diatonico Sintono, Tonieo, Ditoneo, Congiuntione, Disgiuntione, a, b, [sqb], c, d, e, 9/8, 81/80, 125/124, 16/15, 8/7, 28/27, 10/9, 9/8, 256/243, tuono disgiuntiuo, Dorio, Lidio, frigio, Missolidio, Iastio, Aeolio, limma]

Now, for the same reason the soft Diatonic will be more suited to the nature of the Lydian and Mixolydian mode, than to the nature of the others, and, among the chromatic species, the one of Didymus which starts from the larger Semitone will be suited to the Dorian and Phrygian, while the one of Archytas' which has the proportion 28/27 in the first place and the soft chromatic of Ptolemy will be better suited to the Lydian and Myxolydian mode, and the one which proceeds through the limma and the other semitone 139/128, which is not very different will be suited to the other two, namely, Iastian and Aeolian. However, in order to explain it better not only in the Diatonic, but also in the Chromatic according to Ptolemy's distribution, one must place two d d separated by the interval of the Comma in the perfect System, and in Didymus' one [<408>-] two c c, as I shall place in the following illustration.

[Doni, Treatise on the Genera and the Modes, second book, 407, <figura deest>]

How one can find the species of the Tones not mentioned by Ptolemy.

It is not very easy to discover nowadays the specific species of each one of the modes which are added in Aristoxenus distribution to the seven of Ptolemy, namely, to those mentioned by Ptolemy. Nevertheless, since musical matters are so well ordered and circularly connected together, that, like someone who finds the end of a bundle of wool can disentangle it all, thus, once someone has found a rule, all the others of that same theory can be found if one proceeds with judgment and with much attention and maturity. For this reason, I believe that one can discover the form and specific species of the Iastian and Aeolian mode with the help of that passage of Aristides Quintilianus and of some other statement which we have of good writers, and I believe that from them we can also deduce the form of their plagal or subordinate ones. We can rest assured, therefore, that the Aeolian shall have the species of the Hypodorian because Laso of Hermione, the first author who wrote about music, who was Aeolian, in a certain Hymn of his of which Athaenaeus reports some verses, calls that song of his [-<409>-] [aiolida harmonian], or Aeolian Harmony and [hypodoria mele] or Hypodorian songs. This is also confirmed by Heraclides Ponticus, a very learned music writer quoted by Athenaeus in the same passage where he says that the Hypodorian mode or Harmony is also called Aeolian. Therefore, we can conclude that their Trope or Harmony, as we want to call it, is the same but not the tone, because in the order given by Aristoxenus he placed both in a different position. As to the Iastian, it seems possible to understand that his form is very different from the ancient one described by Aristides, because it is certain that in the fresher times, when the modes were better ordered and each was assigned its own whole Diapason, the earlier order was not changed but only the missing intervals were added, as the other ones show, in which case we know manifestly that this occurred, namely, the Dorian, Phrygian and Mixolydian. Therefore, since initially the Iastian had these intervals, namely, Diesis, Diesis, Ditone, Trihemitone and Tone, which is equivalent to say Semitone, two Tones, Semitone, Tone and another Tone in the Diatonic, one cannot doubt that a tone in the higher register was added to it to complete the octave, otherwise its nature would have been changed. In this way the Iastian will have the same species of the Mixolydian, which suited it even better than it suited the other ones because is soft and feminine. This seems to me to be even more certain because in this way the Dorian will have the same relation to the Iastian, which is above it, as the Phrygian has to the Aeolian, which is also above it, because, just as the Phrygian through b flat takes the species of the Hypodorian that is the one of the Aeolian, thus the Dorian through b flat takes the species of the Mixolydian which is the same of the Iastian, [-<410>-] and this turned out to be very useful in the mutations, as I shall show in practice. It has to be noted also that Aristides Quintilianus has described the modes used in the most ancient times with their sequence of high and low because the lowest is the Lydian, followed by the Dorian, the Phrygian, the Iastian, the Mixolydian and finally the Syntonolydian, hence one can see that that word [syntonos] indicates the very high position of that mode and nothing else, because the high notes are more tense or intense, as they want to call them. This word is used by Plato and by others with this meaning, hence, to distinguish it from the other Lydian which was located under the Dorian, which was relaxed, this one was called Syntonic or Syntonolydian or [syntonolydisti], to use a single word. Therefore, one understands that it is the same one that was called later Lydian absolutely, although it is also under the Mixolydian, which does not matter, while the one called by the ancients Lydian or relaxed and

languid Lydian, after the seven species were ordered was called Hypolydian for the reason we know. As to the fact that the low Lydian was also called relaxed Lydian, or [aneimenos], which means precisely not tense, as the string of a bow which is not very tense, we see that Plutarch teaches us this openly where he says: [Alla men kai ten epaneimenen lydisti, heper enantia te Mixolydisti paraplesia ouse te Iadi hypo Damonos eurhsthai phasi tou Athenaiou], which means: “Moreover, they say that the relaxed Lydian Harmony, which is the opposite of the Mixolydian, which is much very similar to the Iastian [-<411>-] was discovered by Damon of Athens.” However, one must be aware that where one used to read [eiper] instead of [heper], and [paraplesian ousan] without any reasonable sense, I have corrected the text as it is, because that [eiper] in that position had no function, and if one read [paraplesian] in the accusative, it meant that the Iastian Harmony was similar to the relaxed Lydian, which is completely the opposite, as one can see from Aristides’ description, because the Lydian starts from a single diesis followed by two separate tones, while the Iastian starts from two adjacent diesis followed by an uncompounded ditone, and the in the remainder the Lydian is fragmented and the Iastian proceeds with large intervals, while, according to my correction, everything proceeds very well because in truth the relaxed Lydian or Hypolydian is contrary to the Myxolydian because it has exactly the same species in reverse order,

[Doni, Treatise on the Genera and the Modes, second book, 411; text: F, G, A, [sqb], C, D, E, f, T, S, a, [[lydi]] Hypolydio, Missolidio]

and the Mixolydian is very similar to the Iastian, as one can see in Aristides’ description where they do not have any other difference except the may uncompounded intervals of the Mixolydian appear as compounded in the Iastian, which also has a tone less. However, we must observe that the Harmonies described by Aristides are Enharmonic rather than Diatonic, because they pre-date Aristoxenus, in which time only the Enharmonic was sung and appreciated by the Greeks. It is true that it is not a pure Enharmonic because those conditions, namely, that it must have only one Tone at the distance of an octave do not apply to it. Nevertheless, they are Enharmonic modes and we must call them as such because they were described in this way by our ancestors who were arbiters of their languages, as we are of ours. Hence one deduces how the Enharmonic was sung, namely, that [-<412>-] it was not always necessary to make those two Ditones uncompounded, and that they had often more than seven intervals for every octave. One can see also that they maintained the species of the Dorian in the pure Enharmonic to preserve to it its majesty and gravity, but that they varied it and enlarged it considerably by adding to it a tone in the lower register outside the octave, and that they placed only one Ditone in the Phrygian to add more movement and to lessen its austere character they put a single uncompounded Ditone. Equally, in the Mixolydian, which was dedicated to womanly laments and tears, they divided it as much as they could without changing its species, using tones instead of ditones. We are also able to know how the more recent Modes of the perfect System were created from these Modes. In fact, starting with the Dorian, it was not altered in any way except that lower tone was removed from its lower register for the reason mentioned by Ptolemy that the Diapason is the perfect System, although it was allowed to use nine notes and also many more. Since the Lydian, which was then called Hypolydian, lacked two tones, these were added in different positions, one in the fourth place and the other in the eighth one so that it would proceed through one diesis, three tones, two diesis, two tones and one diesis.

Nothing was changed in the Phrygian, if one understands, as I said above, that the diesis towards the high register was not alone but accompanied by another one. In the Iastian they only divided the first semitone of the Trihemitone compounded, so that one tone and one tone were left, and they added another one to those two tones. In the Myxolydian they did make no change because it completes the octave, if we place those dieses together [-<413>-] towards the high register. The Syntonolydian, which was then called Lydian was enlarged by dividing the first semitone of that uncompounded Trihemitone, by adding two other tones towards the high register and by transposing the first diesis which was in the low register in the last place towards the high one. In this way they were all rendered perfect and they all completed the Diapason. However, since placing two ditones one compounded and the other one uncompounded was liable to produce a great variety of harmony and to produce a larger number of different tones, I hold certain that it was set out in this way in the majority of the modes. As to the Dorian itself, I believe that they decided to preserve it in its majesty of its two uncompounded ditone, and thus some variety of harmony was created not only in the eleven tones but also in the eighteen, but we shall discuss in the next chapter how this was done, as far as we can tell.

Why the most ancient musicians used few notes in their Systems.

However, in the meantime, I would not want that anybody should believe that the ancients, who used the modes described by Aristides were devoid of judgment in using harmonies that were so poor. In fact, there is no doubt at all that they did it not because they lacked notes or strings on their instruments, because instruments called organa panharmonia and polychorda (or instruments on which any note could be played or of many strings) were known even at the time Plato and before, but because they noted that the fewer the notes of the harmony or the mode, the more the mode is different from the others and the better it preserves its character. This is not surprising, because the three species of the Diatessaron are more different one from the other than the four of the Diapente and these are more different than the seven of the Diapason. Therefore we hear a great variety in the melodies of the psalms [-<414>-] although they differ only according to their Systems rather than according to their tones. Hence Plutarch states: [kai hoi palaioi de pantes ouk apeiros ekhontes pason ton harmonion eniais ekhresanto; ou gar he agnoia tes toiautes stenokhorias kai oligokhordias autois aitia gegenetai; ou de di'agnoias hoi peri Olympon kai Terpandron kai hoi akolouthesantes te touton proairesei perieilon ten polykhordian te kai poikilian martyrei goun ta Olympou te kai Terpandrou poiemata kai ton toutois homoiotropon panton trikhordia gar onta kai apla, diaferei ton poikilon kai polykhordon hos medena [.] dynasthai mimesasthai ton Olympou tropon; hysterizein de toutous en to polykhordo te kai polytropo katageinomenous. et cetera], which means: "Moreover, all the ancients, although they were expert in every type of harmony, they availed themselves only of some, but their ignorance was not the reason for such restrictions and lack of notes, nor Olympus, Terpander and the others who followed that style removed the large number of notes and the ensuing variety. In truth, Olympus', Terpander's works and those of the followers of their style support this, because, although they are simple and only composed of three notes, they are much superior to those that are greatly varied and composed of many notes, so that nobody can imitate Olympus' style and those who adopt the modern style of many notes and Modes are left behind. " [-<415>-] Then Plutarch (or rather Aristoxenus through him) says that they did not use the tetrachord of the Hypate from [sqb] to E in

the Dorian mode not because of their ignorance, since they used it in the other Tones, but on purpose and by choice, to preserve better its character and its majesty: [Delon de kai peri ton hypaton (ouero kai peri ton hyperypaton) hoti ou di'agnoian apeikhonto en tois Doriois tou tetrakhordou toutou; autika epi ton loipon tono ekhronto delonoti eidotes; dia de ten tou hthous phylaken apheroun epi tou Doriou tous timontes to kalon aoutou.], which means: "It is clear, on the subject of the Hypate or of the Hyperhypate that they did not abstain from this tetrachord in the Dorian modes because of their ignorance, while they used it on purpose in the other tones, but they removed it from the Dorian because of respect towards its majesty." From this witness report one can gather that not a single disposition of the Tones was in use in the most ancient times, namely, before Timotheus, which is the one reported by Aristides, but others as well according to the times and the musicians who lived then. In fact, albeit we see that the Dorian has more notes than the other Tones in this one, nevertheless at other times it had fewer. Therefore one can believe that, even when it had nine notes, the others would have had eleven or more. We can also deduce that also at the time of Aristoxenus as well as in those of Plutarch there was no shortage of people who criticised the ancients unjustly for being ignorant because they did not use devices which were introduced later, in the way that Glareano and others criticise as ignorant the Ecclesiastical musical writers and Franchino because they were content with [-<416>-] the eight tones and because he wanted to avoid malpractice and unnecessary corruption, because, if anything, they deserve to be criticised now because they did not reduce their number to seven or four as those used before Guidone.