

A  
GENERAL HISTORY  
OF  
M U S I C.

VOLUME THE FIRST.







GUIDO ARETINUS A BENEDICTINE MONK, HAVING REFORMED THE  
SCALE OF MUSIC AND INVENTED A NEW METHOD OF NOTATION,  
COMMUNICATES HIS IMPROVEMENTS TO POPE JOHN XX,  
WHO INVITES HIM TO ROME AND BECOMES HIS DISCIPLE. . .

A  
GENERAL HISTORY

OF THE

SCIENCE and PRACTICE

OF

M U S I C,

BY

SIR JOHN HAWKINS.

IN FIVE VOLUMES.

VOLUME THE FIRST.

L O N D O N,

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THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 310

LECTURE 10

STATISTICAL MECHANICS

ENTROPY

LECTURE 10

TO  
GEORGE THE THIRD,  
KING OF GREAT BRITAIN, ETC.  
A PRINCE  
NOT MORE DISTINGUISHED  
BY HIS PATRONAGE OF THOSE ELEGANT ARTS  
WHICH EXALT HUMANITY  
AND ADMINISTER TO THE IMAGINATIVE FACULTIES  
THE PUREST DELIGHTS,  
THAN  
HONOURED AND BELOVED  
FOR HIS REGAL AND PRIVATE VIRTUES,  
THE FOLLOWING HISTORY IS,  
WITH ALL DUE REVERENCE  
AND GRATITUDE,  
DEDICATED  
BY HIM WHO ESTEEMS IT  
EQUALLY AN HONOUR AND A FELICITY  
TO SUBSCRIBE HIMSELF  
HIS MAJESTY'S FAITHFUL AND DEVOTED  
SUBJECT AND SERVANT,  
THE AUTHOR.





# P R E F A C E.

*A HISTORY of Music by any but a professor of the science, may possibly be looked on as a bold undertaking; and it may appear not a little strange that one, who is perhaps better known to the world as occupying a public station, than as a writer, should choose to be the author of a work of this kind, and for which the course of his studies can hardly be supposed to have in any degree qualified him.*

*In justification of the attempt, and to account for this seeming inconsistency, the reader is to know, that the author having entertained an early love of music, and having in his more advanced age not only become sensible of its worth, but arrived at a full conviction that it was intended by the Almighty for the delight and edification of his rational creatures, had formed a design of some such work as this many years ago, but saw reason to defer the execution thereof to a future period.*

*About the year 1759, he found himself in a situation that left his employments, his studies, and his amusements in a great measure to his own choice; and having in a course of years been as industrious in making collections for the purpose as could well consist with the exercise of a laborious profession, he, with a copious fund of materials, began the work: But before any considerable progress could be made therein, he was interrupted by a call to preside in the magistracy of the county of his residence, which, though unsolicited on his part, he could not decline without betraying an indifference to the interests of society, and the preservation of public order, or such an aversion to the occupations of an active life, as in few cases is excusable, and in many reproachful.*

*Deter-*

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*Determining, however, to avail himself of those intervals of leisure which the stated recesses from the exercise of his office afforded, and which seemed too precious to be wasted either in sloth and indolence, or those fashionable recreations and amusements, to which he was ever disposed to prefer the pursuit of literature, he re-assumed his work; and with the blessing of health, scarcely interrupted for a series of years, has been able to present it to the world in the condition in which it now comes forth.*

*What the reader is to expect from it, and as the fruit of many years study and labour, is the history of a science deservedly ranked among those, which, in contradistinction to the manual arts, and others of lower importance, have long been dignified with the characteristic of liberal; and as the utility of Music is presupposed in the very attempt to trace its progress, an enumeration of its various excellencies will scarcely be thought necessary; the rather perhaps as its praises, and the power it exercises over the human mind, have been celebrated by the ablest panegyrists.*

*Farther than the circumstances attending the peculiar situation of the author and the work may be allowed to entitle him to it, the favour or indulgence, or whatever else it is the practice of writers to crave of the public, is not here sued for, either on the ground of want of leisure, inadvertence, or other pretences; for this reason, that there can be no valid excuse for a publication wittingly imperfect: And it is but a sorry compliment that an author makes to his reader, when he tenders him a work less worthy regard than it was in his power to make it.*

*To be short, the ensuing volumes are the produce of sixteen years labour, and are compiled from materials which were not collected in double that time. The motives to the undertaking were genuine, and the prosecution of it has been as animated as the love of the art, and a total blindness to lucrative views, could render it. And perhaps the best excuse the author can make for the defects and errors that may be found to have escaped him, must be drawn from the novelty of his subject, the variety of his matter, and*  
the

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THE powers of the imagination, with great appearance of reason, are said to hold a middle place between the organs of bodily sense and the faculties of moral perception; the subjects on which they are severally exercised are common to the senses of seeing and hearing, the office of which is simply perception; all pleasure thence arising being referred to the imagination.

The arts which administer to the imaginative faculty the greatest delight, are confessedly poetry, painting, and music; the two former exhibiting to the mind by their respective media, either natural or artificial \*, the resemblances of whatever in the works of nature is comprehended under the general division of great, new, and beautiful; the latter as operating upon the mind by the power of that harmony which results from the concord of sounds, and exciting in the mind those ideas which correspond with our tenderest and most delightful affections.

These, it must be observed, constitute one source of pleasure; but each of the above arts may in a different degree be said to afford another, namely, that which consists in a comparison of the images by them severally and occasionally excited in the mind, with their archetypes; thus, for instance, in poetry, in comparing a description with the thing described; in painting, a landscape and the scene represented by it, or a portrait and its original; and in music, where imitation is intended, as in the songs of birds, or in the expression of those various in-

\* The natural media seem to consist only in colour and figure, and refer solely to painting: the artificial are words, which are symbols by compact of ideas, as are also, in a limited sense, musical sounds, including in the term the accident of time or duration.

flexions of the voice which accompany passion or exclamation, weeping, laughing, and other of the human affections, the sound and the thing signified.

It is easy to discover that the pleasures above described are of two distinct kinds, the one original and absolute, the other relative; for the one we can give no reason other than the will of God, who in the formation of the universe and the organization of our bodies, has established such a relation as is discoverable between man and his works; the other is to be accounted for by that love of truth which is implanted in the human mind \*. In poetry and painting therefore we speak, and with propriety, of absolute and relative beauty; as also of music merely imitative; for as to harmony, it is evident that the attribute of relation belongs not to it, as will appear by a comparison of each with the others †.

\* In this sentiment liberty has been taken to differ from Mr. Harris, who with his usual accuracy, has analysed this principle of the human mind in the following note on a passage in the second of his Three celebrated Treatises.

‘ That there is an eminent delight in this very recognition itself, abstract from any thing pleasing in the subject recognized, is evident from hence——that, in all the mimetic arts, we can be highly charmed with imitations, at whose originals in nature we are shocked and terrified. Such, for instance, as dead bodies, wild beasts, and the like.

‘ The cause assigned for this, seems to be of the following kind: We have a joy, not only in the faculty and perfection, but also in the just and natural energies of our several limbs and faculties. And hence, among others, the joy in reasoning, as being the energy of that principal faculty, our intellect or understanding. This joy extends, not only to the wise, but to the multitude. For all men have an aversion to ignorance and error; and in some degree, however moderate, are glad to learn and to inform themselves.

‘ Hence therefore the delight arising from these imitations; as we are enabled in each of them to exercise the reasoning faculty; and, by comparing the copy with the archetype in our minds, to infer that this is such a thing, and that another; a fact remarkable among children, even in their first and earliest days.’

† Nevertheless there have not been wanting those, who, not contemplating the intrinsic excellence of harmony, have resolved the efficacy of music into the power of imitation; and to gratify such, subjects have been introduced into practice, that to injudicious ears have afforded no small delight; such, for instance, as the noise of thunder, the roaring of the winds, the shouts and acclamations of multitudes, the wailings

With regard to poetry, it may be said to resemble painting in many respects, as in the description of external objects, and the works of nature; and so far it must be considered as an imitative art; but its greatest excellence seems to be its power of exhibiting the internal constitution of man, and of making us acquainted with characters, manners, and sentiments, and working upon the passions of terror, pity, and various others. Painting is professedly an imitative art; for, setting aside the harmony of colouring, and the delineation of beautiful forms, the pleasure we receive from it, great as it is, consists in the truth of the representation.

But in music there is little beyond itself to which we need, or indeed can, refer to heighten its charms. If we investigate the princi-

ings of grief and anguish in the human mind; the song of the cuckoo, the whooting of the screech-owl, the cackling of the hen, the notes of singing-birds, not excepting those of the lark and nightingale. Attempts also have been made to imitate motion by musical sounds; and some have undertaken in like manner to relate histories, and to describe the various seasons of the year. Thus, for example, Froberger, organist to the emperor Ferdinand III. is said to have in an allemand represented the passage of Count Thurn over the Rhine, and the danger he and his army were in, by twenty-six cataracts or falls in notes. See vol. IV. page 183. Kuhnau, another celebrated musician, composed six sonatas, entitled *Biblishe Historien*, wherein, as it is said, is a lively representation in musical notes of David manfully combating Goliath. Vol. IV. page 281, in not. Buxtehude of Lubec also composed suites of lessons for the harpsichord, representing the nature of the planets. Vol. V. page 251. Vivaldi, in two books of concertos, has striven to describe the four seasons of the year. Vol. V. page 214. Geminiani has translated a whole episode of Tasso's Jerusalem into musical notes. Vol. V. page 423. And Mr. Handel himself, in his *Israel in Egypt*, has undertaken to represent two of the ten plagues of Egypt by notes, intended to imitate the buzzing of flies and the hopping of frogs.

But these powers of imitation, admitting them to exist in all the various instances above enumerated, constitute but a very small part of the excellence of music; wherefore we cannot but applaud that shrewd answer of Agesilaus, king of Sparta, recorded in Plutarch, to one who requested him to hear a man sing that could imitate the nightingale, 'I have heard the nightingale herself.' The truth is, that imitation belongs more properly to the arts of poetry and painting than to music; for which reason Mr. Harris has not scrupled to pronounce of musical imitation, that at best it is but an imperfect thing. See his *Discourse on Music, Painting, and Poetry*, pag. 69.

ples of harmony, we learn that they are general and universal ; and of harmony itself, that the proportions in which it consists are to be found in those material forms, which are beheld with the greatest pleasure, the sphere, the cube, and the cone, for instance, and constitute what we call symmetry, beauty, and regularity ; but the imagination receives no additional delight ; our reason is exercised in the operation, and that faculty alone is thereby gratified. In short; there are few things in nature which music is capable of imitating, and those are of a kind so uninteresting, that we may venture to pronounce, that as its principles are founded in geometrical truth, and seem to result from some general and universal law of nature, so its excellence is intrinsic, absolute, and inherent, and, in short, resolvable only into his will, who has ordered all things in number, weight, and measure\*.

Seeing therefore that music has its foundation in nature, and that reason recognizes what the sense approves, what wonder is it, that in all ages, and even by the least enlightened of mankind, its efficacy should be acknowledged ; or that, as well by those who are capable of reason and reflection, as those who seek for no other gratifications than what are obvious to the senses, it should be considered as a genuine and natural source of delight ? The wonder is, that less of that curiosity, which leads men to enquire into the history and progress of arts, and their gradual advances towards perfection, has been exercised in the instance now before us, than in any other of equal importance.

If we take a view of those authors who have written on music, we shall find them comprehended under three classes, consisting of those who have resolved the principles of the science into certain mathematical proportions ; of others who have treated it systematically, and with a view to practice ; and of a third, who, considering sound as a branch of physics, have from various phenomena explained the manner in which it is generated and communicated to the auditory fa-

\* Wisdom, xi, 20.

culty. But to whom we are indebted for the gradual improvements of the art, at what periods it flourished, what checks and obstructions it has at times met with, who have been its patrons or its enemies, what have been the characteristics of its most eminent professors, few are able to tell. Nor has the knowledge of its precepts been communicated in such a manner as to enable any but such as have devoted themselves to the study of the science to understand them. Hence it is that men of learning have been betrayed into numberless errors respecting music; and when they have presumed to talk about it, have discovered the grossest ignorance. When Strada, in the person of Claudian, recites the fable of the Nightingale and the Lyrist, how does his invention labour to describe the contest, and how does he err in the confusion of the terms melody and harmony; and in giving to music either attributes that belong not to it, or which are its least excellence! and what is his whole poem but a vain attempt to excite ideas for which no correspondent words are to be found in any language? Nor does he, who talks of the genius of the world, of the first beauty, and of universal harmony, symmetry, and order, the sublime author of the Characteristics, discover much knowledge of his subject, when after asserting with the utmost confidence that the ancients were acquainted with parts and symphony, he makes it the test of a good judge in music 'that he understand a fiddle\*.'

Sir William Temple speaking of music in his Essay upon the ancient and modern Learning, has betrayed his ignorance of the subject in a comparison of the modern music with the ancient; wherein, notwithstanding that Palestrina, Bird, and Gibbons lived in the same century with himself, and that the writings of Shakespeare, and the Paradise Lost were then extant, he scruples not to assert that 'the science is wholly lost in the world, and that in the room of music and poetry we have nothing left but fiddling and rhyming.'

Mr. Dryden, in those two admirable poems, Alexander's Feast, and his lesser Ode for St. Cecilia's day, and in his Elegy on the death

\* Vide Characteristics, vol. III, page 263, in not. 269.

of Purcell, with great judgment gives to the several instruments mentioned by him their proper attributes; and recurring perhaps to the numerous common places in his memory respecting music, has described its effects in adequate terms; but when in the prefaces to his operas he speaks of recitative, of song, and the comparative merit of the Italian, the French, and the English composers, his notions are so vague and indeterminate, as to convince us that he was not master of his subject, and does little else than talk by rote.

Mr. Addison, in those singularly humorous papers in the *Spectator*, intended to ridicule the Italian opera, is necessitated to speak of music, but he does it in such terms, as plainly indicate that he had no judgment of his own to direct him. In the paper, Numb. 18, the highest encomium he can vouchsafe music is, that it is an agreeable entertainment; and a little after he complains of our fondness for the foreign music, not caring whether it be Italian, French, or High Dutch, by which latter we may suppose the author meant the music of Mynheer Hendel, as he calls him.

In another paper, viz. Numb. 29, the same person delivers these sentiments at large respecting Recitative: ‘ However the *Italian* method of acting in *Recitativo* might appear at first hearing, I cannot but think it more just than that which prevailed in our *English* Opera before this Innovation; the Transition from an air to Recitative Musick being more natural than the passing from a Song to plain and ordinary Speaking, which was the common Method in *Purcell*’s operas.

‘ The only Fault I find in our present Practice, is the making use of the *Italian Recitativo* with *English* words.

‘ To go to the Bottom of this Matter, I must observe that the Tone, or, as the *French* call it, the Accent of every Nation in their ordinary Speech is altogether different from that of every other People, as we may see even in the Welsh and Scotch, who border so near upon us. By the Tone or Accent I do not mean the Pronunciation of each particular Word, but the Sound of the whole



‘ whole Sentence. Thus it is very common for an English gentleman, when he hears a French Tragedy, to complain that the Actors all of them speak in a Tone; and therefore he very wisely prefers his own Countrymen, not considering that a Foreigner complains of the same Tone in an English Actor.

‘ For this Reason, the Recitative Music in every Language should be as different as the Tone or Accent of each Language; for otherwise what may properly express a Passion in one Language, will not do it in another. Every one that has been long in Italy knows very well that the Cadences in the Recitativo bear a remote Affinity to the Tone of their Voices in ordinary Conversation; or, to speak more properly, are only the Accents of their Language made more Musical and Tuneful.

‘ Thus the Notes of Interrogation or Admiration in the Italian Musick, (if one may so call them) which resemble their Accents in Discourse on such Occasions, are not unlike the ordinary Tones of an English Voice when we are angry; insomuch that I have often seen our Audiences extremely mistaken as to what has been doing upon the Stage, and expecting to see the Hero knock down his Messenger when he has been asking him a question; or fancying that he quarrels with his Friend when he only bids him Good-morrow.

‘ For this Reason the Italian artists cannot agree with our English musicians in admiring Purcell’s Compositions, and thinking his Tunes so wonderfully adapted to his words, because both Nations do not always express the same Passions by the same Sounds.

‘ I am therefore humbly of opinion that an English Composer should not follow the Italian Recitative too servilely, but make use of many gentle Deviations from it in Compliance with his own Native Language. He may copy out of it all the lulling Softness and Dying Falls, (as Shakespeare calls them) but should still remember that he ought to accommodate himself to an English Audience, and by humouring the Tone of our Voices in ordinary Conversation, have the same Regard to the Accent of his own

‘ Language, as those Persons had to theirs whom he professes to imitate. It is observed that several of the singing Birds of our own Country learn to sweeten their Voices, and mellow the Harshness of their natural Notes by practising under those that come from warmer Climates. In the same manner I would allow the Italian Opera to lend our English Musick as much as may grace and soften it, but never entirely to annihilate and destroy it. Let the Infusion be as strong as you please, but still let the Subject Matter of it be English.

‘ A Composer should fit his Musick to the Genius of the People, and consider that the Delicacy of Hearing and Taste of Harmony has been formed upon those Sounds which every Country abounds with. In short, that Musick is of a relative Nature, and what is Harmony to one Ear may be Dissonance to another.’

Whoever reflects on these sentiments must be inclined to question as well the goodness of the author's ear as his knowledge of subject. The principle on which his reasoning is founded, is clearly that the powers of music are local; deriving their efficacy from habit, custom, and whatever else we are to understand by the genius of a people; a position as repugnant to reason and experience as that which concludes his disquisition, viz. that ‘ what is harmony to one ear may be dissonance to another;’ whence as a corollary it must necessarily follow, that the same harmony or the same succession of sounds may produce different effects on different persons; and that one may be excited to mirth by an air that has drawn tears from another.

A late writer, in a strain of criticism not less erroneous than affectedly refined, forgetting the energy of harmony, independent of the adventitious circumstances of loudness or softness that accompany the utterance of it; or perhaps not knowing that certain modulations or combinations of sounds have a necessary tendency to inspire grand and sublime sentiments, such, for instance, as we hear in the Exaltabo of Palestrina, the Hosanna of Gibbons, the opening of the first  
con-

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*the necessity he was under of marking out himself the road which he was to travel.*

*It may perhaps be objected that music is a mere recreation, and an amusement for vacant hours, conducing but little to the benefit of mankind, and therefore to be numbered among those vanities which it is wisdom to condemn. To this it may be answered, that, as a source of intellectual pleasure, music has greatly the advantage of most other recreations; and as to the other branch of the objection, let it be remembered that all our desires, all our pursuits, our occupations, and enjoyments are vain. What are stately palaces, beautiful and extensive gardens, costly furniture, sculptures, and pictures, but vanities? and yet there are few men so vain as that they had rather be without than possess them. Nay, if these be denied us, where are we to seek for amusements, for relief from the cares, the anxieties and troubles of life, how support ourselves in solitude, or under the pressure of affliction, or how preserve that equanimity, which is necessary to keep us in good humour with ourselves and mankind? As to the abuses of this excellent gift, enough it is presumed is said in the ensuing work by way of caution against them, and even to demonstrate that as there is no science or faculty whatever that more improves the tempers of men, rendering them grave, discreet, mild, and placid, so is there none that affords greater scope for folly, impertinence, and affectation.*

*The end proposed in this undertaking is the investigation of the principles, and a deduction of the progress of a science, which, though intimately connected with civil life, has scarce ever been so well understood by the generality, as to be thought a fit subject, not to say of criticism, but of sober discussion: Instead of exercising the powers of reason, it has in general engaged only that faculty of the mind, which, for want of a better word to express it by, we call Taste; and which alone, and without some principle to direct and controul it, must ever be deemed a capricious arbiter. Another end of this work is the settling music upon somewhat like a footing of equality with those, which, for other reasons than that,*

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*like music, they contribute to the delight of mankind, are termed the sister arts; to reprobate the vulgar notion that its ultimate end is merely to excite mirth; and, above all, to demonstrate that its principles are founded in certain general and universal laws, into which all that we discover in the material world, of harmony, symmetry, proportion and order, seems to be resolvable.*

*The method pursued for these purposes will be found to consist in an explanation of fundamental doctrines, and a narration of important events and historical facts, in a chronological series, with such occasional remarks and evidences, as might serve to illustrate the one and authenticate the other. With these are intermixed a variety of musical compositions, tending as well to exemplify that diversity of styles which is common both to music and speech or written language, as to manifest the gradual improvements in the art of combining musical sounds. The materials which have furnished this intelligence must necessarily be supposed to be very miscellaneous in their nature, and abundant in quantity: To speak alone of the treatises for the purpose, the author may with no less propriety than truth assert, that the selection of them was an exercise of deep skill, the result of much erudition, and the effect of great labour, as having been for a great part of his life the employment of that excellent theorist in the science, Dr. Pepusch. These have been accumulating and encreasing for a series of years past: For others of a different kind recourse has been had to the Bodleian library and the college libraries in both universities; to that in the music-school at Oxford; to the British Museum, and to the public libraries and repositories of records and public papers in London and Westminster; and, for the purpose of ascertaining facts by dates, to cemeteries and other places of sepulture; and to him that shall object that these sources are inadequate to the end of such an undertaking as this, it may be answered, that he knows not the riches of this country.*

*A correspondence with learned foreigners, and such communications from abroad as suit with the liberal sentiments and disposition of the present*

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*sent age, together with a great variety of oral intelligence respecting persons and facts yet remembered, have contributed in some degree to the melioration of the work, and to justify the title it bears of *A General History*; which yet it may be thought would have been more properly its due, had the plan of the work been still more extensive, and comprehended the state of music in countries where the approaches to refinement have as yet been but small.*

*It must be confessed that in some instances, particularly in the discussion of the first principles of morality, and the origin of human manners, the researches of learned men have been extended to nations, or tribes of people, among whom the simple dictates of nature seemed to be the only rule of action; but the subjects here treated of are science, and the scientific practice of music: Now the best music of barbarians is said to be hideous and astonishing sounds\*. Of what importance then can it be to enquire into a practice that has not its foundation in science or system, or to know what are the sounds that most delight an Hottentot, a wild American, or even a more refined Chinese?*

*For the style, it will be found to be uniformly narratory; as little incumbered with technical terms, and as free from didactic forms of speech, as could consist with the design of explaining doctrines and systems; and it may also be said that care has been taken not to degrade the work by the use of fantastical phrases and modes of expression, that, comparatively speaking, were invented yesterday, and will die to-morrow; these make no part of any language, they conduce nothing to information, and are in truth nonsense sublimated.*

*For the insertion of biographical memoirs and characters of eminent musicians, it may be given as a reason, that, having benefited mankind by their studies, it is but just that their memories should live: Cicero, after Demosthenes, says that 'bona fama propria possessio defunctorum;'* and

\* *Characteristics*, vol. I. page 242.

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*for bestowing it on men of this faculty, we have the authority of that scripture which exhorts us to praise 'such as found out musical tunes, and 'recited verses in writing' \* : Besides which it may be observed, that in various instances the lives of the professors of arts are in some sort a history of the arts themselves. For digressions from his subject, the insertion of anecdotes that have but a remote relation to it, or that describe ancient modes or customs of living, the author has less to say; these must be left to the judgment of his readers, who cannot be supposed to be unanimous in their opinions about them.*

*It remains now that due acknowledgement be made of the assistance with which the author has been favoured and honoured in the course of his work; but as this cannot be done without an enumeration of names, for which he has obtained no permission, he is necessitated to declare his sense of the obligation in general terms, with this exception, that having need of assistance in the correction of the music plates, he was in sundry instances eased of that trouble by the kind offices of one, who is both an honour to his profession and his country, Dr. William Boyce; and of the difficulty of decyphering, as it were, and rendering in modern characters the compositions of greatest antiquity among those which he found it necessary to insert, by the learning and ingenuity of Dr. Cooke, of Westminster-abbey, Mr. Marmaduke Overend, organist of Isleworth in Middlesex, and Mr. John Stafford Smith, of the royal chapel.*

\* Wisdom, chap. xlv. verse 5.

*Hatton Garden,  
24th Aug. 1776.*

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concerto of Corelli, and many of Mr. Handel's anthems, ascribes to the *burſi*, as he calls them, of Boranello \*, and the ſymphonies of Yeomelli † the power of dilating, agitating, and rousing the ſoul like the paintings of Timomachus and Ariſtides ‡, whoſe works by the way no man living ever ſaw, and of whoſe very names we ſhould be ignorant, did they not occur, the one in Pliny, the other in ſome of the epigrams in the Greek Anthologia.

In a manner widely different do thoſe poets and philoſophers treat muſic, who, being ſuſceptible of its charms, and conſidering it as worthy the moſt abſtract ſpeculation, have made themſelves acquainted with its principles. Milton, whenever he ſpeaks of the ſubject, and there are many paſſages in the *Paradiſe Loſt* and his other poems, where he has taken occaſion to introduce it, beſides expreſſing an enthuſiaſtic fondneſs for muſic, talks the language of a maſter.

His ideas of the joint efficacy of muſic and poetry, and of the nature of harmony, are manifeſted in the following well-known paſſage:

And ever againſt eating cares  
Lap me in ſoft Lydian aires ;  
Married to immortal verſe,  
Such as the meeting ſoul may pierce  
In notes, with many a winding bout  
Of linked ſweetneſs long drawn out,  
With wanton heed, and giddy cunning,  
The melting voice through mazes running ;  
Untwiſtling all the chains, that tye  
The hidden ſoul of harmony.

Cathedral muſic and choral ſervice he deſcribes in terms that ſuf-

\* i. e. Buranello, a diſciple of Lotti.

† Nicola Iomelli, a celebrated compoſer now living at Naples.

‡ See an Inquiry into the Beauties of Painting by Daniel Webb, Eſq. 8vo. 1769, page 167.

ficiently declare his abilities to judge of it, and its effects on his own mind :

There let the pealing organ blow,  
 To the full-voic'd choir below,  
 In service high, and anthems clear,  
 As may with sweetness through mine ear  
 Dissolve me into extasies,  
 And bring all heav'n before mine eyes.

The following sonnet, addressed to his friend Mr. Henry Lawes, points out one of the great excellencies in the composition of music to words :

Harry, whose tuneful and well-measur'd song  
 First taught our English music how to span  
 Words with just note and accent, not to scan  
 With Midas' ears, committing short and long ;  
 Thy worth and skill exempt thee from the throng,  
 With praise enough for envy to look wan ;  
 To after-age thou shalt be writ the man,  
 That with smooth air could humour best our tongue.  
 Thou honour'st verse, and verse must lend her wing  
 To honour thee, the priest of Phœbus' choir,  
 That tun'st their happiest lines in hymn, or story.  
 Dante shall give Fame leave to set thee higher  
 Than his Casella, whom he woo'd to sing,  
 Met in the milder shades of Purgatory.

His sonnet to Mr. Lawrence Hyde conveys his sense of the delights of a musical evening.

Lawrence, of virtuous father virtuous son,  
 Now that the fields are dank, and ways are mire,  
 Where shall we sometimes meet, and by the fire  
 Help waste a sullen day ; what may be won  
 From the hard season gaining ? time will run



On smoother, till Favonius re-inspire  
 The frozen earth; and cloath in fresh attire  
 The lillie and the rose, that neither sow'd nor spun.  
 What neat repast shall feast us, light and choice,  
 Of Attic taste, with wine; whence we may rise  
 To hear the lute well toucht, or artful voice  
 Warble immortal notes and Tuscan air?  
 He, who of those delights can judge, and spare  
 To interpose them oft is not unwise.

And in his tractate on Education, he recommends the practice of music in terms that bespeak his skill in the science. 'The interim  
 ' of unsweating themselves regularly, and convenient rest before meat,  
 ' may both with profit and delight be taken up in recreating and  
 ' composing their travail'd spirits with the solemn and divine harmonies  
 ' of musick heard or learnt; either while the skilful organist plies  
 ' his grave and fancied descant, in lofty fugues, or the whole symphony  
 ' with artful and unimaginable touches adorn and grace the well-  
 ' studied chords of some choice composer; sometimes the lute, or soft  
 ' organ-stop waiting on elegant voices either to religious, martial,  
 ' or civil ditties; which, if wise men and prophets be not extremely  
 ' out, have a great power over dispositions and manners, to smoothe  
 ' and make them gentle from rustick harshness and distempered  
 ' passions.'

Lord Bacon, in his Natural History, has given a great variety of experiments touching music, that shew him to have been not barely a philosopher, an enquirer into the phenomena of sound, but a master of the science of harmony, and very intimately acquainted with the precepts of musical composition.

That we have so few instances of this kind is greatly to be wondered at, seeing that in poetry and painting the case is far otherwise: In the course of a classical education men acquire not only a taste of the beauties of the Greek and Roman poets, but a nice and discriminating

nating faculty, that enables them to discern their excellencies and defects; and in painting, an attentive perusal of the works of eminent artists, aided by a sound judgment, will go near to form the character of a connoisseur, and render the possessor of it susceptible of all that delight which the art is capable of affording; and this we see exemplified in numberless instances, where persons unskilled in the practice of painting become enabled to distinguish hands, to compare styles, and to mark the beauties of composition, character, drawing, and colouring, with a degree of accuracy and precision equal to that of masters. But few, except the masters of the science, are possessed of knowledge sufficient to enable them to discourse with propriety on music; nor indeed do many attend to that which is its greatest excellence, its influence on the human mind, or those irresistible charms which render the passions subservient to the power of well modulated sounds, and inspire the mind with the most exalted sentiments. One admires a fine voice, another a delicate touch, another what he calls a brilliant finger; and many are pleased with that music which appears most difficult in the execution, and in judging of their own feelings, mistake wonder for delight.

To remove the numberless prejudices respecting music, which those only entertain who are ignorant of the science, or are mistaken in its nature and end; to point out its various excellencies, and to assert its dignity, as a science worthy the exercise of our rational as well as audible faculties, the only effectual way seems to be to investigate its principles, as founded in general and invariable laws, and to trace the improvements therein which have resulted from the accumulated studies and experience of a long succession of ages, such a detail is necessary to reduce the science to a certainty, and to furnish a ground for criticism; and may be considered as a branch of literary history, of the deficiency whereof Lord Bacon has declared his sentiments in the following emphatical terms:

‘ History is Natural, Civil, Ecclesiastical, and Literary; whereof  
 ‘ the three first I allow as extant, the fourth I note as deficient. For

‘ no

‘ no man hath propounded to himself the general state of learning to  
 ‘ be described and represented from age to age, as many have done  
 ‘ the works of nature, and the state civil and ecclesiastical ; without  
 ‘ which the history of the world seemeth to me to be as the statue of  
 ‘ Polyphemus with his eye out, that part being wanting which doth  
 ‘ most shew the spirit and life of the person. And yet I am not ig-  
 ‘ norant, that in divers particular sciences, as of the juriconsults, the  
 ‘ mathematicians, the rhetoricians, the philosophers, there are set  
 ‘ down some small memorials of the schools, authors, and books ; and  
 ‘ so likewise some barren relations touching the invention of arts or  
 ‘ usages.

‘ But a just story of learning, containing the antiquities and ori-  
 ‘ ginals of knowledges and their sects, their inventions, their tra-  
 ‘ ditions, their diverse administrations and managings, their flourish-  
 ‘ ings, their oppositions, decays, depressions, oblivions, removes,  
 ‘ with the causes and occasions of them, and all other events concern-  
 ‘ ing learning, throughout the ages of the world, I may truly affirm  
 ‘ to be wanting \*.’

If any thing can be necessary to enforce arguments so weighty as are contained in the above passage, it must be instances of error, resulting from the want of that intelligence which it is the business of history to communicate ; and it is greatly to be lamented that music affords more examples of this kind than perhaps any science whatever : for, not to remark on those uncertain and contradictory accounts which are given of the discovery of the consonances, some writers attributing it to Pythagoras, others to Diocles, that relation of the fact which has gained most credit with mankind, as deriving its authority from the Pythagorean school, is demonstrably false and erroneous †. Again, as to the invention of symphonic harmony, or, as we now call it, music in parts, many ascribe it to the ancients, and say that it was in use among the Greeks, though no evidence of

\* Of the Advancement of Learning, book II.

† Vide infra, vol. I. page 29, et seq.

the fact can be drawn from their writings now extant. Others assert it to be a modern improvement, but to whom it is due no one has yet been able to discover.

As to the modern system, there is the irrefragable evidence of his own writings extant, though not in print, that it was settled by Guido Aretinus, a Benedictine monk of the monastery of Pomposa in Tuscany, who flourished about the year 1028; yet this fact, which is also related as an important event in the *Annales Ecclesiastici* of Cardinal Baronius, has been rendered doubtful by an assertion of a writer now living, Signor Martinelli, that one of the same name and place, Fra Guittone d'Arezzo, an Italian poet of great eminence, and who lived about two hundred years after, adjusted that musical scale by which we now sing\*; and further that the same Fra Guittone was the inventor of counterpoint. Again, those who give the invention of the modern system, and the application thereto of the syllables used in solmisation to the true author, ascribe also to him the invention of music in consonance, and also of the Clavicembalum or harpsichord; whereas the harpsichord is an improvement of the Clavictherium, an instrument known in England in Gower's time by the name of the Cithole, from CISTELLA, a little chest. Another writer asserts, on what authority we are not told, that counterpoint, which implies music in consonance, was invented by John of Dunstable, who flourished anno 1400; and another †, mistaking the name,

\* ' Fra Guittone d'Arezzo, celebre per i suoi scritta sopra la musica, inventore del contrappunto, e dal quale furono fissati i tuoni, che presentemente si cantano.' *Lettere familiari e critiche di Vincenzo Martinelli, Londra, 1758.* Prefazione, pag. viii. This person had undertaken to write a history of music. See his letters above cited, pag. 164, containing an apology for his not having published it.

Of this Fra Guittone an account may be seen in the *Istoria della volgar Poesia of Crescimbeni, lib. II. pag. 84.* He flourished about 1250, and is celebrated among the best of the ancient Tuscan poets. In the same work, lib. III. pag. 176, is a sonnet of his writing; and in Mr. Baretti's *History of the Italian Tongue*, prefixed to his Italian library, page ix. is a fable of Fra Guittone, which Baretti says might be taken for a composition of yesterday.

† Wolfgang Caspar Printz, in his *History of Music*, written in the German language, and published at Dresden in the year 1690, who has given a relation pur-

attributes it to St. Dunstan, archbishop of Canterbury. Mr. Marpourg of Berlin, a person now living, has taken up this relation, groundless as it is, and in a book of his writing, entitled 'Traité de la Fugue et du Counterpoint,' has done little less than assert that St. Dunstan invented counterpoint, by reducing into order the rules for composition in four parts, and not a few give credit to his testimony\*.

Again we are told, that whereas the Greeks signified the several sounds in their scale by the letters of their alphabet, or by characters derived from them, Guido invented a more compendious method of notation, by points stationed on a staff of five lines, and occupying both the lines and the spaces. This assertion is true but in part; for the staff, and that of many lines, was in use near half a century before Guido was born; and all that can be ascribed to him is the placing points as well in the spaces as on the lines, which it must be owned is an ingenious and useful contrivance.

To assist the memory and facilitate the practice of solmification, it is also said that Guido made use of the left hand, giving to the top of the thumb the note GAM UT, to the joint below it A RE, to the next B MI, and so on, placing the highest note of his system, E LA, at the extremity of the hand, viz. the tip of the middle finger; but nothing of this kind is to be found, or indeed is mentioned, or even hinted at, in any of his writings, and we may therefore conclude that the whole is an invention of some other person.

purporting that 'In the year of our Lord 940, Dunstan, otherwise Dunstaphus, an Englishman, being very young, betook himself to the study of music, and thereby acquired immortal fame. He was the first that composed songs of different parts, that is to say, Bass, Tenor, Descant, and Vagant or Alt,' pag. 104, sect. 23. The whole relation is an error, arising from a mistaken sense of a passage in the *Præceptiones Musices Poeticæ* of Johannes Nucus, a writer on music in the year 1613. Vide *infra*, vol. II. page 18, n. 298, n. vol. IV. 248, n.

\* 'Dunstan, Archevêque de Canterbury, qui vivoit dans le dixième siècle, a aujourd'hui eu l'honneur d'avoir commencé, ainsi que d'avoir frayé le chemin aux autres. Il redigea en ordre les regles de la composition à quatre parties & par là donna une nouvelle époque à la musique.' *Partie II. pag. vi.*

Little less confusion attends the relations extant respecting the invention of the Cantus Mensurabilis, and those marks or characters used to signify the several lengths or durations of notes. The vulgar tale is, that John de Muris, a Norman, and a doctor of the Sorbonne about the year 1330, invented eight musical characters, namely, the Maxima, or as we call it, the Large, the Long, the Breve, Semibreve, Minim, Semiminim or Crotchet, Chroma or Quaver, and the Semichroma, assigning to each a several length in respect of time or duration\*. Now upon the face of the relation there is great reason to conclude, that in the original institution of the Cantus Mensurabilis, the semibreve was the shortest note; but there is undeniable evidence that as well the minim as the notes in succession after it, were of comparatively late invention.

But this is not all; De Muris was not a Norman, but an Englishman: He was not the inventor of the Cantus Mensurabilis: Not he, but a person of the name of Franco, a scholastic, as he is called, of Liege, about the middle of the eleventh century invented certain characters to signify the duration of sounds †, that is to say, the four first abovementioned.

Another prevailing error respecting music has got possession of the minds of many people, viz. that those singularly sweet and pathetic melodies with which the Scots music abounds, were introduced into it by David Rizzio, an Italian musician, and a favourite of Mary queen of Scots: The reverse is the truth of the matter, and that by the testimony of Italians themselves; the Scots tunes are the genuine produce of Scotland; those of greatest merit among them are compositions of a king of that country; and of these some of the most celebrated madrigals of one of the greatest of the Italian composers are avowed imitations ‡.

\* Nicola Vicentino, a writer of the sixteenth century, with some degree of ingenuity, attempts to shew that these characters are but different modifications of the round and square b, which had been introduced into Guido's scale for another purpose.

† Vide infra, vol. II. pag. 140, 150, 237.

‡ Vol. IV. page 5.

Again,

Again, few are sufficiently acquainted with the history of the science, and in particular how long the several musical instruments now known by us have been in use, to prevent being imposed on by pretended new inventions: The harp of Æolus, as it is called, on which so much has been lately said and wrote, was constructed by Kircher above a century ago, and is accurately described in his *Musurgia*; as is also the perpendicular harpsichord, and an instrument so contrived as to produce sound by the friction of wheels, from which the modern lyrichord is manifestly taken. The new system, as it is called, of the flute abec, proposed about forty years ago by the younger Stanesby, is in truth the old and original system of that instrument, and is to be found in Merfennus; and the clarinet, an instrument unknown in England till within these last twenty years, was invented by John Christopher Denner, a wind musical instrument maker of Leipsic above a century ago\*.

Farther, it has for the honour of this our native country been said of Purcell, that his music was very different from the Italian; that it was entirely English, that it was masculine †. Against the two first of these assertions we have his own testimony in the preface to one of his works, wherein he says that he has endeavoured at a just imitation of the most famed Italian masters, with a view, as he adds, to bring the gravity and seriousness of that sort of music into vogue ‡. As to the third, the judicious peruser of his compositions will find that they are ever suited to the occasion, and are equally calculated to excite tender, and robust or manly affections.

Lastly, of the many who at this time profess to love music, few are acquainted with the characters, and even the names of those many eminent persons celebrated for their skill and great attainments in the science, and who flourished under the patronage of the greatest potentates, previous to the commencement of the present century; and,

\* Vide infra vol. IV. page 249.

† Granger's Biographical History of England, as it is called, vol. II. part II. class X. tit. MUSICIANS, art. HENRICUS PURCELL.

‡ Vide infra vol. IV. page 497.

with respect to those of our own country, it is true there is scarce a boy in any of the choirs in the kingdom but knows that Tallis and Bird composed anthems, and Child, Batten, Rogers, and Aldrich services; but of their compositions at large, and in what particulars they excelled, even their teachers are ignorant.

Under a thorough conviction of the benefits that must result from the kind of intelligence here recommended, attempts have been made at different periods to trace the rise and progress of music in a course of historical narration; and let it not be deemed an invidious office, if those defects in the attempts of others are pointed out, which alone can justify the present undertaking.

In the *Menagiana*, tome I. page 303, mention is made of a canon of Tours of the name of Ouvard, who wrote a history of music: Mattheson, in his *Vollkommenen Capellmeister*, takes notice of this work, and says that it comes down to the end of the seventeenth century, and is perhaps extant in MS. in some library at Paris. But the first attempt of this kind in print is a treatise of Johannes Albertus Bannius, 'De Musicæ origine, progressu et deniquè studio bene instituendo,' published in 1637, in octavo.

Next to this, in point of time, is the *History of Music of Wolfgang Caspar Printz*, chapel-master and director of the choir of the church of Sorau, printed at Dresden in the year 1690, in a small quarto volume, with the title of 'Historiche Beschreibung der Edelen Sing- und Klingkunst.' Neither of the two latter works can be considered as a history of the science; the first of them is a very small volume, and the other not a large one, containing little more than a list of writers on music disposed in chronological order.

The appendix of Dr. Wallis to his edition of Ptolemy, published in 1682, though not a history of the science, contains many historical particulars respecting music, besides that in sundry instances it renders intelligible the doctrines of the ancient writers. It is written with great accuracy and perspicuity, and abounds with instances of that acuteness and penetration for which the author is celebrated.

In



In 1683, the Sieur Gabriel Guillaume Nivers, organist of the chapel of Lewis XIV. published 'Differtation sur le Chant Gregorien,' a small octavo volume, but in effect a history of ecclesiastical music, with a relation of the many corruptions it has undergone. In it are many curious passages relating to the subject, extracted from the fathers and the ritualists, with the observations of the author, who appears to have been a learned man in his profession.

In 1695 Gio. Andrea Angelini Bontempi, of Perugia, published in a thin folio volume a work of some merit, entitled 'Historia Musica.' Berardi mentions a work of one Pietro Arragona, a Florentine, entitled 'Istoria Armonica,' but Brossard doubts the existence of it\*.

A history of the pontifical chapel, and of the college of singers thereto belonging, is contained in a work entitled 'Osservazioni per ben regolare il Coro de i Cantori della Cappella Pontificia, tanto nelle Funzioni ordinarie, che straordinarie,' by Andrea Adami da Bolsena, Maestro della Cappella Pontificia, published at Rome in 1711, in a quarto volume. In this book are many curious particulars.

There is also extant in two volumes duodecimo, but divided into four, a book entitled 'Histoire de la Musique et de ses Effets,' printed first at Paris in 1715, and afterwards at Amsterdam in 1725. The materials for this publication were certain papers found in the study of the Abbé Bourdelot, and others of his nephew Bonnet Bourdelot, physician to the king of France, the letters of the Abbé Ragueuet and others, on the comparative merits of the Italian and French opera and music, together with sundry other papers on the same subject. The publisher was Bonnet, a nephew of the Abbé Bourdelot; and the best that can be said of the work is, that the whole is a confused jumble of intelligence and controversy; and, saving that it contains some curious memoirs of Lully and a few other of the French musicians, has very little claim to attention.

\* Catalogue of writers on music at the end of his 'Dictionnaire de Musique,' octavo, page 369.

About the year 1730, Mr. Peter Prelleur, an able musician and organist, published a work entitled 'The modern Music-master, containing an introduction to singing, and instructions for most of the instruments in use.' At the end of this book is a brief history of music, in which are sundry particulars worth noting: it has no name to it, but was nevertheless compiled by the above person.

John Godfrey Walther, a professor of music, and organist of the church of St. Peter and Paul at Weimar, published in 1732 a musical Lexicon or Bibliotheque, wherein is a great variety of information respecting music and musicians of all countries and ages. Mattheson of Hamburg, in his 'Critica Musica,' his 'Orchestre,' and a work entitled 'Vollkommenen Capellmeister,' i. e. the perfect Chapelmaster, has brought together many particulars of the like kind; but the want of method renders these compositions, in an historical view, of little use.

In the year 1740, an ingenious young man of the name of Grassineau\*, published a Dictionary of Music in one octavo volume, with a recommendation of the work by Dr. Pepusch, Dr. Greene, and Mr. Galliard. The book had the appearance of a learned work, and all men wondered who the author could be: It seems he had been an amanuensis of the former of these persons. The foundation of this dictionary is a translation of that of Sebastian Broffard; the additions include all the musical articles contained in the two volumes of Chambers's Dictionary, with perhaps a few hints and emendations furnished by Dr. Pepusch. The book nevertheless abounds with errors, and, though a useful and entertaining publication, is not to be relied on.

In 1756, Fr. Wilhelm Marpourg, a musician of Berlin, published in a thin quarto volume, 'Traite de la Fugue et du Contrepoint,' the second part whereof is a brief history of counterpoint and fugue. The same person is also the author of a work entitled 'Critische Einleitung in die Geschichte und Lehrsake der alten und neuen Musik,' printed at Berlin in 1759. It is part of a larger work, and the remainder is not yet published.

\* See an account of him vol. I. page 86, in the notes.

The 'Storia della Musica' of Padre Martini of Bologna, of which as yet only two volumes have been published, and those at the distance of thirteen years from each other, is a learned and curious work; but the great study and labour bestowed by the author in compiling it, make us despair of ever seeing it completed.

The 'Histoire generale, critique, et philologique de la Musique,' of Mons. De Blainville, printed at Paris in 1767, in a thin quarto volume, has very little pretence to the title it bears: Like some other works of the kind, it is diffuse where it ought to be succinct, and brief where one would wish to find it copious.

A character very different is due to a work in two volumes, quarto, entitled 'De Cantu et Musica sacra, a prima Ecclesiæ Ætate usque ad præsens Tempus; Auctore Martino Gerberto, Monasterii et Congregationis Sancti Blasii in Silva Nigra Abbate, Sacrique Romani Imperii Principis. Typis San-Blasianis, 1774.' In this most valuable work the author has with great learning, judgment, and candour given the history of ecclesiastical music; and the author of the present work felicitates himself on the finding his sentiments on the subject, particularly of the church composers, and the corruptions of the church style, confirmed by the testimony of so able a writer. He is farther happy to see that without any communication with this illustrious dignitary, and without having perused his book, by the help of materials, which this country alone has furnished, he has been able to pursue a similar track of narration, and to relate and authenticate many facts contained therein\*.

At the beginning of this present year 1776, the musical world were favoured with the first volume of a work entitled 'A General History of Music from the earliest Ages to the present Period, with a Dissertation on the Music of the Ancients, by Charles Burney, Mus. D. F. R. S.' The author in the proposals for his subscription

\* The fact is, that the fifth volume of this work was printed off in July in the present year, and the former ones in succession in the years preceding, and the two volumes of the Abbot Gerbert's work came to hand in the month immediately following.

has given assurances of the publication of a second, which we doubt not he will make good.

From those who have thus taken upon them to trace the rise and progress of music in a course of historical deduction, we pass to others who appear to have made collections for the like purpose, but were defeated in their intentions of benefiting the science by their labours.

And first Anthony Wood, who himself was a proficient in music, and entertained an enthusiastic fondness for the art, had it seems meditated a history of musicians, a work which his curiosity and unwearyed industry rendered him very fit for: To this end he made a collection of memoirs, which is extant, in his own hand-writing, among the manuscripts in the Ashmolean Museum; and in the printed catalogue thereof is thus numbered and described: '8568. 106. Some materials toward a history of the lives and compositions of all English musicians; drawn up according to alphabetical order in 210 pages by A. W.' Of these materials he seems to have availed himself in the *Fasts Oxonienses*, wherein are contained a great number of memoirs of eminent English musicians, equally curious and satisfactory, the perusal whereof in the original MS. has contributed to render this work somewhat less imperfect than it must have been without such information as they afford.

Dr. Henry Aldrich, dean of Christ Church, an excellent scholar, and of such skill in music, that he holds a place among the most eminent of our English church musicians, had formed a design of a history of music on a most extensive plan. His papers in the library of Christ Church college, Oxford, have been carefully perused: Among them are a great number of loose notes, hints, and memoranda relating to music and the professors of the science; in the collection whereof he seems to have pursued the course recommended by Brofsard in the catalogue of writers on music at the end of his *Dictionnaire de Musique*, page 367; but among a great multitude of papers in his own hand-writing there are none to be found from whence it can with certainty be concluded that he had made any progress in the work.

Nicola

Nicola Francesco Haym, a musician, and a man of some literature, published, above forty years ago, proposals, containing the plan of a history of music written by himself, but, meeting with little encouragement, he desisted from his design of printing it.

Much intelligence respecting music might have been hoped for from the abilities and industry of Ashmole, Dr. Hooke, and Sir William Petty, the two former of whom had been choristers, the one in the cathedral of Litchfield, the other of Christ Church, Oxford: The latter of the three was professor of music at Gresham college; but these persons abandoning the faculty in which they had been instituted, betook themselves to studies of a different kind: Ashmole, at first a solicitor in Chancery, became an antiquary, a herald, a virtuoso, a naturalist, and an Hermetic philosopher: Hooke took to the study of natural philosophy, mechanics, and architecture, and attained to great skill in all.\*: And Petty, choosing the better part, laid the foundation

\* It is said by Anthony Wood of Dr. Hooke, that, being at Westminster-school, he lodged and dined in the house of Mr. Busby, the master, and that there, of his own accord, he learned to play twenty lessons on the organ, and invented thirty several ways of flying. Athen. Oxon. vol. II. col. 1039. The latter of these facts must stand on the authority of the relator, or rather his authors, Dr. Busby and the great Dr. Wilkins of Wadham college; but the former is rendered highly probable by the following anecdote respecting Dr. Busby, the communication whereof we owe to Dr. Wetenhall, one of Busby's scholars, and afterwards bishop of Cork and Ross, viz. that 'the first organ he ever saw or heard was in his, Dr. Busby's, house; and that the same was kept for sacred use, and that even when 'it was interdicted.' Dedication of a treatise entitled 'Of Gifts and Offices in the public Worship of God, by Edward Wetenhall, D. D. Chanter of Christ Church, Dublin; 8vo. 1679.' That he was also eminently skilled in architecture, may be inferred from an assertion of Dr. Ward, in his life of Sir Christopher Wren, among the Gresham professors, viz. that he greatly assisted Sir Christopher in rebuilding the public edifices. Wood goes so far as to say that Hooke designed New Bedlam, Montague-house, the college of physicians, and the pillar on Fish-street Hill; but the erection of the latter of these edifices is ascribed to Sir Christopher Wren. As to Montague-house and the College of Physicians, there are in Moxon's Mechanic Exercises, under the head of Bricklayer's Work, intimations that they were both designed by Hooke; and Strype, in his edition of Stowe's Survey of London, speaking of Aske's hospital at Hoxton, says it was built after a modern design of Dr. Hooke.

of an immense estate by a various exertion of his very great talents, and was successively a physician, a mathematician, a mechanic, a projector, a contractor with the government, and an improver of land.

Enough it is presumed has been said to prove the utility, and even the necessity; in order to a competent knowledge of the science, of a History of Music, in the deduction whereof the first object that presents itself to view is the system of the ancient Greeks, adjusted, it must be confessed, with great art and ingenuity, but labouring under many defects, which, if we are not greatly deceived, are remedied in that of the moderns. Of the origin of this system we have such authentic intelligence as leaves little room to doubt that it was invented by Pythagoras, a name sufficiently known and revered, and the subsequent deduction of the progress of the science, involving in it the names and improvements of men well known, such as Philolaus, Archytas of Tarentum, Aristoxenus, Euclid, Nicomachus, Ptolemy, and many others, may truly be called history, as being founded in truth; and the utility and certainty of their relations will teach us to distinguish between fact and fable.

It is much to be lamented that the greater part of what we believe touching music, is founded on no better authority than the fictions of poets and mythologists, whose relations are in most instances merely typical and figurative; such must the stories of Orpheus and Amphion appear to be, as having no foundation in truth, but being calculated solely for the purpose of moral instruction.

And with regard to facts themselves, a distinction is to be made between such as are in their own nature interesting, and those that tend only to gratify an idle curiosity: To instance in the latter, what

Of this latter person it may be said, that he was perhaps one of the greatest proficients in the art of thriving of his time: By places, by projects, and by grants, some to himself, and others to his wife, he acquired estates, real and personal, to the annual amount of 15,000*l.* to the accumulation of which wealth we may well suppose that the virtue of parsimony contributed not a little, and the rather as he suffered a natural daughter of his to be an actress on the stage under Sir William D'Avenant at the Duke's theatre in Dorset-Garden.

fatis-

fatisfaction does the mind receive from the recital of the names of those who are said to have increased the chords of the primitive lyre from four to seven, Chorebus, Hyagnis, and Terpander; or when we are told that Olympus invented the enarmonic genus, as also the Harmatian mood; or that Eumolpus and Melampus were excellent musicians, and Pronomus, Antigenides, and Lamia celebrated players on the flute? In all these instances, where there are no circumstances that constitute a character, and familiarize to us the person spoken of, we naturally enquire who he is; and, for want of farther information, become indifferent as to what is recorded of him.

Mr. Wollaston has a remark upon the nature of fame that seems to illustrate the above observation, and indeed goes far beyond the case here put, inasmuch as the persons by him spoken of, are become well known characters: his words are these: ‘When it is said that Julius Cæsar subdued Gaul, beat Pompey, changed the Roman commonwealth into a monarchy, &c. it is the same thing as to say, the conqueror of Pompey was Cæsar; that is, Cæsar and the conqueror of Pompey are the same thing; and Cæsar is as much known by one designation as the other. The amount then is only this: That the conqueror of Pompey conquered Pompey; or somebody conquered Pompey; or rather, since Pompey is as little known as Cæsar, somebody conquered somebody\*.’

That memorials of persons, who at this distance of time must appear thus indifferent to us, should be transmitted down to posterity, together with those events that make a part of musical history, is not to be wondered at; and Plutarch could never have recorded the facts mentioned by him in his Dialogue on Music, had he not also given the names of those persons to whom they are severally ascribed; and if they now appear uninteresting we may reject them: But the case is far otherwise with respect to what is told us of the marvellous power and efficacy of the ancient music. Aristoxenus expressly as-

\* Religion of Nature delineated, page 117.

ferts that the foundation of ingenuous manners, and a regular and decent discharge of the offices of civil life, are laid in a musical education; and Plutarch, speaking of the education of Achilles, and relating that the most wise Chiron was careful to instruct him in music, says, that whoever shall in his youth addict himself to the study of music, if he be properly instructed therein, shall not fail to applaud and practise that which is noble and generous, and detest and shun their contraries: Music teaching those that pursue it to observe decorum, temperance, and regularity; for which reason he adds, that in those cities which were governed by the best laws, the greatest care was taken that their youth should be taught music. Plato, in his treatise *De Legibus*, lib. II insists largely on the utility of this practice; and Polybius, lib. IV. cap. iii. scruples not to attribute the misfortunes of the Cynetheans, a people of Arcadia, and that general corruption of their manners, by him described, to the neglect of the discipline and exercise of music; which he says the ancient Arcadians were so industrious to cultivate, that they incorporated it into, and made it the very essence of, their government; obliging not their children only, but the young men till they attained the age of thirty, to persist in the study and practice of it. Innumerable also are the passages in the ancient writers on harmonics wherein the power of determining the minds of men to virtue or vice is ascribed to music with as little doubt of its efficacy in this respect, as if the human mind was possessed of no such power as the will, or was totally divested of those passions, inclinations, and habits, which constitute a moral character.

Now, forasmuch as we at this day are incapable of discovering any such power as is here attributed to mere musical sounds, we seem to be warranted in withholding our assent to these relations, till the evidence on which they are grounded becomes more particular and explicit; or it shall be shewn that they are not, what some men conceive them to be, hyperbolical forms of speech, in which the literal is as far from the true sense, as it is in the stories of the effects of music  
on



on inanimate beings : If indeed by music we are to understand musical sounds jointly operating with poetry, for this reason that music is ever spoken of by the ancients as inseparably united with poetry ; and farther, because we are told that the ancient poets, for instance, Demodocus, Thaletas of Crete, Pindar, and others, not only composed the words, but also the music to their odes and pœans, and sung them to the lyre, a degree of efficacy must be allowed it, proportioned to the advantages which it could not but derive from such an union \* : But

\* Quintilian has elegantly expressed his sense of the joint efficacy of music and poetry in the following passage : ‘ Namque et voce et modulatione grandia  
‘ elatè, jucunda dulciter, moderata leniter canit, totaque arte consentit cum corum,  
‘ quæ dicuntur, affectibus.’ Inst. Orat. lib. I. cap. x.

But, notwithstanding this observation, which, as far as it goes, must be allowed to be just, the powers of music will be found inadequate to the expression of many of those sentiments in poetry which are comprehended in the ideas of the beautiful and the sublime ; such, for instance, as these :

Where glowing embers round the room  
Teach light to counterfeit a gloom.

Where I may oft outwatch the bear,  
With thrice great Hermes, and unsphere  
The spirit of Plato to unfold  
What worlds or what vast regions hold  
The immortal mind.

Sentiments that defy the utmost powers of music to suit them with correspondent sounds.

Nor will it be found that the melody or the cadence of sounds are either of them so peculiarly appropriated to particular passions or descriptions, as to rank the faculty of expression among the principal excellencies of music. And in proof of this assertion some examples might be given that would stagger an infidel in these matters. The late Dr. Brown, when he had wrote his ode entitled the Cure of Saul, for the music to it made a selection from the works of the most celebrated composers, of such favourite movements as he thought would best express the sense of the words ; in particular he took the saraband in the eighth sonata of Corelli’s second opera for a solo air ; and that most divine movement in Purcell’s ‘ O give thanks,’ ‘ Remember Me O Lord,’ for a chorus ; and any stranger would have thought that the music had been originally composed to the words : The music to that admired

here a difficulty will arise, which, though it does not destroy the credit of these reports, as they stand on the footing of other historical facts, would incline us to suspect that the music here spoken of was of a kind very different from what it is in general conceived to be, and that for the following reason :

We know by experience that there is no necessary connexion between music and poetry ; and such as are competent judges of either, know also that though the powers of each are in some instances concurrent, each is a separate and distinct language : The poet affects the passions by images excited in the mind, or by the forcible impression of moral sentiments ; the musician by sounds either simple and harmonical only in succession, or combined : These the mind, from its particular constitution, supposing it endued with that sense which is the perfection of the auditory faculty, without referring to any other subject or medium, recognizes as the language of nature ; and the affections of joy, grief, and a thousand nameless sensations, become subservient to their call.

As the powers of music and poetry are thus different, it necessarily follows that they may exist independent of each other ; and the instances are as numerous of poets incapable of articulating musical sounds, as of musicians unpossessed of a talent for poetry.

If then the poets of the ancients were only such as to the harmony of their verse were capable of joining that of music, by composing musical airs, and also singing them, and that to an audience grounded and well instructed in music, what can we suppose the music of their odes to have been ? Perhaps little else than bare recitation ; not

sung in Samson, ‘ Return O God of hosts,’ was taken from an Italian cantata of Mr. Handel, composed in his youth ; as was also the music to the other, ‘ Then long eternity,’ in the same oratorio : Farther, the chorus in Alexander’s Feast, ‘ Let old Timotheus yield the prize,’ saving the addition of one of the interior parts, was originally an Italian trio ; as was also that in the *Il Penseroso*, ‘ These pleasures melancholy give.’ Finally, a great part of the music to Mr. Dryden’s lesser ode for St. Cecilia’s Day was originally composed by Mr. Handel for an opera entitled *Alceste*, written by Dr. Smollet, but never performed.

in true musical intervals, but with such inflexions of the voice as accompany speech when calculated to make a forcible impression on the hearers.

As to the relations of the effects of music in former ages on the passions of men, and of its provoking them to acts of desperation, it may be said that they afford no greater proofs of its influence on the passions than modern history is capable of furnishing\*. But there

\* Vide *infra*, vol. I. page 317, 318, n. and Plutarch relates that Antigenides, the tibicinist, playing before Alexander the Great, in a measure of time distinguished by the name of the Harmatian mood, enflamed the hero to such a degree, that, leaping from his seat, and drawing his sword, he in a frenzy of courage assailed those who were nearest him. In *Orat. II. De Fortun. vel. Virtut. Alexandri Magn.*

To these instances may be opposed the following, which modern history affords: The first is related of Ericus, king of Denmark, surnamed the Good, who reigned about 1130, and is to the following purport. When Ericus was returned into his kingdom, and held the yearly assembly, he was greatly pleased with the industry both of his soldiers and artificers. Among other of his attendants was a musician, who asserted that by the power of his art he was able to excite in men whatsoever affections he thought proper; and to make the sad cheerful, the cheerful sad, the angry placid, and such as were pleased discontented, and even drive them into a raging madness; and the more he insisted on his abilities the greater was the king's desire to try them. The artist now began to repent his having thus magnified his talent, foreseeing the danger of making such experiments on a king, and he was afraid that if he failed in the performance of what he had undertaken, he should be esteemed a liar; he therefore entreated all who had any influence over the king to endeavour to divert him from his intention to make proof of his art; but all without effect, for the more desirous he was to evade the trial of his skill, the more the king insisted on it. When the musician perceived that he could not be excused, he begged that all weapons capable of doing mischief might be removed, and took care that some persons should be placed out of the hearing of the Cithara, who might be called in to his assistance, and were, if necessity required it, to snatch the instrument from his hands, and break it on his head. Every thing being thus prepared, the citharist began to make proof of his art on the king, who sat with some few about him in an open hall; first, by a grave mode, he threw a certain melancholy into the minds of the auditors; but, changing it into one more cheerful, he converted their sadness into mirth that almost incited his hearers to dancing; then varying his modulation, on the sudden he inspired the king with fury and indignation, which he continued to work up in him till it was easy to see he was approach-

are others that stagger human belief, and leave us in doubt whether to give or refuse credit to them; such, for instance, are the stories of the cure of diseases, namely the sciatica, epilepsy, fevers, the bites of vipers, and even pestilences, by the power of harmony.

What an implicit assent has been given to the reports of the sovereign efficacy of music in the cure of the frenzy occasioned by the bite of the Tarantula! Baglivi, an eminent physician, a native of Apulia, the country where the Tarantula, a kind of spider, is produced, has given the natural history of this supposed noxious insect, and a variety of cases of persons rendered frantic by its bite, and restored to sanity and the use of their reason; and in Kircher's *Mufurgia* we have the very air or tune by which the cure is said to be effected. Sir Thomas Brown, that industrious exploder of vulgar errors, has let

approaching to frenzy. The sign was then given for those who were in waiting to enter, they first broke the Cithara according to their directions, and then seized on the king; but such was his strength, that he killed some of them with his fist; being afterwards overwhelmed with several beds, his fury became pacified, and, recovering his reason, he was grievously afflicted that he had turned his wrath against his friends. Saxo Grammaticus, in *Hist. Danicæ*, edit. Basil, lib. XII. pag. 113. The same author adds, that he broke open the doors of a chamber, and, snatching up a sword, ran four men through the body; and that when he returned to his senses he made a pilgrimage to Jerusalem as an expiation of his crime. Olaus Magnus, who tells the same story, says that he afterwards died in the island of Cyprus. Vide Olaus Magnus, in *Hist. Gent. Sept.* lib. XV. cap. xxviii. and Krantzius, in *Chron. Regn. Danicæ, Suecicæ, et Norvegicæ*.

Hieronymus Magius gives the following relation of a fact recent in memory in the year 1564: Cardinal Hippolyto de Medicis, being a legate in the army at Pannonia, the troops being about to engage, upon sounding the alarm by the trumpets and drums, was so enflamed with a martial ardour, that, girding on his sword, he mounted his horse, and could not be restrained from charging the enemy at the head of those whose duty it was to make the onset. *Var. Lect. seu Miscell. Venet.* 1564, lib. IV. cap. xiii.

And, lastly, it is related, that at the celebration of the marriage of the duke of Joyeuse, a gentleman was so transported with the music of Claude le Jeune, performed at that solemnity, that he seized his sword, and swore that, unless prevented, he must fight with some one present; but that a sudden change in the music calmed him. Bayle, art. Goudimel, in not. Vide *infra*, vol. III. page 205.

this,

this, perhaps the most egregious of any that he has animadverted on, pass as a fact not to be controverted; and Dr. Mead has strengthened the belief of it by his reasoning on the nature of poisons. After all the whole comes out to be a fable, an imposture calculated to deceive the credulous, and serve the ends of designing people inhabiting the country\*.

The natural tendency of these reflections is to draw on a comparison of the ancient with modern music; which latter, as it pretends to no such miraculous powers, has been thought by the ignorant to be so greatly inferior to the former, as scarce to deserve the name. In like manner do they judge of the characters of men, and the state of human manners at remote periods, when they compare the events of ancient history, the actions of heroes, and the wisdom of legislators, with those of modern times, inferring from thence a depravity in mankind, of which not the least trace is discernible.

This mistaken notion seems to be but the necessary consequence of that system of education which directs the attention of young minds to the discoveries and transactions of the more early times; assigning, as the rule of civil policy, and the standard of moral perfection and excellence in arts, the conduct, the lives and works of men whose greatest achievements are only wonderful as they were rare; whose valour was brutality, and whose policy was in general fraud, or at best craft; and whose inventions and discoveries have in numberless instances been superseded by those of later times. To these, which we may call classical prejudices, we are to impute those numerous and reiterated complaints which we meet with of the degeneracy of modern times; and when they are once imbibed, complaints of the declension of some arts, and of the loss of others, as also of the corruption of manners, appear to be but of course. Whether therefore our reverence for antiquity has not been carried too far both as to matters of science and morality, comprehending in the latter the virtue of justice, and the qualities of personal courage, general benevolence, and refined humanity, of which the examples

\* Vide infra, vol. IV. page 216, n.

are not less numerous and conspicuous in modern than in ancient history, is a question well worthy consideration\*.

\* In a book, which few readers at this day think worth looking into, Dr. Hakewill's Apologie for the Power and Providence of God, are the following sentiments touching the reverence due to antiquity. 'Antiquity I unfeignedly honour and reverence; but why I should reverence the rust and refuse, the dross and dregs, the warts and wens thereof, I am yet to seek.—As in the little, so in the great world, reason will tell you that old age or antiquity is to be accounted by the farther distance from the beginning, and the nearer approach to the end; and as grey beards are for wisdom and judgment to be preferred before young green heads, because they have more experience in affairs; so likewise for the same cause the present times are to be preferred before the infancy or youth of the world, we having the history and practice of former ages to inform us, which they wanted.—In disgracing the present times you disgrace antiquity properly so called.' Book V. page 133.

Farther to this purpose the learned and sagacious Sir Thomas Brown delivers his sentiments in the following terms: 'The mortallest enemy unto knowledge, and that which hath done the greatest execution upon truth, hath been a peremptory adhesion unto authority; and more especially the establishing of our belief upon the dictates of antiquity. For, (as every capacity may observe) most men of ages present, so superstitiously do look upon ages past, that the authorities of the one exceed the reasons of the other: Whose persons indeed being far removed from our times, their works, which seldom with us pass uncontrouled, either by contemporaries, or immediate successors, are now become out of the distance of envious: And the farther removed from present times, are conceived to approach the nearer unto truth itself. Now hereby methinks we manifestly delude ourselves, and widely walk out of the track of truth.

For, first, men hereby impose a thralldom on their times, which the ingenuity of no age should endure, or indeed the presumption of any did ever yet enjoin. Thus Hippocrates, about two thousand years ago, conceived it no injustice either to examine or refute the doctrines of his predecessors: Galen the like, and Aristotle the most of any. Yet did not any of these conceive themselves infallible, or set down their dictates as verities irrefragable: But when they either deliver their own inventions, or reject other men's opinions, they proceed with judgment and ingenuity: establishing their assertions, not only with great solidity, but submitting them also unto the correction of future discovery.

Secondly, men that adore times past, consider not that those times were once present, that is, as our own are at this instant; and we ourselves unto those to come, as they unto us at present: As we rely on them, even so will those on us, and

Of the loss of many arts, that contribute as well to the benefit as delight of mankind, much has been said; and there is extant a large volume, written in Latin by Guido Pancirollus, a lawyer of Padua, entitled 'De rebus memorabilibus deperditis et noviter inventis,' which has not escaped censure for the mistakes and puerilities with which it abounds, the tendency thereof being to shew that many arts known to the ancients are either totally lost, or so greatly depraved, that they can scarcely be said to have an existence among us\*. In

and magnify us hereafter, who at present condemn ourselves. Which very absurdity is daily committed amongst us, even in the esteem and censure of our own times. And, to speak impartially, old men, from whom we should expect the greatest example of wisdom, do most exceed in this point of folly; commending the days of their youth, which they scarce remember, at least well understood not; extolling those times their younger years have heard their fathers condemn, and condemning those times the gray heads of their posterity shall commend. And thus is it the humour of many heads to extol the days of their fore-fathers, and declaim against the wickedness of times present. Which, notwithstanding they cannot handsomely do, without the borrowed help and satyrs of times past, condemning the vices of their own times, by the expressions of vices in times which they commend; which cannot but argue the community of vice in both. Horace, therefore, Juvenal, and Persius were no prophets, although their lines did seem to indigitate and point at our times. There is a certain list of vices committed in all ages, and declaimed against by all authors, which will last as long as humane nature; which, digested into common places, may serve for any theme, and never be out of date until Dooms-day.' Enquiries into Vulgar and Common Errors, Book I. Chap. vi.

\* Of the many instances of arts or inventions lost, or in a state of depravity at this time, there are very few, if any, of which evidence can be found, or at least that have not been succeeded by others tending to the same purpose, and of far greater utility. To instance in a few particulars, instead of the papyrus of the ancients, prepared from the leaves of a certain bulrush, we have the paper of the moderns; in the room of their specular stones, glass; and of clepsydræ, instruments that measured time by the dropping of water, or the falling of sand, clocks and watches. As to the art of staining or painting glass, which ceased to be practised about the Reformation, and has almost ever since been deplored as a lost invention, it is effected by chemical means, and is at this day in as great perfection as ever. Vide Chambers's Dict. voce GLASS. Anecdotes of Painting in England by Mr. Horace Walpole, vol. II. page 15.

this book, which has proved a plentiful source of intelligence to such as have laboured to depreciate all modern attainments, it is roundly asserted of music, which was anciently a science, that there are not the least footsteps remaining: and further, that the Cardinal of Ferrara, by whom it is supposed is meant Hippolyto de Este, the patron of Vicentino took great pains to recover it, but all to no purpose\*.

Such as seem to have adopted the opinion of Pancirollus with respect to music, for example, Dr. Pepusch, and a few of his disciples, have asserted as an instance in support of it, that the chromatic and enarmonic genera are now neither practised nor accurately known. Farther they add, that of the various modes of the ancients, only two are remaining, viz. those which answer to the keys A and C; for, say they, the ancients took the tones and semitones in order as they naturally arise in the diapason system, and, without any dislocation of either, considered the progression from any fundamental chord as a mode or key, and formed their melodies accordingly.

With regard to the enarmonic genus, it will in the ensuing volumes be shewn that the ancients themselves suffered it to grow into disuse by reason of its intricacy; and therefore it cannot so properly be said to have been lost, as that it is rejected, and the rather as we are assured that Salinas and others have accurately determined it †: Of the chromatic as much seems to have been retained as is necessary to the perfection of the diatonic; and as to the modes, it will also be shewn that there never was, nor can there in nature be more, or any other than the two abovementioned; and consequently that in this respect music has sustained no injury at all.

The loss of arts is a plausible topic of declamation, but the possibility of such a calamity by other means than a second deluge, or the

\* A like attempt was made in France in the year 1570, by the establishment of an academy under the direction of Jean-Antoine Baif and Joachim Theobalde de Courville, but through envy, as it is said, the design failed. Merfennus in *Quest. et Explic. in Genesin. art. XV. pag. 1683.* Walth. *Musicalisches Lexicon, voce ACADEMIE ROYALE DE MUSIQUE.*

† Vide infra, vol. I. page 110.



interposition of any less powerful agent than God himself, is a matter of doubt; and when appearances every where around us favour the opinion of our improvement not only in literature, but in the sciences and all the manual arts, it is wonderful that the contrary notion should ever have got footing among mankind.

As to the general prejudices in behalf of antiquity, it has been hinted above that a reason for them is to be found in that implicit belief which the course of modern education disposes us to entertain of the superior virtue, wisdom, and ingenuity of those, who in all these instances we are taught to look on as patterns the most worthy of imitation; but it can never be deemed an excuse of some writers for complimenting nations less enlightened than ourselves with the possession or enjoyment of arts which it is pretended we have lost; as they do when they magnify the attainments of nations comparatively barbarous, and making those countries on which the beams of knowledge can scarcely be said to have yet dawned the theatres of virtue and the schools of science, recommend them as fit exemplars for our imitation.

Of this class of authors, Sir William Temple and Isaac Vossius seem to be the chief; the one a statesman retired from business, an ingenious writer, but possessed of little learning, other than what he acquired in his later years, and which it is suspected was not drawn from the purest sources; the other a man of great erudition, but little judgment, the weakness whereof he manifested in a childish credulity, and a disposition to believe things incredible. These men, upon little better evidence than the reports of travellers, and the relations of missionaries, who might have purposes of their own to serve, have celebrated the policy, the morality, and the learning of the Chinese, and done little less than proposed them as examples of all that is excellent in human nature\*.

\* As an instance of their superior skill in the science of medicine, he says that their physicians pretend that they are able, not only to tell by the pulse how many hours or days a sick man can last, but how many years a man in perfect seeming health

The topics insisted on by Sir William Temple, in that part of his *Essay on Heroic Virtue*, where he takes occasion to speak of the Chinese, are their wisdom, their knowledge, their wit, their learning, ingenuity, and civility, on which he bestows the most extravagant encomiums.

Voffius is more particular, and says that ‘the Chinese deplore the loss of their music, the superior merit whereof may be inferred from the relics of it yet remaining, which are so excellent, that for their perfection in the art, the Chinese may impose silence on all Europe.’ Farther he says of their pantomimes, or theatrical representations by mute persons, in which the sentiments are expressed by gesticulations, and even nods, that ‘these declare their

health may live, in case of no accident or violence. *Essay of Heroic Virtue*, sect. II.

The following summary of Chinese knowledge may serve to shew how well they are entitled to the exaggerated encomiums of such writers. They carry their history back to many ages before the time of the creation. Hearne’s *Duct. Historic.* vol. I. page 16. Their notion of an eclipse is, that there is in heaven a dragon of an immense bigness, ready at all times to eat up the sun or moon, which he likes best; when an eclipse of either happens, they suppose he has got the planet between his teeth, and, to make him quit his hold, they beat drums and brass kettles. Le Comte’s *Memoirs of China*, edit. 1738, pag. 70, 488. In the judgment of Cassini, and other great astronomers, they err in their accounts of sundry conjunctions of the planets; in some of them not less than five hundred years. Jenkin on the *Reasonableness and Certainty of the Christian Religion*, vol. I. p. 339. They are so little skilled in mechanics, that they took a watch, brought into their country by a Jesuit, for an animal. They are strangers to the use of letters as the elements of words; and have even at this day no alphabet. *Ibid.* Moreover they pretend to be the inventors of music, notwithstanding that in the opinion of Father Le Comte they have nothing among them that deserves the name. See his *Memoirs*, page 214.

Of their propensity to fraud and deceit in their dealings, there are abundant examples in Le Comte and Lord Anson’s voyage; and of their morality and civil policy, which are so highly extolled, any one may judge, when he is told that in Pekin and other large cities there is an officer, whose duty it is every morning to destroy the numerous infants that have been exposed in the streets in the preceding night. *Mod. Univ. Hist.* fol. vol. I. page 175.

‘ skill in the rythmus, which is the soul of music \*.’ Elsewhere he takes occasion to celebrate this people for their skill on the tibia, and bestows on their performance the following enthusiastic encomium : ‘ The tibia, by far to be preferred to the stringed instruments of every kind, is now silenced, so that, excepting the Chinese, who alone excel on it, scarce any are to be found that are able to please even an ordinary hearer †.’

Another writer is more particular, and gives us for history this nonsense ; that Fou-Hi, the first of the emperors and legislators of China, delivered the precepts of music, and having invented fishing, composed a song for those who exercised the art ; and to banish all impurity from the heart, made a lyre with strings of silk ; and farther that Chin-Nong, a succeeding emperor, celebrated the fertility of the earth in songs of his own composing, and made a beautiful lyre and a guitar enriched with precious stones, which produced a noble harmony, curbed the passions, and elevated many to virtue and heavenly truth ‡.

These are the opinions of men who have acquired no small reputation in the world of letters ; and therefore that error might not derive a sanction from authority, it seemed necessary to enquire into the evidence in support of them ; of what sort it is, the passages above cited may serve to shew. It remains now to make the comparison above proposed of the modern with the ancient music.

The method hitherto pursued by those writers who have attempted to draw a parallel between the ancient and modern music, has been to bring together into one point of view the testimonies in favour of the former, and to strengthen them by their own suffrages, which upon examination will be found to amount to just nothing ; for these testimonies being no more than verbal declarations or descriptions, every

\* De poemat. cant. et virib. Rythmi, pag. 95.

† Ibid. pag. 107.

‡ Extraits des Hist. Chinois, published by Mons. Goguet, pag. 567, 572. Dissert. on the Union, &c. of Poetry and Music, page 167.

reader is at liberty to supply them by ideas of his own; ideas which can only have been excited by that music which he has actually heard, or at least perused and contemplated. An instance borrowed from the practice of some critics in painting, may possibly illustrate this sentiment: The works of Apelles, Parrhasius, Zeuxis, and Protogenes, together with those of other artists less known, such as Bularchus, Euphranor, Timanthes, Polygnotus, Polycletes, and Aristides, all famous painters, have been celebrated in terms of high applause by Aristotle, Philostratus, Pliny, and the poets; and those who attend to their descriptions of them, associate to each subject ideas of excellence as perfect as their imaginations can suggest, which can only be derived from such works of later artists as they have seen; in like manner as we assist the descriptions of Helen in Homer and of Eve in Milton, with ideas of female beauty, grace, and elegance, drawn from our own observation \*: The result of such a comparison in the case of painting, has frequently been a determination to the prejudice of modern artists; and the works of Raphael, Domenichino, and Guido have been condemned as not answering to those characters of sublime and beautiful, which are given to the productions of the ancient ar-

\* Mr. Harris to this purpose has given his sentiments in the following judicious observation: 'When we read in Milton of Eve, that

' Grace was in all her steps, heav'n in her eye,  
' In ev'ry gesture dignity and love;

' we have an image not of that Eve which Milton conceived, but of such an Eve only as every one by his own proper genius is able to represent from reflecting on those ideas which he has annexed to those several sounds. The greater part in the mean time have never perhaps bestowed one accurate thought upon what Grace, Heaven, Love, and Dignity mean; or ever enriched the mind with ideas of beauty, or asked whence they are to be acquired, and by what proportions they are constituted. On the contrary, when we view Eve as painted by an able painter, we labour under no such difficulty; because we have exhibited before us the better conceptions of an artist, the genuine ideas of perhaps a Titian or a Raphael.' Disc. on Music, Painting, and Poetry, page 77, in not.

tists.

tists \*. In like manner to speak of music, we can form ideas of the perfection of harmony and melody, and of the general effect resulting from the artful combination of musical sounds, from that music alone which we have actually heard; and when we read of the music of Timotheus or Antigenides, we must either resemble it to that of the most excellent of the modern artists, or forbear to judge about it; and if in the comparison such critics as Isaac Vossius, Sir William Temple, and some others, reject the music of the moderns as unworthy of attention or notice, how egregiously are they deceived, and what do they but forego the substance for the shadow?

Other writers have taken a different course, and endeavoured to prove the inferiority of the modern music to the ancient, by a comparison of the powers of each in depriving men of the exercise of their rational faculties, and by impelling them to acts of violence. To these it may be said, that, admitting such a power in music, it seems to be common in some degree to that of all ages and countries, even the most savage; but the fact is, that these effects are adventitious, and in all the instances produced will be found to have followed from some predisposition of the mind of the hearer, or peculiar coincidence of circumstances, for that in truth music pretends not to the power of working miracles, nor is it the more to be esteemed for exciting men to frenzy: Those who contemplate it in a philosophical and rational manner, and attend to its genuine operation on the human affections, are abundantly satisfied of its efficacy, when they discover that it has a tendency to exhilarate the mind, to calm the passions, to assuage the pangs of affliction †, to assist devotion, and to inspire the mind with the most noble and exalted sentiments.

\* Vide Inquiry into the Beauties of Painting, by Daniel Webb, Esq. *passim*.

† To this purpose we meet in Procopius with the following affecting relation, viz. that Gelimer, king of the Vandals, being at war with the emperor Justinian, and having been driven to the mountains by Belisarius, his general, and reduced to great straits, was advised in a letter by a friend of his named Pharas to make terms with the enemy; but in the greatness of his spirit disdainful submission, he return-

Others, despairing of the evidence of facts, have recourse to argument, contending that the same superiority with respect to music is to be yielded to the ancients as we allow them in the arts that afford delight to the imagination; poetry, eloquence, and sculpture, for instance, of which say they, their works bear luculent testimony. To this it may be answered, that the evidence of works or productions now existing is irrefragable, but in a question of this kind there is no reasoning by analogy; and farther, that in the case of music, proof of the superiority of the ancients is not only wanting, but the weight of the argument lies on the other side; for where are those productions of the ancients that must decide the question? Lost, it will be said, in the general wreck of literature and the arts: If so, they cease to be evidence. Appeal we then to those remaining monuments that exhibit to us the forms of their instruments, of which the lyre and the tibia

ed this answer: ‘*Quod mihi consilium dedisti, magnam habeo tibi gratiam, ut etiam hosti injusto serviam; id verò mihi intolerandum videtur. Si Deus faveret, repetere pœnas ab eo vellem, qui à me nunquam nec factò violatus nec verbo, bello, cujus nulla est causa legitima, prætextum præbuit, meque in hunc statum redegit, accito, nescio unde, immissoque Belisario. Non improbabile esse sciat, passurum ipsum, tanquam hominem ac principem, eorum aliquid, unde abhorrit. Nequit ultra progredi stylus, auferente mentem calamitate, quæ me circumvenit. Vale, amice Phara, et mihi quod te oro, citharam, panem unum ac spongiam mitte.*’ Procopius Cæsariensis de Bello Vandalico, vol. I. lib. II. cap. vi. pag. 240, edit. Paris, 1662: which we thus render: I esteem it a great kindness that you vouchsafe me your advice, recommending a submission to my enemy, unjust as he has been to me, but the thought thereof is intolerable. If it pleases God I am prepared to suffer the worst from him, who having never been injured by me, has found a pretext for a war, for which no justifiable reason can be assigned; and has let loose upon me Belisarius, who has reduced me to this extremity. Let him know that he is a man, and, though a prince, that he is not beyond the reach of misfortune. I can proceed no farther, the calamities which surround me depriving me of my reason. Farewell my friend Pharas, and send to me an harp, a loaf of bread, and a sponge. The historian adds, that the harp was to console him in his affliction, the loaf to satisfy his hunger, he not having seen bread for a long time, and the sponge to dry up his tears.

are the most celebrated; and that these are greatly excelled by the instruments of the moderns will not bear a question. As to the lyre, considered as a musical instrument, it is a very artless invention, consisting merely of a few chords of equal length but unequal tensions, in such a situation, and so disposed, as, without any contrivance to prolong or reverberate the sound, to vibrate in the empty air. The tibia, allowing it the perfection to which the flute of the moderns is arrived, could at best be but an imperfect instrument\*; and yet we are told it was in such estimation among the ancients, that at Corinth the sum of three, some say seven, talents was given by Ismenias, a musician, for a flute.

But a weightier argument in favour of modern music, at least so far as regards the improvements in theory and practice that necessarily result from the investigation of new principles and the discovery of new combinations, may be drawn from the natural course and order of things, which is ever towards perfection, as is seen in other sciences, physics and mathematics, for instance; so that of music it may be said, that the discoveries of one age have served but as a foundation for improvements in the next; the consequence whereof is, that the fund of harmony is ever encreasing. What advantages must accrue to music from this circumstance, may be discerned if we enquire a little into those powers which are chiefly exercised in practical composition: The art of invention is made one of the heads among the precepts of rhetoric, to which music in this and sundry instances bears a near resemblance; the end of persuasion, or affecting the passions, being common to both. This faculty consists in the enumeration of common places, which are revolved over in the mind, and requires

\* The imperfection of the flute consists in the impossibility of tempering its tones, there being no rule or canon by which it can be tuned; to which we may add, that the tones in the upper octave are as dissimilar, in respect of sound, as those of the human voice in those persons who have what is called the falsetto. In the flute abec the difference is discernible in the double shake, which is made on a note that divides the two systems of the natural and artificial tones.

both an ample store of knowledge in the subject upon which it is exercised, and a power of applying that knowledge as occasion may require. It differs from memory in this respect, that whereas memory does but recall to the mind the images or remembrance of things as they were first perceived, the faculty of invention divides complex ideas into those whereof they are composed, and recomposes them again after different fashions, thereby creating variety of new objects and conceptions: Now the greater the fund of knowledge above spoken of is, the greater is the source from whence the invention of the artist or composer is supplied; and the benefits thereof are seen in new combinations and phrases capable of variety and permutation without end. And thus much must serve at present touching the comparative merits of the ancient and modern music.

In tracing the progress of music, it will be observed, that it naturally divides itself into the two branches of speculation and practice, and that each of these requires a distinct and separate consideration\*. Of the dignity and importance of the former Ptolemy, lib. I. cap. ii. has delivered his sentiments to the following purpose: ‘It is in all things the business of contemplation and science to shew that the works of nature, well regulated as they are, were constituted according to reason, and to answer some end; and that nothing has been done by her without consideration, or as it were by chance; more especially in those that are deemed the finest of her works, as participating of reason in the greatest degree, the senses of sight and hearing.’ And Sir Isaac New-

\* There are but few instances of musicians that have been eminently distinguished for skill both in the theory and practice of music, Zarlino, Tartini, and Rameau excepted: The two branches of the science have certainly no connection with each other, as may be gathered from the following sentiment of an ingenious writer on the subject: ‘The delights of practical music enter the ear without acquainting the understanding from what proportions they arise, or even so much as that proportion is the cause of them: This the philosopher observes from reason and experience, and the mechanic must be taught, for the framing instruments; but the practiser has no necessity to study, except he desires the learning as well as the pleasure of his art.’ Proposal to perform Music in perfect and mathematical Proportions, by Tho. Salmon, 4to. Lond. 1688.



ton, speaking of the examination of those ratios that afford pleasure to the eye in architectural designs, says it tends to exemplify the simplicity in all the works of the Creator. And farther he gives it as his opinion, ‘ that some general laws of the Creator prevail with respect to the agreeable or displeasing affections of all our senses \*.’ By practical music we are to understand the art of composition as founded in the laws of harmony, and deriving its grace, elegance, and power of affecting the passions from the genius and invention of the artist or composer; in the exercise of which faculty it may be observed, that the precepts for combining and associating sounds are as it were the syntax of his art, and are drawn out of it, as the rules of grammar are from speech †.

In musical history the several events most worthy of attention seem to be those of the first establishment of a system, the introduction of music into the church service, the rise of dramatic music; under these several heads all that intelligence which to us is the most interesting may be comprehended. As touching the first, it is certain that we owe it to the Greeks, and there is nothing that at this distance of time can be superadded to the relations of the ancient writers on the subject; nor can it be safe to deviate, either in respect of form or manner, from the accounts from them transmitted to us of the original constitution of the lyre, or of the invention and successive progress of a musical scale; much less can we be warranted in speaking of the ancient practice, and the more abstruse parts of the science, namely the genera and the modes, in any other terms than themselves make use of: Were a liberty to do otherwise allowed, the same mischief would follow that attends the multiplication of the copies of a manuscript, or a translation through the medium of divers languages, where a new sense may be imposed upon the text by

\* Vide *infra*, vol. III. page 142, 143, in not.

† ‘ The art by which language should be regulated, viz. Grammar, is of much later invention than languages themselves, being adapted to what was already in being, rather than the rule of making it so.’ Bishop Wilkins’s *Essay towards a real Character*, pag. 19.

different transcribers and translators in succession, till the meaning of the original becomes totally obscured.

Vitruvius, in his treatise *De Architectura*, has a chapter on music, wherein he laments the want of words in the Roman language equivalent to the Greek musical terms; the same difficulty is experienced in a greater or less degree by all who take occasion to speak of the ancient music, whether of the Hebrews or the Greeks. The English translators of the Bible were necessitated to render the words כִּנּוּר Kinnor and צוּגִב Gnugab, by harp and organ; and a translator of musical appellatives will in many instances be reduced to as great difficulty as the Laplander, who in rendering a passage in the Canticles, 'He looketh forth at the windows, shewing himself through the lattice,' could find no nearer a resemblance to a lattice than a snow-shoe, a thing like a racket used in the game of tennis, and translated it accordingly.

The complaint of Vitruvius above mentioned furnishes an occasion of enquiry into the state of music among the Romans; and this will appear, even in their most flourishing condition, to have been, both in theory and practice, very low, there being no author to be found till after the destruction of the commonwealth who has written on the subject; and of those that lived in the time of Augustus and afterwards, the number is so small, and, if we except Boetius, their writings are so inconsiderable, as scarce to deserve notice. Vitruvius wrote not professedly on music; all that he says of it is contained in the third, fourth, and fifth chapters of the third book of his treatise *De Architectura*; wherein laying down the rules for the construction of theatres, he speaks of harmony in general terms, and afterwards of certain hollow vessels disposed in niches for the purpose of reverberating the voice of the singers or actors; and thence takes occasion to mention the genera of the ancients, which he illustrates by a scale or diagram, composed, as he says, by Aristoxenus himself, though it does not occur in the valuable edition of that author published by Meibomius. In the same  
work,

work, lib. X. cap. ii. entitled *De Hydraulicis*, he describes the hydraulic organ of the ancients, but in such terms, that no one has been able satisfactorily to ascertain either its figure or the use of its parts.

Of Censorinus, Macrobius, Martianus Capella, and Cassiodorus, it was never pretended that they had made any new discoveries, or contributed in the least to the improvement of music. Boetius indeed with great industry and judgment, collected the sense of the ancient Greek writers on Harmonics, and from the several works of Aristoxenus, Euclid, Nicomachus, Alypius, Ptolemy, and others whose discourses are now lost, compiled his most excellent treatise *De Musica*. In this he delivers the doctrines of the authors above mentioned, illustrated by numerical calculations and diagrams of his own invention; therein manifesting a thorough knowledge of the subject. Hence, and because of his great accuracy and precision, this work of Boetius, notwithstanding it contains little that can be said to be new, has ever been looked upon as a valuable repository of musical erudition\*.

Long before the time of Boetius, the enarmonic and chromatic genera had grown into disuse; the diatonic genus only remaining, the musical characters were greatly reduced in number; and the notation of music became so simple, that the Romans were able to represent the whole series of sounds contained in the system of a double octave, or the bisdiapason, by fifteen characters; rejecting therefore the characters used by the Greeks for the purpose, they assumed the first fifteen letters of their own alphabet; and this is the only improvement or innovation in music that we know of that can be ascribed to the Romans.

As to the practice of music, it seems to have been carried to no very great degree of perfection by the Romans; the tibia and the lyre seem

\* The works of Boetius were published in a folio volume at Venice in the year 1499, and at Basil by Glareanus, in 1570. In the treatise *De Musica* are sundry diagrams invented by the editor, which tend greatly to the illustration of his author.

to have been the only instruments in use among them; and on these there were no performers of such distinguished merit as to render them worthy the notice of posterity, which perhaps is the reason that the names of but few of them are recorded.

Caspar Bartholinus has written a treatise 'De Tibiis veterum et earum antiquo usu,' in which he has brought together a great variety of intelligence respecting the flutes of the ancients: In this tract is a chapter entitled 'Tibia in Ludis Spectaculis atque Comediis,' where in the author takes occasion to speak of the tibiæ pares et impares, and also of the tibiæ dextræ et sinistræ, used in the representation of the comedies of Terence, which he illustrates by plates representing the forms of them severally, as also the manner of inflating them, taken from coins and other authentic memorials. In particular he gives an engraving from a manuscript in the Vatican library, of a scene in an ancient comedy, in which a tibicinist is delineated standing on the stage, and blowing on two equal flutes: What relation his music has to the action we are to seek. He also gives from a marble at Rome the figure of a man with an inflected horn near him, thus inscribed, M. IULIUS VICTOR EX COLLEGIO LITICINUM CORNICINUM.

It appears from a passage in Valerius Maximus, that there was at Rome a college of tibicinists or players on the flute, who we may suppose were favoured with some special privileges and immunities. These seem to have been a distinct order of musicians from the former, at least there are sundry inscriptions in Gruter purporting that there was at Rome a college comprehending both tibicinists and fidicinists; which latter seem to have been no other than lyrists, a kind of musicians of less account among the Romans than the players on their favourite instrument the flute. Valerius Maximus, lib. II. cap. v. relates of the tibicinists that they were wont to play on their instruments in the forum, with their heads covered, and in party-coloured garments.

That the tibicinists were greatly indulged by the Romans, may be inferred from the nature of their office, which required their attendance

dance at triumphs, at sacrifices, and indeed all public solemnities; at least the sense of their importance and usefulness to the state is the only reason that can be suggested for their intemperance, and that insolence for which they were remarkable, and which both Livy and Valerius Maximus have recorded in a narration to the following purpose. ‘The censors had refused to permit the tibicines to eat in the temple of Jupiter, a privilege which they claimed as founded on ancient custom; whereupon the tibicines withdrew to Tibur, a town in the neighbourhood of Rome, now Tivoli. As the tibicines were necessary attendants on the sacrifices, the magistrates were at a loss how to perform those solemnities in their absence; the senate therefore sent ambassadors to the Tiburtines, requesting them to deliver them up as officers of the state who had fled from their duty: At first persuasions were tried, but these proving ineffectual, the Tiburtines had recourse to stratagem; they appointed a public feast, and inviting the tibicines to assist at it, plied them with wine till they became intoxicated, and, while they were asleep, put them into carts, which conveyed them to Rome. The next day, having in some degree recovered their reason, the tibicines were prevailed on to stay in the city, and were not only restored to the privilege of eating in the temple, but were permitted annually to celebrate the day of their return, though attended with circumstances so infamous to their office, by processions in which the most licentious excesses were allowed\*.’

The secession of the tibicinists was in the consulate of Caius Junius Bubulcus and Quintus Æmilius Barbula; that is to say in the year of the world 364c, three hundred and eight years before Christ; and serves to shew the extreme licentiousness of Roman manners at that period, as also the low state of their music, when the best instruments they could find to celebrate the praises of their deities were a few

\* Livy, lib. IX. cap. xxx. See also Valerius Maximus, lib. II. cap. v. The same story is related by Ovid, Fasti, lib. VI. who adds that the thirteenth day of June was celebrated as the anniversary.

forry pipes, little better than those which now serve as playthings for children.

But, leaving the tibicines and their pipes to their admirers, if we proceed to enquire into the state of music among the Romans at any given period of their history, we shall find, that as a science they held it in small estimation: And to this fact Cornelius Nepos bears the fullest testimony, for relating in his life of Epaminondas that he could dance, play on the harp and flute, he adds, that in Greece these accomplishments were greatly esteemed, but by the Romans they were little regarded. And Cicero, in his *Tusculan Questions*, lib. I. cap. i. to the same purpose, observes that the ancient Romans, addicting themselves to the study of ethics and politics, left music and the politer arts to the Greeks. Farther we may venture to assert, that neither their religious solemnities, nor their triumphs, their shews or theatrical representations, splendid as they were, contributed in the least to the improvement of music either in theory or practice: To say the truth, they seemed scarcely to have considered it as a subject of speculation; and it was not until it received a sanction from the primitive fathers of the church, that the science began to recover its ancient dignity.

The introduction of music into the service of the church affords ample scope for reflection, and comprehends in its history a great part of what we know of modern music. All that need be mentioned in this place respecting that important event is, that after the example of the Jews, and upon the authority of fundry passages in scripture, and more especially in compliance with the exhortation of St. Paul in his Epistles, St. Basil, St. Ambrose and St. Chrysostom about the middle of the fourth century instituted antiphonal singing in their respective churches of Cesarea in Cappadocia, Milan, and Constantinople. St. Ambrose, who must be supposed to have been eminently skilled in the science, prescribed a formula of singing in a series of melodies called the ecclesiastical tones, apparently borrowed from the modes of the ancient Greeks; these, as constituted by him, were in  
number

number only four; and are meant when we speak of the Cantus Ambrosianus; but St. Gregory, near two centuries after, increased them to eight. The same father drew up a number of precepts respecting the limits of the melodies, the fundamental note, and the succession of tones and semitones in each; and, with a view to the establishment of a settled and uniform musical science, that would apply to all the several offices at that time used in divine worship, founded and endowed a school for the instruction of youth in the rudiments of music, as contained in this formula, which was distinguished by the appellation of the Cantus Ecclesiasticus, and in later times by that of the Cantus Gregorianus.

Before this time music had ceased to be a subject of speculation: Ptolemy was the last of the philosophers that had written professedly on it; and though it may be said that his three books of Harmonics, as also those of Aristoxenus, Euclid, Nicomachus, Aristides Quintilianus, and others, being extant, music was in a way of improvement from the studies of men no less disposed to think and reflect than themselves; yet the fact is, that among the Romans the science not only had made no progress at all, but even before the dissolution of the commonwealth, with them it seemed to be extinct. Nor let the supposition be thought groundless, that during some of the succeeding ages the books, the very repositories of what we call musical science, might be lost; the history of the lower empire furnishing an instance, the more remarkable, as it relates to their own, the Roman civil law, which proves at least the possibility of such a misfortune\*.

To these causes, and the zeal of the fathers abovementioned, and more especially of St. Gregory, to disseminate its precepts, it is to be ascribed that the cultivation of music became the peculiar care of the clergy. But here a distinction is to be noted between the study and the practice of the science; for we find that at the time of the institution of the Cantus Ambrosianus, an order of clergy was also established, whose employment it was to perform such parts of the service as were

\* See the relation of the discovery of the *Litera Pisana* in vol. II. page 28.

required to be sung : These were called Psalmists ; and though by Bellarmine and a few other writers they are confounded with the Lectors, yet were they by the canonists accounted a separate and distinct order. The reason for their institution was, that whereas in the apostolical age the whole congregation sang in divine service, and great confusion and disorder followed therefrom, it was found necessary to settle what the church calls a regular and decent song, which, as it was framed by rule, and founded in the principles of harmony, required skill in the performance ; and accordingly we find a canon of the council of Laodicea held as early as the beginning of the fourth century, forbidding all excepting the canonical singers, that is to say, those who were stationed in the Ambo, where the singing-desk was placed, and who sang out of a book or parchment, to join in the psalms, hymns, and other parts of musical divine service. We may well suppose that this order of men were endowed with all the requisites for the discharge of their function ; and that that peculiar form which the council of Carthage directs to be used for the ordination of Psalmists or singers \*, was in effect a recognition of their skill and abilities.

The order of men abovementioned can be considered in no other view than as mere practical musicians, the principal object of whose attention was to make themselves acquainted with the songs of the church, and to utter them with that decency and gravity, and in such a manner as tended most to edification : From the frequent repetition of the same offices it must be supposed that in general they sang by rote ; at least we have no better reason to assign than that they must have so done, for the establishment of a school by St. Gregory for the instruction of youth in the Cantus Ecclesiasticus, as reformed by himself, and for that sedulous attention to their improvement in it which he manifested in sundry instances.

At the same time that we applaud the zeal of this father of the church, we cannot but wonder at that of his predecessors, which is not more apparent in their commendations of music, as associated with

\* See it in vol. I. page 284, n.



religious worship, than in their severe censures of that which was calculated for private recreation: As to the songs of the stage in the ages immediately succeeding the Christian era, we know little more of them than in general that they were suited to the corrupt manners of the times; and these, by reason of their lewdness, and perhaps impiety of sentiment, might be a just subject of reprehension; but against the music, the sounds to which they were uttered, or the particular instruments that assisted the voice in singing them, an objection can scarce be thought of; and yet so frequent and so bitter are the invectives of the primitive fathers, namely, Clemens Alexandrinus, Tertullian, St. Cyprian, Lactantius, Epiphanius, Gregory Nazianzen, and of St. Basil, St. Augustine, and St. Chryostom, who were lovers and promoters of the practice of music, against wicked measures and effeminate melodies, the noise of flutes, cymbals, harps, and other instruments of deceit, seducing the hearers to intemperance, and even idolatry, that if credit be given to their opinions of the nature and tendency of secular music, we must be inclined to believe, as they in good earnest profess to have done, that it was an invention of the Devil.

The cultivation of music as a science was the employment of a set of men, in whom all the learning of the times may then be said to have centered; these were the regular clergy, of such of whom as flourished in the eleventh century and afterwards, it must in justice be said, that what they wanted in knowledge, they made up in industry; and that those frequent barbarisms which occur in their writings, were in no small degree atoned for by the clearness and precision \* with which on every occasion they delivered their sentiments. Nor

\* These qualities seem to be but the necessary result of the old scholastic method of institution, in which logic made a considerable part, and are in no instance more manifest than in the ancient forms of judicial proceedings, such as writs and pleadings; of which Sir Matthew Hale, in his History of the Law, chap. 7, remarks that they were very short, but very clear and conspicuous, orderly digested, pithy, clear, and rational. The same may be said in general of the more ancient statutes.

was the conciseness and method of the monkish treatises on music a less recommendation of them than their perspicuity: They consisted either of such maxims as were deemed of greatest importance in the study of the science, or of familiar colloquies between a master and his disciple, in which in an orderly course of gradation, first the elements, and then the precepts of the art were delivered and illustrated. To enumerate the instances of this kind which have occurred in the course of this work, would be an endless task; let it suffice to say that the *Histoire Litteraire de France*, and the *Memoirs of Bale, Pits*, and the *Bibliotheca of Tanner* abound with references to a variety of manuscript tracts deposited in the public and other libraries, that abundantly prove the mode of musical instruction to have been such as is above described.

Before the period above spoken of, music had for very good reasons been admitted into the number of the liberal sciences; and accordingly in the scholastic division of the arts into the trivium and quadrivium, it held a place in the latter: Nevertheless, till the Greek literature began to revive in Europe, saving the summary of harmonics contained in the treatise *De Musica* of Boetius, the students in that faculty had scarce any source of intelligence; and to this it must be attributed that in none of the many tracts written by the monks of those times, and afterwards by the professors or scholastics as they were called, do we meet with any of those profound disquisitions on harmony and the proportions which resolve the principles of music into geometry; nor any of those nice calculations and comparisons of ratios, or subtle distinctions between the consonances of one kind and those of another, which abound in the writings of the ancient Greeks; so that were we to judge from the many discourses written during that dark period, and bearing the titles of *Micrologus*, *Metrologus*, and others of the like import, we should conclude that the science of harmonics had scarce any existence among mankind. Nor could any great advantages result from the writings of Boetius, seeing that there wanted light to read them by; and this was not obtained till Franchinus introduced

troduced it, by procuring translations of those authors from whose writings Boetius had compiled his work.

That the studies of the monkish musicians must have been confined to the Cantus Gregorianus is evident from this consideration, that they were strangers to music of every other kind; an assertion which will be the more readily credited when we are told that till the middle of the eleventh century rhythmic or mensurable music was not known: Their method of teaching it was by the monochord, without which they had no method of determining the progression of tones and semi-tones in the octave, nor consequently of measuring by the voice any of the intervals contained in it.

The reformation of the scale by Guido Aretinus, and more especially his invention of a method of singing by certain syllables adapted to the notes, facilitated the practice of singing to such a degree, that, as himself relates, the boys of his monastery were rendered capable in a month's time of singing in a regular and orderly succession the several intervals with the utmost accuracy and precision\*. We are told, though not by himself, that he also by an ingenious contrivance transferred the notes of his scale to the left hand, making a several joint of each of the fingers the position of a note. Whether this invention is to be ascribed to him or not, it is pretty certain that it followed soon after the reformation of the scale; and that it gave rise to a distinction of music into manual and tonal, the first comprehending the precepts of singing by the syllables, the other the Cantus Ecclesiasticus, as instituted in the formula of St. Gregory.

At this time the world were strangers to what we call rhythmic music, the practice of singing, and thereby of associating music with poetry, which till then had universally prevailed, rendering any such invention unnecessary: Nevertheless there were some writers who had entertained an idea of transferring the prosody of poetry to music; and a few scattered hints of this kind, which occur in the writings of St. Augustine and our countryman Bede on the subject of metre, sug-

\* Vide infra, vol. I. pag. 448.

gested the formation of a system of metrical laws, such as would not only enable music to subsist of itself, but aid the powers of melody with that force and energy which it is observed to derive from the regular commixture and interchange of long and short quantities.

This improvement was effected in the institution of what is called the *Cantus Mensurabilis*; a branch of musical science which subjected the duration of musical sounds to rule and measure, by assigning to those of the slowest progression certain given portions of time, and to the next in succession a less, in a regular gradation; and which taught a method of signifying by characters, varying in form and colour, the radical notes, with their several ramifications, terminating in those of the smallest value, i. e. of the shortest duration.

An invention of this kind was all that could then be thought wanting, to the perfection of instrumental music; and from this period we may observe that it began to flourish: It is true that the state of the mechanic arts was then very low, and that the instruments in common use were so rudely constructed, as to be scarcely capable of yielding musical sounds. Bartholomeus, in his book *De Proprietatibus Rerum*, in an enumeration of the musical instruments of his time, has described the flute as made of the boughs of an elder-tree hollowed; and an instrument called the *Symphonia*, as made of a hollow tree, closed in leather on either side, which he says is beaten of minstrels with sticks, and that 'by accord of hyghe and lowe thereof comyth full  
' swete notes:' And again, describing the *Psalterium* or *Sawtrie*, he says it differs from the harp, for that it is made of an hollow tree, and that 'the sowne comythe upwarde, the srynges being smytte  
' downwarde; whereas in the harpe the holownesse of the tre is by-  
' nethe.' These descriptions, and others of the like kind which are elsewhere to be met with, are evidence of the inartificial construction of musical instruments in those days, and leave it a question what kind of a harp or other instrument that could be on which king Alfred had attained to such a degree of excellence as to rival the musicians of his time.

Never-

Nevertheless it appears that there were certain instruments, perhaps not in common use, better calculated to produce melody than those abovementioned, namely, those of the viol kind; the specific difference between which and other stringed instruments is, that in the former the sound is produced by the action of a plectrum or bow of hair on the strings: Of these the mention is not only express, but frequent in Chaucer, by the names of the Fithel, Getron, Ribible, and other appellations, clearly synonymous: The invention of this class of instruments is by some, who make the viol the prototype of it, ascribed to the French; but there are other writers who derive the viol itself from the Arabian Rebab, from whence perhaps Ribible and Rebec, the use whereof it is said the Christians learned from the Saracens in the time of the Crusades; but it is more probable, by reason of its antiquity, that it was brought into Spain by the Moors.

To ascertain the degree of perfection to which the practice of instrumental music had attained at any period before the sixteenth century, would be very difficult. The Provençal songs, as being mere vocal compositions, afford no ground on which a conjecture might be formed; and as to their popular tunes, the airs of the Musars and Violers, besides that they seem to have been mere melodies, for the most part the effusions of fancy, and not regulated by harmonical precepts, the impression of them can hardly be supposed to have been either deep or lasting; and this may be the chief reason that the knowledge of them has not reached posterity.

That the practice of instrumental music was become familiar with such young persons of both sexes as had received the benefit of a good education, is clearly intimated by the old poets. Not only the Squire, but the Clerk, Absolon, in Chaucer, are by him described, the one as floyting, i. e. fluting all the day, the other as playing songs on a small Ribible, and elsewhere on the Geterne\*; and in the Confessio Aman-

\* See the character of the Squire among the Prologues to the Canterbury Tales, as also the Miller's Tale passim.

tis of Gower, fol. 178, b. is a plain intimation that the Citole, an instrument nearly resembling the virginal, was in his time the recreation of well educated young women\*.

We are also told by Boccace, in his Account of the Plague at Florence in 1348, that the ladies and gentlemen who retired from that city, and are the relators of the several stories contained in his Decameron, among other recreations in the intervals of their discourses, intermixed music; and that fundry of the persons whose names he mentions played on the lute and the viol. They also danced to the music of the Cornamusa or bagpipe, an instrument which we may infer to have been held in but ordinary estimation from this circumstance, that it is put into the hands of Tindarus, a domestic of one of the ladies; besides that Chaucer in characterizing his Miller says,

‘ A baggepipe well couth he blowe and founē.’

Of vocal concerts, as they stood about the year 1550, or perhaps earlier, a judgment may be formed from the madrigals of that time, which abound with all the graces of harmony. Concerts of instruments alone seem to be of later invention, at least there is no clear evidence of the form in which they existed, other than treatises and compositions for concerts of viols called *Fantasias*, few whereof were published till thirty years after †.

Gio. Maria Artusi, an ecclesiastic of Bologna, and a writer on music about the year 1600, describes the concerts of his time as abounding in sweetness of harmony, and consisting of cornets, trumpets,

\* Vide infra, vol. II, page 106.

† The earliest of which we can speak with certainty, is a treatise in folio by Thomas à Sancta Maria, a Spanish Dominican, published at Valladolid in 1570, entitled ‘*Arte de tanner fantasia para tecla, viguela, y todo instrumentado de tres o quatro ordenes,*’ which carries the antiquity of concerts for viols, and those compositions called *Fantasias*, back to that time, but leaves us at a loss as to other instrumental concerts.

violins, viols, harps, lutes, flutes, and harpsichords: These, as also organs, regals, and guitars, are enumerated in the catalogue of instruments prefixed to the opera, *L'Orfeo*, composed by Claudio Monteverde, and represented at Mantua in 1607. Tom Coryat speaks also of a performance at Venice, chiefly of instrumental music, which he protests he would have travelled an hundred miles on foot to hear, but without any such particular description as can enable us to compare it with the concerts of more modern times.

As touching the theory of the science, it has above been said to have consisted in manual, tonal, and mensurable music, with this farther remark, that, as it was included in the very nature of their profession, and besides required some degree of literature, the great cultivators of it were the regular clergy. These men contented themselves with that small portion of knowledge which was to be attained by the perusal of Boetius, Cassiodorus, Guido, and a few others, who wrote in the Latin tongue; the little they knew they freely communicated; and it was not till the beginning of the fourteenth century that men began to suspect that the science was capable of farther improvement.

About this time Johannes De Muris improved the *Cantus Mensurabilis*, by reducing it to form and demonstrating that the measures thereof, like the ratios of the consonances, were founded in number and proportion: From the rules laid down by him in a treatise entitled *Practica Mensurabilis Cantus*, are derived the distinctions of duple and triple proportion, as they respect the duration of sounds, with all the various modifications thereof. On this tract Prosdocimus Beldimandis wrote a commentary, and farther illustrated the doctrines contained therein in sundry discourses on the subjects of plain and mensurable music. It appears that both these persons were philosophers at large, and eminently skilled in the mathematics; and the liberal manner in which they wrote on music, treating it as a subject of deep speculation, was an inducement with many learned men, who lived under no ecclesiastical rule, to enter into an investigation of its principles. Some of these assumed the character of professors of the science, and undertook by

public lectures to disseminate its principles. The most eminent of these persons were Marchettus of Padua, Johannes Tinctor, Gulielmus Garnerius, and Antonius Suarcialupus, to whom we may add Politian, whose skill in music is manifested in a discourse *De Musica*, contained in his *Panepistemon* or *Prælectiones*, extant in print. But notwithstanding the pains thus taken to revive the science, the improvement of it went on very slowly; whatever advances were made in practice, the theoretical topics of disquisition were soon exhausted, and the science of harmonics may be said to have been for some ages at a stand.

At length the beams of learning began to dawn on the western empire: The city of Constantinople had been the seat of literature for some ages, but the sack of it by the Turks in the year 1453, had driven a great number of learned Greeks thence, who bringing with them an immense treasure of manuscripts, took refuge in Italy. Being settled there, they opened their stores, took possession of the public schools, and became the professors and teachers of the mathematical and other sciences, and indeed of philosophy, eloquence, and literature in general, in all the great cities. Of the many valuable books of Harmonics that are known to have been written by the mathematicians and other ancient Greeks, some had escaped that fate which learning is fure to experience from the ravages of conquest\*, and the contents of these being made public, the principles of the science began to be known and understood by many, who till then were scarcely sensible that it had any principles at all.

This communication of intelligence was very propitious to music, as it determined many persons to the study of the science of harmony. The tonal laws and the *Cantus Mensurabilis* were left to those whose duty it was to understand them; the ratios of sounds, and the nature of consonance were considered as essentials in music, and the investi-

\* Laurus Quirinus of Venice was told by Cardinal Ruthen that upwards of one hundred and twenty thousand volumes were destroyed. Hody, *De Græcis illustr.* lib. II. cap. i.



gation of these was the chief pursuit of such as were sensible of the value of that kind of learning.

Of the many who had profited in this new science, as it may be called, one was Franchinus Gaffurius, a native of Lodi, who having quitted the tuition of a Carmelite monk, who had been his instructor, became soon distinguished for skill in those theoretic principles, the knowledge whereof he had derived from an attendance on the Greek teachers. And having procured copies of the treatises on harmonics of Aristides Quintilianus, Ptolemy, Manuel Bryennius, and Bacchius senior, he caused them to be translated into Latin; and, besides discharging the duty of a public professor of music in the several cities of Italy, became the reviver of musical erudition; and that as well posterity, as those of his own time, might profit by his labours, he digested the substance of his lectures into distinct treatises, and gave them to the world.

The writings of Franchinus, as they were replete with learning drawn from the genuine source of antiquity, and contained the clearest demonstrations of the principles of harmony, were so generally studied, that music began now to assume the character of a secular profession. The precepts therein delivered afforded a greater latitude to the inventive faculty than the tonal laws allowed of; and emancipating the science from the bondage thereof, many who had no relation to the church set themselves to frame compositions for its service, in which the powers both of harmony and melody were united. And hence we may at least with a shew of probability date the origin of an office that yet subsists in the choral establishments of Italy, namely, that of *Maestro di Cappella*; the duty whereof seems uniformly to have been not only that the person appointed to it should as precentor regulate the choir, but also adapt to music the offices performed both on ordinary and solemn occasions. Of the dignity and importance of the office of *Maestro di Cappella* a judgment may be formed from this circumstance, that the persons elected to it for some centuries past appear to have been of distinguished emi-

nence\* ; and of its necessity and utility no stronger argument can be offered, than that among the Germans, to whom the knowledge of music was very soon communicated after its revival in Italy, the office was recognized by the appointment of a director of the choir in the principal churches of all the provinces and cities. The same sense of the importance of this office appears to have been entertained by the protestants, who at the time of the Reformation we find to have been no less sedulous in the cultivation of music with a view to religious worship, than the church that had established it. It is true that Calvin was for some time in doubt whether to adopt the solemn choral service, or that plain metrical psalmody which is recommended by St. Paul to the Colossians, as an incentive to such mirth as was consistent with the Christian profession, and at length determined on the latter.

But Luther, who was excellently skilled in music, considered it not merely as a relief under trouble and anxiety, but as the voice of praise, and as having a tendency to excite and encourage devout affections, besides that he had translated into the German language the Te Deum, and composed sundry hymns, as also tunes to some of the German psalms †, he, with the approbation of Melancthon, received into his church a solemn service, which included anthems, hymns, and certain sweet motets, of which he speaks very feelingly, and of music in general he gives his opinion in these words: ‘ Scimus musicam dæmonibus etiam invisam et intolerabilem esse ‡.’ That the office of a

\* Andrea Adami Bolseña, in the historical preface to his ‘ Osservazioni per ben regolare il Coro de i Cantori della Cappella Pontificia,’ asserts that anciently in the college of pontifical singers the maestro di cappella was a bishop.

† Melchior Adamus, in his life of Luther, has inserted a letter from him to Spalatinus, written anno 1524, wherein he says he is looking out for poets to translate the whole of the Psalms into the German tongue, and requests of Spalatinus his assistance therein. This was some years before Marot translated the Psalms into French.

‡ In an epistle to Senfelius, Musicus, cited by Dr. Wetenhall from Sethus Calvisius, in his Gifts and Offices in the public Worship of God, page 434, but without reference to any work of Calvisius. This epistle, wherever it is, and the above-cited passage is also noticed by Butler in his Principles of Music, page 115. Dr.

chapel-master was recognized by the protestants in the manner abovementioned is hardly to be doubted, seeing that it was exercised at Bavaria by Ludovicus Senfelius, a disciple of Henry Isaac, and an intimate friend and correspondent of Luther \*, and subsists in Germany to this day.

For the reasons above assigned, we may without scruple attribute to Franchinus a share of that merit which is ascribed to the revivors of literature in the sixteenth century; and the rather as his writings, and the several translations of ancient treatises on harmonics which he procured to be made, furnished the students in the science with such a copious fund of information, as enabled them not only to reason justly on its principles, but to extend the narrow bounds of harmony, and lay a foundation for those improvements, which it has been the felicity of later times to experience: And it is not a groundless supposition that the reputation of his writings was a powerful incentive to the publication of those numerous discourses on music of which the ensuing work contains a detail. Indeed so general was the propensity in the professors of the science in Italy, and in Germany more especially, to the compilation of musical institutes, dialogues, and discourses in various forms, that the science was for some time rather hurt by the repetition of the same precepts, than benefited by any intelligence that could in strictness be said to be new. The writings of Zarlino and Salinas are replete with erudition; the same, though in a less eminent degree, may be said of those of Glareanus and the elder Galilei; but of the generality of the Introductions, the Enchiridions, and the Erotemata published in Italy and Germany from about the year 1550 to the middle of the next century, the perspicuity of them is their best praise.

As the revival of the theory of music is to be ascribed to the Italians, so also are those improvements in the practice of it that have

Wetenhall applies this passage to the music of our church, and on the authority thereof pronounces it to be such as no Devil can stand against.

\* Some motets of his composition are extant in the Dodecachordon of Glareanus.

brought.

psalm xli. estimates the importance of music by its universality, and, in a strain of simplicity, corresponding with the manners of the times in which he lived, says that human nature is so delighted with canticles and poems, that by them infants at the breast when they are froward or in pain, are lulled to rest; that travellers in the heat of noon, driving their beasts, such as are occupied in rural labours, as treading or pressing grapes, or bringing home the vintage; and even mariners labouring at the oar, as also women at their distaff, deceive

‘ had also other pipes, which were flutes with four or five stops, like the pipes of shepherds; with these they played not in consort, but singly, and tuned them to sonnets, which they composed in metre, the subject of which was love, and the passions which arise from the favours or displeasures of a mistress. These musicians were Indians trained up in that art for divertisement of the Incas; and the Curacas, who were his nobles, which, as rustical and barbarous as it was, it was not common, but acquired with great industry and study.’

‘ Every song was set to its proper tune; for two songs of different subjects could not correspond with the same aire, by reason that the musick which the gallant made on his flute, was designed to express the satisfaction or discontent of his mind, which were not so intelligible perhaps by the words, as by the melancholy or cheerfulness of the tune which he plaid. A certain Spaniard one night late encountered an Indian woman in the streets of Cozco, and would have brought her back to his lodgings; but she cried out, “ For God’s sake, Sir, let me go, for that pipe which you hear in yonder tower calls me with great passion; and I cannot refuse the summons, for love constrains me to go, that I may be his wife and he my husband.”’

‘ The songs which they composed of their wars and grand achievements were never set to the aires of their flutes, being too grave and serious to be intermixed with the pleasures and softnesses of love; for those were onely sung at their principal festivals, when they commemorated their victories and triumphs. When I came from Peru, which was in the year 1560, there were then five Indians residing at Cozco, who were great masters on the flute, and could play readily by book any tune that was laid before them; they belonged to one Juan Rodriguez, who lived at a village called Labos, not far from the city: And now at this time, being the year 1602, ’tis reported that the Indians are so well improved in musick, that it was a common thing for a man to sound divers kinds of instruments; but vocal musick was not so usual in my time, perhaps because they did not much practise their voices, though the mongrils, or such as came of a mixture of Spanish and Indian blood, had the faculty to sing with a tunable and a sweet voice.’

the time, and mitigate the severity of their labour by songs adapted to their several employments or peculiar conditions. Clearchus relates that at Lesbos the people had a song which they sung while they were grinding corn, and for that reason called *επιμύδιον*; and Thales affirms that he had heard a female slave of that country singing it, turning the mill: It began ‘Mole pistrinum mole, nam et Pittacus molit rex ‘magnæ Mitylenæ,’ and alluded to the practice of that king, who was used to grind corn with a hand-mill, esteeming it a healthy exercise.

Other writers go farther, and affect to discern the principles of music not only in the songs, but the occupations and exercises of artificers and even labourers; one of these in a vein of enthusiasm, perhaps more humorous and singular than persuasive, says, ‘What shall I speak of that petty and counterfeit music which carters make with their whips, hempknockers with their beetels, spinners with their wheels, barbers with their fizzers, smithes with their hammers? where methinks the master-smith with his treble hammer sings deskant whilest the greater buz upon the plain-song: Who doth not straitwaies imagin upon musick when he hears his maids either at the woolhurdle or the milking pail? good God, what distinct intention and remission is there of their strokes? what orderly dividing of their strains? what artificial pitching of their stops \*?’

But besides the pleasure that men derive from music, this satisfaction arises from the study of it, that its principles are founded in the very frame and constitution of the universe, and are as clearly demonstrable as mathematical truth and certainty can render them; and in this respect music may be said to have an advantage over many sciences

\* The Praise of Musicke, 8vo. printed anno 1586, at Oxford, for Joseph Barnes, but conjectured to have been written by Dr. John Case, page 76. Of this person there is a curious account in Athen. Oxon. col. 299. Thomas Ravenscroft, in the Apologie prefixed to his discourse on the true charactering of music, published in 1614, cites it as a work of Dr. Case, whom he styles a ‘Mæccnas of musicke.’

and faculties in the pursuit whereof the attention of mankind has at different periods been deeply engaged: To say nothing of school divinity, which, happily for the world, has given place to rational theology, what can be said of law in general, other than that it is mere human invention? a fabric of science erected it is true on the basis of a few uncontrovertible principles of morality, and of that which we call natural justice, but so accommodated to particular circumstances, to the genius, situation, temper, and capacities of those who are the objects of it, as that what is permitted and encouraged in one country, polygamy, for instance, shall be punished in another. In some constitutions a difference of sex shall aggravate the guilt of the same offence; and custom and usage shall preserve the inheritance of the parent for the benefit of the eldest of his male descendants with the same pretence to justice as the law of nature and reason distributes it among them all. Finally, what shall we say to that system of jurisprudence, which, being allowed to be imperfect, craves the aid of equity to regulate its operation, and mitigate its rigours? or of those glosses and comments which in the civil and canon law are of little less authority than the laws themselves?

As to medicine, setting aside the knowledge of the human frame, and the uses of its constituent parts, a noble subject of speculation it must be confessed, the wiser part of men, rejecting theory as vain and delusive, resolve the whole of the science into observation and practice; thereby confessing that its principles are either very few, or so void of certainty, as not with safety to be relied on.

Of other liberal arts, such as grammar, logic, and rhetoric, it must be allowed that they are of singular use; but, as being the mere inventions of men, and at best auxiliaries to other arts or faculties, they are in their nature subordinate, and in that respect do but resemble the art of memory, which all men know to be founded on principles not existing in nature, but assumed by ourselves; widely differing from those which are the basis as well of musical as mathematical science.

From

From this view of the comparative excellence of music, and its pre-eminence over many other sciences and faculties, we become convinced of the stability of its principles, and are therefore at a loss for the reasons why, in these later times at least, novelty in music should be its best recommendation; or that the love of variety should so possess the generality of hearers, as almost to leave it a question whether or no it has any principles at all.

To satisfy these doubts, it may be sufficient to observe that the principles of harmony allow, as it is fit they should; great scope for the exercise of the invention; and though few pretend to skill in the arts without being in some degree or other possessed of it, yet as all the imaginative arts presuppose a disposition in mankind to receive their impressions, all claim a right, and many the ability, to judge of works of invention and fancy.

The epic poet, trusting that the mind of his reader is co-extensive with his own, endeavours to excite in him the ideas of sublimity and beauty; the dramatic writer hopes to move the affections of his audience to terror and pity by the representation of actions, the reflection on which inspired his mind with those passions; and the painter, giving form to those ideas of grace, greatness, and character which occupy his mind; or selecting the beauties of nature, and transferring them to canvas, or at other times contenting himself with simple imitation, in all these exercises of imagination and art, expects from the judgment of the well-informed connoisseur the approbation of his work.

Now in the several instances above adduced, notwithstanding the concessions made to them, we may discern in the generality of men the want of that sense to which the appeal is made; for, with respect to the epic poem, few are endowed with an imagination sufficiently capacious to discover its beauties; and as to dramatic representation, the most favourite of all public entertainments, although all men pretend to be judges of nature, and the cant of theatres has persuaded most that they are so, few are acquainted with

her operations in the various instances exhibited on the stage, or know with any kind of certainty in what manner the actor is to speak, what tones or inflexions of the voice are appropriated to different passions, or what are the proper gesticulations to express or accompany the sentiment which he is to utter. How many individuals among those numerous audiences, who for a series of years past have affected to admire our great dramatic poet, may we suppose capable of discerning his sense, delivered in a style of dialogue very little resembling that of the present day, or of relishing those high philosophical sentiments with which his compositions and those of Milton abound? \* The answer must be very few: Even humour, a talent which lies level with the observation of the many, is not alike intelligible to all; and some are disgusted with those delineations of low manners, however just and natural, that afford delight to others, as exhibiting to view the human mind in the simplicity of nature, and free from those restraints which are imposed on it by education and refinement.

The painter, in like manner, submitting his work to the public censure, shall find for one that will applaud the grandeur of the design, the fineness of the composition, or the correctness of the drawing, a hundred that would have dispensed with all these excellencies for a greater glare of colouring, and attitudes suited to their own ideas of grace and elegance.

\* The masque of *Comus*, written for the entertainment of a noble family, and a company of chosen spectators, which within these few years was introduced on the public stage, may seem to contradict this observation, for this reason, that although the sentiments contained in it are well known to be drawn from the Platonic, the sublimest of all philosophy; and the imagery has an immediate and uniform reference to the fictions of mythology, it afforded great entertainment to the upper gallery; and the performance gave rise to sundry meetings for the purpose of drinking and singing, some of which were dignified with the name of *Comus's Court*. Nevertheless it may be supposed that the mirth of the enchanter and his crew were more sensibly felt by the multitude than the charms of divine philosophy, which the author endeavours to display, or the reliance on divine providence, which it is the end of the poem to inculcate.

The



The case is the same in sculpture and architecture; to speak of the first: In Roubiliac's statue of Mr. Handel at Vauxhall, few are struck with the ease and gracefulness of the attitude, the dignity of the figure, the artful disposition of the drapery, or the manly plumpness and rotundity of the limbs, but all admire how naturally the slipper depends from the left foot. In works of architecture we look for elegance joined with stability; for symmetry, harmony of parts, and a judicious and beautiful arrangement of pleasing forms; but to these a vulgar eye is blind; whatever is great or massy, it rejects as heavy and clumsy: Such judges as these prefer for its lightness a Chinese to a Palladian bridge; and are pleased with a diagonal view of the towers at the west end of St. Paul's cathedral, for the same reason as they are with a bird cage.

Finally, with respect to music, it must necessarily be, that the operation of its intrinsic powers can extend no farther than to those whom nature has endowed with the faculty which it is calculated to delight; and that a privation of that sense, which, superadded to the hearing, is ultimately affected by the harmony of musical sounds, must disable many, and, as some compute, not fewer than nine out of ten, from receiving that gratification in music which others experience. Such hearers as these are insensible of its charms, which yet they labour to persuade themselves are very powerful; but finding little effect from them, they seek for that gratification in novelty which novelty will not afford; and hence arises that incessant demand for variety which has induced some to imagine that music is in its very nature as mutable as fashion itself. It may be sufficient in this place to have pointed out the reasons or causes of this erroneous opinion of the nature and end of music, the effects and operation thereof will be the subject of future disquisition.

In the interim it must be confessed that there is somewhat humiliating in a discrimination of mankind, that tends to exclude the greater number of them from the enjoyment of those elegant and refined pleasures which the works of genius and invention afford; but this condition

of human nature is capable of proof, and is justified by that partial dispensation of those faculties and endowments which we are taught to consider as blessings, and which no one without impiety can censure. Seeing this to be the case, it may be asked how comes it to pass that a sense of what is true, just, elegant, and beautiful in any of the abovementioned arts, exists as it does at this day? or that there are any works of genius which men with one common consent profess to applaud and admire as the standards of perfection? To this it may be answered, that although the right of private judgment is in some degree exercised by all, it is controuled by the few; and it is the uniform testimony of men of discernment alone that stamps a character on the productions of genius, and consigns them either to oblivion or immortality.

It is beside the purpose of the present discourse to enter into a minute investigation of any particular branch of the science of which this work is the history; what is here proposed is the communication of that intelligence which seemed but the prerequisite to the understanding of what will hereafter be said on the subject. This was the inducement to the above observations on Taste, and the motives that influence it; and this must be the apology for a further examen, a pretty free one it may be said, of those musical entertainments, and that kind of musical performance which the public are at present most disposed to favour.

The present great source of musical delight throughout Europe, is the opera, or, as the French call it, the musical tragedy, concerning which it is to be known, that, if regard be due to the opinions of some writers, who yet are no friends to this entertainment, it is a revival of the old Roman tragedy; and it seems that the inventors of the modern recitative, Jacopo Peri and Giulio Caccini wished to have it thought so; forasmuch as they professed in this species of musical intonation to imitate the practice of the ancients, remarking with great accuracy the several modes of pronunciation, and the notes and accents proper to express grief, joy, and the other affections of the human

man

man mind ; but by what exemplars they regulated their imitation we are no where told ; and it is to be conjectured that those general directions for pronunciation, which are to be found in many discourses on the subject of oratory, were the chief sources whence their intelligence was derived.

In what other respects the musical representations of the ancients and moderns bear a resemblance to each other it is not necessary here to enquire ; it may suffice to say of the modern operâ, that by the sober and judicious part of mankind it has ever been considered as the mere offspring of luxury ; and those who have examined it with a critical eye, scruple not to pronounce that it is of all entertainments the most unnatural and absurd. To descend to particulars in proof of this assertion, would be but to repeat arguments which have already been urged, with little success it is true, but with great force of reason, aided by all the powers of wit and humour.

The principal objections against the opera are summed up by an author, who, though a professed lover of music, has shewn his candour in describing the genuine effect of representations of this kind on an unprejudiced ear. The person here spoken of is *Monf. St. Evremond*, and the following are his sentiments.

‘ I am no great admirer of comedies in music \*, such as now-a-days are in request. I confess I am not displeas’d with their magnificence ; the machines have something that is surpris’ing ; the musick, in some places, is charming, the whole together seems wonderful : But it must be granted me also, that this wonderful is very tedious ; for where the mind has so little to do, there the senses must of necessity languish. After the first pleasure that surprize gives us, the eyes are taken up, and at length grow weary of being conti-

\* The word *COMEDIE* in French comprehends every kind of theatrical representation ; a truer designation of an opera is the term *Tragedie en Musique* ; those of *Lully* are in general so called in the title-page ; and it is plain by the context that the author means not the comic but the tragic opera.

' nually fixed upon the same object. In the beginning of the con-  
 ' sorts we observe the justness of the concords; and amidst all the va-  
 ' rieties that unite to make the sweetness of the harmony, nothing  
 ' escapes us. But 'tis not long before the instruments stun us, and the  
 ' musick is nothing else to our ears but a confused sound that suffers  
 ' nothing to be distinguished. Now how is it possible to avoid being  
 ' tired with the Recitativo, which has neither the charm of singing,  
 ' nor the agreeable energy of speech? The soul fatigued by a long  
 ' attention, wherein it finds nothing to affect it, seeks some relief  
 ' within itself; and the mind, which in vain expected to be enter-  
 ' tained with the show, either gives way to idle musing, or is dissatis-  
 ' fied that it has nothing to employ it. In a word, the fatigue is so  
 ' universal, that every one wishes himself out of the house, and the  
 ' only comfort that is left to the poor spectators, is the hopes that the  
 ' show will soon be over.

' The reason why, commonly, I soon grow weary at operas is, that  
 ' I never yet saw any which appeared not to me despicable, both as to  
 ' the contrivance of the subject, and the poetry. Now it is in vain to  
 ' charm the ears, or gratify the eyes, if the mind be not satisfied; for  
 ' my soul being in better intelligence with my mind than with my  
 ' senses, struggles against the impressions which it may receive, or at  
 ' least does not give an agreeable consent to them, without which even  
 ' the most delightful objects can never afford me any great pleasure.  
 ' An extravagance, set off with musick, dances, machines, and fine  
 ' scenes, is a pompous piece of folly, but 'tis still a folly. Tho' the  
 ' embroidery is rich, yet the ground it is wrought upon is such  
 ' wretched stuff, that it offends the sight.

' There is another thing in operas so contrary to nature, that I can-  
 ' not be reconciled to it, and that is the singing of the whole piece,  
 ' from beginning to end, as if the persons represented were ridiculously  
 ' matched, and had agreed to treat in musick both the most common,  
 ' and most important affairs of life. Is it to be imagined that a master  
 ' calls his servant, or sends him on an errand, singing; that one friend  
 ' imparts

‘ imparts a secret to another, singing ; that men deliberate in council  
 ‘ singing ; that orders in time of battle are given singing ; and that  
 ‘ men are melodiously kill’d with swords and darts. This is the  
 ‘ downright way to lose the life of representation, which without  
 ‘ doubt is preferable to that of harmony ; for harmony ought to be  
 ‘ no more than a bare attendant, and the great masters of the stage  
 ‘ have introduced it as pleasing, not as necessary, after they have per-  
 ‘ form’d all that relates to the subject and discourse. Nevertheless  
 ‘ our thoughts run more upon the musician than the hero in the  
 ‘ opera ; Luigi, Cavallo, and Cesti, are still present to our imagina-  
 ‘ tion. The mind not being able to conceive a hero that sings, thinks  
 ‘ of the composer that set the song ; and I don’t question but that in  
 ‘ the operas at the Palace Royal, Baptift is an hundred times more  
 ‘ thought of than Theseus or Cadmus \*.’

The same author, speaking of recitative, particularly that of the Venetian opera, says that it is neither singing nor reciting †, but

\* Works of Monf. St. Evremond, vol. II. page 84, in a letter to Villiers, duke of Buckingham.

† This remark upon examination will be found to be but too true, notwithstanding the arguments in favour of recitative, which amount in substance to this, that it is a kind of prose in music, that its beauty consists in coming near nature, and in improving the natural accents of words by more pathetic or emphatical tones. Preface to the opera of Semele by Mr. Congreve. Mr. Hughes, to the same purpose, delivers these as his sentiments : ‘ The recitative style in composition is founded on  
 ‘ that variety of accent which pleases in the pronunciation of a good orator, with as  
 ‘ little deviation from it as possible. The different tones of the voice in astonishment,  
 ‘ joy, sorrow, rage, tenderness, in affirmations, apostrophes, interrogations, and all  
 ‘ the other varieties of speech, make a sort of natural musick which is very agree-  
 ‘ able ; and this is what is intended to be imitated, with some helps, by the compo-  
 ‘ ser, but without approaching to what we call a tune or air ; so that it is but a  
 ‘ kind of improved elocution.’ Preface to Mr. Hughes’s Cantatas in the first volume of his Poems.

Upon these several passages it may be remarked, that in the expression of the passions nature doth not offer musical sounds to the human ear : For though the natural tones of grief and joy, the two passions which are most effectually expressed by music, approach nearer to musical precision than any other, yet still they are in-

fomewhat unknown to the ancients, which may be defined to be an aukward ufe of mufic and fpeech\*.

It may perhaps be faid that mufic owes much of its late improvement to the theatre, and to that emulation which it has a tendency to excite, as well in compofers as performers; but who will pretend to fay what direktion the ftudies of the moft eminent muficians of late years would have taken, had they been left to themfelves; it being moft certain that every one of that character has two taftes, the

concinuous and unmufical. Farther, that the founds of the voice in fpeech are immufical is asserted by Lord Bacon in the following paffage: ‘ All founds  
‘ are either mufical founds, which we call tones, whereunto there may be an  
‘ harmony; which founds are ever equal, as finging, the founds of ftringed and  
‘ wind inftruments, the ringing of bells, &c. or immufical founds, which are ever  
‘ unequal; fuch as are the voice in fpeaking, all whifperings, all voices of beafts  
‘ and birds, except they be finging-birds, all percuffions of ftones, wood, parchment,  
‘ fkins, as in drums, and infinite others.’ Nat. Hift. cent. II. feft. 101.

The conclusion from thefe premifes muft be, that mufical founds do not imitate common fpeech; and therefore that recitative can in no degree be faid to be an improvement of elocution.

But admitting the contrary to be the cafe, and that the founds of fpeech were equally mufical with thofe employed in recitative, the inflexions of the voice are too minute to fall in with the divifion of the fcale, allowing even the enarmonic diefis, or the comma, the fmalleft of all fenfible intervals, to make a part of it; and of this opinion is Monf. Duclos, who, in the Encyclopedia, art. DECLAMATION DES ANCIENS, for this reafon denies the poffibility of a notation for fpeech.

Upon the whole, the beauties of the recitative ftyle in mufic confift not in the power of imitating the tones, much lefs the various inflexions of the voice in fpeech, but in the varieties of accent and melody, which follow from its not being fubject to metrical laws: In fhort, what has been faid and infifted on in this difcourfe of mufic in general, may be applied to recitative, viz. that its mimetic powers are very inconfiderable, and that whatever charms it poffeffes are abfolute and inherent.

\* Thefe obfervations of St. Evremond refpect the mufical tragedy, but the Italians have alfo a mufical comedy called a Burletta, which has been lately introduced into England, and given rife to the diftinction in the advertisements for fubfcriptions of firft, fecond, &c. *ferious* man or woman. This entertainment affords additional proof how little mufic, as fuch, is able to fupport itfelf: In the tragic opera it borrows aid from the tumidity of the poetry; in the comic, from the powers of ridicule, to which mufic has not the leaft relation.

one for himself, and the other for the public? Purcell has given a plain indication of his own, in a declaration that the gravity and seriousness of the Italian music were by him thought worthy of imitation\*: The studies of Stradella, Scarlatti, and Bononcini for their own delight were not songs or airs calculated to astonish the hearers with the tricks of the finger, but cantatas and duets, in which the sweetness of the melody, and the just expression of fine poetical sentiments, were their chief praise; or madrigals for four or more voices, wherein the various excellencies of melody and harmony were united, so as to leave a lasting impression on the mind. The same may be said of Mr. Handel, who, to go no farther, has given a specimen of the style he most affected in a volume of lessons for the harpsichord, with which no one will say that any modern compositions of the kind can stand in competition. These, as they were made for the practice of an illustrious personage, as happy in an exquisite taste and correct judgment as a fine hand, may be supposed to be, and were in fact compositions *con amore*. In other instances this great musician compounded the matter with the public, alternately pursuing the suggestions of his fancy, and gratifying a taste which he held in contempt †.

Whoever is curious to know what that taste could be, to which so great a master as Mr. Handel was compelled occasionally to conform, in prejudice to his own, will find it to have been no other than that which is common to every promiscuous auditory, with whom it is a notion that the right, and as some may think, the ability to judge, to applaud and condemn is purchased by the price of admittance; a taste that leads all

\* It is worth remarking that the poets, who of all writers seem the most sensible of the efficacy of music, appear uniformly to consider it as an intellectual, and consequently a serious pleasure, engaging not only the attention of the ear, but the powers and faculties of the soul. To this end, and not for the purpose of exciting mirth, it is in numberless instances introduced by Shakspeare; and among the poems of Milton is one entitled 'At a solemn Music.'

† An intimate friend of Mr. Handel, looking over the score of an opera newly composed by him, observed of some of the songs that they were excellent: You may think so, says Mr. Handel, but it is not to them, but to these, turning to others of a vulgar cast, that I trust for the success of the opera.

who possess it to prefer light and trivial airs, and such as are easily retained in memory, to the finest harmony and modulation; and to be better pleased with the licentious excesses of a finger, than the true and just intonation of the sweetest and most pathetic melodies, adorned with all the graces and elegancies that art can suggest. Such critics as these, in their judgment of instrumental performance, uniformly determine in favour of whatever is most difficult in the execution, and, like the spectators of a rope-dance, are never more delighted than when the artist is in such a situation as to render it doubtful whether he shall incur or escape disgrace.

To such a propensity as this, the gratifications whereof are of necessity but momentary, leaving no impression upon the mind, we may refer the ardent thirst of novelty in music, and that almost general reprobation of whatever is old, against the sense of the poet:

Now, good Cefario, but that piece of song,  
That old and antique song we had last night,  
Methought it did relieve my passion much;  
More than light airs, and recollected terms  
Of these most brisk and giddy-paced times.

TWELFTH-NIGHT, ACT II. Scene iv.

But to account for it is in no small degree difficult: To justify it, it is said that there is a natural vicissitude of things, and that it were vain to expect that music should be permanent in a world where change seems to predominate.

But it may here be observed, that there are certain laws of nature that are immutable and independent on time or place, the precepts of morality and axioms in physics for instance; there never was since the creation a time when there did not exist an irreconcilable difference between truth and falsehood; or when two things, each equal to the same third, were unequal one to the other; or, to carry the argument farther, when consonance and dissonance were not as essentially distinguished from each other, both in their ratios and by their effects, as they



they are at this day; or when certain interchanges of colours, or forms and arrangements of bodies were less pleasing to the eye than the same are now; from whence it should seem that there are some subjects on which this principle of mutation does not operate: And, to speak of music alone, that, to justify the love of that novelty which seems capable of recommending almost any production, some other reasons must be resorted to than those above.

But, declining all farther research into the reason or causes of this principle, let us attend to its effects; and these are visible in the almost total ignorance which prevails of the merits of most of the many excellent artists who flourished in the ages preceding our own: Of Tye, of Redford, Shephard, Douland, Weelkes, Wilbye, Est, Bateson, Hilton, and Brewer, we know little more than their names; these men composed volumes which are now dispersed and irretrievably lost, yet did their compositions suggest those ideas of the power and efficacy of music, and those descriptions of its manifold charms that occur in the verses of our best poets. To say that these and the compositions of their successors Blow, Purcell, Humphrey, Wife, Weldon, and others were admired merely because they were new, is begging a question that will be best decided by a comparison, which some of the greatest among the professors of the art at this day would shrink from.

Upwards of two hundred years have elapsed since the anthem of Dr. Tye, 'I will exalt thee,' was composed; and near as long a time since Tallis composed the motet 'O sacrum convivium,' which is now sung as an anthem to the words 'I call and cry to thee, O Lord;' and it is comparatively but a few years since Geminiani was heard to exclaim in a rapture that the author of it was inspired\*. Amidst all the va-

\* To this testimony we may add that of a foreigner respecting the church-music of queen Elizabeth's days, thus recorded by Strype in his *Annals of the Reformation*, vol. II. page 314.

'In her [the queen's] passing, (I say) she visited Canterbury; how magnificently she was received and entertained here by archbishop Parker, I have related elsewhere. This I only add, that while she was here, the French ambassador came

'to

rieties of composition in canon, which the learning and ingenuity of the ablest musicians have produced, that of Bird, composed in the reign of his mistress Elizabeth, is considered as a model of perfection. Dr. Blow's song, 'Go, perjured man,' was composed at the command of king Charles the Second, and Purcell's 'Sing all ye Muses,' in the reign of his successor; but no man has as yet been bold enough to attempt to rival either of these compositions. Nor is there any of the vocal kind, consisting of recitative and air, which can stand a competition with those two cantatas, for so we may venture to call them, 'From rosy bowers,' and 'From silent shades.'

Of poetry, painting, and sculpture, it has been observed that they have at different periods flourished and declined; and that there have been times when each of those arts has been at greater perfection than now, is to be attributed to that vicissitude of things which gave rise to the present enquiry, and is implied in an observation of Lord Bacon, that in the youth of a state arms do flourish, in its middle age learning, and in its decline mechanical arts and merchandize\*. And if this observation on the various fates of poetry, painting, and sculpture be true, why is it to be assumed of music that it is continually improving, or that every innovation in it must be for the better? That the music of the church has degenerated and been greatly corrupted by an intermixture of the theatric style, has long been a subject of complaint; the Abbat Gerbert laments this and other innovations in terms the most affecting †; and indeed the evidence of this corruption must be apparent to every one that reflects on the style

'to her. Who hearing the excellent music in the cathedral church, extolled it up to the sky, and brake out into these words: "O God, I think no prince beside in all Europe ever heard the like, no, not our Holy Father the Pope himself." A young gentleman that stood by him replied, "Ah, do you compare our queen to the knave of Rome, or rather prefer him before her?" Whereat the ambassador was highly angered, and told it to some of the councillors. They bade him be quiet, and take it patiently, for the boys, said they, with us do so call him and the Roman Antichrist too.'

\* Essay of Vicissitude of Things.

† De Cantu et Musica Sacra, tom. II. pag. 375.

and structure of those compositions for the church that are now most celebrated abroad, even those of Pergolesi, his masses, for instance, and those of Iomelli and Perez, have nothing that distinguishes them but the want of action and scenic decoration, from dramatic representations: Like them they abound in symphony and the accompaniment of various instruments, no regard is paid to the sense of the words, or care taken to suit it with correspondent sounds; the clauses *Kyrie Eleison* and *Christe Eleison*, and *Miserere mei* and *Amen* are uttered in dancing metres; and the former not seldom in that of a minuet or a jig. Even the funeral service of Perez, lately published in London, so far as regards the measures of the several airs, and the instrumental aids to the voice-parts, differs as far from a sacred and solemn composure as a burletta does from an opera or musical tragedy.

From these premises it may be allowed to follow, that a retrospect to the musical productions of past ages is no such absurdity, as that a curious enquirer need decline it. No man scruples to do the like in painting; the connoisseurs are as free in remarking the excellencies of Raphael, Titian, Domenichino, and Guido, as in comparing succeeding artists with them; and very considerable benefits are found to result from this practice: Our present ignorance with respect to music may betray us into a confusion of times and characters, but it is to be avoided by an attention to those particular circumstances that mark the several periods of its progress, its perfection and its decline.

Of the monkish music, that is to say the *Cantus Ecclesiasticus*, little can be said, other than that it was solemn and devout: After the introduction into the church service of music in consonance, great skill and learning were exercised in the composition of motets; but the elaborate contexture, and, above all, the affectation of musical and arithmetical subtilties in these compositions, as they conduced but little to the ends of divine worship, subjected them to censure, and gave rise to a style, which, for its simplicity and grandeur many look up to as the perfection of ecclesiastical harmony; and they are not a few who think that at the end of the sixteenth century the Romish church-

church-music was at its height, as also that with us of the reformed church its most flourishing state was during the reign of Elizabeth; though others postpone it to the time of Charles II. grounding their opinion on the anthems of Blow, Humphrey, and Purcell, who received their first notions of fine melody from the works of Carissimi, Cesti, Stradella, and others of the Italians.

For the perfection of vocal harmony we must refer to a period of about fifty years, commencing at the year 1560, during which were composed madrigals for private recreation in abundance, that are the models of excellence in their kind; and in this species of music the composers of our own country appear to be inferior to none. The improvement of melody is undoubtedly owing to the drama; and its union with harmony and an assemblage of all the graces and elegancies of both we may behold in the madrigals of Stradella and Bononcini, and the chorusses and anthems of Handel; and among the compositions for private practice in the duets of Steffani and Handel. As to the harmony of instruments, it is the least praise that can be bestowed on the works of Corelli, Geminiani, and Martini, to say that through all the vicissitudes and fluctuations of caprice and fancy, they retain their primitive power of engaging the affections, and recommending themselves to all sober and judicious hearers\*.

\* Of the instrumental music of the present day, notwithstanding the learning and abilities of many composers, the characteristics of it are noise without harmony, exemplified in the frittering of passages into notes, requiring such an instantaneous utterance, that thirty-two of them are frequently heard in the time which it would take moderately to count four; and of this cast are the Symphonies, Periodical Overtures, Quartettos, Quintettos, and the rest of the trash daily obtruded on the world.

Of solos for the violin, an elegant species of composition, as is evident in those most excellent ones of Corelli and Geminiani, and in many of those of Le Clair, Carbonelli, Festing, and Tartini, few have of late been published that will bear twice hearing; in general, the sole end of them is to display the powers of execution in prejudice to those talents which are an artist's greatest praise.

The lessons for the harpsichord of Mr. Handel, abounding with fugues of the finest contexture, and the most pathetic airs, are an inexhaustible fund of delight; those of the present time have no other tendency than to degrade an instrument invented

for

To music of such acknowledged excellence as this, the preference of another kind, merely on the score of its novelty, is surely absurd; at least the arguments in favour of it seem to be no better than those of Mr. Bayes in behalf of what he calls the new way of dramatic writing; which however were not found to be of such strength as to withstand the force of that ridicule, which was very seasonably employed in restoring the people to their wits.

The performance on the organ is for the most part unpremeditated, as the term *Voluntary*, which is appropriated to that instrument, imports; we may therefore look on this practice as extemporary composition; and it is not enough to be regretted how much the applauses bestowed on the mere powers of execution have contributed to degrade it. Bird and Blow, as organists, are celebrated not so much for an exquisite hand, as for their skill, and that fullness of harmony which distinguished their performance, and which this noble instrument alone is calculated to exhibit\*. The canzones of Frescobaldi, Kerl, Krieger, and Thiel, and above all, the fugues of Mr. Handel, including those in his lessons, shew us what is the true organ style, and leave us to lament that the idea of a voluntary on the organ is lost in those *Capriccios* on a single stop, which, as well in our parochial as cathedral service, follow the psalms. As to what is called a concerto on the organ, it is a kind of composition consisting chiefly of solo passages, contrived to display what in modern musical phrase is termed a brilliant finger; and which, if attended to, will, amidst the clamour of the accompaniment, in fact be found instead of four, to consist of but two parts.

for the elegant recreation of the youthful of the other sex, and to render it what at best it now appears to be, and may as truly as emphatically be termed, a tinkling cymbal.

\* Old Mr. Arthur Bedford, chaplain to Aske's Hospital at Hoxton, and who died not many years ago, was acquainted with Dr. Blow, and says of him that he was reckoned the greatest master in the world for playing most gravely and seriously in his voluntaries. *The Great Abuse of Musick*, by Arthur Bedford, M. A. Lond. 8vo. 1711, page 248.

But of all the abuses of instrumental performance, none is more injurious to music than the practice of single instruments, exemplified in solos and solo concertos, originally intended for private recreation, but which are now considered as an essential part of a musical entertainment. Music composed for a single instrument, as consisting of the mere melody of one part, is less complicated than that which is contrived for many; and melody is ever more pleasing to an unlearned ear than the harmony of different parts. The uniformity of a minuet, consisting of a determined number of bars, the emphasis of each whereof returns in an orderly succession of measures or times, corresponds with some ideas of metrical regularity which are common to all minds, and affords a reason for that delight which the ear receives from the pulsatile instruments. Hence it is easy to account for the obtrusion of such compositions on the public ear as furnish opportunities of displaying mere manual proficiency in the artist; a solo or a concerto on the violin, the violoncello, the hautboy, or some other such instrument, does this, and gives scope for that exercise of a wild and exuberant fancy which distinguishes, or rather disgraces, the instrumental performance of this day.

The first essays of this kind were solos for the violin, the design whereof was to affect the hearer by the tone of the instrument, and those graces of expression which are its known characteristic; but it was no sooner found that the merit of these compositions was estimated by the difficulty of performing them, than the plaudits of the auditory became an irresistible temptation to every kind of extravagance: These have been succeeded by compositions of a like kind, but framed with a very different view, Solos and Concertos, containing passages that carried the melody beyond the utmost limits of the scale, indeed so high on the instrument, that the notes could not be distinctly articulated, in violation of a rule that Lord Bacon has laid down, that the mean tones of all instruments, as being the most sweet, are to be preferred to those at either extremity of either the

the voice or instrument \*. The last improvement of licentious practice has been the imitation of tones dissimilar to those of the violin, the flute, for instance, and those that resemble the whistling of birds; and the same tricks are played with the violoncello. To what farther lengths these extravagancies will be carried, time only can discover.

Amidst that stupor of the auditory faculties, which leads to the admiration of whatever is wild and irregular in music, a judicious hearer is necessitated to seek for delight in those compositions, which, as owing their present existence solely to their merit, must, like the writings of the classic authors, be looked on as the standards of perfection; in the grave and solemn strains of the most celebrated composers for the church, including those of our own country, who in the opinion of the best judges are inferior to none †; or in the gayer

\* Nat. Hist. cent. II. sect. 173. The *Sylva Sylvarum*, or Natural History of Lord Bacon, contains a great variety of experiments and observations tending to explain the properties of sound and the nature of harmony. The following judicious remark may serve as a specimen of the author's skill in his subject, and at the same time shew his sentiments of harmony, and in what he conceived the perfection thereof to consist. 'The sweetest and best harmony is, when every part or instrument is not heard by itself, but a constellation of them all; which requireth to stand some distance off, even as it is in the mixture of perfumes, or the taking of the smells of several flowers in the air.' Cent. III. sect. 225.

† Such music as this has been the delight of the wisest men in all ages. Luther, who was so great an admirer of music, that he scrupled not, as a science, to rank it next to theology, which is styled the queen of the sciences, was often used to be recreated with the singing of motets. Bishop Williams, while he was lord keeper, chose to retain the deanery of Westminster for the sake of the choral service performed there: 'He was loath,' says his historian, 'to stir from that seat where he had the command of such exquisite music.' And in a more particular manner the same person speaks of the love which that great prelate bore to music, for, says he, 'that God might be praised with a chearful noise in his sanctuary, he procured the sweetest music both for the organ and voices of all parts that ever was heard in an English quire. In those days that abbey and the Jerusalem Chamber, where he gave entertainment, were the volaries of the choicest fingers that the land had bred.' Life of the Lord Keeper Williams by Hackett, Bishop of Litchfield and Coventry, pag. 62, 46. Milton has been very explicit in declaring  
what

and more elegant compositions, as well instrumental as vocal, of others contrived for the recreation and solace, in private assemblies and select companies, of persons competently skilled in the science.

How far remote that period may be when music of this kind shall become the object of the public choice, no one can pretend to tell: To speak of music for instruments, the modern refinements in practice, and the late improvements in the powers of execution have placed it beyond the reach of view: and it affords but small satisfaction to a lover of the art to reflect that the world is in possession of such instrumental compositions as those of Corelli, Bononcini, Geminiani, and Handel, when not one principal performer in ten has any relish of their excellencies, or can be prevailed on to execute them but with such a degree of unfeeling rapidity, as to destroy their effect, and utterly to defeat the intention of the author. In such kind of performance, wherein not the least regard is paid to harmony or expression, we seek in vain for that most excellent attribute of music, its power to move the passions, without which this divine science must be considered in no better a view than as the means of recreation to a gaping crowd, insensible of its charms, and ignorant of its worth.

what kind of music delighted him most, in the verses entitled ‘ At a solemn music.’ Dr. Busby, the master of Westminster-school had an organ, and music of the most solemn kind in his house at the time when choral service was throughout the kingdom forbidden to be performed. Vide ante, pag. xxiii. in not.



A  
G E N E R A L H I S T O R Y  
O F T H E  
S C I E N C E and P R A C T I C E  
O F  
M U S I C.

B O O K I. C H A P. I.

**T**HERE is scarce any consideration that affords greater occasion to lament the inevitable vicissitude of things, than the obscurity in which it involves, not only the history and real characters, but even the discoveries of men. When we consider the various pursuits of mankind, that some respect merely the interest of individuals, and terminate with themselves, while others have for their object the investigation of truth, the attainment and communication of knowledge, or the improvement of useful arts; we applaud the latter, and reckon upon the advantages that posterity must derive from them: but this it seems is in some degree a fallacious hope; and, notwithstanding the present improved state of learning in the world, we have reason to deplore the want of what is lost to us, at the same time that we rejoice in that portion of knowledge which we possess.

Whoever is inclined to try the truth of this observation on the subject of the present work, if he does not see cause to acquiesce in it, will at least be under great difficulties to satisfy himself how it comes to pass, that seeing what miraculous effects have been ascribed to the music of the ancients, we know so little concerning it, as not only to be ignorant of the use and application of most of their instruments, but even in a great measure of their system itself.

To say that in the general deluge of learning, when the irruptions of barbarous nations into civilized countries, the seats and nurseries of science, became frequent, music, as holding no sympathy with minds actuated by ambition and the lust of empire, was necessarily overwhelmed, is not solving the difficulty; for though barbarism might check, as it did, the growth of this as well as other arts, the utter extirpation of it seems to have been as much then, as it is now, impossible. That conquest did not produce the same effect on the other arts is certain; the architecture, the sculpture, and the poetry of ancient Greece and Rome, though they withdrew for a time, were yet not lost, but after a retirement of some centuries appeared again. But what became of their music is still a question: the pyramids, the Pantheon, the Hercules of Glycon, the Grecian Venus, the writings of Homer, of Plato, of Aristotle, and other ancients, are still in being; but who ever saw, or where are deposited, the compositions of Terpander, Timotheus, or Phrynis? Did the music of these, and many other men whom we read of, consist of mere Energy, in the extemporary prolation, of solitary or accordant sounds; or had they, in those very early ages, any method of notation, whereby their ideas of sound, like those of other sensible objects, were rendered capable of communication? It is hard to conceive that they had not, when we reflect on the very great antiquity of the invention of letters; and yet before the time of Alypius, who lived A. C. 115, there are no remaining evidences of any such thing.

The writers in that famous controversy set on foot by Sir William Temple, towards the close of the last century, about the comparative excellence of the ancient and modern learning, at least those who sided with the ancients, seem not to have been aware of the difficulty they had to encounter, when they undertook, as some of them did, to maintain the superiority of the ancient over the modern music, a difficulty arising not more from the supposed weight on the other side of the argument, than from the want of sufficient Data on their own. In the comparison of ancient with modern music, it was reasonable to expect that the advocates for the former should at least have been able to define it; but Sir William Temple, who contends for its superiority, makes no scruple to confess his utter incapacity to judge about it: 'What, says he, are become of the charms of music, ' by which men and beasts, fishes, fowls, and serpents were so frequently

‘quently enchanted, and their very natures changed; by which the  
 ‘passions of men are raised to the greatest height and violence; and  
 ‘then so suddenly appeased, so as they might be justly said to be  
 ‘turned into lions or lambs, into wolves or into harts, by the powers  
 ‘and charms of this admirable art? ’Tis agreed of all the learned  
 ‘that the science of music, so admired by the ancients, is wholly lost  
 ‘in the world, and that what we have now is made up of certain  
 ‘notes that fell into the fancy or observation of a *poor friar* in chant-  
 ‘ing his mattins: so as those two divine excellencies of music and  
 ‘poetry are grown in a manner to be little more but the one *fiddling*,  
 ‘and the other rhyming, and are indeed very worthy the ignorance  
 ‘of the friar, and the barbarousness of the Goths that introduced  
 ‘them among us \*.’

Whatever are the powers and charms of this admirable art, there  
 needs no farther proof than the passage above-cited, that the author  
 of it was not very susceptible of them; for either the learned of these  
 later times are strangely mistaken, or those *certain notes*, which he  
 speaks so contemptuously of, have, under the management of skilful  
 artists, produced effects not much less wonderful than those attributed  
 to the ancient music. And it is not to be imagined but that Sir Wil-  
 liam Temple, in the course of a life spent among foreigners of the  
 first rank, and at a time when Europe abounded with excellent masters,  
 must have heard such music, as, had he had any ear to appeal to,  
 would have convinced him that the art had still its charms, and  
 those very potent ones too.

But, not to follow the example of an author, whose zeal for a fa-  
 vourite hypothesis had led him to write on a subject he did not under-  
 stand, we will proceed to trace the various progress of this art: its  
 progress, it is said, for the many accounts of the time of the in-  
 vention, as well as of the inventors of music, leave us in great uncer-  
 tainty as to its rise. The authority of poets is not very respectable in  
 matters of history; and there is hardly any other for those common  
 opinions that we owe the invention of music to Orpheus, to Amphion,  
 Linus, and many others; unless we except that venerable doctor and  
 schoolman Thomas Aquinas, who asserts, that not music alone, but  
 every other science, was understood, and that by immediate revela-

\* Essay on the ancient and modern learning.

tion from above, by the first of the human race. However, it may not be amiss to mention the general opinions as to the invention of music, with this remark, that no greater deference is due to many of them than is paid to other fables of the ancient poets and mythologists.

There can be no doubt but that vocal music is more ancient than instrumental, since mankind were endowed with voices before the invention of instruments; but the great question is, at what time they began to frame a system, and this naturally leads to an enquiry into the time of the invention of instruments; for if we consider the evanescence of sound uttered by the human voice, the notion of a system without, is at this day not very intelligible.

But previous to any such enquiry, we may very reasonably be allowed the liberty of conjecture, in which if we indulge ourselves, we cannot suppose but that an art so suited to our natures, and adapted to our organs, as music is, must be nearly as ancient as those of Agriculture, Navigation, and numberless other inventions, which the necessities of mankind suggested, and impelled them to pursue: the desire of the conveniences, the comforts, the pleasures of life, is a principle little less active than that which leads us to provide for its wants; and perhaps it might be even before they had learned to 'go down to the sea in ships' that men began to 'handle the harp and organ,' which it cannot be supposed they could do to any delightful purpose, without some knowledge of those harmonical relations and coincidences of sound, which are the essence of the art. Such a knowledge as this we may easily conceive was soon attained by even the earliest inhabitants of the earth. The voices of animals, the whistling of the winds, the fall of waters, the concussion of bodies of various kinds, not to mention the melody of birds, as they all contain in them the rudiments of harmony, may easily be supposed to have furnished the minds of intelligent creatures with such ideas of sound, as time, and the accumulated observation of succeeding ages, could not fail to improve into a system\*.

\* Lucretius supposes that mankind took their first notions of music from the singing of birds.

At liquidas avium voces imitariæ ore  
Ante fuit multo, quam lævia carmina cantu  
Concelebrare homines possent, aureisque juvare. LIB. V.

A reason has already been given to shew that the notion of a musical system does necessarily presuppose musical instruments; it

And the same poet has in some sort ascertained the origin of wind instruments in the following elegant verses.

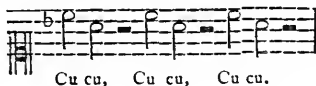
Et zephyri cava per calamorum sibi primum  
 Agrestis docuere cava inflare cicutas,  
 Inde minutatim dulcis didicere querelas,  
 Tibia quas fundit digitis pulfata canentum. *Ibid.*

Thro' all the woods they heard the charming noise  
 Of chirping birds, and try'd to frame their voice  
 And imitate. Thus birds instructed man,  
 And taught them songs before their art began;  
 And whilst soft evening gales blew o'er the plains,  
 And shook the founding reeds, they taught the swains,  
 And thus the pipe was fram'd and tuneful reed. *CREECH.*

Part of the natural song of the black-bird consists of true diatonic intervals, and is thus to be expressed in musical notes.



That of the cuckow is well known to be this:

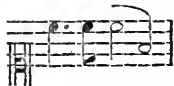


Cu cu, Cu cu, Cu cu.

And Kircher, *Musurg. lib. I. cap. xiv.* has given the songs of other birds, which with great ingenuity and industry he had investigated, as namely that of the nightingale, the quail, the parrot, the cock and hen, in the common characters of musical notation. Though that which he gives of the common dunghill cock seems to be erroneous, and is thus to be expressed:



And it may be observed that between the dunghill and bantam cock there is a difference, for the latter intonates the following sounds, which constitute the interval of a true fifth.



The song of the hen at the time of her laying, is thus described by him:



and clearly appears to be an intonation of a major sixth.

therefore becomes necessary to trace the invention of such instruments as are distinguished by the simplicity of their construction, and whose forms and properties at this distance of time are most easily to be conceived of, and these clearly seem to be reduced to two, the lyre and the pipe.

The same author asserts that other animals, and even quadrupeds, articulate different sounds that have a musical ratio to each other, as an instance whereof he mentions an animal produced in America called the *Pigritia*, or Sloth, of which he gives the following curious account.

‘ Before I speak of his voice I will give a description of this whole animal, which this very year I received from the mouth of father Johannes Torus, procurator of the province of the new kingdom in America, who had some of these animals in his possession, and made several trials of their natures and properties. The figure of this animal is uncommon, they call it *Pigritia*, on account of the slowness of its motions. It is of the size of a cat, has an ugly countenance, and claws projecting in the likeness of fingers: it has hair on the back part of its head, which covers its neck; it brushes the very ground with its fat belly. It never rises upon its feet, but moves forward so slowly, that it scarce in a continued space advances above the cast of a dart in even fifteen days. No one knows what meat it feeds on, nor are they seen to eat; they for the most part keep on the tops of trees, and are two days ascending and as many in descending. Moreover, nature seems to have furnished them with two kinds of arms or weapons against other beasts and animals their enemies. First their feet, in which they have such strength, that whatsoever animal they lay hold on they keep it so fast, that it is never after able to free itself from their nails, but it is compelled to die through hunger: the other is, that this beast so greatly affects the men that are coming towards it by its countenance, that in pure compassion they refrain from molesting it, and easily persuade themselves not to be solicitous about that which nature has subjected to so defenceless and miserable a state of body. The above-mentioned father, in order to make a trial of this procured one of these animals to be brought to the college of our society at Carthagen of the new kingdom, and threw a long pole under its feet, which he immediately grasped so tenaciously, that it would by no means let it go; the animal thus bound by a voluntary suspension, was placed between two beams, where he stuck thus suspended for forty days together, without either meat, drink, or sleep, having his eyes continually fixed on those that looked on him, whom he affected so with his sorrowful aspect, that there was scarce any one that was not touched with pity for him. Being at length freed from this long suspension, a dog was thrown to him, which he immediately seized with his feet, and forcibly detained for the space of four days, at the end whereof the miserable creature expired, being famished through hunger. This I had from the mouth of the above father.’

They add moreover (to return to the purpose) that this beast makes no noise or cry but in the night, and that with a voice interrupted only by the duration of a sigh or semi-pause. It perfectly intonates, as learners do, the first elements of music, *ut, re, mi, fa, sol la, la, sol, fa, mi, re, ut*. ascending and descending through the common intervals of the six degrees, inasmuch that the Spaniards, when they first took possession of these coasts, and perceived such a kind of vociferation in the night, thought they heard men accustomed to the rules of music. It is called by the inhabitants *Haut*, for no other reason than that it repeats through every degree of the interval of a sixth the sound *ha, ha, ha, ha, ha, ha, ha*, &c.



The

The lyre, the most considerable of the two, and the prototype of the *fidicinal* or stringed species, is said to have been invented about the year of the world 2000, by Mercury, who finding on the bank of the river Nile a shell-fish of the tortoise kind, which an inundation of that river had deposited there, and observing that the flesh was already consumed, he took up the back shell, and hollowing it, applied strings to it\*; though concerning the number of strings there is great controversy, some asserting it to be only three, and that the sounds of the two remote were acute and grave, and that of the intermediate one a mean between those two extremes: that Mercury resembled those three chords to as many seasons of the year, which were all that the Greeks reckoned, namely, Summer, Winter, and Spring, assigning the acute to the first, the grave to the second, and the mean to the third.

Others assert that the lyre had *four* strings; that the interval between the first and fourth was an octave; that the second was a fourth † from the first, and the fourth the same distance from the third, and that from the second to the third was a tone ‡.

Another class of writers contend that the lyre of Mercury had *seven* strings: Nicomachus, a follower of Pythagoras, and the chief of them, gives the following account of the matter: ‘ The lyre made of the shell was invented by Mercury, and the knowledge of it, as it was constructed by him of seven strings was transmitted to Orpheus; Orpheus taught the use of it to Thamyris and Linus, the latter of whom taught it to Hercules, who communicated it to Amphion the Theban, who built the seven gates of Thebes to the seven strings of the lyre.’ The same author proceeds to relate ‘ that Orpheus was afterwards killed by the Thracian women, and that they are reported to have cast his lyre into the sea, which was after-

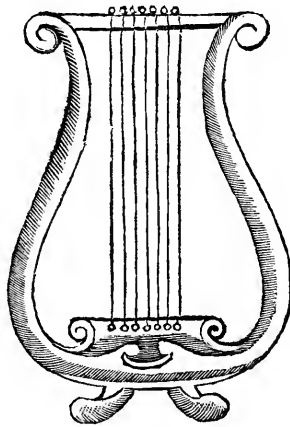
\* Nicomachi Harmonices Manualis, lib. II. ex vers. Meibom. p. 29.

† In this and all other instances, where the measures of intervals are assigned, it is to be observed that they include the two extreme terms, in which respect the phrases of music and physic agree; to this purpose a very whimsical but ingenious and learned writer on music and many other subjects, in the last century, namely Charles Butler, thus speaks: ‘ As physicians say a tertian ague, which yet cometh but every second day, and a quartan, whose access is every third day, (because they count the first fit-day for one) so do musicians call a third, a fourth, and a fifth (which yet are but two, three, and four-notes from the ground) because they account the ground itself for one.’ Principles of Music, by Charles Butler, quarto, London 1636, pag. 52, in not.

‡ Boetius de Musica, lib. I. pag. 20.

wards thrown up at Antiffa, a city of Lesbos; that certain fishers finding it, they brought it to Terpander, who carried it to Egypt, exquisitely improved, and shewing it to the Egyptian priests, assumed to himself the honour of its invention \*.

And with respect to the form of the ancient lyre, as little agreement is to be found among authors as about the number of strings; the best evidences concerning it are the representations of that instrument in the hands of ancient statues of Apollo, Orpheus, and others, on bas-reliefs, antique marbles, medals and gems †; but of these it must be confessed that they do not all favour the supposition that it was originally formed of a tortoise shell; though on the other hand it may be said, that as none of those monuments can pretend to so high an antiquity as the times to which we assign the invention of the lyre, they are to be considered as exhibitions of that instrument in a state of improvement, and therefore are no evidence of its original form. Galilei mentions a statue of Orpheus in the Palazzo de Medici, made by the Cavalier Bandinelli, in the left hand whereof is a lyre of this figure ‡.



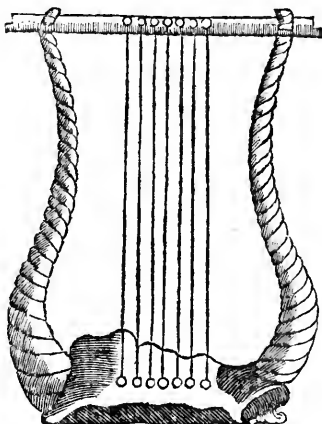
\* Nicom. lib. II. pag. 29.

† Mercennus de Instrumentis Harmonicis, lib. I. pag. 7. Vincentio Galilei Dialogo della Musica Antica e Moderna, pag. 125. Athanasius Kircher Musurgia universalis, lib. II. cap. vi. § iii.

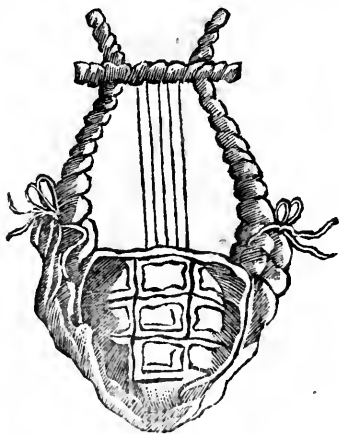
‡ Galilei, 129.



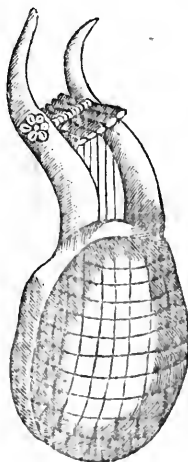
He also cites a passage from Philostratus, importing that the lyre was made of the horns of a goat, from which Hyginus undertook thus to delineate it.



Mersennus says that by means of his friends Naudè and Gaffarel, he had obtained from Rome, and other parts of Italy, drawings of sundry ancient instruments from coins and marbles; among many which he has given, are these of the lyre: the first is apparently a part of a tortoise-shell, the other he says is part of the head with the horns of a bull.



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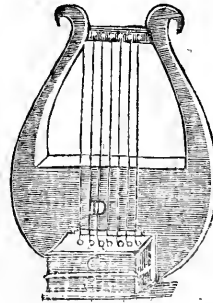
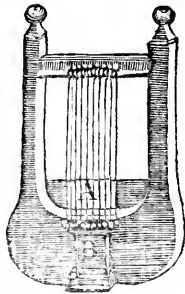
C

The above-cited authors mention also a *Plectrum*, of about a span in length, made of the lower joint of a goat's leg; the use whereof was to touch the strings of the lyre, as appeared to Galilei by several ancient bas-reliefs and other sculptures discovered at Rome in his time.

Kircher has prefixed as a frontispiece to the second tome of the *Mufurgia*, a representation of a statue in the Matthei garden near Rome, of Apollo standing on a circular pedestal, whereon are carved in basso relievo a great variety of ancient musical instruments. But the most perfect representation of the lyre is the instrument in the hand of the above statue, which is of the form in which the lyre is most usually delineated. Vide *Mufurg.* tom. I. pag. 536\*.

The Pipe, the original and most simple of wind instruments, is said to have been formed of the shank-bone of a crane, and the invention thereof is ascribed to Apollo, Pan, Orpheus, Linus, and many others. Marfyas, or as others say, Silenus, was the first that joined pipes of different lengths together with wax; but Virgil says,

\* Isaac Vossius, a bigotted admirer of the ancients, de *Poemat. cant. et virib. Rythm.* pag. 97, contends that hardly any of these remaining monuments of antiquity are in such a state as to warrant any opinion touching the form of the ancient lyre. He speaks indeed of two statues of Apollo in the garden of his Britannic majesty at London, in the year 1673, (probably the Privy Garden behind the then palace of Whitehall) each holding a lyre; and as neither of these instruments was then in the least mutilated, he considers them as true and perfect representations of the ancient cythara or lyre, in two forms, and has thus delineated and described them.



- A The bridge over which the chords are stretched.  
 B The chordotomum, from which the chords proceed.  
 C C The echei, made of brass, and affixed to the bridge to encrease the found.  
 D The bridge as in the former figure.

*Pan*

*Pan primos calamos cera conjungere plures  
Instituit.\**

forming thereby an instrument, to which Isidore, bishop of Seville gives the name of Pandorium, and others that of Syringa, and which is frequently represented in collections of antiquities †.

As to the instruments of the pulsatile kind, such as are the Drum, and many others, they can hardly be ranked in the number of musical instruments; inasmuch as the sounds they produce are not reducible to any system, though the measure and duration or succession of those sounds is; which is no more than may be said of many sounds, which yet are not deemed musical.

Such are the accounts that are left us of the invention of the instruments above-mentioned, which it is necessary to make the basis of an enquiry into the origin of a system, rather than the Harp, the Organ, and many others mentioned in sacred writ, whose invention was earlier than the times above referred to, because their respective forms are known even at this time of day to a tolerable degree of precision: a lyre consisting of strings extended over the concave of a shell, or a pipe with a few equidistant perforations in it, are instruments we can easily conceive of; and indeed the many remaining monuments of antiquity leave us in very little doubt about them; but there is no medium through which we can deduce the figure or construction of any of the instruments mentioned either in the Pentateuch, or the less ancient parts of sacred history; and doubtless the translators of those passages of the Old Testament, where the names of musical instruments occur, after due deliberation on the context, found themselves reduced to the necessity of rendering those names by such terms as would go the nearest to excite a correspondent idea in their readers: so that they would be grossly mistaken who should imagine that the organ, handled by those of whom Jubal is said to have been the father ‡, any way resembled the instrument now known among us by that name.

Those accounts which give the invention of the lyre to Mercury, agree also in ascribing to him a system adapted to it; though with

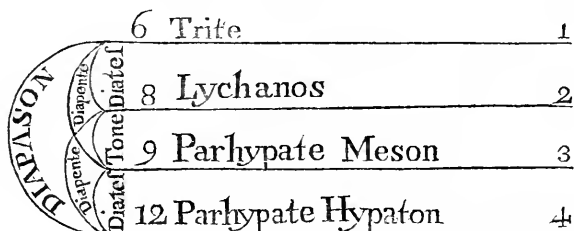
\* Eclog. II. ver. 32.

† Vide Merfen. de Instrum. Harmon lib. II. pag. 73.

‡ Genesis, ch. iv. ver. 21.

respect to the nature of that system, as also to the number of strings of which the lyre consisted, there is a great diversity of opinions; and indeed the settling the first of these questions would go near to determine the other. Boetius inclines to the opinion that the lyre of Mercury had only four strings; and adds, that the first and the fourth made a diapason; that the middle distance was a tone, and the extremes a diapente\*.

Zarlino, following Boetius, adopts his notion of a tetrachord, and is more particular in the explanation of it †; his words are as follow: ‘From the first string to the second was a diatesseron or a fourth; from the second to the third was a tone; and from the third to the fourth was a diatesseron; so that the first with the second, and the third with the fourth, contained a diatesseron; the first with the third, and the second with the fourth, a diapente or fifth.’ Admitting all which, it is clear that the first and fourth strings must have constituted a diapason.



It is to be observed that the above diagram is used by Boetius, and is adopted by Zarlino, Kircher, and many other writers ‡; but that though the application of the letters C. G. F. C. in one edition of Boetius, is plainly intended to shew that the strings immediately below them were supposed to correspond with those notes in our system, yet the authors who follow Boetius have not ventured to make use of them; and indeed there is great reason to reject them; for in the earlier editions of Boetius de Musica, the diagram above given is without letters. It seems as if

\* De Musica, lib. I. cap. 20. Bontempi, 48.

† Istitutioni Harmoniche, pag. 72.

‡ Vide Boetius de Musica, lib. I. cap. 20. Kircher, Mufurgia universalis, tom. I. lib. ii. cap. 6. Zarlino Istit. Harmon. pag. 73, 75.

Glareanus, who assisted in the publication of the Basil edition of that author, in 1570, thought he should make the system more intelligible by the addition of those letters; but there is no ground to suppose that the Mercurian lyre, admitting it to consist of four strings, was so constructed.

Bontempi, an author of great credit, relying on Nicomachus suspects the relation of Boetius, as to the number of the strings of the Mercurian lyre; and farther doubts whether the system of a diapason, as it is above made out, did really belong to it or not; and indeed his suspicions seem to be well grounded; for, speaking of this system, he says that none of the Greek writers say any thing about it, and that the notion of its formation seems to be founded on a discovery made by Pythagoras, who lived about 500 years before Christ, of which a very particular relation will be given in its proper place; and farther to shew how questionable this notion is, he quotes the very words of Nicomachus before-cited, concluding with a modest interposition of his own opinion, which is that the lyre of Mercury had *three* strings only, and was thus constituted\*.

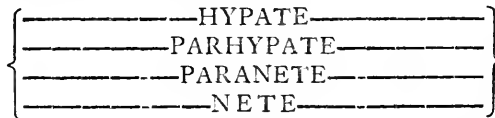
Interval of a tone.	G
Interval of a hemitone.	F
	E

However, notwithstanding the reasons of the above author, the received opinion seems to have been that the lyre consisted of four strings, tuned to certain concordant intervals, which intervals were undoubtedly at first adjusted by the ear; but nevertheless had their foundation in principles which the inventor was not aware of, though what that tuning was, is another subject of controversy. Succeeding musicians are said to have given a name to each of these four strings, which names, though they are not expressive of the intervals, are to be adopted in our enquiry after a system: to the first or most grave was given the name of Hypate, or principal; the second was called Parhypate, viz. next to Hypate; the third was called Paranete, and the fourth Nete, which signifies lowest; it is observable here, that

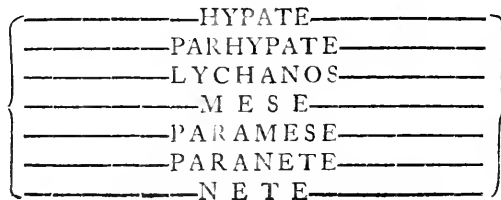
\* Hist. Music. pag. 49.

it seems to have been the practice of the ancients to give the more grave tones the uppermost place in the scale, contrary to the moderns, by whom we are to understand all who succeeded the grand reformation of music by Guido, in the eleventh century, of which there will be abundant occasion to speak hereafter.

The several names above-mentioned exhibit the lyre in a very simple state, viz. as consisting of four strings, having names from whence neither terms nor intervals can be inferred.



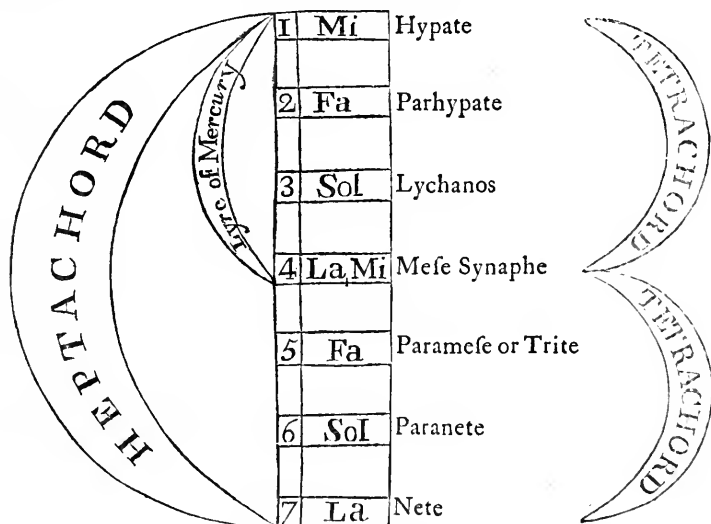
Those who speak of the lyre in the manner above-mentioned, seem to imagine that its compass included two diatessérons or fourths, which being conjoined, extended to a seventh, differing from that of Boetius, in that his diatessérons, being separated by a tone, took in the extent of an octave, and thereby formed a diapason. They proceed to relate farther, that Chorebus, the son of Atys king of Lydia, added a fifth string, which he placed between Parhypate and Paranete, calling it, from its middle situation, Mese, that Hyagnis, a Phrygian, added a sixth, which he placed between Mese and Parhypate; this string he called Lychanos, a word signifying the *indicial* finger, viz. that on the left hand, next the thumb: and lastly say these writers, Terpander added a seventh string, which he placed between Mese and Paranete, and called Paramese: the lyre, thus improved, included a septenary, or system of seven terms, disposed in the following order.



C H A P. II.

THE system above exhibited was the Heptachord Synemmenon of the Greeks; it consisted of two tetrachords or fourths, conjoined, that is to say, the middle term was the end of the one, and the beginning of the other; and as the last string was added by Terpander, the system was distinguished by his name, and considered as the second state of the lyre.

Here then we may discern the foundation of a system, viz. a succession of seven sounds, including two tetrachords, conjoined, by having the Mese or middle term common to both, thus represented by Glareanus in his edition of Boetius, lib. i. cap. 20.



The seeming perfection of this system, as also the consideration that in musical progression every eighth sound is but the replicate of its unison, has served to confirm an opinion that there is somewhat mysterious in the number seven: to say the truth, for different reasons

an

an equal degree of perfection has been ascribed to almost every other of the digits: the number four was greatly revered by Pythagoras and his disciples, as that of three is at this day by many Christians. Seven and nine multiplied into themselves make sixty-three commonly esteemed the grand climacteric of our lives; the ground of superstitious fears in persons of middle age, and the subject of much learned disquisition: and there is now extant a treatise in folio, intituled, *Mysticæ numerorum significationis*, written by one Peter Bongus, and published at Bergamo, in the year 1585; the sole end whereof is to unfold the mysteries, and explain the properties of certain numbers; and whoever has the curiosity to search after so insignificant a work, will find that in the judgment of its author this of Seven is intituled to a kind of pre-eminence over almost every other number.

Had these opinions of numerical mystery no better a foundation than the suffrage of astrologers, they would hardly deserve confutation, even though perhaps in the case of errors so glaring, to expose is to detect them; but when we find them maintained not only by men of sound understandings, but by the gravest philosophers, they become matter of importance; at least there is somewhat of curiosity in observing the extravagancies of an heated imagination, and marking the absurdities that a favourite hypothesis will frequently lead men into.

There is not perhaps a more pregnant instance of this kind, or of the misapplication of learned industry, than the work above-mentioned; as a proof whereof the following chapter is selected, as well by way of specimen of the manner of reasoning usual among writers of his class, as to explain the properties of the number seven, the only one which we are here concerned to enquire about. If the arguments in favour of its perfection are not so conclusive as might be expected, the reader may rest assured that they are some of the best that have yet been adduced for the purpose.

‘The number Seven,’ says this learned author, ‘has a wonderful property, for it neither begets nor is begotten, as the rest are, by any of the numbers within ten, wherefore philosophers resemble it to the ruler or governor of all things, who neither moves nor is moved. Philolaus the Pythagorean, no ignoble author, testifies thus, and writes that the eternal God is permanent, void of motion, similar to himself, and different from others; and Boetius has



' a passage much to the same purpose. The idea of virginity had  
 ' such a relation to the number Seven, that it was also named Pallas ;  
 ' and the Pythagoreans, initiated in her rites, compare the virgin  
 ' Minerva to that number, seeing she was not born, but sprung from  
 ' the head of Jupiter. God rested on the Seventh day, wherefore it is  
 ' named Sabbath, a word signifying rest. The Seventh petition of  
 ' the Lord's Prayer is, deliver us from evil ; because the number  
 ' Seven denotes rest, and all evil being removed from man, he rests  
 ' in good ; and farther, the seventh day or sabbath represents death,  
 ' or the rest of the soul from worldly labours. In Seven days after  
 ' Noah entered the ark the flood began : in the Apocalypſe Seven  
 ' trumpets are mentioned : Job speaks of the visitation of six tribu-  
 ' tations, which six succeeding days brought on him, but on the  
 ' Seventh no harm could touch the just : God blessed only the  
 ' Seventh day, wherefore the number Seven is attributed to the  
 ' Holy Ghost, without whom there is no blessing. This St. John  
 ' proves, when in the Apocalypſe he calls the Seven horns and the  
 ' Seven eyes the Seven spirits of God. The fever left the son of Re-  
 ' gulus, according to St. John, at the Seventh hour. Elisha breathed  
 ' Seven times on the dead man. Christ after his resurrection feasted  
 ' with Seven disciples ; and Seven brothers were sent to baptize  
 ' Cornelius. The Seven hairs of Sampſon ; Seven golden candle-  
 ' sticks : and in Leviticus command was given to sprinkle the blood  
 ' and oil Seven times. The Seven stars in the bear ; the Seven prin-  
 ' cipal angels who rule the world under God, and have charge of the  
 ' Seven planets, as namely, Horophiel the spirit of Saturn, Anael the  
 ' spirit of Venus, Zachariel of Jupiter, Raphael of Mercury, Samael  
 ' of Mars, Gabriel of the moon, and Michael the spirit of the sun.  
 ' The moon changes its form Seven times, and completes its course  
 ' in twenty-eight days, which is the sum of the number Seven, and  
 ' all the numbers under it. Josephus writes that a certain river in  
 ' Syria is dry for six days, and full on the Seventh. Farther, the great  
 ' artist did not only dignify the heavens, but he also adorned  
 ' with the number Seven his favourite creature man, who has  
 ' seven inward parts, or bowels, stomach, heart, lungs, milt, liver,  
 ' reins, and bladder ; and seven exterior, as head, back, belly,  
 ' two hands, and two feet. There are Seven objects of sight, as  
 ' body, distance, figure, magnitude, colour, motion, and rest : and

‘ Seven species of colour, taking in the two extremes of white and  
 ‘ black, viz. yellow, sky-blue, green, purple, and red. No one  
 ‘ can without eating live after the Seventh day. Physicians reckon  
 ‘ ten times Seven years to be the period of human life, which Hippo-  
 ‘ crates divides into Seven stages. The ancient lyre, used both by  
 ‘ Orpheus and Amphion, had only Seven chords, answering, as it is  
 ‘ said, to the Seven gates of Thebes. Every Seventh daughter, no  
 ‘ son coming between, hath, by virtue of the number Seven as I  
 ‘ imagine, a great power in easing the pains of child-birth: and  
 ‘ every Seventh son, no daughter coming between, has the power of  
 ‘ curing the scurvy and leprosy by the bare touch; so that diseases,  
 ‘ incurable by physicians, are curable by the virtue contained in the  
 ‘ number Seven. A right-angled triangle is constituted of the sides three,  
 ‘ four, five, but three and four contain the right angle, which is perfec-  
 ‘ tion itself, and therefore their sum seven, must as a number be most  
 ‘ perfect. Every active body has three dimensions, length, breadth,  
 ‘ and thickness, and these have four extremes, point, line, surface,  
 ‘ and solid, and these together make up the number Seven.’

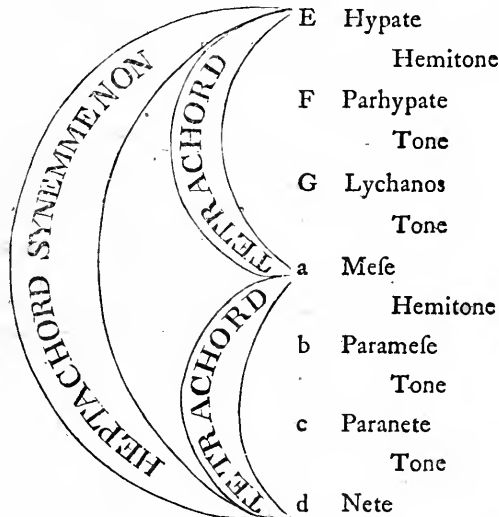
By such arguments as these do many of the musical writers endeavour  
 to excite a mysterious reverence for that number which is confessedly  
 the limits of a system, as far as it goes, perfect in its kind; in-  
 answer to which it may be said, that this superstitious regard for certain  
 numbers seems to be very deservedly ranked among those vulgar and  
 common errors, which it is professedly the end of a very learned and  
 justly celebrated publication of the last century to refute, wherein it  
 is said, that ‘ with respect to any extraordinary power or secret virtue  
 ‘ attending the number sixty-three, or any other, a serious reader will  
 ‘ hardly find any thing that may convince his judgment, or any far-  
 ‘ ther persuade than the lenity of his belief, or pre-judgment of rea-  
 ‘ son inclineth \*.’

But to return from this digression: the rudiments of the present  
 greater musical system are discernible in that of a septenary, adjusted,  
 as we are told, by Terpander, in the form above declared; and as to  
 the intervals of which it was constituted, modern authors have not  
 scrupled to assert that they were precisely the same as those contained  
 in a double diatesseron, according to the present practice; the con-

\* Sir Thomas Browne's Enquiry into Vulgar Errors, 173.

sequence whereof must be, that each of the two tetrachords, of which the above system is supposed to have been formed, consisted of a hemitone and two tones; which will be readily conceived by such as reflect, that in the passage either upwards or downwards from any given note to its fourth, in that progression which is most grateful to the ear, those intervals must necessarily occur. Persuaded of the truth of this supposition, succeeding musicians have ventured to apply the modern method of notation to the terms of the ancients, and are pretty well agreed that the term Mese answered to a, or LA, in our scale. Taking this for granted, the system of Terpander will appear in the following form.

SYSTEM of TERPANDER.



But here it is necessary to observe, that though, as has been said, it was the practice with the ancients to give the grave tones the uppermost, and the more acute the lowermost place in their scale\*, which they might very properly do, if, as there is the greatest reason

\* Vincenzio Galilei, Dialog. della Musica, pag. 113. Franciscus Salinas de Musica, lib. iii. cap. 4.

to believe, their music was solitary, and they were strangers to the art of combining sounds in consonance. Yet the moderns, immediately on the making that most important discovery, found it necessary to differ from them; and accordingly we now place the grave tones at the bottom, and the acute at the top of our scale\*; and the consequence of this diversity has been, that whenever any of the modern authors have taken occasion to exhibit the whole or any part of the ancient Greek scale, they have done it in their own way, placing Hypatè at the bottom of the diagram; and this will be the method we shall observe for the future.

Great confusion has arisen among the writers on music, in respect to the order of the several additions to the system of Terpander. That it was perfected by Pythagoras will be related in due time; but the eagerness of most authors to explain the improvements made by him, has betrayed them into the error of confounding the two systems together, whereby they have rendered their accounts unintelligible. Boetius has erred in this respect; and Bontempi, a modern Italian, notwithstanding he professes to have followed the Greek writers, more particularly Nicomachus, has made the same mistake; for in every one of the representations of the improved system of Terpander which he has given, is contained an exhibition of the Synemmenon or conjunct tetrachord, which before the invention of the Diezeugmenon or disjunct tetrachord by Pythagoras, could have no existence. He indeed confesses as much when he admits that the distinction imported by its name was rather *potential* than *actual*; or, as we perhaps should say, rather *contingent* than *absolute*. To refute this error it is necessary in some sort to adopt it, and proceed after Bontempi to describe what he calls the first addition to the system of Terpander. His words are nearly these.

‘ To the lyre of seven strings, forming a conjunct tetrachord, were  
 ‘ added two tetrachords; the most grave was joined to that tetrachord,  
 ‘ which for its gravest, or, to use the modern method of position, its  
 ‘ lowest sound, had Hypatè, and the most acute tetrachord was  
 ‘ joined to that which for its most acute sound had Nete: the acuter  
 ‘ of these two additional tetrachords, from its situation named hyper-  
 ‘ bolon, proceeded from Nete by three other terms, viz. Tritè, Para-  
 ‘ nètè, and Nètè, to each whereof was given the epithet Hyperbo-

\* Bontemp. 51, 52.

leon, to distinguish them from the sounds denoted by the same names in the primitive septenary. The other of the additional tetrachords, which began from Mese, was called Synemmenon or conjunct; and proceeded likewise by the same terms of Tritē, Paranete, and Nete; and each of these had, for the reason just given, the epithet of Synemmenon, as in the following figure appears.'

ADDITION I. to the SYSTEM of TERPANDER.

System of TERPANDER	Tetrach. Hyperb.	Nete hyperboleon	g.		
			Tone		
		Paranete hyperboleon	f		
			Hemitone		
	Tetrach. B.	Trite hyperboleon	e		
			Tone		
	Tetrach. A.	Nete	d	Nete synemmenon	d
			Tone		Tone
		Paranete	c	Paranete synemmenon	c
			Tone		Tone
	Trite	b	Trite synemmenon	b	
		Hemitone		Hemit.	
	Mese	a	Mese	a	
		Tone			
	Lychanos	G			
		Tone			
	Parhypate	F			
		Hemitone			
	Hypate	E			

It is observable in the above scheme, that between the Synemmenon tetrachord and that marked B, which was originally a part of the system of Terpander, there is not the least difference: the interval of a hemitone between a and b being common to both; of what use then this auxiliary tetrachord was, or how it became necessary to distinguish it by the epithet Synemmenon or conjoined, from that which as yet had never been disjoined, is hard to conceive; the only addition therefore that we consider is that of the Hyperboleon tetrachord, which increased the number of terms to ten, as above is shewn: however, after all, as the lyre thus limited to the compass of a musical tenth, reaching from E to g, was not commensurate in general

general to the human voice, a farther extension of it was found necessary; and another tetrachord was added to this, which began at Hypate in the former system, and proceeded by a repetition of the same terms as that did, with the addition of hypaton. This addition begat also a distinction in the terms of the tetrachord, to which it had been joined; which, to shew their relation to the Mese, had each of them the adjunct of meson, and the tetrachord to which they belonged was thence called the tetrachord meson. This last addition of the tetrachord Hypaton increased the number of terms to thirteen, in which were included four conjunct tetrachords, the Mese being the seventh from each extreme, and carried the system down to B; though to shew that hypate Hypaton was a hemitone below Parhypate or C, the Italians generally denote it by the character  $\underline{h}$ .

ADDITION II. to the SYSTEM of TERPANDER.

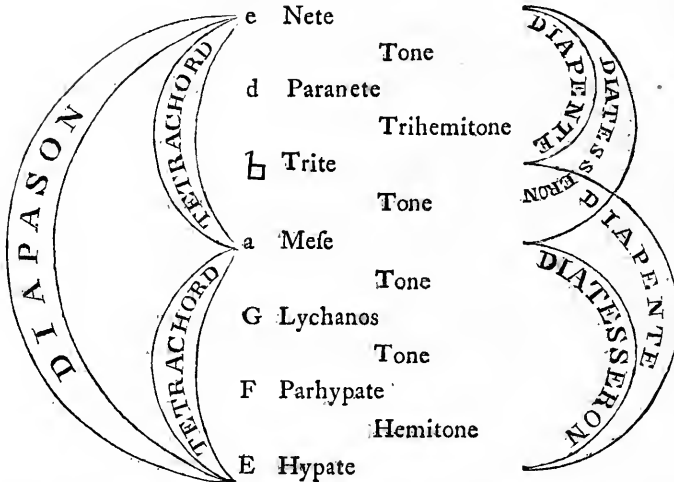
System of TERPANDER.	Tetrach. Hyperb.	Nete hyperboleon	g			
			Tone			
		Paranete hyperboleon	f			
			Hemit.			
	Tetrachord B	Tetrach. A.	Trite hyperboleon	e		
				Tone		
			Nete	d	Nete synemmenon	d
				Tone		Tone
	Tetrachord B	Tetrach. A.	Paranete	c	Paranete synemmenon	c
				Tone		Tone
			Trite	b	Trite synemmenon	b
				Hemit.		Hemit.
	Tetrachord A.	Tetrach. Hypat.	Mese	a	Mese	a
			Tone			
Lychanos meson			G			
			Tone			
Tetrach. Hypat.	Tetrach. Hypat.	Parhypate meson	F			
			Tone			
		Hypate meson	E			
			Tone			
Tetrach. Hypat.	Tetrach. Hypat.	Lychanos hypaton	D			
			Tone			
		Parhypate hypaton	C			
			Hemit.			
		Hypate hypaton	$\underline{h}$			

In

In this diagram also the Synemmenon Tetrachord is inserted: we forbear to repeat the reasons against connecting it with the system of Terpander, with which it seems absolutely incompatible, and shall hereafter endeavour to shew when and how the invention of it became necessary, and what particular ends it seems calculated to answer. In order to this it must be observed, that the system, improved even to the degree above related, wanted much of perfection: it is evident that the lower sound Hypate hypaton, or as we should now call it, B ♮, was a hemitone below C, and that b, which in the order of succession upwards was the eighth term, was a whole tone below the term next above it, consequently it was a hemitone short of a complete musical octave or diapason; to remedy this defect, as also for divers other reasons, Pythagoras is said to have reverted to the primitive system of a septenary, and with admirable sagacity, by interposing a tone in the middle of the double tetrachord, to have formed the system of a Diapason or Octochord.

But before we proceed to relate the particulars of this and other improvements of Pythagoras in music, and the wonderful discovery made by him of the proportions of musical sounds, it may be proper to take notice of two variations in the septenary, introduced by a philosopher, and a disciple of Pythagoras, named Philolaus; the one whereof, for ought we can discover, seems to have been but very inconsiderable, that is to say, no more than an alteration of the term Mese, which, because that sound was a third distant from Nete, he called Tritē; the other consisted in an extension of the diatesseron included between the Mese and Nete to a diapente, by the insertion of a trihemitone between Paramese, or as he termed it, Tritē and Paranete; by which the system, though it laboured under the inconvenience of an Hiatus, comprehended the interval of a diapason, the extreme terms whereof formed a consonance much more grateful to the ear than any of those contained in that of Terpander. Nicomachus speaks more than once of Philolaus, and says that he was the first who called that Tritē, which before was named Paramese, as being a diatesseron distant from Nete. But although it is certain that he was a contemporary of Pythagoras, we must suppose this improvement of his to be prior to that of Pythagoras above hinted at; for the latter adopted the appellation of Tritē, though by restoring the ancient name Paramese, which he gave to the inserted tone, he altered the situation of it, as will be shewn hereafter.

## SYSTEM of PHILOLAUS.



The gradual improvements of this system from the time of Terpander to that of Philolaus having been severally enumerated, and its imperfection noted, we are now to speak of those made by Pythagoras. His regulation of the octave by the insertion of a tone has been just hinted, and it will be necessary to be more particular; but previous to this it is requisite to mention that discovery of his, which though merely accidental, enabled him to investigate the ratios of the consonances, and to demonstrate that the foundations of musical harmony lay deeper than had ever before his time been imagined.

Of the manner of this discovery Nicomachus has given a relation, which Mr. Stanley has inserted in his History of Philosophy in nearly the following terms.

‘ Pythagoras being in an intense thought whether he might invent  
 ‘ any instrumental help to the ear, solid and infallible, such as the  
 ‘ sight hath by a compass and a rule, and by a Dioptré; or the  
 ‘ touch, or by a balance, or by the invention of measures; as he  
 ‘ passed by a smith’s shop by a happy chance he heard the iron ham-



mers striking on the anvil, and rendering sounds most consonant to one another in all combinations except one. He observed in them these three concords, the diapason, the diapente, and the diatesseron; but that which was between the diatesseron and the diapente he found to be a discord in itself, though otherwise useful for the making up of the greater of them, the diapente. Apprehending this came to him from God, as a most happy thing, he hastened into the shop, and by various trials finding the difference of the sounds to be according to the weight of the hammers, and not according to the force of those who struck, nor according to the fashion of the hammers, nor according to the turning of the iron which was in beating out: having taken exactly the weight of the hammers, he went straightway home, and to one beam fastened to the walls, cross from one corner of the room to the other, lest any difference might arise from thence, or be suspected to arise from the properties of several beams, tying four strings of the same substance, length, and twist, upon each of them he hung a several weight, fastening it at the lower end, and making the length of the strings altogether equal; then striking the strings by two at a time interchangeably, he found out the aforesaid concords, each in its own combination; for that which was stretched by the greatest weight, in respect of that which was stretched by the least weight, he found to found a Diapason. The greatest weight was of twelve pounds, the least of six; thence he determined that the diapason did consist in double proportion, which the weights themselves did shew. Next he found that the greatest to the least but one, which was of eight pounds, founded a Diapente; whence he inferred this to consist in the proportion called Sesquialtera, in which proportion the weights were to one another; but unto that which was less than itself in weight, yet greater than the rest, being of nine pounds, he found it to found a Diatesseron; and discovered that, proportionably to the weights, this concord was Sesquitertia; which string of nine pounds is naturally Sesquialtera to the least; for nine to six is so, viz. Sesquialtera, as the least but one, which is eight, was to that which had the weight six, in proportion Sesquitertia; and twelve to eight is Sesquialtera; and that which is in the middle, between Diapente and Diatesseron, whereby Diapente exceeds Diatesseron, is confirmed

‘ to be in Sefquioctava proportion, in which nine is to eight. The  
 ‘ system of both was called Diapafon \*, that is both of the Diapente  
 ‘ and Diatefferon joined together, as duple proportion is compound-  
 ‘ ed of Sefquialtera and Sefquitertia ; such as are twelve, eight, fix,  
 ‘ or on the contrary, of Diatefferon and Diapente, as duple propor-  
 ‘ tion is compounded of Sefquitertia and Sefquialtera, as twelve, nine,  
 ‘ fix, being taken in that order.

‘ Applying both his hand and ear to the weights which he had  
 ‘ hung on, and by them confirming the proportion of the relations,  
 ‘ he ingeniously transferred the common result of the strings upon  
 ‘ the crofs beam to the bridge of an instrument, which he called  
 ‘ *Χορδοτόνῳ*, *Chordotonos* ; and for stretching them proportionably to  
 ‘ the weights, he invented pegs, by the turning whereof he distend-  
 ‘ ed or relaxed them at pleasure. Making use of this foundation as  
 ‘ an infallible rule, he extended the experiment to many kinds of  
 ‘ instruments, as well pipes and flutes, as thofe which have strings † ;  
 ‘ and he found that this conclusion made by numbers was confonant  
 ‘ without variation in all. That found which proceeded from the  
 ‘ number fix he named Hypate ; that from eight Mefe, being Sef-  
 ‘ quitertia to the other ; that from nine Paramefe, it being one tone  
 ‘ more acute, and fefquioctave to the Mefe ; that from twelve he  
 ‘ termed Nete ; and fupplying the middle fpaces with proportionable  
 ‘ founds, according to the diatonic genus, he fo ordered the octo-  
 ‘ chord with convenient numbers, Duple, Sefquialtera, Sefquitertia,  
 ‘ and the difference of the two laft, Sefquioctava.

‘ Thus by a kind of natural neceffity he found the progress from  
 ‘ the loweft to the higheft, according to the diatonic genus ; and  
 ‘ from thence he proceeded to declare the chromatic and enarmonic  
 ‘ kinds ‡. *Hift. of Philofophy*, pag. 387. folio edit. 1701.

\* i. e. per omnes.

† This feems difficult to conceive, for the tuning of pipes and flutes is regulated by the fize and diftance of the apertures for the emission of the wind or breath ; and to thefe the proportions of fix, eight, nine, twelve, are in no way whatever applicable.

‡ The result of this difcovery is, that confonancy is founded on geometrical principles, the contemplation whereof, and the making them the test of beauty and harmony, is a pleasure feparate and diftinct from that which we receive by the fenfes. This geometrical relation of the confonances has been farther illustrated by Archimedes, who has demonftrated that the proportions of certain foild bodies are the fame with thofe of the mufical confonances : to fpeak firft of the diapafon.

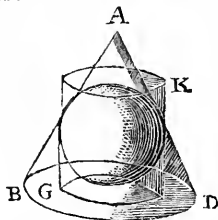
By a corollary from the thirty-fourth propofition of Archimedes it is fhewn, that the proportion of the octave is as the whole fuperficies of a right cylinder defcribed about a fphere,

Other writers attribute the discovery of the consonances to another, namely Diocles, who, say they, passing by a potter's shop, chanced to strike his stick against some empty vessels which were standing there; that observing the sounds of grave and acute resulting from the strokes on vessels of different magnitudes, he investigated the proportions of music, and found them to be as above related †; notwithstanding which testimony, the uniform opinion of

sphere, is to the whole superficies of an equilateral cylinder inscribed, that is to say, as 2 is to 1. For the circumscribed is to the spheric superficies as 12 is to 8; but the spheric is to the inscribed as 8 is to 6; therefore the circumscribed is to the inscribed as 12 is to 6, or 2 to 1. Vide Theorems selected out of Archimedes by Andrew Tacquet, printed at the end of Whiston's Euclid.

As to the diatesseron, the proportion of it is precisely the same with that which subsists between the superficies of a sphere and the whole superficies of a square cylinder inscribed therein, viz. 4 to 3. Ibid. Prop. xxxiv.

But which is admirable, the sesquialteral proportion of the diapente, and of the same interval continued, is demonstrated by Tacquet himself, by a sphere, a right cylinder, and an equilateral cone thus disposed:



His words are these: ' An equilateral cone circumscribed about a sphere, and a right cylinder in like manner circumscribed about the same sphere, and the same sphere itself continue the same proportion; to wit, the sesquialteral, as well as in respect of the solidity as of the whole superficies.

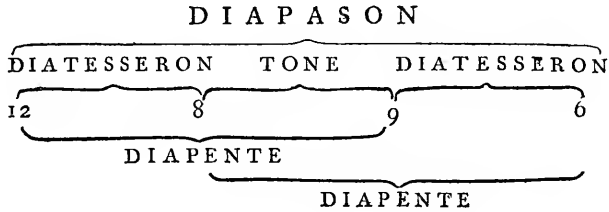
' For by 32 of this book, the right cylinder GK encompassing the sphere, is to the sphere, as well in respect of solidity, as of the whole superficies, as 3 is to 2 or as 6 to 4. But by the foregoing, the equilateral cone B A D circumscribed about the sphere, is to the sphere, in both the said respects, as 9 is to 4. Therefore the same cone is to the cylinder, both in respect of solidity and surface, as nine is to six: wherefore these three bodies, a cone, a cylinder, and sphere, are betwixt themselves as the numbers 9, 6, 4; and consequently continue the sesquialteral proportion.' Q. E. D. Prop. xlv. at the conclusion of the Theorems of Archimedes by Tacquet.

Farther the same author shews, that the same sesquialteral proportion holds betwixt an equilateral cone and cylinder circumscribed about the same sphere, in respect of their whole surfaces, their simple surfaces, their solidities, altitudes, and bases.

Archimedes was so delighted with the thirty-second of his propositions, above referred to, that he left it in charge to his friends to erect on his tomb a sphere included in a cylinder, and Tacquet seems to have been little less pleased with his improvement on it, for he has given the figure referred to in the demonstration of it, in the title page of his Theorems selected from Archimedes.

† Vincent. Galilei, Dial. della Musica, pag. 127.

mankind has been, that we owe this invention to Pythagoras; the result whereof may be conceived by means of the following diagram.



It is observable that there is nothing in this account to authorize the supposition that the lyre of Mercury was tuned in any of those proportions which this discovery had shewn to be consonant. Bon-tempi, who, as we have hinted before, had his doubts about it, says expressly that none of the Greek writers assert any such matter; and Zarlino, though he adopts the relation of Boetius, does it in such a way as sufficiently shews it stuck with him: we may therefore justly respect that Boetius went too far in assigning to the strings of the Mercurian lyre the proportions of six, eight, nine, twelve.

## C H A P. III.

**I**F we consider the amount of this discovery, it will appear to be, that certain sounds, which the human ear had previously recognized as grateful and harmonious, were, by the sagacity of Pythagoras, found to have a wonderful relation to each other in certain proportions; that those proportions do really subsist between the musical concords above-mentioned is demonstrated by Ptolemy, and will be shewn hereafter; but then it has been by experiments of a different kind from that of strings distended by hammers or other weights in the proportions of six, eight, nine, twelve, and such as prove a most egregious error in those said to be made by Pythagoras; so that though his title to the discovery of the proportions above-mentioned is not contested; yet that it was the result of the experiment above related to have been made by him, is demonstrably false.

For suppose, as will be shewn hereafter, that the sounds of four strings, in every other respect alike, and in length as these numbers, six, eight, nine, twelve, will make the intervals above-mentioned, viz. a fourth, fifth, and octave; yet let weights in these proportions be hung to strings of equal length and thickness, and the intervals between the sounds produced by strings thus distended will be far different from those above-mentioned.

It is said that we owe the detection of this error to the penetration and industry of Galileo Galilei, whose merits as well as sufferings are sufficiently known. He was the natural son of a noble Florentine named Vincentio Galilei, the author of a most learned and valuable work, intitled *Dialogo della Musica antica e moderna*, printed at Florence in 1581 and 1602; and also of a tract, intitled *Discorso intorno all' Opere del Zarlino*; and of his father, who was an admirable performer on the lute, learned both the theory and practice of music; in the latter whereof he is said to have been such a proficient, as to be able to perform to a great degree of excellence on a variety of instruments; however, notwithstanding this his propensity to music, his chief pursuits were natural philosophy and the mathematics.

The

The inquisitiveness of his temper leading him to the making experiments, in the course thereof he made many noble discoveries; that of the telescope seems to be universally attributed to him; his first essay towards an instrument for viewing the planets was an organ-pipe with glasses fixed therein; and it was he that first investigated those laws of pendulums, which Mr. Huygens afterwards improved into a regular and consistent theory.

In a work of the younger Galilei, intitled *Discorsi e Dimostrazioni Matematiche intorno à due nuove Scienze, attenenti alla Meccanica, & i Movimenti locali*, is contained a detection of that error, which it is here proposed to refute.

It is true some writers refer this discovery to Vincentio Galilei; and first Bontempi says, that in his discourse on the works of Zarlino, he affirms, that in order ‘to find the consonances by weights hung to chords, the weight to produce the diapason ought to be in quadruple proportion; that to produce the diapente ought to be in dupla sesquiquarta; for the diatesseron in sesquiseptima partientenono and for the tone in sesquiseptima partiente 64\*.’

Malcolm also, speaking of the discovery of the consonances by Pythagoras, makes use of these words: ‘But we have found an error in this account, which Vincenzo Galileo, in his *Dialogues of the ancient and modern Music*, is, for what I know, the first who observes; and from him Meibomius repeats it in his notes upon *Nicomachus* †.’

Here it may be observed, that this author Malcolm has himself been guilty of two mistakes; for first, it is not in his notes on *Nicomachus*, but in those on *Gaudentius* that Meibomius mentions the error now under consideration: and farther, in the passage of Meibomius, which Malcolm meant to refer to, the discovery is not ascribed to Vincentio Galilei, but to Galileo Galilei his son. To take the whole together, *Gaudentius*, speaking of the experiment of Pythagoras, and asserting, that if two equal chords be distended by weights in the same proportion to each other as the terms of the ratio, containing any interval, those chords when struck will give that interval. Meibomius upon this passage remarks in the following words: ‘*Mirandum sane, hanc experientiam, tot gravissimorum aucto-*

\* *Hist. Music.* pag. 54.

† Malcolm on *Music*, pag. 503.

‘ rum adfertione confirmatam, nostro primum seculo deprehensam  
 ‘ esse falsam. Inventionis gloriam debemus nobilissimo mathematico  
 ‘ Galileo Galilei, quem vide pag. 100. Tractatus qui inscribitur: Dif-  
 ‘ corſi e Dimostrazioni Matematiche intorno a due nuove Scienze \*’.

But notwithstanding Bontempi has given from the elder Galilei a passage which seems to lead to a discovery of the error of Pythagoras, yet he himself acquiesces in the opinion of Meibomius, that the honour of a formal refutation of it is due to the younger, and is contained in the passage above referred to, which translated is as follows.

‘ I stood a long time in doubt concerning the forms of consonance,  
 ‘ not thinking the reasons commonly brought by the learned authors  
 ‘ who have hitherto wrote of music sufficiently demonstrative. They  
 ‘ tell us that the diapason, that is the octave, is contained by the  
 ‘ double; and that the diapente, which we call the fifth, is contained by  
 ‘ the sesquialter: for if a string, stretched upon the monochord, be  
 ‘ sounded open, and afterwards placing a bridge under the midst of  
 ‘ it, its half only be sounded, you will hear an eighth; and if the  
 ‘ bridge be placed under one third of the string, and you then strike  
 ‘ the two thirds open, it will sound a fifth to that of the whole string  
 ‘ struck when open; whereupon they infer that the eighth is con-  
 ‘ tained between two and one, and the fifth between three and two.  
 ‘ But I do not think we can conclude from hence that the double  
 ‘ and sesquialteral can naturally assign the forms of the diapason and  
 ‘ diapente; and my reason for it is this: there are three ways by  
 ‘ which we may sharpen the tone of a string, viz. by shortening it,  
 ‘ by stretching it, or by making it thinner: if now, retaining the  
 ‘ same tension and thickness, we would hear an eighth, we must  
 ‘ make it shorter by half; i. e. we must first sound the whole string,  
 ‘ and then its half. But if, keeping the same length and thickness,  
 ‘ we would have it rise to an eighth from its present tone, by stretch-  
 ‘ ing it, or screwing it higher, it is not sufficient to stretch it with a  
 ‘ double, but with four times the force: thus, if at first it was dis-  
 ‘ tended by a weight, suppose of one pound, we must hang a four-  
 ‘ pound weight to it, in order to raise its tone to an eighth. And  
 ‘ lastly, if, keeping the same length and tension, we would have a  
 ‘ string to sound an eighth, this string must be but one fourth of the  
 ‘ thick-

\* Meibom. Not. in Gaudent. pag. 37.

‘ thickness of that which it must sound an eighth to \*. And this  
 ‘ that I say of the eighth, I would have understood of all other musi-  
 ‘ cal intervals. To give an instance of the fifth, if we would pro-  
 ‘ duce it by tension, and in order thereto hang to the grave string a  
 ‘ four-pound weight; we must hang to the acute, not one of six,  
 ‘ which yet is in sesquialtera proportion to four, viz. three to two,  
 ‘ but one of nine pounds. And to produce the above intervals by  
 ‘ strings of the same length, but different thickness, the proportion  
 ‘ between the grave and the acute string must be that of nine to four.  
 ‘ These things being really so in fact, I saw no reason why these sage  
 ‘ philosophers should rather constitute the form of the eighth double  
 ‘ than quadruple, and that of the fifth rather in sesquialtera than in  
 ‘ double sesquiquarta, &c.’ † *Discorsi e Dimostrazioni Matematiche*  
*del Galileo Galilei, pag. 75.*

To give yet farther weight to the above objection, it may be necessary here briefly to explain a doctrine yet unknown to the ancients, viz. that of pendulums, between the vibrations whereof, and those of musical chords, there is an exact coincidence.

\* Isaac Vossius says that in this passage the author has erred, and with his usual temerity asserts, that, *ceteris paribus*, the thicker the chord, the acuter the sound. *De Poemat. Cant. et Viribus Rythmi, pag. 113.* And this, even though he confesses that both Des Cartes and Merfennus were of opinion with Galilei in this respect. The only appeal in such a case as this must be to experiment, and whoever will make one for the purpose will find the converse of this proposition to be true, and that, as Galilei has said, chords comparatively thin render acute, and not grave sounds.

† The reason of these sage philosophers for doing thus, notwithstanding that Galilei could not discover it, seems to be very obvious: they constituted the form of the eighth double because they found it to arise from the division of a chord into two equal parts; and the fifth they found to arise from the division of a chord into five parts, three whereof struck against the remaining two produced that interval; therefore they assigned to it the sesquialtera proportion, 3 to 2. And certainly there needs no better reason for the Pythagorean constitution of the consonances, than that it is founded in the actual division of a chord; and had the followers of Pythagoras rested the matter there, their tenets would have escaped reprehension.

But they say of him that he produced the consonances by chords of equal length and thickness, distended by weights of six, eight, nine, and twelve pounds: Galilei has shewn that this could not be; and from the principles laid down by writers since his time, as also by experiments, it most evidently appears, that to produce the consonances, from chords thus conditioned, weights must be used of a very different proportion from those said to have been taken by Pythagoras.

As to the proportions, there can be no doubt but that they are as above-stated; but the error chargeable on the Pythagoreans is the making the discovery of them the result of an experiment, which must have produced, instead of consonances, dissonances of the most offensive kind.



Sound is produced by the tremulation of the air, excited by the insensible vibrations of some elastic, sonorous body; and it has been manifested by repeated experiments, that of musical sounds the acute are produced by swift, and the grave by comparatively slow vibrations\*. A chord distended by a weight or otherwise, is, with respect to the vibrations made between its two extremities, to be considered as a double pendulum †, and as subject to the same laws.

The proportions between the lengths of pendulums, and the number of vibrations made by them, are in an inverse duplicate ratio; so that if the length be quadrupled, the vibrations will be subduplicated; on the contrary, if the length be subquadrupled, the vibrations will be dupled ‡.

The same proportions hold also with respect to a chord, but with this difference, that in the case of pendulums the ratios are inverse, the greater length giving the fewer vibrations; whereas in that of chords they are direct, the greater tension giving the greater number of vibrations: thus if the tensive power be as one, if that be quadrupled, the number of vibrations is dupled; and the sound produced by the greater power will be duple in acumen to that produced by the lesser. In a word, the same ratios that subsist between the vibrations of pendulums and their respective lengths, are to be found inversely between the vibrations of chords and the powers that distend them: what those ratios are, so far as they respect the acuteness or gravity of sound, will shortly be made appear.

In order to apply the doctrine of tensive powers to the question in debate, it is necessary to state the ratios of the several consonances, and those are demonstrated to be as follows, viz. that of the diapente 3 to 2, and of the diatessaron 4 to 3, that of the diapason 2 to 1, and that of the tone 9 to 8; or in other words, a chord being divided into five parts, the sound produced at three of these parts will be a diapente to that produced at two; if divided into seven parts, four of them will sound a diatessaron against the remaining three; and if divided into three parts, two of them

\* Treatise on the natural Grounds and Principles of Harmony, by William Holder. Passim.

† Ibid. xi. 43.

‡ Ibid. 16.

make a diapason against the other one: farther, if the chord be divided into seventeen parts, nine of them on one side will found a sesquioctave tone to the eight remaining on the other. These are principles in harmonics which we may safely assume, and the demonstrations may be seen in Ptolemy's description of the nature and use of the Harmonic Canon\*.

It is equally certain, and is deducible from the doctrine of pendulums, that if two chords, of equal lengths, A B be so distended as that their vibrations shall be as three to two, that is, that A shall make three vibrations while B is making two, the consonance produced by striking them together will be a diapente.

If the vibrations be as four to three, the consonance will be a diatessaron.

If the vibrations be as two to one, the consonance will be a diapason; and lastly,

If the vibrations be as nine to eight, the interval will be a sesquioctave tone.

We are now to enquire what are the degrees of tensive power requisite to produce the vibrations above-mentioned; and here we must recur to the principle above laid down, that the squares of the vibrations of equal chords are to each other as their respective tensions: if then we suppose a given sound to be the effect of a tension by a weight of six pounds, and would know the weight necessary to produce the diapente, which has a ratio to its unison of 3 to 2, we must take the square of those numbers 9 to 4, and seek a number that bears the same ratio to six, as nine does to four, and this can be no whole number, but is thirteen and a half.

By the same rule we adjust the weight for the diatessaron, 4 to 3, which numbers squared are sixteen and nine, and as 16 is to 9, so is  $10\frac{2}{3}$  to 6.

For the diapason 2 to 1, which numbers squared are 4 to 1, the weight must be twenty-four; for as 4 is to 1, so is 24 to 6.

\* Mercennus recommends for the purpose of making these experiments, the use of two chords rather than one, for this reason, that where one only is taken, only one sound can be heard at a time; whereas when two are used, both sounds are heard at the same instant, and thereby the consonance is perceived. Harmonie universelle, Traité des Instrumens, Prop. v.

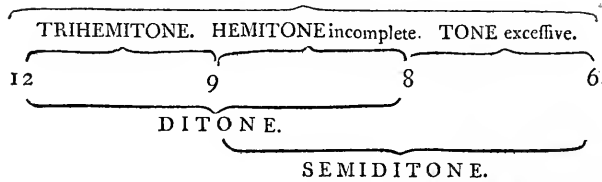
The several weights above adjusted, have a reference to the unison expressed in the scheme of Pythagoras, by the number six, supposed to result from a tension of six pounds. But the sesquioctave tone, as it is the difference between the diapente and diatessaron, takes its ratio from the sound expressed by the number eight, as the diapente does from that expressed by nine; in order then to adjust the weight for this interval, we must square those numbers; and as 81 is to 64, so is  $13\frac{1}{2}$  to  $10\frac{1}{2}$ .

Whoever is disposed to prove the truth of these positions, and doubts the certainty of numerical calculation, may have recourse to experiment; in which however this caution is to be observed, that in the making it the utmost degree of accuracy is necessary; for it should seem that one of the authors above-cited failed in an attempt of this sort, which is not to be wondered at, if we consider the nature of the subject.

The author here meant is Bontempi; who, after citing the authority of Vincentio and Galileo Galilei, adds, that, ‘ prompted by curiosity, he made an experiment by hanging weights to strings of equal lengths and thickness, the result whereof was, that the first and second strings, having weights of 12 and 9, produced not the diatessaron, but the trihemitone; the first and third 12, 8, not the diapente but the ditone; the first and fourth, 12, 6, not the diapasón but the tritone; the second and the third, 9, 8, not the tone, but the defective or incomplete hemitone; the second and fourth, 9, 6, not the diapente, but the semiditone; and the third and fourth 8, 6, not the diatessaron, but the distended or excessive tone, as the following figure demonstrates\*.

\* Egli è cosa da restar confuso, e formare un cumulo di meraviglie, che questo sperimento, confermato da gravissimi autori, e tenuto tanti secoli per vero sia stato finalmente scoperto esser falso da Galileo Galilei, sicome riferisce ne' suoi Discorsi e Dimostrazioni Matematiche, e Vincenzo Galilei nel discorso intorno all' opere del Zarlino afferma, che per ritrovare co' pesi attaccati alle corde le consonanze de Martelli; per la diapasón debbono costituirsi i pesi in quadrupla proportione; per la diapente, in dupla sesquiquarta; per la diatessaron, in sesqui 7 partiente 9; e pe'l tuono, in sesqui 7 partiente 64. E noi, spinti dalla curiosità messo in opera questo sperimento co' pesi de Martelli, habbiamo ritrovato che il primo et il secondo 12, 9, partoriscono non la diatessaron: ma il tricemitono; il primo ed il terzo 12, 8, non la diapente: ma il ditono; il primo e'l quarto 12, 6, non la diapasón; ma il tritono; il secondo e'l terzo 9, 8, non il tuono: ma l' hemitono rimesso o mancante; il secondo e'l quarto 9, 6, non la diapente: ma il semiditono; ed il terzo e'l quarto 8, 6, non la diatessaron: ma il tuono disteso ovvero eccedente, sicome la sottoposta figura dimostra. Bontempi, pa. 54.

## T R I T O N E.



But that the proportions of a diateffaron tone and diateffaron would result from an experiment made by strings of the several lengths of twelve, nine, eight, six; or rather by a division of the monochord, according to that rule, is demonstrable. This invention of Pythagoras, as it regarded only the proportions or ratios of sounds, was applicable to no one system in particular; however it produced a discovery, which enabled him at once to supply a defect in even the improved system of Terpander, and lay a foundation for that more enlarged one, which is distinguished by his name, and has never since his time been capable of any substantial improvement. We are here to remember that the diapason or octave had been found to consist in duple proportion, or in the ratio of 12 to 6; and that the interval between the diateffaron twelve, nine, and that other eight, six, viz. nine, eight, was a complete tone, or sesquioctave ratio. Pythagoras, in consequence of this discovery recurring to the antient septenary, found that its extremes were discordant, and that there wanted but little to produce that supremely sweet concord the diapason, which the means above had enabled him to investigate. Observing farther that in the septenary the interval between Mese and Paramese was but a hemitone, he immediately interposed between them a whole tone, and thereby completed the diapason.

Ptolemy observes, that it is extremely difficult to find chords perfectly equal in respect of crassitude, density, and other qualities that determine their several sounds; and farther he says, that the same chord distended by the same weight, will at different times yield different sounds. Ptolem. Harmonicor. lib. I. cap. 8. Ex verf. Wallis. Merfenn. Harm. universelle, Traite des Instrumens, Prop. iv. So that the success of experiments for investigating the consonances, by the means of weights hung to chords, must be very precarious, and is little to be depended on.

It

It must be confessed that some authors have in general terms ascribed the addition of an eighth string to the heptachord lyre to others; Boetius gives it to Licaon, and Pliny to Simonides; but Nicomachus, from whom the following relation is taken, does most expressly attribute it to Pythagoras.

History has also transmitted to us the bare names of sundry persons, by whom at different times the strings of the lyre are said to have been encreased to eighteen in number; as Theophrastus, who added a ninth; Hestius, who added a tenth, and so on\*; but as to the ratio subsisting between them, or any system to which they could be said to be adapted, there is a total silence. Indeed we have the greatest reason to think that these additions were not made in any ratio whatever, but served only to increase the variety of sounds ‡. That innovations were made in the heptachord is certain; and when we are informed that Timotheus, for his presumption in adding to the strings of the ancient lyre, had a fine imposed on him by the magistracy, we may fairly conclude that those innovations tended rather to the corruption than the improvement of music.

But the case is different with respect to him of whom we are now speaking; the system of Pythagoras had its foundation in nature: the improvement of an instrument was not his care; he was a philosopher and a musician in the genuine sense of the word, and proposed nothing less than the establishment of a theory to which the practice of succeeding ages should be accommodated. His motives for attempting it, and in what manner he effected this great purpose, shall now be given in the words of his learned biographer.

‘ Pythagoras, lest the middle sound by conjunction being compared to the two extremes, should render the diatessaron concert both to the Nete and the Hypate; and that we might have a greater variety, the two extremes making the fullest concord each to other, that is to say, a diapason, which consists in duple proportion, inserted an eighth sound between the Mese and the Paramese, placing it from the Mese a whole tone, and from the Paramese a semitone; so that what was formerly the Paramese in the heptachord,

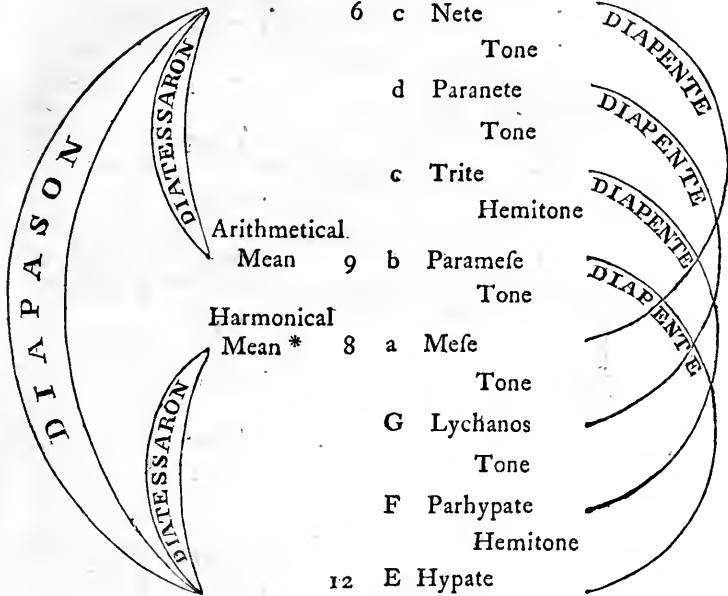
\* Boetius de Musica, lib. ii. cap. 20. Vincen. Galilei, Dial. della Musica, pag. 116.

‡ Nicom. lib. ii. Boet. lib. i. cap. 20. Bont. pag. 71.

' is still the third from the Nete, both in name and place ; but that  
 ' now inferted is the fourth from the Nete, and hath a concert to it  
 ' of diateffaron, which before the Mefe had to the Hypate : but the  
 ' tone between them, that is the Mefe, and the tone inferted, called  
 ' the Paramefe, inftead of the former, to whichfoever tetrachord it  
 ' be added, whether to that which is at the Hypate, being the  
 ' lower, or to that of the Nete, being the higher, will render the  
 ' concord of diapente; which is either way a fystem, confifting both of  
 ' the tetrachord itfelf, and of the additional tone : And as the diapente  
 ' proportion, viz. feffquialtera, is found to be a fystem of feffquitertia  
 ' and feffquioctava, the tone therefore is feffquioctava. Thus the in-  
 ' terval of four chords, and of five, and of both conjoined together,  
 ' called diapafon, with the tone inferted between the two tetra-  
 ' chords, completed the octochord \*."

\* Stanl. Hift. of Philofophy, pag. 386, from Nicom. lib. i.

SYSTEM of PYTHAGORAS.



It remains now to enquire what this variation of and addition to the septenary led to. Pythagoras immediately after he had adjusted his system of the octochord in the manner above related, transferred to it the additions which had been made to that of Terpander; and first he connected with it the tetrachord hypaton, which carried the system down to B, and placing at the other extremity the hyperboleon tetrachord, he continued it up to a a, as here is shewn.

\* The difference between the arithmetical and harmonical division of the diapason is explained in a subsequent chapter. But as this division is frequently occurring, it may not be improper here to remark in general that the numbers 9, 6, 12, express the arithmetical, and 12, 8, 6, the harmonical division.

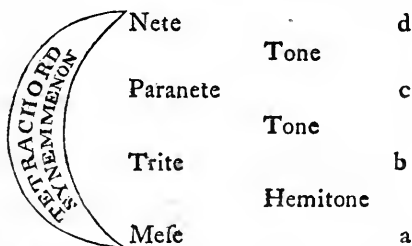
## GREAT SYSTEM of PYTHAGORAS.

Lesser System of PYTHAGORAS.		Tetrach. Hyperb.	Nete hyperboleon	Tone	aa
			Paranete hyperboleon	Tone	g
			Trite hyperboleon	Hemit.	f
			Nete diezeugmenon	Tone	e
		Tetrachord B	Paranete diezeugmenon	Tone	d
			Trite diezeugmenon	Hemit.	e
			Paramefe	Tone	h
			Mefe	Tone	a
		Tetrachord A	Lychanos meson	Tone	G
			Parhypate meson	Hemit.	F
			Hypate meson	Tone	E
			Lychanos hypaton	Tone	D
Tetrach. Hypat.	Parhypate hypaton	Hemit.	C		
	Hypate hypaton		h		

In consequence of the separation in the system of the octochord above noted, we see that in the above diagram the tetrachord B is separated from the tetrachord A by a whole tone: this disjunction of the one diatessaron from the other, gave rise to the epithet of Diezeugmenon or disjunct, whereby the former of the two tetrachords is distinguished: we are therefore now to look for the invention of that other tetrachord, which hitherto has been represented as part of a system, to which it could never with any propriety be applied.



No one in the least acquainted with the principles of harmony need be told, that that relation which modern musicians denominate a Tritonus, can have no place in any regular series of progression, either ascending or descending; for of the effects of sounds produced at the same instant we are not now speaking: that such a relation immediately arose from the separation of the Diezeugmenon and Meson tetrachords, will appear by observing that in the progression upwards through the Meson tetrachord, beginning at Parhypate Meson, and proceeding to Paramese, that interval which should be a diatessaron, and consist of two tones and a hemitone, will contain three tones, and have for its ultimate sound what in this place is to be considered as an excessive fourth\*. The consequence of this was, that the lower sound could never be used as a fundamental; and so far the system must be said to have been imperfect. To remedy this defect in part, collateral or auxiliary tetrachord was with great ingenuity constituted, in which the sounds followed in the order of hemitone, tone, and tone, a succession which a true and perfect diatessaron requires.



The intervals that compose this system will appear upon comparison to be precisely the same with those of the tetrachord B, in the conjunct system; whereas between the tetrachord B, in the disjunct system, and that at present under consideration, this difference is apparent; in the former the distance between a and b is a whole tone, in the latter it is a hemitone: if therefore this question should be asked, Wherein did the merit of the improvements made by Py-

\* Some writers have given the name of Tritonus to the defective fifth, □ f, for this reason, that it is an interval compounded of hemitone, tone, tone, and hemitone, the sum whereof is three tones. But in this they are mistaken, for the ratios of the tritonus or excessive fourth, and the semidiapente or defective fifth are different, the one being 45 to 32, the other 64 to 45. Vide Mercennus Harmonic, De Dissonantiis, pag. 75. Holder on the natural Grounds and Principles of Harmony, pag. 128.

thagoras to the ancient system consist? the answer would be, first, in the invention of the disjunct system, and the consequent completion of the octochord; next in the introduction of the octochord into the system of Terpander; and lastly, in such a disposition of the disjunct tetrachord as was yet consistent with the re-admission of that part of the system which it seems to exclude whenever the perfection of the harmony should require it. After what has been said it will be needless to add that this collateral tetrachord was distinguished by the epithet of Synemmenon or conjunct. With these improvements the Pythagorean system assumed the following form.

ADDITION to the Great System of PYTHAGORAS.

Lesser System of PYTHAGORAS.	Tetrach. hyperb.	Nete hyperboleon	aa		
			Tone		
		Paranete hyperboleon	g		
	Tetrach. diez. B		Tone		
		Trite hyperboleon	f		
			Hemitone		
		Nete diezeugmenon	e		
	Tetrach. diez.		Tone		
		Paranete diezeugmenon	d	Nete synemmenon	d
			Tone		Tone
		Trite diezeugmenon	c	Paranete synemmenon	c
			Hemitone		Tone
	Tetrach. meson A	Paramefe	b	Trite synemmenon	b
			Tone		Hemitone
		Mefe	a	Mefe	a
Tetrach. hypat.		Tone			
	Lychanos meson	G			
		Tone			
	Parhypate meson	F			
		Hemitone			
Tetrach. hypat.	Hypate meson	E			
		Tone			
	Lychanos hypaton	D			
		Tone			
	Parhypate hypaton	C			
	Hemitone				
	Hypate hypaton	b			

There

There were two reasons that seemed to suggest a still farther improvement ; the one was that by the separation of the Diezeugmenon and Meson tetrachords there followed an unequal division of the system ; for, ascending from Mese to Nete Hyperboleon, the distance was a complete Octave ; whereas descending to Hypate Hypaton it was only a Seventh : from hence arose another inconvenience, a false relation between Hypate Hypaton and Parhypate Meson, which though to appearance a fifth, was in truth an interval of only two tones and two hemitones, constituting together the very discordant relation of a defective fifth. To supply this defect nothing more was required than the addition of a tone at the lower extremity of the system. Pythagoras accordingly placed another chord at the distance of a tone below Hypate Hypaton, which he named Proslambanomenos, a word signifying additional or supernumerary, it not being includable in the division of the system by tetrachords ; and thus was completed that system of a Bisdiapason or double octave, which the Italians distinguish by the several appellations of Systema immutabile, Systema diatonico, Systema Pitagorico, and Systema massimo.

IMMUTABLE System of PYTHAGORAS.

Lesser System of PYTHAGORAS.	Tetrach. diezeugm. B	Tetrach. hyperbol.	Nete hyperboleon	aa				
			Tone					
			Paranete hyperboleon	g				
			Tone					
			Trite hyperboleon	f				
			Hemitone					
	Tetrach. diezeugm. B	Tetrach. diezeugm. B	Tetrach. diezeugm. B	Nete diezeugmenon	e			
				Tone				
				Paranete diezeugmenon	d	Nete synemmenon	d	Tetrach. Synemmenon.
				Tone		Tone		
				Trite diezeugmenon	c	Paranete synemmenon	c	
				Hemitone		Tone		
Paramefe	h	Trite synemmenon	b					
Tone		Hemit.	a					
Tetrach. mefon A.	Tetrach. mefon A.	Tetrach. mefon A.	Mefon	a	Mefon	a		
			Tone					
			Lychanos mefon	G				
			Tone					
			Parhypate mefon	F				
			Hemitone					
Tetrach. hypaton.	Tetrach. hypaton.	Tetrach. hypaton.	Hypate mefon	E				
			Tone					
			Lychanos hypaton	D				
			Tone					
			Parhypate hypaton	C				
			Hemitone					
Tetrach. hypaton.	Tetrach. hypaton.	Tetrach. hypaton.	Hypate hypaton	b				
			Tone					
			Proflambanomenos	A				

Here it is to be observed, that although in this and the preceding scale the Synemmenon tetrachord is given at large, yet the generality of writers either insert it entire in its place, immediately above the Mefon tetrachord, placing the Diezeugmenon tetrachord above it, as Kircher in his Musurgia, tom. I. lib. III. cap. xiii. or else,

following perhaps the example of Guido, whose reformation of the scale might suggest this latter method as the most concise, they have borrowed from the Synemmenon tetrachord one only of its terms, Trita, and inserted it immediately after Mese, with Paramese next above it; thereby leaving it to the imagination to select which of the two sounds the nature of the progression might require; however, the better to explain its construction and use, it was here thought proper to exhibit the Synemmenon tetrachord in that detached situation which seems most agreeable to its original formation\*.

C H A P. IV.































**B**UT here it may very naturally be asked what were the marks or characters whereby the ancients expressed the different positions or powers of their musical sounds? An answer to this question may be produced from an author of undoubted credit, Boetius, and also Alypius, an ancient Greek, of whose writings we shall have occasion to speak more particularly, and these inform us that the only characters in use among the Greeks to denote the sounds in music, were the letters of their alphabet, a kind of Brachygraphy totally devoid of analogy or resemblance between the sign and the thing signified. Boetius de Musica, lib. IV. cap. iii. gives an account of the ancient method of notation in the following words. ‘The ancient musicians, to avoid the necessity of always writing them at length, invented certain characters to express the names of the chords in their several genera and modes; this short method was the more eagerly embraced, that in case a musician should be inclined to adapt music to any poem, he might, by means of these characters, in the same manner as the words of the poem were expressed by letters, express the music, and transmit it to posterity. Out of all these modes we shall only specify the Lydian.’ This description of the sounds consisted in the different application of the Greek letters to each of them; Boetius proceeds thus: ‘To express Proslambanomenos, which may be called Acquisitus, was used

\* Merfenn. Harmon, lib. vi. De Generibus et Modis, pag. 100.

· Z imperfect, and tau lying  $\rightarrow$ . Hypate hypaton,  $\Gamma$  reversed and  $\Gamma$  right  
 ·  $\Upsilon$ . Parhypate hypaton, B imperfect  $\Gamma$  supine,  $\frac{B}{L}$ . Hypaton enarmo-  
 · nios,  $\vee$  supine and  $\Gamma$  reversed, having a stroke  $\wedge$ . Hypaton chromatic,  
 ·  $\vee$ , having a line and  $\Gamma$  reversed, having two lines  $\vee$ . Hypaton dia-  
 · tonos,  $\phi$  Greek, and digamma  $\frac{\phi}{F}$ . Hypate meson C and C,  $\frac{C}{C}$ . Par-  
 · hypate meson P and C supine  $\frac{P}{C}$ . Meson enarmonios,  $\Pi$  Greek and C  
 · reversed  $\frac{\Pi}{C}$ . Meson chromatic,  $\Pi$  having a stroke, and C reversed,  
 · having a stroke through the middle  $\frac{P}{L}$ . Meson diatonos, M Greek  
 · and  $\Pi$  drawn open  $\frac{M}{\Gamma}$ . Mese, I and  $\Delta$  lying  $\frac{I}{\Delta}$ . Trita synemmenon,  
 ·  $\Theta$  and  $\Delta$  supine  $\frac{\Theta}{\vee}$ . Synemmenon enarmonios, H Greek and  $\Delta$  lying,  
 · with a stroke through the middle,  $\frac{\Delta}{H}$ . Synemmenon-chromatic, H  
 · Greek and  $\Delta$  reversed with a stroke  $\frac{\Delta}{H}$ . Synemmenon diatonos,  $\Gamma$   
 · and N  $\frac{N}{\Gamma}$ . Nete synemmenon,  $\Omega$  supine and Z,  $\frac{\omega}{Z}$ . Paramese, Z and  
 ·  $\Gamma$  Greek lying  $\frac{Z}{Z}$ . Trita diezeugmenon, E square and  $\Gamma$  supine  $\frac{E}{L}$ .  
 · Diezeugmenon enarmonios,  $\Delta$  and  $\Gamma$  Greek lying reversed  $\frac{\Delta}{\Gamma}$ . Die-  
 · zeugmenon chromatic,  $\Delta$  with a stroke, and  $\Pi$  Greek lying reversed  
 · with an angular line  $\frac{\Delta}{\nabla}$ . Diezeugmenon diatonos,  $\Omega$  square and Z,  $\frac{\omega}{Z}$   
 · Nete diezeugmenon,  $\phi$  lying and N inverted drawn open  $\frac{\phi}{N}$ . Trita  
 · hyperboleon,  $\Gamma$  looking downwards to the right, and half  $\Delta$  to the  
 · left  $\frac{L}{\vee}$ . Hyperboleon enarmonios, T supine and half A to the right  
 · supine,  $\frac{T}{\vee}$ . Hyperboleon chromatic, T supine, having a line and  
 · half A to the right supine, having a line drawn backward  $\frac{T}{\vee}$ . Hy-  
 · perboleon, diatonos M Greek having an acute, and  $\Gamma$  having an acute  
 ·  $\frac{M}{\Gamma}$ . Nete hyperboleon, I having an acute, and A lying, having an  
 · acute also  $\frac{I}{\Delta}$ \*.

\* Boetius as he goes along gives the Latin signification of the Greek names, which it was thought proper to omit in order to make room for an extract from Kircher to the same purpose,

Here it is to be remarked, that although the above passage of Boetius is given, not from any of the printed copies of his works, but from a very ancient manuscript, which Mr. Selden collated, and is prefixed to Meibomius's version of Alypius: there occur in it some instances of disagreement between the verbal description of the character and the character itself; some of these Meibomius in his notes has remarked, and others have escaped him; nevertheless it was not thought advisable to vary the representation which Boetius has given, and therefore the following scheme of the ancient musical characters is inserted, as he has delivered it in lib. IV. cap. iii. of his book De Musica.

	Proflambenomenon		Lychanos mefon diaton.		Paranete diezeug. enarm.
	Hypate Hypaton		Mese		Paranete diezeug. chrom.
	Parhypate Hypaton		Trite synemmenon		Paranete diezeug diat.
	Lychanos hyp. enarm.		Paranete synem. enarm.		Nete diezeugmenon
	Lychanos hyp. chrom.		Paranete synem. chrom.		Trite hyperboleon
	Lychanos hyp. diat.		Paranete synem. diaton		Paranete hyperb. diaton.
	Hypate mefon.		Nete synem. extenta		Paranete hyperb. chrom.
	Parhypate mefon		Nete synem. ultima		Paranete hyperb. diaton.
	Lychanos mefon enarm.		Paramefe		Nete hyperboleon.
	Lychanos mefon chrom.		Trite diezeugmenon		

There is this remarkable difference between the method of notation practised by the ancients, and that now in use, that the character, wherein the Latin are opposed to the Greek names in the order in which they arise in the several tetrachords.

Tetrachordon	aa	Nete hyperboleon, five ultima acutarum.
Neton	g	Paranete hyperboleon, five secunda acutarum.
	f	Trite hyperboleon five, tertia acutarum.

ters used by the former were arbitrary, totally destitute of analogy, and no way expressive of those essential properties of sound, gravity and acuteness; which is the more to be wondered at, seeing that in the writings of the ancients the terms Acumen and Gravitus are perpetually occurring, whereas the modern scale is so adjusted, that those sounds, which in their own nature are comparatively grave or acute, have such a situation in it, as does most precisely distinguish them according to their several degrees of each; so that the graver sounds have the lowest, and the acuter the highest place in our scale. But here it may be asked, does this distinction of high and low properly belong to sound, or do we not borrow those epithets from the scale in which we see them so posited? It should seem that we do not; for if we attend to the formation of sounds by the animal organs, we shall find that the more grave are produced from the lower part of the larynx, as the more acute are from the higher; so that the difference between the one and the other seems to be more than ideal, and to have its foundation in nature: the modern musicians seem however to pay a greater regard to this diversity than is either requisite or proper; for where is the necessity that in a vocal composition such a sentiment as this 'They that go down to the sea in ships,' &c. should be expressed by such sounds, as for the degree of gravity few voices can reach? much less can we see the reasonableness of that precept which directs that the words Hell, Heaven, are invariably to be expressed, the one by a very grave, and the other by a very acute sound. Those who affect to be severely critical on the compositions of this la-

-----	e	Nete, five ultima disjunctarum.
Tetrachordon	d	Paranete diezeugmenon, five secunda disjunctarum.
Diezeugm.	c	Trite diezeugmenon, five tertia disjunctarum.
-----	b	Paramese, five vicina mediis.
Tetrachordon	d	Nete synemmenon, five ultima conjunctarum.
Synemmen.	c	Paranete synemmenon, five secunda conjunctarum.
-----	b	Trite synemmenon, five tertia conjunctarum.
-----	a	Mese, id est media.
Tetrachordon	G	Lychanos meson, five index mediarum.
Meson	F	Parhypate meson, five secunda mediarum.
-----	E	Hypate meson, five gravis mediarum.
Tetrachordon	D	Lychanos hypaton, five index gravium.
Hypaton	C	Parhypate hypaton, five secunda gravium.
-----	B	Hypate hypaton, five gravis gravium.
-----	A	Prollambanomenos, five vox assumpta.



ter age, allow no greater merit to this sort of analogy than is due to a pun, and their censure seems to be no more than the error will warrant.

The description above given of the ancient musical characters, is derived, through Boetius, from Alypius, the most copious and intelligible of all the Greek writers on this branch of music: his authority, so far as it goes, has been implicitly acquiesced in; and indeed from his testimony there can lye no appeal. The reader will naturally expect to be informed of the method by which the ancients denoted the different degrees in the length or duration of their musical sounds; but it seems they were strangers to music merely instrumental: the lyre, and other instruments in use among them, was applied in aid of the voice; and the ode, or hymn, or psalm, or whatever else the musician sung, determined by its measure, and the feet of the verse the length of the sounds adapted to it, and took away the necessity for such marks or characters of distinction in this respect as are used by the moderns. Nor need we any farther proof of this assertion, than the absolute silence of the Greek writers as to any method of denoting what we now understand by the Time or measure of sounds. It is true that those among the learned who have undertaken a translation of some few remaining fragments of ancient music into modern notes, have, in particular instances, ventured to render the characters in the original by notes of different lengths; but it is to be presumed they were determined so to do rather by the cadence of the verse, than by any rhythmical designation observable in any of those characters. Mr. Chilmead, the publisher of the Oxford edition of Aratus, and of Eratosthenes de Astris, in octavo, 1672, has given at the end of it three hymns or odes of a Greek poet named Dionysius, with the ancient musical characters, which he has rendered by breves only; but Kircher, in his *Musurgia*, tom. I. pag. 541, from a manuscript in the library of the monastery of St. Salvator, near the gate of Messina in Sicily, has inserted an ancient fragment of Pindar, with the musical notes, which he has explained by the different signs of a breve, semibreve, crotchet, and quaver, as understood by us moderns. Meibomius also has given from an ancient manuscript a *Te Deum*, with the Greek characters, and in modern notes, the former of which appear to be more simple and less combined than those described by Boetius; which is the less to be wondered at considering

that St. Ambrose, who is said to have been the author of that hymn\*, was consecrated bishop of Milan, A. C. 374, and Boetius flourished not till about the year 500; so that there is a period of more than one hundred years, during which every kind of literature suffered from the rage of conquest that prevailed throughout all Europe, to induce a suspicion that the Greek characters were not transmitted down to the time of Boetius uncorrupted. In the translation of these musical characters of the above-mentioned *Te Deum*, Meibomius has made use of the breve, the semibreve, and minim: upon what authority those several modes of translation is founded we do not pretend to determine; it seems that nothing is wanting to enable us to judge with certainty in this matter but a perfect knowledge of the powers of the ancient characters, with respect to the sounds which they were intended to signify; and concerning these Kircher seems to have entertained no kind of doubt: he had access to two manuscripts of great antiquity, and his judgment of their authority, and the use that may be made of them he has given in the following words:

‘ The ancient musical characters were no way similar to those of the  
 ‘ moderns; for they were certain letters, not indeed the pure Greek  
 ‘ ones, but those sometimes right, sometimes inverted, and at others  
 ‘ mutilated and compounded in various manners, each of which cha-  
 ‘ racters answered to one of the chords in the musical system. I  
 ‘ laid my hands on two manuscripts, which by God’s mercy, were  
 ‘ preserved from the injuries of time, the one in the Vatican library,  
 ‘ the other in ours of the Roman college: the author is Alypius; he,  
 ‘ in order to give the harmonical characters of the ancients in great  
 ‘ perfection, has exhibited with wonderful care every tone in the  
 ‘ Octodecachord, according to the different genera. He keeps a  
 ‘ twofold order in these several characters; the first as they were  
 ‘ used in the Cantus; the second as adapted to instruments, differing  
 ‘ from the former almost after the same manner as at this day the  
 ‘ notes of vocal music do from those characters called by us the Tab-  
 ‘ lature, which are used only in instrumental music. Several writers,

\* The *Te Deum* is commonly styled the Song of St. Ambrose, and it is said that it was composed jointly by him and St. Augustine, upon occasion of the baptism of the latter by St. Ambrose. *Alliance of Divine Offices*, by Hamon L’Estrange, folio, 1690, pag. 79. But archbishop Usher ascribes it to Nicetius, and supposes it not to have been composed till about the year 500, which was long after the time of Ambrose and Augustine. *Ibid.*

' not understanding this order of Alypius, have considered this two-  
 ' fold series as a single one: among these are Liardus, and Solomon  
 ' de Caux, who has followed him, both of whom have given to the  
 ' world most false and corrupted specimens of antient music. Aly-  
 ' pius wrote an entire volume on the musical characters or notes,  
 ' which, together with other manuscripts of the old Greek musicians,  
 ' remain preserved in the library of the Roman college: a translation  
 ' of this volume into the Latin language, I will, with the permission  
 ' of God, at a convenient opportunity give to the learned world; in  
 ' the interim I trust I shall do a favour to posterity by exhibiting a  
 ' specimen of the characters in the order in which they lie in the  
 ' manuscript, correcting from the interpretations thereto annexed  
 ' such errors as I found required it\*.'

The specimen, the whole of which seems by his account to be  
 taken from Alypius, contains the characters through all the fifteen  
 tones in the diatonic and chromatic genera in two separate tables, and  
 is as follows.

\* It seems by this that Alypius had not been published in Kircher's time; and though  
 he here promises to give the world a translation of it, there is no other extant than that  
 very correct one of Meibomius. Kircher expresses a confidence that by publishing these  
 characters he should confer an obligation on the learned world, but the manner in which  
 he has done it furnished a ground of censure to Meibomius, which he delivers in very  
 bitter terms in the preface to his edition of the Greek writers.

	None of characters initially occurring in Asia Minor Grecian	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy	Χαμαρ Joni Lydy
αα	Νητη υπερεδασιων	Ι Λ	Θ Ν	Υ Ζ	Κ Δ	Ξ α	Μ Π	Ρ σ	Τ Ν	Χ ο	Φ α	Ψ ε	Ω λ	Α λ	Β η	Γ λ	Δ λ	Ε λ
β	Περεδασιων διατονος	μ π	υ ζ	κ δ	ξ α	μ π	ρ σ	τ ν	χ ο	φ α	ψ ε	ω λ	α λ	β η	γ λ	δ λ	ε λ	ζ λ
γ	Πητη υπερεδασιων	α ρ	ευ	θ η	θ η	δ β	ι λ	α λ	θ λ	λ ο	υ ζ	ι κ	α ο	κ λ	ο κ	φ η	λ ε	π δ
δ	Νητη διεβευρησιων	θ η	ζ ε	ι κ	ζ α	η χ	κ λ	ο κ	φ η	θ λ	ρ σ	ι κ	α ο	κ λ	ο κ	φ η	λ ε	π δ
ε	Διεβευρησιων διατονος	υ ζ	ι κ	μ π	α ο	κ λ	ο κ	φ η	θ λ	ρ σ	ι κ	α ο	κ λ	ο κ	φ η	λ ε	π δ	ζ λ
ς	Πητη διεβευρησιων	ε υ	ξ α	π λ	ζ ε	ο κ	φ η	θ λ	ρ σ	ι κ	α ο	κ λ	ο κ	φ η	λ ε	π δ	ζ λ	β η
η	Παραμετη	ζ ε	ο κ	θ η	η χ	π ρ	ζ λ		ς ε	υ ζ	κ λ	τ ρ	α ι	η χ	φ φ	γ η	φ φ	γ η
ς	Νητη συνηρησιων	υ ζ	ι κ	μ π	α ο	κ λ	ο κ	φ η	θ λ	ρ σ	ι κ	α ο	κ λ	ο κ	φ η	λ ε	π δ	ζ λ
η	Δυνηρησιων διατονος	γ η	μ π	λ ε	ζ ε	ο κ	φ η	θ λ	ρ σ	ι κ	α ο	κ λ	ο κ	φ η	λ ε	π δ	ζ λ	β η
β	Πητη συνηρησιων	θ κ	ς υ	η σ	ι κ	ς ε	υ ζ	λ ε	υ ψ	β η	ξ κ	χ ψ	ε υ	π δ	ε	ζ ε		
α	Μεση	ι κ	ς ε	υ ζ	κ δ	τ ρ	α ο	μ π	φ φ	γ η	ξ κ	χ ψ	ε υ	π δ	ε	ζ ε		
γ	Μεση διατονος	μ π	φ φ	γ η	ο κ	χ υ	ζ ε	π δ	ω μ	η χ	ς ε	γ η	ι κ	υ ζ	ρ τ	κ λ		
φ	Παραπητη ηρισων	ς υ	ρ λ	θ κ	ς ε	γ η	ι κ	υ ψ	β η	λ ε	υ ψ	β η	ξ κ	χ ψ	ε υ	π δ	ε	ζ ε
ε	Πητη μεση	ς ε	τ ρ	ι κ	τ ρ	α ο	κ λ	φ φ	γ η	μ π	χ ψ	η χ	ο κ	φ η	λ ε	π δ		
δ	Πητη διατονος	φ φ	ξ η	μ π	χ η	η χ	ο κ	ω υ	ι ε	π δ	γ η	φ φ	κ λ	ο κ	φ η	λ ε	π δ	
ς	Παραπητη ηρισων	ρ λ	υ ι	ς υ	γ η	μ π	ς ε	φ λ	ω η	υ ψ	β η	ξ κ	χ ψ	ε υ	π δ	ε	ζ ε	
η	Πητη ηρισων	τ ρ	ω η	ς ε	γ η	μ π	τ φ	ι η	φ η	λ ε	π δ	γ η	φ φ	κ λ	ο κ	φ η	λ ε	π δ
α	Παραλαβασιωνηριος	ς η	ρ η	φ φ	η ε	υ ζ	κ λ	υ ζ	α ο	μ π	χ ψ	η χ	ο κ	φ η	λ ε	π δ	ε	ζ ε

<i>Alta et Characteris</i>	<i>Charact</i> <i>Ioni</i> <i>Hypoly</i> <i>Istady</i>	<i>Charact</i> <i>Ioni</i> <i>Hypoly</i> <i>Ephesy</i> <i>Acoly</i>	<i>Charact</i> <i>Ioni</i> <i>Hypoco</i> <i>Hypocaco</i> <i>Phrygy</i>	<i>Charact</i> <i>Ioni</i> <i>Hypoly</i> <i>Hypoly</i> <i>Phrygy</i>	<i>Charact</i> <i>Ioni</i> <i>Hypoly</i> <i>Hypoly</i> <i>Iacry</i>	<i>Charact</i> <i>Ioni</i> <i>Hypocac</i> <i>Hypocac</i>	<i>Charact</i> <i>Ioni</i> <i>Hypocac</i> <i>Hypocac</i>	<i>Charact</i> <i>Ioni</i> <i>Hypocac</i> <i>Hypocac</i>	<i>Charact</i> <i>Ioni</i> <i>Hypocac</i> <i>Hypocac</i>
<i>musici veterum</i>	Ι Λ Θ Η Π Ξ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>nuxta Diaton Genus</i>	Τ Γ Δ Ε Θ Η Ξ Ν Κ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Νήτη ὑπερδωδεκαων</i>	Ι Λ Θ Η Π Ξ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Παρανήτη ὑπερδωδεκαων</i>	Τ Γ Δ Ε Θ Η Ξ Ν Κ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Ψιτή ὑπερδωδεκαων</i>	Α Γ Δ Ε Θ Η Ξ Ν Κ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Νήτη διεξυγμενων</i>	Θ Η Ξ Ν Κ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Παρανήτη διεξυγμενων</i>	Δ Ε Θ Η Ξ Ν Κ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Ψιτή διεξυγμενων</i>	Ε Π Θ Η Ξ Ν Κ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Παραμεσος</i>	Ξ Ο Κ Θ Η Π	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Νήτη συνημενων</i>	Ι Χ Μ Π	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Παρανήτη συνημενων</i>	Η Ν Π Δ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Ψιτή συνημενων</i>	Θ Χ Ψ Α Γ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Μεση</i>	Ι Λ Γ Δ Ε	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Διχαλιος μεσων</i>	Π Ξ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Παραυπατη μεσων</i>	Ψ Ρ Λ Θ Χ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Υπαυπη μεσων</i>	Γ Δ Ε	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Διχαλιος ὑπατων</i>	Ψ Ε	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Παραυπατη ὑπατων</i>	Β Λ Υ Ε Ψ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Υπαυπη ὑπατων</i>	Γ Γ Ϟ Η	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε
<i>Προδιαμεσανομενος</i>	Ζ Η ϱ Η Φ Ψ	Η Γ Τ Δ	Χ Λ Δ Δ	Π Ξ Κ Γ	Γ Ν Ο Κ	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε	Α Ι Ξ Ε

Kircher gives the following explanation of the above characters.

The top of the plate contains the names of the fifteen tones or modes: the side exhibits eighteen chords, answering to every tone, and expressed by their Greek names, to each of which the Guidonian keys now used by the Latins answer, in the first column. To know therefore for instance by what characters the ancients expressed the Mese in the Phrygian tone, we must look in the side for the chord Mese, and on the top for Tonus Phrygius, and where they meet we shall find the character sought for, and so for the rest.

Having exhibited this key to the ancient characters, Kircher gives the fragment of Pindar above-mentioned in the Greek notes, and also in those of the modern scale, as here under is represented.

64

**MONOPHONIA**

Υ Ψ Γ Θ Ι Ψ Γ Θ Ι Ψ Γ Θ Ι Μ Ι  
Χρύσεια φόρμιγγε, Απόλλωνε και ισωλοκαμων

Θ Ι Μ Ι Θ Γ Θ Γ Ψ Γ Θ Ι Γ Θ Ι Θ Γ Μ Μ Ι  
Σωδωνοι μοισαν κτεανον τας ακυβηβασις αλλαϊας αρχαι

**CHORUS AD CYTHARAM**

ε ε ε ε ζ η ε ε ζ η ε ε ζ η η η ζ η  
Πέθον δ' αιδδι σμασιν αησιχέρων όπόταν τον φροίμων

ε η ζ η ε ε ε ε ζ η ε ο υ η η ζ η ε ε ζ η  
αμβολας τεύχης ελελι ζυμλίου και τον άρχμα των κεραωνόν σβεννύεις

And the table herein before given from him seems to have been his authority for rendering the ancient characters in modern notes, as above is shewn. By way of illustration he adds, that the Chorus vocalis above contains the characters written over each word; and that the Chorus instrumentalis, which is nothing else but the antistrophe to the former, was played according to the strophe, on the cythara or the pipe. As the characters agree with those of Alypius, he says he has no doubt about their meaning; and as to the time, he is clear that it was given by the measures of the syllables, and not by the characters.

The several variations of the system of music have been traced with as much accuracy as the nature of the subject would allow of: the improvements made by Terpander and others, more especially Pythagoras, have been distinctly enumerated, we are therefore now to proceed in our narration.

Pythagoras having, as has been related, investigated the proportions of sounds, and extended the narrow limits of the ancient system, and also demonstrated, not merely the affinity of sounds, but that a harmony, analogous to that of music, was to be found in other subjects wherein number and proportion were concerned; and that the coincidences of sounds were a physical demonstration of those proportions which arithmetic and the higher geometry had till then enabled mankind only to speculate, it followed that music from thenceforth became a subject of philosophical contemplation. Aristotle, by several passages in his writings now extant, appears to have considered it in this view: it is even said that he wrote a treatise professedly on the subject of music, but that it is now lost.

Fabricius has given a catalogue of sundry writers, as namely, Jades, Lafus Hermionensis, Mintanor, Diocles, Hagiopolites, Agatho, and many others, whose works are lost; and in the writings of Aristoxenus, Nicomachus, Ptolemy, Porphyry, Manuel Bryennius, and other ancient authors, we meet with the names of Philolaus, Eratosthenes, Archytas of Tarentum, and Didymus of Alexandria, who seem mostly to have been philosophers; but as they are also enumerated among the *scriptores perditii*, nothing can be said about them. In those early times the principles of learning were very slowly diffused among mankind; and it does not appear, that from the time of Pythagoras, to that of Aristoxenus, which included a period of near three hundred

hundred years, the music of the ancients underwent any very considerable alteration, unless we except that new arrangement and subdivision of the parts of the great system, which constituted the Genera, and those dissimilar progressions from every sound to its diapason, which are distinguished by the name of Modes. Of these it is necessary now to speak; and first of the Genera.

Till the time of Pythagoras, the progression of sounds was in that order, which as well the modern as the ancient writers term the diatonic, as proceeding by tones, a progression from the unison to its fourth by two tones and a hemitone, which we should now express by the syllables DO, RE, MI, FA, confessedly very natural and extremely grateful to the ear; though it seems not so much so as to hinder succeeding musicians from seeking after other kinds of progression; and accordingly by a different division of the integral parts of each of the tetrachords, they formed another series of progression, to which, from the flexibility of its nature they gave the epithet of Chromatic, from Chroma, a word signifying colour; and to this they added another, which was termed enarmonic; besides this they invented a subvariation of each progression, and to distinguish the one from the other they made use of the common logical term genus, by which we are to understand, as Kircher tells us, tom. I. lib. III. cap. xiii. a certain constitution of those sounds that compose a diatessaron, or musical fourth; or, in other words, a certain relation which the four chords of any given tetrachord bear to each other. The Genera are elsewhere defined, certain kinds of modulation arising from the different disposition of the sounds in a tetrachord: every Cantus or composition, says Aristoxenus\*, is either Diatonic, Chromatic, or Enarmonic; or it may be mixed, and include a community of the genera. Aristoxenus, for ought now discoverable, is the first that has written professedly, though obscurely, on this part of music. Ptolemy, as he is in general the most accurate and methodical of all the ancient writers, so is he more copious in his explanation of the Genera. Nicomachus has mentioned them, but in a very superficial manner; and as to the latter authors, we are not to wonder if they have contented themselves with the bare enumeration of them; since before the times in which the greater number of them wrote, the Diatonic was the only one of the three genera in common use.

\* Lib. II. pag. 44. ex Verf. Meibom.



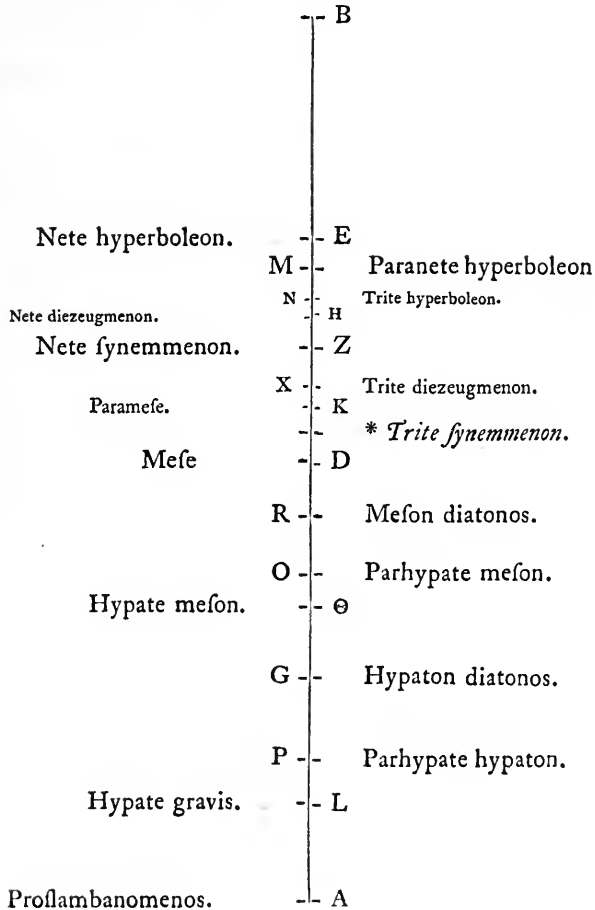
Nor does it any where appear, that even of the five Species, into which that Genus was divided, any more than one, namely, the syn-tonous or intense of Ptolemy, was in general estimation. It must be confessed that no part of the musical science has so much divided the writers on it as this of the genera; Ptolemy has exhibited no fewer than five different systems of general harmony, and, after all, the doctrine on this subject is almost inscrutable: however, the substance of what these and other authors have related concerning the nature of it, is here, as in its proper place, referred to the consideration of such as are desirous to know the essential difference between the music of this and the more early ages.

But before this doctrine of the Genera can be rendered to any degree intelligible, it is necessary to observe, that hitherto we have spoken only of the more common and obvious musical intervals, the tone and hemitone; for the system of Pythagoras is formed of these only; and a more minute division of it was not till after his time thought on, nevertheless it is to be noted, that in order to the completion of his system, it was found requisite to institute a method of calculation that should as it were resolve the intervals into their elements, and adjust the ratios of such sounds as were not determinable by the division of a chord in the manner herein before-mentioned. That division was sufficient, and it answered to the greatest degree of mathematic exactness for ascertaining the ratios of the diatessaron, the diapente, and the tone: and, agreeable to what has been already laid down concerning the investigation of the consonances by Pythagoras, it will most evidently appear upon experiment, that if a chord be divided into twelve equal parts, six of those parts will give an octave to that sound which would have been produced by the same chord, if struck before such division; from whence it appears, that the ratio subsisting between the unison and its octave is duple: again, that eight parts of the twelve will give a diatessaron, which bears to the unison six a ratio of 4 to 3; and that nine parts, according to the same division, will produce the diapente, which bears to the unison six a ratio of 3 to 2; and lastly, that the sound produced at the ninth part will be distant from that at the eighth, and so reciprocally; a tone, in the ratio of 9 to 8, called a Sesquioctave, and often the Diezeugtic tone, which furnished the ear at least with a common measure for the greater intervals.

But we are to note, that the system of Pythagoras was not completed, till, by the very artful contrivance of two tetrachords, to be used alternately, as the nature of the melody might require, a division of the tone between a and  $\sharp$  was effected. By this an interval of a Hemitone was introduced into the system, with which no one section of the chord, supposing it to be divided into twelve parts, would by any means coincide: with great ingenuity therefore did Euclid invent that famous division the Sectio Canonis, by means whereof not only the positions of the several sounds on a supposed chord are precisely ascertained, but a method is suggested for bringing out those larger numbers, which alone can shew the ratios of the smaller intervals, and which therefore make a part of every representation that succeeding writers have given of the immutable system.

The Sectio Canonis of Euclid is a kind of appendix to his *Isagoge*, or *Introductio Harmonica*, containing twenty theorems in harmonics. Nevertheless the title of Sectio Canonis was by him given to the following scheme of a supposed chord, divided for the purpose of demonstrating the ratios of the several intervals thereby discriminated, which scheme is inserted at the end of his work.

SECTIO CANONIS OF EUCLID.



The foregoing canon or scheme of a division is introduced by a series of theorems, preparatory to an explanation of it, which explanation is

contained in Theorems XIX. and XX. the first of these refers to the immoveable sounds, that is to say, Proslambanomenos, and the other sounds to the left of the line, and the latter to the moveable, which are Parhypate and the rest on the right thereof; the sum of which two species composed the great or immutable system.

Theorem XIX. directs the adjustment of the canon for the Stabiles or immoveable sounds, and that in the manner following.

‘ Let the length of the canon be A B, and let it be divided into four equal parts at G D E, therefore B A, as it will be the gravest sound, will be the sonus bombus. Farther, A B is supertertius of G B, therefore G B will sound a diateffaron to A B, towards the acumen, and A B is Proslambanomenos; wherefore G B will be Hypaton Diatonos. Again, because A B is duple of B D, the former will sound a diapafon to the latter, and B D will be Mese. Again, because A B is quadruple of E B, E B will be Nete Hyperboleon; therefore G B is divided twofold in Z, and G B will be duple of Z B, so as G B will sound to Z B the interval of a diapafon, wherefore Z B is Nete Synemmenon. Cut off from D B a third part D H, and D B will be sesquialtera to H B, so as for this reason D B will sound to H B the interval of a diapente, therefore H B will be Nete diezeugmenon. Farther, make H  $\Theta$  equal to H B, therefore  $\Theta$  B will sound a diapafon to H B, so that  $\Theta$  B will be Hypate meson. Again, take the third part of  $\Theta$  B,  $\Theta$  K, and then  $\Theta$  B will be sesquialtera to K B, so that K B will be Paramese. Lastly, cut off L K equal to K B, and then L B will be Hypate the most grave, and thus all the immoveable sounds will be taken in the canon.’

Theorem XX contains the following directions respecting the Mobiles or moveable sounds.

‘ Divide E B into eight parts, of which make E M equal to one, so as M B may be superoctave of E B. And again, divide M B into eight equal parts, and make one of them equal to N M, therefore N B will be a tone more grave than B M, and M B will be a tone graver than B E; so as N B will be Trita hyperboleon, and M B will be Paranete hyperboleon diatonos. Farther, divide N B into three parts, and make N X equal to one of them, so as X B will be supertertius of N B, and the diateffaron will be produced towards the grave, and X B will be Trita diezeugmenon. Again, taking half of X B, make X O equal to it, so as for this reason O B will give a  
‘ diapente

- diapente to X B, wherefore O B will be Parhypate meson; then
- make O P equal to O B \*, so as P B will be Parhypate hypaton.
- Lastly, take the fourth part of G B, G R, and R B will be Meson
- diatonos.

C H A P. V.

THE Sectio Canonis of Euclid, in the judgment of the most eminent writers on harmonics, was the first essay towards a determination of the ratios by the supposed division of a chord; and, assuming the proportions of the diapason, diapente, diatessaron, diezeugtic tone, and limma, as laid down by the Pythagoreans, the division will be found to answer to the ratios: yet this does not appear by a bare inspection, but can only be proved by an actual admeasurement of the several intervals contained in the canon. Now as whatever is geometrically divisible, is also divisible by numbers, succeeding writers in assigning the ratios of the intervals have taken the aid of the latter, and have applied the numbers to each of the sounds, as they result from a division of the canon. How they are brought out will hereafter be made appear.

But here it is necessary to add, that the Sectio Canonis of Euclid, perfect in its kind as it may seem, is supposed to have received some improvement from Aristides Quintilianus, at least with respect to the manner of dividing it; for this we have the testimony of Meibomius, who speaks of a canon of Aristides, which had been once extant, but was perished, or at least was wanting in all the copies of his work; and which he his editor had happily restored. The following is a representation of the Canon, with the numbers annexed.

\* In the Canon O P is not equal to O B but to O X, and Meibomius, with all his care, has made a mistake, which the following page, to go no farther, furnishes the means of rectifying; for observe, that in the Canon of Aristides Quintilianus, which has the numbers to it, Trita diezeugmenon, marked X in that of Euclid, is 3888, and Parhypate hypaton marked P in that of Euclid also, is 7776, which is just double the former number, the consequence whereof is evident.

	-- B
Nete hyperboleon.	-- D. 2304.
Hyperbol. diatonos.	-- l. 2592.
Trite hyperboleon.	-- m. 2916.
Nete diezeugmenon.	-- G. 3072.
Nete fynemmenon.	-- F. 3456.
& diezeugm. diatonos.	-- n. 3888.
Trite diez. & Syn. diat.	-- l. 4096.
Paramefos	-- o. 4374.
Trite fynemmenon.	-- C. 4608.
Mefe	-- P. 5184.
Mefon diatonos.	-- q. 5832.
Parhypate mefon.	-- H. 6144.
Hypate mefon.	-- E. 6912.
Hypaton diatonos.	-- r. 7776.
Parhypate hypaton.	-- K. 8192.
Hypate hypaton.	-- A. 9216. *
Proflambanomenos.	

It does not appear whether the numbers were originally part of the canon, or whether they were inserted by Meibonius. However, from several passages in Ptolemy, particularly in Book I. Chap. 10, where he demonstrates the ratio of the limma, we meet with the number 2048, which is the half of 4096, 1944, the half of 3888, and others, which shew the antiquity of this method of numerical division.

The following is an explanation of the canon as given by Meibonius, in his notes on Aristides Quintilianus, page 312, et seq.

- ‘ The standing sounds are first set down in the division of the canon,
- ‘ and after them the moveable ones ; we have marked the standing
- ‘ sounds by capital letters, and to these are added the moveable ones.
- ‘ The Hypaton diatonos and the rest are marked by the small letters.
- ‘ They are thus to be taken.
- ‘ I. Proslambanomenos, A B, which is the whole length of the
- ‘ chord or line.
- ‘ II. Mese, C B, half thereof.
- ‘ III. Nete hyperboleon, D B, the fourth part of the whole
- ‘ chord.
- ‘ IV. Hypaton diatonos, E B, three fourths thereof.
- ‘ V. Nete synemmenon, F B, the said three fourths, E B, di-
- ‘ vided into two equal parts.
- ‘ VI. Nete diezeugmenon, G B; two thirds of half the chord,
- ‘ that is one third of the whole chord ; but this may be perceived by
- ‘ multiplying an half by two thirds, thus,  $\frac{1}{2} \times \frac{2}{3} = \frac{1}{3}$ .

\* The division of Euclid agrees with that of Aristides as to the manner of obtaining the standing, but differs as to some of the moveable chords, for Euclid finds the Trita diezeugmenon, by setting off towards the grave a diatessaron from the Trita hyperboleon ; he next finds the Parhypate meson, by setting off towards the grave a diapente from the Trita diezeugmenon, which might be easier found by setting down a diapacon from the Trita hyperboleon. He also finds the Parhypate hypaton by making O P equal to O X, that is by setting off a diapacon towards the grave from the Trita diezeugmenon, for he had made O X equal to half X B, and consequently twice O X O P must be equal to X B. And lastly, he finds the Meson diatonos by setting off a diatessaron towards the acute from the Hypaton diatonos, whereas all the four sounds, as well as the other moveable ones, are found in Aristides, by a division into eight parts, that is by setting off sesquioctave tones. It seems, however, upon the whole, that Aristides followed the division of Euclid, but neither of these can answer to the Aristoxenian principles, for this reason, that the Sectio Canonis both of Euclid and Aristides refer to those arithmetic and harmonic ratios, which are discernable in the proportions of Pythagoras, whereas Aristoxenus rejected the criterion of ratios, and maintained that the measure of intervals was determinable by the sense of hearing only.

‘ VII. Hypate meson, H B, two thirds of the whole chord, or  
 ‘ the two thirds, G B, of the half chord twice set off, which chord  
 ‘ therefore we take in the opening of the dividers, and set off twice.

‘ VIII. Paramefos, I B, (one third I H, being taken out of the  
 ‘ two thirds H B of the whole chord) is two thirds of two thirds  
 ‘ of the whole.

‘ IX. Hypate hypaton, K B; two thirds I B. of the two thirds  
 ‘ H B twice set off.

‘ In order to assume the lesser intervals, the following method  
 ‘ must be made use of.

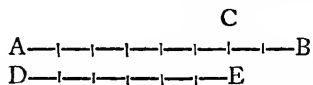
‘ I. The fourth part D B of the whole chord being divided into  
 ‘ eight equal parts, I set off I below D equal to one of those parts,  
 ‘ and I B will be Paranete hyperboleon.

‘ II. Trita hyperboleon m B is assumed in the same manner, viz.  
 ‘ by dividing the line I B into eight equal parts, and taking I m equal  
 ‘ to one of them out of I A.

‘ III. Trita diezeugmenon, and the following moveable sounds,  
 ‘ are easily to be assumed in the same manner.’

Besides the foregoing explanation of the canon, Meibomius has  
 given the following, which he calls a Notable Theorem, and says  
 of it that it is very useful in facilitating the section of the canon.

‘ The difference between two lines that are to each other in a ses-  
 ‘ quitertia ratio, being divided into two equally, will give the eighth  
 ‘ part of the greater line.



‘ A B is sesquitercia to D E; C B is the excess of A B above D E,  
 ‘ C B divided into two equally will exhibit the eighth part of A B.

‘ We shall see the same in the section of our canon. Let the line  
 ‘ G B be divided into eight equal parts, I say the part G D thereof  
 ‘ will contain two eighth parts; so that this need only be divided  
 ‘ into two equally, as appears by this following demonstration; for  
 ‘ as G B is sesquitercia to D B, that is as 4 to 3, if G B be divided  
 ‘ into twice four parts, that is eighths, D B will contain six of those  
 ‘ eighths, and consequently D G two eighths, and its half will contain  
 ‘ one eighth. Also if F B is to be divided into eight equal parts, its



‘ part F I need be divided only into two equally, in order to have one eighth part, which I set off from F to n, to find the excess of the tone above F B. The same method may be used in the following ones.

‘ Moreover, the Meson diatonos, and the other two moveable chords may also be obtained by the following method, namely, Meson diatonos, by setting off the part l B, twice from B; Parhypate meson, by setting off the part m B, twice; Parhypate hypaton, by setting off the part n B, twice.

‘ But whatsoever is here shewn in lines may, by the ingenuity of the intelligent reader, be easily applied in finding out the numbers.’

The canon of Aristides Quintilianus, with the numbers affixed, supposes the whole chord to contain 9216 parts, and being struck open, to produce the most grave sound of the system, viz. A; the interval then of a tone at  $\square$ , the next sound in succession, as being in the proportion of 8 to 9 to A, will require that the chord be stopped at 8192; and, supposing it to answer, we may with the utmost propriety say, that the ratio of a tone is as 9216 is to 8192, or in other words, that  $\square$  is produced at 8192 of those parts whereof the chord A, contains 9216; and these two numbers will be found to bear the same proportion to each other as those of 9 and 8. Again, for the diapason a, the number is 4608, which is just the half of 9216, as 6 is the half of 12; for the diatessaron D, the number is 6912, which is three fourths of 9216; and for the diapente E, the number is 6144, which is two thirds of 9216. Hence it appears that the numbers thus taken for the tone, or for the consonances of the diatessaron and the diapente, or their replicates, as often as it may be thought necessary by the reiteration of an octave, or any less system, to extend that of the bisdiapason, answer in like manner to the ratios of 9 to 8, 6 to 12, 12 to 9, and 12 to 8, in the primitive system.

These proportions we are told will be the result of an actual division of a string, which whoever is desirous of making the experiment, is hereby enabled to try; though, by the way, it is said by Meibomius that for this purpose one of two ells in length will be found necessary. Nevertheless, by the help of the principles already laid down, namely, that the diapason has a ratio of 2 to 1, the diapente of 3 to 2, the diatessaron of 4 to 3, and the tone of 9 to 8, which are to be considered as data that all harmonical writers agree

in, it is very easy, by means of arithmetic alone, to bring out the numbers corresponding to the intervals in the diatonic bisdiapason. Bontempi has given a very particular relation of the process in an account of the method taken by the ancients for that purpose; and immediately after, an exhibition of that system with the proper numbers in the following scale.

Tetrach. hyperb.	2304. Nete hyperboleon	aa			
		Tone			
	2592. Paranete hyperb.	g			
		Tone			
Tetrach. diez.	3072. Nete diezzeugmenon	e			
		Tone			
Tetrach. mezon	3456. Paranete diezzeug.	d	3456. Nete synemmenon	d	
		Tone	Tone	} Tetrach. Synem.	
	3888. Trita diezzeugmenon	c	3888. Paranete synem.		c
		Hemitone	Tone		
4096. Paramese	b	4374. Trita synemmenon	b		
		Tone	Hemitone	a	
Tetrach. hypat.	4608. Mese	a	4608. Mese		
		Tone			
	5184. Lychanos mezon	G			
		Tone			
Tetrach. hypat.	6144. Hypate mezon	E			
		Tone			
Tetrach. hypat.	6912. Lychanos hypaton	D			
		Tone			
	7776. Parhypate hypaton	C			
		Hemitone			
Tetrach. hypat.	8192. Hypate hypaton	A			
		Tone			
	9216. Proflambanomenos	A *			

\* Bontemp. 97.

His description of the process is in these words: ' The numbers  
 ' affixed to the several chords in the system draw their origin from  
 ' the sesquioctave proportion, which is the relation that the second  
 ' chord bears to the first; and, proceeding from the acute to the  
 ' grave, the numbers will be found to be in the ratio of subsefqui-  
 ' octave, subsefquitertia, subsefquialtera, and subduple. But to be  
 ' more particular :

' As the third chord was to be the sesquioctave of the second, and  
 ' as the second had not an eighth part, the ancients multiplied by 8,  
 ' and set down the number produced thereby: if the fourth chord  
 ' was to be the sefquitertia, they multiplied the numbers by 3; if  
 ' it was to be sefquialtera the numbers were doubled; and if by  
 ' chance there were any fractions, they doubled them again to find  
 ' even numbers, and so they went on: but as all these operations  
 ' belong to arithmetic, and of course must be known, there is no  
 ' necessity to explain them farther.

' However, as all this is different from any practice in the modern  
 ' music, in order that those who are not perfectly versed in arithme-  
 ' tic may understand the foundation of this science, it will not be  
 ' amiss here to explain it. You must then know, that as har-  
 ' monic music was subordinate to arithmetic, the ancients shewed  
 ' only the intervals by numbers arising from the measures they  
 ' had found out by experiments upon the monochord.

' When they wanted therefore to demonstrate in the constitution  
 ' of the system what chord was either double, or sefquialtera, or sef-  
 ' quitertia, or sefquioctave to another by arithmetical numbers, they  
 ' used multiplication, or the doubling of the numbers, in order that  
 ' they might rise by degrees one above the other. They began from  
 ' the most acute chord, which is the Nete hyperboleon, going on as  
 ' far as the Trita synemmenon; which operation is demonstrated by  
 ' the following columns of numbers.

	1	2	3	4	5	6
aa	8	64	192	576	1152	2304
g	9	72	216	648	1296	2592
f		81	243	729	1458	2916
e	-----		256	768	1536	3072
d			288	864	1728	3456
c			324	972	1944	3888
h	-----			1024	2048	4096
b					2187	4374*

‘ The method which they used in these multiplications and reduplications was this; as g was to be sesquioctave of aa, and f sesquioctave of g; and as g had not an eighth part, to find it they multiplied aa and g by 8; from which multiplication the numbers of the second order were produced, and they put down 81 sesquioctave of 72. As e was to be sesquitertia of aa, and had not a third part, they multiplied all the second order by 3; from which multiplication was produced the third order, and there came out the number 256, sesquitertia of 192; in like manner d was found to be sesquitertia of g, and c of f.

‘ As h was to be sesquitertia of e, and had not a third part, they multiplied all the third order by 3, from which was produced the fourth order, and there came out 1024, sesquitertia of 768; as b was to be sesquialtera of f, there came out fractions, to avoid which all the fourth order was doubled, and so the fifth order was produced; and there was the number 2187, sesquialtera of 1458.

‘ In a word, give me leave to repeat again this operation, with common explications for those who are quite unacquainted with the rules of arithmetic; by multiplying eight times 8 they had 64 for aa; by multiplying nine times 8 they had 72 for g; and adding to 72 the number 9, they had 81 for f.

‘ The sesquitertia, which is nothing but the proportion 4 to 3, constituting the diatessaron from e to aa, was produced by giving to aa three times 64, which made 192, and to e four times 64, which made 256.

\* Bontemp. 98.

‘ That

‘ That of d to g was produced by giving to g three times the number 72, which made 216; and to d four times the same, which made 288.

‘ That of c to f was produced by giving to g three times 81, which made 243; and to c four times the same, which made 324.

‘ That of  $\square$  to e was produced by giving to e three times 256, which made 768; and to  $\square$  four times the same, which made 1024.

‘ The sesquialtera, which is nothing but the proportion 3 to 2, constituting the diapente from b to f, was produced by giving to f twice 729, which made 1458; and to b three times the same, which made 2187.

‘ Finally, in order that this kind of numbers might do for the chords of the chromatic and enarmonic genera; to avoid fractions they doubled all the fifth order, and thereby brought out the sixth; so that the second order is the produce of the first multiplied by 8; the third order is the produce of the second multiplied by 3; the fourth order is the produce of the third multiplied by 3; the fifth order is double the fourth, and the sixth double the fifth; and the numbers of the sixth order are the same as those of the tetrachords Hyperboleon, Diezeugmenon, and Synemmenon, in the foregoing scale.

‘ There is besides these the Mese, the number of which is 4608, which is the double of 2304, the number of the Nete hyperboleon, because there is between the one and the other chord the interval of a diapason.

‘ The number 5184 of the Lychanos meson is twice the number 2592 of the Paranete hyperboleon, because there is between them the same interval of the diapason; and so the following numbers towards the grave are double to the numbers belonging to the acute chords, following from the Paranete hyperboleon in succession; because there is between them all, in their respective degrees, the usual interval of the diapason. As the sounds of the diatonic genus have their numbers, so likewise have the sounds of the other genera numbers, which are peculiar to them, except the Nete hyperboleon, the Nete diezeugmenon, the Nete synemmenon, the Paramese, the Mese, the Hypate meson, the Hypate hypaton, and the Proslambanomenos, whose numbers are common to all the genera, as their  
‘ sounds

‘ founds are fixed: Every thing relating to them may be seen in their respective systems.’

It is to be remembered, that it was for the purpose of explaining the doctrine of the genera that the foregoing enquiry into the proportions of the intervals was entered into; this inquiry respected the diatonic series only, and the proportions thereby ascertained are the diapason, diapente, diatessarion, and tone; besides these, another interval, namely, that whereby the diatessarion exceeds the ditone, and which is generally supposed to be a semitone, for now we shall use the appellation given to it by the Latin writers, has been adjusted, and in general shewn to have a ratio of 256 to 243.

But here it is necessary to mention, that the ratio of this interval was a subject of great controversy with the ancient musicians. What were the sentiments of Pythagoras about it we are no where told; though if it be true that he constituted the diatessarion in the ratio of 4 to 3, and made each of the tones contained in it sesquioctave, it will follow as a consequence, that the interval necessary to complete that system must have been in the ratio of 256 to 243: this is certain, that Boetius, and the rest of the followers of Pythagoras, deny the possibility that it can consist in any other: but this is a method of deduction by numerical calculation, and the appeal is made to our reason, which, in a question of this nature, say some, has nothing to do.

The first who asserted this doctrine, and he has done it in terms the most explicit, was Aristoxenus, the disciple and successor of Aristotle; he taught that as the ear is the ultimate judge of consonance, we are able by the sense of hearing alone to determine the measure both of the consonants and dissonants, and that both are to be measured or estimated, not by ratios but by intervals\*. The method he took was this, he considered the diapason as consisting of the two systems of a diatessarion and diapente; it was easy to discover the difference between the two to be a tone, which was soon found, allowing the ear to be the judge, to be divisible into semitones. These two latter intervals being once recognized by the ear, became a common measure, and enabled him to determine the magnitude of any interval whatever, which he did by various additions to, and subductions from, those above mentioned; in like manner as is practised by the fingers of

\* Wallis Appendix de Veterum Harmonica, Quarto, pag. 290.

our times, who by an instantaneous effort of the voice, are able not only to utter a fourth, a fifth, a greater or lesser third, a tone, a semitone, and the rest, but by habit and practice are rendered capable of separating and combining these intervals at pleasure, without the assistance of any arithmetical process or computation.

It must be confessed that there seems to be a kind of retrogradation in a process which directs the admeasurement of a part by the whole, rather than of the whole by a part, as this evidently does; but notwithstanding this seeming irregularity, the adherents to the former method are very numerous.

The principles on which these two very different methods of judging are founded, became the subject of great contention; and might perhaps give rise to another question, as extensive in its latitude, as important in its consequences, namely, whether the understanding or the imagination be the ultimate judge of harmony and beauty; or, in other words, what are the peculiar offices of reason and sense in subjects common to them both. The consequence of this diversity of opinions, so far as it related to music, was that, from the time of Aristoxenus the musicians of earlier times, according as they adhered to the one or the other of these opinions, were denominated either Pythagoreans or Aristoxeneans, by which appellations the two sects continued for a long time to be as much distinguished as those of the Peripatetics and Stoics were by their respective names\*.

But it seems that as well against the one as the other of the positions maintained by the two parties, there lay strong objections; for as to that of Pythagoras, that reason, and not the hearing, is to determine of consonance and dissonance, it was erroneous in this respect, it accommodated harmonical proportions to incongruous intervals; and as to Aristoxenus, he, by rejecting reason, and referring all to sense, rendered the very fundamentals of the harmonical science incapable of demonstration. The several offices of reason and sense, by which we are here to understand the sense of hearing, are very accurately discriminated by Ptolemy, who undertook the task of reviewing this controversy; and the method he took to reconcile these two militant positions will be shewn at large in that extract from his treatise, which we mean hereafter to exhibit in its proper place; the

\* Porphyrii in Ptolemæi Harmonica Commentarius, Edit. Wallisii, pag. 189.

only question at present to be discussed, is that relating to the measure of the diatessaron. That it exceeded two of those tones one whereof constituted the difference between the diapente and diatessaron, was agreed by both parties; but the measure of this excess was the point in debate: the Pythagoreans asserted it to be an interval in the ratio of 256 to 243, to which, for want of a better, they gave the name of Limma; the Aristoxeneans, on the other hand, contended that it was neither more nor less than a semitone. The question then became, Whether is the system of a diatessaron compounded of two tones and a limma, or of two tones and a semitone?

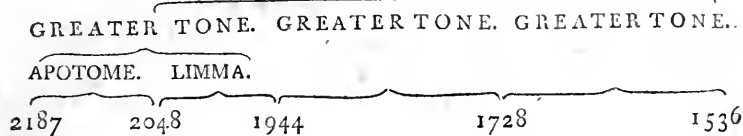
Ptolemy has entered into a very minute examination of this question; and though he professes to be, as he certainly is, an impartial arbiter between the two sects, and is very free in his censures on each; yet has he most irrefragably demonstrated the Pythagorean tenet to be the true one. The method he has taken to do it may be seen in the first book of his Harmonics, chap. x. but the following process will enable any one to judge of the force of his reasoning.

Let the number 1536, which it is said is the smallest that will serve the purpose, be taken, and after that 1728, its sesquioctave, to express a tone; and again, the sesquioctave of 1728, which is 1944, for another tone; the numbers 1536 and 1944 will then stand for the ditone. The diatessaron is sesquitercian, or as 4 to 3, it is therefore necessary to seek a number that shall contain four of those parts, of which 1536 is three, and this can be no other than 2048; so that the interval whereby the diatessaron exceeds the ditone, is in the ratio of 2048 to 1944; or, in smaller numbers, as 256 to 243. But to judge of the magnitude of this interval, let the sesquioctave of 1944, 2187 be taken for a third tone; it will then remain to enquire the difference between the two ratios 2187 to 2048, and 2048 to 1944, and the former will be found the greater; for 2187 exceeds 2048 by more than a fifteenth, and by less than a fourteenth part; whereas 2048 exceeds 1944 by more than a nineteenth, and by less than an eighteenth; and consequently that which, together with the ditone completes the diatessaron, is the lesser part of the third tone.

Salinas calls this demonstration of Ptolemy an excellent one, as most undoubtedly it is, and in his *Treatise de Musica*, lib. II. cap. xx. exhibits it in the following diagram.



D I A T E S S A R O N .



To this lesser part of the third tone 2048 to 1944, or in lesser numbers, 256 to 243, was given the name of the Limma of Pythagoras; though some writers, and those of the Pythagorean sect, scrupled not to term it a Diesis. The greater part of the tone resulting from the above division was termed Apotome, a word signifying the residue of what remains of a line after part has been cut off.

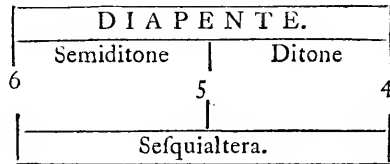
Salinas, lib. II. cap. xx. remarks, that both the theoretic and practical musicians among the moderns are deceived in thinking that the Apotome of the ancients is that interval, which, in such musical instruments as the organ, and others of the like kind, is found between  $\text{h}$  and  $\text{b}$ ; or, in other words, that the interval between  $\text{h}$  and  $\text{b}$  is greater than that between  $\text{h}$  and  $\text{c}$ , and than that between  $\text{b}$  and  $\text{a}$ ; when, says he, the thing is quite the reverse, and may be proved by the ear.

Farther, lib. II. cap. x. he observes of the Limma, that as Pythagoras had divided the diapason into two diatessarons and a sesquioctave tone, he discovered that the diatessaron was capable of a like method of division, namely, into two continued tones, and that interval which remained after a subtraction of the ditone from the diatessaron. And this which he calls a semitone, is that which Ptolemy calls the semitone accepted and best known; and of which Plato in *Timeus* makes mention; when having followed the same proportion, he says that all the duple ratios were to be filled up with sesquitercias and a sesquioctave, and all the sesquitercias with sesquioctaves, and the interval 256 to 243. He adds, that Cicero mentions this semitone in his book *de Universitate*, as does Boetius in all his divisions; and that there were none of the ancients to whom it was not known, for that all the philosophers embraced the Pythagorean traditions of music. The same author adds, that the Pythagorean Limma was esteemed by the Greeks, particularly Bacchius and Bryennius, to be

irrational; and that Plato himself dared not to call it a proportion, for the reason, as he conceives, that it was not superparticular.

Hitherto we have spoken of the tone in general terms, and as an interval in a sesquioctave ratio, such as constitutes the difference between the diatessaron and diapente, and it is said that the Pythagoreans acknowledged no other\*; it is nevertheless necessary to mention that there is a lesser interval, to which the appellation of tone is also given; the ratio whereof is that of 10 to 9. It is not sufficiently clear who it was that first discovered it, but, from several passages in the harmonics of Ptolemy †, it should seem that Didymus, an ancient musician, whom he frequently takes occasion to mention, was the first that adjusted its ratio.

Dr. Wallis, who seems to have founded his opinion on that of Salinas, and certainly entertained the clearest conceptions of the subject, has demonstrated very plainly how both the greater and lesser tone are produced; for assuming the diapente to be in the ratio of 3 to 2, or which is the same, the numbers being doubled, 6 to 4; by the interposition of the arithmetical mean 5, he shews it to contain two intervals, the one in the ratio of 6 to 5, the other in that of 5 to 4 ‡.



The latter of these, which constituted the ditone or greater third, subtracted from the diapente, left that interval in the ratio of 6 to 5, which by the Greeks was called a Trihemitone, and by the Latins a deficient, or *femi* ditone, but by the moderns a lesser or flat third.

The consideration of the semiditone will be hereafter resumed; but as to the ditone, it had a superparticular ratio, and consequently would not, any more than the diapente, admit of an equal division||.

\* Salinas de Musica, lib. II. cap. 17. Boet. lib. IV. cap. 5.

† Lib. II. cap. 13, 14. Salinas, lib. II. cap. 17.

‡ Wallis, Append. de Vet. Harm. quarto, pag. 322.

|| That a superparticular is incapable of an equal division is clearly demonstrated by Boetius, lib. III. cap. 1 and must be considered as a first principle in harmonics. Vide Macrobius in Somnium Scipionis, lib. II. cap. 1.

In order therefore to come at one that should be the nearest to equality, Dr. Wallis doubled the terms 5, 4, and thereby produced the numbers 10, 8, which have the same ratio. Nothing then was wanting but the interposition of the arithmetical mean 9,

D I T O N E		
Greater Tone		Lesser Tone
8	9	10
Sesquioctave		Sesquinal
Sesquiquarta		

and a division was effected which produced the greater or sesquioctave tone, 9 to 8, and the lesser or sesquinal tone, 10 to 9\*.

## C H A P. VI.

**H**AVING thus adjusted the proportions of the greater and lesser tone, it follows next in order to consider the several divisions of each, the first and most obvious whereof is that of the semitone; but here two things are to be remarked, the one that the adjunct *semi*, though it may seem to express, as it does in most instances, the half of any given quantity, yet in musical language has a signification the same with deficient or incomplete: the other is that although as the lesser is always contained in the greater, and consequently the tone comprehends the semitone and more, yet the semitone is not, nor can be found in, or at least cannot be extracted from, or produced by any possible division of the tone. The Aristoxeneans, who asserted that the diatessaron consisted of two tones and a half, had no other way of defining the half tone, than by taking the ditone out of the diatessaron, and the residue they pronounced to be a hemitone, as it nearly is; and the Pythagoreans, who professed the admeasurement and determination of intervals by ratios, and not by the ear, were necessitated to proceed in the same way; for after

\* Wallis Append. de Vet. Harm. quarto, pag. 323. Salinas de Musica, lib. II. cap. 17.

Pythagoras had adjusted the diezeugtic tone, and found its ratio to be sesquioctave, or as 9 to 8, it no where appears that he or any of his followers proceeded to a division of that interval into semitones, and indeed it is not in the nature of the thing possible to effect any such division of it by equal parts. Ptolemy, who, so far as regards the method of defining the intervals by their ratios, must be said to have been a Pythagorean, has had recourse to this method of subtracting a lesser interval from a greater for adjusting the proportion of the Limma; for after having assumed that the ratio of the diatessaron was sesquitertia, answering to the numbers 8 and 6, or which is the same, 4 to 3, he measures out three sesquioctave tones, 1536, 1728, 1944, 2187, and subtracts from them the diatessaron 2048 to 1536, and thereby leaves a ratio of 2187 to 2048, which is that of the apotome; the limma 2048 to 1944, then remains an adjunct to the two sesquioctave tones 1728 to 1536, and 1944 to 1728; and the ratio of 2048 to 1536 is 8 to 6, or 4 to 3; and would we know the ratio of 2048 to 1944, it will be found to be 256 to 243, for eight times 256 is 2048, and eight times 243 is 1944\*.

And Didymus, who after he had discovered the necessity of a distinction of tones into the greater and lesser, and found that it required an interval different in magnitude from the limma, to complete the diatessaron, had no way to ascertain the ratio of that interval, but by first adjusting that of the ditone; in the doing whereof he also determined that of the semitone, for so are we necessitated to call the interval by which the diatessaron is found to exceed the ditone. With respect to this interval, which, in the judgment of Salinas, is of such importance, that he seems to think it the hinge on which the knowledge of all instrumental harmony turns; it seems clearly to have taken place of the limma, immediately after the discrimination of the greater and lesser tone: and there is reason to think it was investigated by Didymus in the following manner. First he considered the ratio of the diatessaron to be, as has been shewn, sesquitercian, or as 8 to 6; or, which is the same, those numbers being doubled, 16 to 12. The ditone he had demonstrated to be in sesquiquarta proportion, as 5 to 4. It remained then to find out a number that should contain 5 of these parts, of which 12 contained four, and this could

\* See the preceding demonstration of the ratio of the Pythagorean limma.

be no other than 15, and these being set down, demonstrated the ratio of the semitone to be 16 to 15.

D I A T E S S A R O N		
Ditone	Greater Semitone	
12	15	16
Sesquiquarta	Sesquidecimaquinta	
Sesquitertia		
*		

This interval is also the difference between the semitone 6 to 5, and the sesquioctave tone 9 to 8, which, multiplying the extreme numbers by 3, is thus demonstrated.

S E M I D I T O N E		
Greater Semitone	Tone	
15	16	18
Sesquidecimaquinta	Sesquioctave	
Sesquiquinta		
†		

But it seems that this interval, so very accurately adjusted, did not answer all the combinations of which the greater and lesser tones were capable; nor was it adapted to any division of the system, other than that which distinguishes the diatonic genus. These considerations gave rise to the invention of the lesser semitone, an interval so peculiarly appropriated to the chromatic genus, that Salinas and Merfennus scruple not to call it the Chromatic Diesis; the measure of it is the difference between the ditone and semitone, the former whereof is demonstrated to be in sesquiquarta proportion, or as 5 to 4; or, which is the same, each of those numbers being multiplied by 5, 25 to 20. The semitone is sesquiquinta, that is to say, as 6 to 5; or multiplying each of those numbers by four, as 24 to 20; from a comparison therefore of the semitone with the ditone, it will ap-

\* This and most of the diagrams for demonstrating the other intervals are taken from Salinas, who, it is to be remarked, differs from many other writers in the order of the numbers of ratios, placing the smallest first.

† Salinas, lib. II. cap. xviii.

pear that the difference between them is an interval of 25 to 24, the ratio sought, and which is the measure of the lesser semitone.

D I T O N E		
20	Semiditone	Lesser Semitone
	24	25
	Sesquiquinta	Sesquivigesimaquarta
Sesquiquarta		
*		

Salinas remarks that this lesser semitone of 25 to 24, and the greater one of 16 to 15, compose the sesquinal or lesser, and not the sesquioctave or greater tone, between which and the former he demonstrates the difference to be a comma, or an interval in the ratio of 81 to 80.

Salinas, Merfennus, and other writers, chiefly moderns, speak of a mean semitone in the ratio of 135 to 128, which with that greater one of 16 to 15, completes the sesquioctave tone; and of another in the ratio of 27 to 25, which added to the lesser semitone 25 to 24, also makes up the greater or sesquioctave tone †. Salinas ascribes the invention of this latter to Ludovicus Follianus, a very ingenious musician of the sixteenth century, of whom an account will be hereafter given; but he says it is unfit for harmony: and indeed it does not appear to have ever been admitted into practice. Salinas de Musica, lib. III. cap. 7.

We are now to speak of the Diesis, as being an interval less in quantity than the semitone: though it is to be remembered that the word as it imports indefinitely a Particle ‡, is of very loose signification, and is used to express a great variety of dissimilar intervals. Aristotle calls dieses the Elements of song, as letters are of speech; but in this the moderns differ from him. Others of the Greek writers, and Vitruvius a Latin, after them, make the diesis to be a quarter of a tone, and Salinas less. The Pythagoreans use the words Diesis and Linnma indiscriminately to express the interval 256 to 243. In the subse-

\* Salinas, de Musica, lib. II. cap. 20.

† Salinas, lib. II. cap. 20. lib. III. cap. 7. Merfen. Harmonic. lib. V. De Dissimulantibus, pag. 7.

‡ Macrob. in Somn. Scipion. lib. I. cap. 1.

quent division of the tone into lesser parts, the name of diesis has been given sometimes to one, and at others to other parts arising from that division; and hence those different definitions which we meet with of this interval; but the general opinion touching it is that it is less than a semitone, and more than a comma. We will consider it in all its variety of significations.

Boetius, in the third book of his treatise de Musica, has related at large the method taken by Philolaus the Pythagorean for dividing the tone into nine parts, called commas, of which we shall speak more particularly hereafter; according to this division, two commas make a diaschisma, and two diaschismata a diesis. This is one of the senses in which the term diesis is used, but it is not easy to discover the use of this interval, for it does not seem to be adapted either to the tetrachord composed of sesquioctave tones, or that later one of Didymus, which supposes a distinction of a greater and lesser tone; so that in this instance the term seems to be restrained to its primitive signification, and to import nothing more than a particle; and Salinas seems to concur in this sense of the word when he says that in each of the genera of melodies the least interval is called a diesis.

In other instances we are to understand by it such an interval as, together with others, will complete the system of a diatessaron. There are required to form a diatessaron, or tetrachord in each of the genera, tones, semitones, and dieses. In the diatonic genus the diesis is clearly that, be it either a semitone, a limma, or any other interval, which, together with two tones is necessary to complete the tetrachord. If with the Pythagoreans we suppose the two tones to be sesquioctave, it will follow that the diesis and the limma  $\frac{256}{243}$  are one and the same interval; on the other hand, if with Didymus we assign to the two tones, the different ratios of 10 to 9, and 9 to 8, the interval necessary to complete the diatessaron will be  $\frac{16}{15}$ ; or the difference between the ditone in the ratio of 5 to 4, and the diatessaron above demonstrated. In short, this suppletory interval, whatever it be, is the only one in the diatonic genus, to which the appellation of diesis is ever given.

To the chromatic genus belong two intervals of different magnitudes, and the term diesis is common to both; the first of these is that of  $\frac{25}{24}$ , mentioned above, and shewn to be the difference between the ditone and semiditone, and is what Salinas has appropriated

propriated to the chromatic genus. Gaudentius mentions also another species of diesis that occurs in this genus, in quantity the third part of a tone \*, in which he has followed Aristoxenus; but as all the divisions of the Aristoxeneans were regulated by the ear, and supposed a division of the tone into equal parts, which parts being equal, must necessarily be irrational, it would be in vain to seek a numerical ratio for the third part of a tone.

We are now to speak of that other diesis incident to the enarmonic genus, to which the term, in the opinion of most writers, seems to be appropriated †; for whereas the other diesis obtained that name, only as being the smallest interval required in each genus, this other is the smallest that any kind of musical progression will possibly admit of. Aristides Quintilianus says, a diesis is as it were a dissolution of the voice ‡.

According to Boetius, who must every where be understood to speak the sense of the Pythagoreans, the two dieses contained in the tetrachord of the enarmonic genus must have been unequal, for he makes them to arise from an arithmetical division of the limma, 256 to 243 ||.

Ptolemy has exhibited §, as he has done in each of the other genera, a table of the enarmonic genus, according to five different musicians, all of whom, excepting Aristoxenus, make the dieses to be unequal, those of Ptolemy are 24 to 23, and 46 to 45.

Salinas uses but one enarmonic diesis, which he makes to be the difference between the greater semitone 16 to 15, and the lesser 25 to 24.

GREATER SEMITONE		
	Lesser Semitone	Diesis
120	125	128
Sesquiquagesimaquarta		Supertripartiens 125
Sesquidecima quinta ¶		

\* Ex Verf. Meibom. pag. 5.

† Boetius, lib. II. cap. 23, has given dieses only to the enarmonic.

‡ Ex Verf. Meibom. pag. 13.

|| Boetius, lib. IV. cap. 5.

§ Lib. II. cap. 14.

¶ Salinas, lib. II. cap. 21.

Which



Which numbers are thus produced, 15 and 16 each multiplied by 8 will give 120, and 128, for the greater semitone; we are then to seek for a number that bears the same ratio to 120, as 25 does to 24, which can be no other than 125, so that the ratio of the diesis will stand 125 to 128.

Brossard has applied the term diesis to those signs or characters used by the moderns to denote the several degrees by which a sound may be elevated or depressed above or beneath its natural situation; for the doing whereof he seems to have had no better authority than that of the practitioners of his time, who perhaps are the only persons entitled to an excuse for having given to the sign the name of the thing signified. He professes to follow Kircher, when he says that there are three sorts of dieses, namely, the lesser enarmonic or simple diesis, containing two commas or about a quarter of a tone; the chromatic or double diesis, containing a lesser semitone, or nearly four commas, and the greater enarmonic diesis, containing nearly three fourths of a tone, or from six to seven commas; but this definition is by much too loose to satisfy a speculative musician.

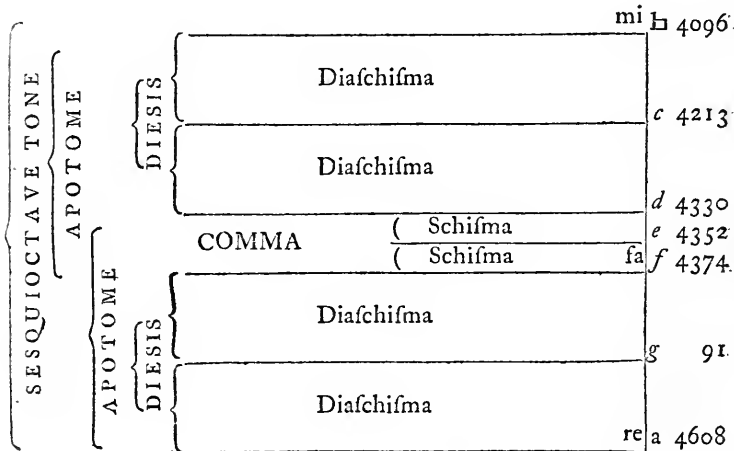
These are all the intervals that are requisite in the constitution of a tetrachord in any of the three genera: it may not be improper however to mention a division of the tone, invented perhaps rather as an essay towards a temperature, than as necessary to the perfection of the genera; namely, that ascribed by Boetius, and others to Philolaus, by which the tone was made to consist of nine parts or commas.

The account of this matter given by Boetius is long, and rather perplexed; but Glareanus\*, who has been at the pains of extracting from it the history of this division, speaks of it thus. ‘A tone in a sesquioctave ratio is divided into a greater and lesser semitone; the greater was by the Greeks called an apotome, the lesser a limma or diesis, and the difference between these two was a comma. The diesis was again divided into diaschismata, of which it contained two; and the comma into schismata, two whereof made the comma.’ The passage, to give it at length, is thus.

‘It is demonstrated by musicians, for good reasons, that a tone cannot be divided into two equal parts, because no superparticular ratio, such as is that of a tone, is capable of such a division,

\* Dodecachordon, lib. I. cap. x.

' as Divus Severinus Boetius fully shews in his third book, chap. i.  
 ' a tone which is in a sesquioctave ratio is divided into a greater and  
 ' lesser semitone. The Greeks call the greater semitone an apotome,  
 ' and the lesser a diesis or limma; but the lesser semitone is divided  
 ' into two diaschismata. The excess whereby a greater semitone is  
 ' more than a lesser one is called a comma, and this comma is divided  
 ' into two parts, which are called schismata by Philolaus. This  
 ' Philolaus, according to Boetius, gives us the definitions of all those  
 ' parts. A diesis, he says, is that space by which a sesquialteral ratio  
 ' or diatessaron exceeds two tones; and a comma is that space  
 ' whereby a sesquioctave ratio is greater than two dieses, that  
 ' is than two lesser semitones. A schisma is that half of a  
 ' comma, and a diaschisma is the half of a diesis, that is of a lesser  
 ' semitone; from which definitions and the following scheme you  
 ' may easily find out into how many diaschismata, and the other  
 ' smaller spaces, a tone may be divided, for the same Boetius shews  
 ' that it can be done many ways in his treatise, lib. III. cap. viii.  
 ' from whence we have taken these descriptions. It is to be observed  
 ' that the name of diesis is proper in this place; but when, as the  
 ' ancients have done, we give it to the enarmonic diaschisma it is  
 ' improper.



' Let

' Let a  $\sqcup$  be a tone,  $\sqcup d$ , or  $f a$ , a lesser semitone, or as the Greeks  
 ' call it, as Boetius witnesseth lib. II. cap. xxvii, a limma or diesis,  
 '  $\sqcup f$ , or  $d a$ , a greater semitone, called by the Greeks an apotome,  
 '  $\sqcup c$  and  $c d$ , also  $f g$  and  $g a$ , diaschismata, or the halves of a diesis,  
 '  $d f a$  comma, whose halves  $d e$  and  $e f$  are schismata; but it is ne-  
 ' cessary for our purpose to observe this, let a be Mese, or a *la mi*  
 ' *re, f* Tritē synemmenon or *fa* in  $b fa \sqcup mi \sqcup$  Paramese or *mi* in  $b$   
 '  $fa \sqcup mi$ , therefore the note *re* in a *la mi re* is distant from *fa* in  $b$   
 '  $fa \sqcup mi$  by a lesser hemitone, and from *mi* in the same key by a  
 ' tone; from whence it follows, that the two notes in  $b fa \sqcup mi$ ,  
 ' which seem to be of the same key, are farther distant from each  
 ' other than from the extremes or neighbouring keys above and  
 ' below, viz. *mi* from *c sol fa ut*, and *fa* from a *la mi re*, for *mi*  
 ' and *fa* are separated from each other by a greater semitone, and  
 ' from the extremes on either side by only a lesser semitone, for  
 ' which reason this theory is not to be despised. We must not omit  
 ' what the same Severinus tells us in lib. III. cap. xiv. and xv. to wit  
 ' that a lesser semitone is not altogether four commas, but somewhat  
 ' more than three; and that a greater semitone is not five commas,  
 ' but somewhat more than four; from whence it comes to pass that  
 ' a tone exceeds eight commas, but does not quite make up nine.'

This of Philolaus is generally deemed the true division of the tone,  
 and may serve to prove the truth of that position, which all the theo-  
 retic writers on music seem to agree in, namely, that the sesquioct-  
 ave tone, as being in a superparticular ratio, is incapable of an equal  
 division. But unfortunately the numbers made use of by Glareanus  
 do not answer to the division, for those for the diesis or limma  $\sqcup d$   
 4330, 4096 have no such ratio as 256 to 243, which is what the  
 limma requires, and that other  $f a$ , has, and it seems that in his asser-  
 tion that  $\sqcup$  and  $b$  are farther distant from each other than from  $c$   
 and  $a$ , respectively, he is mistaken. This is noticed by Salinas, who  
 insists that the converse of the proposition is the truth. De Musica,  
 lib. II. cap. xx\*.

As to the comma, it appears by the foregoing calculation to be in the  
 ratio of 4374 to 4330. Nevertheless Salinas, for the purpose of accom-  
 modating it to practice, has assumed for the comma an interval in the  
 ratio of 81 to 80, which is different from that of Glareanus and Boe-

\* See his sentiment of it pag. 73 of the present work.

tius, but is clearly shewn by Salinas to be the difference between the greater and lesser tone. Ptolemy looked upon this latter comma as an insensible interval, and thought that therefore it was a thing indifferent whether the sesquioctave or the sesquinal tone held the acutest situation in the diatonic tetrachord; but Salinas asserts, that though it is the least, it is yet one of the sensible intervals, and that by means of an instrument which he himself caused to be made at Rome, he was enabled to distinguish, and by his ear to judge, of the difference between the one and the other of the tones.

Mersennus says that the Pythagoreans had another comma, which was in the ratio of 531441 to 524288, and was between sesqui  $\frac{1}{7\frac{1}{4}}$  and sesqui  $\frac{1}{7\frac{1}{4}}$ ; and that Christopher Mondore, in a book inscribed by him to Margaret, the sister of Henry III. of France, speaks of another between sesqui  $\frac{1}{8\frac{1}{6}}$ , and sesqui  $\frac{1}{8\frac{1}{7}}$  \*. As to the first, though he does not mention it, it is clear that he took the ratio of it from Salinas, who in the nineteenth and thirty-first chapters of his fourth book speaks very particularly of the Pythagorean comma, and says that it is the difference whereby the apotome exceeds the limma.

We have now investigated in a regular progression the ratios of the several intervals of the greater and lesser tone, the greater and lesser semitone, the apotome and limma, the diesis, and the comma; and thereby resolved the tetrachord into its elements. It may be worth while to observe the singular beauties that arise in the course of this deduction, and how wonderfully the lesser intervals spring out of the greater; for the difference between

The	{ Diapente and Diateffaron }	is	- - -	a sesquioctave tone.
The	{ Ditone and Greater tone }	is	- - -	a sesquinal tone.
The	{ Semiditone and greater tone and also between the diateffaron and ditone }	is		a greater semitone.
The	{ Lesser tone and greater semitone and also between the ditone and semiditone }	is		a lesser semitone.
The	{ Greater tone and Lesser tone }	is	- - -	a comma.
The	{ Greater semitone and Lesser semitone }	is	- - -	an enarmonic diesis.

\* Harmonicor. lib. V. de Diffonantiis, pag. 88.

Salinas remarks much to the same purpose on the regular order of the simple consonances in these words. 'It seems worthy of the greatest observation, that the differences of the simple consonances, each above that which is the next under it, are found to be in the proportions which the first square numbers hereunderwritten bear to those that are the next less to them: to instance in the diapason, the excess above the diapente is the diatessaron, which is found in the ratio between the first square number 4, and its next less number 3. The excess of the diapente above the diatessaron is the greater tone, which is found in the ratio between the numbers 9 and 8. Again, that of the diatessaron above the ditone is the greater semitone, found in the ratio 16 to 15; farther, the excess of the ditone above the semitone is the lesser semitone 25 to 24. All these will appear more clearly in the following disposition of the numbers.

A					
B	C	A	B	C	
2	3	4	Diapason	Diapente	Diatessaron
6	8	9	Diapente	Diatessaron	Tone Major
12	15	16	Diatessaron	Ditone	Semitone major
20	24	25	Ditone	Semitone	Semitone minor

'In the above disposition, the last numbers are square, the first longilateral, and the middle ones less than those that are square by unity, but greater than the longilateral ones by as many units as there are numbers of squares above them. The greatest ratios are those between the longilaterals and the squares, the lesser between the longilaterals and middle numbers, and the least or differences those between the squares and the middle ones. Of the ratios the greatest are marked A, the lesser B, and the least C\*.'

Observations of this kind are perpetually occurring in the course of harmonical calculations; and it cannot but be a matter of astonishment to an intelligent mind to find, that those combinations of musical sounds which afford delight to the sense of hearing, have such a relation among themselves, and are disposed with such order and re-

\* De Musica, lib. II. cap. xx.

gularity, that they approve themselves also to the understanding, and exhibit to the mind a new species of beauty, such as is observable in theorems, and will for ever result from design, regularity, truth, and order. It is said that the senses are arbitrary, and that too in so great a degree, as to give occasion to a well known axiom that precludes all dispute about them; but that of hearing seems to be an exception; for what the ear recognizes to be grateful, the understanding approves as true. To enquire farther into the reasons why the sense is delighted with harmony and consonance, would be vain, since all beyond what we are able to discover by numerical calculation is resolvable into the will of Him who has ordered all things in number, weight, and measure.

The genera, as has been mentioned, were three; the diatonic, the chromatic, and the enarmonic. We are farther to understand a subdivision of these into species. Gaudentius expressly says, 'The species or colours of the genera are many \*,' and an author of much greater authority, Aristoxenus, has particularly enumerated them. According to him the diatonic genus had two species, the soft and the intense; the chromatic three, the soft, the hemiolian †, and the tonic ‡; as to the enarmonic, it had no subdivision. Indeed the representations of the genera and their species, as well by diagrams as in words, are almost as numerous as the writers on music. Monsieur Broffard has exhibited a view of the Aristoxenean division, taken, as he says, from Vitruvius; and the same is to be met with in an English dictionary of music, published in the year 1740, by James Graffineau ‖.

\* Ex Verf. Meibom. pag. 5.

† This is but another name for sesquialtera, as Andreas Ornithoparcus asserts in his *Micrologus*, lib. II. on the authority of Aulus Gellius. It signifies a whole and its half, consequently the sesquialtera ratio in its smallest numbers is 3 to 2.

‡ Vide Wall. Append. de veter. Harm. quarto, pag. 299.

‖ At the time when the above book was published the world were surprized; no such person as James Graffineau being known to it as possessed of any great share of musical erudition, and the work offered to the public appeared to be the result of great study and skill in the science. But the wonder ceased when it came to be known that the basis of Graffineau's book was the *Dictionnaire de Musique* of Monsieur Sebastian Broffard of Strasbourg; though, to do him justice, Graffineau in his preface ingenuously confesses he had made a liberal use of it. For the rest of it he stood indebted to Dr. Pepusch, and perhaps in a small degree to the other masters, Dr. Greene and Mr. Galliard, who have joined in the recommendation of it.

Graffineau was an ingenious young man; he understood the Latin and French languages, the latter very well, and knew a little of music; he had been clerk to Mr. Godfrey

But this representation is not near so particular and accurate, as the Aristoxenean Synopsis of the Genera given by Dr. Wallis in the Appendix to his edition of Ptolemy, and here inserted.

	Enarmonic	Chromatic Genus			Diatonic Genus		
	Genus	Soft	Hemiolian	Toniac	Soft	Intense	
30	Nete	Nete	Nete	Nete	Nete	Nete	30
24						12	24
18	24	22	21	18	15	Paranete Lichanos	18
15					Paranete Lichanos		15
12				Paranete Lichanos		12	12
9		Paranete Lichanos	Paranete Lichanos	6	9		9
6	Paranete Lichanos	4 Trite	4½ Trite	Trite Parypate	Trite Parypate	Trite Parypate	6
3	3 Trite Parypate	3 Parypate	4½ Parypate	6	6	6	3

frey the chemist in Southampton-street, Covent-Garden, but being out of employ, he became the amanuensis of Dr. Pepusch, and translated for him into English some of the Greek harmonicians from the Latin version of Meibomius. The Doctor having no farther occasion for him, recommended it to him to translate Broffard's dictionary above-mentioned, which he undertook and completed, the Doctor furnishing him with many new articles, and with additional matter for the enlargement of those contained in Broffard; and Grassineau's dictionary would have been an inestimable present to the musical world, had due care been taken in the correction of it, but it abounds with errors, and the author is not now living to correct them in a new edition.

Although the dictionary of Broffard, and this of Grassineau contain a great variety of useful knowledge, it is to be wished that it had been communicated to the world in some better form than that of a dictionary; for to speak of the latter, some of the articles contained in it are complete treatises.

In order to understand this scheme, we must suppose the tetrachord hypaton, though any other would have served the purpose as well, divided into thirty equal parts: in the primitive division of this system, according to the diatonic genus, the stations of the two intermediate sounds parypate and lichanos, for it is to be noted that those at the extremities termed stabiles, or immoveables, were at 6 and 18; that is to say, the first interval in the tetrachord was 6 parts, and each of the other two 12, making together 30; so that the second interval was the double of the first, and the third equal to the second, answering precisely to the hemitone, tone, and tone; this is spoken of the intense diatonic, for it is that species which the ancients are supposed to have meant whenever they spoke of the diatonic generally.

The soft diatonic has for its first interval 6, for its second 9, or a hemitone and a quadrantal diesis, or three fourths of a tone, and for its third 15, viz. a tone and a quadrantal diesis.

We are now to speak of the chromatic genus, the first species whereof, the tonic, had for its first interval 6, or a hemitone; for its second also 6, and for its third 18, a trihemitone, or tone and a half.

In the hemiolian chromatic, called also the sesquialteral \*, the first and also the second interval was  $4\frac{1}{2}$ , which is a hemiolian or sesquialteral diesis; and the third 21, or a tone, a hemitone, and a quadrantal diesis.

The soft chromatic makes the first and also the second interval a triental diesis or third part of a tone, by assigning to parypate and lichanos, the stations of 4 and 18; and gives to the third twenty-two twelfths of a tone, or, which is the same, twenty-two thirtieths of the whole tetrachord, which amount to a tone, a hemitone, and a triental diesis.

In the enarmonic genus, which, in the opinion of most authors, had no division into species, the first and second intervals, being terminated by 3 and 6, were each quadrantal dieses, or three twelfths of a tone, and the last a ditone. Of the diesis in this genus it is said by Aristoxenus and others, that it is the smallest interval that the human voice is capable of expressing; and it is farther to be remarked, that it is ever termed the enarmonic diesis, as being appropriated to the enarmonic genus.

Euclid's

\* Vide pag 86, in not.



Euclid's account of the genera is not much different from this of Aristoxenus. The diatonic, he says, proceeds from the acute to the grave by a tone, a tone, and a hemitone; and, on the contrary, from the grave to the acute by a hemitone, a tone, and a tone. The chromatic from the acute to the grave by a trihemitone, a hemitone, and a hemitone; and, contrarywise, from the grave to the acute by a hemitone, a hemitone, and a trihemitone. The enarmonic progression, he says, is a descent to the grave by a ditone, a diesis, and a diesis; and an ascent to the acumen by a diesis, a diesis, and a ditone. He speaks of a commixture of the genera, as namely, the diatonic with the chromatic, the diatonic with the enarmonic, and the chromatic with the enarmonic.

He exhibits the bisdiapason according to each of the genera, enumerating the several sounds as they occur, from *Proslambanomenos* to *Nete hyperboleon*, and observes that some of them are termed *Stantes* or standing sounds, and others *Mobiles* or moveable; the meaning of which is no more than that the extreme sounds of each tetrachord are immoveable, and that the difference between the genera consists in those several mutations of the intervals, which are made by assigning different positions to the two intermediate sounds.

Colour he defines to be a particular division of a genus; and, agreeable to what is said by Aristoxenus, he says that of the enarmonic there is one only; of the chromatic three, and of the diatonic two. He says farther, that the enarmonic progression is by a diesis, a diesis and incomposite ditone; that the chromatic colours or species are the soft, proceeding by two dieses, each being the third part of a tone, and an incomposite interval equal to a tone, and its third part; and the sesquialteral, proceeding by a diesis in a sesquialteral ratio to that in the enarmonic, another such diesis, and an incomposite interval consisting of seven dieses, each equal to a fourth part of a tone; and the tonic by a hemitone, a hemitone, and a trihemitone. Of the diatonic he says there are two species, namely the soft and the intense, by some called also the syntonous; the former proceeding by a hemitone, an interval of three quadrantal dieses, and by another of five such dieses; and the latter by a common division, with its genus, namely, a tone, a tone, and a hemitone.

And here it is to be observed, that these several definitions of the genera are taken from some one or other of their respective species;

thus that of the tonic chromatic is the same by which the genus itself is defined; and the definition of the syntonous or intense diatonic is what is used to denote the genus itself. From hence it should seem that of the species some were deemed spurious, or at least that some kind of pre-eminence among them, unknown to us, occasioned this distinction; which amounts to no less than saying that the soft chromatic is more truly the chromatic than either of the other two species of that genus; and that the intense or syntonous diatonic is more truly the diatonic than the soft diatonic: as to the enarmonic, it cannot in strictness be said to have had any colour or species, for it admits of no specific division.

To demonstrate the intervals in each species by numbers, Euclid supposes a division of the tone into twelve parts. To the hemitone he gives six, to the quadrantal diesis three, and to the triental diesis four; and to the whole diatessaron he assigns thirty. In the application of these parts to the several species, he says first, that the intervals in the soft chromatic are four, four, and twenty-two; in the sesquialteral four and a half, four and a half, and twenty-one; and in the tonic six, six, and eighteen; in the soft diatonic six, nine, and fifteen; and in the syntonous six, twelve, and twelve.

## C H A P. VII.

**A**RISTIDES Quintilianus, who, in the judgment of Dr. Wallis\*, seems in this respect to have been an Aristoxenean, speaks of the genera and their species in the following manner. 'Genus is a certain division of the tetrachord. There are three genera of modulation, namely the harmonic, chromatic, and diatonic; the difference between them consists in the distances of their respective intervals. The harmonic is that genus which abounds in the least intervals, and takes its name from adjoining together. The diatonic is so called because it proceeds by, or abounds in, tones. The chromatic is so termed, because, as that which is be-

\* Append. de veter. Harm. pag. 318.

• tween white and black is called Colour, so also that which holds  
• the middle place between the two former genera as this does, is  
• named Chroma. The enarmonic is sung by a diesis, diesis, and an  
• incomposite ditone towards the acute; and contrarywise towards  
• the grave. The chromatic towards the acute by a hemitone, a he-  
• mitone, and trihemitone; and contrarywise towards the grave.  
• The diatonic by a hemitone, a tone, and tone towards the acute;  
• and contrarywise towards the grave. The diatonic is the most na-  
• tural of all, because it may be sung by every one, even by such as  
• are unlearned. The most artificial is the chromatic, for only learn-  
• ed men can modulate it; but the most accurate is the enarmonic:  
• it is approved of by only the most skilful musicians; for those who  
• are otherwise look on the diesis as an interval which can by no  
• means be sung, and to these, by reason of the debility of their  
• faculties, the use of this genus is impossible. Each of the genera  
• may be modulated both by consecutive sounds and by leaps,  
• Moreover, modulation is either direct or frait forward, revert-  
• ing or turning back, or circumcurrent, running up and down:  
• the direct is that which stretches towards the acute from the grave;  
• the reverting that which is contrary to the former; and the cir-  
• cumcurrent is that which is changeable, as when we elevate by  
• conjunction, and remit by disjunction. Again, some of the gene-  
• ra are divided into species, others not. The enarmonic, because  
• it consists of the smallest diesis, is indivisible. The chromatic may  
• be divided into as many rational intervals as are found between the  
• hemitone and enarmonic diesis; the third, namely the diatonic,  
• into as many rational intervals as are found between the hemitone  
• and tone; there are therefore three species of the chromatic, and  
• two of the diatonic. And, to sum up the whole, these added to  
• the enarmonic make six species of modulation; the first is distin-  
• guished by quadrantal diesis, and is called the enarmonic; the  
• second by triental diesis, and is called the soft chromatic; the third  
• by diesis that are sesquialteral to those in the enarmonic, and is  
• therefore called the sesquialteral chromatic. The fourth has a pe-  
• culiar constitution of two hemitones, it is called the tonic chroma-  
• tic: the fifth consists of an hemitone and three diesis, and the five  
• remaining ones, and is called the soft diatonic: the sixth has an

‘ hemitone, tone, and tone, and is called the intense diatonic. But that what we have said may be made clear, we shall make the division in the numbers. Let the tetrachord be supposed to consist of sixty units, the division of the enarmonic is 6, 6, 48, by a quadrantal diesis, a quadrantal diesis, and a ditone. The division of the soft chromatic is 8, 8, 44, by a triental diesis, a triental diesis, and a trihemitone and triental diesis. The division of the sesquialteral chromatic is 9, 9, 42, by a sesquialteral diesis, a sesquialteral diesis, and a trihemitone and quadrantal diesis. The division of the tonic chromatic is 12, 12, 36, by an hemitone, an hemitone, and a trihemitone. That of the soft diatonic is 12, 18, 30, by a hemitone, and three quadrantal dieses, and five quadrantal dieses. That of the intense diatonic is 12, 24, 24, by a hemitone, a tone, and a tone\*.’

It is observable in this division of Aristides Quintilianus, that the numbers made use of by him are double those used by Euclid; the reason is, that the two dieses in the sesquialteral chromatic are not so well defined by four parts and a half of thirty, as by 9 of 60; and it is evident that preserving the proportions, whether we take the number 30 or 60 for the gross content of the tetrachord, the matter is just the same.

Ptolemy, the most copious, and one of the most accurate of all the ancient harmonicians, has treated very largely of the genera; and has, for the reason above given, adopted the number 60 for the measure of the tetrachord; he has represented the Aristoxenean constitution of the six species by the following proportions.

Acute	48	44	42	36	30	24
Mean	6	8	9	12	18	24
Grave	6	8	9	12	12	12
	60	60	60	60	60	60
	Enarmonic	Chromatic soft	Chromatic sesquialteral	Chromatic tonic	Diatonic soft	Diatonic intense

\* Aristides Quintilianus ex verf. Meib. pag. 18, et seq. in which passage it is observable that he sometimes uses the term *εσμονια*, and others *εραμονια*, to signify the enarmonic genus.

In which proportions he agrees both with Euclid and Aristides Quintilianus; though, for the purpose of ascertaining them, he has preferred the numbers of the latter to those used by Euclid.

In chapter xiv. of his second book Ptolemy has given the genera, with each of their several species, according to five different musicians, namely, Archytas\*, Aristoxenus, Eratosthenes†, Didymus, and himself. The sum of his account, omitting the division of Aristoxenus, for that is given above, is as follows.

Archytas	}	Enarmonic	$\frac{28}{27} \times \frac{36}{35} \times \frac{5}{4} = \frac{4}{3}$
		Chromatic	$\frac{28}{27} \times \frac{243}{224} \times \frac{32}{27} = \frac{4}{3}$
		Diatonic	$\frac{28}{27} \times \frac{8}{7} \times \frac{9}{8} = \frac{4}{3}$
Eratosthenes	}	Enarmonic	$\frac{40}{39} \times \frac{30}{38} \times \frac{19}{15} = \frac{4}{3}$
		Chromatic	$\frac{20}{19} \times \frac{19}{18} \times \frac{6}{5} = \frac{4}{3}$
		Diatonic	$\frac{256}{243} \times \frac{9}{8} = \frac{4}{3}$
Didymus	}	Enarmonic	$\frac{32}{31} \times \frac{31}{30} \times \frac{5}{4} = \frac{4}{3}$
		Chromatic	$\frac{16}{15} \times \frac{25}{24} \times \frac{6}{5} = \frac{4}{3}$
		Diatonic	$\frac{16}{15} \times \frac{10}{9} \times \frac{9}{8} = \frac{4}{3}$

In his own division Ptolemy supposes five species of the diatonic genus, which, together with the enarmonic, and two species of the chromatic he thus defines.

Ptolemy	}	Enarmonic	$\frac{46}{45} \times \frac{24}{23} \times \frac{5}{4} = \frac{4}{3}$	
		Chromatic	Soft	$\frac{18}{17} \times \frac{15}{14} \times \frac{6}{5} = \frac{4}{3}$
			Intense	$\frac{22}{21} \times \frac{12}{11} \times \frac{7}{6} = \frac{4}{3}$
			Soft	$\frac{21}{20} \times \frac{10}{9} \times \frac{8}{7} = \frac{4}{3}$
		Diatonic	Tonic	$\frac{18}{17} \times \frac{8}{7} \times \frac{9}{8} = \frac{4}{3}$
			Ditonic	$\frac{256}{243} \times \frac{9}{8} \times \frac{9}{8} = \frac{4}{3}$
			Intense	$\frac{16}{13} \times \frac{9}{8} \times \frac{10}{9} = \frac{4}{3}$
			Equable	$\frac{12}{11} \times \frac{11}{10} \times \frac{10}{9} = \frac{4}{3}$

\* There were two of this name, the one of Tarentum a Pythagorean, famous, as Aulus Gellius and others relate, for having constructed an automaton in the form of a pigeon, which had the power of flying to a considerable distance; the other a musician of Mitylene. They are both mentioned by Diogenes Laertius, but it is not certain which of the two was the author of the division here given.

† Eratosthenes, a Cyrenean philosopher, and a disciple of Aristo and Callimachus, was librarian at Alexandria to Ptolemy Evergetes. He was for his great learning esteemed a second Plato. An astronomical discourse of his is extant in the Oxford edition of Aratus; prefixed to which is an account of many other books of his writing now lost. He is said to have lived to the age of eighty-two; and, according to Helvicus, flourished about the Olympiad cxxxviii. that is to say about two hundred and thirty years before Christ.

Martianus Capella gives this explanation of the genera : ‘ The enarmonic abounds in small intervals, the diatonic in tones. The chromatic consists wholly of semitones, and is called chromatic, as partaking of the nature of both the others ; for the same reason as we call that affection colour which is included between the extremes of white and black. The enarmonic is modulated towards the acumen, or, as we should now say, ascends by a diesis, diesis, and an incomplete ditone ; the chromatic by a semitone, semitone, and an incomplete trihemitone : and the diatonic, content with larger intervals, proceeds by a semitone, tone, and tone : we now chiefly use the diatonic.’ He says farther, ‘ The possible divisions of the tetrachord are innumerable, but there are six noted ones, one of the enarmonic, three of the chromatic, and two of the diatonic. The first of the chromatic is the soft, the second is the hemiolian, and the third the tonian. The divisions of the diatonic are two, the one soft and the other robust. The enarmonic is distinguished by the quadrantal diesis, the soft chromatic by the tridental diesis, and the hemiolian chromatic by the hemiolian diesis, which is equal to an enarmonic diesis and a half, or three eighths of a tone \*.’ In all this Capella is but a copier of Aristides Quintilianus ; and, in the judgment of his editor Meibomius, and others, he is both a servile and an injudicious one.

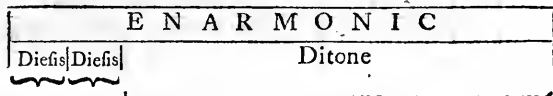
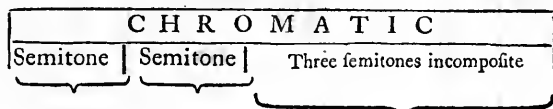
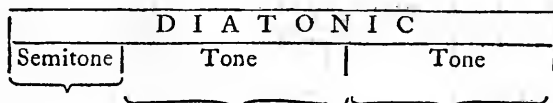
Boetius † has treated the subject of the genera in a manner less satisfactory than could have been expected from so scientific a musician : he mentions nothing of the species, but contents himself with an exhibition of the enarmonic, the chromatic, and diatonic, in three several diagrams, which are here given. He says that the diatonic is somewhat hard, but that the chromatic departs from that natural intension, and becomes somewhat more soft ; and that the enarmonic is yet better constituted through the five tetrachords. The diatonic progression, he says, is by a semitone, tone, and tone ; and that it

The abovementioned edition of Aratus is a book not unworthy the notice of a learned musician, as containing a short but curious dissertation *De Musica antiquâ Græcâ*, by the editor Mr. Edmund Chilmead. Aratus was an eminent astronomer and poet, contemporary with Eratosthenes ; and in the Oxford publication is an astronomical poem, which it seems St. Paul alludes to in his speech at Athens, Acts xvii. ver. 28. ‘ As certain of your own poets have said.’ Aratus was a Cilician, and a countryman of the apostle. Vide Bentley’s Sermons at Boyle’s Lecture, sermon II.

\* *De Nuptiis Philologiae et Mercurii*, lib. IX. *De Generibus Tetrachordorum*.

† *Lib. I. cap. xxi.*

is called diatonic, as proceeding by tones. He adds that the chromatic, which takes its name from the word Chroma, signifying colour, is, as it were, the first change or inflexion from that kind of intension preserved in the diatonic : and is sung by a semitone, a semitone, and three semitones \* ; and that the enarmonic, which in his judgment is the most perfect of all the genera, is sung by a diesis and a ditone ; a diesis he says is the half of a semitone. The following is his division of the tetrachord in each of the three genera.



He is somewhat more particular in his fourth book, chap. v. and again in the seventh chapter, for in the chromatic tetrachord he makes the semitones to be, the one a greater and the other a lesser ; and the trihemitone he makes to consist of one greater and two lesser semitones.

\* In a diagram of Glareanus, representing Boetius's division of the chromatic, the last interval is thus defined ; " tria semitonia incompofita," which epithet, as Boetius himself explains it, is not meant to signify that the semitones are incomplete, but that the interval constituted by them is to be considered as an integer, and uncompounded like the tone, without regard to its constituent parts. De Mus. lib. I. cap. xxiii.

## TETRACHORD.

D I A T E S S A R O N. Ratio Sequitertia		Nete hyperboleon		Nete hyperboleon		Nete hyperboleon	
		Tone	2304	Three Hemitones one greater and two lesser	2304	Ditone	2304
		Tone	2592 Paranete hyp.	Hemitone greater	2736 Paranete hyp.		
		Hemitone lesser	2916 Trite hyperb.	Hemitone lesser	2916 Trite hyperb.		
			3072 Nete diezeug. DIATONIC		3072 Nete diezeug CHROMATIC	Dieti. Dieth. Paranete hyp. Trite hyperb. 3072 Nete diezeug. ENARMONIC	

It is somewhat remarkable that this author has said nothing of the colours or species of the genera, about which so much is to be met with in Ptolemy and other writers, except towards the conclusion of his work, where he professes to deliver the sentiments of Aristoxenus and Archytas on this head; but he seems rather to reprehend than adopt their opinions, for which it seems difficult to assign any reason, other than that he was, as his writings abundantly prove, a most strenuous assertor of the doctrines of Pythagoras.

Mersennus \* has given a scale of the succession of sounds in each of the three genera, as near as it could be done, in the characters of modern notation, which is here inserted, and may serve to shew how ill the division of the tetrachord in the chromatic and enarmonic genera agree with the notions at this time entertained of harmony, and the natural progression of musical sounds.

\* Harmonic. De Generibus et Modis, pag. 97.



## DIATONIC GENUS

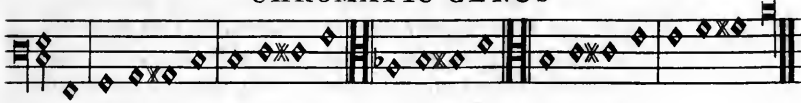
97

Tetrachord.    Tetrachord.    Tetrachord.    Tetrachord.    Tetrachord.  
hypaton.    parhypaton.    synemmen.    diezeug.    hyperb.



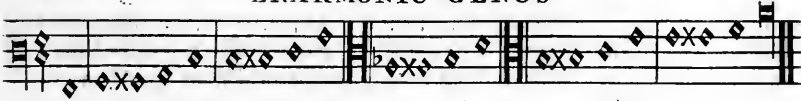
Tone    Semitone    Tone    Tone    Semitone    Tone    Tone    Semitone    Tone    Tone    Semitone    Tone    Tone    Semitone    Tone    Tone

## CHROMATIC GENUS



Semitone    Semitone    Trihemitone    Semitone    Semitone    Third minor    Semitone    Semitone    Third minor    Semitone    Semitone    Third minor    Semitone    Semitone    Trihemitone

## ENARMONIC GENUS



Proflambanomenos  
Hypate hypaton  
Parhypate hypaton  
Lychanos hypaton  
Hypate meson  
Parhypate meson  
Lychanos meson  
Mese  
Trite synemmenon  
Paramete synemmenon  
Nete synemmenon  
Paramese  
Trite diezeugmenon  
Paramete diezeugmenon  
Nete diezeugmenon  
Trite hyperboleon  
Paramete hyperboleon  
Nete hyperboleon

Diesis    Diesis    Ditone    Diesis    Diesis    Ditone    Diesis    Diesis    Third major    Diesis    Diesis    Third major    Diesis    Diesis    Ditone

J. Cook. Sculp.

Other authors there are, particularly Franchinus, Vicentino, Vincentio Galilei, and Zarlino, that profess to treat of the genera; but it is to be noted that all their intelligence is derived from the same source, namely, the writings of Aristoxenus, Euclid, Aristides Quintilianus, and more especially Ptolemy; and therefore we find no other variation among them than what seems necessarily to arise from their different conceptions of the subject. Boetius himself can in this respect be considered no otherwise than as a modern; and he himself does not pretend to an investigation of the genera, but contents himself with a bare repetition of what is to be found in the writings of the ancients respecting them: and when it is considered that in his time only the diatonic genus was in use; the other genera having been rejected for their intricacy, and other reasons, long before, it must appear next to impossible that he could contribute much to the explanation of this most abstruse part of the science; and the excessive caution with which he delivers his sentiments touching them, is a kind of proof of the difficulties he had to encounter.

If this was the case with Boetius, how little is to be expected from the writers of later times. In short, for information as to the doctrine of the genera, we are under an indispensable necessity of recurring to the ancients; and it will be much safer to acquiesce in their relations, defective and obscure as they are, than to trust to the glosses of modern authors, who in general are more likely to mislead than direct us: for this reason it has been thought proper to reject an infinitude of schemes, diagrams, and explanations, which the fertile inventions of the moderns have produced to exemplify the constitution of the chromatic and enarmonic genera, and that from a thorough persuasion that many of them are erroneous.

But it seems the considerations above suggested were not sufficient to deter a writer, who flourished in the sixteenth century, who, to say the least of him, appears to have been one of the ablest theorists of modern times, from attempting to develope the doctrine of the genera, and to deliver it free from those difficulties.

The author here meant is Franciscus Salinas, a Spaniard by birth, and who, under all the disadvantages of incurable blindness, applied himself with the most astonishing patience and perseverance to the study of the theory of music; and in many respects the success of his

researches

researches has been equal to the degree of his resolution. His system of the genera is much too copious to be inserted here, it is therefore referred to a part of this work reserved for an account of him and his writings.

Kircher has given a compendious view of the genera \*, together with the proportions of their component intervals in the tetrachord of each genus, by the help whereof we are enabled to form an idea of those various progressions that constitute the difference between the one and the other of them. But though he professes to have in his possession, and to have perused the manuscripts of Aristoxenus, Archytas, Didymus, Eratosthenes, and others †, he gives the preference to Ptolemy in respect of his division of the genera, and apparently follows the elder Galilei, not indeed in the order, but in the method of representation. According to him the species of the diatonic genus are five; namely, the ditonic or Pythagorean, the soft, the syntonous, the toniac, and the equable. The following is his definition and representation of them severally in their order, with his remarks on each.

DITONIC or PYTHAGOREAN DIATONIC I.

‘ The Pythagorean or ditonic diatonic consists in a progression from  
 ‘ the grave to the acute, through the tetrachord, by the interval of  
 ‘ a lesser semitone, and two tones, each in the ratio of 8 to 9; and  
 ‘ contrarywise from the acute to the grave by two tones and a lesser  
 ‘ semitone, as in the following example.

TETRACHORD	{	6144		Hypate meson
			Sesquioctave tone, 8 to 9	
		6912		Lychanos hypaton
			Sesquioctave, tone 8 to 9	
		7776		Parypate hypaton
			Lesser semitone, 243 to 256	
		8192		Hypate hypaton

\* Musurg. tom. I. lib. III. cap. xiii.

† Meibomius questions the truth of this assertion, upon the supposition that Archytas, Didymus, and Eratosthenes are to be reckoned among the scriptores perditii. It is true that, excepting a small astronomical tract of Eratosthenes, there is nothing of the writing of either of them in print. But it is said that in the library of St Mark at Venice there are even now a great number of Greek manuscripts that were brought into Italy upon the sacking of Constantinople, and among them it is not impossible that some tracts of the abovenamed writers might be found.

‘ This kind of progression is said to have been held in great estimation by the philosophers, particularly Plato and Aristotle, as having a conformity with the composition of the world and with nature itself.

## S O F T D I A T O N I C II.

‘ The second or soft species of the diatonic genus proceeds from the grave to the acute by an interval, in the ratio of 20 to 21; the other intervals have a ratio, the one of 9 to 10, and the other of 7 to 8, as is here represented.

TETRACHORD	{	63		Hypate meson
		72		Lychanos hypaton
		80		Parypate hypaton
		84		Hypate hypaton

## S Y N T O N O U S D I A T O N I C III.

‘ The third species, distinguished by the epithets syntonum incitatum, or hastened, proceeds from the grave to the acute by an interval in the ratio of 15 to 16, or greater semitone, a greater tone 8 to 9, and a lesser 9 to 10; and descends from the acute to the grave by the same intervals.

Greater terms					
TETRACHORD	{	Sesquitertia	36		Hypate meson
			40		Lychanos hypaton
		Sesquiquint.	45		Parypate hypaton
			48		Hypate hypaton

TONIAC DIATONIC IV.

‘ The toniac, the fourth species of the diatonic genus supposes such a disposition of the tetrachord as that the first and second chords shall include an interval of 27 to 28 ; next an interval of 7 to 8, and lastly one of 8 to 9. Thus adjusted it will ascend from the grave to the acute, and on the contrary descend from the acute to the grave, as in the example.

Greater terms

TETRACHORD	{	168		Hypate meson
			Sesquioctave, 8 to 9	
		189		Lychanos hypaton
			Sesquiseptima, 7 to 8	
TETRACHORD	{	216		Parypate hypaton
			Sesquigigesimaseptima, 27 to 28	
TETRACHORD	{	224		Hypate hypaton

EQUABLE DIATONIC V.

‘ The fifth and last species of this genus is the equable, proceeding in arithmetical progression from the grave to the acute, by the ratios of 11 to 12, 10 to 11, and 9 to 10 ; and contrarywise from the acute to the grave.

TETRACHORD	{	DIATESARON	9		Hypate meson
				Sesquinona	
			10		Lychanos hypaton
				Sesquidecima	
TETRACHORD	{	DIATESARON	11		Parypate hypaton
				Sesquiundecima	
TETRACHORD	{	DIATESARON	12		Hypate hypaton

‘ Ptolemy, whose fondness for analogies has already been remarked, resembles the tetrachord thus constituted to Theology and Politics.’

The chromatic genus, in the opinion of this author had three species, the ancient, the soft, and the syntonous, thus severally described by him.

## ANCIENT CHROMATIC I.

‘ This species proceeded by two semitones and a trihemitone,  
 ‘ that is to say, it ascended from the grave to the acute by a lesser  
 ‘ semitone; then by an interval somewhat greater, as being in the  
 ‘ ratio of 81 to 76; and lastly by an incomplete trihemitone, in the  
 ‘ ratio of 19 to 16.

TETRACHORD DIATESSARON	{	6144		Hypate meson
		Trihemitone, 16 to 19		Lychanos hypaton
		7296		Semitone, 76 to 81
		7776		Parypate hypaton
		8192		Hypate hypaton

## SOFT CHROMATIC II.

‘ The chromatic molle was so disposed, as that the lowest chord  
 ‘ and the next to it had a ratio of 27 to 28, the second and third 14  
 ‘ to 15, and the third and fourth 5 to 6.

TETRACHORD	{	105		Hypate meson
		Sesquiquinta, 5 to 6		Lychanos hypaton
		126		Sesquiquartadecima, 14 to 15
		135		Parypate hypaton
		140		Hypate hypaton

## SYNTONOUS CHROMATIC III.

‘ In the chromatic syntonum the first and second chords, reckon-  
 ‘ ing from the lowest, were distant by an interval in the proportion  
 ‘ of 22 to 21, the second was removed from the third by an interval  
 ‘ in the proportion of 12 to 11, and the third from the fourth by  
 ‘ one of a sesquifexta proportion, which is as 6 to 7, as here is shewn.

TETRACHORD	66		Hypate meson
	Sesquifexta, 6 to 7		Lychanos hypaton
	77		Parypate hypaton
	Sesquiundecima, 11 to 12		Hypate hypaton
84			
Sesquivigesima prima, 21 to 22			
88			

‘ Of this genus it is said by Macrobius that it was deemed to be of an effeminate nature, and that it had a tendency to enervate the mind \*; for which reason the ancients very seldom used it; Ptolemy resembles this tetrachord to œconomics.’

The enarmonic, the third and last in order of the genera, seems to have been originally simple or undivided into species; but the refinements of Ptolemy led to a variation in the order of the enarmonic progression, which formed that species distinguished by his name, so that it may be said the enarmonic contained two species, the ancient and the Ptolemaic. Kircher thus defines it.

### ANCIENT ENARMONIC I.

‘ In this species the tetrachord ascended by two dieses, and an incomplete ditone, the several ratios whereof were as denoted by the underwritten numbers.

TETRACHORD	6144		Hypate meson
	Ditone		Lychanos hypaton
	7776		Parypate hypaton
	Diesis		Hypate hypaton
	7984		
Diesis			
8192			

### ENARMONIC OF PTOLEMY II.

‘ The Ptolemaic enarmonic, which was scarce formed before both the chromatic and enarmonic grew into disesteem, ascended from the most grave to the next chord by an interval in the ratio of 45 to

\* Vide Macrob. in Somn. Scipion. Lib. II. cap. iv.

‘ to 46, thence by one of 23 to 24, and lastly by one of 4 to 5,  
 ‘ which is said to be a true enarmonic ditone.

TETRACHORD	{	276	Hypate meson
			Sesquiquarta, 4 to 5
		345	Lychanos hypaton
			Sesquivigesima tertia, 23 to 24
		360	Parypate hypaton
			Sesquiquadragesima quinta, 45 to 46
		368	Hypate hypaton

Dr. Wallis has treated this subject of the genera in a manner worthy of that penetration and sagacity for which he is admired. It has been mentioned, that of all the ancients Ptolemy has entered the most minutely into a discussion of this doctrine; he has delivered the sentiments of many writers, which but for him we should scarcely have known, and has adjusted the species in such a way as to leave it a doubt whether even Aristoxenus or he be the nearest truth: Dr. Wallis published an edition of this valuable author, with a translation and notes of his own; to this work he has added an appendix, wherein is contained a very elaborate and judicious disquisition on the nature of the ancient music, and a comparison of the ancient system with that of the moderns. In this he has taken great pains to explain, as far as it was possible, the genera: the enarmonic and chromatic he gives up, and speaks of as irrecoverably lost; but of the diatonic genus he expresses himself with great clearness and precision; for, after defining, as he does very accurately, the several species of the diatonic, he says, that one only of them is now in practice; and, as touching the question which of them that one is, he gives the opinions of several musicians, together with his own; and lastly shews how very small and inconsiderable must have been the difference between those divisions that distinguish the species of the diatonic genus. His words are nearly these.

‘ It now remains to discuss one point, which we have referred to  
 ‘ this place, the genera and their colours or species. We have be-  
 ‘ fore said that for many years only one of them all has been received  
 ‘ in practice, and this is by all allowed to be the diatonic, the enar-  
 ‘ monic and all the chromatics, and the other diatonics being laid  
 ‘ aside.



' aside. But it is matter of dispute whether it is the intense diato-  
 ' nic of Aristoxenus, or the ditonic diatonic of Ptolemy, or the in-  
 ' tense diatonic of the same Ptolemy; that is to say, when we sing  
 ' a diatessaron from MI or LA in the grave towards the acute in the  
 ' syllables FA SOL LA, which express so many intervals, to ascertain  
 ' the degree of magnitude which each of these intervals contains.  
 ' The first opinion is that of Aristoxenus, who when he made the  
 ' diatessaron to consist of two tones and a half, would have the great-  
 ' est sound FA, to be a hemitone, and the other two SOL LA, to be  
 ' whole tones, which is the intense diatonic of this author\*. And in  
 ' this manner speak all musicians even to this day, at least when they  
 ' do not profess to speak with nicety. But those who enter more  
 ' minutely into the matter, will have what is understood by a hemi-  
 ' tone to be, not exactly the half of, but somewhat a little less than a  
 ' tone; and this is demonstrated by Euclid, who in other respects  
 ' was an Aristoxenean, though I do not know whether he was the first  
 ' that did it. Euclid I say, admitting the principles of the Pythago-  
 ' reans in estimating the intervals of sounds by ratios; and admit-  
 ' ting also that a tone is in a sesquioctave ratio, in his harmonic in-  
 ' troduction treats of the tones and hemitones in the same manner as  
 ' do the Aristoxeneans; yet in his section of the canon he shews  
 ' that what remains after subtracting two tones from a diatessaron is  
 ' less than a hemitone, and is called a limma, which is in the ratio  
 ' of  $\frac{2}{3} \frac{5}{4} \frac{6}{3}$ ; for if a diatessaron contains two tones and a half, then a  
 ' diapason, which is two diatessarons and one tone, must contain six  
 ' tones; but a diapason, which has a duple ratio, is less than six  
 ' tones, for a sesquioctave ratio six times compounded is more than  
 ' duple †; a diapason therefore is less than six tones, and a diatessaron  
 ' less than two tones and a half.

C H A P. VIII.

' **T**HE next opinion is that of those, who, instead of a tone,  
 ' tone, and hemitone, substitute a tone, tone, and limma.  
 ' And these, if at any time they call it a hemitone, would yet have

\* See the Synopsis, p. 87, of Dr. Wallis's Appendix, herein before given.

† This is excellently demonstrated by Boetius, lib. III. cap. i.

' us understand them to mean a limma, which differs very little from  
 ' a hemitone, and therefore they will have the syllable LA to express  
 ' a limma, and the syllables SOL LA two tones, that is  $\frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} = \frac{16}{81}$ ,  
 ' and this is the ditonic diatonic of Ptolemy, but which was shewn  
 ' by Euclid before Ptolemy; and it was also the diatonic of Eratof-  
 ' thenes, as has been said above; and these have been the sentiments  
 ' of musicians almost as low as to our own times. Ptolemy himself,  
 ' though he has given other kinds of diatonic genera, does not reject  
 ' this; and the rest who have spoken of this matter in a different  
 ' way, did it more out of compliance with custom, than that they  
 ' adhered to any contrary opinion of their own, as Ptolemy himself  
 ' tells us, lib. I. cap. xvi. And thus Boetius divides the tetrachord,  
 ' and after him Guido Arctinus, Faber Stapulensis, Glareanus, and  
 ' others; it is true, however, that, about the beginning of the six-  
 ' teenth century, Zarlino, and also Kepler resumed the intense diatonic  
 ' of Ptolemy, and attempted to bring it into practice\*; but for this  
 ' they were censured by the elder Galileo †.

' The third opinion therefore is that of those who, following Pto-  
 ' lemy, substituted in the place of a hemitone or limma, a sesquide-  
 ' cimaquinta ratio  $\frac{1}{1} \frac{6}{5}$ , which they also call a hemitone; and for the  
 ' tones, both which the others had made to be in the ratio  $\frac{2}{3}$ , one  
 ' they made to be in the ratio  $\frac{4}{9}$ , so that they compounded the dia-  
 ' tessaron by the ratios  $\frac{1}{1} \frac{6}{5} \times \frac{4}{9} = \frac{8}{15}$ , expressing by the syllable FA the  
 ' ratio  $\frac{1}{1} \frac{6}{5}$ , by SOL that of  $\frac{4}{9}$ , and by LA  $\frac{1}{1} \frac{2}{3}$ , which is the intense  
 ' diatonic of Ptolemy, and the diatonic of Didymus, except that he,  
 ' changing the order, has  $\frac{1}{1} \frac{6}{5} \times \frac{1}{9} \times \frac{2}{3} = \frac{4}{15}$ .

' And as they called  $\frac{1}{1} \frac{6}{5}$  a greater hemitone, they made the lesser  
 '  $\frac{5}{8}$ , which with  $\frac{1}{1} \frac{6}{5}$  completes the lesser tone, as  $\frac{1}{1} \frac{6}{5} \times \frac{5}{8} = \frac{1}{1} \frac{2}{3}$ , and is  
 ' the difference, as they say, between the greater and the lesser third.

\* Dr. Wallis has a little mistaken Kepler in this place: it was not the intense diatonic of Ptolemy, but of Didymus  $\frac{1}{1} \frac{6}{5} \times \frac{1}{9} \times \frac{2}{3} = \frac{4}{15}$  that he was for resuming. Joann. Keplerus Harm. Mundi, lib. III. cap. vii.

† Galileo did not contend for the ditonic division of the diatonic, but for the intense of Aristoxenus, defined in his synopsis of the genera herein before given; the reason whereof was, that he was a lutenist, and the performers on that instrument unanimously prefer the Aristoxenean division.

‡ It may be proper to remark, that in this and other instances of solmification that occur in the passage now quoting, Dr. Wallis uses the method of solmification by the tetrachords, in which the syllables UT RE are rejected, and which took place about the year 1650. See Clifford's Collection of divine Services and Anthems, printed in the year 1664.

‘ Merfennus adds two other hemitones, one in the ratio  $\frac{1\frac{1}{2}\frac{5}{8}}$ , which with  $\frac{1\frac{6}{5}}$  completes  $\frac{2}{3}$  the greater tone, and the other  $\frac{2\frac{7}{3}}$ , which with  $\frac{2\frac{5}{4}}$  alfo makes up  $\frac{2}{3}$  the greater tone \*.’

The above is an impartial state of the feveral opinions that at different times have prevailed among the moderns, touching the preference of one or other of the fpecies of the diatonic genus to the reft. Dr. Wallis is certainly right in faying, that to the time of Boetius, and fo on to the end of the fixteenth century, the ditonic diatonic of Ptolemy prevailed, for fo much appears by the writings of thofe feveral authors; and as to the latter part of his affertion, it is confirmed by the prefent practice, which is to confider the tetra-chord as confifting of a feſquidecimaquinta ratio, a tone major, and a tone minor, and to this method of divifion he gives the preference; but he cloſes his relation with a remark that ſhews of how very little importance all enquiries are, which tend to adjust differences too minute for a determination by the ſenſes, and cognizable only by the underſtanding, and that too not till after a laborious inveſtigation. His words are theſe :

‘ But as thoſe fpecies which we have mentioned differ fo very little from one another, that the niceſt ear can ſcarcely, if at all, diſtinguiſh them, ſince the ratio  $\frac{1\frac{6}{5}}$  from the ratio of a limma  $\frac{2\frac{5}{4}\frac{6}{7}}$ , as alſo the ratio of a greater tone  $\frac{2}{3}$  from  $\frac{1\frac{6}{5}}$  differ only by the ratio  $\frac{3\frac{1}{5}}$ , which is fo ſmall that the ear can with difficulty diſcriminate between the one and the other of the two tones; we muſt therefore judge not fo much by our ſenſes, which opinion ought moſt to be regarded, becauſe the ſenſes would without any difficulty admit any of them, but reaſon greatly favours the laſt †.’

There is yet another writer, with whoſe ſentiments, and a few obſervations thereon, we ſhall conclude our account of the genera, this was Dr. John Chriſtopher Pepuſch, a man of no ſmall eminence in his profeſſion, and who for many years enjoyed, at leaſt in England, the reputation of being the ableſt theorift of his time. In a letter to Mr. Abraham de Moivre, printed in the Philoſophical Tranſactions of the year 1746, N<sup>o</sup> 481, he propoſes to throw ſome light upon the obſcure ſubject of the ancient ſpecies of muſic; and after premifing that, according to Euclid, the ancient ſcale muſt have been compoſed of tones major and

\* Append. de Vet. Harm. 317, et ſeq.

† Ibid. pag. 318.

limmas, without the intervention of tones minor, which in numbers are thus to be expressed,  $\frac{9}{8}$   $\frac{2}{2} \frac{5}{4} \frac{6}{4}$   $\frac{9}{8}$   $\frac{9}{8}$   $\frac{2}{2} \frac{5}{4} \frac{6}{4}$   $\frac{9}{8}$   $\frac{9}{8}$ , he proceeds in these words :  
 ‘ It was usual among the Greeks to consider a descending as well as  
 ‘ an ascending scale, the former proceeding from acute to grave pre-  
 ‘ cisely by the same intervals as the latter did from grave to acute.  
 ‘ The first found in each was the proflambanomenos. The not dis-  
 ‘ tinguishing these two scales, has led several learned moderns to sup-  
 ‘ pose that the Greeks in some centuries took the proflambanomenos  
 ‘ to be the lowest note in their system, and in other centuries to be  
 ‘ the highest; but the truth of the matter is, that the proflambano-  
 ‘ menos was the lowest or highest note according as they consider-  
 ‘ ed the ascending or descending scale. The distinction of these is con-  
 ‘ ducive to the variety and perfection of melody; but I never yet met  
 ‘ with above one piece of music where the composer appeared to have  
 ‘ any intelligence of this kind. The composition is about one hundred  
 ‘ and fifty or more years old, for four voices, and the words are,  
 ‘ “ Vobis datum est noscere mysterium regni Dei, cæteris autem in para-  
 ‘ bolis; ut videntes non videant, et audientes non intelligant.” By the  
 ‘ choice of the words the author seems to allude to his having per-  
 ‘ formed something not commonly understood.’ The doctour then  
 exhibits an octave of the ascending and descending scales of the dia-  
 tonic genus of the ancients, with the names for their several sounds,  
 as also the corresponding modern letters, in the following form.

A	Proflambanomenos	$\frac{8}{9}$	g
B	$\frac{9}{8}$ Hypate hypaton	$\frac{2}{2} \frac{4}{5} \frac{3}{6}$	f
C	$\frac{2}{2} \frac{5}{4} \frac{6}{4}$ Parypate hypaton	$\frac{8}{9}$	e
D	$\frac{9}{8}$ Lychanos hypaton	$\frac{8}{9}$	d
E	$\frac{9}{8}$ Hypate meson	$\frac{2}{2} \frac{4}{5} \frac{3}{6}$	c
F	$\frac{2}{2} \frac{5}{4} \frac{6}{4}$ Parypate meson	$\frac{8}{9}$	b
G	$\frac{9}{8}$ Lychanos meson	$\frac{8}{9}$	a
a	$\frac{9}{8}$ Mese		G

He observes, that in the octave above given, the Proflambanome-  
 nos, Hypate hypaton, Hypate meson, and Mese were called Stabiles,  
 from their remaining fixed throughout all the genera and species; and  
 that the other four, being the Parypate hypaton, Lychanos hypaton,

Parypate meſon, and Lychanos meſon, were called *Mobiles*, becauſe they varied according to the different ſpecies and varieties of muſic.

He then proceeds to determine the queſtion what the genera and ſpecies were, in this manner. ‘ By genus and ſpecies was under- ſtood a diviſion of the diateſſaron, containing four ſounds, into three intervals. The Greeks conſtituted three genera, known by the names of Enarmonic, Chromatic, and Diatonic. The chromatic was ſubdivided into three ſpecies, and the diatonic into two. The three chromatic ſpecies were, the chromaticum molle, the ſeſquialterum, and the toniæum. The two diatonic ſpecies were, the diatonicum molle, and the intenſum; ſo that they had ſix ſpecies in all. Some of theſe are in uſe among the moderns, but others are as yet unknown in theory or practice.

‘ I now proceed to define all theſe ſpecies by determining the intervals of which they ſeverally conſiſted, beginning by the diatonicum intenſum as the moſt eaſy and familiar.

‘ The diatonicum intenſum was compoſed of two tones and a ſemitone; but, to ſpeak exactly, it conſiſts of a ſemitone major, a tone minor, and a tone major. This is in daily practice, and we find it accurately defined by Didymus in Ptolemy’s Harmonics, published by Dr. Wallis\*.

\* Dr. Wallis has remarked in the paſſage above-cited, that it had long been a matter of controverſy whether the ſyſtem of the moderns correſponded with the intense diatonic of Ariſtoſenus, the ditonic diatonic of Ptolemy, or rather Pythagoras, or the intense of Ptolemy; and though he ſeems to incline to the opinion of Zarlino, that the muſic now in uſe is no other than the intense diatonic of Ptolemy, it is far from clear that the moderns have gone farther than barely to admit in theory and in a courſe of numerical calculation the latter as the moſt eligible. Salinas, lib. III. cap. xiii. contends for an equality of tones, and for the conſequent neceſſity of diſtributing throughout the diapason ſyſtem thoſe intervals by which the greater tones exceed the leſſer.

Bontempi, Hiſt. Muſ. 188. ſays that that temperament which makes the intervals irrational, is to be looked upon as a divine thing, and aſſerts that no where in Italy, nor indeed in Europe, does the practice of diſcriminating between the greater and leſſer tone prevail in the tuning of the organ, and that the organ of St. Mark’s chapel at Venice, where he himſelf ſung for ſeven years, continued to be tuned without regard to this diſtinction, notwithstanding what Zarlino had written and the efforts he made to get it varied.

The practice has long been in tuning the organ, and ſuch like inſtruments, to make the fifths as flat and the thirds as ſharp as the ear will bear, which neceſſarily induces an equality in the tones.

Laſtly, Dr. Smith, in his Harmonics, ſecond edition, pag. 33, aſſerts that ſince the invention of a temperament, the ancient ſyſtems of ditonic diatonic, intense diatonic, &c. have

‘ The next species is the diatonicum molle, as yet undiscovered, as far as appears to me, by any modern author. Its component intervals are the semitone major, an interval composed of two semitones minor, and the complement of these two to the fourth, being an interval equal to a tone major and an enarmonic diesis.

‘ The third species is the chromaticum tonium, its component intervals are a semitone major succeeded by another semitone major, and lastly, the complement of these two to the fourth, commonly called a superfluous tone.

‘ The fourth species is the chromaticum sesquialterum, which is constituted by the progression of a semitone major, a semitone minor, and a third minor. This is mentioned by Ptolemy as the chromatic of Didymus\*. Examples among the moderns are frequent.

‘ The fifth species is the chromaticum molle. Its intervals are two subsequent semitones minor, and the complements of these two to the fourth, that is an interval compounded of a third minor and an enarmonic diesis. This species I never met with among the moderns.

‘ The sixth and last species is the enarmonic. Salinas and others have determined this accurately †. Its intervals are the semitone minor, the enarmonic diesis, and the third major.

‘ Examples of four of these species may be found in modern practice. But I do not know of any theorist who ever yet determined what the chromaticum tonium of the ancients was; nor have any of them perceived the analogy between the chromaticum sesquialterum and our modern chromatic. The enarmonic, so much admired by the ancients, has been little in use among our musicians as yet. As to the diatonicum intensum it is too obvious to be mistaken.’

The above-cited letter is very far from being what the title of it indicates, an explanation of the various genera and species of music among the ancients. To say the best of it, it contains very little more than is to be met with in almost every writer on the subject of

have justly been laid aside. So that after so many opinions to the contrary, it may very well be doubted whether the diatonicum intensum is in daily practice or not.

\* Lib. II. cap. xiv.

† Salinas de Musica, lib. III. cap. viii.

ancient music, except that seemingly notable discovery, that the ancients made use of both an ascending and descending scale, the consideration whereof will be presently resumed. As to the six species above enumerated, the doctor says four are in modern practice, but of these four he has thought proper to mention only two, namely, the diatonicum intensum, and the chromaticum sesquialterum; and it is to be wished that he had referred to a few of those examples of the four, which he says are to be found, or at least that he had mentioned the authors in whose works the latter two of them occur; and the rather, because Dr. Wallis asserts that the enarmonic, all the chromatics, and all but one of the diatonics, for many years, he might have said centuries, have been laid aside.

As to his assertion that the Greeks made use of both an ascending and descending scale, it is to be remarked, that there are no notices of any such distinction in the writings of any of the Greek harmonicians. The ground of it is a composition about one hundred and fifty years old, in the year 1746, to the words of a verse in the gospel of St. Mark \*, so obscure, if we consider them as referring to the music, that they serve more to excite, than allay curiosity; and Dr. Pepusch could not have wished for a fairer opportunity of displaying his learning and ingenuity than the solution of this musical enigma afforded him. Nay, had he condescended to give this composition in the state he found it, or had he barely referred to it, the world would have been sensible of the obligation. The only excuse that can be alledged for that incommunicative disposition which the whole of this letter betrays, is, that the author of it subsisted for many years by teaching the precepts of his art to young students, and it was not his interest to divulge them. How far the composition abovementioned, which is not yet two hundred years old, is an evidence of the practice of the ancient Greeks, will not here be enquired into; but it may gratify the curiosity of the reader to be told that the author of it was Costanza Porta, a Franciscan monk, and chapel-master in the church of St. Mark at Ancona, and that it is published at the end of a book printed at Venice in 1600, entitled, *L' Artusi Overo delle Imperfettioni della moderna Musica*, written by Giovanni Maria Artusi, an ecclesiastic of Bologna, of whom a particular account will hereafter be given. As to the composition, it is for four voices, and is as follows.

\* Chap. iv. ver. 9.

Vo - bis datum est nofce Mifte - -

Vo - bis da-tum est nof-ce Mif-te - - ri - um no - - -

Vo - - bis da-tum est

Vo - - bis datum est nofce Mifte-ri-um no-fce Mifte-ri-

-rium no-fce Mifteri - -um Vo - - bis datum est no -

-fce Mifteri - -um Vo - bis datum est no-fce Mif -

nofce Mifte - - ri - um Vo - - bis datum est nofce Mif-

-um Vo - bis datum est no-fce Mif-te - - ri -



Ite Misericordiam Regni Dei Ceteris autem in Parabolis  
 - te - ri - um Re - ni De - - - i Ceteris autem in Pa - ra - bo -  
 - te - ri - um Regni De - - - - i Cef -  
 um Regni Dei Cef -

Ut vi - den - tes non vi - de - ant,  
 - lis Ut vi - den - tes non vi - de - ant,  
 - teris autem in Para - bolis Ut vi - den - tes non vi - - - - de -  
 - teris autem in Para - bo - lis Ut vi - den - tes non vi - - - - de -

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Et audi - en - tes et audi - en - - - tes non in -  
 Et audi - en - tes et audi - en - - tes non in - telligunt non  
 - ant Et audi - en - tes non in - tel - li - gant non in -  
 - ant Et audi - en - tes non in - tel - li - gant non in -

tel - - - li - gant Ut vi - den - tes non  
 in - - tel li - - - gant Ut vi - den - tes non  
 - tel - - li - gant Ut vi - den - - - tes ut vi - den -  
 - tel - - - li - gant Ut vi - den - tes non vi - de - ant ut vi - den

vi-de-ant, et au-di-en-tes et audi-en-tes non vi-de-ant, et au-di-en-tes non in-tel-

-tes non in-tel-li-gant.  
non in-tel-le-gant non in-tel-li-gant.  
-li-gant non in-tel-li-gant.

O 2

Artusi observes upon this composition, which, the better to shew the contrivance of it, is here given in score, that it is a motet for four voices, and that it may be sung two ways, that is to say, first, as the cliffs direct that are placed nearest to the notes, and afterwards turning the top of the book downwards, from the right to the left; taking the extreme cliff for a guide in naming the notes; the consequence whereof will be, that the base will become the soprano, the tenor the contralto, the contralto the tenor, and the soprano the base. Besides this he says that the second time of singing it, *b* must be assumed for *æ*, and in other instances *FA* for *MI*. He concludes with a remark upon the words of this motet, that they indicate that it is not given to every one to understand compositions of this kind.

Upon the example above adduced the remark is obvious, that it falls short of proving the use of both an ascending and descending scale by the Greek harmonicians. In a word, it is evidence of nothing more than the antiquity of a kind of composition, of which it is probable Costanza Porta might be the inventor, namely that, where the parts are so contrived as to be sung as well backwards as forwards. In this he has been followed by Pedro Cerone, and other Spanish musicians, and by our own countryman Elway Bevin and others, who seem to have thought that the merit of a musical composition consisted more in the intricacy of its construction than in its aptitude to produce the genuine and natural effects of fine harmony and melody on the mind of an unprejudiced hearer.

From the foregoing representations of the genera, the reasons for the early preference of the diatonic to the chromatic and enarmonic are clearly deducible; but notwithstanding these and the consequent rejection of the latter two by Guido and all his followers, the ingenuity of a few speculative musicians has betrayed them into an opinion that they are yet actually existing, and that with the addition of a few intervals, occasionally to be interposed among those that constitute the diapason, both the chromatic and enarmonic genera may be brought into practice.

The first of these bold assertors was Don Nicola Vicentino, an author of whom farther mention will hereafter be made. In a work entitled *L'Antica Musica ridotta alla Moderna Prattica*, published by him at Rome in 1555, we find not only the tetrachord divided in such a manner as seemingly to answer the generical division of the ancients, but compositions actually exhibited, not only in one and the

the other of the genera, but in each of them severally, and in all of them conjunctly, and this with such a degree of persuasion on his part that he had accurately defined them, as seems to set all doubt at defiance.

It is true that little less than this was to be expected from an author who professes in the very title of his book to reduce the ancient music to modern practice; but that he has succeeded in his attempt so few are disposed to believe, that in the general estimation of the most skilful professors of the science Vicentino's book has not its fellow for musical absurdity \*. And of the justice of this censure few can entertain a doubt, that shall peruse the following account of himself and of his studies.

To shew the world that I have not grudged the labour of many years, as well for my own improvement, as to be useful to others, in the present work I shall publish all the three genera with their several species and commixtures, and other inventions never given to the world by any body; and shall shew in how many ways it is possible to compose variously in the sharp and flat modes: though at present there are some professors of music that blame me for the trouble I take in this kind of learning, not considering the pains that many celebrated philosophers have taken to explain the doctrine of harmonics; nevertheless I shall not desist from my endeavours to reduce to practice the ancient genera with their several species by the means of voices and instruments; and if I shall fail in the attempt, I shall at least give such hints to men of genius as may tend to the improvement of music. We see by a comparison of the music that we use at present, with that in practice a hundred, nay ten years ago, that the science is much improved; and I doubt not but that these improvements of mine will appear strange in comparison with those of our posterity, and the reason is, that improvements are continually making of things already invented, but the invention and beginning of every thing is difficult; therefore I rejoice that God has so far favoured me, that in these days for his honour and glory I am able to shew my honourable face among the

\* This is remarked by Gio Battista Doni, in his treatise entitled *De Præstantia Musicae veteris*. Florent. 1647, and numberless other writers. Kircher however seems to entertain a different opinion of it; his sentiments are given at length in a subsequent page of this chapter.

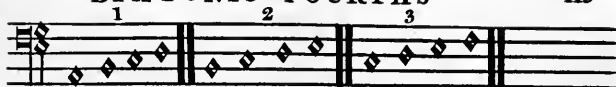
' professors of music. It is true that I have studied hard for many  
 ' years; and as the divine goodness was pleased to enlighten me, I  
 ' began this work in the fortieth year of my age, in the year 1550,  
 ' the jubilee year, in the happy reign of pope Julius the third; since  
 ' that I have gone on, and by continual study have endeavoured to  
 ' enlarge it, and to compose according to the precepts therein con-  
 ' tained, as likewise to teach the same to many others, who have  
 ' made some progress therein, and particularly in this illustrious  
 ' town of Ferrara, where I dwell at present, to the inhabitants  
 ' whereof I have explained both the theory and practice of the art;  
 ' and many lords and gentlemen who have heard the sweetness of this  
 ' harmony have been charmed therewith, and have taken pains to  
 ' learn the same with exquisite diligence, because it really compre-  
 ' hends what the ancient writers shew. As to the diatonic genus, it  
 ' was in use in the music sung at public festivals, and in common  
 ' places, but the chromatic and enarmonic were reserved for the pri-  
 ' vate diversion of lords and princes, who had more refined ears than the  
 ' vulgar, and were used in celebrating the praises of great persons and  
 ' heroes. And, not to detract from the virtues of the ancient princes,  
 ' the most excellent prince of Ferrara, Alfonso d' Este, after having  
 ' very much countenanced me, has with great favour and facility  
 ' learned the same, and thereby shewn to the world the image of a  
 ' perfect prince; and he, as he has a most worthy name of eternal  
 ' glory in arms, so has he acquired immortal honours by his skill in  
 ' the sciences\*.'

In the prosecution of this his notable design of accommodating the  
 ancient music to modern practice, Vicentino has exhibited in the cha-  
 racters of modern notation a diatonic, a chromatic, and an enarmonic  
 fourth and fifth in all their various forms. The following is an ex-  
 ample of their several varieties, taken from the third book of his  
 work above-cited, pages 59 a, 59 b, 62 b, et seq.

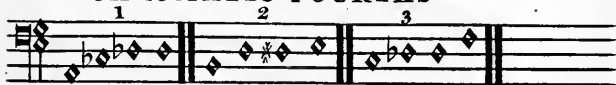
\* Libro primo, cap. iv.

DIATONIC FOURTHS

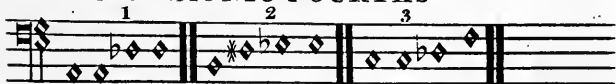
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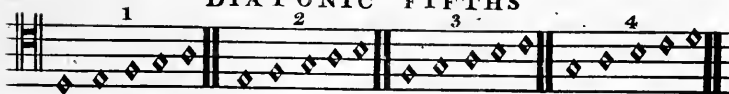
CHROMATIC FOURTHS



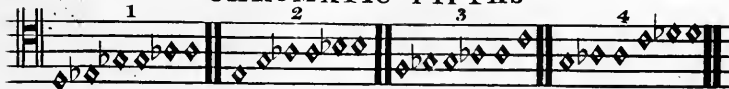
ENARMONIC FOURTHS



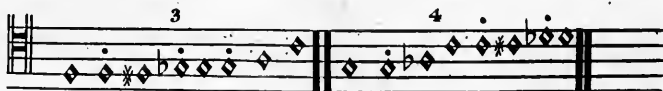
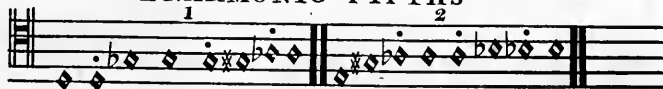
DIATONIC FIFTHS



CHROMATIC FIFTHS



ENARMONIC FIFTHS



Having thus adjusted the several intervals of a fourth and fifth in each of the three genera, the author proceeds to exhibit certain compositions of his own in each of them; and first we have a motet composed by himself, and sung, as he says, in his church on the day of the Resurrection, as a specimen of the true chromatic.

Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-

-ia hæc di-es quam fecit do-mi-nus hæc di-es quam fe-cit

do-mi-nus quam fe-cit do-mi - - - nus Ex-ul-te-mus et le-te-

mur ex ul-temus et le-te-mur in ea et le-te-mur in ea.

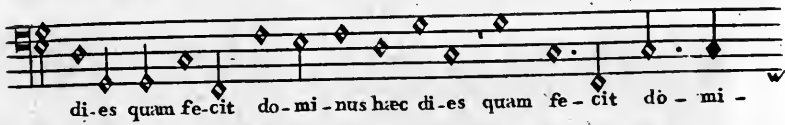
Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu-ia Al-le-lu- -ia hæc

di-es quam fe-cit do-mi-nus hæc di-es hæc di-es quam fe-cit

do-mi-nus quam fe-cit do-mi - - - nus ex-ul-te-mus et le-te-mur

ex-ul-te-mus et le-te-mur in e - a et le-te-mur in e - a





As an example of the enarmonic, he gives the following, which is the beginning of a madrigal in four parts.

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Soav' e dol c'ardore ij che fra piante fospiri ij

Soav' e dol c'ardore ij che fra piante fospiri ij

Soav' e dol c'ardore ij che fra piante fospiri ij

So-av' e dol c'ardo-re ij che fra piante fos-pi-ri pian

\* Vicentino has not been particular in explaining the use of the points over many of the notes in this and the following examples of the enarmonic; but from the practice of Salinas and other writers it is presumed that the point is intended to denote the enarmonic diesis as defined in the foregoing representations of that genus.

And as a proof of the practicability of uniting all the genera in one composition, he exhibits the following madrigal for four voices, which he says may be sung in five ways, that is to say, as diatonic, as chromatic, as chromatic and enarmonic, as diatonic and chromatic, and lastly as diatonic, chromatic and enarmonic.

Dolce mio ben ij fon questi dolci lumi dolci lu-mi dolce min  
 ben fon questi dolci lumi fon questi dolci lumi che tanto dolce-  
 men-te che tanto dol-ce-men-te mi con-fu-mi che tanto dol cemen-  
 -te fanno che dolcemen-te mi con-fu-mi mi confu-mi

Dolce mio ben ij fon questi dolci lu-mi dolce mio ben ij  
 fon questi dolci lu-mi dol-ce lumi che tanto che tanto dol-ce-  
 -men-te fanno che dolce-mente che dolce-mente mi consumi mi con--  
 fu-mi fanno che dolcemen te mi con-fu-mi mi con- fu- mi

Dolce mio ben son questi dolci lu-mi dolce mio ben son quef-  
 -ti dol-ci lu-mi son questi dolci lumi dolci lu-mi che tanto  
 dol-ce-mente che tan-to dolcemente mi con-fu-mi che tan-to  
 dol-ce-mente mi con-fu-mi dol-ce-mente mi con-fu-mi

Dolce mio ben ij fon questi dolci lu-mi dol-ci  
 mio ben ij fon questi dolci lu-mi che tanto dol-ce- men-te  
 fanno che mi con-fu-mi che dol-ce-mente  
 mi con-fu-mi mi con-fu-mi Hay-me

Kircher seems to think that Vicentino has succeeded in this his attempt to restore the ancient genera; and if he has, either the discovery was of no worth, or the moderns have a great deal to answer for in their not adopting it. The following are the sentiments of Kircher touching Vicentino and his endeavours to reduce the ancient music to modern practice. 'The first that I know of who invented the method of composing music in the three genera, according to the manner of the ancients, was Nicolaus Vicentinus\*; who when he perceived that the division of the tetrachords according to the three genera by Boetius could not suit a polyphonous melothesia and our ratio of composition, devised another method, which he treats of at large in an entire book. There were however not wanting some, who being strenuous admirers and defenders of ancient music, cavilled at him wrongfully and undeservedly for having changed the genera that had been wisely instituted by the ancients, and put in their stead I know not what spurious genera; but those who shall examine more closely into the affair will be obliged to confess that Vicentinus had very good reason for what he did, and that no other chromatic enarmonic polyphonous melothesia could be made than as he taught †.'

This declaration of Kircher is not easily to be reconciled with those positive assertions of his in the *Musurgia*, that the ancients were strangers to polyphonous music; and the examples above given are all of that kind.

But waving this consideration, whoever will be at the pains of examining these several compositions, will find it a matter of great difficulty to reconcile them with the accounts that are given of the manner of dividing the tetrachord in the several genera; he will not be able easily to discover the chromatic interval of three incomposite semitones; much less will he be able to make out the enarmonic diesis; and much greater will be his difficulty to persuade himself, or any one

\* Kircher is mistaken in his assertion that Vicentino was the first who attempted the revival of the ancient genera; for it seems that Giovanni Spataro of Bologna, in the year 1512, made an attempt of that kind, but without success. *Storia della Musica di Giambattista Martini*, tom. I. pag. 126, in not.

But notwithstanding the discouragements the two writers abovementioned met with, Domenico Mazzochi of Rome, about the year 1600, attempted a composition in all the three genera, entitled *Planctus Matris Euryalis*, which is printed in the *Musurgia*, tom. I. pag. 660.

† *Musurg.* tom. I. pag. 637.

else, that either of the above compositions can stand the test of an ear capable of distinguishing between harmony and discord.

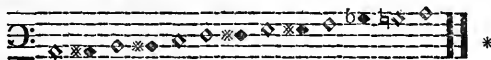
But all wonder at this attempt of Vicentino must cease, when it is known that he contended with some of the greatest musicians, his contemporaries, that the modern or Guidonian system was not simply of the diatonic kind, but compounded of all the three genera. He has himself, in the forty-third chapter of his fourth book, given a most curious relation of a dispute between him and a reverend father on this subject, which produced a wager, the decision whereof was referred to two very skilful professors, who gave judgment against him. An account of this dispute is contained in a subsequent chapter of the present work.

## C H A P. IX.

**I**T does not any where appear that the music which gave rise to the controversy between Vicentino and his opponents, was any other than what is in use at this day; which that it is the true diatonic of the ancients is more than probable; though, whether it be the diatonicum Pythagoricum, or the diatonicum intensum of Aristoxenus, of Didymus, or of Ptolemy, has been thought a matter of some difficulty to ascertain, but is of little consequence in practice.

But we are not to understand by this that the music now in use is so purely and simply diatonic, as in no degree to participate of either the enarmonic or chromatic genus, for there is in the modern scale such a commixture of tones and semitones as may serve to warrant a supposition that it partakes in some measure of the ancient chromatic; and that it does so, several eminent writers have asserted, and seems to be the general opinion. Monsieur Broffard says, that after the division of the tone between the Mese and Paramese of the ancients, which answer to our A and  $\square$ , into two semitones, it was thought that the other tones might be divided in like manner; and that therefore the moderns have introduced the chromatic chords of the ancient scale, and thereby divided the tones major in each tetrachord into two semitones: this, he adds, was effected by raising the lowest chord a semitone by

means of this character ✱, which was placed immediately before the note *so* to be raised, or on its place immediately after the *cliff*. Again he says, that it having been found that the tones minor terminating the tetrachords upwards were no less capable of such division than the tones major, they added the chromatic chords to the system, and in like manner divided the tones minor, so that the octave then became composed of thirteen sounds and twelve intervals, eight of which sounds are diatonic or natural, distinguished in the following scheme by white notes thus ◊, and five chromatic by black ones thus ◆, with the sharp sign, which Broffard calls a double diesis prefixed to each of the notes *so* elevated.



This, though a plausible, is a mistaken account of the matter ; for first it is to be observed, this introduction of the semitones into the system, was not for the purpose of a progression of sounds different from that in the diatonic genus : on the contrary, nothing more was intended by it than to render it subservient to the diatonic progression ; or, in other words, to institute a progression in the diatonic series from any given chord in the diapason, and we see the design of this improvement in its effects.

For, to assume the language of the moderns, if we take the key of *E*, in which no fewer than four of the sharp signatures are necessary, it is evident to demonstration that in the system of the diapason the tones and semitones will arise precisely in the same order as they do in the key of *C*, where not one of those signatures are necessary, and the same, *mutatis mutandis*, may be said of all the other keys with the greater third ; and the like will be found in those with the lesser third, comparing them with that of *A*, the prototype of them all †.

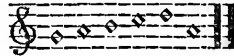
From hence it follows, that the use of the above signatures has no effect either in the intension or remission of the intervals ; but the same remain, notwithstanding the application of them the same as in the diatonic genus.

\* Dictionnaire de Musique, Article SYSTEMA.

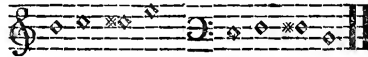
† See this demonstrated in the next book.

It is true, that since the invention of polyphonous or symphoniack music, a species of harmony of which the ancients seem to have been totally ignorant; among the various combinations that may occasionally occur in a variety of parts, some may arise that shall nearly answer to the chromatic intervals, and it shall sometimes happen that a given note shall have for its accompaniment those sounds that constitute a chromatic tetrachord; and of this opinion are some of the most skilful modern organists, who are inclined to think that they sometimes use the chromatic intervals, without knowing that they do so\*. But the question in debate can only be determined by a comparison of the melody of the moderns with that of the ancients; and in that of the moderns we meet with no such progression as that which is characterised by three incomposite semitones and two semitones, which is the least precise division of the tetrachord that any of the antients have given us.

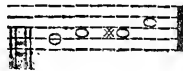
Our countryman Morley gives his opinion of the matter in the following words: ‘ The music which we now use is neither just diatonic, nor right chromatic. Diatonicum is that which is now in use, and riseth throughout the scale by a whole note, a whole note, and a lesser or half note. A whole note is that which the Latins call Integer Tonus, and is that distance which is betwixt any two notes, except *mi* and *fa*; for betwixt *mi* and *fa* is not a full halfe note, but is lesse than halfe a note by a comma, and therefore called the lesser halfe note, in this manner.



‘ Chromaticum is that which riseth by semitonium minus, or the less halfe note, the greater halfe note, and three halfe notes thus.



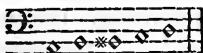
\* It is also said, that in passages of notes in succession the chromatic intervals sometimes occur. The following not uncommon passage is said to be an example of the hemiolian or sesquialteral chromatic.



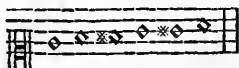
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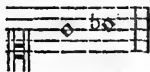
‘ The greater halfe note betwixt *fa* and *mi* in  $\flat$  *fa*  $\square$  *mi*. Enarmonicum is that which riseth by diesis, diesis (diesis is the halfe of the lesse halfe note) and ditonus; but in our musicke I can give no example of it, because we have no halfe of a lesse semitonium; but those who would shew it set down this example



‘ of enarmonicum, and marke the diesis thus  $\times$  as it were the halfe of the apotome or greater halfe note, which is marked thus  $\sharp$ . This sign of the more halfe note we now-a-daies confound with our  $\flat$  square, or signe of *mi* in  $\square$  *mi*, and with good reason; for when *mi* is sung in  $\flat$  *fa*  $\square$  *mi*, it is in that habitude to *a la mi re*, as the double diesis maketh *F fa ut* sharpe to *E la mi*, for in both places the distance is a whole note; but of this enough: and by this which is already set downe, it may evidentlie appeare that this kind of musick which is usual now-a-daies, is not fully and in every respect the ancient diatonicum; for if you begin any four notes, singing *ut, re, mi, fa*, you shall not find either a flat in *E la mi*, or a sharp in *F fa ut*; so that it must needs follow that it is neither just diatonicum nor right chromaticum. Likewise by that which is said it appeareth this point, which our organists use



‘ is not right chromatica, but a bastard point, patched up of halfe chromaticke and halfe diatonick. Lastlie, it appeareth by that which is said, that those virginals which our unlearned musytians call cromatica (and some also grammatica) be not right chromatica, but half enharmonica; and that al the chromatica may be expressed upon our common virginals except this



‘ for if you would thinke that the sharpe in *g sol re ut* would serve that turne by experiment, you shall find that it is more than halfe a quarter of a note too low\*.’

From hence we may conclude in general, that the system as it stands at present, is not adapted to the chromatic genus; and were

\* Plaine and easie Introduction to Practicall Musicke. Annotations on Part I.

there a possibility, which no one can admit, of rendering the chromatic tolerable to a modern ear, the revival of it would require what has often been attempted in vain, a new and a better temperament of the system than the present.

From the several hypotheses above stated, and the different methods of dividing the tetrachord in each genus, it clearly appears that among the most ancient of the Greek harmonicians there was a great diversity of opinions with respect to the constitution of the genera. And it also appears that both the chromatic and enarmonic gave way to the diatonic, as being the most natural, and best adapted to the general sense of harmony; indeed it is very difficult to account for the invention and practice of the former two, or to persuade ourselves that they could ever be rendered grateful to a judicious ear. And after all that has been said of the enarmonic and chromatic, it is highly probable that they were subservient to oratory, or in short that they were modes of speaking and not of singing, the intervals in which they consist not being in any of the ratios which are recognized by the ear as consonant.

Another subject in harmonics, no less involved in obscurity, is the doctrine of the Modes, Moods, or Tones, for so they are indiscriminately termed by such as have professed to treat of them. The appellation of Moods has indeed been given to the various kinds of metrical combination, used as well in music as poetry, and were the word Tone less equivocal than Mode, it might with propriety be substituted in the place of the former. Euclid has given no fewer than four senses in which the word Tone is accepted\*; whereas that of Mode or Mood is capable of but two; and when it is said that these appellations refer to subjects so very different from each other as sound and duration, that is to say tone and time, there can be little doubt which of the two is to be preferred.

To consider the term Mode in that which is conceived to be its most eligible sense, it signifies a certain series or progression of sounds. Seven in number at least are necessary to determine the nature of the progression; and the distinction of one mode from another arises from that chord in the system from whence it is made to commence; in this respect the term Mode is strictly synonymous with the word Key, which at this day is so well understood as to need no explanation.

As.

\* Introd. Harmon. ex vers. Meibom. pag. 19, et vide Meib. in loc. citat.

As to the number of the modes, there has subsisted a great variety of opinions, some reckoning thirteen, others fifteen, others twelve, and others but seven; and, to speak with precision, it is as illimitable as the number of sounds. The sounds that compose any given series, with respect to the degree of acumen or gravity assigned to each, are capable of an innumerable variety; for as a point or a line may be removed to places more or less distant from each other ad infinitum; in like manner a series of sounds may be infinitely varied, as well with respect to the degree of acumen or gravity, as the position of each in the system\*; we are therefore not to wonder at the diversity of opinions in this respect, or that while some limit the modes to seven, others contend for more than double that number.

At what time the modes were first invented does no where clearly appear. Bontempi professes himself at a loss to fix it†; but Aristides Quintilianus intimates that they were known so early as the time of Pythagoras‡; and considering the improvements he made, and that it was he who perfected the great or immutable system, it might naturally be supposed that he was the inventor of them; but the contrary of this is to be inferred from a passage in Ptolemy, who says that the ancients supposed only three modes, the Dorian, the Phrygian, and the Lydian §, denominations that do but ill agree with the supposition that any of them were invented by Pythagoras, who it is well known was a Samian. But farther, Aristides Quintilianus, in the passage above referred to, has given the characteristic letters of all the fifteen modes according to Pythagoras; so that, admitting him to have been the inventor of the additional twelve, the institution of the three primitive modes is referred backwards to a period anterior to that in which the system is said to have been perfected.

Euclid relates that Aristoxenus fixed the number of the modes at thirteen, that is say, 1. the Hypermixolydian or Hyperphrygian. 2. The acuter Mixolydian, called also the Hyperiaastian. 3. The graver Mixolydian, called also the Hyperdorian. 4. The acuter Lydian. 5. The graver Lydian, called also the Æolian. 6. The acuter Phrygian. 7. The graver Phrygian, called also the Iastian. 8. The Dorian. 9. The acuter Hypolydian. 10. The graver Hypolydian, called also the Hypoæolian. 11. The acuter Hypophrygian. 12. The graver Hy-

\* Wallis. Append. de Vet. Harm. pag. 312. † Histor. Mus. pag. 136.

‡ Lib. I. pag. 28, ex vers. Meibom. § Harmonicor. lib. II. cap. vi. x. ex vers. Wallis.

pophrygian, called also the Hypoastian. 13. The Hypodorian\*. The most grave of these was the Hypodorian; the rest followed in a succession towards the acute, exceeding each other respectively by a hemitone; and between the two extreme modes was the interval of a diapason †.

The better opinion however seems to be, that there are in nature but seven, and as touching the diversity between them, it is thus accounted for. The Proslambanomenos of the hypodorian, the gravest of all the modes, was, in the judgment of the ancients, the most grave sound that the human voice could utter, or that the hearing could distinctly form a judgment of; they made the Proslambanomenos of the hypoastian or graver hypophrygian to be acuter by a hemitone than that of the hypodorian; and consequently the Hypate of the one more acute by a hemitone than the Hypate of the other, and so on for the rest; so that the Proslambanomenos of the hypoastian was in the middle, or a mean between the Proslambanomenos of the hypodorian and its Hypate hypaton. The Proslambanomenos of the acuter hypophrygian was still more acute by a hemitone, and consequently more acute by a whole tone than the hypodorian, and therefore it coincided with the Hypate hypaton of that mode, and is thus represented by Ptolemy, lib. II. cap. xi ‡.

A C U T E	
Tone	Hypermixolydian
Limma	Mixolydian
Tone	Lydian
Tone	Phrygian
Limma	Dorian
Tone	Hypolydian
Tone	Hypophrygian
Tone	Hypodorian

G R A V E

\* Euclid. Introd. Harm. pag. xx. † Wallis Append. de Vet. Harm. pag. 312.

‡ Ibid. pag. 313.

Those who contended for fifteen modes, among whom Alypius is to be reckoned, to the thirteen above enumerated, added two others in the acute, which they termed the Hyperlydian and Hyperæolian\*.

But against this practice of increasing the modes by hemitones, Ptolemy argues most strongly in the eleventh chapter, and also in the four preceding chapters of the second book of his Harmonics: and indeed were it to prevail, the modes might be multiplied without end, and to no purpose. Notwithstanding this, Martianus Capella contends for fifteen and Glareanus for twelve modes; but it is to be observed, that both these latter writers are, in respect of the Greek harmonicians, considered as mere moderns; and besides these there are certain other objections to their testimony, which will be mentioned in their proper place.

As to the two additional modes mentioned by Alypius, they seem to have been added to the former thirteen, more with a view to regularity in the names and positions of the modes, than to any particular use; and perhaps there is no assignable period of time during which it may with truth be said, that more than thirteen were admitted into practice.

Ptolemy however rejects as spurious six of the thirteen allowed by the Aristoxeneans, and this in consequence of the position he had advanced, that it was not lawful to encrease the modes by a hemitone. It is by no means necessary to give his reasons at large for limiting the number to seven, as his doctrine contains in it a demonstration that the encrease of them beyond that number was rather a corruption than an improvement of the harmonic science. As to the three primitive modes, the Dorian, the Phrygian, and the Lydian, each of them was situated at the distance of a sesquioctave tone from that next to it †, and therefore the two extremes were distant from each other two such tones; or, in other words, the Phrygian mode was more acute than the Dorian by one tone, and the Lydian more acute than the Phrygian by one tone; consequently the Lydian was more acute than the Dorian by two tones.

To these three modes Ptolemy added four others, making together seven, which, as he demonstrates, are all that nature can admit of. As to the Hypermixolydian, mentioned by him in the tenth chapter of his second book, it is evidently a repetition of the hypodorian.

\* Wallis. Append. pag. 312.

† *Ibid.*

MIXOLYDIAN  
 LYDIAN  
 PHRYGIAN  
 DORIAN  
 HYPOLYDIAN  
 HYPOPHRYGIAN  
 HYPODORIAN\*

The above is the order in which they are given by Euclid, Gaudentius, Bacchius, and Ptolemy himself, though the latter, in the eleventh chapter of his second book, has varied it by placing the Dorian first, and in consequence thereof transposing all the rest; but this was for a reason which a closer view of the subject will make it unnecessary to explain.

Having proceeded thus far in the endeavour to distinguish between the legitimate and the spurious modes, it may now be proper to enter upon a more particular investigation of their natures, and see if it be not possible, notwithstanding that great diversity of opinion that has prevailed in the world, to draw from those valuable sources of intelligence the ancient harmonic writers, such a doctrine as may afford some degree of satisfaction to a modern enquirer. It must be confessed that this has been attempted by several writers of distinguished abilities, and that the success of their labours has not answered the expectations of the world. The Italians, particularly Franchinus, or as he is also called, Gaffurius, Zaccone, Zarlino, Galilei, and others, have been at infinite pains to explain the modes of the ancients, but to little purpose. Kircher has also undertaken to exhibit them; but notwithstanding his great erudition and a seeming certainty in all he advances, his testimony is greatly to be suspected; and, if we may believe Meibomius, whenever he professes to explain the doctrines of the ancients, he is scarcely intitled to any degree of credit. The reason why these have failed in their attempts is obvious, for it was not till after most of them wrote, that any accurate edition of the Greek harmonicians was given to the world: so lately as the time when Morley published his Introduction, that is to say in the reign of queen Elizabeth, it was doubted whether the writings of some of the most valuable of them were extant even in manuscript; and it seemed to be the opinion that they had perished in that general wreck of literature

\* Called also the Locrenian. Euclid Introd. Harm. pag. 16.

terature which has left us just enough to guess at the greatness of our loss.

To the several writers above-mentioned we may add Glareanus of Basil, a contemporary and intimate friend of Erasmus; but he confesses that he had never seen the Harmonics of Ptolemy, nor indeed the writings of any of the Greek Harmonicians, and that for what he knew of them he was indebted to Boetius and Franchinus. From the perusal of these authors he entertained an opinion that the number of the modes was neither more nor less than twelve; and, confounding the ancient with the modern, or, as they are denominated, the ecclesiastical modes, which, as originally instituted by St. Ambrose, were only four in number, but were afterwards by St. Gregory, about the year 600, increased to eight, he adopted the distinction of authentic and plagal modes, and left the subject more perplexed than he found it.

To say the truth, very few of the modern writers in the account they give of the modes are to be depended on; and among the ancients, so great is the diversity of opinions, as well with respect to the nature as the number of them, that it requires a great deal of attention to understand the designation of each, and to discriminate between the genuine and those that are spurious. In general it is to be observed that the modes answer to the species of diapason, which in nature are seven and no more, each terminating or having its final chord in a regular succession above that of the mode next preceding: for instance, the Dorian, which had its situation in the middle of the lyre or system, had for its final note hypate meson or E; the Hypolydian, the next in situation towards the grave, had for its final chord parypate meson or F; and the Hypophrygian, the next in situation towards the grave to the Hypolydian, had for its final chord lychanos hypaton or G; so that the differences between the modes in succession, with respect to their degrees of gravity, corresponded with the order of the tones and semitones in the diatonic series. But it seems that those of the ancient harmonicians, who contended for a greater number of modes than seven, effected an increase of them by making the final chord of each in succession, a semitone more acute than that of the next preceding mode: and against this practice of augmenting the modes by semitones Ptolemy has expressly written in the eleventh chapter of the second book of his Harmonics, and that with such  
force

force of reason and argument, as cannot fail to convince every one that reads and understands him, to which end nothing can so much conduce as the attentive perusal of that learned Appendix to his Harmonics of Dr. Wallis, so often cited in the course of this work.

Besides this Appendix, the world is happy in the possession of a discourse entitled, An Explanation of the Modes or Tones in the ancient Græcian Music, by Sir Francis Haskins Eyles Stiles, Bart. F. R. S. and published in the Philosophical Transactions for the year 1760; and by the assistance of these two valuable tracts it is hoped that this abstruse part of musical science may be rendered to a great degree intelligible.

## C H A P. X.

**T**O conceive aright of the nature of the modes, it must be understood, that as there are in nature three different kinds of diatessaron, and also four different kinds of diapente; and as the diapaſon is composed of these two systems, it follows that there are in nature seven species of diapaſon\*. The difference among these several systems arises altogether from the different position of the semitone in each species. To explain this difference in the language of the ancient writers would be very difficult, as the terms used by them are not so well calculated to express the place of the semitone as those syllables invented by the moderns for that sole purpose, the practice whereof is termed solmisation. We must therefore so far transgress against chronological order, as, in conformity to the practice of Dr. Wallis, to assume these syllables for the purpose of distinguishing the several species of diatessaron, diapente, and diapaſon, reserving a particular account of their invention and use to its proper place.

To begin with the diatessaron; it contains four chords and three intervals: its species are also three: the first is said to be that which has LA, the characteristical ratio or sound of the diatessaron, as MI is of the diapente and diapaſon, in the first or more acute place; the

\* Vide Ptolem. Harm. lib. II. cap. ix. ex vers. Wallis. Wallis. Append. de Vet. Harm. pag. 310. Euclid. Introd. Harm. pag. 15. ex vers. Meibom. Kirch. Musurg. tom. I. cap. xv. xvi.



second which hath it in the second, and the third which hath it in the third\*.

Euclid defines these several species by the appellatives that denote their situation on the lyre, viz. Βαρυπικνοί Barypyknoi, Μεσοπικνοί Mesopyknoi, and Οξύπικνοί Oxypyknoi †, meaning by the first the series from Hypaton hypaton to Hypate mefon, which we sing in ascending from the grave to the acute by the syllables FA, SOL, LA; by the second, the series from Parhypate hypaton to Parhypate mefon, SOL LA FA; and by the third, that from Lychanos hypaton to Lychanos mefon, FA, SOL, LA ‡. As to the other series here under exhibited from Hypate mefon to Mese, it is inserted to shew that the diatessaron is capable of but three mutations; for this latter will be found to be precisely the same as, or in truth but a bare repetition of, the first ||, as is evident in the following scales, in which the extreme or grave found from which we ascend, is distinguished by a difference of character; the syllables being ever intended to express the intervals or ratios, and not the chords themselves.

SPECIES of the DIATESSARON III.

Mese	a la		la		la
	G sol		sol		sol
	F fa		fa		fa
Hypate mefon	E la	la	la	la	LA
	D sol	sol	sol	SOL	I
	C fa	fa	FA		3
Hypate hypaton	B MI	MI	z		

I

The above is the tetrachord hypaton of the great system; but as a diapente contains five chords and four intervals, to explain the nature of the several species included in that system a greater series is required; it is therefore necessary for this purpose to make use of those two tetrachords between which the diazeuctic tone may be properly interposed; and these can be no other than the tetrachord Mefon, and the tetrachord Diezeugmenon. It has been just said that the characteristic syllable of the diapente is MI, and this will be found to occur in the first, second, third, and fourth places of the following example

\* Wall. Append. de Vet. Harm. pag. 310. † Introd. Harm. pag. 15, ex vers. Meib.  
‡ Wallis Append. de Vet. Harm. pag. 310. || Ibid.

of the possible variations in that system, the consequence whereof is, that the first species is to be sung FA, SOL, LA, MI, the second SOL, LA, MI, FA, the third LA, MI, FA, SOL, and the fourth MI, FA, SOL, LA, as in the following scales.

SPECIES of the DIAPENTE IV.

Nete diezeugmenon	e	la				la
	d	sol		sol	sol	
	c	fa	fa	fa	fa	
Paramese	b	mi	mi	mi	mi	mi
Mese	a	la	la	la	la	LA
	G	sol	sol	sol	SOL	4
	F	fa	fa	FA	3	
Hypate mezon	E	LA	LA	2		

I

These are all the mutations of which the diapente is capable; that an additional series, namely that from  $\square$  to f, was not inserted as a proof of it, agreeable to what was done in respect to the next preceding diagram, was because between  $\square$  and f the diazeuctic tone marked by the syllable MI does no where occur: or, in other words, that series is a semidiapente or false fifth, containing only three tones, which is less by a semitone, or, to speak with precision, a limma, than a true diapente. As for example:

$\square$  Semitone c Tone d Tone e Semitone f

and were another series to be added, it must begin from MI or  $\square$ ; now the diazeuctic tone is the interval between a and  $\square$ , and consequently is out of the pentachord\*.

To distinguish the seven species of diapason, two conjunct diapasons are required; for example, from Proslambanomenos to Nete hyperboleon, to be sung by the syllables LA, MI, FA, SOL, LA, MI, FA, SOL, LA, FA, SOL, LA †, in which series will be found all the seven species of the diapason; and that there are no more will appear by a repetition of the experiment made in the case of the diatessaron; for were we to proceed farther, and after the seventh begin from a or LA, the succession of syllables would be in precisely the same order as in the first series, which is a demonstration that those two species are the same ‡.

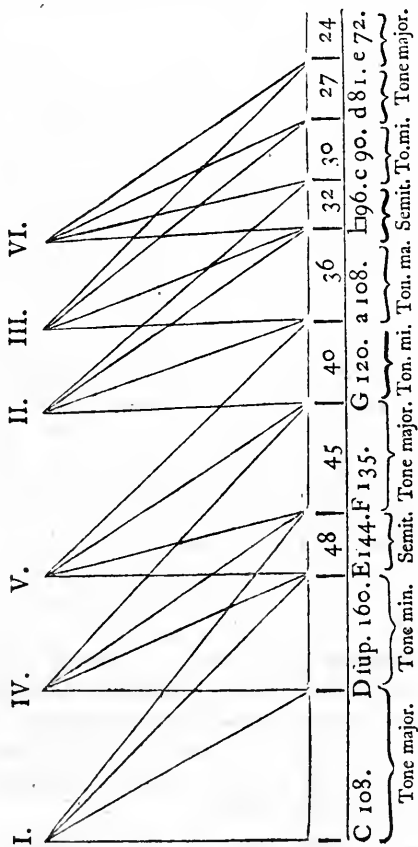
\* Wallis Append. de Vet. Harm. pag. 311. † Ibid. ‡ Ibid.





According to which, each of the diateffarons is made to consist of a hemitone, tone, and tone; yet out of the above six combinations, we see that these intervals do not occur twice in the same order.

Besides these, Salinas has shewn the following six other species of diateffaron; in his opinion not less true than those above exhibited.



It seems however that he has considered that as a diateffaron, which in truth is only nominally so, namely, the Tritonus between F and

F and  $\square +$ ; the situation whereof, in respect to the others in the above diagram, seems to have suggested to him a motive for inserting from Bede an account of a very curious method of divination, formerly practised, which is here, with some small variation, translated from Salinas.

‘ It is very credible that this disposition gave rise to that well known game, the design whereof is to divine when three men placed in order have distributed among themselves three lots of different magnitudes, which of those lots each person has received; which must be done after six manners, and those the same by which the diatessaron is divided, and its intervals placed in order as we have shewn, that is to say, each lot may be twice placed in each of the three situations; for the three men answer to the three places, the first to the grave, the second to the mean, and the third to the acute; and the three lots of different magnitudes to the three intervals also of different quantity; the greater to the greater tone, the middle to the lesser tone, and the least to the semitone. This method of divination is performed by the help of twenty-four little stones, of which the diviner himself gives one to the first, two to the second, and three to the third, with this injunction, that he who has received the greatest lot, do take up out of the remaining eighteen stones as many as were at first distributed to him; he who has the lot in the middle degree of magnitude, twice as many as he has; and he that has the least lot, four times as many as he also has. By this means the diviner will be able to know from the number of stones remaining, which of the things each person has; for if the distribution be made after the first manner, there will be one left; if after the second two, if after the third three, if after the fourth five, if after the fifth six; and, lastly, if after the sixth seven; for there can never four remain, for which a twofold reason may be assigned; the one from the disposal of the instituent, who from the truth of the thing, though perhaps the reason thereof was not known by him, was impelled to constitute the game in this manner.

“ Haud equidem sine mente reor, sine numine divûm.”

† Salinas De Musica, lib. IV. cap. iii.

The other taken from the constant and settled order of the harmonical ratio; but four cannot possibly remain, because the first and third persons having received an uneven number of stones, either of them must, if he have the greatest lot, take up an uneven number also; as by the injunction of the instituent, he was to take up as many stones as were at first distributed to him; and an uneven number being taken out of an even one, the remainder must necessarily be uneven; but as each of them may have the greatest lot twice, there must be four uneven remainders of stones out of the six changes: as to the second, he can have it only twice; because as he has an even number, and takes up a number equal thereto, there must an even number remain; for the others must also take up even numbers, as they are enjoined to take up twice, and four times as many as they had received; and the greatest lot may fall to the second person in two cases, for either the first may have the middling, and the third the smallest, and then the remainder will be two; or contrarywise, and then there will remain six; and as the greatest lot cannot come three times to the second, it is plain that the third even number, which is four, cannot by any means be left. But the other reason taken from the harmonical ratio, is much truer and stronger; for as it is shewn in the seven sounds of a diatessaron from C to c, that a diatessaron may be produced towards the acute from six of them, that is to say, the first, second, third, fifth, sixth, and seventh, the fourth being passed over because the diatessaron cannot be produced therefrom; so also in this play the number four is passed over as having no concern therein; but it does not happen so in the composition of instrumental harmony, for though, as is shewn in the last example above, the fourth sound from C makes a tritone, with its nominal fourth above it, it is not to be excluded from the series. Neither is the diatessaron from this fourth sound from C, viz. F, to be totally rejected; for though by reason of the tritone it cannot be arithmetically divided as the other six may, yet may it be divided harmonically. I should by no means have made mention of this game, being apprehensive that I may be thought to trifle on so serious an affair, but that I look upon it as an example very much suited to explain the subject we are treating of; and I did it the more willingly, because I found it particularly treated of by Bede, furnished

‘ named the Venerable, a most grave man, and deeply learned both  
 ‘ in theology and secular arts, from whence we may conjecture that  
 ‘ it has been invented above one thousand years \*.”

But, to return from this digression, notwithstanding the species  
 of diapason are manifestly seven, the modes seem originally to

\* The passage on which this assertion is grounded, has eluded a cursory search among the writings of Bede; nevertheless it may possibly be found in some one or other of those numerous little tracts on arithmetic, music, and other of the sciences, contained in his voluminous works, many whereof as yet exist only in manuscript. The description given by Salinas of this method of divination is in nearly these words.

Ab hac etiam dispositione credendum est, ortum habuisse lufum illum notiffimum, cujus propositum est, tribus hominibus ordine dispositis, tres res diversæ magnitudinis inter se distribuentibus, quam quis eorum acceperit, divinare. Quod sex modis fieri, necesse est: atque eisdem, quibus diatessaron dividitur, et eodem ordine dispositis, quo tria ipsius intervalla, tribus in locis bis singula in singulis ostendimus collocari. Tribus enim locis respondent tres homines: primus gravissimo, secundus medio, tertius acutissimo. Et tres res diversæ magnitudinis, tribus intervallis etiam varie quantitatis, maxima tono majori, media minor, minima semitonio. Conficitur autem hic lufus 24 lapillis, ex quibus primo unum, secundo duos, tertio tres divinatorius ipse tradit; ea lege, ut ex 18 reliquis, qui rem maximam accipiet, tot, quot habet: qui mediam, bis totidem: qui minimam, totidem quater assumat: quo ex eorum, qui supererunt numero, quæ cuique obvenerit, possit cognoscere. Nam si primo modo fiet distributio, relinquetur unus: si fiet secundo, duo: si tertio, tres: si quatuor, quinque: si quinto, sex: et si denique sexto, septem. Neque quatuor unquam poterit superesse, ejus duplex ratio potest assignari. Altera, ex arbitrio instituentis ab ipsa rei veritate forsitan illi non cognita ad lufum sic instituentem impulsæ,

‘ Haud equidem sine mente reor, sine numine divum.’

Altera ex æterna rationis harmonice dispositione desumpta. Quod autem ad instituentem attinet, quatuor id circo remanere non possunt, quoniam primus, et tertius lapillos impares susceperunt: et cum ex lege tot, quot habent, accipere teneantur, si maximam habebunt, assumunt impares: quibus ex paribus sublatis, impares relinquunt necesse est, quod alterutri bis evenire continget, unde quater impares restabunt. Et cum secundus etiam bis maximam possit accipere, quoniam habet pares, totidem assumptis relinquuntur pares: nam reliquos necesse est pares assumere, cum duplicare, et quadruplicare lapillos, quos habent, teneantur. Quod bis evenire continget; aut enim primus mediam habebit, et tertius minimam, et restabunt duo; aut contra, et restabunt sex. Et cum maxima secundo ter evenire nequeat, constat, tertiam parem, qui quatuor est, nullo modo posse relinquere. Sed multo verior, et fortior est, quæ ex ratione harmonica desumitur. Nam quemadmodum in septem sonis diapaon ostensus est, à sex illorum diatessaron in acutum protrahi posse, qui sunt primus, secundus, tertius, quintus, sextus, septimus: et quartum præteriri neque in eo reperiri posse: sic etiam in lufu ipso præteritur quarta dictio, quæ octava est; quod non ita evenit in harmonice instrumentalis compositione. Quandoquidem (ut dictum est) significat tritonum, quod à quarto sono inter septem sonos diapaon invenitur, cum à sex aliis omnibus diatessaron invenitur. Unde etiam in septem diapason speciebus, quæ à septem sonis oriuntur, sex arithmetice dividi possunt; una verò nequaquam, quæ C cum prima sit, progrediendo in acutum, erit quarta. Hujus autem lufus nequitiam ego ment onem fecissem, ne in re tam seria ludere velle viderer, nisi ad rem, qua de agimus, facilius explicandam, aptissimum esset exemplum. Quod eo libentius feci, quoniam eum comperi ex professo traditum à Beda, cognomento Venerabili, viro gravissimo et in divinis literis, ac secularibus disciplinis eruditissimo. Unde conjectari licet, ante mille annos excogitatum fuisse. Salinas de Musica, lib. IV. cap. v.

have



have been but three in number, namely, the Dorian, the Phrygian, and the Lydian \*: the first proceeding from E to e, the second from D to d, and the third from C to c †, how these are generated shall be made appear.

And first it is to be remarked that the place of the diazeuſtic tone is the characteristic of every mode. In the Dorian the diazeuſtic tone was ſituated in the middle of the heptachord, that is to ſay, it was the interval between meſe or a, and parameſe ♮, the chords meſe and parameſe being thus ſtationed in the middle of the ſyſtem, three in the acute, namely, Tritē diezeugmenon, Paraneſe diezeugmenon, and Nete diezeugmenon; and three in the grave, namely, Lychanos meſon, Parhypate meſon, and Hypate meſon, determined the ſpecies of diapafon proper to the Dorian mode. The ſeries of intervals that conſtituted the Dorian mode, had its ſtation in the middle of the lyre, which conſiſted, as has been already mentioned, of fifteen chords, comprehending the ſyſtem of a diſdiapafon; and to characteriſe the other modes, authors make uſe of a diapafon with preciſely the ſame boundaries; and that becauſe the extreme chords, both in remiſſion and intenſion, are leſs grateful to the ear than the intermediate ones. Ptolemy takes notice of this, ſaying, that the ear is delighted to exerciſe itſelf in the middle melodies ‡: and he therefore adviſes, for the inveſtigation of the modes, the taking the diapafon as nearly as may be from the middle of the lyre ||.

The Dorian Meſe being thus ſettled at a, and the poſition of the diazeuſtic tone thereby determined, a method is ſuggeſted for diſcovering the conſtitution of the other ſix modes, namely, the Mixolydian, Lydian, Phrygian, Hypolydian, Hypophrygian, and Hypodorian, making together with the Dorian, ſeven, and anſwering to the ſpecies of the diapafon; all above which number, according to the expreſs declaration of Ptolemy, are to be rejected as ſpurious §.

But in order to render this conſtitution intelligible, it is neceſſary to take notice of a diſtinction made by Ptolemy, lib. II. cap. xi. between the natural, or, which is the ſame, the Dorian Meſe and the modal Meſe; as alſo between every chord in the lyre or

\* Ptolem. Harm. lib. II. cap. vi. Wallis Append. de Vet. Harm. p. 312.

† Vide Kirch. Muſurg. tom. I. cap. xvi. ‡ Harmonicor. lib. II. cap. xi.

|| Ibid. lib. II. cap. xi.

§ Lib. II. cap. viii. ix. xi. cx verſ. Wallis.

great system, and its corresponding sound in each of the modes, which he has noted by the use of the two different terms Positions and Powers. In the Dorian mode these coincided, as for example, the Mese of the lyre, that is to say the Mese in position, was also the Mese in power, the Proslambanomenos in position was also the Proslambanomenos in power, and so of the rest\*.

But in the other modes the case was far otherwise; to instance, in the Phrygian, there the Mese in position was the Lychanos meson in Power, and the Proslambanomenos in position the Paranete hyperboleon in power. In the Lydian the Mese in position was the Parhypate meson in power, and the Proslambanomenos in position was the Trite hyperboleon in power; and to the rule for transposition of the Mese the other intervals were in like manner subject.

From this distinction between the real and the nominal or potential Mese followed, as above is noted, a change in the name of every other chord on the lyre, which change was regulated by that relation which the several chords in each mode bore to their respective Meses, and the term Mese not implying any thing like what we call the Pitch of the sound, but only the place of the diazeuetic tone in the lyre, this change of the name became not only proper, but absolutely necessary: nor is it any thing more than is practised at this day, when by the introduction of a new cliff, we give a new name, not only to One, but a series of sounds, without disturbing the order of succession, or assigning to them other powers than nature has established.

The following scale, taken from the notes of Dr. Wallis on the eleventh chapter of the second book of the Harmonics of Ptolemy, exhibits the position on the lyre, of each of the modal Meses.

\* Vide Sir Francis Stiles on the Modes, pag. 702

By the Mese in power is to be understood not the actual Mese or the middle chord of the septenary, but that which marks the position of the diazeuetic tone which varies in each mode. In the Dorian, for instance, it holds the middle or fourth, in the Phrygian the third, and in the Lydian the second place, reckoning from the acute towards the grave. See the diagram of the species of diapason in the seven Ptolemaic modes hereafter inserted.

aa	Nete hyperboleon		
g	Paranete hyperboleon		
f	Trite hyperboleon		
e	Nete diezeugmenon		
d	Paranete diezeugmenon	Mixolydian	} M E S E
c	Trite diezeugmenon	Lydian	
h	Paramefe	Phrygian	
a	Mefe	Dorian	
G	Lychanos mefon	Hypolydian	
F	Parhypate mefon	Hypophrygian	
E	Hypate mefon	Hypodorian	
D	Lychanos hypaton		
C	Parypate hypaton		
h	Hypate hypaton		
A	Proslambanomenos *		

Now that diversity of stations for the Mese above represented, necessarily implies the dislocation of the diazeuctic tone for every mode; and from the rules in the tenth chapter of the second book of Ptolemy, for taking the modes, it follows by necessary consequence that in the Mixolydian mode the diazeuctic tone must be the first interval, reckoning from acute to grave; in the Lydian the second, in the Phrygian the third, in the Dorian the fourth, in the Hypolydian the fifth, in the Hypophrygian the sixth, and in the Hypodorian the last †.

The situation of the Mese, and consequently of the diazeuctic tone being thus adjusted, the component intervals of the diapaſon above and below it, follow of course as they arise in the order of nature; and we are enabled to say not only that the species of diapaſon answering to the several modes in their order are as follow :

\* Ptolem. Harmonicor. ex vers. Wallis, pag. 137, in not.

† Sir Francis Stiles on the Modes, pag. 709. And see the diagram of the seven Ptolemaic modes hereinafter inserted.

Mixolydian	} from {	B to b
Lydian		C to c
Phrygian		D to d
Dorian		E to e
Hypolydian		F to f
Hypophrygian		G to g
Hypodorian		A to a, or a to aa*

But that the following is the order in which the tones and semitones occur in each series, proceeding from grave to acute.

Mixolydian	Semitone, tone, tone, semitone, tone, tone, tone.
Lydian	Tone, tone, semitone, tone, tone, tone, semitone.
Phrygian	Tone, semitone, tone, tone, tone, semitone, tone.
Dorian	Semitone, tone, tone, tone, semitone, tone, tone.
Hypolydian	Tone, tone, tone, semitone, tone, tone, semitone.
Hypophrygian	Tone, tone, semitone, tone, tone, semitone, tone.
Hypodorian	Tone, semitone, tone, tone, semitone, tone, tone ‡.

And this, according to Ptolemy, is the constitution of the seven modes of the ancients.

\* Sir F. S. on the Modes, 708. Kirch. Mufurg. tom. I. cap. xvi.

† Upon the constitution of the first of the above modes a great difficulty arises, namely, how to reconcile it to the rules of harmonical progression, for it is expressly said by Kircher and also by Sir Francis Stiles, in his Discourse on the Modes, pag. 407, and may be inferred from what Ptolemy says concerning them in his Harmonics, lib. II. cap. x. that the Mixolydian answers to the species of diapason from Hypate hypaton to Paramese, that is to say, from  $\square$  to  $\square$ , and that the semitones in it are the first and fourth intervals in that series; now if this be the case, as most clearly it is, the interval between the chord  $\square$  and the chord Parhypate meson or F must be a femidiapente, which is a false relation, arising from two inconcinuous chords, and consequently is unfit for musical practice.

Again, in the Hypolydian, from Parhypate meson to Trite hyperboleon, or F to f, a tritone occurs between F and  $\square$ , which is a false relation, and renders this species equally with the former unfit for musical practice.

Dr. Wallis seems to have been aware of this difficulty, and has attempted to solve it in a diagram of his, containing a comparative view of the ancient modes with the several keys of the moderns, by prefixing the flat sign b, to the Hypate hypaton; agreeable to what he says in another place, that in the Mixolydian *mi* is placed in E *la mi*, and to get rid of the tritone in the latter case he prefixes a second flat in E *la mi*, excluding thereby *mi* from thence, and placing it in A *la mi re*.

Sir Francis Stiles has done the same, and farther both these writers have made use of the acute sign ‡ for similar purposes. In all which instances it is supposed they are justified by the practice of the ancients; for it is to be noted that they had a particular tuning for every key, which could be for no other purpose than that of dislocating the intervals from their respective stations in the several species of diapason, and might probably reduce them to that arrangement observable in the keys of the moderns, which, after all that can be said about them, are finally resolvable into two.

A

GENERAL HISTORY  
OF THE  
SCIENCE and PRACTICE  
OF  
MUSIC.

BOOK II. CHAP. I.

**I**N the foregoing enquiry touching the modes, endeavours have been used to demonstrate the coincidence between the seven genuine modes and the seven species of diapasen. But supposing the relation between them to be made out, a question yet remains, namely, whether the progression in each of the modes was in the order prescribed by nature or not: In what order of succession the tones and semitones arise in each species of the diapasen has already been declared; and it seems from the representation above given of the species, that, as the keys of the moderns are ultimately reducible to two, DO MI, and RE FA, so the seven modes of the ancients by the dislocation of the Mese for each, and that consequent new tuning of the diapasen for each, which is mentioned by Ptolemy in the eleventh chapter of his second book, are by such dislocation of the Mese and new tuning reduced to two. To this purpose Dr. Wallis seems uniformly to express himself and particularly in this his description of the modes taken from Ptolemy.

‘ Ptolemy, in the eleventh chapter of his second book, and elsewhere, makes the Dorian the first of the modes, which, as having  
‘ for its Mese and Paramese the Mese and Paramese both in position,  
‘ and power, or, to speak with the moderns, having its *mi* in  $\square$ ,  
‘ may

‘ may be said to be situated in the midst of them all ; he therefore  
 ‘ constitutes the Dorian mode so as that between the real and as-  
 ‘ sumed names of all the chords, there is throughout a perfect coin-  
 ‘ cidence : and to this mode answers that key of the moderns in  
 ‘ which no signature is placed at the head of the staff to denote ei-  
 ‘ ther flat or sharp.

‘ Secondly he takes a mode more acute than the former by a dia-  
 ‘ tessaron, which therefore has for its Mese a chord also more acute  
 ‘ by a diatessaron, namely the Paranete diezeugmenon of the Dorian,  
 ‘ and consequently its Paramese, which is our *mi*, must answer to  
 ‘ the Nete diezeugmenon, that is as we speak, *mi* is placed in *E la*  
 ‘ *mi*, and this he calls the Mixolydian. The moderns for a similar  
 ‘ purpose place a flat on *B fa*, and thereby exclude *mi*.

‘ And from hence he elsewhere, lib. II. cap. vi. concludes, that  
 ‘ there is no necessity for that which the ancients called the conjunct  
 ‘ system, namely, the system from Proslambanomenos to Nete sy-  
 ‘ nemmenon, since that is sufficiently supplied by the change made  
 ‘ in Mese from the Dorian to the Mixolydian mode ; for here fol-  
 ‘ lows after the two conjunct tetrachords in the Dorian, from Hypate  
 ‘ hypaton to the Mese, that is from *B mi* to *A la mi re*, a third in the  
 ‘ Mixolydian from its Hypate meson, which is the Mese in the Do-  
 ‘ rian to its Mese, that is from *A la mi re* to *D la sol re* ; so that there  
 ‘ are three conjunct tetrachords from *B mi*, the Hypate hypaton of  
 ‘ the Dorian, to *D la sol re*, the Mese of the Mixolydian.

‘ Thirdly, as another diatessaron above that in the acute, could not  
 ‘ be taken without exceeding that diapason in the midst whereof  
 ‘ the Mese of the Dorian was placed, Ptolemy assumes in the room  
 ‘ thereof a diapente towards the grave, which may answer to a dia-  
 ‘ tessaron taken towards the acute, in as much as the sounds so taken,  
 ‘ differing from each other by a diapason, may in a manner be ac-  
 ‘ counted the same. The Mese therefore of this new mode must be  
 ‘ graver by a diapente than that of the Mixolydian ; that is to say, it is  
 ‘ the Lychanos hypaton of the Mixolydian, or, which is the same, the  
 ‘ Lychanos meson of the Dorian, and consequently its Paramese will  
 ‘ be the Mese of the Dorian ; that is as we should say, *mi* in *A la mi*  
 ‘ *re*. This is what Ptolemy calls the Hypolydian mode, to denote  
 ‘ which we put besides the flat placed before in *B fa b mi*, a second  
 ‘ flat

‘ flat in E *la mi*, to exclude *mi* from thence, and thereby *mi* is removed into A *la mi re*.

‘ Fourthly, as he could not from hence towards the grave, take either a diapente or diatessaron, without going beyond the above diapason, Ptolemy takes a mode more acute than the Hypolydian by a diatessaron, which he calls the Lydian, the Mese whereof is the Paranete diezeugmenon, and its Paramese the Nete diezeugmenon of the Hypolydian; which latter is also the Paranete diezeugmenon of the Dorian, that is as we speak, *mi* in D *la sol re*. We, to denote this mode, besides the two flats already set in b and e, put a third in A *la mi re*, whereby we exclude *mi* from thence, and transfer it to D *la sol re*.

‘ Fifthly, as the Mixolydian was taken from the Dorian, and made a diatessaron more acute, so is the Hypodorian to be taken from the same Dorian towards the grave, and made more grave than that by a diatessaron: the Mese therefore of the Hypodorian is the Hypate meson of the Dorian; and its Paramese, which is our *mi*, is the Parhypate meson of the Dorian, that is as we speak, *mi* in F *fa ut*. We, to denote this mode, leaving out all the flats, place an acute signature or sharp in F *fa ut*, which would otherwise be elevated by a hemitone only, and called *fa*, but is now called *mi*, and elevated by a whole tone above the next note under it; by reason whereof the next note in the acute will be distant only a hemitone from that next under it, and be called *fa*, and *mi* will return in a perfect diapason in the F *fa ut* next above it.

‘ Sixthly, as another diatessaron towards the grave cannot be assumed from the Hypodorian thus situated, without exceeding the limits of the above diapason, he takes the Phrygian mode a diapente more acute, which is the same thing in effect, since between any series in the fifth above and in the fourth below, the distance is precisely a diapason; the Mese therefore of this mode is the Nete diezeugmenon of the Hypodorian, that is the Paramese of the Dorian, and consequently its Paramese is the Trita diezeugmenon of the Dorian, that is as we speak, *mi* in c *fa ut*; to denote which, besides the sharp placed before in F *fa ut*, we put another sharp in C *fa ut*, which would otherwise be elevated by only an hemitone above the next note under it, but is now elevated by a whole tone; and as before it would have been called *fa*, it must now be called *mi*;

‘ and.

‘ and from hence to *g sol re ut* is now only a hemitone, which is  
 ‘ therefore to be called *fa, mi* returning either in *cc sol fa* above, or  
 ‘ in *c fa ut* below.

‘ Seventhly and lastly, the Hypophrygian is taken from the Phry-  
 ‘ gian, as above defined, and is distant therefrom by a diatessaron to-  
 ‘ wards the grave. Its Mese therefore is the Hypate meson of the  
 ‘ Phrygian, that is to say the Parhypate meson of the Dorian,  
 ‘ consequently its Paramese, which is our *mi*, is the Lychanos  
 ‘ meson of the Dorian. That is as we speak, *mi* in *G sol re*  
 ‘ *ut*, to express which, the rest standing as above, we place a  
 ‘ third sharp in *G sol re ut*, which otherwise, by reason that *F fa ut*  
 ‘ was made sharp before, would be elevated by only a hemitone, and  
 ‘ called *fa*, is now elevated by a whole tone and called *mi*, and there-  
 ‘ fore *A la mi re*, distant from *G sol re ut* by a hemitone, is called *fa*,  
 ‘ and *mi* returns in *g sol re ut* above, or in *Γ ut* below.

‘ The modes being thus determined, we gather from thence that  
 ‘ the Mixolydian mode is distant from the Lydian as in Ptolemy,  
 ‘ lib. II. cap. x. by a limma, or not to speak so nicely, by a hemi-  
 ‘ tone, the Lydian from the Phrygian by a tone, the Phrygian from  
 ‘ the Dorian by a tone, the Dorian from the Hypolydian by a limma,  
 ‘ the Hypolydian from the Hypophrygian by a tone, and the Hypo-  
 ‘ phrygian from the Hypodorian also by a tone.

‘ From these premises Ptolemy concludes, not only that the seven  
 ‘ modes above enumerated are all that are necessary, but even that  
 ‘ there is not in nature room for any more, by reason that all the  
 ‘ chords in the diapason are by this disposition occupied: for since  
 ‘ all the chords, from the Hypate meson to the Paranece diezeugme-  
 ‘ non inclusively, are the Mese of some mode, there is no one of them  
 ‘ remaining to be made the Mese of any intermediate mode: for ex-  
 ‘ ample, the Mese in power of the Hypodorian is in position the  
 ‘ Hypate meson, and the Mese in power of the Hypophrygian is the  
 ‘ Parhypate meson; and as there is no chord lying between these  
 ‘ two, there is none left, nor can be found to be the Mese of any in-  
 ‘ termediate mode, or which, as Aristoxenus supposes, may with pro-  
 ‘ priety be called the graver Hypophrygian or Hypoiasian; and what  
 ‘ has been said of the Mese may with equal reason be said of the  
 ‘ Paramese, which is our *mi*\*.’

Thus

• Wallis Append. de Vet. Harmon. pag. 314, et seq.



Thus far Dr. Wallis, who has undoubtedly delivered, though in very concise terms, the sense of his author; nevertheless as the whole of the arguments for restraining the number of modes to seven is contained in the eleventh chapter of the second book of Ptolemy, and Sir Francis Stiles has bestowed his pains in an English version thereof, it may not be amiss to give it as translated by him, and his words are as follow.

Now these being the modes which we have established, it is plain, that a certain sound of the diapason is appropriated to the Mese in power, of each, by reason of their being equal in number to the species. For a diapason being selected out of the middle parts of the perfect system, that is the parts from Hypate meson in position to Nete diezeugmenon, because the voice is most pleased to be exercised about the middle melodies, seldom running to the extremes, because of the difficulty and constraint in immoderate intensions and remissions, the Mese in power of the Mixolydian will be fitted to the place of Paranete diezeugmenon, that the tone may in this diapason make the first species; that of the Lydian, to the place of Trite diezeugmenon, according to the second species; that of the Phrygian, to the place of Paramese, according to the third species; that of the Dorian, to the place of the Mese, making the fourth and middle species of the diapason; that of the Hypolydian, to the place of Lychanos meson, according to the fifth species; that of the Hypophrygian, to the place of Parhypate meson, according to the sixth species; and that of the Hypodorian, to the place of Hypate meson, according to the seventh species; that so it may be possible in the alterations required for the modes, to keep some of the sounds of the system unmoved, for preserving the magnitude of the voice, meaning the pitch of the diapason; it being impossible for the same powers, in different modes to fall upon the places of the same sounds. But should we admit more modes than these, as they do who augment their excesses by hemitones, the Meses of two modes must of necessity be applied to the place of one sound; so that in INTERCHANGING THE TUNINGS of those two modes, the whole system in each must be removed, not preserving any one of the preceding tensions in common, by which to regulate the proper pitch of the voice. For the Mese in power of the Hypodorian for instance, being fixed to Hypate meson by position, and that of the

‘ Hypophrygian to Parhypate meson, the mode taken\* between these  
 ‘ two, and called by them the graver Hypophrygian, to distinguish  
 ‘ it from the other acuter one, must have its Mese either in Hypate,  
 ‘ as the Hypodorian, or in Parhypate, as the acuter Hypophry-  
 ‘ gian; which being the case, when we interchange the tuning of  
 ‘ two such modes, which use one common sound, this sound is indeed  
 ‘ altered an hemitone in pitch by intension or remission; but having  
 ‘ the same power in each of the modes, viz. that of the Mese, all the  
 ‘ rest of the sounds are intended or remitted in like manner, for the  
 ‘ sake of preserving the ratios to the Mese, the same with those taken  
 ‘ before the mutation, according to the genus common to both  
 ‘ modes; so that this mode is not to be held different in species from  
 ‘ the former, but the Hypodorian again, or the same Hypophrygian,  
 ‘ only somewhat acuter or graver in pitch, that these seven modes  
 ‘ therefore are sufficient, and such as the ratios require, be it thus  
 ‘ far declared\*.’

Dr. Wallis continues his argument, and with a degree of perspi-  
 cuity that leaves no room to doubt but that he is right in his opinion,  
 shews that the modes of the ancients were no other than the seven  
 species of diapason: for, as a consequence of what he had before laid  
 down, he asserts that the syllable *mi*, to speak, as he says, with the  
 moderns, has occupied all the chords by the modes now determined,  
 since in the Hypodorian, *mi* is found in F, and also in f, which is a  
 diapason distant therefrom. In the Hypophrygian it is found in G,  
 and therefore also in G and in g, which are each a diapason distant  
 therefrom. In the Hypophrygian it is found in a, and therefore in  
 A and aa, each distant a diapason therefrom. In the Dorian it is  
 found in B, and therefrom in b and Bb. In the Phrygian *mi* is  
 found in c, and also in c and cc. In the Lydian it is found in d, and  
 therefore in D and dd. And lastly, in the Mixolydian it is found in  
 e, and consequently in E and ee; from all which it is evident that  
 there can no one chord remain whereon to place *mi* for any other  
 mode, which would not coincide with some one of these above-  
 specified†.

Nothing need be added to illustrate this account of the modes but  
 an observation, that instead of g and c for the respective places of *mi*  
 in the Hypophrygian and Phrygian modes, their true positions will  
 be found to be in g<sup>♯</sup> and c<sup>♯</sup> and their replicates.

The

\* Sir F. S. on the Modes, pag. 724.

† Append. de Vet. Harm. 315.

The following scheme is exhibited by Dr. Wallis to shew the correspondence between the several keys as they arise in the modern system, and the modes of the ancients.

Dorian Mese Paramese	Mixolydian Mese Paramese	Hypolydian Mese Paramese	Lydian Mese Paramese	Hypodorian Mese Paramese	Phrygian Mese Paramese	Hypophrygian Mese Paramese
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By which it should seem that the key of A with the lesser third answers to the Dorian ; D with the lesser third to the Mixolydian ; G with the lesser third to the Hypolydian ; C with the lesser third to the Lydian ; E with a lesser third to the Hypodorian ; B with the lesser third to the Phrygian, and F\* with the lesser third to the Hypophrygian.

These are the sentiments of those who taught that the modes were coincident with the species of diapason. Another opinion however prevailed, namely, that the word Mode or Tone signified not so properly any determinate Succession of sounds, as the Place of a sound ; and indeed this is one of the definitions given by Euclid of the word Tone or Mode † ; or, in other words, the difference between one tone and another consisted in the Tension, or, as we should say, the Pitch of the system ‡. The occasion of this diversity of opinion seems to be this, Aristoxenus, the father of that sect which rejected the measure by ratios, and computed it by intervals, in his treatise on Harmonics, book the second, divides the science into seven parts, 1. Of sounds. 2. Of intervals. 3. Of genera. 4. Of systems. 5. Of tones. 6. Of mutations. 7. Of melopœia ||. Now had he considered the species of diapason to have been the same as, or even connected with, the modes, it had been natural for him to have placed them under the fifth division, that is to say, of tones, or at least under the sixth, of mutations : instead of which we find them ranged under the fourth, namely, that of systems ; and even there it is not expressly

\* Ptolem. Harmonic. ex vers. Wallis, pag. 137, in uot.

† Introd. Harm. pag. 19, ex vers. Meibom.

‡ Sir Francis Stiles on the Modes, pag. 698.

|| Lib. II, pag. xxxv. et seq. ex vers. Meibom.

said, though from their denominations, and other circumstances it might well be inferred, that the species of diapason had a relation to the modes \*. The silence of Aristoxenus, and indeed of all his followers, in this respect, has created a difficulty in admitting a connexion between the species of diapason and the modes, and has led some to suspect that they were distinct; though after all that can be said, if the modes were not the same with the species, it is extremely hard to conceive what they could be; for a definition of a mode, according to the Aristoxenians, does by no means answer to the effects ascribed by the ancient writers, such as Plutarch and others, to the modes; for instance, can it be said of the Dorian that it was grave and solemn, or of the Phrygian that it was warlike, or that the Lydian was soft and effeminate, when the difference between them consisted only in a different degree of intension or remission; or, in other words, a difference in respect of their acumen or gravity? On the other hand, the keys of the moderns, which, as already has been shewn, answer to the modes of the ancients, have each their characteristic, arising from the different measures of their component intervals; those with the minor third are all calculated to excite the mournful affections; and yet amongst these a difference is easily noted: the funereal melancholy of that of F is very distinguishable from the cloying sweetness of that of A; between those with the greater third a diversity is also apparent, for neither is the martial ardour of the key D at all allied to the hilarity that distinguishes the key E, nor the plaintive softness of E b to the masculine energy of B b; but surely no such diversity could exist, if the sole difference among them lay in the Pitch, without regard to their component intervals.

This difficulty, whether greater or less, seems however to be now removed by the industry and ingenuity of the above-named Sir Francis Stiles, who in the discourse so often above-cited, namely, his Explanation of the Modes or Tones in the ancient Græcian Music, has reconciled the two doctrines, and suggested a method for demonstrating that to adjust the pitch of any given mode is also to adjust the succession of its intervals, the consequence whereof is a discovery that the two doctrines, though seemingly repugnant, are in reality one and the same. The reasonings of this very able and accurate writer are so very close and scientific, that it

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\* Vide Sir Francis Stiles on the Modes, pag. 704.

is not easy to deliver his sense in other terms than his own; however it may not be amiss to give a short state of his arguments.

The two doctrines which he has undertaken thus to reconcile, he distinguishes by the epithets of Harmonic and Musical; the former of these, which he says had the Aristoxeneans for its friends, taught that the difference between one mode and another, lay in the tension or pitch of the system; the latter, and which Ptolemy with great force of reasoning contends for, teaches that this difference consisted in the manner of dividing an octave, or, as the ancients express it; in the different species of diapason: the task which this writer has undertaken is, to shew that between these two definitions of a musical mode there is a perfect agreement and coincidence.

In order to demonstrate this he shews, pag. 701, from Bacchius, pag. 12, edit. Meibom. that the Mixolydian mode was the most acute, the Lydian graver by a hemitone, the Phrygian graver than the Lydian by a tone, the Dorian graver than the Phrygian by a tone, the Hypolydian graver than the Dorian by a hemitone, the Hypophrygian graver than the Hypolydian by a tone, and the Hypodorian graver than the Hypophrygian by a tone\*. He adds, 'that as the Guidonian scale answers to the system of the ancients in its natural situation, which was in the Dorian mode, and our *A la mi re* consequently answers to the pitch of the Dorian Mese, we have a plain direction for finding the absolute pitch of the Meses for all the seven in our modern notes, and they will be found to stand thus:

Mixolydian Mese in	-	-	d
Lydian in	-	-	c*
Phrygian in	-	-	b
Dorian in	-	-	a
Hypolydian in	-	-	g*
Hypophrygian in	-	-	f*
Hypodorian in	-	-	e †

But to understand this doctrine as delivered by the ancients, the same author says it will be necessary to examine how the Meses of the seven modes were stationed upon the lyre; and in order to that

\* Sir F. S. on the Modes, 701.

† Ibid. Dr. Wallis, in his edition of Ptolemy, pag. 137, assigns c, g, and f natural, for the positions of the Lydian, Hypolydian, and Hypophrygian Mese; but Sir Francis Stiles, for reasons mentioned in his discourse, pag. 703, places them in c\*, g\*, and f\*.

to consider the structure of the instrument; this he explains in the following words: 'The lyre, after its last enlargement, consisted of fifteen strings, which took in the compass of a disdiapason or double octave; these strings were called by the same names as the fifteen sounds of the system, and when tuned for the Dorian mode corresponded exactly with them. Indeed there can be no doubt but that the theory of the system had been originally drawn from the practice of the lyre in this mode, which was the favourite one of the Greeks, as the lyre was also their favourite instrument. In this mode then the Mese of the system was placed in the Mese of the lyre, but in every one of the rest it was applied to a different string, and every sound in the system transposed accordingly. Hence arose the distinction between a sound in Power and a sound in Position; for when the system was transposed from the Dorian to any other mode, suppose for instance the Phrygian, the Mese of the lyre, though still Mese in position, acquired in this case the power of the Lychanos meson; and the Paramese of the lyre, though still Paramese in position, acquired the power of the Mese. In these transpositions, one or more of the strings always required *new tunings*, to preserve the relations of the system; but notwithstanding this alteration of their pitch they retained their old names when spoken of, in respect to their positions only; for the name implied not any particular pitch of the string, but only its place upon the lyre in the numerical order, reckoning the Proslambanomenos for the first \*.'

These are the sentiments of the above-cited author, with respect to the Harmonic doctrine: the Musical has been already explained; or if any thing should be wanting, the scale hereinafter inserted, shewing the position of the Mese, and the succession of chords in each of the modes in a comparative position with those in the natural system, will render it sufficiently intelligible.

## C H A P. II.

**I**T now remains to shew the method by which this author proposes to reconcile the two doctrines. He says that by the Harmonic doctrine we are told the pitch of the system for each mode; and by the Musical, in what part of the system to take the species of diapason,

\* Sir Francis Stiles on the Modes, pag. 702.

fon, and that by combining the two directions we gain the following plain canon for finding any mode required \*.

C A N O N.

‘ First pitch the system for the mode, as directed by the  
 ‘ harmonic doctrine; then select from it the diapason, directed  
 ‘ by the musical; and we have the characteristic species of the  
 ‘ mode in its true pitch †.’

To make this more plainly appear, he has annexed a diagram of the species of diapason, which is here also exhibited, and which he says will shew at what pitch of the Guidonian scale each sound of the diapason is brought out by the canon for each of the seven modes; and that as in the construction of this diagram the directions of the canon have been strictly pursued, so it will appear that the result of it is in all respects conformable to the principles of both doctrines. ‘ Thus,’ continues he, ‘ in the Dorian, for instance, it will be seen  
 ‘ that the Mese is placed in *A la mi re*, and that the rest of the sounds  
 ‘ exhibited in that diapason, are placed at the proper distances, for pre-  
 ‘ serving the order of the system as required by the harmonic doctrine.  
 ‘ It will also be seen that the diapason selected lies between Hypate  
 ‘ meson and Nete diezeugmenon; that the semitones are the first in-  
 ‘ terval in the grave, and third in the acute; and that the Diazeuc-  
 ‘ tic tone is in the fourth interval, reckoning from the acute. All  
 ‘ which circumstances were also required by the musical doctrine for  
 ‘ this mode; and in the rest of the modes all the circumstances re-  
 ‘ quired by each doctrine will in like manner be found to obtain :  
 ‘ So that no objection can well be raised to the principles on which  
 ‘ the diagram has been framed, by the favourers of either doctrine se-  
 ‘ parately: and the very coincidence of the two doctrines therein  
 ‘ might furnish a probable argument in justification of the manner in  
 ‘ which I have combined them in the canon ‡.’

Here follows the diagram of the seven species of diapason above-mentioned.

\* Ibid. 710.

† Ibid.

‡ Ibid. 711..

SPECIES of the DIAPASON in the Seven Modes admitted by PTOLEMY:

	MIXOLYDIAN.	LYDIAN.	PHRYGIAN.	DORIAN.	HYPOLYDIAN.	HYPOPHRYGIAN.	HYPODORIAN.
e	Paramefe	Trite diez.	Paramete diez.	Nete diezeug.	Trite hyperb.	Paran. hyperb.	Nete hyperb.
d	<sup>d*</sup> Paramefe <sub>Diaz, tone</sub> Mefe	<sup>d</sup> Trite diezeug. <sub>Paramefe</sub>	<sup>d</sup> Trite diezeug. <sub>Paramefe</sub>	<sup>d*</sup> Paramete diez.	<sup>d</sup> Nete diezeug.	<sup>d</sup> Trite hyperb.	<sup>d</sup> Paran. hyperb.
c	<sup>c*</sup> Lich. mefon	<sup>c*</sup> Mefe <sub>Diaz, tone</sub>	<sup>c</sup> Paramefe <sub>Diaz, tone</sub> Mefe	<sup>c*</sup> Trite diezeug.	<sup>c*</sup> Paramete diez.	<sup>c</sup> Nete diezeug.	<sup>c</sup> Trite hyperb.
b	Lich. mefon	Lich. mefon	Mefe	<sup>b</sup> Paramefe	<sup>b</sup> Trite diezeug.	<sup>b</sup> Paran. diez.	<sup>b</sup> Nete diezeug.
b <sup>y</sup>	Parhyp. mefon	Lich. mefon	Lich. mefon	<sup>a*</sup> Paramefe <sub>Diaz, tone</sub> Mefe	<sup>a</sup> Paramefe <sub>Diaz, tone</sub> Mefe	<sup>a</sup> Trite diezeug.	<sup>a</sup> Paran. diez.
a	Hypat. mefon	Parhyp. mefon	Lich. mefon	<sup>a</sup> Mefe <sub>Diaz, tone</sub>	<sup>a</sup> Mefe <sub>Diaz, tone</sub>	<sup>a</sup> Trite diezeug.	<sup>a</sup> Paran. diez.
g	Lich. hypaton	<sup>g*</sup> Hypat. mef.	Parhyp. mef.	<sup>g*</sup> Lich. mef.	<sup>g</sup> Mefe	<sup>g</sup> Paramefe <sub>Diaz, tone</sub> Mefe	<sup>g</sup> Trite diezeug.
f	Parhyp. hyp.	<sup>f*</sup> Lich. mefon	Hyp. mefon	<sup>f*</sup> Parhyp. mef.	<sup>f*</sup> Lich. mef.	<sup>f*</sup> Mefe	<sup>f*</sup> Paramefe
e	Hypat. hyp.	Parhyp. hyp.	Lich. hyp.	<sup>e</sup> Hyp. mef.	<sup>e</sup> Parhyp. mef.	<sup>e</sup> Lich. mef.	<sup>e</sup> Mefe



By the help of the above diagram it is no very difficult matter to ascertain, beyond the possibility of doubt, the situations of the different modes with respect to each other; or, in other words, to demonstrate that six of them were but so many transpositions from the Dorian, which occupies the middle station: whether after such transposition the intervals remained the same or no., is a subject of dispute.

With regard to this question it may be observed, that throughout the whole of Ptolemy's treatise, nothing is to be met with that leads to a comparison between the modes of the ancients and the keys of the moderns; for it seems that with the former the characteristic of each mode was the position of the diazeutic tone, and the consequent arrangement of the tones and semitones corresponding with the several species of diapason, to which they respectively answer. But the keys of the moderns are distinguished by the final chord, and therefore unless they could be placed in a state of opposition to each other, it is very difficult to demonstrate that this or that key answers to this or that of the ancient modes, or unless a several tuning of the lyre for each mode be supposed, to ascertain the constituent intervals of the latter. Sir Francis Stiles seems to have been aware of this difficulty, for though in page 708 of his discourse, he has given a diagram in which the Mixolydian mode is made to answer to the series from  $\square$  to  $\square$ , and the others in succession, to the succeeding species, he means nothing more by this than to compare them severally with a species of diapason selected from the middle of the lyre, without regard to the fundamental chord or key-note.

Neither does the diagram of the seven species of diapason, given by him and above inserted, afford any intelligence of this kind; and but for a hint that he has dropped at the close of his discourse, that the Hypodorian answers exactly to our *A mi la*, with a minor third, and the Lydian to our *A mi la*, with a major third\*, we should be

\* The anonymous author of a Letter to Mr. Avifon, who by the way was the late reverend and learned Dr. Jortin, had in that letter blamed Sanadon and Cerceau for affirming, in their Observations on Horace, that the Dorian mode answered exactly to our *A mi la* with a minor third, and the Phrygian to our *A mi la* with a major third; from hence Sir Francis Stiles takes occasion to give the above as his opinion of the matter. In which, after all, it seems that he is mistaken, and that the author of the Letter was in the right: his words are these, and they are well worth noting.

totally at a loss with respect to his sentiments touching the affinity between the ancient modes and the modern keys.

That there was some such affinity between the one and the other is beyond a doubt\* ; and we see Dr. Wallis's opinion of the matter in the diagram above inserted from his notes on the eleventh chapter, lib. II. of his author, containing a comparative view of the keys with the modes. And though it is to be feared that there is not that precise agreement between them which he has stated, there is good ground to suppose that, as in the keys, the succession of intervals is in the order which the sense approves, so the succession in the modes could not but have been in some degree also grateful to the ear.

This supposition is founded on a passage in the eleventh chapter of the second book of Ptolemy, importing no less than that each of the modes required a peculiar tuning, and these tunings have been severally investigated, and are given by Sir Francis Stiles ; for what purpose then it may be asked, but to render the intervals grateful to the sense, was a new tuning of the lyre for every mode necessary ; and what could that terminate in, but two constitutions, in the one whereof the interval between the fundamental chord and its third was a semitone, and in the other a ditone ; and when the lyre was so tuned,

\* Sanadon and Cerceau in their observations on Horace, Carm. v. 9.

“ Sonante mixtum tibiis carmen lyra,

“ Hac Dorian, illis barbarum.

‘ affirm that the Modus Dorian answered exactly to our *A mi la* with a minor third, and the Modus Phrygius to our *A mi la* with a major third : but surely this is a musical error, and a dream from the ivory gate. Two modes, with the same tonic note, the one neither acuter nor graver than the other, make no part of the old system of modes.’

This is very true ; and the reason of Sir Francis Stiles for asserting the contrary was that he had deceived himself into a different opinion by placing the acute signs to *f c* and *g* in the Lydian, thereby giving to that series the appearance of the key of *A*♯. But upon his own principles the Lydian answers to our key of *C fa ut* with the major third,

Tone, tone, semitone, tone, tone, tone, semitone.

DO RE MI FA SOL RE MI

For though the acute signs require that the final chord be *A*, the succession of intervals is that proper to the diapason *C c*.

\* Sethus Calvisius seems to have been of this opinion in the following passage, cited by Butler in his Principles of Music, pag. 86. in not. ‘ In hoc choralis cantu, diligentissime consideret huic Arti deditus, qui sint ubique ; Modulationis progressus, quod Exordium, et quis Finis : ut cognoscat ad quem modum referatur. Inde enim tam primarium illius Modi clausulam, quam Secundariam, eruere, et convenientibus locis annotare, et inferere poterit.’ Calvis. c. 17, and Butler himself adds that this is the general sentiment of musicians. Notwithstanding that Cælius Rhodoginus out of Cassiodorus distinguishes the modes by their several effects. Ibid.

what

what became of the seven species of diapason? The answer to this latter demand is, that as there seem to be in nature but the two species abovementioned, proceeding, as will presently be shewn, from A and C respectively, the remaining five were rejected, and considered as subjects of mere speculation.

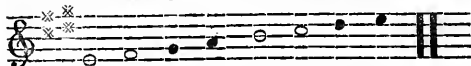
But before we proceed to refute the opinion of those who without knowing, or even suspecting, that the tuning of the lyre was different in each mode, contend, that there are in nature seven, not merely nominal, but real modes, it is but just to state the reasons on which it is founded.

And first it is said on the authority of those ancient writers who define a mode to be a given species of diapason, that as there are in nature seven such species, so are there seven modes, in each whereof the succession of tones and semitones must be in that order which nature has established, or as they arise in the scale, without interposing any of those signatures to denote remission or intension, which are used for that purpose by the moderns. They say farther that none of the species were at any time rejected by the ancients as unfit for practice; and from thence take occasion to lament the depravity of the modern system, which admits of no other diversity of modes or keys than what arises from the difference between the major and the minor third; for, say they, and they say truly, the modern system admits in fact of but two, namely A and C; the first the prototype of the flat, as the latter is of the sharp keys, all the rest being respectively resolvable into one or the other of these\*.

\* In the Dissertation sur le Chant Gregorien of Monsieur Nivers, Paris 1688, chap. xii. it is said that the eight ecclesiastical tones, which all men know have their foundation in the ancient modes, are reducible to four, and in strictness to two, as being no otherwise essentially distinguished than by the greater and lesser third; and the same may be inferred from a well-known discourse, entitled a Treatise on Harmony, containing the chief rules for composing in two, three, and four parts, which though at first printed in 1730 by one of his disciples, was indisputably the work of Dr. Pepusch, and was afterwards published by him with additions, and examples in notes. In this tract is a chapter on transposition, in which the reader is referred to a plate at the end of the work, containing a table of the keys, with their characteristics, and a stave of musical lines, with certain letters inscribed thereon, which, for the purpose of resolving any transposed or factitious key into its natural tone by the annihilation of the flat or sharp signatures, he is directed to cut off and apply to the abovementioned table, by means whereof it may be discovered that all the flat keys are transpositions from that of A, and all the sharp from that of C. This is a process so merely mechanical, that no one can be the wiser for having performed it, and is rather calculated to disguise than explain the true method of reducing a transposition to its natural key. But in a small tract, entitled, Elements ou Principes de Musique mis dans un nouvel Ordre, par M. Loulie, printed at Amsterdam in 1698, we meet with a notable rule or

But what, if after all, the ear will not recognize any other succession of intervals than is found in the constitution of the keys A and C?

canon for this purpose, which fully answers the design of its invention. This author premises that the diesis, or what we should call the sharps, placed at the beginning of the musical stave, arise by fifths, beginning from F, that is to say, C G D A E, and that the B flats or flats arise by fourths, beginning from B in this order, E A D G C. The rule or canon which he deduces from hence is this: In keys which are determined by sharp signatures, call the last sharp *MI*; or as any but a Frenchman would say *MI*, and place or suppose such a cliff at the head of the stave as in a regular course of solmification, will make it so. To give an instance of the key of E with the major third.

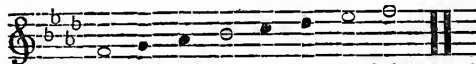


Here the attentive peruser will observe that the interval between the third and fourth, and also between the seventh and eighth notes, is a semitone; and that to make the last sharp D, *MI*, the tenor cliff must be placed on the first line of the stave, and when this is done as here it is,

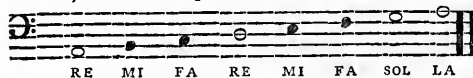


the progression of tones and semitones will be exactly in the same order as in the key of C, from which this of E is therefore said to be a transposition.

The canon farther directs in the keys with the flat signatures, to call the last of the flats *FA*, and to place or suppose a cliff accordingly; and to shew the effect of the rule in an instance of that kind, the following example is given of the key of F with the minor third.

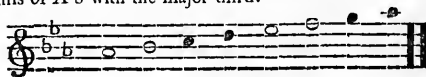


Here the intervals between the second and third, and also between the fifth and sixth notes, are semitones: and to make the last flat, which is A, *FA*, it is necessary to place the bass cliff on the fourth line of the stave, which annihilates the flat signatures, and demonstrates that the above key of F is a transposition from that of A with the minor third.



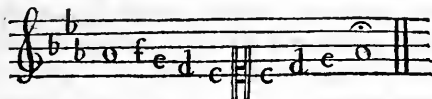
Another rule for the above purpose, and which indeed Dr. Pepusch would communicate to his favourite disciples, is, in the case of keys with the sharp signatures, to call the last sharp B, and count the lines and spaces upwards or downwards till the station of a cliff is found; and the placing that cliff accordingly annihilates the sharps, and bespeaks the natural key. In keys with the flat signatures the rule directs to call the last flat F, and count as before.

But amongst the keys with flat signatures a diversity is to be noted, that is to say, between those with a major and those with a minor third; for in the former the process must be repeated, as in this of A b with the major third.

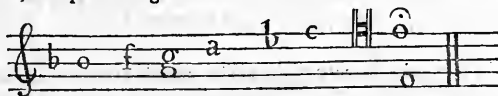


The consequence then seems to be that there are in nature no other. Now if it be true that the sense of hearing is averse to those modulations that have no relation to any fundamental chord, and that it expects, nay longs for some one sound that shall at stated periods determine the nature of the progression, there is an end of the question. In short, a single experiment of the effect of the Mixolydian mode, which answers to the series from  $\square$  to  $\square$ , in its natural order, and gives to the diapente a semitone less than its true content, will offend the ear, and convince any impartial enquirer that the existence of seven modes is, in the sense contended for, nominal and not real\*.

In this instance the rule directs to call the last flat, which is the key-note, F; and to count on to the place of a cliff: in doing this the cliff  $\parallel$  will fall on the first line, and make the key-note F; by which it should seem that the key of A b with the major third is a transposition from F also with a major third.



But as there is in the key of F a flat on b, it is necessary to repeat the process, and see what key this of F is a transposition from; and this by the above rule is to be done by calling the flat b F, and proceeding as before directed:



and this key of F will appear to be a transposition from that of C, and by consequence that of A b, from which that of F is transposed, must be a transposition from the key of C also.

\* Vide ante, pag. 162, and Dr. Wallis asserts that there are passages in Ptolemy which plainly indicate that the ancients had a several tuning for every mode, which could not have been necessary had they followed the above order. Farther, to this purpose Malcolm expresses himself in the following remarkable passages. ' If every song kept in one mode, there was need for no more than one diatonic series; and by occasional changing the tune of certain chords these transpositions of every mode to every chord may be easily performed; and I have spoken already of the way to find what chords are to be altered in their tuning to effect this, by the various signatures of  $\sharp$  and b: But if we suppose that in the course of any song a new species is brought in, this can only be effected by having more chords than in the first system, so as from any chord of that, any order or species of octave may be found. On Music, pag. 536.

' If this be the true nature and use of the tones, I shall only observe here, that according to the notions we have at present of the principles and rules of melody, most of these modes are imperfect and incapable of good melody, because they want some of those we reckon the essential and natural notes of a true mode or key, of which we reckon only two species, viz. that from C and A, or the Parhyptic hypaton and Proslambanomenos of the ancient fix system. Ibid:

' Again

But notwithstanding the uniformity of keys in the modern system, there is a diversity among them worth noting, arising from that surd quantity in the diapason system, which it has been the labour of ages to attemper and distribute among the several intervals that compose it, so as not to be discoverable; the consequence of which temperament is such a diversity in the several keys, as gives to each a several effect; so that upon the whole it seems that the modern constitution of the modes or keys is liable to no objection, save the want of such a division of the intervals as seems to be inconsistent with the principles of harmonics, and the established order of nature.

The several effects of the modern keys are discoverable in the tendency which each has to excite a peculiar temper or disposition of mind; for, not to mention that soothing kind of melancholy which is felt on the hearing music in keys with the minor third, and the gaiety and hilarity excited by that in keys with the greater third\*, each key in the two several species is possessed of this power in a different degree, and a person endowed with a fine ear will be variously affected by the keys A and F, each with the lesser, as also by those of C and E with the greater third.

Effects like these, but to a degree of extravagance that exceeds the bounds of credibility, are ascribed to the modes of the ancients: that the Dorian was grave and solemn, and the Lydian mild and soothing†,

\* Again, if the essential difference of the modes consists only in the gravity or acuteness of the whole octave, then we must suppose there is one species or concinnous division of the octave, which being applied to all the chords of the system, makes them true fundamentals for a certain series of successive notes. These applications may be made in the manner already mentioned, by changing the tune of certain chords in some cases, but more universally by adding new chords to the system, as the artificial or sharp and flat notes of the modern scale. But in this case, again, where we suppose they admitted only one concinnous species, we must suppose it to be corresponding to the octave *a*, of what we call the natural scale; because they all state the order of the systema immutatum in the diagram, so as it answers to that octave.' Ibid. 537.

\* Dr. Jortin has discovered a new characteristic for these two species of keys; he calls one the male, the other the female: the thought is ingenious, and is thus expressed by him in a letter published at the end of the later editions of Avison's Remarks on Musical Expression 'By making use of the major and minor third we have two real and distinct tones, a major and a minor, which may be said to divide music, as nature seems to have intended, into male and female. The first hath strength, the second hath softness; and sweetness belongs to them both.'

† Milton adopts these characteristics of the Dorian and Lydian modes:

—————Anon they move

In perfect phalanx to the Dorian mood

Of flutes and soft recorders; such as rais'd

To height of noblest temper heroes old

Arming to battle.

PARADISE LOST, B. I. line 549.

And

may be believed, but who can credit the relation, though of Cicero himself, and after him of Boetius \*, that by an air in the Phrygian mode played on a solitary pipe (one of the ancient tibiae) a drunken young man, of Tauromenium, was excited to burn down the house wherein a harlot had been shut up by his rival, and that Pythagoras brought him to his reason, by directing the tibia-player to play a spondee in a different mode? Or that not the fumes of wine or a disturbed imagination, rather than the flute of Timotheus, played on in the Phrygian mode, provoked Alexander to set fire to Persepolis.

C H A P. III.

HAVING thus collected into one point of view the sentiments of the ablest writers on those two most important desiderata in the ancient music, the genera and the modes, in order to trace the successive improvements of the science, it is necessary to recur to those only genuine sources of intelligence, the writings of the Greek harmonicians. And here we cannot but applaud the ingenuity and industry of those learned men, their remote successors, who from ancient manuscripts, dispersed throughout the world, have been able to settle the text of their several works; and who with a great degree of accuracy have given them to the public, together with Latin versions, illustrated with their own learned annotations.

Those whom we are most obliged to in this respect are, Marcus Meibomius, a German; and our countryman Dr. John Wallis: the former of these has given to the world seven of the ancient Greek writers, namely, Aristoxenus, Euclid, Nicomachus, Alypius, Gaudentius, Bacchius Senioris, and Aristides Quintilianus; as also a Discourse on Music, which makes the ninth book of Martianus Capella's Latin work, entitled *De Nuptiis Philologiae et Mercurii*; and the

And ever against eating cares  
Lap me in soft Lydian airs. I'ALLEGRO.

And Dryden describes the Lydian by its effects, in these words:

Softly sweet in Lydian measures  
Soon he sooth'd his soul to pleasures. ALEXANDER'S FEAST.

From which passage it is to be suspected that the poet thought with Cornelius Agrippa and some others, that the epithet Lydian referred to the measure, whereas it clearly relates to the harmony. But Dryden knew little about music.

\* *De Musica*, lib. I. cap. I.

latter a complete translation of the harmonics of Ptolemy, with notes, and a most valuable appendix ; as also translations of Porphyry and Manuel Bryennius in like manner.

Concerning these writers, it is to be observed that the Greeks are by far of the greatest authority ; and that their division of music into several branches, as being more scientific than that of the Latin writers, is intitled to the preference. The most ample of these is the division of Aristides Quintilianus, which is thus analyzed by his editor Meibomius, in his notes on that author, pag. 207.

Musicae	alia est pars <b>Theoretica :</b> cujus rursus partes duæ,	{	Phyfica :	quæ dividitur in	{	Arithmeticum.
			Artificialis :			quæ dividitur in
	alia <b>Practica :</b> cujus item partes duæ,	{	Ufualis :	cujus partes	{	Harmonicam. Rythmicam. Metricam.
			Enarrativa :			cujus partes
					{	
						Odica. Hypocritica.

Nevertheless, the most general is that threefold division of music into Harmonica, Rhythmica, and Metrica ; the two latter of which, as they relate chiefly to poetry, are but superficially treated of by the harmonic writers. Upon this division of music it is observable that the more ancient writers were very careful in the titles of their several treatises : such of them as confined their discourses to the elementary part of the science, as namely, Aristoxenus, Euclid, Nicomachus, Gaudentius, Ptolemy, and Bryennius, call the several treatises written by them Harmonica ; whereas Aristides, Bacchius, and Martianus Capella entitle theirs Musica ; as does Boetius, although he was a strict Pythagorean. Porphyry indeed, who professes nothing more than to be a commentator on the harmonics of Ptolemy, institutes another mode of division, and, without distinguishing the speculative part of the science from the practical, divides it into six general heads, namely, Harmonica, Rhythmica, Metrica, Organica, Poetica, and Hypocritica ;



pocritica; Rythmica he applies to dancing, Metrica to the enun-  
ciative, and Poetica to verses \*. The branch of the science,  
which has been most largely treated of by the ancients, is the  
Harmonica, as will appear by the extracts hereinafter given from  
their works.

From the relation herein before given of the invention of, and suc-  
cessive improvements made in, music, a very accurate judgment may  
be formed of the nature of the ancient system, which, together with  
the ratios of the consonances, and the doctrine of the genera and the  
modes, constituted the whole of the harmonical science as it stood  
about the year of the world 3500. After which Aristoxenus, Euclid,  
Nicomachus, and other Greek writers made it a subject of philosophi-  
cal enquiry, and composed those treatises on harmonics which are se-  
verally ascribed to them, and of which, as also of their respective au-  
thors, a full account will hereafter be given. What was the state of the  
science previous to the era abovementioned, can only be learned from  
those particulars relating to music, which are to be met with in the  
several accounts extant of the life and doctrines of Pythagoras, who,  
for any thing that can now be collected to the contrary, seems indis-  
putably intitled to the appellation of the Father of Music.

PYTHAGORAS, according to the testimony of the generality of writ-  
ters, was born about the third year of the fifty-third Olympiad, which  
answers to the year of the world 3384, and to about 560 years before  
the birth of our Saviour; and although he was of that class of phi-  
losophers called the Italic sect, he is supposed to have been a native  
of Samos, and in consequence of this opinion is usually stiled the  
Samian sage or philosopher. His father, named Mnesarchus, is re-

\* Malcolm has taken notice of this division, but prefers to it that of Quintilian, upon  
whose analysis he has given the following concise and perspicuous commentary. ' Arif-  
tides considers music in the largest sense of the word, and divides it into *contemplative*  
' and *active*. The first he says is either *natural* or *artificial*; the *natural* is *arithmetical*,  
' because it considers the proportion of numbers; or *physical*, which disputes of every  
' thing in nature; the *artificial* is divided into *harmonica*, *rythmica* (comprehending the  
' dumb motions) and *metrica*: the *active*, which is the application of the *artificial*, is  
' either *eununciative* (as in oratory) *organical*, (or instrumental performance) *odical* (for voice  
' and singing of poems) *hypoetical* (in the motions of the pantonimes). To what pur-  
' pose some add hydraulic I do not understand, for this is but a species of the organical,  
' in which water is some way used, for producing or modifying the sound. The musical  
' faculties, as they call them, are *Melopoia*, which gives rules for the tones of the voice  
' or instrument; *Rythmopoia*, for motions, and *Poesis* for making of verse.' Treatise of  
Music, Edinb. 1721, pag. 455.

ported to have been a merchant, or, as some say, an engraver of rings. Of his travels into various parts of the world for the acquiring of knowledge; of the wonders related of him, or of his doctrines in general, it is needless to give an account in this place. It seems to be agreed that he left not any thing behind him of his writing, and all that is to be known of his doctrines is grounded on the testimony of his disciples, who were very many, and were drawn to hear him from the most distant parts of Greece and Italy. Of these Nicomachus was one, who because he himself has written on the science of harmonics, may well be supposed to understand the doctrines of his master; from him therefore, as also from others, as namely, Ptolemy, Macrobius, and Porphyry, who, though they lived many years after Pythagoras, were of his sect, we may with some degree of confidence determine as to the tenets of his school. A summary of these is given by his learned biographer Stanley, in the passages here cited; and first as to those respecting music in general, he gives them in these words.

‘ The Pythagoreans define music an apt composition of contraries, and an union of many, and consent of differents; for it not only co-ordinates rythms and modulation, but all manner of systems. Its end is to unite and aptly conjoin. God is the reconciler of things discordant, and this is his chiefest work, according to music and medicine, to reconcile enmities. In music, say they, consists the agreement of all things, and aristocracy of the universe. For what is harmony in the world, in a city is good government; in a family, temperance.’

‘ Of many sects, saith Ptolemy, that were conversant about harmony, the most eminent were two, the Pythagoric and Aristoxenian: Pythagoras dijudicated it by reason, Aristoxenus by sense. The Pythagoreans, not crediting the relation of hearing, in all those things wherein it is requisite, adapted reasons to the differences of sounds, contrary to those which are perceived by the senses; so that by this criterion (reason) they gave occasion of calumny to such as were of a different opinion.’

‘ Hence the Pythagoreans named that which we now call harmonic Canonic, not from the canon or instrument, as some imagine, but from rectitude; since reason finds out that which is right by using harmonical canons or rules even of all sorts of instruments

ments framed by harmonical rules, pipes, flutes, and the like. They call the exercise Canonic, which although it be not canonic, yet is so termed, because it is made according to the reasons and theorems of canonic; the instrument therefore seems to be rather denominated from its canonic affection. A canonic in general is an harmonic who is conversant by ratiocination about that which consists of harmony. Musicians and harmonics differ; musicians are those harmonics who begin from sense, but canonics are Pythagoreans, who are also called harmonics; both sorts are termed by a general name musicians.\*

As touching the human voice, the same author delivers the following as the Pythagorean tenets.

They who were of the Pythagorean school said that there are (as of one genus) two species. One they properly named Continuous, and the other Diastematic (intermissive) framing appellations from the accidents pertaining to each. The Diastematic they conceived to be that which is sung and rests upon every note, and manifest the mutation which is in all its parts, which is inconfused and divided, and disjointed by the magnitudes, which are in the several sounds as coacerved, but not commixt, the parts of the voice being applied mutually to one another, which may easily be separated and distinguished, and are not destroyed together; such is the musical kind of voice, which to the knowing manifests all sounds of what magnitude every one participates: For if a man use it not after this manner, he is not said to sing but to speak. †

Human voice having in this manner two parts, they conceived that there are two places, which each in passing possesseth. The place of continuous voice, which is by nature infinite in magnitude, receiveth its proper term from that wherewith the speaker began until he ends, that is the place from the beginning of his speech to his conclusive silence. So that the variety thereof is in our power, but the place of diastematic voice is not in our power, but natural; and this likewise is bound by different effects. The beginning is that which is first heard, the end that which is last pronounced; for from thence we begin to perceive the magnitudes of sounds, and their mutual commutations, from whence first our hearing seems

\* Hist. of Philos. by Thomas Stanley, Esq. folio edit. 1701, pag. 385.

† Ibid.

‘ to operate ; whereas it is possible there may be some more obscure  
 ‘ sounds perfected in nature which we cannot perceive or hear : as  
 ‘ for instance, in things weighed there are some bodies which seem  
 ‘ to have no weight, as straws, bran, and the like ; but when as by  
 ‘ apposition of such bodies some beginning of ponderosity appears,  
 ‘ then we say they first come within the compass of static. So when  
 ‘ a low sound increaseth by degrees, that which first of all may be  
 ‘ perceived by the ear, we make the beginning of the place which  
 ‘ musical voice requireth.’ \*

These were the sentiments of the Pythagoreans, with respect to music in general, and of voice in particular. Farther, they maintained an opinion which numbers, especially the poets, have adopted, and which seems to prevail even at this day, namely, that music, and that of a kind far surpassing mortal conception, is produced by the motion of the spheres in their several orbits. The sum of this doctrine is comprized in the following account collected by Stanley from Nicomachus, Macrobius, Pliny, and Porphyry.

‘ The names of sounds in all probability were derived from the  
 ‘ seven stars, which move circularly in the heavens and compass the  
 ‘ earth. The circumagitation of these bodies must of necessity  
 ‘ cause a sound ; for air being struck, from the intervention of the  
 ‘ blow sends forth a noise. Nature herself constraining that the vio-  
 ‘ lent collision of two bodies should end in sound.”

‘ Now, say the Pythagoreans, all bodies which are carried round  
 ‘ with noise, one yielding and gently receding to the other, must necessarily cause sounds different from each other, in the magnitude and  
 ‘ swiftness of voice and in place, which (according to the reason of  
 ‘ their proper sounds, or their swiftness, or the orbs of repressions,  
 ‘ in which the impetuous transportation of each is performed) are  
 ‘ either more fluctuating, or, on the contrary, more reluctant. But  
 ‘ these three differences of magnitude, celerity, and local distance,  
 ‘ are manifestly existent in the planets, which are constantly with  
 ‘ sound circumagitated through the ætherial diffusion ; whence every  
 ‘ one is called ἀσῆρ, as void of στάσις, station, and αἰεὶ θεῶν, always in  
 ‘ course, whence God and Æther are called Θεός and Αἰθήρ.†

‘ Moreover the sound which is made by striking the air, induceth  
 ‘ into the ear something sweet and musical, or harsh and discordant :

\* Ibid.

† Ibid. 386.

' for if a certain observation of numbers moderate the blow, it effects  
 ' a harmony consonant to itself; but if it be temerarious, not go-  
 ' verned by measures, there proceeds a troubled unpleasant noise,  
 ' which offends the ear. Now in heaven nothing is produced ca-  
 ' sually, nothing temerarious; but all things there proceed according  
 ' to divine rules and settled proportions: whence irrefragably is in-  
 ' ferred, that the sounds which proceed from the conversion of the ce-  
 ' lestial spheres are musical. For sound necessarily proceeds from  
 ' motion, and the proportion which is in all divine things causeth the  
 ' harmony of this sound. This Pythagoras, first of all the Greeks,  
 ' conceived in his mind; and understood that the spheres sounded  
 ' something concordant, because of the necessity of proportion, which  
 ' never forsakes celestial beings.\*

' From the motion of Saturn, which is the highest and farthest  
 ' from us, the gravest sound in the diapason concord is called Hypate,  
 ' because *ὑπάτων* signifieth highest; but from the lunary, which  
 ' is the lowest, and nearest the earth, Neate; for *νεατών* signifieth  
 ' lowest. From those which are next these, viz. from the motion of  
 ' Jupiter who is under Saturn, Parypate; and of Venus, who is  
 ' above the moon, Paraneate. Again, from the middle, which is  
 ' the sun's motion, the fourth from each part Mese, which is distant  
 ' by a diatessaron, in the heptachord from both extremes, according  
 ' to the ancient way; as the sun is the fourth from each extreme of  
 ' the seven planets, being in the midst. Again, from those which  
 ' are nearest the sun on each side from Mars, who is placed betwixt  
 ' Jupiter and the sun, Hypermese, which is likewise termed Lichanus;  
 ' and from Mercury, who is placed betwixt Venus and the sun,  
 ' Parámese.†

' Pythagoras, by musical proportion, calleth that a tone, by how  
 ' much the moon is distant from the earth: from the moon to Mer-  
 ' cury the half of that space, and from Mercury to Venus almost as  
 ' much; from Venus to the sun, sesquiple; from the sun to Mars, a  
 ' tone, that is as far as the moon is from the earth: from Mars to  
 ' Jupiter, half, and from Jupiter to Saturn, half, and thence to the  
 ' zodiac sesquiple. Thus there are made seven tones, which they  
 ' call a diapason harmony, that is an universal concert, in which

\* Ibid.

† Ibid.

° Saturn.

‘ Saturn moves in the Doric mood, Jupiter in the Phrygian, and in  
 ‘ the rest the like.\*

‘ Those sounds which the seven planets, and the sphere of fixed stars,  
 ‘ and that which is above us, termed by them Antichton, make,  
 ‘ Pythagoras affirmed to be the nine Muses; but the composition  
 ‘ and symphony, and as it were connexion of them all, whereof, as  
 ‘ being eternal and unbegotten, each is a part and portion, he  
 ‘ named Mnemosyne.†

That the above notion of the music of the spheres was first entertained by Pythagoras seems to be agreed by most writers. The reception it has met with has been different, according as the temper of the times, or the different opinions of men have contributed to favour or explode it. Cicero mentions it in such a way as shews him inclined to adopt it, as does also Boetius, lib. I. cap. ii. Macrobius, in his Commentary on the Somnium Scipionis, lib. II. cap. iii. speaks of it as a divine and heavenly notion. Valesius, on the contrary, treats it as an ill-grounded conceit. *Sacr. Philosoph. cap. xxvi. &c. pag. 446. edit. 1588.* Notwithstanding which it has ever been favoured by the poets: Milton, who was a great admirer of music, while at college composed and read in the public school, a small tract *De Sphærarum Concertu*, which with a translation thereof is published in Peck’s *Memoirs of him*. Mr. Fenton, in his notes on Waller, suggests that Pythagoras might possibly have grounded his opinion of the music of the spheres upon a passage in the book of Job, the reasons for this conjecture are very ingenious, and will be best given in his own words, which are these:

‘ Pythagoras was the first that advanced this doctrine of the music  
 ‘ of the spheres, which he probably grounded on that text in Job,  
 ‘ understood literally, “ When the morning stars sang together,”  
 ‘ &c. chap. xxix. ver. 7. For since he studied twelve years in  
 ‘ Babylon, under the direction of the learned impostor Zoroastres,  
 ‘ who is allowed to have been a servant to one of the prophets, we  
 ‘ may reasonably conclude that he was conversant in the Jewish writ-  
 ‘ ings, of which the book of Job was ever esteemed of most authen-  
 ‘ tic antiquity. Jamblicus ingenuously confesseth that none but  
 ‘ Pythagoras ever perceived this celestial harmony; and as it seems  
 ‘ to be a native of imagination, the poets have appropriated it to  
 ‘ their

\* *Ibid.* 386.

† *Ibid.*

• their own province, and our admirable Milton employs it very  
• happily in the fifth book of his *Paradise Lost* :

That day, as other solemn days, they spent  
In song and dance about the sacred hill ;  
Mystical dance ! which yonder starry sphere  
Of planets and of fixt in all her wheels  
Resembles nearest, mazes intricate,  
Excentric, intervolv'd, yet regular  
Then most, when most irregular they seem ;  
And in their motions harmony divine  
So smooths her charming tones, that God's own ear  
Listens delighted—— \*

Censorinus suggests a notable reason why this heavenly music is in-  
audible to mortal ears, viz. its loudness, which he says is so great as  
to cause deafness. *De Die Natal.* cap. xi. which Butler has thus  
ridiculed.

Her voice, the music of the spheres,  
Soloud it deafens mortal ears,  
As wise philosophers have thought,  
And that's the cause we hear it not.

HUDIBRAS, Part II. Cant. i. line 617.

After all, whether the above opinion be philosophically true or  
not, the conception is undoubtedly very noble and poetical, and as  
such it appears in the passage above-cited from the *Paradise Lost*,  
and in this other of Milton, equally beautiful and sublime.

Ring out, ye chrystal spheres,  
Once blefs our human ears,  
If ye have power to touch our senses so ;

\* One of the earliest editors of Milton has the following note on this passage, which  
Dr. Newton has retained.

‘ There is a text in *Job xxxviii.* 37. that seems to favour the opinion of the Pythagoreans,  
concerning the musical motion of the spheres, though our translation differs therein from  
other versions. “ *Concentum cæli quis dormire faciet ?*” Who shall lay asleep, or still  
the concert of the heaven ? But this is to be understood metaphorically of the wonderful  
proportions observed by the heavenly bodies in their various motions.’ HUME.

The above is the vulgar translation ; that of Beza is less to this purpose, as is also that of  
Tremelius.

And

And let your silver chime  
 Move in melodious time,  
 And let the base of heav'n's deep organ blow.

HYMN on the NATIVITY.

Touching the division of the diapason, the following is the doctrine of the Pythagoreans.

‘ The diatonic genus seems naturally to have these degrees and progresses, hemitone, tone and tone, (half note, whole note and whole note); this is the system diatessaron, consisting of two tones, and that which is called a hemitone; and then, another tone being inserted, diapente is made, being a system of three tones and a hemitone. Then in order after this, there being another hemitone, tone and tone, they make another diatessaron, that is to say, another Sesquitertia: so that in the ancients heptachord, all fourths from the lowest, found a diatessaron one to another, the hemitone taking the first, second, and third place, according to the progression in the tetrachord. But in the Pythagoric octochord, which is by a conjunction a system of the tetrachord and the pentachord, and that either jointly of two tetrachords, or disjointly of two tetrachords separated from one another by a tone, the procession will begin from the lowest, so that every fifth found will make diapente, the hemitone passing into four places, the first, the second, the third, and the fourth.’\*

It appears also that Pythagoras instituted the canon of the Monochord, and proceeded to a subdivision of the diatessaron and diapente into tones and semitones, and thereby laid the foundation for the famous Sectio Canonis, which Euclid afterwards adjusted, and is given in his Introduction, as also in a foregoing chapter of this work. Duris, an author cited by Porphyry, mentions a brazen tablet, set up in the Temple of Juno by Arimnestus the son of Pythagoras, near two cubits in diameter, on which was engraven a musical canon, which was afterwards taken away by Simon, a Thracian, who arrogated the canon to himself, and published it as his own.†

Stanley speaks farther of Pythagoras in these words: ‘ Pythagoras, saith Censorinus, asserted that this whole world is made according to musical proportion, and that the seven planets betwixt heaven

\* Stanl. Hist. of Philos. pag. 387.

† Ibid. 388. 366.

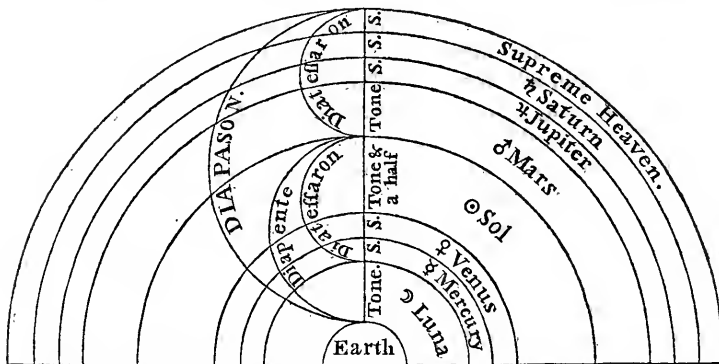
‘ and



' and the earth, which govern the natiivities of mortals, have an har-  
 ' monious motion, and intervals correfpondent to mufical diatefemes ;  
 ' and render various founds, according to their feveral heights, fo con-  
 ' fonant that they make moft fweet melody ; but to us inaudible, by  
 ' reafon of the greatnefs of the noife, which the narrow paffage of our  
 ' ears is not capable to receive. For, as Eratofthenes collected that the  
 ' largeft circumference of the earth is 252000 ftadia, fo Pytha-  
 ' goras declared how many ftadia there are betwixt the earth and  
 ' every ftar. In this meafure of the world we are to underftand the  
 ' Italick ftadium, which confifts of 625 feet, for there are others of a  
 ' different length, as the Olympic of 600 feet, the Pythic of 500.  
 ' From the Earth therefore to the Moon Pythagoras conceived it to  
 ' be about 126000 ftadia ; and that diftance, (according to mufical  
 ' proportion) is a tone. From the Moon to Mercury, who is called  
 ' *στίλβων*, half as much, as it were a hemitone. From thence to  
 ' Phofphorus, which is the ftar Venus, almoft as much, that is an-  
 ' other hemitone : from thence to the Sun twice as much, as it were  
 ' a tone and an half. Thus the Sun is diftant from the Earth three  
 ' tones and a half, which is called Diapente ; from the moon two  
 ' and a half, which is Diateffaron. From the Sun to Mars, who is  
 ' called *Πυρόεις*, there is the fame interval as from the Earth to the  
 ' Moon, which makes a tone. From thence to Jupiter, who is  
 ' called *Φαεδων*, half as much, which makes a hemitone. From  
 ' thence to the fupreme heaven, where the figns are a hemitone alfo ;  
 ' fo that the diatefeme from the fupreme heaven to the Sun is Diateffa-  
 ' ron, that is two tones and a half : from the fupreme heaven to the  
 ' top of the earth fix tones, a diapafon concord. Moreover he refer-  
 ' red to other ftars many things which the mafters of mufic treat of,  
 ' and fhewed that all this world is enarmonic \*. Thus Cenforinus :

\* Thefe pofitions of the Pythagoreans, that the univerfe is framed according to mufical proportion, and that all this world is enarmonic, refer to the general frame and contexture of the whole. But there are arguments in favour of mufic, deducible from the properties and affections of matter, difcoverable in its feveral parts : in fhort. it may be faid in other words, that the whole world is in tune, inafmuch as there are few bodies but are fonorous. The fkin of an animal may be tuned to any given note, as is observable in the drum : a cable diftended by a fufficient power is as much a mufical chord as a lute ftring or one of wire. And Strada fomewhere mentions fix great guns in a fortification at Groningen, which from the founds uttered by them in their explofion, had the names of *UT, RE, MI, FA, SOL, LA*. The percuffion of all metals, of ftones, nay of timber, or of the trunks of trees when felled, produces a mufical found : hollow veffels, as well of wood, as earth and metal, when ftruck do the fame. Of this fact the Indian Gong, as it is called, is

‘ but Pliny, delivering his opinion of Pythagoras, reckons seven tones from the earth to the supreme heaven; for whereas Cenforinus accounts but a hemitone from Saturn to the zodiac, Pliny makes it ‘ Sesquiple.’\*  
 Stanley represents the intervals of the spheres in the following diagram.



a surprizing instance; it is an instrument of brass, or some other factitious metal, in form like a sieve, and about two feet in diameter. The late duke of Argyle had one in his observatory at Whitton near Twickenham in Middlesex, which being suspended edgewise by a cord, and struck with a stick muffled at the end, many times, till the quickest vibrations it could make were excited, yielded not only a clear musical sound, but the whole harmony of a diapason, namely, the unison third, fifth, and octave, so clearly and distinctly, that each was obvious to the ear. This instrument is mentioned by Capt. Dampier in one of his voyages, and is thus described by him.

‘ In the sultan’s mosque [at Mindanao] there is a great drum with but one head, called a Gong, which is instead of a clock. This gong is beaten at twelve o’clock, at three, six, and nine, a man being appointed for that service. He has a stick as big as a man’s arm, with a great knob at the end bigger than a man’s fist, made with cotton, bound with small cords; with this he strikes the gong as hard as he can about twenty strokes, beginning to strike leisurely the first five or six strokes, then he strikes faster, and at last strikes as fast as he can; and then he strikes again slower and slower so many strokes: thus he rises and falls three times a-day, and then leaves off till three hours after.’ Dampier’s Voyages, vol. I. pag. 388.

Glass, and many other bodies, affected by the voice, or the vibrations of chords, return the sounds that agitate them. It is credibly reported of old Smith the organ-maker, that he could not tune a pipe in St. Paul’s organ till he had broke a pane of glass in the faith that incloses it.

\* Stanl. Life of Pythag. pag. 393;

## C H A P.      I V.

**I**N what manner Pythagoras discovered the consonances, and adjusted the system, has already been mentioned. The particulars of his life are related by Jamblichus and other authors; and a summary of his doctrines is contained in the account given of him by the learned Stanley, in his History of Philosophy. Pythagoras lived to the age of eighty, or, according to some writers, ninety years. The manner of his death, which all agree was a violent one; is as variously reported; some say, that being with others at the house of his friend Milo, one who had been refused admittance among them set it on fire, and that Pythagoras, running to escape the flames, was overtaken and killed, together with forty of his disciples, among whom was Archytas of Tarentum\*. Others say that he fled to the Temple of the Muses at Metapontum, and died for want of food, having lived forty days without eating †. He had for one of his disciples Philolaus, a Crotonian (though he is classed among those of Tarentum, his followers) whose system of a septenary is hereinbefore inserted; and who was also the inventor of that division of the sesquioctave tone into commas, which Boetius has recognized, and is approved of even at this day. This Philolaus is said to have been the first that asserted the circular motion of the earth, and to have written of the doctrines of the Pythagorean school. One of his books was purchased by Plato of his relations, at forty Alexandrian Minæ, an immense price ‡.

Among many tenets of the Pythagoreans, one was that there is a general and universal concert or harmony in the parts of the universe; and that the principles of music pervade the whole material world; for which reason they say that the whole world is enarmonic. And in the comparison they assert that those proportions into which the consonances in music are resolvable, are also to be found in those material forms; which from the symmetry of their parts excite pleasure

\* Stanley in the Life of Pythagoras, chap. xix.

† Ibid.

‡ Ibid. pag. 436.

in the beholder. The effect of this principle is in nothing so discoverable as in the works of the architects of ancient times, in which the proportions of 2 to 1, answering to the diapason; of 3 to 2, or Sesquialtera, 4 to 3, or Sesquitercia, are perpetually resulting from a comparison between the longitude and latitude of the whole or constituent parts, such as porticos, pediments, halls, vestibules, and apertures of all kinds, of every regular edifice.

At a time when philosophy had derived very little assistance from experiment, such general conclusions as these, and that the universe was founded on harmonic principles, had little to recommend them but the bare probability that they might be well grounded; but how great must have been the astonishment of a Pythagorean or a Platonist, could he have been a witness to those improvements which a more cultivated philosophy has produced! And how would he who exulted in the discovery that the consonances had a ratio of 12. 9. 8. 6, have been pleased to hear the consonances at the same instant in a sonorous body; or been transported to find, by the help of a prism, a similar coincidence of proportions among colours, and that the principles of harmony pervaded as well the objects of sight as hearing? For Sir Isaac Newton happily discovered, that the breadths of the seven primary colours in the sun's image, produced by the refraction of his rays through a prism, are proportional to the seven differences of the lengths of the eight musical strings, D, E, F, G, A, B, C, d, when the intervals of their sounds are T, H, t; T, t, H, T.\*

The earliest of the harmonic writers, whose works are now extant, was ARISTOXENUS; he was the son of a musician of Tarentum in Italy, called also Spintharus. Aristoxenus studied music first under his father at Mantinea, and made a considerable proficiency therein: he had also diverse other tutors, namely, Lamprius, Erythraeus, Xenophilus the Pythagorean, and lastly Aristotle, whom, as some say, he greatly reviled after his death, for having left his school to Theophrastus, which Aristoxenus expected to have had, he being greatly applauded by his hearers: though others on the contrary assert, that he always mentioned Aristotle with great respect. He lived in the time of Alexander the Great, viz. about the hundred and eleventh Olympiad,

\* Vide Smith's Harmonics, pag. 31, in a note. And Sir Isaac Newton's Optics, book I. part ii. prop. 3, pag. 91 of the quarto edition.

which

which answers nearly to A. M. 3610. There are extant of his writing Elements of Harmonics, in three books. He is said to have written on music, philosophy, history, and other branches of learning, books to the number of four hundred and fifty-three, and to have expressly treated on the other parts of music, namely, the Rhythmic, the Metric, and the Organic; but that abovementioned is the only work of his now remaining.

Touching the elements of Aristoxenus, there is great diversity of opinions: Cicero, who, as being a philosopher, we may suppose to have studied the work with some degree of attention, in his *Treatise de Finibus*, lib. V. 19. pronounces of it that it is utterly unintelligible. Meibomius, on the other hand, speaks of it as a most valuable relique of antiquity, and scruples not to style the author the Prince of Musicians. And the principal end of Euclid's Introduction is to reduce the principles of the Aristoxeneans into form. Notwithstanding all this, a very learned writer, namely, Sir Francis Stiles, of whom mention has already been made, hesitates not to say, that the whole three books of harmonics ascribed to Aristoxenus are spurious. On what authority this assertion is grounded he has forborne to mention; however, as the work is recognized by Ptolemy, and is constantly appealed to by him, as the test of the Aristoxenean doctrine, its authenticity will at this day hardly bear a question.

In the first book of the Elements of Harmonics of Aristoxenus, is contained that explanation of the genera, and also of their colours or species, which has already been given from him. The rest of that book consists of some general definitions of terms, particularly those of Sound, Interval, and System, which, though in some respects arbitrary, all the subsequent writers seem to have acquiesced in.

In his second book we meet with an assertion of the author, which at this day must doubtless appear unintelligible, namely, that music has a tendency to improve or corrupt the morals. This notion, strange as it may seem, runs through the writings of all the ancient philosophers, as well those who did not, as those that did, profess to teach music. Plutarch insists very largely on it; and it is well known what effects the Spartans attributed to it, when they made it an essential in the institution of their youth. Aristophanes, in his comedy of *The Clouds*, puts into the mouth of Justice, whom he represents as engaged in a contest with Injustice, a speech so very pertinent

' tinent to this subject, that it is here inserted at length, as Mr. Theobald has translated it. ' I'll tell you then what was the discipline of  
 ' old, whilst I flourished, had liberty to preach up temperance to man-  
 ' kind, and was supported in it by the laws; then it was not per-  
 ' mitted for the youth to speech it in public, but every morning the  
 ' young people of each borough went to their music school, marched  
 ' with a grave composed countenance through the streets, decent  
 ' and lightly clothed, even when the snow fell thick. Before their  
 ' master they sat with modesty, in proper ranks, at distance from  
 ' each other; there they were taught to sing in lofty strains some  
 ' hymn to the great and formidable Pallas, or other canto of that  
 ' kind, in concert with the strong and masculine music of their  
 ' country, without pretending to alter the tones that had been de-  
 ' rived down to them by their forefathers. And if any one were ob-  
 ' served to wanton it in his performance, and sing in an effeminate  
 ' key, like those that now sing your corrupted airs of Phrynis, he  
 ' was immediately chastised as one that depraved and ruined music.  
 ' You would not then have seen a single instance of one that should  
 ' dare commit the least immodesty, or discover ought that honesty  
 ' enjoined him to hide: they were so scrupulously nice in this re-  
 ' spect, that they never forgot to sweep up the sand on which they  
 ' had sat. None then assumed the lawless minion, or defiled himself  
 ' with wanton glances; none were suffered to eat what was an incen-  
 ' tive to luxury, or injured modesty: radishes were banished from  
 ' their meals; the anise and rock-parsley, that are proper for old  
 ' constitutions, were forbid them, and they were strangers to high  
 ' and seasoned dishes: they sat with gravity at table, never encou-  
 ' raged an indecent posture, or the tossing of their legs lazily up and  
 ' down \*.'

\* Polybins in his fourth book, chap. iii. has given a description of the ancient Arcadian discipline of youth, nearly corresponding with that of the Spartans above cited, in a passage, which, as it is often alluded to by the writers on music, is here inserted in the words of his elegant translator Mr. Hampton.

' All men know that Arcadia is almost the only country in which children, even from  
 ' their most tender age, are taught to sing in measure the songs and hymns that are com-  
 ' posed in honour of their gods and heroes: and that afterwards when they have learned  
 ' the music of Timotheus and Philoxenus, they assemble once in every year in the public  
 ' theatres, at the feast of Bacchus, and there dance with emulation to the sound of flutes,  
 ' and celebrate according to their proper age, the children those that are called the puerile,  
 ' and the young men the manly games. And even in their private feasts and meetings  
 ' they

It has already been said that this philosopher did by no means acquiesce in the opinion of Pythagoras and his followers, that the understanding is the ultimate judge of intervals; and that in every system there must be found a mathematical coincidence before such system can be said to be harmonical: this position Aristoxenus and all of his school denied. The philosopher himself, in this second book of his *Elements*, expressly asserts, that ‘by the hearing we judge of the magnitude of an interval, and by the understanding we consider its several powers.’ And again he says, ‘that the nature of melody is best discovered by the perception of sense, and is retained by memory; and that there is no other way of arriving at the knowledge of music;’ and though, he says, ‘others affirm that it is by the study of instruments that we attain this knowledge;’ this, he says, is talking wildly, ‘for that as it is not necessary for him who writes an Iambic to attend to the arithmetical proportions of the feet of which it is composed, so it is not necessary for him who writes a Phrygian Cantus to attend to the ratios of the sounds proper thereto.’ The meaning of this passage is very obvious, and may be farther illustrated by a comparison of music with painting, the practice whereof is so little connected with the theory of the art, that it requires not the least skill in the former to make a painter. The laws of vision, or the theory of light and colours never suggest themselves to him who is about to design a picture, whether it be history, landscape, or portrait: the common places in his mind are ideas of effect and harmony, drawn solely from experience and observation; and in like manner the musical composer adverts to those harmonies or melodies, those combinations, which from their effect alone he has found to be the most grateful, without recurring to the ratios that subsist among them.

Aristoxenus then proceeds to a general division of music into seven parts, which he makes to be 1. The Genera. 2. Intervals. 3.

‘they are never known to employ any hired bands of music for their entertainment, but each man is himself obliged to sing in turn. For though they may without shame or censure disown all knowledge of every other science, they dare not, on the other hand, dissemble or deny that they are skilled in music, since the laws require that every one should be instructed in it: nor can they, on the other hand, refuse to give some proofs of their skill when asked, because such refusal would be esteemed dishonourable. They are taught also to perform in order all the military steps and motions to the sound of instruments; and this is likewise practised every year in the theatres, at the public charge, and in sight of all the citizens.’ Hampton’s Polybius, pag. 359.

Sounds.

Sounds. 4. Systems. 5. Tones or Modes. 6. Mutations. And 7. Me-  
lopœia; and in this method he is followed by Aristides, Nicomachus,  
and most other ancient writers.

The remainder of the abovementioned work, the Elements of  
Aristoxenus, is taken up with a discussion of the several parts of music  
according to the order which he had prescribed to himself. But it  
must be owned so great is the obscurity in which his doctrines are  
involved, that very little instruction is to be obtained from the most  
attentive perusal of him; nor will the truth of this assertion be ques-  
tioned, when the reader is told that Cicero himself has pronounced  
his work unintelligible\*. The use, however, proposed to be made  
of it is occasionally to refer to such parts of it as are least liable to this  
censure, and this will be done as often as it shall appear necessary.

The next in order of time of the writers on music is EUCLID, the  
author of the Elements of Geometry. He lived about the year of  
the world 3617, and wrote an Introduction to Harmonics, which he  
begins with some necessary definitions, particularly of the words  
Acumen and Gravitās, terms that frequently occur in the writings of  
the ancient harmonicians: the first of these he makes to be the effect  
of intension or raising, and the other of remission or falling the voice.  
He then proceeds to treat of the genera and the modes; what he has  
said of each is herein beforementioned. His Isagoge or Introduction is a  
very small tract, and little remains to be said of it, except that it contains  
the famous Sectio Canonis, a geometrical division of a chord for the  
purpose of ascertaining the ratios of the consonances, hereinbefore in-  
serted. In this, and also in his opinion touching the diatessaron and  
diapente, namely, that the former is less than two tones and a hemi-  
tone, and the latter less than three tones and a hemitone he is a Pytha-  
gorean, but in other respects he is apparently a follower of Aristoxe-  
nus†. The fundamental principle of Euclid's preliminary discourse  
to the Sectio Canonis is, that every concord arises either from a mul-  
tiple or superparticular ratio; the other necessary premises are, 1. That  
a multiple ratio twice compounded, that is multiplied by two, makes  
the total a multiple ratio. 2. That if any ratio twice compounded  
makes the total multiple., that ratio is itself multiple. 3. A super-

\* De Finibus, lib V. 19.

† Wallis. Append. de Vet. Harm. pag. 307.



particular ratio admits of neither one nor more geometrical mean proportionals. 4. From the second and third propositions it follows, that a ratio not multiple, being twice compounded, the total is a ratio neither multiple nor superparticular. Again, from the second it follows that if any ratio twice composed make not a multiple ratio, itself is not multiple, 5. The multiple ratio, 2 to 1, which is that of the diapason, and is the least of the kind and the most simple, is composed of the two greatest superparticular ratios 3 to 2, and 4 to 3, and cannot be composed of any other two that are superparticular\*.

The foregoing account of the nature and design of Euclid's division is contained in a series of theorems prefixed to the *Sectio Canonis*, and are reduced to a kind of summary by Malcolm, who appears to have been extremely well versed in the mathematical part of music.

It was not till the time of Meibomius that the world was possessed of a genuine and accurate edition of the *Isagoge* of Euclid; it seems that a MS. copy of a Treatise on Harmonics in the Vatican had wrote in it '*Incerti Introductio Harmonica*;' and that some person had written therein the name of Cleonidas, and some other, with as little reason, Pappus Alexandrinus. Of this MS. Georgius Valla, a physician of Placentia, published at Venice, in 1498, a Latin translation, with the title of *Cleonidæ Harmonicum Introductorium*; which after all appears to be a brief compendium of Euclid, Aristides Quintilianus, and Manuel Bryennius, of very little worth: and as to Cleonidas, the reader is as much to seek for who he was, and where he lived, as he would have been had Valla never made the above translation.

\* Malcolm on Music, pag. 508.

The above terms were used by the old arithmetical writers before the invention of fractional arithmetic, since which they have in a great measure been laid aside. What is to be understood by those kinds of musical proportion to which they are severally applied, will hereafter be shewn; however it may here be necessary to give a short explanation of the terms, and such a one follows.

Multiple proportion is when the antecedent being divided by the consequent, the quotient is more than unity; as 25 being divided by 5, it gives 5 for the quotient, which is the multiple proportion.

Superparticular proportion is when one number or quantity contains another once, and an aliquot part, whose radical or least number is one; so that the number which is so contained in the greater, is said to be to it in a superparticular proportion.

To these may be added superpartient proportion, which is when one number or quantity contains another once, and some number of aliquot parts remaining, as one  $\frac{3}{2}$ , one  $\frac{4}{3}$ , &c.

DIDYMUS of Alexandria, an author to be reckoned among the *scriptores perdit*, inasmuch as nothing of his writing is now extant, must nevertheless be mentioned in this place: he flourished about the year of the world 4000, and is said to have first discovered and ascertained the difference between the greater and lesser tone. Ptolemy takes frequent occasion to mention him, and has given his division of the diatessaron in each of the three genera.

## C H A P. V.

**M**ARCUS VITRUVIUS POLLIO, the architect, has usually been ranked among the writers on music; not so much because he appears to have been skilled in the art, but for those chapters in his work *De Architectura*, in ten books, written in Latin, and dedicated to the emperor Augustus, in which he treats of it. He flourished in the time of Julius Cæsar, to whom he says he became known by his skill in his profession, which it is agreed was superlatively great; though, to consider him as a writer, it is remarked that his style is poor and vulgar. In some editions of his work, particularly that of Florence, 1496, and in another published at Venice the year after, by some unaccountable mistake he is called Lucius, whereas his true name was Marcus, and so by common consent he is called. In the fifth book of the abovementioned treatise, chap. iii. intitled *De Theatro*, he takes occasion to treat of sound, particularly that of the human voice, and of the methods practised by the ancients in the construction of their theatres, to render it more audible and musical: the various contrivances for this purpose will doubtless appear strange to modern apprehension, and give an idea of a theatre very different from any that can be conceived without it. His words are as follow: 'The ancient architects having made very diligent researches into the nature of the voice, regulated the ascending gradations of their theatres accordingly, and sought, by mathematical canons and musical ratios, how to render the voice from the stage more clear and grateful to the ears of the audience.' Chap. iv. harmony, he says, is a musical literature, very obscure and difficult to such as understand not the Greek language; and, if we are desirous to explain it,

we

we must necessarily use Greek words, some whereof have no Latin appellations; wherefore, says he, 'I shall explain it as clearly as I am able from the writings of Aristoxenus, whose diagram I shall give, and shall define the sounds so as that whoever diligently attends may easily conceive them.' He then proceeds, 'For the changes of the voices, some are acute and others grave. The genera of modulations are three; the first, named in Greek Harmonica, the second Chroma, the third Diatonon; the harmonic genus is grave and solemn in its effect; the chromatic has a greater degree of sweetness, arising from the delicate quickness and frequency of its transitions; the diatonic, as it is the most natural, is the most easy.' He then proceeds to describe the genera in a more particular manner. Chap. v. intitled *De Theatri Vasis*, he speaks of the methods of assisting the voice in the manner following. 'Let vessels of brass be constructed agreeable to our mathematical researches, in proportion to the dimensions of the theatre, and in such manner, that when they shall be touched they may emit such sounds as shall be to each other a diatessaron, diapente, and so on in order, to a disdiapason; and let these be disposed among the seats, in cells made for that purpose, in a musical ratio, so as not to touch any wall, having round them a vacant place, with a space overhead. They must be placed inversely: and, in the part that fronts the stage, have wedges put under them, at least an half foot high; and let there be apertures left before these cells, opposite to the lower beds; these openings must be two feet long, and half a foot high, but in what places in particular they are to be fixed is thus explained. If the theatre be not very large, then let the places designed for the vases be marked quite across, about half way up its height, and let thirteen cells be made therein, having twelve equal intervals between them. In each of these, at the extremes or corners, let there be placed one vase, whose echo shall answer to Nete hyperboleon; then on each side next the corners place another, answering to the diatessaron of Nete synemmenon. In the third pair of cells, reckoning, as before, from the angles, place the diatessaron of Nete parameson; in the fourth pair that of Nete synemmenon; in the fifth the diatessaron of Mese; in the sixth the diatessaron of Hypate meson; and in the middle the diatessaron of Hypate hypaton. In this ratio, the voice, which is sent out from

the stage as from a center, undulating over the whole, will strike the cavities of every vase, and the concords agreeing with each of them, will thereby return clearer and increased; but if the size of the theatre be larger, then let its height be divided into four parts, and let there be made three rows of cells across the whole, one whereof is designed for Harmonia, another for Chroma, and the other for Diatonos. In the first or lower row, which is for Harmonia, let the vases be placed in the same manner as is above directed for the lesser theatre; but in the middle row let those be placed in the corners whose sounds answer to the Chromaticon hyperboleon; in the pair next to the corners the diatessaron to the Chromaticon diezeugmenon; in the third the diatessaron to the Chromaticon synemmenon; in the fourth the diatessaron to the Chromaticon meson; in the fifth the diatessaron to the Chromaticon hypaton; and in the sixth the diatessaron to the Chromaticon Paramezon; for the Chromaticon hyperboleon diapente has an agreement of consonancy with the Chromaticon meson diatessaron. But in the middle cell nothing need be placed, by reason that in the chromatic genus of symphony no other quality of sounds can have any concordance. As to the upper division or row of cells, let vases be placed in the extreme corners thereof, which answer to the sounds Diatonon hyperboleon; in the next pair to them the diatessaron to Diatonon diezeugmenon; in the third the diatessaron to Diatonon synemmenon; in the fourth the diatessaron to Diatonon meson; in the fifth the diatessaron to Diatonon hypaton; in the sixth the diatessaron to Proslambomenon: the diapason to Diatonon hypaton has an agreement of symphony with the diapente. But if any one would easily arrive at perfection in these things, let him carefully inspect the diagram at the latter end of the book, which Aristoxenus composed with great care and skill, concerning the divisions of modulations\*, from which, if any one will attend to his reasoning, he will the more readily be able to effect the constructions of theatres according to the nature of the voice, and to the delight of the hearers.' Thus far Vitruvius.

We are too little acquainted with the nature of the ancient drama to be able to account particularly for the effects of this singular inven-

\* This diagram is inserted in Grassineau's Dictionary, article GENERAL tion :

tion : to suppose that in their theatrical representations the actors barely pronounced their speeches, accompanying their utterance with correspondent gesticulations, and a proper emphasis, as is practised in our times, would render it of no use ; for the vases so particularly described and adjusted by this author, are evidently calculated to reverberate, not the tones used in ordinary speech, which have no musical ratio, but sounds absolutely musical : and, on the other hand, that the actor should, instead of the lesser inflexions of the voice proper to discourse, make use of the consonances diatessaron, diapente, and diapasen, and consequently *sing*, as well the familiar speeches proper to comedy, as those of the more sublime and exalted kind which distinguish tragedy, is utterly impossible for us to conceive.

If it was for the purpose of reverberating the music used in the dramatic representations of the ancient Romans, that this disposition of hollow vessels, directed by Vitruvius, was practised, we may fairly pronounce that the end was not worthy of the means ; for however excellent the musical theory of the ancients might be, yet in the number and perfection of their instruments they were greatly behind the moderns ; and were it a question, we need look no farther for a proof of the fact than the comedies of Terence, where we are told that the music performed at the acting of each of them was composed by Flaccus, a freed-man of Claudius ; and that it was played in some instances, as at the *Andria*, *tibiis paribus, dextris et sinistris* ; and in others, *tibiis paribus generally* ; and at the *Phormio* *tibiis imparibus*, that is to say, by flutes or pipes right-handed and left-handed, in pairs, or of unequal lengths. This was not at a time when the ancient music was in its infancy : the system had been adjusted many ages before ; and we may look on this refinement mentioned by Vitruvius as the last that the art was thought capable of. It is not here meant to anticipate a comparison, which will come more properly hereafter ; but let any one take a view of the ancient music at the period above referred to, with even the advantage of this improvement drawn from the doctrine of Phonics, and compare it with that of modern times ; let him reflect on the several improvements which distinguish the modern from the ancient music, such as the multiplication of parts, the introduction of instruments, some to extend the compass of sounds, others to encrease the variety of tones, and others more forcibly to impress the time and measure, as the drum and other instru-

instruments of the pulsatile kind are manifestly calculated to do; the use of a greater and lesser chorus; that enchanting kind of symphony, known only to the moderns, called thorough bass; and those very artful species of composition, fugue and canon. Let this comparison be made, and the preference assigned to that æra which has the best claim to it.

Although this work of Vitruvius is professedly written on the subject of architecture, it is of a very miscellaneous nature, and treats of matters very little allied to that art, as namely, the construction of the balista, the catapulta, and other warlike engines; clocks and dials, and the nature of colours. In chap. xi. lib. X. intitled De Hydraulicis, he undertakes to describe an instrument called the hydraulic of water-organ, but so imperfectly has he described it, that to understand his meaning has given infinite trouble and vexation to many a learned enquirer\*.

For the existence of this strange instrument we have not only the testimony of Vitruvius, but the following passage in Claudian, which cannot by any kind of construction be referred to any other.

Vel qui magna levi detrudens murmura tactu,  
 Innumeras voces segetis modulatur ahenæ;  
 Intonat erranti digito, penitusque trabali  
 Vecte laborantes in carmina concitat undas.

It is said by some that the hydraulic organ was invented by Hero of Alexandria; others assert that Ctesibus, about the year of the world 3782, invented an instrument that produced music by the compression of water on the air; and that this instrument, which answers precisely to the hydraulic organ, was improved by Archimedes and Vitruvius, the latter of whom has given a very particular description of it.

Ctesibus the inventor of it was a native of Alexandria, and the son of a barber. He was endowed with an excellent genius for mechanic inventions, which he soon discovered in the contrivance of a looking-glass for his father's shop, so hung as that it might be

\* Merfennus, speaking of this machine, says it is much more complex than the common pneumatic organ, and that he has laboured to describe a thing very obscure, and the meaning of which he could not come at, though assisted by the commentary of Daniel Barbaro. De Instrumentis Harmonicis, pag. 138. He farther says that Poliuan in his Panepistemon has in vain attempted to explain it.

easily pulled down or raised higher by means of a hidden rope. The manner of this invention is thus related by Vitruvius. He put a wooden tube under a beam where he had fastened some pulleys, over which a rope went that made an angle in ascending and descending into the tube, which was hollow, so that a little leaden ball might run along it, which ball, in passing and repassing in this narrow cavity, by violent motion expelled the air that was inclosed, and forced it against that without; these oppositions and concussions made an audible and distinct sound, something like the voice. He therefore on this principle, invented engines which received motion from the force of water inclosed, and others that depended upon the power of the circle or lever; and many ingenious inventions, particularly clocks that move by water. To set these engines at work he bored a plate of gold or a precious stone, and chose such kind of materials, as not being subject to wear by constant passing of the water, or liable to contract filth and obstruct its passage; this being done, the water, which ran through the small hole, raised a piece of cork, or little ship inverted, which workmen call Tympanum, upon which was a rule and some wheels equally divided, whose teeth moving one another made these wheels turn very leisurely. He also made other rules and wheels, divided after the same manner, which by one single motion in turning round produced divers effects; made several small images move round about pyramids, threw up stones like eggs, made trumpets sound, and performed several other things not essential to clock-work. Vitruvius de Architectura, lib. IX. cap. viii.

But to return: The following is the description given by Vitruvius of the hydraulic organ.

• Autem quas habeant ratiocinationes, quam brevissimè proxime  
 • que attingere potero: et scriptura consequi, non prætermittam. De  
 • materia compacta basi area in ea ex ære fabricata collocatur:  
 • Supra basin eriguntur regulæ dextra ac sinistra scalari forma com-  
 • pacta: quibus includuntur ærei modioli fundulis ambulationibus  
 • ex torno subtiliter subactis habentibus infixos in media ferreos an-  
 • gones; et verticulis cum vectibus conjunctos pellibusque lanatis in-  
 • volutos. Item in summa planitie foramina circiter digitorum ter-  
 • num, quibus foraminibus proximè in verticulis collocati ærei del-  
 • phini, pendentia habent catenis cymbalia ex ore infra foramina mo-  
 • diorum celata. Intra aream: quo loci aqua sustinetur in est in id  
 genus.

• genus uti infundibulum inverſum : quem ſuper traxilli alti circiter  
 • digitorum ternum ſuppoſiti librant ſpaciū imum. Ima inter labra  
 • phigæos et aræ ſundum. Supra autem cerviculi ejus coagmenta  
 • arcuſa ſuſtinet caput machinæ quæ Græcè Canon Muſicus appella-  
 • tur : in cujus longitudine ſi canalis tetrachordos eſt ſunt quatuor.  
 • Si exachordos ſex. Si octochordos octo. Singulis autem cana-  
 • libus ſingula epithonia ſunt incluſa manubriis ferreis collocata.  
 • Quæ manubria cum torquentur ex arca pateſcunt nares in canales.  
 • Ex canalibus autem canon habet ordinata in tranſverſo foramina  
 • reſpondentia in naribus : quæ ſunt in tabula ſumma : quæ tabula  
 • Græcè Pinax dicitur. Inter tabulam et canona regulæ ſunt interpo-  
 • ſitæ ad eundem modum foratæ ex oleo ſubactæ : ut faciliſſe impel-  
 • lantur : et ruruſus introrſus reducantur : quæ obturant ea foramina :  
 • plinthideſque appellantur. Quarum itus et reditus alias obturat :  
 • alias operit terebrationes. Hæ regulæ habent ferrea choragia fixa  
 • et juncta cum pinnis quarum tactus motiones efficit. Regularum  
 • continentur ſupra tabulam foramina quæ ex canalibus habent egréſ-  
 • ſum ſpiritus ſunt annuli agglutinati : quibus linguæ omnium in-  
 • cluduntur organorum. E modiolis autem fiſtulæ ſunt continentes  
 • conjunctæ ligneis cervicibus : pertinentesque ad nares : quæ ſunt in  
 • arcuſa : in quibus axes ſunt ex torno ſubacti : et ibi collocati. Qui  
 • cum recipit arcuſa animam ſpiritus non patientur obturantes fora-  
 • mina ruruſus redire. Ita cum vèctes extolluntur ancones educunt  
 • fundos modiolorum ad imum. Delphinique qui ſunt in verticulis  
 • incluſi calcantes in eos cymbala replent ſpatia modiolorum : at-  
 • que ancones extollentes fundos intra modiolos vehementi pulſus ce-  
 • rebritate : et obturantes foramina cymbalis ſuperiora. Aera qui  
 • eſt ibi clauſus preſſionibus coactum in fiſtulas cogunt : per quas in  
 • ligna concurrunt : et per ejus cervices in arcam. Motione vero vec-  
 • tium vehementiores ſpiritus frequens compreſſus epithoniorum  
 • aperturis iſluit , et replet animæ canales itaque cum pinæ manibus  
 • tactæ propellunt et reducant continenter regulas alterius obturant  
 • foramina alterius aperiendo ex muſicis artibus multiplicibus modu-  
 • lorum varietatibus ſonantes excitant voces \*. Quantum pòtui niti,  
 • ut obſcura res, per ſcripturam diludicè pronuntiaretur ; contendi.  
 • Sed hæc non eſt facilis ratio : neque omnibus expedita ad intelli-

\* Vitruvius de Architeſtura, lib. X. cap. xi. Ibid. cap. xii.



• gendum præter eos, qui in his generibus habent exercitationem.  
 • Quod si qui parum intellexerint e scriptis cum ipsam rem cognof-  
 • cent: profectò invenient curioſe et ſubtiliter omnia ordinata.\*

This description, which to every modern reader muſt appear un-  
 intelligible, Kircher has not only undertaken to explain, but the  
 ſtrength of his imagination co-operating with his love of antiquity,  
 and his deſire to inform the world, he has exhibited in the Muſur-  
 gia an inſtrument which no one can contemplate ſeriouſly: and, after  
 all, he leaves it a queſtion whether it was an automaton, acted upon  
 by that air, which by the pumping of water was forced through the  
 ſeveral pipes, or whether the hand of a ſkilful muſician, ſitting at the  
 front of it, with the quantity of ſome tons of water in a reſervoir  
 under him, was not neceſſary to produce that muſic which the bigot-  
 ted admirers of antiquity aſcribe to this inſtrument, and affect to be  
 ſo fond of. Iſaac Voſſius, in his treatiſe *De Poematum Cantu et*  
*Viribus Rythmi*, pag. 100, has given a representation of the hydrau-  
 lic organ, no way reſembling that of Kircher, but which he yet ſays is  
 almoſt exactly conformable to the words of Vitruvius; after which fol-  
 lows a deſcription thereof in words not leſs obſcure than thoſe of Vi-  
 truvius and Kircher: neither one nor the other of the diagrams will  
 bear the teſt of an impartial examination, or is worthy to be inſerted  
 in any work intended to convey information to a ſober enquirer after  
 truth; but the confidence with which Voſſius ſpeaks of his diſcovery  
 will make it neceſſary to give his delineation of the hydraulic organ,  
 together with a deſcription of it in his own words.

Kircher indeed, after all the pains he had taken, has the modeſty to  
 confeſs the inferiority of the ancient hydraulic to the modern organ;  
 for he ſays that if the former be compared to the latter it muſt ſeem  
 a very inſignificant work, for, adds he, ‘I cannot perceive what har-  
 • mony a diſpoſition of four, five, ſix, or eight pipes could produce,  
 • and I very much wonder how Nero ſhould be ſo exceedingly af-  
 • fected by ſo ſmall and poor an hydraulic, for Vitruvius teſtifies that  
 • when his life and empire were both in danger, and every thing at  
 • the laſt hazard by a ſedition of his generals and ſoldiers, he did not  
 • relinquish his great care and affection, or deſire thereof. We may  
 • from hence eaſily form a judgment what great pleaſure he muſt

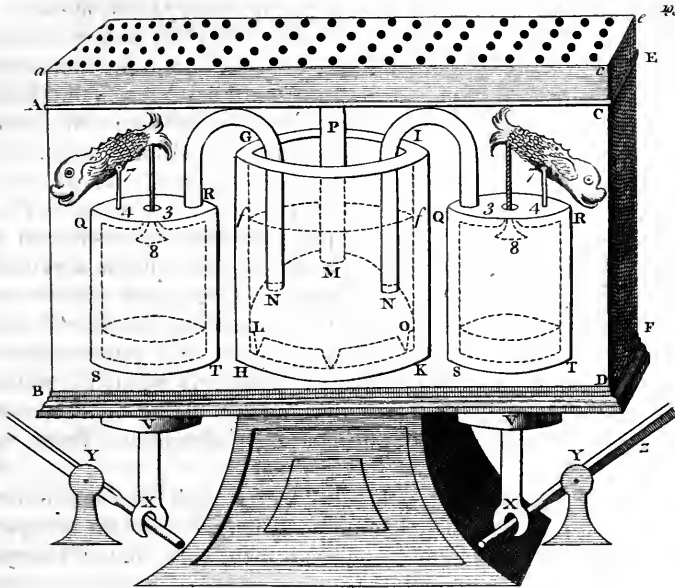
\* Ibid. cap. xii.

‘ have taken in our modern organs, not composed of four, five, six, or eight pipes, but such as our greater organs of Germany, consisting of eleven hundred and fifty-two double pipes, animated by the help of twenty-four different registers; or had he seen our automata or engines of this kind, which move of their own accord without the help of any hand. Certainly these most enlightened ages have invented several things to which the inventions of the ancients can in no manner be compared \*.’

Of a very different opinion is the before-cited Vossius, who declares himself not ashamed to assert, not only that the tibiae alone of the ancients are by very far to be preferred to all the instruments of his age, but that, if we except the pipes of the organs, commonly used in churches, it will be found that scarce any others are worthy to be called by the name of tibiae. And he adds, ‘ even those very organs, which now please so much, can by no means be compared to the ancient hydraulics. And the modern Organarii, to speak after the manner of the ancients, are not in reality Organarii, but Ascaulae or Utricularii, that is to say, Bag-pipers, for by that name were those called who furnish wind to the tibiae by the means of bags or wallets, and bellows, as is done in churches.’ He farther says that ‘ those are ridiculous who suppose the above appellations to belong to those mendicants who go about the streets with a Cornamusa, and with their arms force out continued and displeasing sounds.’ No, says this sagacious writer, ‘ the Ascaulae or Utricularii did not in the least differ from our modern organists; and the ancient Organarii were those only who played on the hydraulic organ, and they were so called from Organum, a brazen vessel, constructed like a round altar, out of which the air by the help of the incumbent water is pressed with great force, which yet flows equally into the tibiae †’. After remarking on the bad success of many who had attempted to find out the meaning of Vitruvius in his description of this instrument, and to restore it to practice, he says very confidently that he himself has done it, and accordingly exhibits it in the following form.

\* Mufurg. Univ. tom. II. pag. 333.

† Voss. de Poemat. pag. 98.



And describes it in these words : ‘ Fiat basis lignea A B C D E F,  
 et in ea constituatur ara rotunda G H I K ex ære fabricata et torno  
 fideliter expolita. Fiat quoque clibanus seu hemisphærium æreum  
 L M N O, quam exactissime huic adaptatum. Sit vero in medio  
 perforatus hic clibanus, et insertum habeat tubum et ipsum æreum  
 et utrinque apertum M P. Habeat quoque clibanus alterum foramen,  
 cui insertus sit siphon N I Q, cujus nares pertingunt ad modiolum  
 æreum Q R S T. Siphon hic habeat assarium seu platysmation ad N.  
 Modiolo vero Q R S T aptetur embolus V cui affixa sit regula firmiter  
 admodum compacta V X, ita ut à vecte XYZ embolus V commode  
 moveri possit. Modiolus autem Q R S T habeat in superiori superficie  
 aliud foramen 3, 4, cum platys-

'matio per quod aër ingredi possit. Iste vero ingreditur cum vectis  
 'XYZ in Z attollitur. Quando vero idem deprimitur, platysma-  
 'tion hoc clauditur, et ingressus aër per siphonem Q I N, aperto pla-  
 'tysmatio ad N, exprimitur in clibanum L M N O, unde per tubum  
 'M P influit in arcam A a C c E e, cujus afflatu tibiæ animantur.  
 'Clibano vero L M N O, quamvis magni sit ponderes, veluti æneo,  
 'quo tamen fortius subjectum premat aërem et fidelius ne effluat cus-  
 'todiat, superinfunditur aqua, puta ad f f, vel altius si fortiores ve-  
 'limus efficere sonos. Fiat itaque ex continua vectis agitatione, ut  
 'attollatur tandem clibanus L M N O, immoto interim perstante  
 'tubo M P, et siphone N I Q, et notandum simulac vehementia in-  
 'gressi spiritus attollitur clibanus, tum quoque æqualem fieri com-  
 'pressionem aëris qui in arca continetur. Licet enim effluente per  
 'tibiæ aëre clibanus descendat, idemque rursus agitatione vectis at-  
 'tollatur, quamdiu tamen clibanus suspensus et à fundo separatus  
 'manet, tandiu propter æqualitatem præmentis ponderis, æqualis  
 'etiam manet inclusi aëris constipatio, ipsaque clibani et superinfusæ  
 'aquæ inconstans et mobilis altitudo efficit æqualitatem flatus, quo  
 'tibiæ aspirantur \*.'

The same author affects to be very merry with those who have  
 asserted that this organ was mounted only with six or eight tibiæ, and  
 cites the foregoing verses of Claudian, and the following exclamation  
 of Tertullian to prove the contrary. 'Specta portentosam Archime-  
 'dis (Ctesibii rectius dixisset) munificentiam: organum hydraulicum  
 'dico, tot membra, tot partes, tot compagine, tot itinera vocum,  
 'tot compendia sonorum, tot commercia modorum, tot acies tibia-  
 'rum, et una moles erunt omnia. Spiritus ille qui de tormento  
 'aquæ anhelat, per partes administratur, substantia solidus, opera di-  
 'visus †.' He says that the use of the hydraulic organ ceased before

\* De Poemat. pag. 101.

In the cabinet of Christina, queen of Sweden, was formerly a beautiful and large me-  
 dallion of Valentinian; having on the reverse one of these hydraulic organs, with two men,  
 one on the right, the other on the left side thereof, seeming to pump the water which  
 plays it, and to listen to the sound of it. It had only eight pipes, and those were placed  
 on a round pedestal; the inscription PLACEA SPECTRI.

† Ibid. pag. 105. In English thus: Behold the wonderful munificence of Archime-  
 des! (he should have said of Ctesibius) I mean the hydraulic organ; so many numbers,  
 so many parts, so many joinings, so many roads or passages for the voices, such a com-  
 pendium of sounds, such an intercourse of modes, such troops of tibiæ, and all com-  
 posing one great whole! The spirit or air which is breathed out from this engine of  
 water, is administered through the parts, solid in substance, but divided in operation.

the time of Cassiodorus; and that the same appears from a passage in a discourse of that author on the hundred and fiftieth Psalm, wherein, without making the least mention of the hydraulic, he bestows the following very high commendations on the pneumatic organ, then in common use. ‘ An organ is as it were a tower composed of several  
‘ different fistulæ or pipes, in which a most copious sound is furnish-  
‘ ed by the blowing of bellows: and that it may be composed of a  
‘ graceful modulation, it is constructed with certain wooden tongues  
‘ in the inner part, which being skilfully pressed down by the fingers  
‘ of the master, produce a great sounding and most sweet cantilena \*.’

He notwithstanding asserts that the hydraulic organ continued in use lower down than the time of Cassiodorus; for that in the French annals of a certain anonymous writer, he is informed that in the year 826 a certain Venetian, called Georgius, or rather Gregorius, constructed an hydraulic organ for Lewis the Pious, at Aix la Chapelle, and that after the manner of the ancients †. He elsewhere says that the hydraulic organ of Daniel Barbaro, described in his Commentary on Vitruvius, is with great reason exploded by all ‡; and that those who in his time had in their writings concerning music inserted, the construction of the Vitruvian organ, while they depreciate the inventions of the ancients, may serve as an example to shew how customary a thing it is for men to despise what they themselves do not understand. This passage is manifestly intended as a censure on Kircher’s description of the hydraulic organ, and proves nothing but the extreme bigotry of Vossius ‖. As to the hydraulic organs of modern Italy of which

\* Organum itaque est quasi turris diversis fistulis fabricata, quibus flatu folium vox copiosissima destinatur, et ut eam modulatio decora componat, linguis quibusdam ligneis ab interiore parte constructur, quas disciplinabiliter magistrorum digiti reprimentes grandifonem efficiunt et suavissimum cantilenam. De Poemat. pag. 106.

† De Poemat. 106.

‡ Ibid. pag. 99.

‖ The enthusiastic attachment to antiquity of this author is strongly evinced by the sentiments he entertains of the energy of the ancient Tibia, which he scruples not to prefer to every instrument of modern invention. His words are these: ‘ As to what belongs  
‘ to the cantus of the Tibia which is blown upon by the mouth, I think it may be truly  
‘ said that the tibicinists know no more concerning that instrument than the ancient shep-  
‘ herds, and perhaps not so much. This most excellent art is banished among the men-  
‘ dicants; and the Tibia, which was by far preferred to all stringed instruments, and to  
‘ all other instruments of music, is now silenced to such a degree, that, if you except the  
‘ Chinese alone, who excel in this part, you will find none in this age that can even-  
‘ please a moderate ear; and the very name of the Tibia is justly despised by the European  
‘ nations. That the Tibia was formerly held in greater esteem, and accounted sweeter  
‘ than the Lyre, is not only evinced by Aristotle, in his problems, but also by the very  
‘ punish-

Grassineau says there are several in the grottos of vineyards, particularly one belonging to the family d'Este, near the Tyber, described by Baptista Porta, he says they are very different, and no way resemble the ancient hydraulic organ. These perhaps will be found to be nothing more than the common organ played on by a barrel, which by a very easy contrivance is set in motion by a small stream of water: and that these for more than a century past have been in use in various parts of Italy there is additional evidence. In a book supposed to be written by one Dr. Thomas Powell, a canon of St. David's, entitled Human Industry, or a History of the Manual Arts, it is said that pope Sylvester II. made an organ which was played on by warm water; and that such hydraulics, frequent in Italy, are founded with cold water. Oldys's British Librarian, No. I. pag 51. And in an old English comedy of Webster, printed in 1623, intitled the Devil's Law-Cafe, Romelia, a wealthy merchant of Naples, speaking of the greatness of his income says,

————— My factors' wives  
Weare shaperoones of velvet; and my scriveners,  
Meerely through my employment, grow so rich  
They build their palaces and belvidears  
With *musical water-workes*.

Comedy, which in general exhibits a very just representation of contemporary manners and characters, is, in cases of this sort, authority: and the poet, in the passage above-cited, would hardly have pointed out this instance of Italian profusion, had he not had some example in his eye to warrant it.

\* punishment of Marsyas. How great the care and diligence of the ancients was in improving this instrument, sufficiently appears from what both Theophrastus and Pliney have wrote concerning the reeds of the lake Orchomenius. It was not sufficient that they were cut at certain periods of years, when the lake became dry; unless they were also macerated by the sun, rain, and frost, and afterwards softened by long use; and, remaining without any defect, satisfied the wish of the artists. He who reads and considers these things, will the less wonder that sometimes Tibia have been sold for seven talents, as Lucian testifies. Vossius De Poemat. 107.

## C H A P. VI.

**B**UT to return to the ancient hydraulic organ, a hundred questions might be asked touching the use and application of its several parts, as also what system it was adapted to; and particularly whether those who have undertaken to delineate it with such exactness, have not formed an idea of it from the organ of our own times, and done a violence to historical truth by incorporating two instruments, which cannot possibly exist in a state of union. And after all that can be said in favour of it, the censure of Kircher above-cited, must undoubtedly appear to be very just, and may serve to shew what little reason there is to lament the loss of many inventions of the ancients, particularly those in which the knowledge of mechanics is any way concerned. The hydraulic organ is one of those ancient inventions mentioned by Pancirollus as now lost \*, a misfortune which at this day we lament perhaps with as little reason as we should have for saying that the loss of the ancient Clepsydræ † is not amply compensated by the invention of clocks and watches. With respect to this instrument, it cannot so properly be said to be lost, as to have given way to one of a more artificial construction, and nobler in its effects, as unquestionably the modern organ is. It is remarkable that those who would infer the debility of the later ages, from the few

\* Guido Pancirollus De Rerum memorabilium sive deperditarum, lib. I. cap. ii.

† Clepsydra, an hour-glass made with water. The use of Clepsydræ was very ancient, and among the Romans there were several sorts of them; in general they resembled a sand hour-glass, which is composed of two vessels, so joined at top and bottom, as that what is contained in the upper may run into the under of them. The Clepsydræ contained water, which passing through a small hole, imperceptibly raised a piece of cork with an index fixed thereto that pointed to the hours marked on the under glass. They were all subject to two inconveniences: the first was that which Plutarch takes notice of, to wit, that the water passed through with more or less difficulty, according as the air was more or less thick, cold, or hot, for that hindered the hours from being equal; the other was, that the water ran faster at first, when the vessel from whence the water came was full, than at last.

These Clepsydræ were chiefly used in a city called Achanta, beyond the Nile. In this city there was an huge vessel of this kind, into which three hundred and sixty-five priests daily brought water from the Nile, which running out from the vessel again, declared the hours. The use of the Clepsydra was to tell the hour in the night, or in cloudy weather, when it could not be found by the sun-dial.

remaining monuments of ancient ingenuity, generally confine themselves to poetry, sculpture, and other arts, which owe their perfection rather to adventitious circumstances, than to the vigorous exertion of the powers of invention : but, with respect to instruments, machines, and engines of various kinds, it is not in the nature of things possible but that mankind must continue to improve as long as the world shall last.

NICOMACHUS GERASENUS, so called from his having been born in Gerasa, a city of Arabia, lived about A. C. 60. He was a philosopher, and wrote an Introduction to Harmony, at the request, as it should seem by the beginning of it, of some learned female contemporary. He was a follower of Pythagoras ; and it is by this work alone that we know how, and by what means, his master discovered the consonances. He begins his work with an address to his female friend, whom he styles the most virtuous of women ; and reflects with some concern on the difference in sentiment of the several writers on the elements of harmony. He excuses his inability to reconcile them by reason of the long journeys he is obliged to take, and his want of leisure, which he prays the gods to vouchsafe him, and promises to complete a work which he has in contemplation, of which what he now gives seems to be but a part. Professing to follow the Pythagoreans, he considers the human voice as emitting sounds, which are either commensurable by intervals, as when we are said to *sing* ; or incommensurable, as when we converse by speech. In this latter use of the voice, he says, we are not obliged by any rule ; but in the former we are bound to an observance of those intervals and magnitudes in which harmony does consist.

The sounds and their names, continues this author, are probably taken from the seven planets in the heavens which surround this earth ; for it is said that all bodies which are carried round with any great degree of velocity, must necessarily, and by reason of their magnitude, and the celerity of their motions, cause a sound, which sound will vary in proportion to the degrees of magnitude in each, the celerity of their motions, or the depression of the orb wherein they act. These differences, he says, are manifest in the planets, which perpetually turn round, and produce their proper sounds : for example, the motion of Saturn, the planet most distant from us, produces a sound the most grave, in which it resembles the consonance diapason ; as does  
Hypate,



Hypate, which signifies the same as principal. To the motion of the moon, the lowest of the planets, and nearest the earth, we apply the most acute term, called Nete, for Neaton is the same as low.

He then proceeds to declare the supposed analogy between the rest of the planets and the intermediate chords, as mentioned in the foregoing account of Pythagoras. But here it may be proper to take notice that the ancient writers were not unanimous in opinion that the graver sounds were produced by the bodies of greatest magnitude: Cicero, in particular, is by Glareanus \* said to have maintained that the lesser bodies produce the graver sounds, and the greater the more acute. And from this dictum of Cicero, Glareanus has been at the pains of forming a diagram, intended to represent this fanciful coincidence of revolutions and harmonies, which is given in a subsequent page of this work.

In the *Somnium Scipionis*, which is what Glareanus means when he refers to Cicero de *Republica*, lib. VI. is a great deal concerning the music of the spheres in general; and Macrobius, in his commentary on that fragment, has made the most of it. Nevertheless the general sentiment of mankind seems till very lately † to have been that the whole doctrine is to be regarded as a poetical fiction; and as to the fact, that it has no foundation in reason or philosophy.

But to return to our author Nicomachus, and his opinion of the harmony of the planets: it is true, says he, that it is inaudible to our ears, but to our reason it is clear.

Nicomachus proceeds to define the terms made use of by him, distinguishing, as others of the ancients do, between sound and noise. Speaking of instruments, he says they are of two kinds, viz. such as are blown, as are the flute, trumpet, organ, and the like; or such as are strung, to wit, the lute, lyre, and harp; of the latter kind are also the monochord, by many called the Pandora ‡, and by the Py-

\* *Dodecaehordon*, lib. II. cap. xiii.

† See a subsequent note, in the present book, containing the sentiments of Dr. Gregory and Mr. Maclaurin on this subject.

‡ An appellative from which the English word *Bandore* seems clearly to be derived. Meibomius gives the following note on this passage.

“ *ἄνδρα* [Phandourous.] Hefychius speaks of it thus: “ Pandora or Panduris is a musical instrument; Pandurus he who plays on that instrument.” Monochords were also by some called Phanduras. Nicomachus here says the same, and seems as if he approved of the practice. These instruments are various; Pollux, lib. IV. cap. ix. says, “ The monochord was invented by the Arabians, and the trichord by the Assyrians, who gave

thagoreans the Canon, and also the Trigon or triangular dulcimer. He also mentions crooked and other flutes made of the box-tree, of which he proposes to speak again. Of the stringed species he says those with the greater tensions express the more acute sounds; on the contrary, those with the lesser give the more languid and grave; and in instruments that are blown, the more hollow and long, the more languid and grave are their sounds. He then proceeds to relate how Pythagoras discovered the consonances, and to give that account of his system which Stanley has taken into his life of that philosopher, and is inserted in the foregoing part of this work, together with some remarks, the result of late experiments, which in some degree, though not essentially, weaken the credit of the relation.

But without enquiring farther into the weight of the hammers, and other circumstances attending the discovery of the consonances, we may very safely credit Nicomachus, so far as to believe that Pythagoras, by the means of chords of different lengths, did discover them; that the philosopher to the sound produced by the first number six, gave the name Hypate; to eight he gave Mese, which is sesquitertian thereto; to nine Paramese, which is a tone more acute, and therefore sesquioctave of the last; and to the last number, twelve, he gave the name Nete; and afterwards filled up the intermediate spaces with sounds in the succession proper to the diatonic genus, and thereby completed the system of eight chords. The diatonic genus, as this author describes it, is a natural progression to the system of a diatessaron by a semitone, tone, and tone; and to a diapente by three tones and a semitone. This is the manner in which it is said the ancient system was adjusted and extended to that of a complete octave, an improvement so much the more to be valued, as we are told that in the ancient or primitive lyre, all the sounds from the lowest were fourths to each other\*; whereas in the Pythagorean lyre, composed

"it the name of Pandura." He justly says that Pandura was an Assyrian word. But the most learned of the Hebrews do not seem sufficiently to understand the signification of it; they explain it by a twig or rod, whip, thong of leather, as appears from Buxtorf in the Talmudical Lexicon, from Talmud Hierosol. I imagine the true origin of this appellation to be this, the instrument was mounted or stretched with thongs of bull's hides, in the same manner as the pentachord of the Scythians, concerning which the same Pollux speaks thus: "The pentachord is an invention of the Scythians; it was stretched or mounted with thongs made of the raw hides of oxen, but their plectra were the jaw-bones of the goats."

\* Nicomach. Harmonic. Manual. pag. 5, ex vers. Meibom.

of a tetrachord and pentachord conjoined; or, which is the same, of two tetrachords disjoined by an intervening tone, we have a continued progression of sounds.

Nicomachus proceeds to relate that the magnitude of the scale in the diatonic genus is two diapasons, for that the voice cannot easily extend itself either upwards or downwards beyond this limit; and for this reason, to the ancient lyre formed of seven strings, by the conjunction of two tetrachords, extending from Hypate to Mese, and thence to Nete, were adjoined two tetrachords, each at the outward extremity of the former; that which began at Nete was called Hyperboleon, signifying excellent. This tetrachord, he says, consists of three adjoined sounds, whose names are worthy to be remembered; as first, Tritè hyperboleon, then Paranete hyperboleon, and lastly, Nete hyperboleon. The other tetrachord was joined to the chord Hypate, and was thence called Hypaton; and each of the three adjoined sounds had the addition of Hypaton to distinguish it from the chord of the same denomination in the lower of the two primitive tetrachords; thus Hypate hypaton, Parhypate hypaton, Diatonos hypaton, or Lychanos hypaton, for it matters not which it is called; and this system from Hypate hypaton to Mese is seven chords, making two conjoint tetrachords; and that from Hypate hypaton to Nete is thirteen; so that Mese having the middle place, and conjoining two systems of a septenary each, reckoning either upwards from Hypate hypaton, or downwards from Nete hyperboleon, each system contained seven chords.

From this it is evident that the additional tetrachords were originally adapted to the system of Terpander, which did not separate Mese from Tritè by a whole tone, as that of Pythagoras did. What advantages could be derived from this addition it is not easy to say; nor is it conceivable that that system could be reducible to practice which gave to a nominal diapason four tones and three hemitones, instead of five tones and two hemitones.

But the addition of the new tetrachords to the two disjunct tetrachords of Pythagoras was very natural, and made way for what this author next proceeds to mention, the tetrachord synemmenon, which took place in the middle of that interval of a tone, by which Pythagoras had divided the two primitive tetrachords. The design of introducing this tetrachord synemmenon, which placed Tritè but a he-

mitone distant from Mese, was manifestly to give to Parhypatē meson what it wanted before, a perfect diatessarōn for its nominal fourth; and this opinion of its use is maintained by all who have written on the subject of music.

The author then proceeds to a verbal enumeration of the several chords, which by the disjunction made by Pythagoras, and the addition of Proslambanomenos, it appears were encreased to fifteen, with their respective tonical distances: it has already been mentioned, that, contrary to the method now in use, the ancients gave the most grave sounds the uppermost place in their scale; he therefore begins with Proslambanomenos and reckons downwards to Nete hyperboleon.

He gives the same kind of enumeration of the several sounds that compose the tetrachord synemmenon, having first Tritē synemmenon at the distance of a hemitone from Mese, then after a tone Paranetē synemmenon, and after another tone Nete synemmenon of the same tenor and sound as Paranetē diezeugmenon.

Mese  
Hemitone  
Trite  
Tone  
Paranete  
Tone  
Nete

So that there exist five tetrachords, Hypaton, Meson, Synemmenon, Diezeugmenon, and Hyperboleon; though it is to be remembered that the third of these is but auxiliary, and whenever it is used it is only in the room of the fourth, for reasons before given; and in these tetrachords there are two disjunctions and three conjunctions; the disjunctions are between Nete synemmenon and Nete diezeugmenon, and between Proslambanomenos and Hypatē hypaton: the conjunctions are between Hypaton and Meson, and, which is the same, Meson and Synemmenon, and between Diezeugmenon and Hyperboleon.

We must understand that the foregoing is a representation of the tetrachords as they are divided in the diatonic genus, the characteristic whereof is a progression by a hemitone, tone, and tone; for as to the other genera, the chromatic and enharmonic, this author pro-

fesses

fesses not to deliver his sentiments, but promises to give them at large, together with a regular progression in all the three in his Commentaries, a work he often speaks of, as having undertaken it for the information of his learned correspondent: he also engages to give the testimonies of the ancients, the most learned and eloquent of men on this subject, and an exposition of Pythagoras's section of the canon, not as Eratosthenes or Thrasyllus badly understand it, but according to Locrus Timæus, the follower of Plato, although nothing of his on the subject is remaining at this day; however he has given an idea of the genera in the following words: 'The first and most simple of consonances is the diatessaron. The diatonic tetrachord proceeds by a hemitone, tone, and tone, or four sounds and three intervals; and it is called diatonic, as proceeding chiefly by tones. The chromatic progression in the tetrachord is by a hemitone, hemitone, and an incomposite trihemitone, and therefore, though not constituted as the other, it contains an equal number of intervals. The enharmonic progression is by a diesis, which is half a hemitone, another diesis, also half a hemitone, and the remainder is an incomposite ditone; and these latter are also equal to a hemitone and two tones. Amongst these it is impossible to adapt sound to sound, for it is plain that the difference of the genera does not consist in an interchange of the four sounds, but only of the two intermediate ones; in the chromatic the third sound is changed from the diatonic, but the second is the same, and it has the same sound as the enharmonic; and in the enharmonic the two intermediate sounds are changed, with respect to the diatonic, so as the enharmonic is opposite to the diatonic, and the chromatic is in the middle between them both; for it differs only a hemitone from the diatonic, whence it is called chromatic, from Chroma, a word signifying a disposition flexible and easy to be changed: in opposition to this we call the extremes of each tetrachord Stantes, or standing sounds, to denote their immovable position. This then is the system of the diapason, whether from Mese to Proslambanomenos, or from Mese to Nete hyperboleon; and as the diatessaron is two tones and a hemitone, and the diapente three tones and a hemitone, the diapason should seem to be six whole tones; but in truth it is only five tones and two hemitones, which hemitones are not strictly complete; and therefore the diapason is somewhat less than six complete

whole

‘ whole tones\*: and with this agree the words of Philolaus when he  
 ‘ says that harmony hath five superoctaves and two diesis; now  
 ‘ a diesis is the half of a hemitone, and there is another hemitone  
 ‘ required to make up the number six.’

His second book Nicomachus begins with an account of the invention of the lyre by Mercury, already related, and which has been adopted by almost every succeeding writer on music, adding that some among the ancients ascribed it to Cadmus the son of Agenor. He proceeds to state the proportions, which he does in a way not easily reconcilable with the practice of the moderns: he then reconsiders the supposed relation between the sounds in the harmonical septenary and the motions of the planets; and endeavours to account for these different denominations, which it seems were given them in his days. He says that the chord Hypate is applied to Saturn, as the chief of the planets, and Nete to Luna, as the least. Mese is Sol, Parhypate is attributed to Jove, Paramese not to Mercury but to Venus, by a perverse order, says his editor, unless there is an error in the manuscript. Paramese to Mars, Trita to Venus, Luna or the Moon is said to be acute, as it answers to Nete; and Saturn grave as is Hypate. Those that reckon contrarywise, applying Hypate to the Moon, and Nete to Saturn, do it, because say they the graver sounds are produced from the lower and more profound parts of the body, and therefore are properly adapted to the lower orbs; whereas the acute sounds are formed in the higher parts, and do therefore more naturally resemble the more remote of the heavenly bodies:

Saturn	+	-	-	Nete
Jupiter	-	-	-	Paranete
Mars	-	-	-	Paramese
Sol	-	-	-	Mese
Venus	-	-	-	Lichanos
Mercury	-	-	-	Parhypate
Luna	-	-	-	Hypate

Nicomachus then proceeds to enumerate the several persons who added to the system of the diapason, completed as it was by Pythagoras; but as he expressly says the additional chords were not ad-

\* This is demonstrated by Ptolemy, lib. I. cap. xi. of his Harmonics, and also by Boetius, lib. V. cap. xiii.

justed in any precise ratio, and as their names have already been given, it seems needless to be more particular about them. Speaking of the great system, viz. that of the diatonic, he cites Ptolemy, to shew that it must necessarily consist of fifteen chords; but as it is certain that Nicomachus lived A. C. 60, and that Claudius Ptolemæus flourished about one hundred and forty years after the commencement of the Christian æra, there arises an anachronism, which is not to be accounted for but upon a supposition that the manuscript is corrupted. From divers passages in this author, and others to be met with in the Greek writers, it is evident that the ancients were not wholly unacquainted with the doctrine of the vibrations of chords: they had observed that the acute sounds were produced by quick, and the grave by slow motions, and that the consonances arose from a coincidence of both; but it no where appears that they made any use of the coincidences in adjusting the ratios of the consonances; on the contrary, they seem to have referred the whole to the ratio of lengths and tensions by weights, and a division of the monochord; and in this respect it is unquestionably true that the speculative part of music has received considerable advantages from those improvements in natural philosophy which in the latter ages have been made. The inquisitive and accurate Galileo was the first that investigated the laws of pendulums; he found out that all the vibrations of the same string, the longer and the shorter, were made in equal time, that between the length of a chord and the number of its vibrations, there subsists a duplicate proportion of length to velocity; and that the length quadrupled will subduple the velocity of the vibrations, and the length subquadrupled will double the vibrations; for the proportion holds reciprocally: adding to the length will diminish, and shortening it will encrease the frequency of vibrations. These, and numbers of other discoveries, the result of repeated experiments, have been found of great use, as they were soon after the making of them applied to the measure of time, and other most valuable purposes.

Having given an extract which contains in substance almost the whole of what Nicomachus has left us on the subject of harmony, it remains to observe that his work is manifestly incomplete: it appears from his own words to have been written while he was upon a journey, and for the particular information of the lady to whom he has, in  
 terms

terms of the greatest respect, inscribed it; and is no other than what he himself with great modesty entitles it, a Manual; it is however to be esteemed a very valuable fragment, as it is by much the most clear and intelligible of the works of the Greek writers now remaining. Boetius, in his treatise De Musica, cites divers passages from Nicomachus that are not to be found in this discourse of his, from whence it is highly probable that he had seen those commentaries which are promised in it, or some other tract, of which at this distance of time no account can be given.

## C H A P. VII.

**P**LUTARCH is also to be numbered among the ancient writers on music, for in his *Symposiacs* is a discourse on that subject, which is much celebrated by Meibomius, Doni, and others. A passage in the French translation, by Amyot, of the works of that philosopher, has given rise to a controversy concerning the genuineness of this tract, the merits of which will hereafter be considered. This discourse contains in it more of the history of the ancient music and musicians than is to be met with anywhere else, for which reason it is here meant to give a copious extract from it. It is written in dialogue; the speakers are Onesicrates, Soterichus, and Lyfias.

The latter of these, in answer to a request of Onesicrates, gives a relation of the origin and progress of the science, in substance as follows.

‘ According to the assertion of Heraclides, in a Compendium of  
 ‘ Music, said to have been written by him, Amphion, the son of Ju-  
 ‘ piter and Antiope, was the inventor of the harp and of Lyric poetry;  
 ‘ and in the same age Linus the Eubean composed elegies: Anthes  
 ‘ of Anthedon in Bœotia was the first author of hymns, and Pierius of  
 ‘ Pieria of verses in honour of the Muses; Philamon the Delphian  
 ‘ also wrote a poem, celebrating the nativity of Latona, Diana, and  
 ‘ Apollo; and was the original institutor of dancing about the tem-  
 ‘ ple of Delphos. Thamyris, of Thracian extraction, had the finest  
 ‘ voice, and was the best singer of his time, for which reason he is  
 ‘ by the poets feigned to have contended with the Muses; he wrought  
 ‘ into



' into a poem the war of the Titans against the Gods. Demodocus  
 ' the Corcyrean wrote in verse the history of the destruction of  
 ' Troy, and the nuptials of Vulcan and Venus. To him succeeded  
 ' Phemius of Ithaca, who composed a poem on the return of those  
 ' who came back with Agamemnon from the siege of Troy; and  
 ' besides that these poems were severally written by the persons  
 ' abovenamed, they were also set to musical notes by their respective  
 ' authors. The same Heraclides also writes that Terpander was the  
 ' institutor of those laws by which the metre of verses, and conse-  
 ' quently the musical measure, were regulated; and according to  
 ' these rules he set musical notes both to his own and Homer's words,  
 ' and sung them at the public games to the music of the lyre. Clon-  
 ' as, an epic and elegiac poet, taking Terpander for his example,  
 ' constituted rules which should adjust and govern the tuning and  
 ' melody of flutes or pipes, and such like wind-instruments; and in  
 ' this he was followed by Polymnestes the Colophonian.

' Timotheus is said to have made lyric preludes to his epic poems,  
 ' and to have first introduced the dithyrambic, a measure adapted to  
 ' songs in the praise of Bacchus, which songs required a violent mo-  
 ' tion of the body, and a certain irregularity in the measure.'

' Farther of Terpander, one of the most ancient of musicians, he  
 ' is recorded to have been four times a victor at the Pythian games.'

' Alexander the historian says, that Olympus brought into Greece  
 ' the practice of touching the strings of the lyre with a quill; for  
 ' before his time they were touched by the fingers: and that Hyag-  
 ' nis was the first that sang to the pipe, and Marsyas his son the next,  
 ' and that both these were prior to Olympus. He farther says that  
 ' Terpander imitated Homer in his verses, and Orpheus in his mu-  
 ' sic; but that Orpheus imitated no one. That Clonas, who was  
 ' some time later than Terpander, was, as the Arcadians affirm, a  
 ' native of Tegea, a city of Arcadia; though others contend that he  
 ' was born in Thebes; and that after Terpander and Clonas flour-  
 ' ished Archilochus: yet some writers affirm that Ardalus the Troe-  
 ' zenian taught wind-music before Clonas.'

' The music appropriated to the lyre under the regulations of Ter-  
 ' pander continued without any variation, till Phrynis became fa-  
 ' mous, who altered both the ancient rules, and the form of the in-  
 ' strument to which they were adapted.'

Having thus discoursed concerning the ancient musicians, and stringed and wind-instruments in general, *Lysias* proceeds, and confining himself to the instruments of the latter kind, speaks to this effect.

‘ *Olympus*, a Phrygian, and a player on the flute, invented a certain measure in honour of *Apollo*, which he called *Polycephalus* or of many heads. This *Olympus*, as it is said, was descended from the first *Olympus*, the son of *Marsyas*, who being taught by his father to play on the flute, first brought into Greece the laws of harmony. Others ascribe the invention of the *Polycephalus* to *Crates*, the disciple of *Olympus*. The same *Olympus* was the author of the *Harmatian* mood, as *Glaucus* testifies in his treatise of the ancient poets, and as some think of the *Orthian* mood also\*. There was also another mood in use among the ancients, termed *Cra-dias*, which *Hipponax* the *Mimnermian* greatly delighted in. *Sacadas* of *Argos*, being himself a good poet, composed the music to several odes and elegies, and became thrice a victor at the *Pythian* games. It is said that this *Sacadas*, in conjunction with *Polymnestes*, invented three of the moods, the *Dorian*, the *Phrygian*, and the *Lydian*; and that the former composed a strophe, the music whereof was a commixture of all the three. The original constitution of the modes was undoubtedly by *Terpander*, at *Sparta*; but it was much improved by *Thales* the *Gortynian*, *Xenedamus* the *Cytherian*, *Xenocritus* the *Locrian*, and *Polymnestes* the *Colophonian*.’

‘ *Aristoxenus* ascribes to *Olympus* the invention of the *enarmonic* genus; for before his time there were no other than the *diatonic* and *chromatic* genera.’

‘ As to the measures of time, they were invented at different periods and by different persons. *Terpander*, amongst other improvements

\* These moods, the *Harmatian* and *Orthian*, were unquestionably moods of time. The former, if we may trust the English translator of *Plutarch’s* *Dialogue on Music*, as it stands in the first volume of his *Morals*, Lond. 1684, was the measure termed by *Zarlino*, *La Curule*, in which it is supposed was sung the story of *Hector’s* death, and of the dragging him in a chariot round the walls of *Troy*: of the *Orthian* mood the same translator gives the following description: ‘ This mood consisted of swift and loud notes, and was used to inflame the courage of soldiers going to battle, and is mentioned by *Homer* in the seventh book of the *Iliad*, and described by *Eustathius*. This mood *Arion* made use of when he flung himself into the sea, as *Aulus Gellius* writes, lib. XVI. cap. xix. the time of it was two down and four up.’ *Meibomius* on *Aristides*.

‘ which

‘ which he made in music, introduced those grave and decent measures which are its greatest ornament; after him, besides those of Terpander, which he did not reject, Polymnestes brought into use other measures of his own.; as did also Thales and Sacadas, who, though of fertile inventions, kept within the bounds of decorum. Other improvements were also made by Stesichorus and Alcmas, who nevertheless receded not from the ancient forms; but Crexus, Timotheus, and Philoxenus, and others of the same age, affecting novelty, departed from the plainness and majesty of the ancient music.’

Another of the interlocutors in this dialogue of Plutarch, Soterichus by name, who is represented as one not only skilled in the science but eminently learned, speaks of the invention and progress of music to this effect.

‘ Music was not the invention of any mortal, but we owe it to the god Apollo. The flute was invented neither by Marsyas, nor Olympus, nor Hyagnis, but Apollo invented both that and the lyre, and, in a word, all manner of vocal and instrumental music. This is manifest from the dances and sacrifices which were solemnized in honour of Apollo. His statue, placed in the temple of Delos, holds in his right hand a bow, and at his left the Graces stand with each a musical instrument in her hand, one bearing a lyre, another a flute, and another a shepherd’s pipe; and this statue is reported to be as ancient as the time of Hercules. The youth also that carries the tempic laurel into Delphos is attended by one playing on the flute; and the sacred presents of the Hyperboreans were sent of old to Delos, attended by flutes, pipes, and lyres; and some have asserted that the God himself played on the flute. Venerable therefore is music, as being the invention of Gods; but the artists of these later times, contemning its ancient majesty, have introduced an effeminate kind of melody, mere sound without energy. The Lydian mode, as first instituted, was very doleful, and suited only to lamentations; wherefore Plato in his Republic utterly rejects it. Aristoxenus in the first book of his Harmonics relates that Olympus sung an elegy in that mode on the death of Python; though some attribute the invention of the Lydian mode to Menalippides, and others to Torebus. Pindar asserts that it was first used at the nuptials of Niobe; Aristoxenus, that it was invented by Sappho, and

' that the tragedians learned it of her, and conjoined it with the Do-  
 ' rian; but this is denied by those who say that Pythocleides the  
 ' player on the flute, and also Lyfis the Athenian, invented this con-  
 ' junction of the Dorian with the Lydian mode. As to the softer  
 ' Lydian, which was of a nature contrary to the Lydian properly so  
 ' called, and more resembling the Ionian, it is said to have been in-  
 ' vented by Damon the Athenian. Plato deservedly rejected these  
 ' effeminate modes, and made choice of the Dorian, as more suit-  
 ' able to warlike tempers; not that we are to suppose him ignorant  
 ' of what Aristoxenus has said in his second book, that in a wary  
 ' and circumspect government advantages might be derived from the  
 ' use of the other modes; for Plato attributed much to music, as  
 ' having been a hearer of Draco the Athenian, and Metellus of Agri-  
 ' gentum; but it was the consideration of its superior dignity and  
 ' majesty that induced him to prefer the Dorian mode. He knew  
 ' moreover that Alcmas, Pindar, Simonides, and Bacchylides, had  
 ' composed several Parthenioi in the Dorian mode; and that suppli-  
 ' cations and hymns to the Gods, tragical lamentations, and some-  
 ' times love-verses were also composed in it; but he contented himself  
 ' with such songs as were made in honour of Mars and Minerva, or  
 ' those other that were usully sung at the solemn offerings called  
 ' Spondalia. The Lydian and Ionian modes were chiefly used by the  
 ' tragedians, and with these also Plato was well acquainted. As to  
 ' the instruments of the ancients, they were in general of a narrow  
 ' compass; the lyre used by Olympus and Terpander and their fol-  
 ' lowers had but three chords, which is not to be imputed to ig-  
 ' norance in them, for those musicians who made use of more were  
 ' greatly their inferiors both in skill and practice.'

' The chromatic genus was formerly used by those who played on  
 ' the lyre, but by the tragedians never. It is certainly of greater an-  
 ' tiquity than the enarmonic; yet the preference given to the dia-  
 ' tonic and enarmonic was not owing to ignorance, but was the ef-  
 ' fect of judgment. Telephanes of Megara was so great an enemy to  
 ' the syrinx or reed-pipe, that he would never suffer it to be joined  
 ' to the tibia; or that other pipe made of wood, generally of the  
 ' lote-tree, and for that reason he forbore to go to the Pythian  
 ' games. In short, if a man is to be deemed ignorant of that which  
 ' he makes no use of, there would be found a great number of igno-  
 ' rant

‘ rant persons in this age ; for we see that the admirers of the Dorian mode make no use of the Antigenidian method of composition : and other musicians refuse to imitate Timotheus, being bewitched with the trifles and idle poems of Polyeides.’

‘ If we compare antiquity with the present times, we shall find that formerly there was great variety in music, and that the diversities of measure were then more esteemed of than now. We are now lovers of learning, they were lovers of time and measure ; plain it is therefore that the ancients did not because of their ignorance, but in consequence of their judgment, refrain from broken measures ; and if Plato preferred the Dorian to the other modes, it was only because he was the better musician ; and that he was eminently skilled in the science appears from what he has said concerning the procreation of the soul in his Timæus.’

‘ Aristotle, who was a disciple of Plato, thus labours to convince the world of the majesty and divine nature of music ; “ Harmony, saith he, descended from heaven, and is of a divine, noble, and angelic nature ; being fourfold as to its efficacy, it has two mediums, the one arithmetical, the other harmonical. As for its members, its dimensions, and excesses of intervals, they are best discovered by number and equality of measure, the whole system being contained in two tetrachords.”

‘ The ancient Greeks were very careful to have their children thoroughly instructed in the principles of music, for they deemed it of great use in forming their minds, and exciting in them a love of decency, sobriety, and virtue : they also found it a powerful incentive to valour, and accordingly made use of pipes or flutes when they advanced to battle : the Lacedæmonians and the Cretans did the same ; and in our times the trumpet succeeding the pipe, as being more sonorous, is used for the same purpose. The Argives indeed at their wrestling matches made use of fifes called Schenia, which sort of exercise was at first instituted in honour of Danaus, but afterwards was consecrated to Jupiter Schenius or the Mighty ; and at this day it is the custom to use fifes at the games called Pentathla, which consist of cuffling, running, dancing, hurling the ball, and wrestling. But among the ancients, music in the theatres was never known ; for either they employed it in the education of  
‘ their

‘ their youth, or confined it within the walls of their temples; but now our musicians study only compositions for the stage.’

‘ If it should be demanded, Is music ever to remain the same, and is there not room for new inventions? The answer is that new inventions are allowed, so as they be grave and decent; the ancients themselves were continually adding to and improving their music. Even the whole Mixolydian mode was a new invention; such also were the Orthian and Trochean songs; and, if we may believe Pindar, Terpander was the inventor of the Solian song, and Archilocus of the iambic and divers other measures, which the tragedians took from him, and Crexus from them. The Hypolydian mode was the invention of Polymnestes, who also was the first that taught the manner of alternately soft and loud. Olympus, besides that he regulated in a great measure the ancient Greek music, found out and introduced the enarmonic genus, and also the Prodriac, the Chorian, and the Bacchian measures; all which it is manifest were of ancient invention. But Lasus Hermionensis\* applying these measures to his dithyrambic compositions, and making use of an instrument with many holes, by an addition of tones and hemitones made an absolute innovation in the ancient music. In like manner Menalippides the lyric poet, Philoxenus, and Timotheus, all forsook the ancient method. The latter until the time of Terpander of Antissa used a lyre with only seven strings, but afterwards he added to that number. The wind-instruments also received a great alteration; and in general the plainness and simplicity of the ancient music was lost in that affected variety which these and other musicians introduced.’

‘ In ancient times, when Poetry held the precedency of the other arts, the musicians who played on wind-instruments were retained with salaries by the poets, to assist those who taught the actors, till Menalippides appeared, after which that practice ceased.’

\* Lasus Charbini from Hermione, a city of Achaia, lived about the 58th Olympiad, in the time of Darius Hystaspes: some reckon him among the seven wise-men, in the room of Periander. He was the first who wrote a book concerning music, and brought the dithyrambics into the games and exercises, where he was a judge or moderator, deciding contentious disputations. This Lasus was a musician of great fame, and is mentioned by Plutarch as the first who changed any thing in the ancient music. Meibom. on Aristoxenus, from Suidas.

Pherecrates the comic poet introduces Music in the habit of a woman with her face torn and bruised; and also Justice, the latter of whom, demanding the reason of her appearing in that condition is thus answered by Music: \*

“ It is my part to speak and yours to hear, therefore attend to my complaints. I have suffered much, and have long been oppressed by that beast Menalippides, who dragged me from the fountain of Parnassus, and has tormented me with twelve strings: to complete my miseries, Cinesian the Athenian, a pretender to poetry, composed such horrid strophes and mangled verses, that I, tortured with the pain of his dithyrambics, was so distorted that you would have sworn that my right side was my left: nor did my misfortunes end here, for Phrynus, in whose brains is a whirlwind, racked me with small wires, from which he produced twelve tiresome harmonies. But him I blame not so much, because he soon repented of his errors, as I do Timotheus, who has thus furrowed my face, and ploughed my cheeks; and Pyrrias the Milesian, who as I walked the streets met me, and with his twelve strings bound and left me helpless on the earth.”

\* This Pherecrates the comic poet lived in the time of Alexander the Great, and attended him, as we are told, in his expeditions, [Suid. in Pherecrates] and was contemporary with Aristophanes, Plato. Eupolis, and Phrynicus, all comic writers [Id. in Plato.] Phrynus who played on the lyre was the son of Cabon, [Id. in Phrynus] and scholar of Aristocleides, who pretended to be of the family of Terpander, and was a favourite with Hiero king of Sicily, as some accounts tell us, which would throw him back near one hundred and fifty years in time before our poet Pherecrates: but if we may believe Plutarch, he should have been a contemporary with the poet at least, if he personally contended the music prize with Timotheus, with whose playing we are told Alexander's spirit was so raised and animated to war. [Suid. in Timotheus.] But may it not be said that Timotheus did contend the prize against some piece formerly composed by Phrynus, as the dramatic poets sometimes contested the priority against a play of some deceased poet? if so, Phrynus then might have lived as early as the period mentioned by Suidas.

It is true indeed Plutarch, where he gives us this point of history, does not mention Phrynus by name, but distinguishes him only as the son of Cabon, and by his nickname *Ἰωνοκαμπτής*, Ionocampetes; which sarcastical addition he obtained, because by his effeminate modulations he had corrupted the old music in the like manner as the Ionic movements had debauched the old masculine dances. Jul. Pollux, lib. IV. cap. ix. § 66.

The same Phrynus is likewise rallied by Aristophanes [in *Nubibus*, v. 967] and others of the comic poets, for the levity of his compositions, and for overdoing every thing in his performance. He was marked out, even to infamy, for his innovations in music; for his soft and affected modulations, which were so abhorrent from the simplicity of the ancient music; for his intermingling and confounding the modes; and for debasing the science to parasitism and servile offices.

• That

‘ That virtuous manners are in a great measure the effect of a well-grounded musical education, Aristoxenus has made apparent. He mentions Telefias the Theban, a contemporary of his, who being a youth, had been taught the noblest excellencies of music, and had studied the best Lyric poets, and withal played to perfection on the flute; but being past the prime of his age, he became infatuated with the corrupted music of the theatres, and the innovations of Philoxenus and Timotheus; and when he laboured to compose verses, both in the manner of Pindar and of Philoxenus, he could succeed only in the former, and this proceeded from the truth and exactness of his education; therefore if it be the aim of any one to excel in music, let him imitate the ancients; let him also study the other sciences, and make philosophy his tutor, which will enable him to judge of what is decent and useful in music.

‘ The genera of music are three, the diatonic, the chromatic, and enarmonic; and it concerns an understanding artist to know which of these three kinds is the most proper for any given subject of poetry.

‘ In musical institution the way has sometimes been for the tutor first to consider the genius and inclination of the learner, and then to instruct him in such parts of the science as he should discover most affection for; but the more prudent sort, as the Lacedæmonians of old, the Mantinæans, and Pellenians rejected this method.

Here the discourse of Soterichus grows very obscure, and has a reference to terms of which a modern can entertain no idea. Farther on he resumes the consideration of the genera, which he speaks of to this effect.

‘ Now then, there being three genera of harmony, equal in the quantity of systems or intervals, and number of tetrachords, we find not that the ancients disputed about any of them except the enarmonic, and as to that they differed only about the interval called the diapason.’

The speaker, by whom all this while we are to understand Soterichus, then proceeds to shew that a mere musician is an incompetent judge of music in general; and to this purpose he asserts that Pythagoras rejected the judgment of music by the senses, and maintained that the whole system was included in the diapason. He adds, that the later musicians had totally exploded the most noble of the modes; that



that they made hardly the least account of the enarmonic intervals, and were grown so ignorant as to believe that the enarmonic diesis did not fall within the apprehension of sense.

He then enumerates the advantages that accrue from the use of music, and cites Homer to prove its effects on Achilles in the height of his fury against Agamemnon: he speaks also of a sedition among the Lacedemonians, which Terpander appeased by the power of his music; and a pestilence among the same people, which Thales the Cretan stopped by the same means.

Onesicrates, who hitherto appears to have acted the part of a moderator in this colloquy, after bestowing his commendations both on Lyfias and Soterichus, addresses them in these terms.

‘ But for all this, my most honoured friends, you seem to have forgotten the chief of all music. Pythagoras, Archytas, Plato, and many others of the ancient philosophers maintain that there could be no motion of the spheres without music, since that the supreme Deity constituted all things harmoniously; but now it would be unreasonable to enter upon a discourse on that subject.’

And so singing a hymn to the Gods and the Muses, Onesicrates dismisses the company.

Thus ends the Dialogue of Plutarch on music, which though a celebrated work of antiquity, is in the judgment of some persons rendered still more valuable by the passage from Pherecrates, which he has introduced into it. The least that can be said of which is, that without a comment it is next to impossible to understand it: the following remarks, which were communicated to the late Dr. Pepusch by a learned but anonymous correspondent of his, may go near to render it in some degree intelligible.

‘ The poet, speaking of the successive abuses of music, mentions first Phrynis, and afterwards Timotheus; so that Phrynis should seem to have led the way to the abuses which Timotheus is reprehended for, or rather gave into, to the prejudice of music; and it is probable he did so, from a speech of Agis made to Leonidas, which is transmitted to us by Plutarch in the life of Agis.

‘ What we want the explanation of, is that passage of Pherecrates which relates to the five strings and the twelve harmonies.

‘ From the time of Terpander, and upwards, we know that the lyre had seven strings, and those adjusted to the number of the

‘ seven planets, and as some suppose to their motions also. For  
 ‘ though Euphorion in Athenæus is made to say, that the use of the  
 ‘ instruments with many strings was of very great antiquity, yet the  
 ‘ lyre was reckoned complete, and to have attained the full measure  
 ‘ of perfect harmony when it had seven strings; because, as Aristotle  
 ‘ observed, the harmonies consisted in the number of chords, and be-  
 ‘ cause that was the number of old used.

‘ And therefore when Timotheus added four strings to the former  
 ‘ seven, that innovation was so offensive to the Lacedæmonians, that  
 ‘ he was formally prosecuted for the presumption; and it was one of  
 ‘ the causes for which they were said to have banished him their  
 ‘ state. The edict by which they did so, still extant, is transmitted  
 ‘ to us as a curiosity by Boetius\*; some however have said that Ti-  
 ‘ motheus cleared himself from this sentence by producing a very  
 ‘ ancient statue of Apollo found at Lacedæmon, holding a lyre with  
 ‘ nine strings †. But if he avoided this sentence of banishment, he did  
 ‘ not wholly escape censure; for Pausanias, who wrote as early as  
 ‘ Athenæus, tells us where the Lacedæmonians hung up his lyre pub-  
 ‘ licly, having punished him for superadding four strings, in com-  
 ‘ positions for that instrument, to the ancient seven; and Plutarch  
 ‘ likewise tells us that before this, when the abovementioned Phry-  
 ‘ nis was playing on the lyre at some public solemnity, one of the  
 ‘ Ephori, Ecrepes by name, taking up a knife, asked him on which  
 ‘ side he should cut off the strings that exceeded the number of  
 ‘ nine ‡.

\* Boetius, in his treatise *De Musica*, lib. I. cap. i. has given it in the original Greek; and the author of a book lately published, entitled *Principles and Power of Harmony*, has given the following translation of it.

Whereas Timotheus, the Milesian, coming to our city, has deformed the ancient music; and laying aside the use of the seven-stringed lyre, and introducing a multiplicity of notes, endeavours to corrupt the ears of our youth by means of these his novel and complicated conceits, which he calls chromatic, by him employed in the room of our established, orderly, and simple music; and whereas, &c. It therefore seemeth good to us the King and Ephori, after having cut off the superfluous strings of his lyre, and leaving only seven thereon, to banish the said Timotheus out of our dominions, that every one beholding the wholesome severity of this city, may be deterred from bringing in amongst us any unbecoming customs, &c.

† Casaub. ad Athenæum, lib. VIII. cap. xi.

‡ This fact is alluded to by Agis king of Sparta, in a speech of his to Leonidas, thus recorded by Plutarch.

‘ And you that use to praise Ecrepes, who being Ephore, cut off two of the nine strings  
 ‘ from the instrument of Phrynis the musician, and to commend those who did afterwards  
 ‘ imitate

‘ But though these innovations of Timotheus were said to be so offensive to the Lacedæmonians, it was not the first time of their having been put in practice; for Phrynis had before done the like, and been punished, as we shall find, in the same manner.

‘ These accounts therefore go thus far towards an explanation of one part of the passage before us; that as to the five strings, we may be pretty certain that the lyre of Phrynis was not confined to that number, nay we have particular testimonies that Phrynis himself was noted for playing on the lyre with more than seven strings; the system of the lyre, from the time of Terpander to that of Phrynis, had continued altogether simple and plain, but Phrynis beginning to subvert this simplicity by adding two strings to his instrument, we are told by Plutarch, in more than one passage, that Ecpreps the magistrate cut of two off his nine strings\*.

‘ The next thing therefore to be enquired into, is what the poet could mean by playing twelve harmonies on five strings?

‘ Perhaps by Harmonies we are to understand Modes; and if so, Phrynis may be ridiculed for such a volubility of hand, and such an affectation of variety, that he extracted a dozen tones from five strings only, or that he played over the whole twelve modes within that compass. For besides the seven principal modes, it is said that Aristoxenus by converting five species of the diapason, introduced five other secondary modes; and that the intermingling of the modes is the sense of *ἀρμονίας* here, seems plain from another passage in Plutarch ‡, where he says, “ That it was not allowed to compose for the lyre formerly, as in his time, nor to intermingle the modes *ἀρμονίας* and measures of time, for they observed one and the same cast peculiar to each distinct mode, which had therefore a name to distinguish it by; they were called *Νόμοι* or rules and limitations, because the composers might not transgress or alter the form of time and measure appointed to each one in particular.”

‘ imitate him in cutting the strings of Timotheus’s harp, with what face can you blame me for designing to cut off superfluity and luxury from the commonwealth? Do you think those men were so concerned only about a fiddle-string, or intended any thing else than by checking the voluptuousness of music, to keep out a way of living which might destroy the harmony of the city? Plutarch in *Vita Agidis*.

† Vide the last preceding note, and Plutarch in *Laconic. Institutio*.

‡ De Musica.

‘ For we are certain that both the Athenians and Lacedæmonians had their laws by which the particular species of music were designed to be preserved distinct and unconfused; and their hymns, threni, pæans, and dithyrambs kept each to their several sort of ode; and so the composers for the lyre were not permitted to blend one melody with another, but they who transgressed were censured and fined for it.’

It has already been mentioned that the genuineness of this dialogue has been questioned, some writers affirming it to be a spurious production, and others contending it to be a genuine work of Plutarch, worthy of himself, and in merit not inferior to the best of the treatises contained in the Symposiaca. It is therefore necessary to take a view of the controversy, and to state the arguments of the contending parties in support of their several opinions. It seems that the original ground of this dispute was a note prefixed to Amyot's French translation of this dialogue in the following words: ‘ Ce traité n'appartient point, ou bien peu à la musique de plusieurs voix accordées & entrelacées ensemble, qui est aujourd'hui en usage; ains à la façon ancienne, qui consistoit en la convenance du chant avec le sens & la mesure de la lettre, & la bonne grace du geste; & le style ne semble point être de Plutarque.’

Amyot's translation bears date in 1610; notwithstanding which, Fabricius, in his catalogue of the writings of Plutarch, has mentioned this discourse without suggesting the least doubt of its authenticity\*. But a dispute having arisen in the French Academy of Inscriptions and Belles Lettres, on the question, whether the ancients were acquainted with music in consonance or not, this tract of Plutarch, in which there is not the slightest mention of any such practice, was urged in proof that they were strangers to it. While a doubt remained of the genuineness of this discourse, its authority could not be deemed conclusive; those who maintained the affirmative of the principal question, therefore insisted on the objection raised by Amyot; and this produced an enquiry into the ground of it, or, in other words, whether Plutarch was really the author of that discourse on music which is generally ascribed to him or not: this enquiry is contained in three papers written by Monsieur Burette, and inserted in the Me-

\* Biblioth. Græc. lib. IV. cap. xi. pag. 364, N. 124.

moirs of the abovementioned Academy, tome onzieme, Amst. 1736, with the following titles, Examen du Traité de Plutarque sur la Musique—Observations touchant l'Histoire littéraire du Dialogue de Plutarque sur la Musique—Analyse du Dialogue de Plutarque sur la Musique, the publication whereof has put an end to a question, which but for Amyot had probably never been started.

Meibomius, in the general preface to his edition of the musical writers, and Doni are lavish in their commendations of this treatise: the latter of them, in his discourse De Præstantia Musicæ Veteris, pag. 65, calls it a golden little work; but whether it merits such an encomium must be left to the judgment of such as can truly say they understand it. As to the historical part, it is undoubtedly curious, except in some instances, that seem to approach too near that species of history which we term fabulous, to merit any great share of attention; but as to that other wherein the author professes to explain the nature of the ancient music, it is to be feared he is much too obscure for modern comprehension. The particulars most worthy of observation in this work of Plutarch are, the perpetual propensity to innovation, which the musicians in all ages seem to have discovered, and the extreme rigour with which those in authority have endeavoured to guard against such innovations: the famous decree of the Ephori against Timotheus just mentioned, which some how or other was recovered by Boetius, and is inserted in a preceding note, is a proof that the state thought itself concerned in preserving the integrity of the ancient music; and if it had so great an influence over the manners of the Spartan youth, as in the above treatise is suggested, it was doubtless an object worthy their attention.

## C H A P. VIII.

**A**RISTIDES QUINTILIANUS is supposed to have flourished, A. C. 110. this is certain that he wrote after Cicero, for from his books De Republica he has abridged all the arguments that Cicero had advanced against music, and has opposed them to what he urged in behalf of it in his oration for Roscius. It is farther clear that Aristides must have been prior to Ptolemy, for he speaks of Aristoxenus who admitted of thirteen modes, and of those who after him allowed of fifteen, but he takes no notice of Ptolemy who restrained the number of them to seven. His treatise De Musica consists of three books. The first contains an ample discussion of the doctrine of the modes: speaking of the diagram by which the situation and relation of them is explained, he says it may be delineated in the form of wings, to manifest the difference of the tones among themselves; but he has given no representation of it.

All that has been hitherto said of the modes is to be understood of melody, for there is another and to us a more intelligible sense of the word, namely that, where it is applied to the proportions of time, or the succession and different duration of sounds, of which whether they are melodious, or such as arise from the simple percussion of bodies, the modes of time, for by that appellation we chuse to distinguish them from the modes of tone, are as so many different measures. The effect of the various metrical combinations of sounds it undoubtedly what the ancients, more particularly this author, meant by the word Rythmus. Of time he says there are two kinds, the one simple and indivisible, resembling a point in geometry; the other composite, and that of different measures, namely, duple, treble and quadruple\*. The rhythmic ge-

\* This passage in Aristides Quintilianus has drawn on him a severe censure from the late Dr. Pemberton, the Gresham professor of physic, who says that he here endeavours to make out four different measures of time in verse also. This says the Dr. is talking nonsense. But, adds he, this writer is apt to amuse himself with fanciful resemblances; and having first imagined I know not what analogy between these four measures of time, and the four diases, into which a tone was considered as divisible, he must needs try at making out the like in relation to words. Observations on Poetry especially the Epic. Lond. 1738. page 110.

nera he makes to be three in number, namely, the equal, the sesquialteral, and the duple; others he says add the supertertian: these are constituted from the magnitude of the times; for one compared to itself begets a ratio of equality, two to one is duple, three to two is sesquialteral, and four to three supertertian: He speaks of the elation and position of some part of the body, the hand or foot perhaps, as necessary to the rythmus, probably as a measure; and this corresponds with the practice of the moderns in the measuring of time by the tactus or beat. The remainder of the first book of this work of Quintilian contains a very laborious investigation of measures, with all their various inflexions and combinations, in which the author discovers a profound knowledge.

The second book treats of music as a means to regulate the external behaviour, as that of philosophy is to improve the mind. Music, he says, by its harmony polishes the manners, and its rythmus renders the body more agreeable; for youth being impatient of mere admonition, and capable of instruction by words alone, require such a discipline as without disturbing the rational part of their natures shall familiarly and by degrees instruct them: he adds that it is easily perceived that all boys are prompt to sing and ready for brisk motions, and that it is not in the power of their governors to hinder them from the pleasure which they take in exercises of this sort. In human things, continues this author, there is no action performed without music; it is certain that divine worship is rendered more solemn by it, particular feasts and public conventions of cities rejoice with it, wars and voyages are excited by it, the most difficult and laborious works are rendered easy and delightful by it, and we are excited to the use of music by divers causes. Nor are its effects confined to the human species; irrational animals are affected by it, as is plain from the use which is made of pipes by shepherds, and horns by goatherds. Of the use of music in war, as practised by the ancients, he has the following passage: ‘ Numa has said, that by music he corrected  
‘ and refined the manners of the people, which before were rough  
‘ and fierce: to that end he used it at feasts and sacrifices. In the  
‘ wars where it is and will be used, is there any need to say how the  
‘ Pyrrhic music is a help to martial discipline? certainly it is plain  
‘ to every one, and that to issue commands by words in time of  
‘ action would introduce great confusion, and might be dangerous by

‘ their being made known to the enemies, if they were such as use  
 ‘ the same language. To the trumpet, that martial instrument, a  
 ‘ particular cantus or melody is appropriated, which varies according  
 ‘ to the occasion of sounding it, so as for the attack by the van or either  
 ‘ wing, or for a retreat, or whether to form in this or that particular  
 ‘ figure, a different cantus is requisite; and all this is so skilfully  
 ‘ contrived, as to be unintelligible to the enemy, though at the  
 ‘ same time by the army it is plainly understood.’

Thus much of this author is intelligible enough to a reader of this time; but when he speaks, as he does immediately after, of the efficacy of music in quieting tumults and appeasing an incensed multitude, it must be owned his reasoning is not so clear: as little can we conceive any power in music over the irascient and concupiscent affections of the mind, which he asserts are absolutely under its dominion. The remainder of this second book consists of a chain of very abstruse reasoning on the nature of the human soul, no way applicable to any conception that we at this time are able to form of music, and much too refined to admit of a place in a work, in which it is proposed not to teach, but to deliver a history of, the science.

The third book contains a relation of some experiments made with strings, distended by weights in given proportions, for finding out the ratios of consonances; a method which this author seems to approve; and to recommend this practice, he cites the authority of Pythagoras, who he says, when he departed this life, exhorted his disciples to strike the monochord, and thereby rather inform their understandings than trust to their ears in the measure of intervals. He speaks also of an instrument for the demonstration of the consonances, called a helicon, which was of a square form, and on which were stretched, with an equal tension, four strings\*. For the reason above given, it seems no way necessary to follow this author through that series of geometrical reasoning, which he has applied for the investigation of his subject in the succeeding pages of his book, wherefore a passage relating to the tetrachords, remarkable enough in its kind, shall conclude this extract from his very learned but abstruse work.  
 ‘ The tetrachords are agreed to be five, in number, and each  
 ‘ has a relation to one or other of the senses; the tetrachord hypaton resembles the touch, which, is affected in new-born infants,

\* See it in a subsequent chapter of this second book.



‘ when they are impelled by the cold to cry. The tetrachord  
 ‘ meson is like the taste, which is necessary to the preservation  
 ‘ of life, and hath a similitude to the touch. The third, called  
 ‘ synnemenon, is compared to the smell, because this sense is allied  
 ‘ to the taste; and many, as the sons of art say, have been restored  
 ‘ to life by odours. The fourth tetrachord, termed diezeugmenon, is  
 ‘ compared to the hearing, because the ears are so remote from the  
 ‘ other organs of sense, and are disjoined from each other. The  
 ‘ tetrachord hyperboleon is like the sight, as it is the most acute of  
 ‘ the systems, as the sight is of the senses.’ Farther, this author tells  
 us that ‘ the five tetrachords do in like manner answer to the five  
 ‘ primary elements, that is to say, hypaton to the earth, as the most  
 ‘ grave; meson to the water, as nearest the earth; synnemenon to  
 ‘ the air, which passes through the water remaining in the profun-  
 ‘ dities of the sea and the caverns of the earth, and is necessary for  
 ‘ the respiration of animals, which could not live without it; die-  
 ‘ zeugmenon to the fire, the motion whereof, as tending upwards,  
 ‘ is against nature; lastly, the tetrachord hyperboleon answers to  
 ‘ the æther, as being supreme and above the rest.’ There are, he  
 says, also analogies between the three several systems of diapente  
 and the senses; but we hasten to dismiss this fanciful doctrine.  
 Moreover, adds he, ‘ in discoursing of the human soul, systems are  
 ‘ not improperly compared to the virtues. Hypaton and meson are  
 ‘ to be attributed to temperance, the efficacy whereof is double, and  
 ‘ consists in an abstinence from unlawful pleasures, resembling the  
 ‘ most grave of these two systems; as also in a moderate use of law-  
 ‘ ful enjoyments, not improperly signified by the tetrachord meson;  
 ‘ but the tetrachord synnemenon is to be attributed to justice, which  
 ‘ being joined with temperance, exerts itself in the discharge of pub-  
 ‘ lic duties, and in acts of private beneficence: the diezeugmenon has  
 ‘ the resemblance of fortitude, which virtue delivers the soul from  
 ‘ the dominion of the body; lastly, the hyperboleon emulates the  
 ‘ nature of prudence, for that tetrachord is the end of the acumen,  
 ‘ and this virtue is the extremity of goodness. Again, these virtues  
 ‘ may be assimilated to the three systems of diapente\*; the two first,  
 ‘ justice and temperance, which are always placed together as being a

\* The varieties or different systems of diapente are four, and therefore it may be ques-  
 tioned why in this place the author has limited them to three.

‘ check to the concupiscent part of the mind, resemble the first of these systems; fortitude may be compared to the second, as that virtue denotes the irascient part and refers to each of our two natures; and prudence to the third, as declaring the rational essence. Add to this, that the two species of diapason answer to the twofold division of the mind; the first resembling the irrational, and the second the rational part thereof.’

It has been remarked of Quintilian that he is extremely fond of analogies, vide pag. 222, in a note; and the above passages are a proof that this charge against him is not ill grounded.

ALYPIUS, the next in succession of the authors now remaining to him above cited, or, as some suppose, a contemporary of his, as flourishing about A. C. 115\*, compiled a work entitled an Introduction to Music, which seems to be little else than a set of tables explaining the order of the sounds as they arise in the several modes of their respective genera in the ancient method of notation. The musical characters used by the ancients were arbitrary; they were nothing more than the Greek capitals mutilated, inverted, and variously contorted, and are estimated at no fewer than twelve hundred and forty. A specimen of them is herein before inserted in two plates from Kircher.

MANUEL BRYENNIUS, another of the Greek writers on music, is supposed to have flourished under the elder Palæologus, viz. about the year of Christ 120. He wrote three books on harmonics, the first whereof is a kind of commentary on Euclid, as the second and third are on Ptolemy †. He professes to have studied perspicuity for the sake of young men, but has given very little more than is to be found in one or other of the above authors. Meibomius had given the public expectations of a translation of this work, but not living to complete it, Dr. Wallis undertook it, and it now makes a part of the third volume of his works, published at Oxford in three volumes in folio, 1699.

BACCHIUS SENIOR was a follower of Aristoxenus; Fabricius supposes him to have been tutor to the emperor Marcus Antoninus, and consequently to have lived about A. C. 140 ‡. He wrote in Greek a very short introduction to music in dialogue, which, with a Latin translation thereof, Meibomius has published. It seems it was first

\* Fabr. Biblioth. Græc. lib. III. cap. x.

† Ibid.

‡ Ibid.

published in the original by Merfennus, in his Commentary on the six first chapters of Genesis; and that afterwards he published a translation of it in French, which Meibomius, in the preface to his edition of the ancient musical authors, censures as being grossly erroneous.

GAUDENTIUS the philosopher, according to Fabricius \*, seems to have written before Ptolemy, and treading in the steps of Aristoxenus, composed an introduction to harmonics, which Cassiodorus commends as an elegant little work; though he does not pretend to say who he was, or where he lived; however upon his authority Cassiodorus relates that Pythagoras found out the original precepts of the art by the sound of hammers and the percussion of extended chords; and indeed as to this matter Gaudentius is very explicit. For his work in general, excepting a few definitions and a representation of the musical characters in the method of Alypius, it is little more than an abridgment of Aristoxenus, and that so very short and obscure, that little advantage can be derived from the perusal of it.

CLAUDIUS PTOLEMEUS was an Egyptian, born at Pelusium; not one of the Ptolemies kings of Egypt, with some one of whom he has been confounded; nor the same with Ptolemy the mathematician and astronomer, who, as Plutarch relates in his life of Galba, was the constant companion of that emperor and was also attendant on the emperor Otho in Spain, and foretold that he should survive Nero, as Tacitus tells us, lib. I. cap. xxii. The Ptolemy here spoken of flourished in the reign of the emperor Marcus Aurelius Antoninus, as Suidas testifies; and also himself in his *Magnæ Syntaxis*, where he says that he drew up his astronomical observations at Alexandria, for which reason he is by Suidas and others called Alexandrinus, in the second year of Antoninus Pius, which answers to the year of Christ 139†. He was the author of a treatise on harmonics in three books, a work much more copious than any of those above-mentioned; and it must be allowed that he of all the ancient writers seems to have entered the most deeply into the subject of harmonics. In the first chapter of his first book, he assigns the criteria of harmony, which he makes to be sense and reason: the former of these, he says, finds out what is nearly allied to truth, and approves of what is accurate, as the latter finds out what is accurate and approves of what is

\* Biblioth. Græc. lib. III. cap. x.

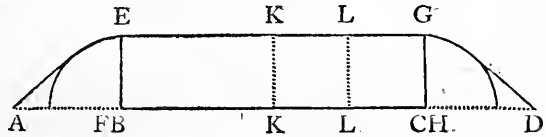
† Ibid. cap. xiv.

nearly allied to truth. Chap. iii. speaking of the causes of acuteness and gravity, he takes occasion to compare the wind-pipe to a flute; and to remark as a subject of wonder, that power or faculty which enables a finger readily and instantaneously to hit those degrees of dilatation and contraction as are necessary to produce sounds, grave or acute, in any given proportion.

In the sixth chapter of the same book he condemns the method of the Pythagoreans, and in the ninth that of the Aristoxenians, in the adjusting of the consonances, but thinks the former the least erroneous of the two: the Pythagoreans, he says, not sufficiently attending to the ear, often gave harmonic proportions to incongruous sounds; on the contrary, the Aristoxenians, ascribing all to the ear, applied numbers, the images of reason, not to the differences of sounds, but to their intervals. To correct the errors of these two very different methods, he contrived an instrument very simple and inartificial in its construction, but of singular use in the adjusting of ratios, which though in truth but a monochord, as consisting of one string only, he with great propriety called the Harmonic Canon, by which appellation it is constantly distinguished in the writings of succeeding authors. His description of the instrument and its use, as also the reasons that led him to the invention, are contained in the eighth chapter of the same first book, and are to the following effect:

‘ We omit to explain what is proposed, by the means of pipes or  
 ‘ flutes, or by weights affixed to strings, because they cannot make  
 ‘ the necessary demonstrations with sufficient accuracy, but would rather  
 ‘ occasion controversy; for in pipes and flutes, as also in the  
 ‘ breath which is injected into them, there is great disorder; and as  
 ‘ to strings with weights affixed to them, besides that of a number  
 ‘ of such strings, we can hardly be sure that they are exactly equal  
 ‘ in size, it is almost impossible to accommodate the ratios of the  
 ‘ weights to the sounds intended to be produced by them; for with  
 ‘ the same degree of tension two strings of different thickness would  
 ‘ produce sounds differently grave or acute: and farther, which is  
 ‘ more to the present purpose, a string, at first of an equal length to  
 ‘ others, by the affixing to it a greater weight than is affixed to the  
 ‘ rest, becomes a longer string, from whence arises another difference  
 ‘ of sound besides what might be deduced from the ratio of weight  
 ‘ alone. The like will happen in sounds produced from hammers or  
 ‘ quoits

• quoits of unequal weights ; and we may observe the same in some  
 • vessels that are first empty, and afterwards filled ; and certainly it  
 • is difficult in all these cases to provide against the diversity of  
 • matter and figure in each ; but in the canon, as I term it, the chord  
 • most readily and accurately demonstrates the ratios of the several  
 • consonances.’



A B C D The line of the canon.

A E G D The chord.

A E, G D The ligament or place where it is fastened.

E B, G C Perpendiculars of the immoveable magades or bridges:

K K, L L The moveable magades.

B K, L C The canon or rule divided.

Suppose A B C D to be a right line, at each end thereof apply magades or little bridges, equal in height and having surfaces as nearly spherical as possible ; as suppose the surface B, E to be described round the center F, and the surface C, G round the center H. Let then the points E, G be taken in the middle or bisection of these curved superficies, the magades being so placed as that lines E, F, and G, H, drawn from the said bisections E and G, may be perpendicular to the right line A B, C D. Now if from the points A D a chord be strained over the middle points E and G of the said curved superficies, the part E G will be parallel to the right line A B, C D, because of the equal height of the magades, and will have its limits at E and G. Transfer then the line E G to the line A B C D and having first bisected the whole length at K, and the half of that distance at L, place under the chord other magades, which must be very thin, and somewhat higher, but in every other respect like the former, so that both the intermediate magades may be strait with the middle of the external ones ; now if the part of the chord E K be found equitonal to K G, and the part K L to L G, then are we convinced that the chord is equable and perfect as to its constitution and make, and consequently fit for the experiment ; but if it should not prove so, the trial is to be transferred to another part, or even to a new chord.

chord, till we obtain this condition of equability under the circumstances of similar moveable magades, and a similar length and tension of the parts of the chord. This being done and the chord divided according to the proportions of the consonances, we shall by the application of the moveable magades prove by our ears the ratios of corresponding sounds; for giving to the distance E K four of such parts whereof K G is three, the sounds on both sides will produce the consonance diateffaron, and have a sesquitercian ratio; and giving to E K three parts whereof K G is two, the sounds on both sides will make the consonance diapente, which is in sesquialteral ratio. Again, if the whole length be so divided as that E K may be two parts and K G one of them, it shall be the unison diapafon, which consists in a duple ratio. If it be so that E K be eight parts whereof K G is three, it will be the consonance diapafon and diateffaron, in the ratio of eight to three; farther if it be divided so as that E K be three parts and K G one of them, it will be diapente and diapafon, in a triple ratio; and lastly if it be so divided as that E K be four and K G one, it will be the unison disdiapafon in a quadruple ratio.

RATIOS.	THE PROOF.			CONSONANCES
$\frac{4}{1}$	E	4	K, 1	G Disdiapafon
$\frac{3}{1}$	E	3	K, 1	G Diapafon and diapente
$\frac{8}{3}$	E	8	K, 3	G Diapafon and diateffaron
$\frac{2}{1}$	E	2	K, 1	G Diapafon
$\frac{3}{2}$	E	3	K, 2	G Diapente
$\frac{4}{3}$	E	4	K, 3	G Diateffaron
	E	1	K, 1	G

How the monochord of Pythagoras was constructed, or in what manner he divided it, we are no where told: it seems difficult to conceive

conceive that for producing the consonances it could be divided in any other manner than this of Ptolemy, and yet this author censures the followers of Pythagoras for not knowing how to reason about the consonances, which one would think they could not fail to do from principles so clear as those deducible from experiments on the monochord. But as to the Aristoxenians, he censures them for rejecting the reasonings of the Pythagoreans, at the same time that they would not endeavour to find out better. To understand these and other invectives against this sect, it is to be observed that they measured the intervals by the ear as our practical musicians do now, that is to say, the greater by fourths or fifths, and the less by tones and semitones; thus to ascertain the measure of an octave, they applied that of a diatessaron or fourth above the unison, and another below the octave, and between the approximating extremities of these two intervals they found the distance of a tone, which furnished a common measure for the less intervals of a fourth, a fifth, and the rest; and enabled them to say that a tone is the difference between the diatessaron and the diapente: this Ptolemy calls remitting one question to another, and he adds that the ear, when it would judge of a tone needs not the help of a comparison of it with the diatessaron or any other consonance, and yet adds he, 'if we would ask of the Aristoxenians what is the ratio of a tone, they will say perhaps that it is two of those intervals, that is to say hemitones, of which the diatessaron contains five, and in like manner that the diatessaron is five, of those of which the diapason is twelve, and so of the rest, till at last they come to say that the ratio of a tone is two, which is not defining those ratios.'

Ptolemy, lib. I. cap. x. farther denies the assertion of the Aristoxenians, that the diatessaron contains two tones and half, and the diapente three and a half; as also that the diapason consists of six tones, as the several contents of those two systems of two and a half, and three and a half, supposing this estimation of them to be just, would make undoubtedly six; but by his division of the monochord, he clearly demonstrates that the term by which the diatessaron exceeds the diatone, and which he calls a limma, is less than a hemitone, in the same proportion as 1944 bears to 2048, a difference however much too small for the ear to distinguish. His demonstration

monstration of this proposition is given in a preceding chapter of this work.

To enter into a discussion of that very abstruse subject, the division of the diapason, would require a much more minute investigation of the doctrine of ratios than is requisite in this place; it must however be observed, that supposing the ear alone to determine the precise limits of any system, that of the diatessaron for example, and that such system were transferred to the monochord, a repetition of the system so transferred would fail to produce a series of systems consonant in the extremities. Thus let a given sound be, as we should now call it G, and let the monochord be divided by a bridge according to the rules above prescribed, so as to give its fourth C; and let a tone, D, be set on by another bridge in like manner, and after that another fourth, which would terminate at G, and would seem to make what we should call a diapason: we should find upon taking away the intermediate bridges at C and D, that the interval from G to G would be more than a diapason; and that were this method of ascertaining the terms of the consonances repeated through a series of octaves, the dissonance would be increased in proportion to the number of repetitions. Ptolemy has taken another method, chap. xi. of this his first book, and by an accumulation of sesquioctave tones has clearly demonstrated that six such, exceed the consonance diapason. This deficiency, if it may be so called, in the intervals of which the diapason is compounded, and the difference between tuning by the ear and by numbers, has suggested to mathematicians what is called a temperament, which proposes a certain number of integral parts for the limit of the diapason, and the division of the amount of the several limmas that occur in the progression to it, in such a manner as to make the consonances contained in it as nearly perfect as possible.

The remainder of Ptolemy's first book treats of the genera. Chap. xii. exhibits the division of Aristoxenus, which he condemns; and chap. xiii. that of Archytas of Tarentum, whom he censures for defining the genera by the interjacent intervals rather than by the ratios of the sounds among themselves, and charges him with rashness and want of thought.

The use and application of the genera is at this day so little understood, that we are greatly at a loss to account for any other division of the

the

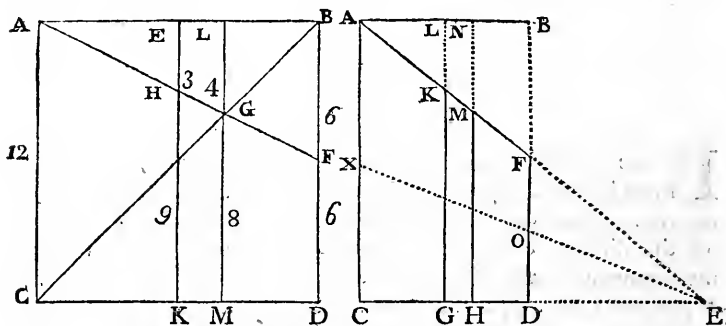


the tetrachord than that which characterizes the diatonic genus: Nor does it seem possible, with the utmost strength of the imagination, to conceive how a series of sounds so extremely ungrateful to the ear as those of which the chromatic and enarmonic genera are said to be formed, could ever be received as music in the sense in which that word is now understood.

## C H A P. IX.

**I**N the first Chapter of his second Book Ptolemy undertakes to shew by what means the ratios of the several genera may be received by the sense, in the course of which demonstration he points out the different offices of sense or the ear, and reason, in the admeasurement of intervals, by which it should seem that the former is previously to adjust the consonances, and that these being transferred to the canon, become a subject of calculation: and this position of his is undoubtedly true; for the determination of the senses in all subjects where harmony or symmetry are concerned is arbitrary, and it is the business of reason, assisted by numbers, to enquire whether this determination has any foundation in nature or not; and if it has not, we pronounce it fantastical and capricious; for example we perceive by the ear a consonance between the unison and its octave, and we are conscious of the harmony resulting from those two sounds; but little are we aware of the wonderful relation that subsists between them, or that if an experiment be made by suspending weights to the chords that produce it, whose lengths are by the laws of harmony required to be in the proportion of 2 to 1, that the shorter would make two vibrations to one of the longer, and that the vibrations would exactly coincide in that relation as long as both chords should continue in motion. Again with respect to the forms of bodies, when we prefer that of a sphere to one less regular, we never attend to the properties of a sphere, but reason will demonstrate a perfection in that figure which is not to be found in an irregular polygon.

In the second chapter of his second book he describes an instrument or diagram called the Helicon, invented as it should seem by himself, for demonstrating the consonances, so simple in its construction that its very figure seems to speak for itself and to render a verbal explanation, though he has given a very long one of it, unnecessary. It is of this form

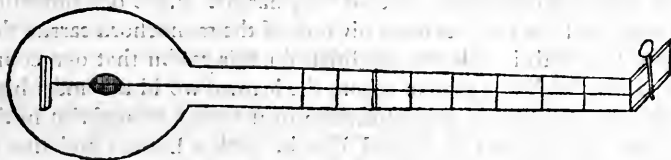


The side of the square A C 12 shews the diapason; the half of B D, that is to say B F or F D 6 the unison. The line G M 8, terminated by the diagonal B C, the diatessaron. The line E K divides the quadrangle equally, and H K 9, terminated by the line A F, shews the diapente. The lines L G and E H are in the ratio of 4 to 3, which is that of the diatessaron; and lastly the lines H K 9 and G M 8 shew the sesquioctave tone.

To this diagram Ptolemy has added another not less easy to be comprehended than the former, in which the lines B D, N H, L G, and A C are supposed to be chords of equal lengths but bisected by the line A F in the direction A E: this line may be supposed to be a bridge, or subductorium, stopping the four chords at A K M F, and thereby giving the proportions 12 9 8 6; which proportions will also result from a subductorium placed in the direction X E, for X C will be duple of O D, and the two intermediate chords sesquialtera and sesquitertia, and with respect to each other, sesquioctave; in all agreeing with the ratios in the former diagram.

In the ninth chapter of book II. Ptolemy takes occasion to say that there are only seven tones or modes, for that there are but seven species of diapason; a position that will be easily granted him by the moderns who suppose the word, tone or mode, when applied to sound, to answer to what we term the key or fundamental note. What he says farther concerning the modes has already been mentioned in a preceding chapter of this book.

Chapter xii. the same author speaks of the monochord; and here he proposes, but not for the purpose of experiments, a different method of dividing it, not, says he, according to one tone or mode only, but according to all the tones together; by which one would imagine he meant somewhat like a temperament of its imperfections, and a design to render it an instrument not of speculation but practice; and indeed besides exhibiting it in a form more adapted to practice, and more resembling a musical instrument than its primitive one\*.



He speaks, though not very intelligibly, of the manner of performing on it, and recommends to conceal its defects the conjunction with it, either of a pipe or the voice. A little after, he speaks of Didymus a musician, who endeavoured to correct this instrument by a different application of the magades; but for the greater imperfections he says Didymus was not able to find out a cure. Towards the close of this second book he exhibits a short scheme of the three genera, according to five musicians, namely, Archytas, Aristoxenus, Eratosthenes, the same Didymus, and himself; and a little farther on, tables of the section of the canon in all the seven modes according to the several genera.

In the third book chap. iv. he speaks in general of the faculty of harmony, and of mathematical reasoning as applied to it; the use

\* There is very little doubt but that the instrument here delineated is the pandura of the Arabians, mentioned in a note of Meibomius on a passage in Nicomachus, for among the Arabian and Turkish instruments described by Merfennus are many in this form.

whereof he says is to contemplate and adjust the ratios. In the next ensuing chapter he proceeds, in the manner of Quintilian, to state the analogy of music with the affections of the human mind, the system of the universe, and in short with every other subject in which number, proportion, or coincidence are concerned. In the course of this his reasoning, he mentions that Pythagoras advised his disciples at their rising in the morning to use music, whereby that perturbation which is apt to affect the mind at the awakening from sleep, might be prevented, and the mind be reduced to its wonted state of composure: besides which he says, that it seems the Gods themselves are to be invoked with hymns and melody, such as that of flutes or Egyptian trigons, to shew that we invite them to hear and be propitious to our prayers.

Upon a very careful review of this work of Ptolemy, it will appear that the doctrines contained in it, so far as they are capable of being rendered intelligible, are of singular use in the determination of ratios, and his very accurate division of the monochord carries demonstration with it. It was doubtless for this reason that our countryman Dr. Wallis, a man to whom the learned world are under high obligations, undertook the publication of it from a manuscript in the Bodleian library, in the original Greek, with a Latin translation of his own, together with copious notes, and an appendix by way of commentary, which the Doctor was the better qualified to give, as it abundantly appears, as well by divers other of his writings in the Philosophical Transactions, as the work we are now speaking of, that he was very profoundly skilled in the science of music. How far he is to be depended on when he undertakes to render the ancient modes in modern characters seems very questionable, for were the Doctor's opinion right in that matter, all that controversy which has subsisted for these many centuries, not only touching the specific differences between them, but even as to their number, must necessarily have ended ages ago; whereas, even at this day, the ablest writers on the subject do not hesitate at saying that the doctrine of the modes is absolutely inscrutable; and perhaps it is for this reason only that so many have imagined that with them we have lost the most valuable part of the art; but on the contrary it is worth remarking that the Doctor, though he was perhaps the ablest geometer of his time, and had all the prejudices in favour of the ancients that

a man conversant with the best of their writers could be supposed to entertain, never intimates any such matter; nay, so far is he from adjudging a preference to the ancient music over that of the moderns, that he scruples not to ascribe the relations that are given of the effects of the former to the ignorance of mankind in the earlier ages, the want of refinement, the charms of novelty, and other probable causes. Dr. Wallis gave two editions of this work of Ptolemy, the one published in quarto at Oxford in 1682; another, as also the commentary of Porphyry, and a treatise of Manuel Bryennius, makes part of the third volume of his works, published in three volumes in folio, 1699.

CENSORINUS, a most famous grammarian, lived at Rome about A. C. 238\*, and wrote a book entitled *De Die Natali*. It was published by Erycius Puteanus at Louvain, in 1628, who styles it *Doctrinæ rarioris Thesaurus*; and it is by others also much celebrated for the great light it has thrown on learning. It is a very small work, consisting of only twenty-four chapters; the tenth is concerning music; and the subsequent chapters, as far as the thirteenth inclusive, relate to the same subject.

He professes to relate things not known even to musicians themselves. He defines music to be the science of well modulating, and to consist in the voice or sound. He says that sound is emitted at one time graver, at others acuter; that all simple sounds, in what manner soever emitted, are called *phthongi*; and the difference, whereby one sound is either more grave or more acute than another, is called *diastema*.

The rest of his discourse on music is here given in his own words: ' Many diastemata may be placed in order between the lowest and the highest sound, some whereof are greater, as the tone, and others less, as the hemitone; or a diastem may consist of two, three, or more tones. To produce concordant effects, sounds are not joined together capriciously, but according to rule. Symphony is a sweet concert of sounds. The simple or primitive symphonies are three, of which the first consist; the first, having a diastem of two tones and a hemitone, is called a *diatessaron*; the second, containing three tones and a hemitone, is called a *diapente*; the third is the

\* Fabricius. Biblioth. Lat. tom. I. pag. 537,

‘ diapason, and consists of the two former, for it is constituted either  
 ‘ of six tones, as Aristoxenus and other musicians assert, or of five  
 ‘ tones and two hemitones, as Pythagoras and the geometricians say,  
 ‘ who demonstrate that two hemitones do not complete the tone ;  
 ‘ wherefore this interval, improperly called by Plato a hemitone,  
 ‘ is truly and properly a diesis or limma.

‘ But to make it appear that sounds, which are neither sensible to  
 ‘ the eyes, nor to the touch or feeling, have measures, I shall relate  
 ‘ the wonderful comment of Pythagoras, who, by searching into the  
 ‘ secrets of nature, found that the sounds of the musicians agreed to  
 ‘ the ratio of numbers ; for he distended chords equally thick and  
 ‘ equally long, by different weights, these being frequently struck,  
 ‘ and their sounds not proving concordant, he changed the weights ;  
 ‘ and having frequently tried them one after another, he at length  
 ‘ discovered that two chords struck together produced a diatessaron ;  
 ‘ when their weights being compared together, bore the same ratio  
 ‘ to each other as three does to four, which the Greeks call *επιτριτος*,  
 ‘ epitritus, and the Latins supertertium. He at the same time found  
 ‘ that the symphony, which they call diapente, was produced when  
 ‘ the weights were in a sesquialtera proportion, namely, that of 2  
 ‘ to 3, which they called hemiolium. But when one of the  
 ‘ chords was stretched with a weight duple to that of the other, it  
 ‘ sounded a diapason.

‘ He also tried if these proportions would answer in the tibia, and  
 ‘ found that they did ; for he prepared four tibiae of equal cavity or  
 ‘ bore, but unequal in length ; for example, the first was six inches  
 ‘ long, the second eight, the third nine, and the fourth twelve ;  
 ‘ these being blown into, and each compared with the others, he  
 ‘ found that the first and second produced the symphony of the dia-  
 ‘ tessaron, the first and third a diapente, and the first and fourth the  
 ‘ diapason : but there was this difference between the nature of the  
 ‘ chords and that of the tibiae, that the tibiae became graver in pro-  
 ‘ portion to the encrease of their lengths, while the chords became  
 ‘ acuter by an additional augmentation of their weights ; the propor-  
 ‘ tion however was the same each way.

‘ These things being explained, though perhaps obscurely, yet as  
 ‘ clearly as I was able, I return to shew what Pythagoras thought con-  
 ‘ cerning the number of the days appertaining to the partus. First, he  
 ‘ says

‘ says there are in general two kinds of birth, the one lesser, of seven months, which comes forth from the womb on the two hundred and tenth day after conception ; the other greater, of nine months, which is delivered on the two hundred and seventy-fourth day.’ Censorinus then goes on to relate from Plato that in the work of conception there are four periods, the first of six days, the second of eight, which two numbers are the ratio of the diatessaron ; the third of nine, which answers to the diapente, and the fourth, at the end whereof the fœtus is formed, of twelve, answering to the diapason in duple proportion.’ After this he proceeds to declare the relations of the above numbers in these words.

‘ These four numbers, six, eight, nine and twelve, being added together, make up thirty-five ; nor is the number six undeservedly deemed to relate to the birth, for the Greeks call it *τελειος*, *teleios*, and we perfectum, because its three parts, a sixth, a third, and a half, that is one, two, three, make up itself ; but as the first stage in the conception is completed in this number six, so the former number thirty-five being multiplied by this latter six, the product is two hundred and ten, which is the number of days required to mature the first kind of birth. As to the other or greater kind, it is contained under a greater number, namely seven, as indeed is also the whole of human life, as Solon writes : the practice of the Jews, and the ritual books of the Etruscans, seem likewise to indicate the predominancy of the number seven over the life of man ; and Hippocrates, and other physicians, in the diseases of the body account the seventh as a critical day ; therefore as the origin of the other birth is six days, so that of this greater birth is seven ; and as in the former the members of the infant are formed in thirty-five days, so here it is done in almost forty, and for this reason, forty days are a period very remarkable ; for instance, a pregnant woman did not go into the temple till after the fortieth day ; after the birth women are indisposed for forty days ; infants for the most part are in a morbid state for forty days ; these forty days, multiplied by the seven initial ones, make two hundred and eighty, or forty weeks : but because the birth comes forth on the first day of the fortieth week, six days are to be subtracted, which reduces the number of days to two hundred and seventy-four, which number very exactly corresponds to the quadrangular aspect of the Chaldeans ; for as the

‘ sun:

‘ sun passes through the zodiac in three hundred and sixty-five days  
 ‘ and some hours; if the fourth part of this number, namely ninety-  
 ‘ one days and some hours, be deducted therefrom, the remainder will  
 ‘ be somewhat short of two hundred and seventy-five days, by which  
 ‘ time the sun will arrive at that place where the quadrature has an  
 ‘ aspect to the beginning of conception. But let no man wonder  
 ‘ how the human mind is able to discover the secrets of human na-  
 ‘ ture in this respect, for the frequent experience of physicians  
 ‘ enables them to do it.

‘ It is not to be doubted but that music has an effect on our birth;  
 ‘ for whether it consists in the voice or sound only, as Socrates  
 ‘ asserts, or, as Aristoxenus says, in the voice and the motion of the  
 ‘ body, or of both these and the emotion of the mind, as Theophras-  
 ‘ tus thinks, it has certainly somewhat in it of divine, and has a great  
 ‘ influence on the mind. If it had not been grateful to the immor-  
 ‘ tal Gods, scenical games would never have been instituted to appease  
 ‘ them; neither would the tibia accompany our supplications in the  
 ‘ holy temples. Triumphs would not have been celebrated with the  
 ‘ tibia; the cythara or lyre would not have been attributed to  
 ‘ Apollo, nor the tibia, nor the rest of that kind of instruments to  
 ‘ the Muses; neither would it have been permitted to those who play  
 ‘ on the tibia, by whom the deities are appeased, to exhibit public  
 ‘ shews or plays, and to eat in the Capitol, or during the lesser *Quin-*  
 ‘ *quatria*\*, that is on the ides of June; to range about the city, drunk,  
 ‘ and disguised in what garments they pleased. Human minds, and  
 ‘ those that are divine, though Epicurus cries out against it, acknow-  
 ‘ ledge their nature by songs. Lastly, symphony is made use of by  
 ‘ the commanders of ships to encourage the sailors, and enable them  
 ‘ to bear up under the labours and dangers of a voyage; and while  
 ‘ the legions are engaged in battle the fear of death is dispelled by  
 ‘ the trumpet; wherefore Pythagoras, that he might imbue his soul  
 ‘ with its own divinity, before he went to sleep and after he awaked  
 ‘ was accustomed, as is reported, to sing to the cithara; and Ascle-  
 ‘ piades the physician relieved the disturbed minds of frenetics by  
 ‘ symphony. Etophilus, a physician also, says that the pulses of the  
 ‘ veins are moved by musical rhythm; so that both the body and

\* A feast in honour of Minerva.



‘ the mind are subject to the power of harmony, and doubtless music  
 ‘ is not a stranger at our birth.

‘ To these things we may add what Pythagoras taught, namely,  
 ‘ that this whole world was constructed according to musical ratio,  
 ‘ and that the seven planets which move between the heavens and  
 ‘ the earth, and predominate at the birth of mortals, have a rhyth-  
 ‘ mical motion and distances adapted to musical intervals, and emit  
 ‘ sounds, every one different in proportion to its height, which  
 ‘ sounds are so concordant as to produce a most sweet melody, though  
 ‘ inaudible to us by reason of the greatness of the sounds, which the  
 ‘ narrow passages of our ears are not capable of admitting.’ Then  
 follows the passage declaring the Pythagorean estimate of the dis-  
 tances of the planets and their supposed harmonical ratio, herein-  
 before cited from him\*.

Censorinus concludes his Discourse on Music with saying that Py-  
 thagoras compared many other things which musicians treat of to the  
 other stars, and demonstrated that the whole world is constituted in  
 harmony. Agreeable to this he says Dorylaus writes that this world  
 is the instrument of God: and others, that as there are seven wander-  
 ing planets, which have regular motions, that may fitly be resembled  
 to a dance †.

\* See it in page 178, with a diagram.

† The general opinion of the learned in former ages, touching the harmony of the  
 spheres, has been mentioned in a preceding page, but there appears a disposition in the  
 modern philosophers to revive the notion. It seems that Dr. Gregory thought it well  
 founded; and Mr. Maclaurin, in conformity with his opinion, Phil. Discov. of Newton,  
 pag. 35, explains it thus: ‘ If we should suppose musical chords extended from the sun to  
 ‘ each planet; that all these chords might become unison, it would be requisite to en-  
 ‘ crease or diminish their tensions in the same proportions as would be sufficient to render  
 ‘ the gravities of the planets equal; and from the similitude of these proportions the cele-  
 ‘ brated doctrine of the harmony of the spheres is supposed to have been derived.’

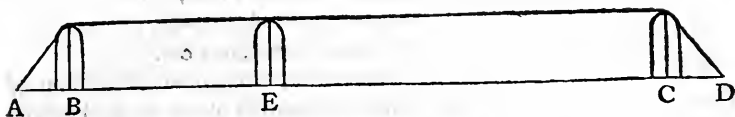
The author of a book lately published, entitled Principles and Power of Harmony, has  
 added his suffrage in support of the opinion. ‘ Certain, says he, as this harmonic coin-  
 ‘ cidence is now become, till Sir Isaac Newton demonstrated the laws of gravitation in  
 ‘ relation to the planets, it must have passed for the dream of an Utopian philosopher.’  
 Pag. 146.

The same author, pag. 145, agreeable to what Censorinus above asserts, says that ‘ there  
 ‘ are traces of the harmonic principle scattered up and down; sufficient to make us look  
 ‘ on it as one of the great and reigning principles of the inanimate world.’ Some of  
 these have hereinbefore been pointed out. Vide pag. 177, in not. To the instances  
 there mentioned, the following may not improperly be added. The web of a spider formed  
 of threads is of an hexangular figure, and each of the threads that divide the whole into  
 six triangles, may be considered as a beam intended to give firmness and stability to the  
 fabric; from one to the other of these beams the insect conducts lines in a parallel direc-  
 tion,

PORPHYRIUS, a very learned Greek philosopher, of the Platonic sect, and who wrote a commentary on the Harmonics of Ptolemy, lived about the end of the third century. His preceptors in philosophy were Plotinus and Amolius; he was a bitter enemy to the Christian religion, which perhaps is the reason why St. Jerome will have him to be a Jew; but Eunapius affirms that he was a native of Tyre, and that his true name was Malchus, which in the Syrian language signifies a king; and that Longinus the sophist, who taught him rhetoric, gave him the name of Porphyrius, in allusion to the purple usually worn by kings. Besides the Commentary on Ptolemy he wrote the lives of divers philosophers, of which only a fragment, containing the life of Pythagoras, is now remaining; a treatise of abstinence from flesh, an explication of the categories of Aristotle, and a treatise, containing fifteen books, against the Christian religion, which he once professed, as St. Augustine, Socrates, and others assert: this latter was answered by Methodius, bishop of Tyre, and afterwards by Eusebius. He died about the end of the reign of Dioclesian, and in 388 his books were burned.

With regard to his commentary, it is evidently imperfect; for whereas the treatise of Ptolemy is divided into three books, the second whereof contains fifteen chapters, Porphyry's commentary is continued no farther than to the end of chapter seven of that book, concluding with the series of sounds through each of the three genera. He seems to have been a virulent opposer of the Aristoxenians, and like his author adheres in general to the tenets of Pythagoras. Porphyry has given a description of the harmonic canon much more intelligible than that of Ptolemy, and has delineated it in the following form.

tion, which, supposing them to be ten in number, do, in consequence of their different lengths, constitute a perfect decachord. Kircher, who made this discovery, says, that were these lines or chords capable of sustaining a force sufficient to make them vibrate, it must necessarily follow from the ratios of their lengths, that between the sound of the outer and the innermost, the interval would be a diapaſon and semiditone; and that the rest of the chords, in proportion to their lengths, would produce the other consonances. Mufurg, tom. I. pag. 441.



By which it appears that a chord A D, strained over the immoveable magades B and C, which are nothing more than two parallelograms, with a femicircular arch at the top of each, together with a movable bridge of the same form E, but somewhat higher, will be sufficient for the demonstration of the consonances, and this indeed is the representation which Dr. Wallis in his notes on Ptolemy has thought proper to give of it.

Dr. Wallis has contented himself with publishing a bare version of this author, without the addition of notes, except a few such short ones as he thought necessary to correct a vicious reading, or explain a difficult passage.

The works of the several authors above-named declare very fully the ancient Greek theory; their practice may in a great measure be judged of from the forms of the ancient instruments, and of these it may be thought necessary in this place to give some account.

The general division of musical instruments is into three classes, the pulsatile, tensile, and inflatile; and to this purpose Cardinal Bellarmine, in his Exposition of the CLth psalm, verse 3, says, ‘ Tria sunt instrumentorum genera, vox, flatus, et pulsus; omnium me-  
minit hoc loco propheta.’

Of the first are the drum, the sistrum, and bells. Of the second the lute, the harp, the clavicymbalum, and viols of all kinds. Of the third are the trumpet, flutes, and pipes, whether single or collected together, as in the organ.

And Kircher, in his Musurgia, preface to book VI. has this passage  
 ‘ Omnia instrumenta musica ad tria genera, ut plurimum revocantur :  
 ‘ Prioris generis dicuntur *εγχάρδα* sive *εντατά*, quæ nervis, seu chordis  
 ‘ constant quæque plectris, aut digitis in harmonicos motus incitantur,  
 ‘ ut sunt Testudines, Psalteria, Lyræ, Sambucæ, Pandoræ, Barbita,  
 ‘ Nablia, Pectides, Clavicymbala, aliaque hujus generis innumera.  
 ‘ Secundi generis sunt *εμφυσωμενα*, *πνευματικα*, vel *εμπνευσα*, quæ inflata,

• seu spiritu incitata sonum edunt ut Fistulæ, Tibiæ, Cornua, Litui,  
 • Tubæ, Buccinæ, Classica. Tertii generis sunt κρουσα, five pulsatilia  
 • uti sunt Tympana, Sistra, Cymbala, Campanæ, &c.’

This division is adopted by a late writer, Franciscus Blanchinus of Verona, in a very learned and curious dissertation on the musical instruments of the ancients\* ; which upon the authority of ancient medals, intaglias, bas-reliefs, and other sculptures of great antiquity, exhibits the forms of a great variety of musical instruments in use among the ancient Greeks and Romans, many whereof are mentioned, or alluded to, by the Latin poets in such terms as contain little less than a precise designation of their respective forms. He has deviated a little from the order prescribed by the above division of musical instruments into classes, by beginning with the inflatile species instead of the tensile ; nevertheless his dissertation is very curious and satisfactory, and contains in it a detail to the following effect.

One of the most simple musical instruments of the ancients is the Calamus pastoralis, made of an oaten reed ; it is mentioned by Virgil and many others of the Latin poets, and by Martianus Capella. See the form of it plate I. fig. 1.

Other writers mention an instrument of very great antiquity by the name of Ossea tibia, a pipe made of the leg-bone of a crane. Fig. 2.

The Syringa or pipe of Pan is described by Virgil, and the use of it by Lucretius, lib. V.

Et supra calamos unco percurrere labro.

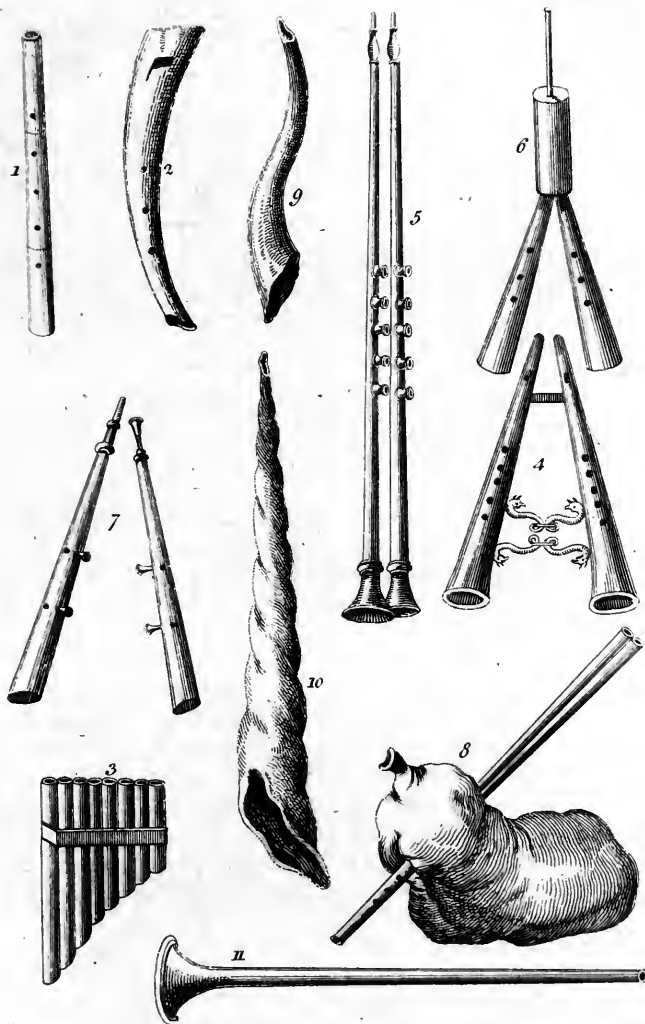
The figure of it occurs so frequently in medals, that a particular description of it is unnecessary. Fig. 3.

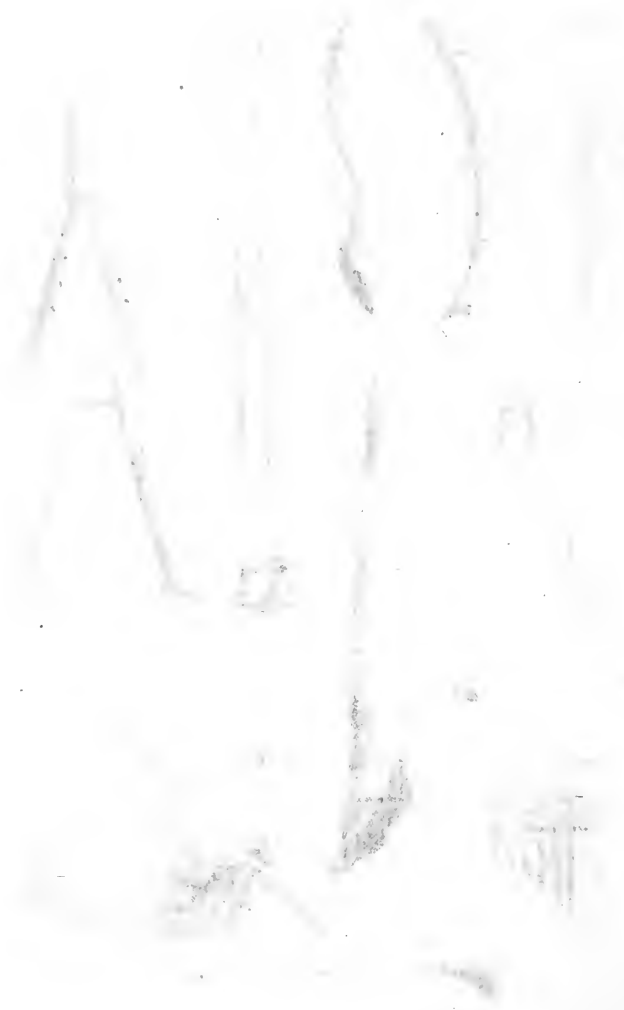
The Tibiæ pares, mentioned by Terence to have been played on, the one with the right, and the other with the left hand, are diversely represented in Mersennus De Instrumentis harmonicis, pag. 7. and in the Dissertation of Blanchinus now citing ; in the former they are yoked together towards the bottom, and at the top, as fig. 4. In the latter they are much slenderer, and are not joined. Fig. 5. †

\* De tribus Generibus Instrumentorum Musicæ veterum Organicæ, Dissertatio ; Romæ, 1742.

† The tibiæ of the ancients, and especially those mentioned in the titles of Terence’s comedies, have been the subject of much learned enquiry. Caspar Bartholinus the anatomist has written a whole volume De Tibiis Veterum. Ælius Donatus, a Latin grammarian, and the preceptor of St. Jerome, says that the tone of the tibiæ dextræ was grave,  
 and

Plate I. to front page 244.





The author last mentioned speaks also of other pipes, namely, the Tibiæ bifores, fig. 6, the Tibiæ gemine, fig. 7, instruments used in theatrical representations; the latter of these seem to be the Tibiæ impares of Terence: he also describes the Tibiæ utriculariæ, or bag-pipes, fig. 8, anciently the entertainment of shepherds and other rustics.

The Horn, fig. 9, was anciently used at funeral solemnities; it is alluded to by Statius, Theb. lib. VI.

The ancient Buccina or horn-trumpet, fig. 10, is mentioned by Ovid, Vegetius, Macrobius, and others.

The Tuba communis, seu recta, so called in contradistinction to the Tuba ductilis, is of very ancient origin, it was formerly, as now, made of silver or brass, of the form fig. 11. Blanchinus hesitates not to assert that the two trumpets of silver which God commanded Moses to make in the wilderness were of this form\*. It seems that the trumpet has retained this figure without the least external diversity, so low down at the year 1520; for in a very curious picture at Windsor, supposed to be of Mabuse, representing the interview between Ardres and Guines, of Henry VIII. and Francis I. are trumpets precisely corresponding in figure with the Tuba recta above referred to.

Of the instruments of the second class, comprehending the tensile species, the Monochord is the most simple. This instrument is mentioned by Aristides Quintilianus, and other ancient writers, but we have no authentic designation of it prior to the time of Ptolemy, it nevertheless is capable of so many forms, that any instrument of one string only answers to the name; for which reason some have not scrupled to represent the monochord like the bow of Diana.

and adapted to the serious parts of the comedy; and that that of the tibiæ sinistræ, and also of the tibiæ farranæ, or Tyrian pipes, was light and cheerful. 'Dextræ tibiæ sua gravitate seriam comediæ dictionem pronuntiabant. Sinistræ et farranæ hoc est Tyriæ acuminis suavitate jocum in comedia ostendebant. Ubi autem dextrâ et sinistrâ acta fabula inscribebatur mistim jocos et gravitatem denunciabat.' Donat. Fragm. de Traged. & Comed. The abbé du Bos says that this passage explains that other in Pliny, where it is said that the ancients to make left-handed pipes, took the bottom of that very reed, the top whereof they had before used for the right-handed. The sense of this passage is manifest; but it does not strictly agree with what Donatus says, unless it can be supposed that, contrary to the order of nature, the reeds were small at bottom, and grew tapering upwards.

\* 'Make thee two trumpets of silver; of an whole piece shalt thou make them, that thou mayest use them for the calling of the assembly, and for the journeying of the camps.' Numbers, chap. x. versé 2.

Figures 1, 2, plate II. are the Lyre of three and four chords, ascribed to Mercury by Nicomachus, Macrobius, Boetius, and a number of other writers, the forms whereof are here given from ancient sculptures in and about Rome, referred to by Blanchinus; as are also those fig. 3 and 4, representing the one a Lyre with seven chords, and the other one with nine.

Fig. 5. is the Lyre of Amphion, and 6. the plectrum, with which not only this, but every species of the lyre was struck, as may be collected from the following passage in Ovid.

Instructamque fidem gemmis et dentibus Indis  
 Sustinet à lævâ : tenuit manus altera plectrum.  
 Artificis status ipse fuit, tum flamina docto  
 Pollice sollicitat : quorum dulcedine captus  
 Pana jubet Tmolus cithæræ submittere cannus.

Met. lib. xi. l. 167. \*

\* It is very probable that the use of the bow, with which the viol species of instruments is founded, was borrowed from a practice of the ancients. Of the many kinds of Lyre among them, it seems that they had one, in which the fingers of one hand were employed in stopping the strings, at the instant that they were stricken with a stick held in the other. Virgil intimates a practice somewhat like this in the following passage of the Æneid :

Nec non Thracicus longa cum veste sacerdos  
 Obloquitur numeris septem discrimina vocum :  
 Jamque eadem digitis, jam pectine pulsat eburno.

Lib. VI. l. 645.

The Thracian bard, surrounded by the rest,  
 There stands conspicuous in his flowing vest,  
 His flying fingers, and harmonious quill,  
 Strike sev'n distinguish'd notes, and sev'n at once they fill.

Dryden's translation, book VI. l. 877.

From which it at least appears, that the instrument was placed in a horizontal position, and that the strings were struck, not by the fingers, but with a plectrum, which might be a quill or a bow, or almost any other thing fit for the purpose.

Plato, in his treatise De Legibus VII. 794. Ed. Serr. advises to train up children to use the right and the left hand indifferently. In some things, says he, we can do it very well, as when we use the lyre with the left hand and the stick with the right. Dr. Jortin says it may be collected from this, that the fingers of the left hand were occupied in some manner upon the strings, else barely to hold a lyre shewed no very free use of the left hand; and it appears from Ptolemy, II. 12, that they used both hands at once in playing upon the lyre, and that the fingers of the left were employed, not in stopping, but in striking the string.

But see the figure of an ancient statue, representing Apollo playing on the lyre, fig. 10, plate III. which seems very clearly to evince the practice above spoken of.

Upon this relic of antiquity, a drawing whereof was found in the collection of the late Mr. N. Haym, it is observable that the lyre is of a form very nearly resembling the violin,



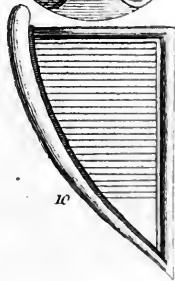
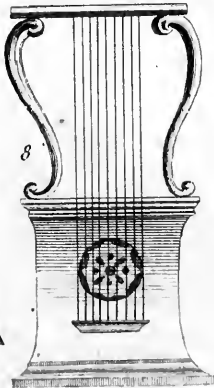
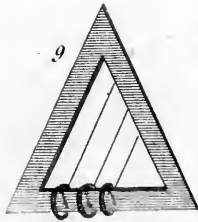
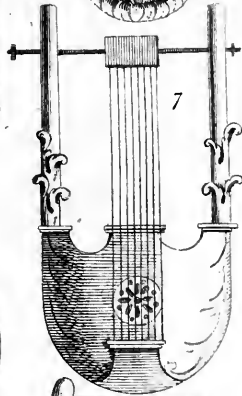
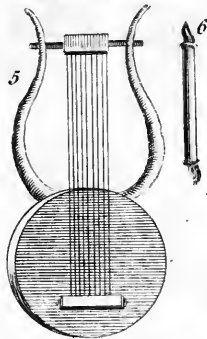
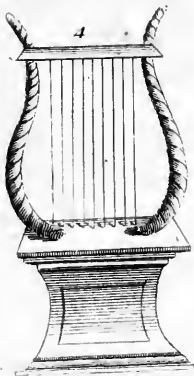
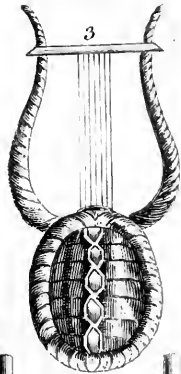
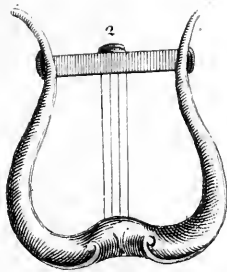
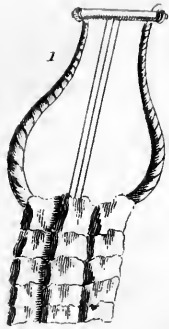




Fig. 7 and 8 are other forms of the Lyre in a state of improvement. Fig. 1 and 2, plate III. are two different representations of the *Lyra triplex*, the one from Blanchinus, the other from a writer of far less respectable authority; concerning this instrument it is necessary to be somewhat particular.

Athenæus, lib. XIV. cap. xv. describes an instrument of a very singular construction, being a lyre in the form of a tripod, an invention as it is said of Pythagoras Zacynthius. This person is mentioned by Aristoxenus, in his *Elements*, page 36; and Meibomius, in a note on the passage, says, on the authority of Diogenes Laertius, that he was the author of *Arcana Philosophiæ*, and adds, that it was from him that the proverbial saying, *ipse dixit*, had its rise; with respect to the instrument, it is exhibited, plate III. in two forms, the first taken from a sarcophagus at Rome, referred to by Blanchinus, the other from an engraving in the *Histoire de la Musique* of Monsieur de Blainville, for which it is to be suspected he had no other authority than the bare verbal description of Athenæus, who has said, that it comprehended three distinct sets of chords, adjusted to the three most ancient of the modes, the Dorian, the Phrygian, and the Lydian.

The Trigon, an instrument mentioned by Nicomachus, among those which were adjusted by Pythagoras, after he had discovered and settled the ratios of the consonances. It was used at feasts, and it is said, was played on by women, and struck either with a quill, or beaten with little rods of different lengths and weights, to occasion a diversity in the sounds. The figure 9, plate II. is taken from an ancient Roman anaglyph, mentioned by Blanchinus. Fig. 10. is also a Trigon, described by the same author; fig. 9, plate III. is the reverse of an ancient medal, and shews the manner of playing on it.

The Cymbals of Bacchus, plate III. fig. 3. were two small brass vessels, somewhat in the form of a shield, which being struck together by the hands, gave a sound. The well-known statue of the dancing faun has one of these in each hand.

violin, as having a body, and also a neck, which is held in the left hand; the instrument in the right, undoubtedly answers to the modern bow, with this difference, that its use was percussion and not friction, which latter is a modern and noble improvement; the position of the instrument deserves to be remarked, as it corresponds exactly with the *viol di braccio*.

The

The Tympanum leve, fig. 4, an instrument yet known by the name of the Tambouret, and frequently used in dancing, was also used to sing to; it is distinguished by Catullus, Ovid, Suetonius, St. Augustine, and Isidore of Sevil, from the great brazen drum, properly so called, this abovementioned, was covered with the skin of some animal, and was struck, either with a short twig or with the hand; as fig. 5, plate III.

Crotala, fig. 6. These were instruments also of the pulsatile kind. The Crotalum was made of a reed, divided into two by a slit from the top, extending half way downwards: the sides thus divided being struck one against the other with different motions of the hands, produced a sound like that which the stork makes with her bill, wherefore the ancients gave that bird the epithet of Crotaliftria, i. e. Player upon the Crotalum\*; and Aristophanes calls a great talker a Crotalum.

Mention is made by some writers on music, of an instrument of forty chords, called, from the name of its inventor, the Epi-

\* Pausanias relates, that Hercules did not kill the Stymphalides with his arrows, but that he frightened, and drove them away with the noise of the crotala, the consequence whereof, supposing the relation to be true, is, that the crotalum must be a very ancient instrument. Ovid joins the crotalum with the cymbals.

Cymbala cum crotalis prurientiaque arma Priapo  
Ponit, et adducit tympana pulsa manu.

It appears by an ancient poem, entitled *Copa*, by some ascribed to Virgil, that those who played with the crotala danced at the same time. It farther appears, that in these dances, which were chiefly of women, such a variety of wanton gesticulations and indecent attitudes and postures were practised, that Clemens Alexandrinus says, that the use of these instruments ought to be banished from the festivals of all christians. And the same might have been said of the cymbals. See figures 7, 8, plate III.

Some authors resemble the crotala to the castanets of the Spaniards, or perhaps of the Moors; for castanets are supposed to be of Moorish invention; but of these the crumata of the ancients seem more nearly to approach. These were made of bones, or the shells of fish. Scaliger observes, upon the abovementioned poem, that they were very common among the Spaniards, especially the inhabitants of the province of Bœtica [Andalusia] about Cadiz, to which Martial alludes.

Nec de Gadibus improbis puellæ  
Vibrabunt sine sine prurientes  
Lascivos docili tremore lumbos. Lib. V. epigr. lxxix.

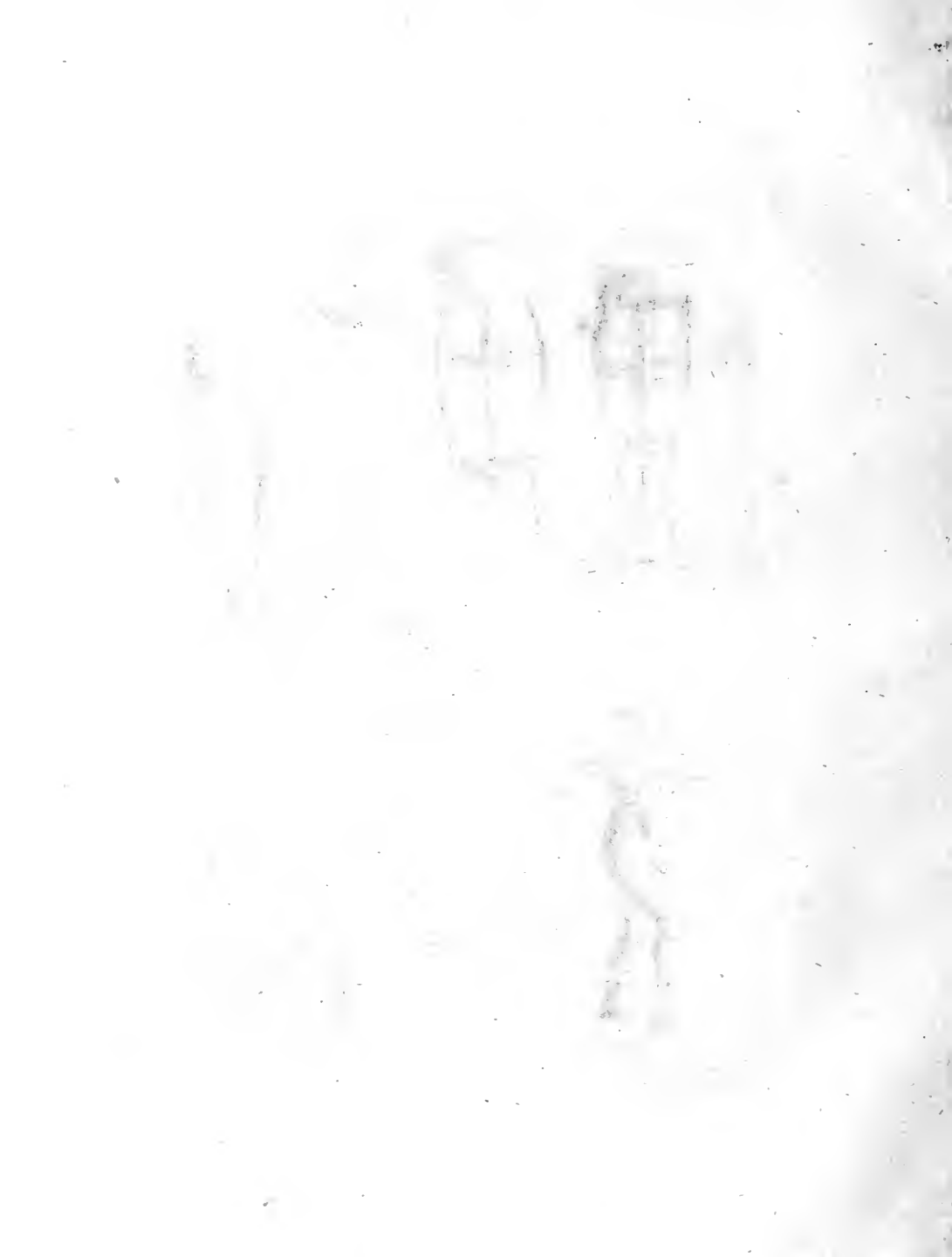
The same poet elsewhere speaks of the crumata in these words,

Edere lascivos ad Bœtica crumata gestus,  
Ed Gaditanis ludere docta modis. Lib. VI. epigr. lxxi.

From which two passages, it appears clearly, that the above censure of Clemens Alexandrinus was well grounded.

gonium.





gonium. Epigonius was a native of Ambracia, a city of Epirus, and a citizen of Sicyon, a town of Peloponnesus. He is mentioned together with Lasus Hermionensis, by Aristoxenus, in his Elements, pag. 3. And Porphyry makes him the head of one of those many sects of musicians that formerly subsisted, giving him the priority even of Aristoxenus, in these words. ' There were many sects, some indeed before Aristoxenus, as the Epigonians, Damonians, Eratocleans, Agenorians, and some others; which he himself, makes mention of; but there were some after him, which others have described, as the Archestratians, Agonians, Philiscians, and Herpipians.'

Julius Pollux, in his Onomasticum, lib. IV. cap. ix. speaking of the instruments invented by certain nations, says, that the Epigonium obtained its name from Epigonius, who was the first that struck the chords of musical instruments without a plectrum\*. The same author adds, that the Epigonium had forty chords, as the Simicum had thirty-five. Athenæus, lib. IV. speaks to the same purpose.

As to the Simicum, nothing more is known about it, than that it contained thirty-five chords. Vincentio Galilei, with good reason, supposes it to be somewhat more ancient than the epigonium. Of both these instruments he has ventured to give a representation, in his dialogue on ancient and modern music; but it is very much to be doubted, whether he had any authority from antiquity for so doing. The form which he has assigned them severally, resembles nearly that of an upright harpichord, which seems to indicate, that when played on, it was held between the legs of the musician, different perhaps from the harp, with the grave chords near and the acute remote from him.

The foregoing account comprehends the principal instruments in use among the ancient Greeks and Romans, so far as the researches of learned and inquisitive men have succeeded in their attempts to

\* Plutarch in his dialogue before cited, relates that Olympus introduced the plectrum into Greece, which it is supposed was then deemed a useful invention. Certainly the lyre was originally touched by the fingers, and all that can be meant here, is, that Epigonius recurred to the primitive method, and played on his instrument, as the harp is now played on with the fingers; between which, and the touch of a plectrum or quill, the difference is very wide, as may be discovered by a comparison of the lute or harp with the harpichord.

recover them; their forms seem to be thereby ascertained beyond the possibility of a doubt, and these it may be said, declare the state of the ancient musical practice, much more satisfactorily than all the hyperbolical relations extant, of its efficacy and influence over the human passions; and leave it an unquestionable fact, that the discoveries of Pythagoras, and the improvements made by the Greeks, his successors, terminated in a theory, admirable in speculation it is true, but to which such instruments were adapted, as would have disgraced any performance, even in the least enlightened period, since the invention of that species of harmony, which has been the delight of later ages.



A

GENERAL HISTORY

OF THE

SCIENCE and PRACTICE

OF

MUSIC.

BOOK III. CHAP. I.

**T**HE gradual declension of learning which had begun before the time of Porphyry, the last of the Greek musical writers, and above all, the ravages of war, and the then embroiled state of the whole civilized world, put an end to all farther improvements in the science of harmonics; nor do we find, that after this time it was made a subject of philosophical enquiry: the succeeding writers were chiefly Latins, who, as they were for the most part followers of the Greeks, contributed but very little to its advancement; and, for reasons which will hereafter be given, the cultivation of music became the care of the clergy; an order of men, in whom the little of learning then left, in a few ages after the establishment of christianity centered.

But before we proceed farther to trace the progress of the science, it is proper to remark, that the writings of the Greeks not only leave us in great uncertainty as to the state of music in other countries, but that they do not exclude the possibility of its having arrived at a great degree of perfection, even before that discovery of the consonances, which is by all of them allowed to be the very basis of the Greek system: For let it be remembered, that Pythagoras is supposed to have lived so late as A. M. 3384, which is about 560 years before the birth of Christ; and that long before his time, such

effects were ascribed to music, as well by the sacred as profane historians, as are utterly inconsistent with the supposition, that it was then in its infancy. It were endless to enumerate the many passages in sacred writ, declaring the power of music: the story of David and Saul, and the effects attributed to the harp; but more especially the frequent mention of instruments with ten strings, would lead us to think, that the art had arrived to a state of greater perfection than the writers abovementioned suppose. Here then arises a question, the solution whereof is attended with great difficulty; namely, whether the Jews, not to mention the various other nations, that had subsisted for many ages, previous to the times from whence we begin our account, in a state of very improved civilization, had not a musical theory? or is it to be conceived, that mankind, with whose frame and structure, with whose organs and faculties, harmony is shewn to be connatural, could remain for so many centuries in an almost total ignorance of its nature and principles?

To this it is answered, that the knowledge of the state, and condition of past times, is deducible, with any degree of certainty, only from history; that the information communicated by the means of writing, must depend on an infinite variety of circumstances, such as a disposition in men of ability to communicate that information which is derived from a long course of study, the permanency of language, a faithful and uncorrupt transmission of facts, and an absence of all those accidents, that in the course of events hinder the propagation of knowledge; and wherever these fail, the progress of human intelligence must necessarily be intercepted. To obstructions arising from one or other of these causes, is to be imputed that impenetrable obscurity, in which the events of the earlier ages lie involved; an obscurity so intense, that no one presumes to trace the origin of any of the arts, and a vast chasm is supplied by the mythologists, the poets, and that species of history which we distinguish from what is truly authentic and worthy of credit by the epithet of fabulous; even antiquity itself, which stamps a value on some sort of evidence, will in many cases diminish the credit of an historian; and mankind have not yet settled what degree of assent is due to the testimony of the most ancient of all profane historians, the venerable Herodotus.

Admit-

Admitting as a fact, that Egypt in the infancy of the world, was as well the seat of learning as of empire; and admitting also, the learning of the Persian Magi, the Indian Brachmans, and other people of the East; not to mention the Phœnicians and the Chinese, to be as great as some pretend, who have magnified it to a degree that exceeds the bounds of moderate credulity; nevertheless, the more sober researchers into antiquity, have contented themselves with a retrospect limited by the time, when philosophy began to flourish in Greece; and it is only on the writers of that country that we can depend.

An investigation of the Jewish theory would be a fruitless attempt, but of their practice we are enabled to form some judgment, by the several passages in the Old Testament that declare the names and number of the Hebrew instruments, and mention the frequent use of them in sacrifices, and other religious solemnities; but it is to be observed, that the correspondence of the names of their instruments, with the names of those in use in modern times, is a circumstance from which no argument in their favour can be drawn, for a reason herein before given.

Merfennus, and after him Kircher, whose elaborate researches into the more abstruse parts of ancient literature, render him in some particulars a respectable authority, have exhibited the forms of many of the ancient Jewish musical instruments: the latter of these authors professes to have gone to the fountain head for his intelligence, and the result of an attentive perusal of as many of the Rabbinical writers and commentators on the Talmud as he could lay his hands on he has given to the public in the *Musurgia*, tom. I. pag. 47. How far the authorities adduced by him will warrant such a precise designation of their respective forms, as verges in some instances too near our own times, is left to the decision of those who shall have curiosity enough to peruse them; but lest it should be said that the subject is too important to be passed over in silence, the substance of what he has delivered on this head is here given.

He says that the author of a treatise entitled *Schilte Haggiborim*, i. e. the Shield of the Mighty, who he elsewhere makes to be Rabbi Hannase, treats very accurately on the musical instruments of the Hebrews, and reckons that they were thirty-six in number, and of the pulsatile kind, and that David was skilled in the use of them all.

Kircher

Kircher however does not seem to acquiesce altogether in the first of these opinions, for he proceeds to a description de instrumentis Hebreorum Polychordis sive Neghinoth; these it seems, according to his author above-named, were of wood, long and round, consisting of three strings made of the intestines of beasts; the instruments had holes bored underneath them; and, to make them sound, the strings were rubbed with a bow composed of the hairs of a horse's tail, well extended and compacted together. Kircher speaks particularly of the Psalterium, or Nablum, the Cythara, or, which is the same thing, the Assur, Nevel, Chinnor, the Machul, and the Minnin. He says that no one has rightly described the Psalterium of David, and that some have thought that the word rather denoted certain genera of harmony, or modulations of the voice, than any kind of instrument: that according to Josephus it had twelve sounds, and was played on with the fingers; that Hilarius, Didymus, Basilus, and Euthymius call it the straietest of all musical instruments—that Augustine says it was carried in the hand of the player, and had a shell or concave piece of wood on it that caused the strings to resound—that Hieronymus describes this instrument as having ten strings, and resembling in its form a square shield—that Hilarius will have it to be the same with the Nablum. Kircher himself is certain that it was a stringed instrument, and cites Suidas to prove that the word Psalterium is derived from Psallo, to strike the chords with the ends of the fingers. He farther says, that many writers suppose it to have had a triangular form, and to resemble the harp of David, as commonly painted in pictures of him; and that some are express in the opinion that the Psalterium and the Nablum, as being struck with the fingers of both hands, were one and the same instrument; and to this purpose he cites the following passage from Ovid.

*Disce etiam duplici genalia Naulia palmâ*

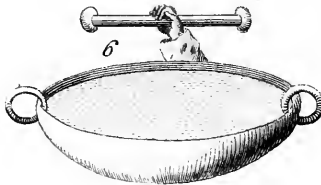
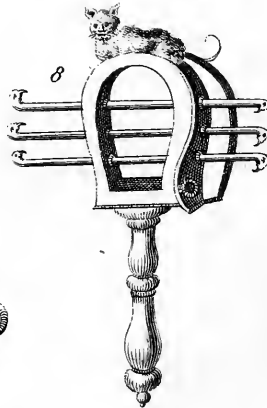
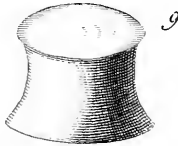
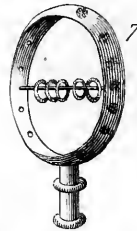
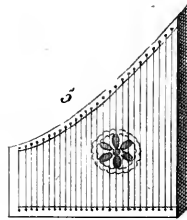
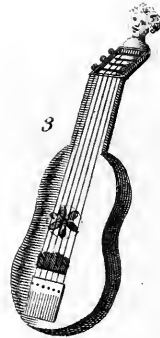
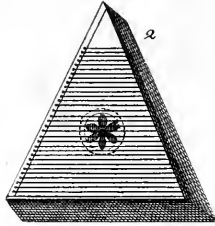
*Verrere: conveniunt dulcibus illa modis.*

ART. AMAT. lib. III. l. 327.

The Nevel, notwithstanding the resemblance between its name and that of the Nablum, and the confusion which Kircher has created by using them promiscuously, clearly appears to have been a different instrument; for he says it was in the form of a trapezium; and the Nablum, which he has taken great pains to prove to be the same



Plate IV. to front page 255.



same with the Psalterium, he shews to have been of a square form. Of the Assur, he only says that it had ten chords; the Chinnor he supposes to have had thirty-two, the Machul six, and the Minnin three or four; and that in their form they resembled, the one the Viol and the other the Chelys. To give a clearer idea, he has exhibited, from an old book in the Vatican library, several figures representing the Psalterium, plate IV. fig. 1; the Chinnor, fig. 2, the Machul, fig. 3, the Minnin fig. 4, and the Nevel, fig. 5\*.

Kircher speaks also of another instrument mentioned by Rabbi Hannase, who it seems was the author of the book before cited, Schilte Haggiborim, and also in the Targum, called Haghniugab, consisting of six strings, and resembling the greater Chelys or Viol di Gamba, differing from it only in the number of its chords: he says it is often confounded with the Machul.

He next proceeds to treat of the pulsatile instruments of the Hebrews, in contradistinction to those of the fiducial or stringed kind; and first he speaks of the Thoph or Tympanum, plate IV. fig. 6, an instrument of Egyptian original, and used by the priests of that country in their public worship. He relates on the authority of Rabbi Hannase that it had the likeness of a ship; and that by the Greeks it was also called Cymbalum, from cymba a boat: he adds that it was covered with the skin of an animal, and was beat on with a pestle or rod of iron or brass.

He proceeds to say that though the Machul is ranked among the fiducial or stringed instruments, this name was given to an instrument of a very different form, and of the pulsatile kind; nay, he adds that Rabbi Hannase asserts that it was precisely the same with the Sistrum of the Egyptians, or the Kroufma of the Greeks; and that it was of a circular form, made of iron, brass, silver, or gold, with little bells hung round it. Kircher corrects this description; and instead of little bells, supposes a number of iron-rings, strung as it were on a rod or bar in a lateral position that went across the circle. He says that a handle was affixed to it, by means whereof the in-

\* The truth of this representation, so far as it relates to the Machul and Minnin, is strongly to be suspected; they both seem to require the aid of the hair bow, a kind of plectrum to which the ancients seem to have been absolute strangers. Besides their near resemblance to the lute and viol, instruments which it is supposed had their origin in Provence, is a strong argument against their antiquity,

strument was flung backwards and forwards, and emitted a kind of melancholy murmur, arising from the collision of the rings, as well against each other as against the sides, the circle, and the bar on which they moved, plate IV. fig. 7. He adds, that the Thoph, or rather Sistrum of the Hebrews was thus constructed, and that the virgins every where made use of it in the dances of the Sistris, as we read in the books of Exodus and Judges, that Mary the sister of Moses, and the daughter of Jephtha did: and he farther says, that according to accounts which he has received from credible witnesses, the Syrians in his time preserved the use of the Sistrum in Palestine\*.

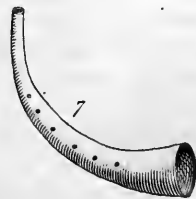
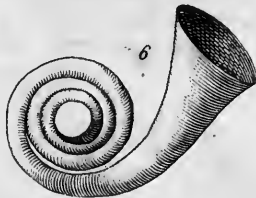
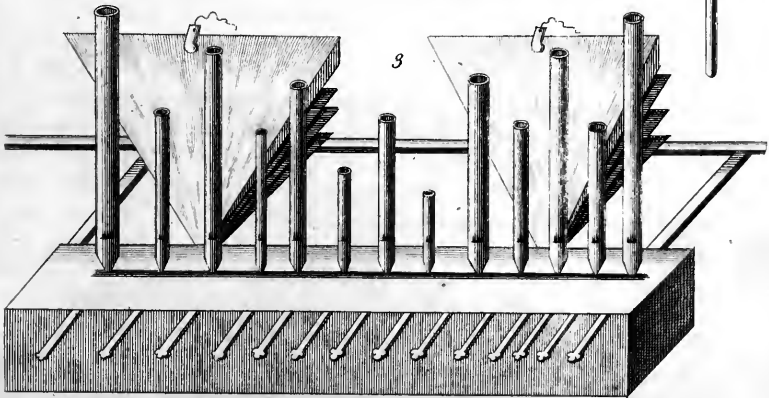
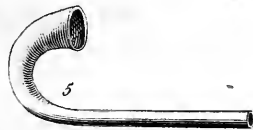
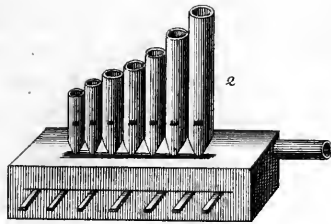
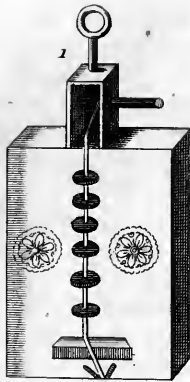
Gnets Berusim was another of the Hebrew pulsatile instruments; it seems by Kircher that there was some controversy about the form of it, but that Rabbi Hannase represents it as nothing more than a piece of fir in shape like a mortar. He says there belonged to it a pestle of the same wood, with a knob at each end, and in the middle thereof a place for the hand to grasp it: that those that beat on the instrument held it in the left hand and struck with the right on the edge and in the middle, using the knobs alternately. Plate IV. fig. 9, 10. Kircher compares this instrument to the Crotalum above described; but seemingly with little propriety; and to the Gnaccari of the Italians, of which word, considered as a technical term, it is hard to find the meaning.

Minagghinim was the name of another of the Hebrew pulsatile instruments, which, according to Rabbi Hannase, was a certain square table of wood, having a handle so fitted as conveniently to be held by it. On the table were balls of wood or brass, through which was put either an iron chain or an hempen chord, and this was stretched from the bottom to the top of the table. When the instrument was shook, the striking of the balls occasioned a very clear sound, which might be heard at a great distance. See the representation which Kircher gives of it, plate V. fig. 1.

Magraphe Tamid, another of the pulsatile instruments of the Hebrews, is conjectured by Kircher to have been used for convoking the priests and Levites together in the temple: it is said to have emitted

\* The invention of the Sistrum is not to be ascribed to the Jews: it is generally supposed to be of Egyptian original. There are some forms of it, as that in particular, plate IV, fig. 8, which bears on it a figure of one of those many brute animals to which this superstitious and idolatrous people paid divine honours.







prodigious sound; and though Rabbi Hannafe says no one can describe the form of it, Kircher thinks it must have been like one of our largest bells.

We are now to declare what instruments of the pneumatic kind were in use amongst the ancient Hebrews; and first we meet with the *Mafrakitha*, which consisted of pipes of various sizes, fitted into a kind of wooden chest, open at the top, but at the bottom stopped with wood covered with a skin; by means of a pipe fixed to the chest, wind was conveyed into it from the lips: the pipes were of lengths proportioned musically to each other, and the melody was varied at pleasure by the stopping and unstopping with the fingers the apertures at the upper extremity. Kircher thinks it differed but little from the instrument which Pan is constantly represented as playing on; there seems however to be a difference in the manner of using it. See it plate V. fig. 2.

Of the *Sampunia*, derived, as Kircher conjectures, from the Greek *Symphonia*, as also of the preceding instrument, mention is made, as Kircher asserts, in the Chaldaic of the book of Daniel, chap. iii. He says also that it is described in the *Schilte Haggiborim*, as consisting of a round belly, made of the skin of a ram or wether, into which two pipes were inserted, one to fill the belly with wind, the other to emit the sound; the lower pipe had holes in it, and was played on by the fingers. In short, it seems to have been neither more nor less than the *Cornamusa*, or common bag-pipe; and Kircher says that in Italy, even in his days, it was known by the name of the *Zampugna*.

The Hebrews had also an instrument, described in the *Schilte Haggiborim*, called *Macraphe d'Aruchin*, consisting of several orders of pipes, which were supplied with wind by means of bellows; it had keys, and would at this time without hesitation be called an organ. Plate V. fig. 3\*.

Of *Fistulæ* it seems the Hebrews had sundry kinds; they were chiefly the horns or bones of animals, strait or contorted, as nature

\* This instrument is delineated by Kircher, but the figure of it above referred to, is taken from the *Musica Historica* of Wolfgang Gaspar Printz, written in the German language, and printed at Dresden in 4to. anno 1690, who cites the *Collectaneis Philologicis* of Johannes Schütterus, to justify his deviations from Kircher, in the form of some of the instruments described in the *Musurgia*. But it is to be feared, that his author has erred in giving to the *Machul* and *Minnin* above described, the hair-bow, of which not the least trace is to be found in the writings of any of the ancients.

fashioned them : the representations of sundry kinds of them, in figures 4, 5, 6, 7, plate V. are taken from Kircher.

In the account which Blanchinus has given of the Jewish musical instruments, he mentions a mallet of wood used by them in their worship, and which at certain times is beaten by the people on the beams, seats, and other parts of the synagogue, in commemoration of the tumult preceding the Crucifixion, or, as the modern Jews say, at the hanging of Haman, plate V. fig. 8. Instruments of this kind, and which produce noise rather than sound, are improperly classed among instruments of music.

Of the Hebrew musicians no very satisfactory account can be given. This of Kircher, extracted from the Rabbinical writers, is, perhaps, the best that can be expected ‘ Afaph, according to the opinion of the interpreters, was the composer of certain psalms ; he is said also to have been a singer, and to have sung to the cymbals of brass, and to have praised the Lord, and ministered in the sight of the ark.

‘ Eman Ezraita, the singer, the son of Joel, of the children of Caath, was most skilful in the cymbal, and was in a manner equal in knowledge and wisdom to Ethan ; he is the supposed author of the Psalm, beginning Domine Deus salutis meæ, which, because he gave it to be sung by the sons of Coreh, he inscribed both with his own and their name.

‘ Ethan of Ezrachus, the son of Assaia, the son of Merari, played on the brass cymbal, and was endued with so much wisdom, that, according to the Book of Kings, no mortal, except Solomon, was wiser. The three sons of Coreh, Afir, Elcana, and Abiafaph, were famous singers and composers of Psalms.’

‘ Idithas was an excellent singer, and player on the cythara. many confound him with Orpheus.’ Kircher supposes, that he and the other Hebrew musicians were inspired with the knowledge of vocal and instrumental music, and that their performance was equal to their skill. He says, he doubts not but that there were many other men, especially in the time of king Solomon, who were well skilled in divine music, for that the most excellent music was fittest for the wisest of mortals, and that of the Hebrews must have been more efficacious in exciting the affections than that of the Greeks, or of later times, but of what kind in particular it was, and

and by what characters expressed, he says, its antiquity prevents us from knowing\*.

A much later writer than him above cited, and who is now living, Giambatista Martini, of Bologna, has entered very deeply into the music of the Hebrews; and it were to be wished, that he had been able to give a more satisfactory account of it than is to be found in his very learned work, the *Storia Musica*, now publishing, but of which, as yet [in this year 1771] the public are in possession of only one volume. Having few other sources of intelligence than the Talmud, and the writings of the Rabbins, we are not to expect much information in this particular.

## C H A P. II.

**F**ROM accounts so vague, and so abounding with conjectures as are given of the ancient Hebrew music and musicians, and more especially of their instruments, even by writers of the best authority, it is very difficult to collect any thing whereon an inquisitive mind may rest. With regard to the Hebrew instruments, it is evident from the accounts of Kircher, and others, that some of them approach so nearly to the form of those of more modern times, as to give reason to suspect the authenticity of the representation: others appear to have been so very inartifi-

\* The confusion of Idithus with Orpheus, suggests a remark on the endeavours of some, to establish the identity of eminent persons of different names and countries, and perhaps of different ages, upon hardly any other ground, than some one particular in their history common to them both: how far it is possible to extend an hypothesis of this kind, the present bishop of Gloucester has shewn in his *Divine Legation of Moses*. In the course of that work, the author has thought it necessary to controvert an assertion of Sir Isaac Newton; namely, that Osiris and Sesostris, both kings of Egypt, were one and the same person; in order to do this, he has undertaken to prove, that the British king Arthur and William the Conqueror were not two distinct beings, but indentially one person; and, as far as the method of reasoning usual in such kind of arguments will serve him, he has established his proposition.

The conclusion from this correspondence of such a variety of circumstances, is much stronger in favour of the identity of Arthur and William, than could have been imagined, and yet, it has no other effect on the mind, than to discredit this method of reasoning, which is fraught with fallacy, and must terminate in scepticism.

What then can we say to the opinion of those, who confound the Hebrew musician Idithus with the ancient Orpheus; what rather can we think of him, who has attempted to shew that this latter, and the royal prophet David, were one and the same person. See the *Life of David*, by Dr. Delany.

cially constructed, that we scarce credit the relation, given of their effects. It is clear, that Kircher and Schütterus had from the Rabbinical writers little more than the bare names of many of the instruments described by them; yet, have they both, in some instances, ventured to represent them by forms of a comparatively late invention. Who does not see, that the Minnin, as represented by the former, and the lute, are one and the same instrument? and what difference can be discerned between the Machul and the Spanish Guitar? or can we believe, that the Macraphe d' Aruchin, and such rude essays towards melody as the Gnets Berusim, the Sistrum, or the Minagnhinim, could subsist among the same people, in any given period of civilization?

As to Martini's account, it speaks for itself; it is extracted from the sacred writings, which, at this distance of time, even with the assistance of the most learned comments, fall short of affording that satisfaction, which is to be wished for in an enquiry of this kind.

Under these disadvantages, which even an enquiry into the instruments of the Hebrews lies under, an attempt to explain their musical theory must seem hopeless. Nor is it possible to conceive any thing like a system, to which such instruments as the Thoph, or the Gnets Berusim could be adapted: if the strokes of a pestle against a mortar, like those of the latter, be reducible to measure; yet, surely the rattling of a chain, like the music of the Minagnhinim, is not; or what if they were, would the sounds produced in either case make music? To speak freely on this matter, whatever advantages this people might derive from the instructions of an inspired lawgiver, and the occasional interpositions of the Almighty, it no where appears that their attainments in literature were very great: or that they excelled in any of those arts that attend the refinement of human manners; the figure they made among the neighbouring nations appears to have been very inconsiderable; and with respect to their music, there is but too much reason to suppose it was very barbarous. The only historical relation that seems to stand in the way of this opinion, is, that the effects wrought by the music of David, on the mind of Saul, a man of a haughty irascible temper, not easily susceptible of the emotions of pity or complacency, and, at the time when David exercised his art on him, under the power of a demon, or, at best, in a frenzy.

Kircher has taken upon him to relate the whole process of the dispossession of Saul, by David, and has done it as circumstantially as if he had been present at the time; his reasoning is very curious, and it is here given in his own words.

‘ That we may be the better able to resolve this question, how David freed Saul from the evil spirit, I shall first quote the words of the Holy Scripture, as found in the first book of Samuel, chap. xvi. ver. 23.’ “ And it came to pass when the evil spirit from God was upon Saul, that David took an harp, and played with his hand: so Saul was refreshed, and was well, and the evil spirit departed from him.” ‘ The passage in the holy text informs us very clearly, that the evil spirit, whatsoever it was, was driven away by music; but how that came to pass is differently explained. The Rabbins on this place say, that when David cured Saul, he played on a cythara of ten strings; they say also, that David knew that star, by which it was necessary the music should be regulated, in order to effect the cure: thus Rabbi Abenezra. But Picus of Mirandola says, that music sets the spirits in motion, and thereby produces the like effects on the mind, as a medicine does on the body; from whence it may seem, that the comment of Abenezra, is vain and trifling, and that David regarded not the aspects of the stars; but trusting to the power of his instrument, struck it with his hand as his fancy suggested.

‘ And we, rejecting such astrological fictions, assert, that David freed Saul, not with herbs, potions, or other medicaments, as some maintain, but by the sole force and efficacy of music. In order to demonstrate which, let it be observed, that those applications which unlock the pores, remove obstructions, dispel vapours and cheer the heart, are best calculated to cure madness, and allay the fury of the mind; now music produces these effects, for as it consists in sounds, generated by the motion of the air, it follows that it will attenuate the spirits, which by that motion are rendered warmer, and more quick in their action, and so dissipate at length the melancholy humour. On the contrary, where it is necessary to relax the spirits, and prevent the wounding or affecting the membranes of the brain; in that case, it is proper to use slow progressions of sound, that those spirits and biting vapours, which ascend thither from the stomach, spleen, and hypocondria, may

may be quietly dismissed. Therefore, the music of David might appease Saul, in either of these two ways of attenuation or dissipation: by the one, he might have expelled the melancholy from the cells of the brain, or he might by the other have dissolved it, and sent it off in thin vapours, by insensible perspiration. In either case, when the melancholy had left him, he could not be mad until the return of it, he being terrestrial, and as it were, destitute of action, unless moved thereto by the vital spirits, which had led him here and there; but they had left him, when for the sake of the harmony they had flown to the ears, abandoning, as I may say, their rule over him. And though, upon the cessation of the harmony they might return, yet, the patient having been elevated, and rendered chearful, the melancholy might have acquired a more favourable habit. From all which, it is manifest, that this effect proceeded not from any casual sound of the cythara, but from the great art and excellent skill of David in playing on it; for, as he had a consummate and penetrating judgment, and was always in the presence of Saul, as being his armour-bearer, he must have been perfectly acquainted with the inclination and bent of his mind, and to what passions it was most subject: hence, without doubt, he being enabled, not so much by his own skill, as impelled by a divine instinct, knew so dexterously, and with sounds suited to the humour and distemper of the king, to touch the cythara, or indeed any other instrument; for, as has been mentioned, he was skilled in the use of no fewer than thirty-six, of different kinds. It might be, that at the instant we are speaking of, he recited some certain rhythmical, proper for his purpose, and which Saul might delight to hear; or, that by the power of metrical dancing, joined to the melody of the instrument, he wrought this effect: for Saul was apt to be affected in this manner, by the music and dancing of his armour-bearer; as he was a youth of a very beautiful aspect, these roused up the spirits, and the words, which were rhythmically joined to the harmony, tickling the hearing, lifted up the mind, as from a dark prison, into the high region of light, whereby the gloomy spirits which oppressed the heart were dissipated, and room was left for it to dilate itself, which dilatation was naturally followed by tranquility and gladness.' *Musurgia*, tom. II. pag. 214, et seq.

Whoever



Whoever will be at the pains of turning to the original from whence this very circumstantial relation is taken, will think it hardly possible for any one to compress more nonsense into an equal number of words than this passage contains, for which no better apology can be made than that Kircher, though a man of great learning, boundless curiosity, and indefatigable industry, was less happy in forming conclusions than in relating facts; his talents were calculated for the attainment of knowledge, but they did not qualify him for disquisition; in short he was no reasoner. With regard to the dispossession of Saul, supposing music to have been in any great degree of perfection among the Hebrews in his time, there is nothing incredible in it; and besides it has the evidence of sacred history to support it: it would therefore have argued more wisdom in the Jesuit to have admitted the fact, without pretending to account for it, than by so ridiculous a theory as he has endeavoured to establish, to render the narration itself doubtful.

After this censure above passed on the music of the Hebrews, it would argue an unreasonable prejudice against them, were it not admitted that their poetry carries with it the signatures of a most exalted sublimity: to select instances from the prophets might be deemed unfair, as there are good reasons to believe that something more than mere human genius dictated those very energetic compositions; but if we look into those of their writings which the canon of our church has not adopted, we shall find great reason to admire their poetical abilities. It is true that the boldness of their figures, and those abrupt transitions, which distinguish the oriental compositions from those of most other countries, are not so well relished by a people with whom the false refinements on life and manners have taken place of the original simplicity of nature; but in the more regular and less enthusiastic spirit of expression, we feel and admire their excellence. Not to mention the numberless instances of this sort that occur in the Psalms, there is one poem among them, which for its truly elegiac simplicity, pathetic expression of the woes of captivity, and the lamentations for the sufferings of an afflicted people, has perhaps not its fellow in any of the dead or living languages. The poem here meant is the CXXXVIIth Psalm.

From the manner in which it appears the ancients treated music, we may observe that they reasoned very abstractedly about it; the measure

measure of intervals, either by their ratios, or by their ear, was in their judgment a very important branch of the science, and we are not to wonder at that close connexion, which in the writings of the Pythagoreans at least, is discoverable between the three sciences music, arithmetic, and geometry. In this view it may perhaps be said that the study of music had an influence on the minds and tempers of men, as we say that the study of the mathematics has a tendency to induce a habit of thinking, to invigorate the powers of the understanding, and to detect the fallacy of specious and delusive reasoning, but in what other way it could affect the manners, or indeed the mind, unless in that very obvious one of an address to the passions, which we at this day are all sensible of, is utterly impossible to determine.

And indeed the investigation of proportions and the properties of numbers may be said to be very different from the art of combining sounds, so as to excite that pleasure which we ascribe to music; and perhaps it may not be too much to say that the understanding has little to do with it, nay, some have carried this matter so far as to question whether the delight we receive from music does not partake more of the sensual than the intellectual kind\*; however this at least may be said, that it is some faculty, very different from the understanding, that enables us to perceive the effects of harmony, and to distinguish between consonant and dissonant sounds, and in this respect, the affinity between music, and that other art, which for more reasons than all are aware of, has ever been deemed its sister, is very remarkable. That painting has its foundation in mathematical principles, is certain, nay, that there is a harmony between colours, analogous to that of sounds, is demonstrable; now the laws of optics, the doctrine of light and colours, and the principles of perspective, connected as they are with geometry, all of which painting has more or less to do with, are things so different from the representation of corporeal objects, from the selection and artful arrangement of beautiful forms, from the expressions of character and passion as they appear in the human countenance, and, lastly, from that creative faculty in which we suppose the perfection of painting to consist, that we scruple not to say that a man may be an excellent painter with a slen-

\* This metaphysical question is discussed and determined in the negative, i. e. that music is an intellectual pleasure, by the ingenious Mr. John Norris of Bemerton. See his *Miscellanies*, pag. 309, 12mo.

der knowledge of the mathematics ; and the examples of the most eminent professors of the art, are a proof the assertion.

But the reason why the ancient writers treated the subject in this manner is, that they used the word Harmony to express relation and coincidence in general ; nay, so extensively was this appellation used, that many authors of treatises on this subject have thought it previously necessary to a discussion of music in its three most obvious divisions of rhythmic, metric, and harmonic, to treat of mundane, humane, and political music ; the three last of which species, if at all intitled to the name of music \*, must owe it to a metaphor, and that a very bold one : Aristides Quintilianus uses another method of division, which it must be confessed is the more natural of the two, and says that music is of two kinds, the contemplative and the active ; the first of these he subdivides into natural and artificial ; which latter he again divides into the harmonic, the rhythmic, and the metric ; the the active he divides into the usual and the enunciative ; the usual,

\* Aristoxenus's division is rhythmic, metric, organic, lib. II. That of Boetius, mundane, humane, and instrumental. By the first is to be understood the harmony of the spheres, before spoken of ; by the second, the harmony subsisting between the body and the rational soul as united together, each being actuated by the other ; and also that other kind of harmony, consent, relation, or whatever else it may be called, between the parts of the body, with respect to each ; and again between those affections of the human mind, which, opposed to, or counterbalancing each other, and aided by reason, produce a kind of moral harmony, the effects whereof are visible in an orderly and well-regulated conduct.

To these Kircher and others have added musica politica, which, say they, consists in that harmonical proportion, which in every well-regulated government subsists between the three several orders of the people, the high, the low, and the middle state.

Kircher, whose inventive faculty never fails him, has given scales demonstrating each of these supposed kinds of harmony ; but whoever would be farther informed as to the nature of mundane music, as it is above called, or is desirous of knowing to what extravagant lengths the human imagination may be led, may consult the writings of our countryman Dr. Robert Fludd, or de Fluctibus, a physician, and a Rosicrucian philosopher ; and who, though highly esteemed for his learning by Selden, was perhaps one of the greatest mystics that ever lived. In a work of his intitled, *Utriusque Cosmi majores scilicet et minoris metaphysica, physica, atque technica Historia*, printed at Oppenheim 1617, folio, is one book intitled *De Musica mundana*, wherein the author exhibits the form of what he calls *Monochordum mundanum*, an instrument representing a monochord, with the string screwed up by a hand that issues from the clouds. Fludd supposes the sound of the chord, when open, to answer to terra. or the earth, and to correspond with the note gamut in the scale of music : from thence he ascends by tones and semitones, in regular order, to water, and the other elements, through the planets, and so to the enapyraean, answering to g g in the ratio of the diatropos.

Merfennus has thought this diagram worthy of a place in his Latin work ; and, to say the truth, most of the plates in this and other of Fludd's works, and by the way they abound with them, are to the last degree curious and diverting. There will be farther occasion to speak of this extraordinary man, Fludd, in the course of this work.

containing melopœia, rhythmopœia, and poësia; and the enunciative the organic, the odiaç, the hypocritic\*.

Thus we see that the ancients, when they treated of music, used the word Harmony in a sense very different from that in which it is understood at this day; for there is doubtless a harmony between sounds emitted in succession, which is discernible as long as the impression of those already struck remains uneffaced; yet we choose to distinguish this kind of relation by the word Melody, and that of Harmony is appropriated to the coincidence of different sounds produced at the same instant: if it be asked why the ancients used the word Harmony in a sense so very restrained, as is above represented, the answer is easy, if that position be true which many writers have advanced, namely, that their music was solitary, and that they were utter strangers to symphonic harmony. This the admirers of antiquity will by no means allow; and, to say the truth, there are very few questions which have more divided the learned world than this. In order that the reader may be able to form a judgment on a matter of so great curiosity, the authorities on both sides shall now be produced, and submitted to his consideration.

To avoid confusion, it will be necessary first to reduce the proposition to the form of a question, which, to take it in the sense in which it has generally been discussed, seems to be, Whether the ancients had the knowledge of music in symphony or consonance, or not?

The advocates for the affirmative are Franchinus, or, as he is frequently named, Gaffurius, Zarlino, Gio. Battista Doni, Isaac Vossius, and Zaccaria Tevo, all, excepting Vossius, musicians, and he confessedly a man of learning, but a great bigot, and of little judgment: the sum of their arguments is, that it appears by the writings of the ancients that their skill in harmony was very profound, and that they reasoned upon it with all the accuracy and precision which became philosophers; that the very first discoveries of the nature of musical consonance, namely, those made by Pythagoras, tended much more naturally to establish a theory of harmony than of mere melody or harmony in succession, that supposing Pythagoras never to have lived, it could not have happened, but that the innumerable coincidences of sounds produced by the voice or by the

\* See the Analysis of Quintilian, in chap. iii. of the next preceding book.

percussion of different bodies at the same instant, which must necessarily occur in the course of a very few years, could not fail to suggest a trial of the effects of concordant sounds uttered together, or at one and the same point of time; that those passages of sacred writ that mention commemoration of remarkable events, or the celebration of public festivals, as that of the dedication of Solomon's temple, with a great number of voices and instruments, hardly allow of the supposition that the music upon these occasions was unisonous.

All this it may be said is mere conjecture, let us therefore see what farther evidence there is to countenance the belief that the ancients were acquainted with the use of different parts in music; Aristotle in his treatise concerning the world, lib. V. has this question, 'If the world is made of contrary principles, how comes it that it was not long ago dissolved?' In answer to this he shews that its beauty, perfection, and duration are owing to the admirable mixture and temperament of its parts, and the general order and harmony of nature. In his illustration of this argument he introduces music, concerning which he has this passage: *Μυσική δὲ ὀξεῖς ἄμα καὶ βαρεῖς, μακρὸς τε καὶ βραχεῖς φθόγους μίξασα, ἐν διαφοραῖς φωναῖς, μίαν ἀπέτελεσεν ἁρμονίαν.* 'Music, by a mixture of acute and grave, and of long and short sounds of different voices, yields an absolute or perfect concertus or concert.' Again, lib. VI. explaining the harmony of the celestial motions; he says, that 'though each orb has a motion proper to itself, yet is it such a motion as tends to one general end, proceeding from a principle common to all the orbs, which produce, by the concord arising from their motions, a choir of the heavens:' and he pursues the comparison in these words: *Καθάπερ δὲ ἐν χορῶν κορυφαία καθαρξάνητες, συνεπιχηεῖ πᾶς ὁ χορὸς ἄνδρων ἔθ' ὅτε καὶ γυναικῶν ἐν διαφοραῖς φωναῖς ὀξυτέραις καὶ βαρυτέραις, μίαν ἁρμονίαν ἐμμελῆ κεραινῶντων.*

Seneca, in his Epistles, has this passage. 'Do you not see of how many voices the chorus consists, yet they make but one sound? In it some are acute, others grave, and others in a mean between both; women are joined with men, and pipes are also interposed among them, yet is each single voice concealed, and it is the whole that is manifest\*.'

\* Non vides quam multorum vocibus chorus constet? unus tamen ex omnibus sonis redditur. Aliqua illic acuta est, aliqua gravis, aliqua media. Accedunt viris feminae, interponuntur tibiae, singulorum latent voces, omnium apparent. Seneca Epist. 84.

Cassiodorus has the following passage, which may seem somewhat stronger: 'Symphony is the adjustment of a grave sound to an acute, or an acute to a grave sound, making a melody.'

From the several passages above-cited it appears, that the ancients were acquainted with symphonetic music of a certain kind, and that they employed therein voices differing in degrees of acuteness and gravity; and thus far the affirmative of the question in debate may seem to be proved.

But in support of the negative we have the authorities of Glareanus, Salinas, Bottrigari, Artusi, Cerone, Kircher, Meibomius, Kepler, Bontempi, our countrymen Morley, Wallis, and others, a numerous band, who infer an absolute ignorance among the ancients of harmony produced by different and concordant sounds, affecting the sense at the same instant, from the general silence of their writers about it, for the exceeding skill and accuracy with which they discussed the other parts of music, leave no room to imagine but that they would have treated this in the same manner had they been acquainted with it: what discoveries accident might produce in that long series of years prior to the time of Pythagoras no one can say; history mentions none, nor does it pretend that even he made any use of his discovery, other than to calculate the ratios of sounds, regulate the system, and improve the melody of his time.

That voices and instruments, to a very great number, were employed at public solemnities is not denied, but it is by no means a consequence that therefore the music produced by them consisted of different parts; at this day among the reformed churches singing by a thousand different voices of men, women, and children, in divine worship is no very unusual thing; and yet the result of all this variety of sound is hardly ever any thing more than mere melody, and that of the simplest and most artless kind. Thus much in answer to the arguments founded on the improbability that the ancients could be ignorant of symphonetic harmony, in the sense wherein at this day the term is understood.

With respect to the several passages above-cited, they seem each to admit of an answer; to the first, produced from Aristotle, it is said that the word Symphony, by which we should understand the harmony of different sounds uttered at one given instant, is used by him to express two different kinds of consonance, symphony and antiphony; the  
first,

first, according to him, is the consonance of the unison, the other of the octave. In his Problems, § xix. prob. 16. he asks why symphony is not as agreeable as antiphony? the answer is, because in symphony the one voice being altogether like the other, they eclipse each other; the symphony can therefore in this place signify nothing but unisonous or integral harmony: and he elsewhere explains it to be so, by calling that species of consonance, Omophony; as to Antiphony, it is clear that he means by it the harmony of an octave, for he constantly uses the word in that sense; and lest there should any doubt remain about it, he says that it is the consonance between sounds produced by the different voices of a boy and a man, that are as Nete and Hypate; and that those sounds form a precise octave is evident from all the representations of the ancient system that have ever been given. The sum of Aristotle's testimony is, that in his time there was a commixture of sounds, which produced a concinnous harmony: no doubt there was, but what is meant by that concinnous harmony his own words sufficiently explain.

As to Seneca, it must be confessed that the *vox media* must imply two extremes; but what if in the chorus which he speaks of, the shrill *tibiæ* were a *bisdiapason* above the voices of the men, and that the women sung, as they ever do, an octave above them, would not these different sounds produce harmony? Certainly they would; but of what kind? Why the very kind described by him, such as seems to make but one sound, which can be said of no harmony but that of the unison or octave.

Lastly, as to Cassiodorus, his words are ‘*Symphonia est temperamentum sonitus gravis ad acutum vel acuti ad gravem, modulamen efficiens, sive in voce, sive in percussione, sive in flatu*\*:’ as to the word *Temperamentum*, it can mean only an adjustment; and *Modulamen* was never yet applied to sounds but as they followed each other in succession: to modulate is to pass, to proceed from one key or series to another; the very idea of modulation is motion: the amount then of this definition is, that the attemperament or adjustment of a grave to an acute sound, or of an acute to a grave one, constitutes such a kind of symphony as nothing will answer to but melody; which is above shewn to be not instantaneous, but successive symphony or consonance.

\* M. Aur. Cassiodor. Opera. De Musica.

There is yet another argument to the purpose: The ancients did not reckon the third and sixth among the consonances; this is taken notice of by a very celebrated Italian writer *Giov. Maria Artusi* of Bologna, who, though he has written expressly on the imperfections of modern music, scruples not therefore, and because the third and sixth are the beauty of symphonic music, to pronounce that the ancients must have been unacquainted with the harmony of music in parts, in the sense in which the term is now understood\*: and an author whom we shall presently have occasion to cite more at large, says expressly that they acknowledged no other consonances than the diapason, diapente, and diatessaron, and such as were composed of them †; nor does it any where appear that they were in the least acquainted with the use of discords, or with the pleasing effects produced by the preparation and resolution of the dissonances; and if none of these were admitted into the ancient system, let any one judge of its fitness for composition in different parts:

In *Morley's Introduction* is a passage from whence his opinion on this question may be collected; and, as he was one of the most learned musicians that this nation ever produced, some deference is due to it; speaking of *Descant* ‡, he uses these words: ‘When descant did begin, by whom, and where it was inuented, is vncertaine; for it is a great controuerfie amongst the learned if it were knowne to the antiquitie, or no; and diuers do bring arguments to proue, and others to disproue the antiquitie of it; and for disprouing of it, they say that in all the workes of them who haue written of musicke before *Franchinus*, there is no mention of any more parts then one; and that if any did sing to the harpe (which was their most vsuall instrument) they sung the same which they plaied. But those who would affirme that the ancients knew it, saie, That if they did not know it, to what ende serued all those long and tedious discourses and disputations of the consonantes, wherein the moeste part of their workes are consumed; but whether they knew it or not, this I will say, that they had it not in halfe that variety wherein we now haue it, though we read of much more strange effects of their musicke then of ours.’ Annotations on *Morley's Introduction*, part II.

\* *Artusi delle Imperfezioni della Moderna Musica.* Ragionam. primo, Cart. 14.

† *Musurg.* tom. I. pag. 540.

‡ *Descant*, as used by this author, has two significations; the one answers precisely to music in consonance, the other will be explained hereafter.



## C H A P. III.

**T**HE suffrage of Kircher, in a question of this nature, will be thought to carry some weight: this author, whose learning and skill in the scienc are universally acknowledged, possessed every advantage that could lead to satisfaction in a question of this nature, as namely, a profound skill in languages, an extensive correspondence, and an inquisitive disposition; and for the purpose had been indulged with the liberty of access to the most celebrated repositories of literature, and the use of the most valuable manuscripts there to be met with; and who, to sum up all, was at once a philosopher, an antiquary, an historian, a scholar, and a musician, has given his opinion very much at large in nearly the following words.

It has for some time been a question among musicians whether the ancients made use of several parts in their harmony or not: in order to determine which, we are to consider their polyodia as threefold, natural, artificial, and unisonous; I call that natural which is not regulated by any certain rules or precepts, but is performed by an extemporary and arbitrary symphony of many voices, intermixing acute and grave sounds together; such as we observe even at this time, happens amongst a company of sailors or reapers, and such people, who no sooner hear any certain melody begun by any one of them, than some other immediately invent a bass or tenor, and thus is produced an harmony extemporary, and not confined by any certain laws, and which is very rude and imperfect, as it is almost always unison, containing nothing of harmony, except in the closes, and therefore of no worth: that the Greeks had such a kind of music none can doubt. But the question is not concerning this kind of polyodia, but whether they had compositions for several voices, framed according to the rules of art. I have taken great pains to be satisfied in this matter; and as in none of the Greek and Latin writers I have met with, any mention is made of this kind of music, it seems to me that either they were ignorant of it, or that they did not make use of it, as imagining perhaps that

it

‘ it interrupted the melody, and took away from the energy of the  
 ‘ words; as to the term *Harmonici concentus*, it is only to be under-  
 ‘ derstood of the agreement between the voice and the sound of the  
 ‘ instrument.

‘ Those who attempt to prove from Euclid that the ancients did  
 ‘ compose music in really different parts, do not seem to understand  
 ‘ his meaning; for when he mentions the four parts of a song, *ἀγωγή*,  
 ‘ *τονή*, *πετρεία*, *πλοκή*, he does not thereby mean the four polyodical  
 ‘ parts of cantus, altus, tenor, and bass, but so many different affec-  
 ‘ tions of the voice, certain harmonical figures or tropes, whereby  
 ‘ the song acquired a particular beauty and grace; for what else can  
 ‘ the word *Ἀγωγή* mean than a certain transition of the voice from  
 ‘ some given sound to another that is related to it. *Τονή* signifies a  
 ‘ certain stay or dwelling on a sound; *Πλοκή*, or implication, is a  
 ‘ particular species or colour of the *Ἀγωγή*, as *Πετρεία*, frisking or play-  
 ‘ ing on, is of *Τονή*: what the *Ἀγωγή* is to *Τονή*, such is the *Πλοκή*  
 ‘ to the *Πετρεία*.

‘ Some imagine that the ancients had a polyodical instrumental  
 ‘ music from the diversity of their pipes; and are of opinion that at  
 ‘ least an organical or instrumental harmony or symphony, regulated  
 ‘ by art, was in use among the ancients, because their authors make  
 ‘ mention of certain pipes, some of which were termed *Παρθενιοί*, or  
 ‘ fit for girls; some *Παιδιοί*, or fit for boys; some *Τελιοί*, as being in a  
 ‘ mean between the acute and grave sounds; and others *Ἐπειλιοί*, as  
 ‘ agreeing with the grave. The better to clear up this doubt, we  
 ‘ must consider the organical polyodia as twofold, natural and arti-  
 ‘ ficial; and both these I make no doubt were in use as well as  
 ‘ the vocal polyodia; for it is very probable that such as played on  
 ‘ those pipes, becoming skilful by such practice, invented certain  
 ‘ symphonies adapted to their purpose, and which they played on  
 ‘ their public festivals, distributing themselves into certain chorusses.  
 ‘ Symphonies of this sort are at this time to be heard among the coun-  
 ‘ try people, who, though ignorant of the musical art, exhibit a  
 ‘ symphony, such a one as it is, on their flutes and pipes of different  
 ‘ sizes, and this merely through the judgment of their ear; and it is  
 ‘ also probable that the ancient Hebrews by this means alone became  
 ‘ enabled to celebrate the praises of God on so many *Cornua*, *Fistulæ*,

• Litui, Tubæ, Buccinæ, as they are said to have been used at once  
 • in their temple; and I remember to have heard the Mahometan  
 • slaves in the island of Malta exhibit symphonies of this kind. An  
 • affection therefore of the polyodia is implanted in the nature of  
 • man; and I doubt not but that the ancients knew and practised it  
 • in the manner above related: but though I have taken great pains  
 • in my researches, I could never find the least sign of their having  
 • any artificial organical Melothesia of many parts; which, had they  
 • been acquainted with it, they would doubtless have mentioned, it  
 • being so remarkable a thing. What Boetius, Ptolemy, and others  
 • speak concerning harmony, is to be understood only as to a single  
 • voice, to which an instrument was joined; add to this that the  
 • ancients acknowledged no other concords than the diapason, the  
 • diapente, and the diatessaron, and such as were composed of them;  
 • for they did not reckon as now, the ditone, semiditone, and hexa-  
 • chord among the consonances. It therefore follows that the an-  
 • cient Greeks acknowledged nothing more than the Monodia,  
 • adapted, it must be confessed, with much care and the greatest art  
 • to the sound of the lyre or the tibia; so that nothing was deficient  
 • either in the variety of the modulation, the sweetness of the singing,  
 • the justness of the pronunciation, or the gracefulness of the body in  
 • all its gestures and motions: and I imagine that the lyre of many  
 • strings was founded in a harmonical concentus to the voice, in  
 • no other manner than is used in our days\*.'

Dr. Wallis has given his opinion on this important question in  
 terms that seem decisive; for speaking of the music of the ancients  
 he makes use of these words:

• We are to consider that their music, even after it came to some  
 • good degree of perfection, was much more plain and simple than ours  
 • now-a-days. They had not concerts of two, three, four, or more  
 • parts or voices, but one single voice, or single instrument a-part,  
 • which to a rude ear is much more taking than more compounded  
 • music; for that is at a pitch not above their capacity, whereas this  
 • other confounds it with a great noise, but nothing distinguishable  
 • to their capacity †.' And again in the same paper he says: 'I do not

\* Musurg. tom. I. pag. 537, et seq.

† Abridgment of Philosoph. Transactions by Lowthorp and Jones, vol. I. pag. 618.

‘ find among the ancients any footsteps of what we call several parts or voices, (as bass, treble, mean, &c. sung in concert) answering to each other to complete the music.’ And in the Appendix to his edition of Ptolemy, pag. 317, he expresses himself on the same subject to this purpose: ‘ But that agreement which we find in the modern music, of parts (as they term it) or of two, three, four, or more voices (singing together sounds which are heard all together) was intirely unknown to the ancients, as far as I can see.’

From the several passages above-cited, it appears that the question, whether the ancients were acquainted with music in consonance or not, has been frequently, and not unsuccessfully agitated, and that the arguments for the negative seem to preponderate. Nevertheless the author of a book lately published, entitled, ‘ Principles and Power of Harmony,’ after taking notice that Dr. Wallis, and some others, maintained that the ancients were strangers to symphonic music, has, upon the strength of a single passage in Plato, been hardy enough to assert the contrary: his words are these.

‘ The strongest passage which I have met with in relation to this long-disputed point, is in Plato; a passage which I have never seen quoted, and which I shall translate: “ Young men should be taught to sing to the lyre, on account of the clearness and precision of the sounds, so that they may learn to render tone for tone. But to make use of different simultaneous notes, and all the variety belonging to the lyre, this founding one kind of melody, and the poet another—to mix a few notes with many, swift with slow, grave with acute, consonant with dissonant, &c. must not be thought of, as the time allotted for this part of education is too short for such a work.” Plat. 895. I am sensible that objections may be made to some parts of this translation, as of the words *πυκνότης, μανήτης, and ἀνιφωνοίς*, but I have not designedly disguised what I took to be the true sense of them, after due consideration. It appears then upon the whole, that the ancients were acquainted with music in parts, but did not generally make use of it\*.’

\* Principles and Power of Harmony, p. 133. The speech in the original, containing the passage of which it is pretended that above is a translation, is here given at length, as it stands in the edition of Plato, by Marsilius Ficinus; which is what this author appears to have made use of: *Τύτων τούτων δι᾽ χάριν τοῖς φθίστοις τῆς λύρας περισχρησθαι, σαφηνεύειας*

Whoever will be at the pains of comparing the discourse of Dr. Wallis, above-cited, and his appendix to Ptolemy, with the several paragraphs in the Principles and Power of Harmony, relating to the question in debate, and calculated, as the author professes, to vindicate the Greek music, will discover in the one the modesty of a philosopher, and in the other the arrogance of a dogmatist.

Opinions delivered in terms so positive, and indeed so contemptuous, as this latter writer has chosen to make use of \*, are an affront to the understandings of mankind, who are not to be supposed ready to acquiesce in the notions of others merely because they are propagated with an unbecoming confidence: and as to the judgment of this author on the question in debate, the least that can be said of it is, that it is founded in mistake and ignorance of his subject; for, first, it is very strange, seeing how much the powers of harmony exceed those of mere melody, that the ancients, when once they had found themselves in possession of so valuable an improvement as symphonic music, should ever forego it. The moderns in this respect were wiser than their teachers, for no sooner did they discover the excellence of music in parts than they studied to improve it, and have cultivated it with great care ever since. Secondly, this writer, in support of his opinion, has been driven to the necessity of translating those words of his author which he thinks make most for his purpose, in a manner which he confesses is liable to objections, and into such English phrase as, in the opinion of many, is not intelligible. Thirdly and lastly, this very passage of Plato, upon which he lays so much stress, was discovered above fifty years ago, and adduced

νείας ἕνεκα τῶν χορῶν, τὸν τε κίθριστον καὶ τὸν παιδιευόμενον, ἀποδιδόντας πρόσχορδα τὰ φθιγγαία τοῖς φθιγγασί τὴν δ' ἑτεροφωνίαν καὶ ποιικίαν τῆς λύρας, ἀλλὰ μὲν μὲν τῶν χορῶν ἰσισῶν, ἀλλὰ δὲ τὰ τῶν μελωδίαν ζυυέντων ποιητῶν καὶ οὐ καὶ ποιικίαν μανιότητι, καὶ τὰ χορῶν βραδυτῆτι, καὶ ὀξύτητι βραδυτῆτι, σύμφωνον καὶ ἀσύνφωνον παρεχομένους, καὶ τῶν ῥυθμῶν ὡσαύτως παιδοπατὰ ποιικίμαλα προσημοσύνητος τοῖσι φθιγγοῖσι τῆς λύρας· πάντα ἂν τὰ τοιαῦτα μὴ προσφέρειν τοῖς μάλιστι ἐν τρισὶν ἔτεσι τὸ τῆς μουσικῆς χρέισμα ἐκλήψασθαι διὰ τῆς ἀρχῆς. τὰ γὰρ ἑναντία, ἀλλήλα ταραττοῦτα δυσμαθίαν παρέχει. δεῖ δὲ ὅτι μάλιστα εὐμαθίαις εἶναι τὰς νείας.

\* As where he insinuates a resemblance between those who doubt the truth of his assertions and the most ignorant of mankind, in these words: ' If all these circumstances are not sufficient to gain our belief, merely because we moderns have not the same musical power, then have the Kamfchatkans a right to decide that it is impossible to foretell an eclipse, or to represent all the elements of speech by about twenty four marks.'

for the very purpose for which he has cited it, by *Monf. l'Abbé Fraguier*, a member of the Academy of Inscriptions and Belles Lettres, and occasioned a controversy, the result whereof will presently be related.

*Monsieur Fraguier* had entertained a high opinion of the Greek music, and a belief that the ancients were acquainted with music in consonance; in support of which latter opinion he produced to the academy the passage above-cited, which is to be found in *Plato de Legibus*, lib. VII\*. He also produced for the same purpose a passage in *Cicero de Republica*, and another from *Macrobius*, both which are given in the note subjoined †.

The arguments deduced by *Monf. Fraguier* from these several passages, were learnedly refuted by *Monf. Burette*, a member also of the academy: and as to the interpretations which *Monf. Fraguier* had put upon them, the same *Monf. Burette* demonstrated that they were forced and unwarranted, either by the context or the practice of the ancients.

The substance of these arguments is contained in a paper or memoir entitled *Examen d'un Passage de Platon sur la Musique*, which may be seen in the *History of the Academy of Inscriptions*, tom. III. pag. 118. This question was farther prosecuted by the same parties, as appears by sundry papers in the subsequent volumes of the *History and Memoirs of the above Academy*; and in the course of the controversy the passages above-cited from *Aristotle*, *Seneca*, *Cassidorus*, and others, were severally insisted on. As to those from *Cicero* and *Macrobius*, and this from *Horace*,

Sonante mistum tibiis carmen Iyra,  
Hac Dorium, illis Barbarum.

Ad Mecænat. Epod. ix.

\* In *Stephens's* edition it is pag. 812, and in that of *Marsilius Ficinus* 895.

† Ut in silibus, ac tibiis atque cantu ipso, ac vocibus concentus est quidam tenendus ex distinctis sonis, quem immutatam ac discrepantem anres erudite ferre non possunt; isque concentus ex dissimilimarum vocum moderatione concors tamen efficitur et congruens: sic ex summis, et infimis, et mediis int'jectis ordinibus, ut sonis, moderata ratione civitas, consensu dissimilimorum concinit, et quæ harmonia a musicis dicitur in cantu, ea est in civitate concordia.' *Cicer. lib. ii. de Repub. Fragm. pag. 527. tom. III.*

‡ Vides quam multorum vocibus chorus constet una tamen ex omnibus redditur. Aliqua est illic acuta, aliqua gravis, aliqua media: accedunt viris femine: interponuntur fistula. Ita singulorum illic latent voces, omnium apparent, et fit concentus ex dissonis.' *Macrob. Saturnalior. Proem.*

which

which had formerly been adduced for the same purpose, they went but a very little way towards proving the affirmative of the question in debate. *Monf. Burette* took all these into consideration ; he admits, that the ancients made use of the octave and the fifteenth, the former in a manner resembling the drone of a bag-pipe ; and he allows that they might accidentally, and without any rule, use the fourth and fifth ; but this is the farthest advance he will allow the ancients to have made towards the practice of symphonic music ; for as to the imperfect consonances and the dissonances, he says they were ignorant of the use and application of all of them in harmony : and finally he demonstrates, by a variety of arguments, that the ancients were absolute strangers to music in parts.

*Martini*, in his *Storia Musica*, vol. I. pag. 172, has given an abridgment of this controversy, as it lies dispersed in the several volumes of the *Memoirs of the Academy of Inscriptions*, and acquiesces in the opinion of *Monf. Burette*, who, upon the whole, appears to have so much the advantage of his opponents, that it is highly probable this dispute will never be revived.

To speak of the ancient Greek music in general, those who reflect on it will be inclined to acquiesce in the opinion of *Dr. Wallis*, who says, he takes it for granted, ‘ that much of the reports concerning the great effects of music in former times, beyond what is to be found in latter ages, is highly hyperbolic, and next door to fabulous ; and therefore, he adds, great abatements must be allowed to the eulogies of their music.’ Certainly many of the relations of the effects of music are either fabulous or to be interpreted allegorically, as this in *Horace* :

\* The learned *Dr. Jortin*, who, with the character of a very worthy man and a profound scholar, possessed that of a learned musician, has delivered his sentiments on this question in the following terms : ‘ One would think that an ancient musician, who was well acquainted with concords and discords, who had an instrument of many strings or many keys to play upon, and two hands and ten fingers to make use of, would try experiments, and would fall into something like counterpoint and composition in parts. In speculation nothing seems more probable, and it seemed more than probable to our skilful musician *Dr. Pepusch*, when I once conversed with him upon the subject ; but in fact it doth not appear that the ancients had this kind of composition, or rather it appears that they had not ; and it is certain, that a man shall overlook discoveries which stand at his elbow, and in a manner intrude themselves upon him.’ Letter to *Mr. Avison*, published in the second edition of his *Essay on Musical Expression*, pag. 36.

Silvestres homines facer interpretæ Deorum,  
 Cædibus & victu sædo deterruit Orpheus ;  
 Dictus ob hoc lenire tigres rabidosque leones.  
 Dictus & Amphion, Thebanæ conditor Arcis,  
 Saxa movere sono testudinis, & prece blanda.  
 Ducere quo vellet.

ARTE POETICA, lib. II. l. 391.

The wood-born race of men, when Orpheus tam'd,  
 From acorns and from mutual blood reclaim'd,  
 This priest divine was fabled to assuage  
 The tiger's fierceness, and the lion's rage.  
 Thus rose the Theban wall ; Amphion's lyre  
 And soothing voice the list'ning stones inspire.

FRANCIS.

Hyperbolic expressions of the power and efficacy of music signify but little ; for these convey nothing more than the ideas of the relator : and every man speaks in the highest terms he can invent of that, whatever it be, that has administered to him the greatest delight. How has the poet, in the Prolusions of Strada, laboured in describing the contest between the nightingale and the lutenist ! and what does that celebrated poem contain, but a profusion of words without a meaning ?

To conclude, every one that understands music is enabled to judge of the utmost effects of a single pipe, by hearing the flute, or any other single stop, finely touched on the organ : and as to the lyre, whether of three, four, seven, or ten strings, it is impossible but that it must have been greatly inferior to the harp, the lute, and many other instruments in use among the moderns.

Having taken a view of the state of music in the earlier ages of the world, and traced the ancient system from its rudiments to its perfection, and thereby brought it down to nearly the close of the third century, we shall proceed to relate the several subsequent improvements that have from time to time been made of it, in the order in which they occurred ; and shew to whom we owe that system, which for its excellence is now universally adopted by the civilized world.

We have seen that hitherto the science of music, as being a subject of very abstracted speculation, and as having a near affinity with



arithmetic and geometry, had been studied and taught by such only as were eminent for their skill in those sciences : of these the far greater number were Greeks, who, in the general estimation of mankind, held the rank of philosophers. The accounts hereafter given of the Latin writers, such as Martianus Capella, Macrobius, Cassiodorus, and others, will shew how little the Romans contributed to the improvement of music ; and in general their writings are very little more than abridgments of, or short commentaries on the works of Nicomachus, Euclid, Aristides, Quintilianus, Aristoxenus, and others of the ancient Greeks. As to Boetius, of whom we shall speak hereafter, it is clear that his intention was only to restore to those barbarous times in which he lived, the knowledge of the true principles of harmony, and to demonstrate, by the force of mathematical reasoning, the proportions and various relations to each other, of sounds ; in the doing whereof he evidently shews himself to have been a Pythagorean. As this was the design of his treatise *De Musica*, we are not to wonder that the author has said so little of the changes that music underwent among the Latins, or that he does but just hint at the disuse of the enarmonic and chromatic genera, and the introduction of the Roman characters in the room of the Greek.

It must however be admitted, that for one improvement of the system we are indebted to the Latins, namely, the application of the Roman capital letters to the several sounds that compose the scale, whereby they got rid of that perplexed method of notation invented by the Greeks : we have seen, by the treatise of Alypius, written professedly to explain the Greek musical characters, to what an amazing number they amounted, 1240 at the lowest computation ; and after all, they were no better than so many arbitrary marks or signs placed on a line over the words of the song, and, having no real inherent or analogical signification, must have been an intolerable burthen on the memory. These the Latins rejected, and in their stead introduced the letters of their own alphabet, A, B, C, D, E, F, G, H, I, K, L, M, N, O, P, fifteen in number, and sufficient to express every sound contained in the bisdiapason. If it be asked, how could this small number serve the purpose of more than 1200 ? the answer is, that this amazing multiplicity of characters arose from the necessity of distinguishing each sound with respect to the genus, and also the mode in which it was used ; and before this innovation of the

Romans,

Romans, we are assured, that both the enarmonic and chromatic genera were grown out of use, and that the diatonic genus, on account of its sweetness and conformity to nature, was retained amongst them : and as to the modes, there is great reason to suspect, that even at the time when Ptolemy wrote, the doctrine of them was but ill understood ; fifteen characters, we know, are at this time sufficient to denote all the sounds in a diatonic bisdiapason, and consequently must have been so then.

It has already been observed, that the science of harmony was anciently a subject of philosophical enquiry ; and it is manifest, from the account herein before given of them and their writings, that the Greeks treated it as a subject of very abstract speculation, and that they neither attended to the physical properties of sound, nor concerned themselves with the practice of music, whether vocal or instrumental. Ptolemy was one of the last of the Greek harmonicians ; and from his time it may be observed, that the cultivation of music became the care of a set of men, who, then at least, made no pretensions to the character of philosophers. This may be accounted for either by the decline of philosophy about this period, or by the not improbable supposition, that the subject itself was exhausted, and that nothing remained but an improvement in practice on that foundation which the ancient writers, by their theory, had so well laid. But whatever may have been the cause, it is certain, that after the establishment of Christianity the cultivation of music became the concern of the church : to this the Christians were probably excited by the example of the Jews, among whom music made a considerable part of divine worship, and the countenance given to it in the writings of St. Paul. Nor is it to be wondered at by those who consider the effects of music, its influence on the passions, and its power to inspire sentiments of the most devout and affecting kind, if it easily found admittance into the worship of the primitive Christians : as to the state of it in the three first centuries, we are very much at a loss ; yet it should seem from the information of St. Augustine, that in his time it had arrived at some degree of perfection ; possibly it had been cultivating, both in the Eastern and Western empire, from the first propagation of Christianity. The great number of men who were drawn off from secular pursuits by their religious profession, amidst the barbarism of the times, thought themselves laudably employed in the study of a  
science

science which was found to be subservient to religion : while some were engaged in the oppugning heretical opinions, others were taken up in composing forms of devotions, framing liturgies ; and others in adapting suitable melodies to such psalms and hymns as had been received into the service of the church, and which made a very considerable part of the divine offices : all which is the more probable, as the progress of human learning was then in a great measure at a stand.

But as the introduction of music into the service of the church seems to be a new æra, it is necessary to be a little more particular, and relate the opinions of the most authentic writers, as well as to the reception it at first met with, as its subsequent progress among the converts to Christianity. If among the accounts to be given of these matters, some should carry the appearance of improbability, or should even verge towards the regions of fable, let it be remembered, that very little credit would be due to history, were the writer to suppress every relation against the credibility whereof there lay an objection. History does not propose to transmit barely matters of real fact, or opinions absolutely irrefragable ; falsehood and error may very innocently be propagated, nay the general belief of falsehood, or the existence of any erroneous opinion, may be considered as facts ; and then it becomes the duty of an historian to relate them. Whoever is conversant with the ecclesiastical historians must allow that the superstition of some, and the enthusiasm of others of them, have somewhat abated the reverence due to their testimony. But notwithstanding this, the characters of Eusebius, Socrates, Sozomen, Theodoret, and Evagrius, for veracity and good intelligence, stand so high in the opinion of all sober and impartial men, that it is impossible to withhold our assent from the far greater part of what they have written on this subject.

The advocates for the high antiquity of church-music urge the authority of Saint Paul in its favour, who, in his Epistle to the Ephesians, charges them to speak to themselves in psalms, and hymns, and spiritual songs, singing and making melody in their hearts to the Lord \* ; and who exhorts the Colossians to teach and admonish one another in psalms, hymns, and spiritual songs †. Cardinal Bona is one of these ; and he scruples not to assert, on the authority of these two passages,

\* Chap. v. verse 19.

† Chap. iii. verse 16.

that songs and hymns were, from the very establishment of the church, sung in the assemblies of the faithful. Johannes Damascenus goes farther back; and relates, that at the funeral of the Blessed Virgin, which was celebrated at Gethsemane, the apostles, assisted by angels, continued singing her requiem for three whole days incessantly. The same author, speaking of the ancient hymn called the Trisagion, dates its original from a miracle that was performed in the time of Proclus, the archbishop: his account is, that the people of Constantinople being terrified with some portentous signs that had appeared, made solemn processions and applications to the Almighty, beseeching him to avert the calamities that seemed to threaten their city, in the midst whereof a boy was caught from among them, and taken up to heaven; who, upon his return, related, that he had been taught by angels to sing the hymn, in Greek,

*Αγιος ο Θεος, αγιος ισχυρος, αγιος αθανατος, ελεησον ημας.*

Holy God, holy and strong, holy and immortal, have mercy upon us.

The truth of this relation is questioned by some, who yet credit a vision of St. Ignatius; of which Socrates, the ecclesiastical historian, gives the following account: ‘ St. Ignatius, the third bishop of Antioch, in Syria, after the apostle Peter, who also conversed familiarly with the apostles, saw the blessed spirits above singing hymns to the Sacred Trinity alternately, which method of singing, says the same historian, Ignatius taught to his church; and this, together with an account of the miracle which gave rise to it, was communicated to all the churches of the East\*.’ Nicephorus, St. Chrysostom, Amalarius, and sundry others, acquiesce in this account of the origin of antiphonal singing; as do our countrymen, Hooker, Hammond, Beveridge, and Dr. Comber.

By the Apostolical Constitutions, said to have been, if not compiled by the apostles themselves, at least collected by Clement, a disciple of theirs, the order of divine worship is prescribed; wherein it is expressly required, that after the reading the two lessons, one of the presbyters should sing a psalm or hymn of David; and that the people should join in singing at the end of each verse. It would be too little to say of this collection, that the authority of it is doubted, since it is agreed, that it did not appear in the world till the fourth century;

\* Hist. Eccles. lib. VI. cap. viii.

and the opinions of authors are, that either it is so interpolated as to deserve no credit, or that the whole of it is an absolute forgery.

Hitherto, then, the high antiquity of church-music stands on no better a foundation than tradition, backed with written evidence of such a kind as to have scarce a pretence to authenticity: there are, however, accounts to be met with among the writers of ecclesiastical history, that go near to fix it at about the middle of the fourth century.

In short the æra from whence we may reasonably date the introduction of music into the service of the church, is that period during which Leontius governed the church of Antioch; that is to say, between the years of Christ 347 and 356, when Flavianus and Diodorus, afterwards bishops, the one of Antioch and the other of Tarsus, divided the choristers into two parts, and made them sing the Psalms of David alternately, Theodoret. Hist. Eccl. lib. II. cap. xxiv.; a practice, says the same author, which began first at Antioch, and afterwards spread itself to the end of the world. Valesius acquiesces in this account, and professes to wonder whence Socrates had the story of Ignatius's vision, Vales. in Socrat. lib. VI. cap. viii. The occasion of antiphonal singing seems to have been this: Flavianus and Diodorus, although then laymen, but engaged in a monastic life, were in great repute for their sanctity; and Leontius, their bishop, was an avowed Arian, whom they zealously opposed: in order to draw off the people from an attendance on the bishop, who, in the opinion of Flavianus and Diodorus, was a preacher of heresy, they set up a separate assembly for religious worship, in which they introduced antiphonal singing, which so captivated the people, that the bishop, to call them back again, made use of it also in his church. Flavianus, it seems, had an high opinion of the efficacy of this kind of music; for it is reported, that the city of Antioch having, by a popular sedition, incurred the displeasure of the emperor Theodosius, sent Flavianus to appease him, and implore forgiveness; who, upon his first audience, though in the imperial palace, directed the usual church-service, to be sung before him: the emperor melted into pity, wept, and the city was restored to his favour. Other instances are to be met with in history, that shew the fondness of the people of Antioch for this kind of music; and which favour the supposition, that amongst them it took its rise.

Antioch was the metropolis of Syria ; the example of its inhabitants was soon followed by the other churches of the east ; and in a very few ages after its introduction into the divine service, the practice of singing in churches not only received the sanction of public authority, but those were forbid to join in it who were ignorant of music. For at the council of Laodicea, held between the years of Christ 360, and 370, a canon was made, by which it was ordained, That none but the canons, or singing-men of the church, which ascend the Ambo \*, or singing-desk, and sing out of the parchment, [so the words are] should presume to sing in the church. Balsamon seems to think that the fathers intended nothing more than to forbid the setting or giving out the hymn or psalm by the laity : but the reason assigned by Baronius for the making this canon, shews that it was meant to exclude them totally from singing in the church-service ; for he says that when the people and the clergy sang promiscuously, the former, for want of skill, destroyed the harmony, and occasioned such discord as was very inconsistent with the order and decency requisite in divine worship. Zonanus confirms this account, and adds, that these canonical singers were reckoned a part of the clergy †. Balsamon, in his scholia on this canon, says, that before the Laodicean council, the laity were wont, in contempt of the clergy, to sing, in a very rude and inartificial manner, hymns and songs of their own invention ; to obviate which practice, it was ordained by this canon that none should sing but those whose office it was. Our learned countryman Bingham declares himself of the same opinion in his Antiquities of the Christian Church, book III. chap. vii. and adds, that from the time of the council of Laodicea the psalmists, or singers, were called *κανονικοι ψαλται*, or canonical singers, though he is inclined to think the provision in the canon only temporary.

\* The Ambo was what we now call the Reading desk, a place made on purpose for the readers and singers, and such of the clergy as ministered in the first service called *Missa Catechumenorum*. It had the name of Ambo, not as Walafridus Strabo imagines, ‘*am biendo*,’ because it surrounded them that were in it, but from *ἀναβαίνων*, because it was a place of eminency, to which they went up by degrees or steps. Bingham’s Antiquities of the Christian Church, book VIII. chap. v. § 4.

† It seems they were one of the many orders in the primitive church, and that they received ordination at the hands, not of the bishop or choriepiscopus, but of a presbyter, using this form of words, prescribed by the canon of the fourth council of Carthage. ‘*See that thou believe in thy heart what thou singest with thy mouth ; and approve in thy works what thou believest in thy heart.*’ Bingham. Antiquities, book III. chap. vii. § 4.

## C H A P.      IV.

**G**REAT stress is also laid on the patronage given to church-music by St. Basil, St. Ambrose, and St. Chrysostom; as to the first, he had part of his education at Antioch, where he was a continual spectator of that pompous worship which prevailed there. He was first made a deacon by Meletius, and afterwards, that is to say about the year 371, was promoted to the bishoprick of Cæsarea in Cappadocia, his own country; and in this exalted station he contracted such a love for church-music, as drove him to the necessity of apologizing for it\*. In his epistle to the Neocæsarian clergy, still extant, he justifies the practice, saying, that the new method of singing, at which they were so offended, was now become common in the Christian church, the people rising before day and going to church, where, having made their confessions and prayers, they proceeded to the singing of psalms: and, he adds, that in this holy exercise, the choir being divided into two parts, mutually answered each other, the precentor beginning, and the rest following him. He farther tells them, that if to do thus be a fault, they must blame many pious and good men in Egypt, Lybia, Palestine, Arabia, Phœnicia, and Syria, and sundry other places. To this they urged that the practice was otherwise in the time of their bishop Gregory Thaumaturgus; in answer to which Basil tells them, that neither was the Litany used in his time; and that in objecting to music, while they admitted the Litany, they strined at a gnat and swallowed a camel.

St. Chrysostom, whose primitive name was John, was a native of Antioch, and received his education there, he was ordained a deacon by Meletius, and presbyter by Flavianus; and having been accustomed to the pompous service introduced by the latter into the church of Antioch, he conceived a fondness for it. When he became bishop of Constantinople, which was about A. C. 380, he found occasion to introduce music among his people: the manner of his doing it is thus related. The Arians in that city were grown very insolent: they held conventicles at a small distance without the walls; but on Saturdays and Sundays, which were set apart for the

\* Valef. in *Secretat. lib. IV. cap. xxvi.*

public assemblies, they were wont to come within the city, where, dividing themselves into several companies, they walked about the porticos, singing such words as these: 'Where are they who affirm three to be one power?' and hymns composed in defence of their tenets, adding petulant reflexions on the orthodox\*; this they continued for the greatest part of the night; in the morning they marched through the heart of the city, singing in the same manner, and so proceeded to the place of their assembly. In opposition to these people, St. Chrysofom caused hymns to be sung in the night; and to give his performance a pomp and solemnity, which the other wanted, he procured crosses of silver to be made at the charge of the empress Eudoxia, which, with lighted torches thereon, were borne in a procession, at which Briso, the empress's eunuch officiated as precentor; this was the occasion of a great tumult, in which Briso received a wound in the forehead with a stone, and some on both sides were slain †. This was followed by a sedition, which ended in the expulsion of the Arians. This manner of singing, thus introduced by them, was, as Sozomen relates ‡, used in Constantinople from that time forwards; however, in a short time it was performed in such an unseemly way as gave great offence; for the singers, affecting strange gestures and boisterous clamours, converted the church into a

\* It seems that the orthodox could in their turns not only be petulant, but industrious in provoking their enemies to wrath, as may be collected from the following relation of Theodoret.

‘Publia, the deaconess, a woman admired and celebrated for her piety, was the mother of the famous John, who for many years was first presbyter of the church of the Antioch, and though often and unanimously elected to the apostolic throne, refused that dignity. She, and a chorus of consecrated virgins with her, spent great part of their time in singing anthems and divine songs; and once when the emperor [Julian] had occasion to pass by them, they sung psalms chosen purposely to expose and ridicule the extravagancies of heathenism and idolatry, singing them with an exalted voice; and among the rest they applied, very properly to the occasion, the hundred and fiftenth, from the fourth to the eighth verse, “Their idols are silver and gold, even the work of men’s hands, &c.” “Let those that make them be like unto them, and also all such as put their trust in them.” This so disturbed the emperor, that he commanded silence should be kept whenever he came by that place, but to so little purpose, that upon his returning, at the motion of Publia they gave him another welcome in these words: “Let God arise, and let his enemies be scattered.” And now his anger was raised so high, that he ordered the chantress to be brought before him, and had her beat on the face till her cheeks were stained with blood; which efforts of the tyrant’s unmanly passion the aged good woman received with pleasure, went home, and, as often as an opportunity offered, entertained him still with the very same sort of disagreeable compositions.’ Hist. Eccles.

† Socrat. Hist. Eccles. lib. VI. cap. viii.

‡ Hist. Eccles. lib. VIII. cap. viii.



mere theatre; for which Chrystom reproved them, by telling his people that their rude voices and disorderly behaviour were very improper for a place of worship, in which all things were to be done with reverence to that Being who observes the behaviour of every one there.

St. Ambrose, who had entertained a singular veneration for St. Basil, like him was a great lover of the church-service: it is true he was not originally an ecclesiastic, but having been unexpectedly elected bishop of Milan, he applied himself to the duties of the episcopal function. Justina, whom the emperor Valentinian had married, proving an Arian, commenced a prosecution against Ambrose and the orthodox; during which the people watched all night in the church, and Ambrose appointed that psalms and hymns should be sung there after the manner of the oriental churches, lest the people should pine away with the tediousness of sorrow; and from this event, which happened about 374, we may date the introduction of singing into western churches.

But the zeal of St. Ambrose to promote this practice, is in nothing more conspicuous than in his endeavours to reduce it into form and method; as a proof whereof, it is said that he, jointly with St. Augustine, upon occasion of the conversion and baptism of the latter, composed the hymn *Te Deum laudamus*, which even now makes a part of the liturgy of our church, and caused it to be sung in his church at Milan; but this has been discovered to be a mistake\*: this however is certain, that he instituted that method of singing, known by the name of the *Cantus Ambrosianus*, or *Ambrosian Chant*, a name, for ought that now appears, not applicable to any determined series of notes, but invented to express in general a method of singing agreeable to some rule given or taught by him. This method, whatever it was, is said to have had a reference to the modes of the ancients, or rather to those of Ptolemy, which we have shewn to have been precisely coin-

\* The very learned Dr. Usher, upon the authority of two ancient manuscripts, asserts the *Te Deum* to have been made by a bishop of Triers, named Nicetius or Nicettus, and that not till about the year 500, which was almost a century after the death both of St. Ambrose and St. Augustine. *L'Etrange's Alliance of Divine Offices*, 79. The Benedictines, who published the works of St. Ambrose, judge him not to have been the author of it; and Dr. Cave, though at one time he was of a different judgment, and bishop. Stillingsfleet concur in the opinion that the *Te Deum* was not the composition of St. Ambrose, or of him and St. Augustine jointly. *Bingham's Antiquities of the Christian Church*, book XIV. chap. ii. § 9.

cident with the seven species of the diapason; but St. Ambrose conceiving all above four to be superfluous, reduced them to that number, retaining only the Dorian, the Phrygian, the Lydian, and the Mixolydian \*, which names he rejected, chusing rather to distinguish them by epithets of number, as protos, deuterus, tritos, tetrartos. His design in this was to introduce a kind of melody founded on the rules of art, and yet so plain and simple in its nature, that not only those whose immediate duty it was to perform the divine service, but even the whole congregation might sing it; accordingly in the Romish countries the people now join with the choir in chanting the divine offices; and if we may credit the relations of travellers in this respect, this distinguished simplicity of the Ambrosian Chant is even at this day to be remarked in the service of the church of Milan, where it was first instituted.

A particular account of the ecclesiastical modes, as originally constituted by St. Ambrose, with the subsequent improvement of them by Gregory the Great, is reserved for another place: in the interim it is to be noted that the ecclesiastical modes are also called tropes, but more frequently tones; which latter appellation was first given to them by Martianus Capella, as we are informed by Sir Henry Spelman, in his Glossary, voce FRIGDORÆ. The following scheme represents the progression in each.

d	e	f	g
c	d	e	f
h	c	d	e
a	h	c	d
G	a	h	c
F	G	a	h
E	F	G	a
D	E	F	G

And this was the original institution of what are called, in contradistinction to the modes or moods of the ancients, the ecclesiastical modes or tones. These of St. Ambrose, however well calculated for use and practice, were yet found to be too much restrained, and not to admit of all that variety of modulation which the several offices in the church-

\* Sir Henry Spelman in his Glossary, voce FRIGDORÆ, in the place of the Mixolydian puts the Æolian.

service seemed to require; and accordingly St. Gregory, furnished the Great, the first pope of that name, with the assistance of the most learned and skilful in the music of that day, set about an amendment of the Cantus Ambrosianus, and instituted what became known to later times by the name of the Cantus Gregorianus, or, the Gregorian Chant: but as this was not till near two hundred and thirty years after the time of St. Ambrose, the account of this, and the other improvements made in music by St. Gregory, must be referred to another place.

With respect to the music of the primitive church, though it consisted in the singing of psalms and hymns, yet was it performed in sundry different manners, that is to say, sometimes the psalms were sung by one person alone, the rest hearing with attention; sometimes they were sung by the whole assembly; sometimes alternately, the congregation being for that purpose divided into separate choirs; and, lastly, by one person, who repeated the first part of the verse, the rest joining in the close thereof\*.

Of the four different methods of singing above enumerated, the second and third were very properly distinguished by the names of symphony and antiphony, and the latter was sometimes called responsaria †; and in this, it seems, women were allowed to join, notwithstanding the apostle's injunction on them to keep silence.

The method of singing in the last place above mentioned, clearly suggests the origin of the office of precentor of a choir, whose duty, even at this day, it is to govern the choir, and see that the choral service be reverently and justly performed.

It farther appears, that almost from the time when music was first introduced into the service of the church, it was of two kinds, and consisted in a gentle inflection of the voice, which they termed plain-song, and a more artificial and elaborate kind of music, adapted to the hymns and solemn offices contained in its ritual; and this distinction has been maintained through all the succeeding ages, even to this time.

\* Bingham's Antiq. book XIV. chap. i.

† In this distinction between symphonic and antiphonal psalmody, we may discern the origin of the two different methods of singing practised in the Romish and Lutheran churches, and of those that follow the rule of Calvin, and others of the reformers; in the former the singing is antiphonal, in the latter it is a plain metrical psalmody, in which all join; so that for each practice the authority of the primitive church may be appealed to.

Besides the reverend fathers of the church above mentioned, we are told, and indeed it appears from many passages in his writings, that SAINT AUGUSTINE was a passionate lover of music ; this which follows, taken from his Confessions, lib. IX. cap. vi. is the most commonly produced as an evidence of his approbation of music in the church-service, though, it must be owned, he lived to recant it :  
 ‘ How abundantly did I weep before God, to hear those hymns of  
 ‘ thine ; being touched to the very quick, by the voices of thy sweet  
 ‘ church-song. The voices flowed into my ears, and thy truth  
 ‘ pleasingly distilled into my heart ; which caused the affections of  
 ‘ my devotion to overflow, and my tears to run over ; and happy  
 ‘ did I find myself therein.’ From hence there is little reason to doubt, that he enjoyed the use of it to the clergy of his diocese. He wrote a treatise De Musica, in six books, chiefly, indeed, on the subject of metre and the laws of versification, but interspersed with such observations on the nature of the consonances, as shew him to have been very well skilled in the science of music.

It is not necessary to enter into a particular character, either of St. Augustine or of this his work : those who are acquainted with ecclesiastical history need not to be told, that he was a man of great learning, for the time he lived in, of lively parts, and of exemplary piety. To such, however, whose curiosity is greater than their reading, the following short account of this eminent father of the church may not be displeasing.

He was born at Thagaste, a city of Numidia, on the 13th of November, 354. His father, a burgher of that city, was called Patricius ; and his mother, Monica, who being a woman of great virtue, instructed him in the principles of the Christian religion. In his early youth he was in the rank of the catechumens, and falling dangerously ill, earnestly desired to be baptized ; but the violence of the distemper ceasing, his baptism was delayed. His father, who was not yet baptized, made him study at Thagaste, Madaura, and afterwards at Carthage. St. Augustine, having read Cicero’s books of philosophy, began to entertain a love for wisdom, and applied himself to the study of the Holy Scriptures ; nevertheless, he suffered himself to be seduced by the Manicheans. At the age of nineteen, he returned to Thagaste,

gaffe, and taught grammar, and also frequented the bar : he afterwards taught rhetoric at Carthage, with applause. The insolence of the scholars at Carthage made him take a resolution to go to Rome, though against his mother's will. Here also he had many scholars ; but disliking them, he quitted Rome, and settled at Milan, and was chosen public professor of rhetoric in that city. Here he had opportunities of hearing the sermons of St. Ambrose, which, together with the study of St. Paul's Epistles, and the conversion of two of his friends, determined him to retract his errors, and quit the sect of the Manicheans : this was in the thirty-second year of his age. In the vacation of the year 386, he retired to the house of a friend of his, named Verecundus, where he seriously applied himself to the study of the Christian religion, in order to prepare himself for baptism, which he received at Easter, in the year 387. Soon after this, his mother came to see him at Milan, and invite him back to Carthage ; but at Ostia, whither he went to embark, in order to his return, she died. He arrived in Africa about the end of the year 388, and having obtained a garden-plot without the walls of the city of Hippo, he associated himself with eleven other persons of eminent sanctity, who distinguished themselves by wearing leathern girdles, and lived there in a monastic way for the space of three years; exercising themselves in fasting, prayer, study, and meditation, day and night : from hence sprung up the Augustine friars, or eremites of St. Augustine, being the first order of mendicants ; those of St. Jerome, the Carmelites, and others, being but branches of this of St. Augustine. About this time, or as some say before, Valerius, bishop of Hippo, against his will, ordained him priest : nevertheless, he continued to reside in his little monastery, with his brethren, who, renouncing all property, possessed their goods in common. Valerius, who had appointed St. Augustine to preach in his place, allowed him to do it in his presence, contrary to the custom of the churches in Africa. He explained the creed, in a general council of Africa, held in 393. Two years after, Valerius, fearing he might be preferred to be bishop of another church, appointed him his coadjutor or colleague, and caused him to be ordained bishop of Hippo, by Megalius, bishop of Calame, then primate of Numidia. St. Augustine died the 28th day of August, 430, aged seventy-six years, having had the misfortune to see his country invaded by the Vandals, and the city where he was bishop besieged for seven months.

The works of St. Augustine make ten tomes; the best edition of them is that of Maurin, printed at Antwerp, in 1700: they are but little read at this time, except by the clergy of the Greek church and in the Spanish universities; our booksellers in London receive frequent commissions for them, and indeed for most of the fathers, from Russia, and also from Spain.

About this time flourished AMBROSIUS AURELIUS THEODOSIUS MACROBIUS, an author whose name appears in almost every catalogue of musical writers extant; but whose works scarcely entitle him to a place among them. He lived in the time of Theodosius the younger, who was proclaimed emperor of the East anno 402. He was a man of consular dignity, and held the office of chamberlain to the emperor. Fabricius makes it a question whether he was a Christian or a Pagan. His works are a Commentary on the Somnium Scipionis of Cicero, in two books, and Saturnaliorum Conviviorum, in seven books; in both which he takes occasion to treat of music, and more especially the harmony of the spheres. The chief of what he says concerning music in general is contained in his Commentary on the Somnium Scipionis, and is taken from Nicomachus, and others of the followers of Pythagoras. Martini mentions also a discourse on mundane music of his, which was translated into Italian by Ercole Bottrigari, with notes; but he speaks of it as a manuscript,\* and by the list of the works of Macrobius, it does not appear to have ever been printed.

Of such writers as Macrobius, and a few other of the Latins who will shortly be mentioned, that have written not professedly on music, but have briefly or transiently taken notice of it in the course of a work written with some other view than to explain it, little is to be said. There is nevertheless a Greek writer of this class, who lived some considerable time before Macrobius, and indeed was prior to Porphyry, the last of the Greek musical writers that deserves to be taken notice of, not so much because he has contributed to the improvement of the science, as because in a voluminous work of his there are interspersed a great variety of curious particulars relating to it, not to be found elsewhere. The author here meant is Athenæus the grammarian, called, by way of eminence, the Grecian Varro; he was born at Naucratis in Egypt, and flourished in the third century; of many works that he wrote, one only remains, intitled The Deipnosophists, that is to say, the Sophists at

Table, where he introduces a number of learned men of all professions, who converse upon various subjects at the table of a Roman citizen named Larenſius. In this work there are many very pleaſant ſto- ries, and an infinite variety of facts, citations, and alluſions, which make the reading of it extremely delightful. The little that he has ſaid of muſic lies ſcattered up and down in this work, which, with the Latin tranſlation of it, makes a large folio volume.

In his fourth book, pag. 174, he gives the names of the ſuppoſed inventors of the ancient muſical instruments, and, among others, of Cteſibius, and of the hydraulic organ conſtructed by him; and it is ſuppoſed that this is the moſt ancient and authentic account of that instrument now extant. He ſays, pag. 175, that the Barbiton or lyre, or, as Merſennus will have it, the viol, was the invention of Anacreon; and the Monaulon, or ſingle pipe, of the Egyptian Oſiris.

Elſewhere, viz. in his fourteenth book, he ſpeaks of the power of muſic, and of the ſondneſs which the Arcadians, above all other people, entertained for it: and in the ſame book, pag. 637, he deſcribes that ſtrange instrument, invented by Pythagoras Zacynthius, called the tripod lyre, correſponding in every particular with the deſcription of it hereinbefore given from Blanchinus; to which may be added, that Athenæus expreſſly ſays that the three ſeveral ſets of chords between the legs, were in their tuning, adjusted to the three primitive modes, the Dorian, the Lydian, and the Phrygian.

Of this learned, curious, and moſt entertaining work, the beſt edition is that of Dalechamp, with the Greek original and Latin tranſlation in oppoſite columns. To this are added the animadverſions of Iſaac Caſaubon, which are very curious, and make another volume. In theſe it is ſaid that the Muſicorum *διαγράμματα*, or Tablatura, i. e. the art of writing or noting down of muſic, was invented by Stratonicus of Rhodes. Iſ. Caſaub. Animadverſ. in Athenæum, lib. VIII. cap. xii.

MARTIANUS MINEUS FELIX CAPELLA was born, as Caſſiodorus teſtifies, at Madaura, a town in Africa, ſituated between the countries of Getulia and Numidia, lived at Rome under Leo the Thracian, viz. about the year of Chriſt 457; he was the author of a work intitled, *De Nuptiis Philologiæ et Mercurii*, the ſtyle whereof, in the opinion of ſome, is harſh, and rather barbarous, though others, and Fabricius

bricius in particular, who terms it a delightful fable \*, think it in nowise deserves such a character : this work, which consists of prose and verse intermixed, is in fact a treatise on the seven liberal sciences, and consequently includes a discourse on music, which makes the ninth book thereof, and is introduced in the following manner : the author supposes the marriage of Philologia, a virgin, to Mercury, and that Venus and the other deities, as also Orpheus, Amphion, and Arion, are assembled to honour the solemnity ; the Sciences, who, to render the work as poetical as may be, are represented as persons, also attend, among whom is Harmonia, described as having her head decked with variety of ornaments, and bearing symbols of the faculty over which she is feigned to preside. She is made to exhibit the power of sounds by such melody as Jupiter himself commends, which is succeeded by a request of Apollo and Minerva to unfold the mysteries of harmony. She first craves leave to relate that she formerly was an inhabitant of the earth, and that through the inspirations of Pythagoras, Aristoxenus, and others, she had taught men the use of the lyre and the pipe ; and by the singing of birds, the whistling of the winds, and the murmuring of water-falls, had instructed even the artless shepherds in the rudiments of melody. That by the power of her art she had cured diseases, quieted seditions, and composed and attempered the irregular affections of mankind ; notwithstanding all which, she had been contemned and reviled by those sons of earth, and had therefore sought the heavens, where she found the motions of the orbs regulated by her own principles. She then proceeds to explain the precepts of harmony in a short discourse, which, if we consider the substance and method rather than the style of it, must be allowed to be a very elegant composition, and by much the most intelligible of any ancient treatise on the science of music now extant.

Capella concludes this ninth book of his treatise *De Nuptiis* thus :  
 ‘ When Harmonia had run over these things concerning songs, and the  
 ‘ sweetness of verse, in a manner both august and persuasive, to the  
 ‘ gods and heroes, who were very intent, she decently withdrew ;  
 ‘ then Jupiter rose up, and Cymetis modulating in divine sympho-  
 ‘ nies, came to the chamber of the virgin, to the great delight of all.’

\* Biblioth. Lat. Art. CAPELLA.



The above discourse of Martianus Capella is manifestly taken from Aristid Quintilianus, of which, to say the truth, it is very little more than an abridgment, but it is such a one as renders it in some respects preferable to the original; for neither is it so prolix as Quintilian's treatise, nor does it partake of that obscurity which discourages so many from the study of his work; and when it is said, as it has been by some, that the style of Capella is barbarous, this must be taken as the opinion of grammarians, who, without regarding the intrinsic merit of any work, estimate it by certain rules of classical elegance, which they themselves have established as the test of perfection. It is by these men, and for this reason, and perhaps because he had not the good fortune to be born at Rome, that Capella is termed 'a semi-barbarian, and his writings reprobated as unworthy the perusal of men of science\*. But, notwithstanding these opinions, one of the best grammarians of the present age, the learned and ingenious author of *Hermes*, or a Philosophical Inquiry concerning Universal Grammar, has forborne to pass a censure of barbarity on the style of this author: his sentiment of him is, that he was rather a philologist than a philosopher; a testimony that leaves him a better character than some of those deserve who have been so liberal in their censures of him. It has been said above, that Fabricius has given to the treatise *De Nuptiis* the character of a delightful fable; and Gregory of Tours delivers his opinion of it at large in the following words: 'In grammatices docent legere, in dialecticis altercationum propositiones advertere, in rhetoricis persuadere, in geometricis terrarum linearumque mensuras colligere, in astrologicis cursus siderum contemplari, in arithmeticis numerorum

\* The learned bishop of Avranches is somewhat less severe in his censure. He gives the following character of Capella and his work. 'Martianus Capella has given the name of satire to his work because it is written in verse and prose, and the profitable and entertaining parts are agreeably interwoven. His design is to treat of the arts, which have the appellation of liberal; and these he represents by certain allegorical personages, with attributes proper to each. The principal action in this fable is the marriage of Mercury and Philology, a feigned being, intended to signify the love of literature. The artifice of this allegory is not very subtle, and as to the style it is barbarism itself; and for the figures, they are unpardonably bold and extravagant; besides all which it is so obscure as hardly to be intelligible; otherwise it is learned, and full of notions not common. Some write that the author was an African; if he was not, his harsh and forced style would induce one to believe he was of that country. The time he lived in is unknown; it only appears that he was more ancient than Justinian.' *Huetius de l'Origine des Romains.*

' partes colligere, in harmoniis sonorum modulationes suavium ac-  
centuum carminibus concrepare.' Hence it may seem that Mr. Malcolms was rather too hasty in condemning this work ; and that in pronouncing of its author as he has done in his Treatise on Music, pag. 498, that he was but a sorry copier from Aristides, he has done him injustice. Of Capella's work, *De Nuptiis Philologiæ et Mercurii*, there have been many editions ; that of Meibomius is the most useful to a musician ; but there is a very good one, with corrections and notes, by Grotius, in octavo, published in 1559, when he was but fourteen years of age.

## C H A P. V.

THE several works hereinbefore enumerated contain the whole of what, in the strict sense of the term, we are to understand by the ancient system of music ; and as many of them appear to be of very great antiquity, we are to esteem it a singular instance of good fortune that they are yet remaining ; that they are so, is owing to the care and industry of very many learned men, who, from public libraries, and other repositories, have sought out the most correct manuscripts of the respective authors, and given them to the world in print ; as to Aristoxenus, the first in the list of the harmonical writers, it is doubtful whether his *Elements* ever appeared in print, till near the middle of the seventeenth century, inasmuch as Morley, who lived in the reign of our queen Elizabeth, and was a very learned and inquisitive man in all matters relating to musical science, professes never to have seen the *Elements* of Aristoxenus ; Euclid indeed had been published in the year 1498, in a Latin translation of Georgius Valla, of Placentia, but under the name of Cleonidas. It was also, in 1557, published at Paris in Greek, with a new Latin translation by Johannes Pena, mathematician to the French king, but in a very incorrect manner ; other editions were also published of it, in which the errors of the former were multiplied. At length, with the assistance of our countrymen Selden, Gerard Langbaine, Marcus Meibomius, a man well acquainted with the science, and well skilled in Greek literature, published it, together with Aristoxenus Nicomachus, Alypius, Gaudentius, Bacchius Senioris, Aristides Quintilianus, and the  
ninth

ninth book of the fable de Nuptiis Philologiæ et Mercurii of Martianus Capella, with a Latin translation of the first seven of the above-named writers, a general preface replete with excellent learning, and copious notes on them all.

Besides the general preface, Meibomius has given a particular one to each author as they stand in his edition, which prefaces, as they contain a variety of particulars relating to the respective authors and their works, and are otherwise curious, are well worthy of attention. The Manual of Nicomachus was first published and translated into Latin by Meibomius, who gives the author a very great character, and with great ingenuity fixes the time when he lived; for he observes that Nicomachus in the course of his work mentions Thrasylus, who he says he thinks to be the same with one of that name mentioned frequently by Suetonius in Augustus and Tiberius, and by the old commentator on Juvenal, Sat. VI. as a famous mathematician; and from hence he infers that he lived after the time of Augustus.

To the Isagoge of Alypius the preface is but very short, but in that to Gaudentius, which follows it next in order Meibomius cites a passage from Cassiodorus, a Latin writer on music, who flourished in the sixth century, and will presently be spoken of, from whence he thinks the age when Alypius lived may in some measure be learned. He observes also that it appears from the same passage of Cassiodorus that Gaudentius had been translated into Latin by a Roman, a friend of his, named Mutianus\*; the whole passage, to give it together as it stands in Cassiodorus, is in these words: ‘*Gratissima ergo nimis utilisque cognitio, quæ et sensum nostrum ad superna erigit, et aures modulatione permulcet: quam apud Græcos Alypius, Euclydes, Ptolomæus, et cæteri probabili institutione docuerunt. Apud Latinos autem vir magnificus Albinus librum de hac re, compendio, sub brevitate conscripsit, quem in bibliotheca Romæ non habuisse atque studiosè legissè retinemus. Qui si forte gentili incurfione sublatus est, habetis hic Gaudentium Mutiani Latinum: quem si sollicita intensione legitis; hujus scientiæ vobis atria patefacit. Fertur etiam latio sermone et Apuleium Madaurensis instituta hujus operis efficisse, scripsit etiam et pater Augustinus de Musica sex libros, in quibus humanam vocem, rhythmicos sonos, et*

\* Mutianus also translated the Homilies of St. Chrysostom. Fabr. Biblioth. Græc. lib. III. cap. x.

‘harmoniam modulabilem in longis syllabis atque brevibus naturaliter habere monstravit. Censorinus quoque de accentibus vocum nostræ ad necessarios subtiliter disputavit, pertinere dicens ad musicam disciplinam: quem vobis inter cæteros transcriptum reliqui.’  
Cassiod. de Musica.

Gaudentius is published from a manuscript, which the editor procured of his friends Selden and Langbaine, who collated it for him, with two others which had been presented to the Bodleian library, the one by Sir Henry Savil, and the other by William earl of Pembroke, formerly chancellor of the university of Oxford. It seems that our countryman Chilmead had undertaken to publish an edition of Gaudentius, but being informed that Meibomius had entertained a design of giving it to the world, he generously sent him his papers, and remitted the care of publishing them to him.

Bacchius Senior was first published in the original Greek, and with a French translation by Mercennus, in a commentary on certain chapters in the book of Genesis, written by him to explain the music of the ancient Hebrews and Greeks, intitled ‘*Questiones et explicatio in sex priora capita Geneseos, quibus etiam Græcorum et Hebræorum Musica instauratur.*’ Of this translation Meibomius, in his general preface, speaks in very severe terms; he says he did not know that any such was extant, till he was informed thereof by his friend Ismael Bullialdus; he says that he then had it brought to him from Paris by the courier, and that if he had seen it before he had published his notes on that author, they would have been made much fuller by observations on his errors. However the only error that Meibomius here charges Mercennus with, is that of having confounded the Stantes with the Mobiles in his representation of the *Systema maxima*.

Aristides Quintilianus is taken from a manuscript which Meibomius frequently mentions as belonging to Joseph Scaliger, in which was contained Alypius, Nicomachus, Aristoxenus, Aristides, and Bacchius. This manuscript was deposited in the library of Leyden, and communicated to him by Daniel Heinsius, together with two manuscripts of Martianus Capella.

With the assistance of the several manuscripts above mentioned, and a correspondence with the most learned men of his time, namely, Selden, Langbaine, Salmasius, Leo Allatius, and many others,  
Meibomius

Meibomius completed his edition of the ancient musical authors, and published it at Amsterdam in the year 1652, with a dedication to Christina queen of Sweden.

With respect to the other Greek writers, namely, Ptolemy, Manuel Bryennius, and Porphyry, the former of these was published, together with Porphyry's Commentary, by Antonius Gogavinus, at Venice, with a Latin version in 1562, but, as it should seem from Dr. Wallis's censure of it, in a very inaccurate manner: Meibomius somewhere says that he had intended to publish both Porphyry and Manuel Bryennius, but he not having done it, Dr. Wallis undertook it, and has given it to the world in the third volume of his works. Most of the manuscripts that were made use of for the above publications, had been carried to Constantinople upon the erection of the eastern empire, to preserve them from the ravages of the northern invaders: and as that city continued to be the seat of learning for some centuries, they, together with an immense collection of Greek and Latin manuscripts, containing the works of the most valuable of the Greek and Roman writers, were preserved there with great care. But the taking and sacking of Constantinople by the Turks, in the year 1452, was followed by an emigration of learning and learned men, who, escaping from the destruction that threatened them, settled chiefly in Italy, and became the revivers of literature in the western parts of Europe.

These men upon their removal from Constantinople brought with them into Italy an immense treasure of learning, consisting of ancient manuscripts in all the several branches thereof, which they disseminated by lectures in the public schools: many of these manuscripts have at different periods been printed and dispersed throughout Europe, and others of them remain unpublished, either in public libraries, or in the collections of princes and other great persons\*.

These men are also said to have introduced into Italy the knowledge of ancient music, which they could no otherwise do than by public lectures, and by giving to the world copies of the several treatises of the Greek harmonicians, hereinbefore particularly men-

\* The manuscripts relating to music which Kircher procured access to for the purpose of compiling his *Musurgia*, are by him said to be extant in the library of the Roman College; and he speaks of one huge tome in particular, in which he says are the several works of Aristides Quintilianus, Bryennius, Plutarch, Aristotle, Callimachus, Aristoxenus, Alypius, Ptolemy, Euclid, Nicomachus, Boetius, Martianus Capella, Valla, and some others.

tioned ; and the effects of these their labours to cultivate that kind of knowledge were made apparent by Gaffurius, or Franchinus, as he is otherwise called, who, before the end of the fifteenth century, published those several works of his, which have justly entitled him to the appellation of the Father of Music among the moderns.

Before the migration of learning from the East, all that was known of the ancient music in the western parts of Europe was contained in the writings of Censorinus, Macrobius, Martianus Capella, Boetius, Cassiodorus, and a few other Latin writers, who, as Meibomius says of Capella, might very justly be termed Pedarians, inasmuch as they were strict followers of the ancient harmonicians ; or else in the works of a very learned and excellent man, to whom this censure cannot be extended, namely, Boetius, of whom, and of whose inestimable work *De Musica* a very particular account will shortly be given ; in the interim it will be necessary to mention some innovations that had been made in music subsequent to Ptolemy, and before Boetius, of whom we are about to speak ; and first it is to be noted that in this interval, if not before the commencement of it, the genera, at least in practice, were reduced to one, namely, the diatonic : and next it is to be remarked, that the method of notation used by the ancients, the explanation whereof is almost the sole purpose of Alypius's book, was totally changed by the Romans, who to the great system, which consisted, as has been shewn, of a bisdiapason, containing fifteen sounds, applied as many letters of their own alphabet ; so that assigning to *Proslambanomenos* the letter A, the system terminated at P. It does not appear that at this time, nor indeed till a long time after, any marks or characters had been invented to denote the length or duration of musical sounds ; nor, notwithstanding all that has been said about the rhythmus of the ancients, does it in the least appear that they had any rule for determining the length of the sounds, other than that which constituted the

In the account of the late discoveries in the ruins of Herculaneum, given by the abbé Winckelman, mention is made of an ancient Greek treatise on music found there, written by one Philodemus, an author who has escaped the researches of the industrious Fabricius. Nevertheless, a philosopher of that name occurs amongst the Locrians, in Stanley's list of the Pythagorean school. Hist. of Philosophy, Pythagoras, chap. xxiv. This manuscript the antiquaries employed by the king of Naples, though it is burned to a cinder, have begun to unroll ; but the condition of it, and the nature of the process made use of for developing it, render it almost impossible that the world can ever be the better for its contents. See the Letter of the Abbé Winckelman to Count Bruhl on this subject.

measure

measure of the verses \* to which those sounds were severally applied; which consideration leaves it in some sort a question whether among the ancients there was any such thing as merely instrumental music.

In this method of notation by the first fifteen letters of the Latin alphabet, a modern will discover a great defect; for, being in a lineal position, they by their situation inferred no diversity between grave and acute, whereas in the stave of the moderns the characters by a judicious analogy are made to express, according to their different situations in the stave, all the differences of acute and grave from one extremity of the system to the other.

ANITIUS MANLIUS TORQUATUS SEVERINUS BOETIUS, was the most considerable of all the Latin writers on music; indeed his treatise on the subject supplied for some centuries the want of those Greek manuscripts which were supposed to have been lost; for this reason, as also on account of his superior eminence in literature, he merits to be very particularly spoken of. He was by birth a Roman, descended of an ancient family, many of whom had been senators, and some advanced to the dignity of the consulate: the time of his birth is related to have been about that period in the Roman history when Augustulus, whose fears had induced him to a resignation of the empire, was banished, and Odoacer king of the Herulians began to reign in Italy, viz. in the year of Christ 476, or somewhat after. The father of Boetius dying while he was yet an infant, his relations undertook the care of his education and the direction of his studies; his excellent parts were soon discovered, and, as well to enrich his mind with the study of philosophy, as to perfect himself in the Greek language, he was sent to Athens. Returning young to Rome, he was soon distinguished for his learning and virtue, and promoted to

\* In the Chronology of Sir Isaac Newton, pag. 14. is the following passage. 'In the year 1035 [before Christ] the Idæi Daçtyli [a people supposed to have come from Numidia, vide Heyl. Cosm. pag. 555. edit. 1703] find out iron in mount Ida in Crete, and work it into armour and iron tools, and thereby give a beginning to the trades of smiths and armourers in Europe; and by singing and dancing in their armour, and keeping time by striking upon one another's armours with their swords, they bring in music and poetry, and at the same time they nurse up the Cretan Jupiter in a cave of the same mountain, dancing about him in their armour.'

The origin of metrical numbers, and of the rhythmus, as is called, is by some referred to this event; but admitting this as a fact, it does not ascertain the time when the characters declaring the length or duration of sounds were first invented; and the truth is that these are, comparatively speaking, a modern improvement in music.

the principal dignities in the state, and at length to the consulate. Living in great affluence and splendour, he addicted himself to the study of theology, mathematics, ethics, and logic; and how great a master he became in each of these branches of learning appears from those works of his now extant. The great offices which he bore in the state, and his consummate wisdom and inflexible integrity, procured him such a share in the public councils, as proved in the end his destruction; for as he ever employed his interest in the king for the protection and encouragement of deserving men, so he exerted his utmost efforts in the detection of fraud, the repressing of violence, and the defence of the state against invaders. At this time Theodoric the Goth had attempted to ravage the Campania; and it was owing to the vigilance and resolution of Boetius that that country was preserved from destruction. At length, having murdered Odoacer, Theodoric became king of Italy, where he governed thirty-three years with prudence and moderation, during which time Boetius possessed a large share of his esteem and confidence. It happened about this time that Justin, the emperor of the East, upon his succeeding to Anastasius, made an edict condemning all the Arians, except the Goths, to perpetual banishment from the eastern empire; in this edict Hormisdas bishop of Rome, and also the senate concurred; but Theodoric, who, as being a Goth, was an Arian, was extremely troubled at it, and conceived an aversion against the senate for the share they had borne in this proscription. Of this disposition in the king, three men of profligate lives and desperate fortunes, Gaudentius, Opilio, and Basilus, took advantage; for having entertained a secret desire of revenge against Boetius, for having been instrumental in the dismissal of the latter from a lucrative employment under the king, they accused him of several crimes, such as the stifling a charge, the end whereof was to involve the whole senate in the guilt of treason; and an attempt, by dethroning the king, to restore the liberty of Italy; and, lastly, they suggested that, to acquire the honours he was in possession of, Boetius had had recourse to magical arts.

Boetius was at this time at a great distance from Rome; however Theodoric transmitted the complaint to the senate, enforcing it with a suggestion that the safety, as well of the people as the prince, was rendered very precarious by this supposed design to exterminate the Goths: the senate perhaps fearing the resentment of the king, and



having nothing to hope from the success of an enterprize, which, supposing it ever to have been meditated, was now rendered abortive, without summoning him to his defence, condemned Boetius to death. The king however, apprehending some bad consequence from the execution of a sentence so flagrantly unjust, mitigated it to banishment. The place of his exile was Ticinum, now the city of Pavia, in Italy : being in that place separated from his relations, who had not been permitted to follow him into his retirement, he endeavoured to derive from philosophy those comforts which that alone was capable of affording to one in his forlorn situation, sequestered from his friends, in the power of his enemies, and at the mercy of a capricious tyrant ; and accordingly he there composed that valuable discourse, entitled *De Consolatione Philosophiæ*. To give a more particular account of this book would be needless, it being well known in the learned world : one remarkable circumstance relating to it is, that, by those under affliction it has in various times been applied to, as the means of fortifying their minds and reconciling them to the dispensations of Providence, almost as constantly as the scriptures themselves. Our Saxon king Alfred, whose reign, though happy upon the whole, was attended with great vicissitudes of fortune, had recourse to this book of Boetius, at a time when his distresses compelled him to seek retirement ; and, that he might the better impress upon his mind the noble sentiments inculcated in it, he made a complete translation of it into the Saxon language, which, within these few years, has been given to the world in its proper character : Chaucer made a translation of it into English, which is printed among his works, and is alluded to in these verses of his :

Adam Serivener, yf ever it the besalle  
 Voerce or Croises for to write new,  
 Under thy longe lockes thou must have the scalle :  
 But after my makynge thou writte more true,  
 So ofte a daye I mote thy werke reneue,  
 It to correcte, and eke to rubbe and serape,  
 And al is thorow thy negligence and rape.

And Camden relates, that queen Elizabeth, during the time of her confinement by her sister Mary, to mitigate her grief, read and afterwards translated it into very elegant English.

It is more than probable that Boetius would have ended his exile by a natural death, had it not been for an event that happened about two years after the pronouncing his sentence; for, in the year 524, Justin, the emperor, thought fit to promulgate an edict against the Arians, whereby he commanded, without excepting the Goths, as he had done lately, on another occasion, that all bishops who maintained that heresy should be deposed, and their churches consecrated after the true Christian form. To avert this decree, Theodoric sent an embassy to the emperor, which, to render it the more splendid and respectable, consisted of the bishop or pope himself, who at that time was John the Second, the immediate successor of Hormisdas, and four others, of the consular and patrician orders, who were instructed to solicit with the emperor the repeal of this decree, with threats, in case of a refusal, that the king would destroy Italy with fire and sword. Upon the arrival of the ambassadors at Constantinople, the emperor very artfully contrived to receive them in such a manner as naturally tended to detach them from their master, and make them slight the business they were sent to negotiate, and he succeeded accordingly; for as soon as they approached the city, the emperor, the clergy, and a great number of the people, went in procession to meet them. In their way to the church, the upper hand of the emperor was given to the bishop; and upon their arrival there, the holy father, to shew his gratitude for the honour done him of sitting on the right of the imperial throne, celebrated the day of the Resurrection after the Roman use, and crowned Justin emperor. Of the insufferable pride and arrogance of this John so many instances are related, that no one who reads them can lament the fate which afterwards befel him, viz. that he died in a dungeon. It is recorded, that upon his arrival at Corinth, in his way to Constantinople, great enquiry was made for a gentle horse for him to ride on; upon which, a nobleman of that city sent him one that, for the goodness of its temper, had been reserved for the use of his lady; the bishop accepted the favour, and, after travelling as far as he thought fit, returned the beast to the owner: but behold what followed, the sagacious animal, conscious of the merit of having once borne the successor of St. Peter, refused ever after to let the lady mount him; upon which the husband sent him again to the pope, with a request that he would accept of that which was no longer of any use

to

to the owner. This event, it is to be noted, is recorded as a miracle; but if we allow it the credit due to one, it will reflect but little honour on the worker of it, since the utmost it proves is, that the pope had the power of communicating to a horse a quality which had rendered the primitive possessor of it to the last degree odious.

It is not easy to see how, with any degree of propriety, or consistent with justice, the misbehaviour of the ambassadors could be imputed to Boetius, who, all this while, was confined to the place of his exile, and seemed to be employing his time in a way much more suited to his circumstances and character than in the abetting the misguided and malevolent zeal of either of two enthusiastic princes; nevertheless, we are told, that Theodoric no sooner heard of the behaviour of John and his colleagues, than he began to meditate the death of Boetius: he however suppressed his resentment, till he had received a formal complaint from his people of the infidelity of those entrusted by him. Immediately on his arrival, he committed the bishop to close confinement, wherein he shortly after ended his days. Had his revenge stopped here, his conduct might have escaped censure, but he completed the ruin of his character by sentencing Boetius, to death, who, together with Symmachus, the father of his wife, was beheaded in prison on the tenth of the kalends of November, 705. In order to palliate the cruelty of the king, it has been insinuated, that the treachery of his ambassadors was a kind of evidence that the conspiracy had a foundation in truth; and that fact once established, the intimacy which had subsisted for several years between Boetius and the bishop, before the banishment of the former, furnished a ground for suspicion that he was at least not ignorant of it. It is farther said, that, as if he believed the conspiracy to be real, the king sent to Boetius, in prison, offers of pardon, if he would disclose the whole treason; but the protestations which he made upon that occasion of his innocence, afford the strongest evidence that could be given that he was not privy to it.

But the causes of this severe resolution of Theodoric are elsewhere to be sought for: he was arrived at the age of seventy-two, and for some years had been infected with the vices usually imputed to old age: he had reigned more than thirty-three years; and though the mildness and prudence of his government, and that paternal tenderness with which he had ruled his people, were greater than could be expected from a prince who had made his way to dominion by the murder

der of the rightful sovereign, the disappointments he had met with, the insults that had been offered him, one particularly in the person of his sister, who had received some indignities from the African Vandals, the contempt that had been shewn him in this late embassy, and, above all, his utter inability to resent these injuries in the way he most desired, these misfortunes concurring, deprived him of that unanimity of temper which had been the characteristic of his reign: in short, he grew jealous, timid, vindictive, and cruel; and after this, nothing he did was to be wondered at. But to return to Boetius.

The extensive learning and eloquence of this great man are conspicuous in his works; and his singular merits have been celebrated by the ablest writers that have lived since the restoration of learning. His first wife, for he was twice married, was named Helves, a Sicilian lady of great beauty and fortune, but more eminently distinguished by the endowments of her mind, and her inviolable affection for so excellent a man. She had a genius for poetry, and wrote with a degree of judgment and correctness not common to her sex. He desired much to have issue by her; but she dying young, he embalmed her memory in the following elegant verses:

Helves dicta fui, Siculæ regionis alumna,  
 Quam procùl à patria, conjugis egit amor.  
 Quo sine, mœsta dies, nox anxia, flebilis hora  
 Nec solum caro, sed spiritus unus erat.  
 Lux mea non clausa est, tali remanente marito,  
 Majorique animæ, parte superstes ero.  
 Porticibus sacris tam nunc peregrina quiesco,  
 Judicis eterni testificata thronum.

\* Procopius relates that he was frightened to death; the following is his account of that strange accident:

‘ Symmachus and his son-in-law, Boetius, just men and great relievers of the poor, senators and consuls, had many enemies, by whose false accusations Theodoric being persuaded that they plotted against him, put them to death, and confiscated their estates. Not long after, his waiters set before him at supper the head of a great fish, which seemed to him to be the head of Symmachus, lately murdered; and with his teeth sticking out, and fierce glaring eyes, to threaten him. Being frightened, he grew chill, went to bed lamenting what he had done to Symmachus and Boetius, and soon after died.’ *De Bello Gothico, lib. I.*

Ne qua manus bustum violet, nisi fortè jugalis,  
 Hæc iterum cupiat jungere membra suis.  
 Ut Thalami cumuliq; comes, nec morte revellar,  
 Et focios vitæ nectat uterque cinis.

His other wife, Rusticiana, was the daughter of Quintus Aurelius Menius Symmachus, a chief of the senate, and consul in the year 485 : with her he received a considerable accession to his fortune. He had several children by her ; two of whom arrived to the dignity of the consulatè. His conjugal tenderness was very exemplary ; and it may be truly said, that, for his public and private virtues, he was one of the great ornaments of that degenerate age in which it was his misfortune to be born.

The tomb of Boetius is to be seen in the church of St. Augustine, at Pavia, near the steps of the chancel, with the following epitaph :

Mœonia et Latia lingua clarissimus; et qui  
 Consul eram, hic perii, missus in exilium ;  
 Et quia mors rapuit ? Probitas me vexit ad auras,  
 Et nunc fama viget maxima vivit opus.

Many ages after his death the emperor Otho the Third enclosed his bones, then lying neglected amongst the rubbish, in a marble chest ; upon which occasion Gerbert, an eminent scholar of that time, and who was afterwards advanced to the papal chair by the name of Sylvester the Second, did honour to his memory in the following lines :

Roma potens, dum jura suo declarat in orbe,  
 Tu pater, et patriæ lumen, Severitate Boeti,  
 Consulis officio, rerum disponis habenas,  
 Infundis lumen studiis, et cedere nescis  
 Græcorum ingeniis, sed mens divina coerces  
 Imperium mundi. Gladio bacchante Gothorum  
 Libertas Romana perit : tu consul et exul,  
 Insignes titulos præclara morte relinquis,

Tunc decus Imperii, summas qui prægravat artes,  
 Tertius Otho sua dignum te judicat aula ;  
 Æternumque tui statuit monumenta laboris,  
 Et bene promeritum, meritis exornat honestis.

The writings of Boetius, the titles whereof are given below\*, seem to have been collected with great care : an edition of them was printed at Venice, in one volume in folio, 1499. In 1570, Glareanus, of Basil, collated that with several manuscripts, and published it, with a few various readings in the margin. To render his author more intelligible, the editor has inserted sundry diagrams of his own ; but has been careful not to confound them with the original ones of Boetius.

But before these, or indeed the doctrines of Boetius, can be rendered intelligible, it is necessary first to state the general drift and tendency of the author, in his treatise De Musica ; and next to explain the several terms made use of by him in the demonstration of the proportions of the consonances and other intervals, as also the proportions themselves, distinguishing between the several species of arithmetical, geometrical, and harmonical proportion.

The design of Boetius in the above mentioned treatise was, by the aid of arithmetic, to demonstrate those ratios which those of the Py-

\* In Porphyrium à Victorino translatum, lib. II. In Porphyrium à se Latinum factum, lib. V. In Prædicamenta Aristotelis, lib. IV. In librum de Interpretatione Commentaria minora, lib. II. In eundem de Interpretatione Commentaria majora, lib. VI. Analyticorum priorum Aristotelis, Anitio Manlio Severino Boethio interprete, lib. II. Analyticorum posteriorum Aristotelis, Anitio Manlio Severino Boethio interprete, lib. II. Introductio ad categoricos Syllogismos, lib. I. De Syllogismo categorico, lib. II. De Syllogismo hypothetico, lib. II. De Divisione, lib. I. De Diffinitione, lib. I. Topicorum Aristotelis, Anitio Manlio Severino, interprete, lib. VIII. Elenchorum Sophisticorum Aristotelis, Anitio Manlio Severino Boethio interprete, lib. II. In Topica Cironis, lib. VI. De Differentiis Topicis, lib. IV. De Consolatione Philosophicæ, luculentissimis Johannis Murmelli (partim etiam Rodolphi Agricolæ) Commentariis illustrati, lib. V. De Sancta Trinitate, cum Gilberti episcopi Piclavienfis, cognomento porrete doctissimi olim viri commentariis, jam primum ex vetustissimo scripto codice in lucem editis, lib. IV. Quorum primus continet excellentem & piam doctrinam, de Trinitate & Unitate Dei : quomodo Trinitas sit Unus Deus, & non Tres Dii, lib. I. Secundus tractat Questionem An Pater, & Filius, & Spiritus Sanctus substantialiter predicentur, lib. I. Tertius complectitur Hebdomaden : An omne quod fit, bonum sit, lib. I. Quartus evidenter & piè docet, in Christo duas esse Naturas, & unam Personam, adversus Eutychem & Nestorium, lib. I. De Unitate & Uno, lib. I. De Disciplina Scholarium, lib. I. De Arithmetica, lib. II. De Musica, lib. V. De Geometria, lib. II.

thagorean school had asserted subsisted between the consonances. These ratios are either of equality, as 1 : 1, 2 : 2, 8 : 8, or of inequality, as 4 : 2, because the first contains the latter once, with a remainder : and of these ratios, or proportions of inequality, there are five kinds, as, namely, multiplex, superparticular, superpartient, multiplex superparticular, and multiplex superpartient ; all which will hereafter be explained. These terms are made use of by Euclid, and others of the Greek writers, and were adopted by Boetius, and through him have been continued down to the Italian writers, in whose works they are perpetually occurring ; and though the modern arithmeticians have rejected them, and substituted in their places, as a much shorter and more intelligible method of designation, the numbers that constitute the several proportions, it is necessary to the understanding of the ancient writers, that the terms used by them should also be understood.

Another thing necessary to be known, in order to the understanding not only of Boetius and his followers, but all who have written on those abstruse parts of music the ancient modes, the ecclesiastical tones, and their divisions into authentic and plagal, is the nature of the three different kinds of proportion, namely, arithmetical, geometrical, and harmonical ; an explanation whereof, as also of the several kinds of proportion of inequality can hardly be given in terms more accurate, precise, and intelligible, than those of Dr. Holder, in his treatise on the Natural Grounds and Principles of Harmony, chap. v. wherein, after premising that all harmonic bodies and sounds fall under numerical calculations, he speaks thus of proportion in general :

‘ We may compare (i. e. amongst themselves) either (1) magnitudes (so they be of the same kind) ; or (2) the gravitations, motions, velocities, durations, sounds, &c. from thence arising ; or, farther, the numbers themselves, by which the things compared are explicated ; and if these shall be unequal, we may then consider either, first, how much one of them exceeds the other ; or, secondly, after what manner one of them stands related to the other, as to the quotient of the antecedent (or former term) divided by the consequent (or latter term) which quotient doth expound, denominate, or shew, how many times, or how much of a time or times, one of them doth contain the other : and this by the Greeks is called

‘ λόγος.

‘ λόγος, ratio, as they are wont to call the similitude or equality of ratios αναλογία, analogie, proportion, or proportionality; but custom, and the sense assisting, will render any over-curious application of these terms unnecessary.’

From these two considerations last mentioned, the same author says, there are wont to be deduced three sorts of proportion, arithmetical, geometrical, and a mixed proportion, resulting from these two, called harmonical. These are thus explained by him:

‘ 1. Arithmetical, when three or more numbers in progression have the same difference; as 2, 4, 6, 8, &c. or discontinued, as 2, 4, 6; 14, 16, 18.’

‘ 2. Geometrical, when three or more numbers have the same ratio, as 2, 4, 8, 16, 32; or discontinued, as 2, 4; 64, 128.’

‘ Lastly, Harmonical, (partaking of both the other) when three numbers are so ordered, that there be the same ratio of the greatest to the least, as there is of the difference of the two greater to the difference of the two less numbers, as in these three terms, 3, 4, 6, the ratio of 6 to 3, (being the greatest and least terms) is duple; so is 2, the difference of 6 and 4 (the two greater numbers) to 1, the difference of 4 and 3 (the two less numbers) duple also. This is proportion harmonical, which diapason, 6 to 3, bears to diapente, 6 to 4, and diatesseron, 4 to 3, as its mean proportionals.’

‘ Now for the kinds of ratios most properly so called; i. e. geometrical: first observe, that in all ratios, the former term or number, (whether greater or less) is always called the antecedent; and the other following number, is called the consequent. If therefore, the antecedent be the greater term, then the ratio is either multiplex, superparticular, superpartient, or (what is compounded of these) multiplex superparticular, or multiplex superpartient.’

‘ 1. Multiplex; as duple, 4 to 2; triple, 6 to 2; quadruple, 8 to 2.’

‘ 2. Superparticular; as 3 to 2, 4 to 3, 5 to 4; exceeding but by one aliquot part, and in their radical, or least numbers; always but by one; and these ratios are termed sesquialtera, sesquitertia, (or supertertia) sesquiquarta, (or superquarta) &c. Note, that numbers exceeding more than by one, and but by one aliquot part, may yet be superparticular, if they be not expressed in their radical, i. e.

‘ least



least numbers, as 12 to 8, hath the same ration as 3 to 2; i. e. superparticular; though it seem not so till it be reduced by the greatest common divisor to its radical numbers, 3 to 2. And the common divisor, (i. e. the number by which both the terms may severally be divided) is often the difference between the two numbers; as in 12 to 8, the difference is 4, which is the common divisor. Divide 12 by 4, the quotient is 3; divide 8 by 4, the quotient is 2; so the radical is 3 to 2. Thus also, 15 to 10, divided by the difference, 5, gives 3 to 2; yet in 16 to 10, 2 is the common divisor, and gives 8 to 5, being superpartient. But in all superparticular rations, whose terms are thus made larger by being multiplied, the difference between the terms is always the greatest common divisor; as in the foregoing examples.'

The third kind of ration is superpartient, exceeding by more than one as 5 to 3; which is called superbipartiens tertias, (or tria) containing 3 and  $\frac{2}{3}$  8 to 5, supertripartiens quintas, 5 and  $\frac{3}{5}$ .

The fourth is multiplex superparticular, as 9 to 4, which is duple, and sesquiquarta; 13 to 4, which is triple and sesquiquarta.'

The fifth and last is multiplex superpartient, as 11 to 4; duple, and supertripartiens quartas\*.'

When the antecedent is less than the consequent, viz. when a less is compared to a greater; then the same terms serve to express the rations, only prefixing sub to them; as, submultiplex, subsuperparticular, (or subparticular) subsuperpartient, (or subpartient) &c. 4 to 2 is duple; 2 to 4 is subduple; 4 to 3 is sesquitertia; 3 to 4 is subsesquitertia, 5 to 3 is superbipartiens tertias; 3 to 5 is subsuperbipartiens tertias, &c.'

The same author proceeds to find how the habitudes of rations are found in these words:

All the habitudes of rations to each other, are found by multiplication or division of their terms, by which any ration is added to or subtracted from another; and there may be use of progression of rations or proportions, and of finding a medium, or mediety, be-

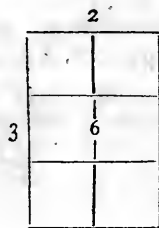
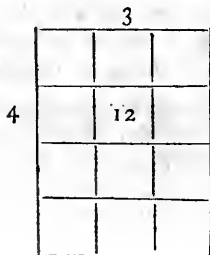
\* The above terms were used by the ancient geometers and arithmeticians; and therefore, for the understanding of such, and of Boetius in particular, it is very necessary that their meaning should be ascertained: but the manner now is to express the proportions by the numbers themselves, rather than by the terms; and briefly to say, as 31 is to 7, or as 7 is to 31, rather than to say, quadrupla superbipartiens septimas, or subquadrupla superbipartiens septimas. Vide Harris's Lex. Tech. vol I. PROPORTION.

‘tween the terms of any ration; but the main work is done by addition and subtraction of rations, which, though they are not performed like addition and subtraction of simple numbers in arithmetic, but upon algebraic grounds, yet the praxis is most easy.’

‘One ration is added to another ration, by multiplying the two antecedent terms together, i. e. the antecedent of one of the rations, by the antecedent of the other. (For the more ease, they should be reduced into their least numbers or terms); and then the two consequent terms, in like manner. The ration of the product of the antecedents to that of the product of the consequents, is equal to the other two, added or joined together. Thus, for example, add the ration of 8 to 6; i. e. (in radical numbers) 4 to 3, to the ratio of 12 to 10, i. e. 6 to 5; the product will be 24 and 15, i. e. 8 to 5; you may set them thus, and multiply 4 by 6, they make 24; which set at the bottom; then multiply 3 by 5, they make 15; which likewise set under, and you have 24 to 15: which is a ration compounded of the other two, and equal to them both. Reduce these products, 24 and 15, to their least radical numbers, which is by dividing as far as you can find a common divisor to them both (which is here done by 3), and that brings them to the ration of 8 to 5. By this you see that a third minor, 6 to 5, added to a fourth, 4 to 3, makes a sixth minor, 8 to 5. If more rations are to be added, set them all under each other, and multiply the first antecedent by the second, and that product by the third; and again that product by the fourth, and so on; and in like manner the consequents.’

‘This operation depends upon the fifth proposition of the eighth book of Euclid; where he shews that the ration of plain numbers is compounded of their sides. See these diagrams.’

$$\begin{array}{r}
 4- | -3 \\
 6- | -5 \\
 \hline
 24 \quad 15
 \end{array}$$



‘ Now

Now compound these sides. Take for the antecedents, 4, the greater side of the greater plane, and 3, the greater side of the less plane, and they multiplied give 12. Then take the remaining two numbers, 3 and 2, being the less sides of the planes (for consequents), and they give 6. So the sides of 4 and 3, and of 3 and 2, compounded (by multiplying the antecedent terms by themselves and the consequents by themselves) make 12 to 6; i. e. 2 to 1, which being applied, amounts to this; ratio sesquialtera 3 to 2, added to ratio sesquitercia 4 to 3, makes duple ration, 2 to 1. Therefore, diapente added to diatesseron, makes diapason.

Subtraction of one ration from another greater, is performed in like manner, by multiplying the terms; but this is done not laterally, as in addition, but crosswise; by multiplying the antecedent of the former (i. e. of the greater) by the consequent of the latter, which produceth a new antecedent; and the consequent of the former by the antecedent of the latter, which gives a new consequent; and therefore, it is usually done by an oblique decussation of the lines. For example, if you would take 6 to 5 out of 4 to 3, you may set them down thus:

4	3	
X		
6	5	
20	18	
10	9	

Then 4, multiplied by 5, makes 20; and 3, by 6, gives 18; so 20 to 18, i. e. 10 to 9, is the remainder. That is, subtract a third minor out of a fourth, and there will remain a tone minor.

Multiplication of rations is the same with their addition; only it is not wont to be of divers rations, but of the same, being taken twice, thrice, or oftener, as you please. And as before, in addition, you added divers rations, by multiplying them; so here, in multiplication, you add the same ration to itself, after the same manner, viz. by multiplying the terms of the same ratio by themselves; i. e. the antecedent by itself, and the consequent by itself, (which in other words, is to multiply the same by 2) and will in the operation be to square the ration first propounded (or give the second ordinal power; the ration first given being the first power or side) and to this product, if the simple ration shall again be added, (after the same manner as before) the aggregate will be the triple of the ration first given; or the product of that ration, multiplied by 3, viz. the cube, or third ordinal power. Its biquadrate, or fourth

power, proceeds from multiplying it by 4; and so successively in order, as far as you please you may advance the powers. For instance, the duple ration, 2 to 1, being added to itself, dupled or multiplied by 2, produceth 4 to 1, (the ration quadruple); and if to this, the first again be added, (which is equivalent to multiplying that said first by 3), there will arise the ration octuple, or 8 to 1. Whence the ration, 2 to 1, being taken for a root, its duple, 4 to 1, will be the square; its triple, 8 to 1, the cube thereof, &c. as hath been said above. And to use another instance; to duple the ration of 3 to 2, it must be thus squared: 3 by 3 gives 9; 2 by 2 gives 4, so the duple or square of 3 to 2 is 9 to 4. Again, 9 by 3 is 27, and 4 by 2 is 8; so the cubic ration of 3 to 2 is 27 to 8. Again, to find the fourth power or biquadrate, (i. e. squared square,) 27 by 3 is 81, 8 by 2 is 16; so 81 to 16 is the ration of 3 to 2 quadrupled; as it is dupled by the square, tripled by the cube, &c. To apply this instance to our present purpose, 3 to 2 is the ration of diapente, or a fifth in harmony; 9 to 4 is the ratio of twice diapente, (or a ninth, viz. diapason, with tone major;) 27 to 8 is the ration of thrice diapente, or three fifths, which is diapason, with sixth major, viz. 13 major; the ration of 81 to 16 makes four fifths, i. e. disdiapason, with two tones major, i. e. a seventeenth major, and a comma of 81 to 80.

To divide any ration, the contrary way must be taken; and by extracting of these roots respectively, division by their indices will be performed. E. gr. to divide it by 2, is to take the square root of it; by 3, the cube root; by 4, the biquadratic, &c. Thus, to divide 9 to 4 by 2, the square root of 9 is 3, the square root of 4 is 2; then 3 to 2 is a ration just half so much as 9 to 4.

## C H A P. VI.

THE nature of proportion being thus explained, without a competent knowledge whereof it would be in vain to attempt the reading of Boetius, it remains to give such an account of his

treatise De Musica as is consistent with a general history of the science, and may be sufficient to invite the studious inquirer to an attentive perusal of this most valuable work. Here therefore follow, in regular order, the titles of the several chapters contained in the five books of Boetius's treatise De Musica, with an abridgment of such of them as seem most worthy of remark.

Chap. i. *Musica naturaliter nobis esse conjunctam, et mores vel honestare vel evertere.*

Boetius in this chapter observes, that the sensitive power of perception is natural to all living creatures, but that knowledge is attained by contemplation. All mortals, he says, are endued with sight, but whether the perception be effected by the coming of the object to the sight; or by rays sent forth to it, is a doubt. When any one, continues he, beholds a triangle or a square, he readily acknowledges what he discovers by his eyes, but he must be a mathematician to investigate the nature of a triangle or a square. Having established this proposition, he applies it to the other liberal arts, and to music in particular; which he undertakes to shew is connected with morality, inasmuch as it disposes the mind to good or evil actions; to this purpose he expresses himself in these terms: 'The power or faculty of hearing enables us not only to form a judgment of sounds, and to discover their differences, but to receive delight, if they are sweet and adapted to each other; whence it comes to pass that, as there are four mathematical sciences \*, the rest labour at the investigation of truth; but this, besides, that it requires speculation, is connected with morality; for there is nothing that more peculiarly distinguishes human nature, than that disposition observable in mankind to be one way affected by sweet, and another by contrary sounds; and this affection is not peculiar to particular tempers or certain ages, but is common to all; and infants, young, and even old men, are by a natural instinct rendered susceptible of pleasure or disgust from consonant or discordant sounds. From hence we may discern that it was not without reason that

\* The four mathematical arts are arithmetic, geometry, music, and astronomy; these were anciently termed the quadrivium, or fourfold way to knowledge; the other three, grammar, rhetoric, and logic, completing the number of the seven liberal sciences, were termed the trivium or threefold way to eloquence. Vide Du Cange, voce QUADRIVIVM. This scholastic division is recognized in an ancient monumental inscription in Westminster abbey, in memory of Gilbert Crispin, who died abbot of Westminster in 1117.

Plato said, that the soul of the world was conjoined with musical proportion: and such is the effect of music on the human manners, that a lascivious mind is delighted with lascivious modes, and a sober mind is more disposed to sobriety by those of a contrary kind: and hence it is that the musical modes, for instance the Lydian and Phrygian, take their names from the tempers or distinguishing characteristics of those nations that respectively delight in them: for it cannot be that things, in their nature soft, should agree with such as are harsh, or contrarywise; for it is similitude that conciliates love; wherefore Plato held that the greatest caution was to be taken not to suffer any change in a well-moraled music, there being no corruption of manners in a republic so great as that which follows a gradual declination from a prudent and modest music; for, whatever corruptions are made in music, the minds of the hearers will immediately suffer the same, it being certain that there is no way to the affections more open than that of the hearing: and these effects of music are discernible among different nations, for the more fierce, as the Getæ, are delighted with the harder modes, and the more gentle and civilized with such as are moderate; although in these days few of the latter are to be found.

Boetius then proceeds to relate that the Lacedæmonians, sensible of the great advantages resulting to a state from a sober, modest, and well-regulated music, invited, by a great reward, Taletas the Cretan to settle among them, and instruct their youth in music. And he relates that the Spartans were so jealous of innovations in their music, that, for adding only a single chord to those he found, they banished Timotheus from Sparta by a decree; which, however he could come by so great a curiosity, he gives in the original Greek, and is as follows:

Mitis eras justus prudens fortis moderatus  
Doctus quadrivio nec minus in trivio.

Widmore's Hist. of Westminster Abbey.

And these are the arts understood in the academical degrees of bachelor and master of arts, for the ancient course of scholastic institution required a proficiency in each. The satire, as it is called, of Martians Capella, *De Nuptiis Philologiæ et Mercurii*, is a treatise on the seven liberal sciences: Cassiodorus, who lived about half a century after him, wrote also *De septem Disciplinis*; and others of the learned in like manner, have written professedly on them all.

FINIS

ΕΠΕΙ ΔΕ ΤΙΜΟΘΕΟΣ Ο ΜΙΛΕΣΙΟΣ ΠΑΡΑΓΙΜΕΝΟΣ ΕΝ ΤΑΝ ΑΜΕΤΕΡΑΝ ΠΟΛΙΝ, ΤΑΝ ΠΑΛΑΙΑΝ ΜΟΛΠΗΝ ΑΤΙΜΑΣΑΣ. ΚΑΙ ΤΑΝ ΔΙΑ ΠΑΝ ΕΠΤΑ ΧΟΡΔΑΝ ΚΙΘΑΡΙΖΕΙ, ΑΠΟΣΤΡΕΦΟΜΕΝΟΣ ΠΟΛΥΦΩΝΙΑΝ ΕΙΣΑΓΩΝ, ΔΥΜΑΙΝΕΤΑΙ ΤΑΣ ΑΚΟΑΣ ΤΩΝ ΝΕΩΝ ΔΙΑ ΤΕ ΤΑΣ ΠΟΛΥΧΟΡΔΑΣ, ΚΑΙ ΤΑΣ ΚΑΙΝΟΤΑΤΑΣ ΤΟΥΤΩΝ ΜΕΛΕΟΣ ΑΓΕΝΝΕ ΚΑΙ ΠΟΙΚΙΛΑΝ ΑΝΤΙΑΠΛΟΑΝ, ΚΑΙ ΤΕΤΑΓΜΕΝΑΝ ΑΜΦΙΑΤΙΑΝ ΜΟΛΠΗΝ ΕΠΙ ΧΡΩΜΑΤΟΣ ΣΥΝΕΙΣΤΑΜΕΝ ΤΟΥΤΟΥ ΜΕΛΕΟΣ, ΔΙΑΣΤΑΣΙΝ. ΑΝΤΙ ΓΑΡ ΕΝΑΡΜΟΝΙΩ ΠΟΙΑΝ ΑΝΤΙΣΤΡΕΦΟΝ ΑΜΟΙΒΑΝ. ΠΑΡΑΚΑΛΑΘΕΙΣ ΔΕ ΕΝ ΤΟΝ ΑΓΩΝΑ ΤΑΣ ΒΛΕΥΣΙΝΙΑΣ ΔΑΜΑΤΡΟΣ ΑΙΧΟΣ ΔΙΕΦΗΜΙΣΑΤΟ ΤΑΝ ΤΩ ΜΥΘΩ ΚΙΔΝΗΣΙΝ: ΤΑΝ ΓΑΡ ΣΕΜΕΛΑ ΘΑΥΝΑΝ ΟΥΚ ΕΝΔΕΚΑΤΟΣ ΝΕΟΣ ΔΙΔΑΧΗΝ ΕΔΙΔΑΞΕ. ΕΙΤΑ ΠΕΡΙ ΤΟΥΤΩΝ ΤΟΝ ΒΑΣΙΛΕΑΝ ΚΑΙ ΤΟΥ ΡΗΤΟΡΟΣ ΜΕΜΨΑΤΑΙ ΤΙΜΟΘΕΟΝ, ΕΠΑΝΑΤΙΘΕΤΑΙ ΔΕ ΚΑΙ ΤΑΝ ΕΝΔΕΚΑ ΧΟΡΔΑΝ ΕΚΤΑΝΩΝ ΤΑΣ ΠΕΡΙΑΣΤΑΣ ΕΠΙΛΕΙΠΟΜΕΝΟΣ ΤΑΝ ΕΠΤΑΧΟΡΔΩΝ ΑΣΤΟΣ. ΤΟ ΓΑΡ ΠΟΛΙΟΣ ΒΑΡΟΣ ΑΠΤΩΝ ΤΕΤΑΡΒΗΤΑΙ ΕΣ ΤΑΝ ΣΠΑΡΤΑΝ ΕΠΙΦΕΡΕΙΝ: ΤΙΘΩΝ ΜΗ ΚΑΛΩΝ ΝΗΤΩΝ ΜΗΠΟΤΕ ΤΑΡΑΤΤΗΤΑΙ ΚΛΕΟΣ ΑΓΟΡΩΝ.

He then proceeds to declare the power of music in these words :  
 • It is well known that many wonderful effects have been wrought  
 • by the power of music over the mind; oftentimes a song has re-  
 • pressed anger; and who is ignorant that a certain drunken young  
 • man of Taurominium being incited to violence by the sound of the  
 • Phrygian mode, was by the singing of a spondeus appeased; for  
 • when a harlot was shut up in the house of his rival, and the young  
 • man, raging with madness, would have set the house on fire, Py-  
 • thagoras, who, agreeable to his nightly custom, was employed in  
 • observing the motions of the celestial bodies, as soon as he was in-  
 • formed that the young man had been incited to this outrage by the  
 • Phrygian mode, and found that he would not desist from his wick-  
 • ed attempt, though his friends repeated their admonitions to him  
 • for that purpose, ordered them to change the mode, and thereby  
 • attempered the disposition of the raging youth to a most tranquil  
 • state of mind. Cicero relates the same story in different words, but  
 • in nearly the same manner. “ When, (says he) certain drunken  
 • men, stirred up, as is often the case, by the sound of the tibia,  
 • would have broke open the doors of a modest woman, Pythagoras  
 • is said to have admonished the tibicinist to play a spondeus, which  
 • he had no sooner done than the lustfulness of these men was ap-  
 • peased by the slowness of the mode and the gravity of the per-  
 • former.” But, to gather some similar examples in few words, Ter-  
 • pander and Arion of Methymne, the next city in Lesbos to Mity-  
 • • Iene.

' Iene for grandeur, cured the Lesbians and Ionians of most grievous  
 ' diseases by the means of music; Hismenias, the Theban, by his  
 ' music is reported to have freed from their torments divers Beotians,  
 ' who were sorely afflicted with sciatic pains \*. Empedocles also,  
 ' when a certain person in a fury would have attacked his guest, for  
 ' having accused and procured the condemnation of his father, is said  
 ' to have diverted him by a particular mode in music, and by that  
 ' means to have appeased the anger of the young man. And so well  
 ' was the power of music known to the ancient philosophers, that  
 ' the Pythagoreans, when they had a mind to refresh themselves by  
 ' sleep after the labours and cares of the day, made use of certain  
 ' songs to procure them an easy and quiet rest; and when they  
 ' awaked they also dispelled the dulness and confusion occa-  
 ' sioned by sleep by others, knowing full well that the mind and  
 ' the body were conjoined in a musical fitness, and that whatever  
 ' affects the body will also produce a similar effect on the mind;  
 ' which observation it is reported Democritus, whom his fellow-  
 ' citizens had confined, supposing him mad, made to Hippo-  
 ' crates the physician, who had been sent for to cure him. To what  
 ' purpose then are all these things? we cannot doubt but that our  
 ' body and mind are in manner constituted in the same proportions  
 ' by which harmonical modulations are joined and compacted, as  
 ' the following argument shall shew; for hence it is that even in-  
 ' fants are delighted with a sweet, or disgusted with a harsh song:  
 ' every age and either sex are affected by music, and though they are  
 ' different in their actions, yet do they agree in their love of music.  
 ' Nay, such as are under the influence of sorrow, even modulate  
 ' their complaints, which is chiefly the case with women, who by  
 ' the sweetness of their songs find means to alleviate their sorrows †;

\* There are many relations in history of the efficacy of music in the cure of bodily diseases. It is reported that Thales the Cretan being by the advice of the Oracle called to Sparta, cured a raging pestilence by the power of music alone. The assertion of Boetius with respect to the Sciatica seems to be founded on a passage in Aulus Gellius, lib. IV. chap. xiii. who reports that persons afflicted with that disease were eased of their pains by certain gentle modulations of the tibia; and that by the same means many had been cured who had been bitten by serpents and other venomous creatures.

† Modern history furnishes a curious fact to prove the truth of this observation; for it is related of the princefs of Navarre, mother of Henry IV. of France, that at the instant when she was delivered of him she sung a song in the Bearnois language. Life of Henry le Grand by the bishop of Rodez.



and it was for this reason that the ancients had a custom for the tibia to precede in their funeral processions. Papinius Statius testifies as much in the following verse.

‘ Cornu grave mugit adjunco,  
 ‘ Tibia cui teneros suctum producere manes.

‘ And though a man cannot sing sweetly, yet while he sings to himself he draws forth an innate sweetness from his heart. Is it not manifest that the sound of the trumpet fires the minds of the combatants, and impels them to battle; why then is it not probable that a person may be incited to fury and anger from a peaceful state of mind? There is no doubt but that a mode may restrain anger or other inordinate desires; for what is the reason that when a person receives into his ears any song with pleasure, that he should not also be spontaneously converted to it, or that the body should not form or fashion some motion similar to what he hears: from all these things it is clear beyond doubt that music is naturally joined to us, and that if we would we cannot deprive ourselves of it; wherefore the power of the mind is to be exerted, that what is implanted in us by nature should also be comprehended by science. For as in sight it is not sufficient for learned men barely to behold colours and forms, unless they also investigate their properties; so also is it not sufficient to be delighted with musical songs, unless we also learn by what proportion of voices or sounds they are joined together.’

Cap. ii. Tres esse musicas, in quibus de vi musicæ narratur.

The three kinds of music here meant are, mundane, humane, and instrumental; and of each of these mention has been made in a preceding page.

Cap. iii. De vocibus ac de musicæ elementis.

Cap. iv. De speciebus inequalitatis.

Cap. v. Quæ inequalitatis species consonantiis aptentur.

Cap. vi. Cur multiplicitas, et superparticularitas consonantiis deputentur.

Cap. vii. Quæ proportiones quibus consonantiis musicis aptentur.

Cap. viii. Quid sit sonus, quid intervallum, quid concinentia.

Cap. ix. Non omne iudicium dandum esse sensibus; sed amplius rationi esse credendum, in quo de sensuum fallacia.

It is the business of this chapter to shew, that though the first principles of harmony are taken from the sense of hearing, for this reason, that were it otherwise there could be no dispute about sounds; yet, in this case, the sense is not the sole arbiter. Boetius to this purpose expresses himself very rationally in the following terms: 'Hearing is as it were but a monitor, but the last perfection and power of judging about it depends upon reason. What need is there for many words to point out the error which the senses are liable to, since we know that neither is the same power of perception given to every one alike, nor is it always equal in the same man; on the other hand, it is vain to commit the examination of truth to an uncertain judgment. The Pythagoreans for this reason took as it were a middle way; for though they did not make the hearing the sole arbiter, yet did they search after and try some things by the ears only: they measured the consonants themselves by the ears, but the distances by which these consonants differed from each other they did not trust to the ears, the judgment whereof is inaccurate, but committed them to the examination of reason, thereby making the sense subservient to reason, which acted as a judge and a master. For though the momenta of all arts, and of life itself, depend upon our senses, yet no sure judgment can be formed concerning them, no comprehension of the truth can exist, if the decision of reason be wanting; for the senses themselves are equally deceived in things that are very great or very little: and with respect of that of hearing, it with great difficulty perceives those intervals which are very small, and is deafened by those which are very great.'

Cap. x. Quemadmodum Pythagoras proportiones consonantiarum investigaverit.

Cap. xi. Quibus modis variè à Pythagora proportiones consonantiarum pensæ sint.

The account delivered in the two preceding chapters, and which is mentioned in almost every treatise on the subject of music extant, is evidently taken from Nicomachus, whose relation of this supposed discovery of Pythagoras is herein before given at length.

Cap. xii. De divisione vocum, earumque explanatione.

Cap.

- Cap. xiii. Quod infinitatem vocum humana natura finierit.
- Cap. xiv. Quis sit modus audiendi.
- Cap. xv. De ordine theorematum, id est speculationum.
- Cap. xvi. De consonantiis proportionum, et tono et semitono.
- Cap. xvii. In quibus primis numeris semitonium constat.
- Cap. xviii. Diatessaron a diapente tono distare.
- Cap. xix. Diapason quinque tonis, et duobus semitoniis jungi.
- Cap. xx. De additione chordarum, earumque nominibus.

The substance of this chapter has already been given.

- Cap. xxi. De generibus cantilenarum.
- Cap. xxii. De ordine chordarum nominibusque in tribus generibus.

- Cap. xxiii. Quæ sint inter voces in singulis generibus proportionales.

These three chapters give a brief and but a very superficial account of the genera.

- Cap. xxiv. Quid sit synaphe.
- Cap. xxv. Quid sit diezeuxis.

In these two chapters the difference between the conjunct and disjunct tetrachords is explained.

- Cap. xxvi. Quibus nominibus nervos appellaverit Albinus.

Albinus is said by Cassiodorus to have been a great man, and to have written a brief discourse on music, which he himself had seen and attentively perused in one of the public libraries at Rome; and Cassiodorus seems to prophecy that some time or other it would be taken away in an incursion of the Barbarians: it has accordingly sustained that fate; for Meibomius, in his preface to Gaudentius, speaks of that manuscript as irrecoverably lost.

- Cap. xxvii. Qui nervi quibus syderibus comparentur.

The substance of this chapter is for the most part an extract from Cicero de Repub. lib. VI. and is a declaration of the supposed analogy between the planets and the sounds in the septenary.

- Cap. xxviii. Quæ sit natura consonantiarum.
- Cap. xxix. Ubi consonantiæ reperiuntur.
- Cap. xxx. Quemadmodum Plato dicat fieri consonantias.
- Cap. xxxi. Quid contra Platonem Nicomachus sentiat.
- Cap. xxxii. Quæ consonantia quam merito præcedat.
- Cap. xxxiii. Quo sint modo accipienda quæ dicta sunt.

## Cap. xxxiv. Quid sit musicus.

In this, which is a very curious chapter, the author observes that the theoretic branch of every science is more honourable than the practical, for ‘ that practice attends like a servant, but reason commands like a mistress; and unless the head executes what reason dictates, its labour is vain.’ He adds, ‘ the speculations of reason borrow no aid of the executive part; but contrarywise, the operations of the hand without the guidance of reason are of no avail;’ —that the greatness of the merit and glory of reason may be collected from this; corporeal artists in music receive their appellations, not from the science itself, but rather from the instruments, as the citharist from the cithara; the tibicen, or player on the pipe, from the tibia; but he only is the true musician, who, weighing every thing in the balance of reason, professes the science of music, not in the slavery of execution, but in the authority of speculation. In like manner he says those who are employed in the erection of public structures, or in the operations of war, receive no praise except what is due to industry and obedience; but to those by whose skill and conduct buildings are erected, or victory achieved, the honours of inscriptions and triumphs are decreed.’ He then proceeds to declare that three faculties are employed in the musical art; one which is exercised in the playing on instruments, another that of the poet, which directs the composition of verses, and a third which judges of the former two; and touching these, and that which he makes the principal question in this chapter, he delivers his opinion thus: ‘ As to the first, the performance of instruments, it is evident that the artists obey as servants, and as to poets, they are not led to verse so much by reason as by a certain instinct which we call genius. But that which assumes to itself the power of judging of these two, that can examine into rhythmus, songs, and their verse, as it is the exercise of reason and judgment, is most properly to be accounted music; and he only is a musician who has the faculty of judging according to speculation and the approved ratios of sounds, of the modes, genera, and rhythmical of songs, and their various commixtures, and of the verses of the poets.’

Lib. II. cap. i. Proemium.

Cap. ii. Quid Pythagoras esse philosophiam constituerit.

Cap. iii. De differentiis quantitatis, et quæ cuique disciplinæ sit deputata.

Cap. iv. De Relatæ quantitatis differentiis.

Cap. v. Cur multiplicitas antecellat.

Cap. vi. Qui sint quadrati numeri deque his speculatio.

Cap. vii. Omnem inequalitatem ex equalitate procedere, ejusque demonstratio.

Cap. viii. Regula quotlibet continuas proportiones superparticulares inveniendi.

Cap. ix. De proportione numerorum qui ab alias metiuntur.

Cap. x. Quæ ex multiplicibus et superparticularibus multiplicitates fiant.

Cap. xi. Qui superparticulares quos multiplices efficiant.

The nine foregoing chapters contain demonstrations of the five several species of proportion of inequality; of these an explanation may be seen in that extract from Dr. Holder's Treatise on the Natural Grounds and Principles of Harmony, hereinbefore inserted, with a view to facilitate the study of Boetius, and to render this very abstruse part of his work intelligible.

Cap. xii. De arithmetica, geometrica, harmonica, medietate.

The three several kinds of proportionality, that is to say, arithmetical, geometrical, and harmonical, are also explained in the extract from Dr. Holder's book above referred to.

Cap. xiii. De continuis mediætatibus et disjunctis.

Cap. xiv. Cur ita appellatæ sint digestæ superius medietates.

Cap. xv. Quemadmodum ab æqualitate supradictæ processerant medietates.

Cap. xvi. Quemadmodum inter duos terminos supradictæ medietates vicissim collocentur.

Cap. xvii. De consonantiarum modo secundum Nicomachum.

Cap. xviii. De ordine consonantiarum sententia Ebulidis et Hippasii.

Two ancient musicians, of whose writings we have nothing now remaining.

Cap. xix. Sententia Nicomachi quæ quibus consonantiis apponantur.

Cap. xx. Quid oporteat præmitti, ut diapason in multiplici genere demonstratur.

- Cap. xxi. Demonstratio per impossibile, diapason in multiplici genere esse.
- Cap. xxii. Demonstratio per impossibile, diapente, diateffaron, et tonum in superparticulari esse.
- Cap. xxiii. Demonstratio diapente et diateffaron in maximis superparticularibus collocari.
- Cap. xxiv. Diapente in sesquialtera, diateffaron, in sesquitertia esse, tonum in sesquioctava.
- Cap. xxv. Diapason ac diapente in tripla proportione esse; bisdiapason in quadrupla.
- Cap. xxvi. Diateffaron ac diapason non esse consonantiam, secundum Pythagoricos.

The two foregoing chapters have an immediate connection with each other; in the first it is demonstrated that the diapason and diapente conjoined, making together the consonant interval of a twelfth, are in triple proportion; and that the bisdiapason is in quadruple proportion, the ratios whereof are severally 3 to 1 and 4 to 1; but with respect to the diapason and diateffaron conjoined, the ratio whereof is 8 to 3, the interval arising from such conjunction is clearly demonstrated by Boetius to be dissonant: from hence arises an evident discrimination between the diateffaron and the other perfect consonances; for whereas not only they but their replicates are consonant, this of the diateffaron is simply a consonance itself, its replicates being dissonant. It is true that the modern musicians do not reckon the diateffaron in the number of the consonances; and whether it be a concord or a discord has been a matter of controversy; nevertheless it is certain that among the ancients it was always looked upon as a consonance, and that with so good reason, that Lord Verulam\* professes to entertain the same opinion; and yet after all, the imperfection which Boetius has pointed out in this chapter, seems to suggest a very good reason for distinguishing between the diateffaron and those other intervals, which, whether taken singly, or in conjunction with the diapason, are consonant.

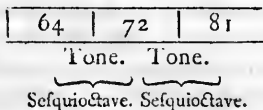
Cap. xxvii. De semitonio in quibus minimis numeris constat.

The arguments in this chapter are of such a kind, that it behoves every musician to be master of them. The ratios of the limma and apotome have already been demonstrated in those larger numbers

\* Nat. Hist. Cent. II. Numb. 107.

which Ptolemy had made choice of for the purpose. In this chapter Boetius gives the ratio of the limma in the smallest numbers in which it can possibly consist, that is to say, 256 to 243; and as this is the most usual designation of the Pythagorean limma, or the interval, which, being added to two sesquioctave tones, completes the interval of a diatessaron, it is a matter of some consequence to know how these numbers are brought out; and this will best be declared in the words of Boetius himself, which are as follow:

‘ The semitones seem to be so called not that they are exactly the halves of tones, but because they are not whole tones. ‘ The interval which we now call a semitone was by the ancients ‘ called a limma, or diesis; and it is thus found: if from the sesquitercia proportion, which is the diatessaron, two sesquioctave ratios, ‘ be taken away, there will be left an interval, called a semitone. ‘ To prove this, let us find out two consecutive tones; but because ‘ these, as has been said, are constituted in sesquioctave proportion, ‘ we cannot find two such, until that multiple from whence they are ‘ derived be first found: let therefore unity be first set down, and ‘ then 8, which is its octuple: from this we derive one multiple; ‘ but because we want to find two, multiply 8 by 8, to produce 64, ‘ which will be a second multiple, from which we may bring out ‘ two sesquioctave ratios; for if 8, which is the eighth part of 64, ‘ be added thereto, the sum will be 72; and if the eighth part of ‘ this, which is 9, be added to it, the sum will be 81; and these will ‘ be the two consecutive tones, in their lowest terms. Thus, set ‘ down 64, 72, 81.



‘ We are now therefore to seek a sesquitercia to 64; but it is found ‘ not to have a third part: wherefore, all these numbers must be ‘ multiplied by 3, and all remain in the same proportion as they were ‘ in before this multiplication by 3. Then three times 64 makes ‘ 192, to which if we add its third part, 64, the sum will be 256; ‘ which gives the sesquitercia ratio, containing the diatessaron. ‘ Then ‘ set down the two sesquioctaves to 192, in their proper order, ‘ that is, three times 72, which is 216, and three times 81, which is ‘ that

‘ that 243 : these two being set between the terms of the sesquitertia,  
‘ the whole will stand thus :

{	Tone	{	Tone	{	Semit.	}
	192		216		243	
	Diateffaron.					

‘ In this disposition of the numbers, the first constitutes a diatef-  
‘ faron with the last, and the first with the second, and also the  
‘ second with the third, do each constitute a tone ; therefore the  
‘ remaining intervals 243 and 256, is a semitone in its least terms.’

Cap. xxviii. Demonstrationes non esse, 243, ad 256, toni me-  
dietetatem.

That the limma in the ratio 256 to 243 is less than a true semi-  
tone, has been already demonstrated in the course of this work.

Cap. xxix. De majore parte toni in quibus minimis numeris  
constet.

The apotome has no place in the system, nor can it in any way be  
considered as a musical interval ; in short, it is nothing more than that  
portion of a sesquioctave tone that remains after the limma has been  
taken therefrom. For this reason, its ratio is a matter of mere cu-  
riosity ; and it seems from this chapter of Boetius, that the smallest  
numbers in which it can be found to consist, are those which Ptolemy  
makes use of, that is to say, 2187 to 2048.

Cap. xxx. Quibus proportionibus diapente, diapasen, constent,  
et quoniam diapasen sex tonis non constet.

The demonstrations contained in this chapter are levelled against  
the Aristoxenians, and declare so fully the sentiments of the Pytha-  
goreans, with respect to the measure of the consonant intervals, that  
they are worthy of particular attention, and cannot be better given  
than in the words of Boetius himself.

‘ The diapente consists of three tones and a semitone, that is, of a  
‘ diateffaron and a tone : for let the numbers 192, 216, 243, 256,  
‘ comprehended in the above scheme, be set down thus :

DIATESSARON								
	192		216		243		256	
	Tone		Tone		Semitone.			

‘ In



• In this disposition, the first number to the second and the second to the third, bear the proportions of tones, and the third to the fourth that of a lesser semitone, as has been shewn above. If then for the purpose of ascertaining the contents of the diapente, 32 be added to 256, the sum will be 288, which is another sesquioctave tone; for 32 is the eighth part of 256, and 256 to 288 is 8 to 9. The extreme numbers will then be 192 to 288, which is sesquialtera, the ratio of the diapente.

192	288
DIAPENTE	
Sesquialtera.	

• Finally, by comparing the first number with the second, the second with the third, and the fourth with the fifth, i. e. 288, it will plainly appear, first, that in the diapente are three tones, and a lesser semitone. If then the diatessaron consists of two tones and a lesser semitone, and the diapente of three tones and a lesser semitone; and if the diatessaron and diapente make up together the diapaſon, it will follow, that in the diapaſon are five tones and two lesser semitones, which joined together do not make up a full and complete tone, and therefore that the diapaſon does not consist of six tones, as Aristoxenus imagined, which also will evidently appear when these intervals are properly disposed in numbers. For let six octuples be thus produced :

1, 8, 64, 512, 4096, 32768, 262144.

• From this last number six tones, constituted in sesquioctave proportion, may be set down, with the octuple terms and their several eighth parts, in the order following :

		Octuples.		
		1, 8, 64, 512, 4096, 32768, 262144.		
Sesquioctaves.	{	262144 294912 331776 373248 419904 472392 531441	Eighth parts.	{
				32768 36864 41472 46656 52488 59049

‘ The nature of the above disposition is this : the first line contains the octuple numbers ; and the sesquioctave proportions in the first column are deduced from the last of them. The numbers contained in the second column are the eighth parts of those to which they are respectively opposite ; and if each of these be added to the number against it, the sum will be the number of the next sesquioctave, in succession. Thus, if to the number 262144 32768 be added, the sum will be 294912 ; and the rest are found in the same manner. And were the last number, 531441, duple to the first, 262144, then would the diapason truly consist of six tones ; but here it is found to be more ; for the duple of 292144 is 524288, and the number of the sixth tone is 531441. Hence it appears, that the consonant diapason is less than six tones ; and the excess of the six tones above the diapason is called a comma, which in its lowest terms is 52428 to 531441.

7153
524288      531441

COMMA, or the interval by which six tones exceed a diapason\*

## Six Octuples.

1	8	64	512	4096	32768	262144
	9	72	576	4608	36864	294912
		81	648	5184	41472	331776
			729	5832	46656	373248
				6561	52488	419904
					59049	472392
						531441

*All the diagonals are ninefold.*

The numbers in the upper row make six octuples, and those placed under them are sesquioctaves to each other in succession

\* This is called the Pythagorean comma, and is taken notice of by Merfennus, vide Harmonicor. de Diffonantiis, pag. 88. It is less than that of 81 to 80, called the comma majus, or ischisma, and is the difference between the greater and lesser tone.

In the third book Boetius continues his controversy with the Aristoxenians, who, as they assert that the diatessaron contains two tones and an half, and the diapente three tones and an half, must be supposed to believe that the tone is capable of a division into two equal parts, contrary to that maxim of Euclid, that ‘inter superparticulare non cadit medium,’ a superparticular ration cannot have a mediety. And Boetius, in the first chapter of his third book, with great clearness and precision demonstrates, that no such division of the tone can be made, as that which Aristoxenus and his followers contend for.

Lib. III. cap. i. Adversus Aristoxenum demonstratio, superparticularem proportionem dividi in æqua non posse, atque ideo nec tonum.

Cap. ii. Ex sesquitercia proportionem sublatis duobus tonis, toni dimidium non relinqui.

Cap. iii. Adversum Aristoxenum demonstrationes, diatessaron consonantiam ex duobus tonis et semitonio non constare, nec diapason sex tonis.

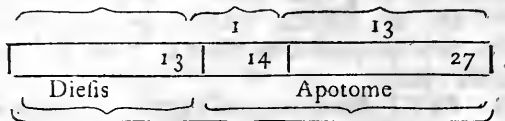
Cap. iv. Diapason consonantiam à sex tonis commate excedi, et qui sit minimus numerus commatis.

Cap. v. Quemadmodum Philolaus tonum dividat.

Pythagoras found out the tone by the difference of a fourth and fifth, subtracting one from the other; Philolaus, who was of his school, proceeded farther, and effected a division of the tone into commas. The manner of his doing it is thus related by Boetius:

Philolaus the Pythagorean tried to divide the tone, by taking the original of the tone from that number which among the Pythagoreans was esteemed very honourable: for as the number 3 is the first uneven number, that multiplied by 3 will give 9, which being multiplied by 3 will necessarily produce 27, which is distant from the number 24 by a tone, and preserves the same difference of 3; for 3 is the eighth part of 24, and being added thereto completes the cube of the number 3, viz. 27. Philolaus therefore divided this into two parts; one whereof was greater than the half, which he called the apotome; and the other less, which he termed the diesis, and those that came after him denominated a lesser semitone; and their difference he termed a comma. The diesis he supposed to consist of 13 unities, because he supposed that to be the difference between 243 and 256, and because the number 13 consisted of 9, 3, and

unity; which unity he considered as a punctum. 3 he considered as the first uneven number, and 9 as the first uneven square: for this reason, when he fixed the diesis or semitone at 13, he made the remaining part of the number 27, containing 14 unities to be the apotome. But because unity is the difference between 13 and 14, he imagined unity ought to be assigned to the place of the comma; but the whole tone he made to be 27 unities, that number being the difference between 216 and 243, which are distant from each other by a tone.



- Cap. vi. Tonum ex duobus semitoniiis ac commate constare.  
 Cap. vii. Demonstratio, tonum duobus semitoniiis commate distare.  
 Cap. viii. De minoribus semitonii intervallis.  
 Cap. ix. De toni partibus per consonantias sumendis.  
 Cap. x. Regula sumendi semitonii.  
 Cap. xi. Demonstratio Archytæ, superparticularem in equa dividi non posse ejusque; reprehensio.

It seems by this chapter, that this Archytas, who it is supposed was he of Tarentum, mentioned in the account herein before given of the genera and their species, was a Pythagorean. He it seems had undertaken to demonstrate that proposition of the Pythagorean school, that a superparticular ratio cannot be divided into two equally; but Boetius says he has done it in a loose manner, and for this he reprehends him. It may be inferred from this chapter, that some of the writings of Archytas on music were in being in the time of Boetius; but that there are none now remaining is agreed by all.

- Cap. xii. In qua numerorum proportione fit comma, et quoniam in ea quæ major fit quam 75 ad 74, minor quam, 74 ad 73.  
 Cap. xiii. Quod semitonium minus majus quidem fit quam 20 ad 19, minus quam 19½ ad 18½.  
 Cap. xiv. Semitonium minus, majus quidem esse tribus commatibus; minus vero quatuor.

Cap. xv. Apotome majorem esse quam 4 commata, minorem quam 5. Tonum majorem quam 8, minorem quam 9.

Cap. xvi. Superius dictorum per numeros demonstratio.

Lib. IV. cap. i. Vocum differentias in quantitate consistere.

Cap. ii. Diversæ de intervallis speculationes.

This, as its title imports, is a chapter of a miscellaneous kind. Among other things, it contains a demonstration somewhat different from that which he had given before, that six sesquioctave tones are greater than a duple interval. That they are so will appear upon a bare inspection of the following diagram.

Six sesquioctave proportions greater than a duple interval.						
Sesqui- octave.	Sesqui- octave.	Sesqui- octave.	Sesqui- octave.	Sesqui- octave.	Sesqui- octave.	Sesqui- octave.
A	B	C	D	E	G	K
262144.	294912.	331776.	373248.	419904.	472392.	531441.
The number A 262144. is half the underwritten number; and therefore the diapason is deficient of the number K by 7153.						

The duple interval reaches to 524288.

Cap. iii. Musicarum per Græcas ac Latinas literas notarum nuncupatio.

In this chapter are contained some of the principal characters used by the Greeks in their musical notation. It seems, that at the time when Glareanus published his edition of Boetius, they had been corrupted, which, considering they were arbitrary, or at best that they were the letters of the Greek alphabet reduced to a state of deformity, is not to be wondered at. Meibomius had the good fortune to get intelligence of an ancient manuscript here in England, in which this chapter was found, in a state of great purity. He had interest enough with Mr. Selden to get him to collate his own by it; and the whole is

very correctly published, and prefixed to the *Isagoge* of *Alypius*, in his edition of the ancient musical authors.

- Cap. iv. Monochordi regularis partitio in genere diatonico.
- Cap. v. Monochordi netarum hyperboleon per tria genera partitio.
- Cap. vi. Ratio superius digestæ descriptionis.
- Cap. vii. Monochordi netarum diezeugmenon per tria genera partitio.
- Cap. viii. Monochordi netarum synemmenon per tria genera partitio.
- Cap. ix. Monochordi meson per tria genera partitio.
- Cap. x. Monochordi hypaton per tria genera partitio, et totius dispositio descriptionis.
- Cap. xi. Ratio superius dispositæ descriptionis.
- Cap. xii. De stantibus et mobilibus vocibus.
- Cap. xiii. De consonantiarum speciebus.
- Cap. xiv. De modorum exordiis, in quo dispositio notarum per singulos modos ac voces.
- Cap. xv. Descriptio continens modorum ordinem ac differentias.
- Cap. xvi. Superius dispositæ modorum descriptiones.
- Cap. xvii. Ratio superius dispositæ modorum descriptionis.
- Cap. xviii. Quemadmodum indubitanter musicæ consonantiæ aure dijudicari possint.
- Lib. V. Proemium.

In this *Boetius* gives the form of the monochord, little differing from that of *Ptolemy* and *Porphyry* herein before described.

- Cap. i. De vi harmonicæ, et quæ sint ejus instrumenta judicii, et quo nam usque sensibus oporteat credi.
- Cap. ii. Quid sit harmonica regula, vel quam intentionem harmonici *Pythagorici*, vel *Aristoxenus*, vel *Ptolemæus* esse dixere.
- Cap. iii. In quo *Aristoxenus*, vel *Pythagorici*, vel *Ptolemæus* gravitatem atque acumen constare posuerint.
- Cap. iv. De sonorum differentiis *Ptolemæi* sententia.
- Cap. v. Quæ voces enharmoniæ sunt aptæ.
- Cap. vi. Quem numerum proportionum *Pythagorici* statuunt.

Cap.

- Cap. vii. Quod reprehendat Ptolemæus Pythagoricos in numero proportionum.
- Cap. viii. Demonstratio secundum Ptolemæum diapason et diateffaron consonantiæ.
- Cap. ix. Quæ sit proprietas diapason consonantiæ.
- Cap. x. Quibus modis Ptolemæus consonantias statuat.
- Cap. xi. Quæ sunt equisonæ, vel quæ consonæ, vel quæ emmelis.
- Cap. xii. Quemadmodum Aristoxenus intervallum consideret.
- Cap. xiii. Descriptio octochordi, qua ostenditur diapason consonantiam minorum esse sex tonis.
- Cap. xiv. Diateffaron consonantiam tetrachordo contineri.
- Cap. xv. Quomodo Aristoxenus vel tonum dividat vel genera ejusque divisionis dispositio.
- Cap. xvi. Quomodo Archytas tetrachordo dividat, eorumque descriptio.
- Cap. xvii. Quemadmodum Ptolemæus et Aristoxeni et Archytæ, tetrachordorum divisiones reprehendat.
- Cap. xviii. Quemadmodum tetrachordorum divisionem fieri dicat oportere.

C H A P. VII.

**F**ROM the foregoing extracts a judgment may be formed, not only of the work from which they are made, but also of the manner in which the ancients, more especially the followers of Pythagoras, thought of music. Well might they deem it a subject of philosophical speculation, when such abstruse reasoning was employed about it. To speak of Boetius in particular, it is clear that he was upon the whole a Pythagorean, though he has not spared to detect many of the errors imputed to that sect; and his work is so truly theoretic, that in reading him we never think of practice: the mention of instruments, nor of the voice, as employed in singing, never occurs; no allusions to the music of his time, but all abstracted speculation, tending doubtless to the perfection of the art, but seemingly little connected with it. Here then the twofold nature of music is apparent: it has its foundation in number and proportion; like geometry,

metry, it affords that kind of pleasure to the mind which results from the contemplation of order, of regularity, of truth, the love whereof is connatural with human nature ; like that too, its principles are applicable to use and practice. View it in another light, and if it be possible, consider music as mechanical, as an arbitrary constitution, as having no foundation in reason : but how exquisite is the pleasure it affords ! how subservient are the passions to its influence ! and how much is the wisdom and goodness of God manifested in that relation which, in the case of music, he has established between the cause and the effect !

That Boetius is an obscure writer must be allowed ; the very terms used by him, and his names for the proportions, though they are the common language of the ancient arithmeticians, are difficult to be understood at this time. Guido, who lived about five hundred years after him, scruples not to say, that ‘ his work is fit only for philosophers.’ It was, nevertheless, held in great estimation for many centuries, and to this its reputation many causes co-operated ; to which may be added that the Greek language was little understood, even by the learned, for a much longer period than that above mentioned ; and to those few that were masters of it, all that treasure of musical erudition contained in the writings of Aristoxenus, Euclid, Nicomachus, Ptolemy, and the rest of the Greek harmonicians, was inaccessible. So late as the time of our queen Elizabeth, it was doubted whether the writings of some of them were any where extant in the world\*.

For these reasons, we are not to wonder that the *Treatise de Musica* of Boetius was for many ages looked upon as the grand repository of harmonical science. To go no farther than our own country for proofs, the writings of all who treated on the subject before the beginning of the fourteenth century, and whose names are preserved in the collections of Leland, Bale, Pits, and Tanner, are but so many commentaries on him : nay, an admission to the first degree in music, in the universities of Oxford and Cambridge, was but a kind of manuduction to the study of his writings † ; and in the latter the exercise for a doctor’s degree was generally a lecture on Boetius ‡.

\* Morley, in the Peroratio to his Introduction.

† Wood, in the *Fasti*. Oxon. pag. 5 8. says, of bachelors of music, that they were such who were admitted to the reading any of the musical books of Boetius ; and in his account of John Mendus, a secular priest, who, anno 1535, supplicated for that decree, he obtained it with the privilege of reading Boetius. *Fasti*. Oxon. pag. 56.

‡ Athen. Oxon. passim.



And, to come nearer to our own times, Salinas and Zarlino have pursued the same train of reasoning that Boetius first introduced. If it be asked how has this contributed to the improvement of music, the answer is not easy, if the question refers to the practice of it; since what Merfennus and others have said is very true, that in the division of sounds we are determined wholly by the ear, and not by ratios; and therefore the makers and tuners of instruments are in fact, though they know it not, Aristoxenians; but if by Music we are to understand the Theory of the science, this method of treating it has contributed greatly to its improvement. This is enough to satisfy such as are aware of the importance of the theory in every science: those whose minds are too illiberal to conceive any thing beyond practice and mere manual operation or energy, might perhaps demand, What has theory, what have the ratios of numbers to do with an art, the end whereof is to move the passions, and not convince the understanding; were these considered, or even understood, by the ablest professors of the science; did Palestrina, Stradella, did Corelli adjust their harmonies by the monochord, or consult Euclid or Ptolemy when they composed respectively their motets, madrigals, and concertos; or is it necessary in the performance of them, that the singers, or any of those who perform on an instrument, the tuning whereof is not adjusted to their hands, perpetually bear in mind the true harmonic canon, and be aware of the difference between the greater and lesser tone, and the greater and lesser semitone; and that what in common practice is called a semitone, is in fact an interval in the ratio of 256 to 243, and unless so prolated is a dissonance? And after all it may perhaps be argued that this kind of knowledge adds nothing to the pleasure we receive from music.

To such as are disposed to reason in this manner it may be said, We all know that the dog who treads the spit-wheel; or, to go higher, the labourer that drives a wedge, or adds the strength of his arms to a lever, are ignorant of all but the effects of their labour; but we also know that the ignorance of the brute and of the uninstructed rational in this respect afford no reason why others are to remain ignorant too; much less does it prove it fruitless and vain for men of a philosophical and liberal turn of mind to attempt an investigation of the principles upon which these machines act\*.

\* The reader will find this argument much better enforced by the learned and ingenious author of a treatise intitled *Hermes* or a *Philosophical Inquiry concerning Universal Grammar*.

Farther, as a motive to the study of the ratios and coincidences of harmonic intervals, it may be said that the noblest of our faculties are exercised in it; and that the pleasure arising from the contemplation of that truth and certainty which are found in them, is little inferior to what we receive from hearing the most excellent music. And to this purpose the learned and ingenious Dr. Holder expresses himself in a passage which is inserted in a note subjoined\*.

After all, we ought not to estimate the works of learned men by the consideration of their immediate utility: to investigate is one thing; to apply, another; and the love of science includes in it a degree of enthusiasm, which whoever is without, will want the strongest motive to emulation and improvement that the mind is susceptible of. Is it to be conceived that those who are employed in mathematical researches attend to the consequences of their own discoveries, or that their pursuits are not extended beyond the prospect of bare utility? In short, no considerable progress, no improvement in any science can be expected, unless it be beloved for its own sake: as well might we expect the continuation of our species from principles of reason

Grammar. Here it was necessary to vary it, in order to adapt it to the present subject; but the author applies it to that of speech; the whole passage is very beautiful, and is as follows: ‘Methinks I hear some objector, demanding with an air of pleasantry and ridicule—Is there no speaking then without all this trouble? Do we not talk every one of us, as well unlearned as learned, as well poor peasants as profound philosophers? We may answer by interrogating on our part—Do not those same poor peasants use the lever and the wedge, and many other instruments, with much habitual readiness? And yet have they any conception of those geometrical principles from which those machines derive their efficacy and force? And is the ignorance of these peasants a reason for others to remain ignorant, or to render the subject a less becoming enquiry? Think of animals and vegetables that occur every day—of time, of place, and of motion—of light, of colours, and of gravitation—of our senses and intellects by which we perceive every thing else—That they are, we all know and are perfectly satisfied—What they are, is a subject of much obscurity and doubt; were we to reject this last question because we are certain of the first, we should banish all philosophy at once out of the world.’  
Hermes, pag. 293.

\* ‘And in searching, stating, and comparing the ratios of those intervals of sounds by which harmony is made, there is found so much variety and certainty, and facility of calculation, that the contemplation of them may seem not much less delightful than the very hearing the good music itself, which springs from this fountain; and those who have already an affection for music cannot but find it improved and much enhanced by this pleasant and recreating chase, as I may call it, in the large field of harmonic ratios and proportions, where they will find, to their great pleasure and satisfaction, the hidden causes of harmony (hidden to most, even to practitioners themselves) so amply discovered and laid plain before them.’ Natural Grounds and Principles of Harmony, chap. v.

and duty, abstracted from that passion which holds the animal world in subjection, and to which humane nature itself owes its existence \*.

Taking this for granted, the merit of Boetius will appear to consist in the having communicated to the world such a knowledge of the fundamental principles of the ancient music, as is absolutely necessary to the right understanding even of our own system: and this too at a period when there was little or no ground to hope for any other intelligence, and therefore Morley has done him but justice in the eulogium which he has given of him in the following words.

Boetius being by birth noble, and most excellent well versed in divinity, philosophy, law, mathematicks, poetry, and matters of estate, did notwithstanding write more of musick than of al the other mathematical sciences, so that it may be justly said, that if it had not beene for him the knowledge of musicke had not yet come into our westerne part of the world. The Greek tongue lying as it were dead under the barbarisme of the Gothes and Hunnes, and musicke buried in the bowels of the Greeke works of Ptolemæus

\* For the farther illustration of this proposition, viz. that knowledge is an object worthy to be pursued for its own sake, we must be indebted to the author above-cited, who to this purpose thus expresses himself: 'But a graver objector now accosts us. What (says he) is the utility, whence the profit, where the gain? Every science whatever (we may answer) has its use. Arithmetic is excellent for gauging of liquors; geometry for measuring of estates; astronomy for making of almanacks; and grammar perhaps for drawing of bonds and conveyances.

Thus much to the sordid—If the liberal ask for something better than this, we may answer, and assure them from the best authorities, that every exercise of the mind upon theorems of science, like generous and manly exercise of the body, tends to call forth and strengthen nature's original vigour. Be the subject itself immediately lucrative or not, the nerves of reason are braced by the mere employ, and we become abler actors in the drama of life, whether our part be of the busier, or of the sedater kind.

Perhaps too there is a pleasure even in science itself, distinct from any end to which it may be farther conducive. Are not health and strength of body desirable for their own sakes, though we happen not to be fated either for porters or draymen? And have not health and strength of mind their intrinsic worth also, though not condemned to the low drudgery of sordid emolument? Why should there not be a good (could we have the grace to recognize it) in the mere energy of our intellect, as much as in energies of lower degree? The sportsman believes there is good in his chace; the man of gaiety, in his intrigue; even the glutton, in his meal. We may justly ask of these, why they pursue such things; but if they answer they pursue them because they are good, 'twould be folly to ask them farther, why they pursue what is good. It might well in such case be replied on their behalf (how strange soever it may at first appear) that if there was not something good, which was in no respect useful, even things useful themselves could not possibly have existence. For this is in fact no more than to assert, that some things are ends, some things are means; and that if there were no ends, there could be of course no means.' *Hermes, pag. 294.*

' and Aristoxenus, the one of which as yet hath never come to light, but lies in written copies in some bibliothekes of Italy, the other hath been set out in print; but the copies are every where so scant and hard to come by, that many doubt if he have beene set out or no\*.'

Other improvements were reserved for a more enlightened age, when the study of physics began to be cultivated, when the hypotheses of the ancients were brought to the test of experiment; and the doctrine of pendulums became another medium for demonstrating the truth of those ratios which the ancient harmonicians had investigated merely by the power of numbers.

To the reasons above adduced in favour of the writings of Boetius, another may be added, which every learned reader will acquiesce in, namely, that he was the last of the Latin writers whose works have any pretence to purity, or to intitle them to the epithet of classical.

It must however be confessed that the treatise De Musica of Boetius is but part of a much larger discourse which he intended on that subject: most authors speak of it as of a fragment, and the very abrupt manner in which it concludes shews that he had not put the finishing hand to it. The whole of the five books extant are little more than an investigation of the ratios of the consonances, the nature of the several kinds of proportionality, and a declaration of the opinions of the several sects with respect to the division of the monochord and the general laws of harmony: these are, it is true, the foundations of the science, but there remained a great deal more to be said in order to render this work of Boetius complete; and that it was his design to make it so, there is not the least reason to doubt.

The desiderata of the ancient music seem to be the genera and the modes, and to these may be added the measure of sounds in respect of their duration, or, in other words, the laws of metre. It is to be observed that music was originally vocal, and in that species of it the voice was employed, not in the bare utterance of inarticulate sounds, but of poetry, to the words whereof correspondent sounds in an harmonical ratio were adopted, and therefore the duration of those sounds might be, and probably was determined by the measure of the verse, yet both were subject to metrical laws, which had been largely discussed

\* See the Peroratio to his Introduction, towards the end.

before the time of Boetius, and these it became a writer like him to have reduced to some standard.

Had Boetius lived to complete his work, it is more than probable that he would have entered into a discussion of the modes of the ancients, and not left it a question, as it is at this day, whether they regarded only the situation of the final or dominant note in respect of the scale; or whether they consisted in the different position of the tones and semitones in the system of a diapason. For the same reason we may conclude that, had not his untimely death prevented it, Boetius would have treated very largely on the ecclesiastical tones: he was a Christian, and, though not an enthusiast, a devout man; music had been introduced into the church-service for above a century before the time when he lived; St. Ambrose had established the chant which is distinguished by his name, and the ecclesiastical tones, then but four in number, were evidently derived from the modes of the ancients.

These are but conjectures, and may perhaps be thought to include rather what was to be wished than expected from a writer of so philosophical a turn as Boetius; we have nevertheless great reason to lament his silence in these particulars, and must impute the present darkness in which the science is unhappily involved, to the want of that information which he of all men of his time seems to have been the most able to communicate.

MAGNUS AURELIUS CASSIODORUS, senator, a christian, born at Brutium, on the confines of Calabria, flourished about the middle of the sixth century. He had a very liberal education considering the growing barbarism of the age he lived in, and by his wisdom, learning, and eloquence, recommended himself to the protection of the Gothic kings Theodoric and Athalaric, Amalafuentha the daughter of the former, Theodohadus her husband, and Vitiges his successor. Theodoric appointed him to the government of Sicily, in which province he gave such proofs of his abilities, that in the year 490 he made him his chancellor, and admitted him to his councils. After having filled several important and honourable posts in the state, he was advanced to the consulate, the duties of which office he discharged without any colleague in the year 514. He was continued in the same degree of confidence and favour by Athalaric, who succeeded Theodoric about the year 526; but in the year 537, being

dismissed from all his employments by Vitiges, he betook himself to a religious life. Trithemius says he became a monk, and afterwards abbot of the monastery of Ravenna; after which it seems he retired to the monastery of Viviers, in the extreme parts of Calabria, which he had built and endowed himself. In his retirement from the business of the world he led the life of a scholar, a philosopher, and a Christian, amusing himself at intervals in the invention and framing of mechanical curiosities, such as sun-dials, water hour-glasses, perpetual lamps, &c. He collected a very noble and curious library, and wrote many books himself, particularly Commentaries on the Psalms, Canticles, the Acts of the Apostles, the Epistles of St. Paul, and the Apocalypse, and a Chronology: farther he framed, or drew into one body, the tripartite history of Socrates, Sozomen, and Theodoret, translated by Epiphanius the scholastic. He wrote also *Institutionem Divinarum Lectionum*, in two books, which Du Pin says abounds with fine remarks on the Holy Scriptures, and a treatise *De Ratione Animæ*, which the same writer also highly commends. There are extant of his, twelve books of Letters, ten of which are written in the names of Theodoric and Athalaric, he being it seems secretary to them both; the other two are in his own name, and they all abound with a variety of curious and interesting particulars. He was also the author of a treatise *De septem Disciplinis*, or of the Arts of Grammar, Rhetoric, Logic, Arithmetic, Geometry, Music, and Astronomy\*; what he says of music is contained in one chapter or

\* This arrangement of the liberal sciences had been made before the time of Cassiodorus, as appears by the fable *De Nuptiis Philologiæ et Mercurii* of Martianus Capella, which contains a separate discourse on each of them. This division comprehends both the trivium and the quadrivium described in a preceding page Mosheim censures the professors, or scholastics, as they were called, of that day, for teaching the sciences in a barbarous and illiberal manner.

‘ The whole circle of sciences was composed of what they called the seven liberal arts, viz. grammar, rhetoric, logic, arithmetic, music, geometry, and astronomy; the three former of which they distinguished by the title of trivium, and the four latter by that of quadrivium. Nothing can be conceived more wretchedly barbarous than the manner in which these sciences were taught, as we may easily perceive from Alcuin’s treatise concerning them; and the dissertations of St. Augustin on the same subject, which were in the highest repute at this time. In the greatest part of the schools the public teachers ventured no farther than the trivium, and confined their instructions to grammar, rhetoric, and logic; they, however, who, after passing the trivium, and also the quadrivium, were desirous of rising yet higher in their literary pursuits, were exhorted to apply themselves to the study of Cassiodorus and Boethius, as if the progress of human knowledge was bounded by the discoveries of those two learned writers.’ *Ecclesiast. Hist. Cens. VIII. part ii. cap. 1.*

section

section of four quarto pages; in this he is very brief, referring very often to Gaudentius, Cenforinus, and other writers. His general division of music is into three parts, harmonic, rhythmic, and metric. His division of instrumental music is also into three parts, namely, percussional, tensile, and inflatile, agreeing in this respect with other writers of the best authority.

One thing worthy of remark in the treatise of Cassiodorus De Musica is, that he makes the consonances to be six, namely, the diatessaron, diapente, diapason, diapason and diatessaron, or eleventh, diapason and diapente, or twelfth, and, lastly, the bisdiapason; in which he manifestly differs from Boetius, whom he must have known and been intimate with, for Boetius has bestowed a whole chapter in demonstrating that the diapason cum diatessaron is not a consonant but a dissonant. Cassiodorus makes the number of the modes, or, as he calls them the tones, to be fifteen; from which circumstance, as also because he here prefers the word Tone to Mode, it may be concluded that he writes after Martianus Capella.

Cassiodorus died at his monastery of Viviers, about the year 560, aged above ninety. Father Simon has given a very high character of his theological writings; they, together with his other works, have been several times printed, but the best edition of them is that of Rohan, in the year 1679, in two volumes folio, with the notes and dissertations of Johannes Garetius, a Benedictine monk\*.

The several improvements of music hereinbefore enumerated, regarded chiefly the theory of the science, those that followed were for the most part confined to practice: among the latter none have a greater title to our attention than those made about the end of the

\* Upon the writings of the Latins the remark is obvious, that they added nothing to musical science; and indeed their inferiority to the Greeks, both in philosophy and the more elegant arts, seems to be allowed by the best judges of ancient literature.

Indeed in their practice of music they seem to have somewhat improved on that of their predecessors, as is evident from Vitruvius's description of the hydraulic organ, an instrument which Sidonius Apollinaris takes notice of in one of his epistles, where he speaks of the amusements of Theodoric, and particularly adds that he was wont to be entertained with the music of the hydraulic organ while he sat at dinner: and it is in the history of the period in which Boetius and Cassiodorus flourished, that we meet with the first intimation of such a profession as that of a teacher of music. The following is an epitaph in the epistles of the same Sidonius Apollinaris on one of this profession.

Orator Dialecticus Poeta  
 Tractator, Geometra, Musicus  
 Psalmorum Modulator, Phonascus  
 Instructas docuit sonare classes.

Lib. IV. pag. 143.

sixth century, by St. Gregory the Great, the first pope of that name, a man not more remarkable for his virtues than for his learning and profound skill in the science of music.

The first improvement of music made by this father consisted in the invention of that kind of notation by the Roman letters, which is used at this day. It is true that before his time the use of the Greek characters had been rejected; and as the enarmonic and chromatic genera, with all the various species of the latter, had given way to the diatonic genus, the first fifteen letters of the Roman alphabet had even before the time of Boetius been found sufficient to denote all the several sounds in the perfect system; and accordingly we find in his treatise *De Musica* all the sounds from *Proslambanomenos* to *Nete hyperboleon* characterised by the Roman letters, from A to P inclusive; but Gregory reflecting that the sounds after *Lychanos meson* were but a repetition of those before it, and that every septenary in progression was precisely the same, reduced the number of letters to seven, which were A, B, C, D, E, F, G; but, to distinguish the second septenary from the first, the second was denoted by the small, and not the capital, Roman letters; and when it became necessary to extend the system farther, the small letters were doubled thus, aa, bb, cc, dd, ee, ff, gg.

But the encreasing the number of tones from four to eight, and the institution of what is called the Gregorian Chant, or plain song, is the improvement for which of all others this father is most celebrated. It has already been mentioned that St. Ambrose when he introduced singing into the church-service, selected from the ancient modes four, which he appropriated to the several offices: farther it is to be observed, that to these modes the appellation of Tones was given, probably on the authority of *Martianus Capella*, who, as *Sir Henry Spelman* remarks, was the first that substituted the term Tones in the room of Modes. But we are much at a loss to discover more of the nature of the tones instituted by St. Ambrose, than that they consisted in certain progressions, corresponding with different species of the diapason; and that under some kind of regulation, of which we are now ignorant, the divine offices were alternately chanted, and this by the express institution of St. Ambrose himself, who all agree was the first that introduced the practice of alternate or antiphonal singing, at least into the western church; but it was such a kind



kind of recitation as in his own opinion came nearer to the tone of reading than singing\*.

Cardinal Bona † cites Theodoret, lib. IV. to prove that the method of singing introduced by St. Ambrose was alternate; and proceeds to relate that as the vigour of the clerical discipline, and the majesty of the Christian religion eminently shone forth in the ecclesiastical song, the Roman pontiffs and the bishops of other churches took care that the clerks from their tender years should learn the rudiments of singing under proper masters; and that accordingly a music-school was instituted at Rome by pope Hilary, or, as others contend, by Gregory the Great, to whom also we are indebted for restoring the ecclesiastical song to a better form; for though the practice of singing was from the very foundation of the Christian church used at Rome, yet are we ignorant of what kind the ecclesiastical modes were, before the time of Gregory, or what was the discipline of the singers. In fact the whole service seems to have been of a very irregular kind, for we are told that in the primitive church the people sung each as his inclination led him, with hardly any other restriction than that what they sung should be to the praise of God. Indeed some certain offices, such as the Lord's Prayer and the Apostle's Creed, had been used in the church-service almost from the first establishment of Christianity ‡; but these were too few in number to prevent the introduction of hymns and spiritual songs at the pleasure of the heresiarchs, who began to be very numerous about the middle of the sixth century, and that to a degree that called aloud for reformation. The evil increasing, the emperor Theodosius requested the then pope, Damasus, to frame such a service as should consist with the solemnity and decency of divine worship; the pope readily assented, and employed for this purpose a presbyter named Hieronymus, a man of learning, gravity, and discretion, who formed a new ritual, into which he introduced the Epistles, Gospels, and the Psalms ||, with the Gloria Patri and Alleluiah; and these, together with certain hymns which he thought proper to retain, made up the whole of the service.

\* Vossius De Scientiis mathematicis, cap. xxi. § 11.

† De Rebus Liturgicis.

‡ Nivers sur le Chant Gregorien, chap. i.

|| Ibid. Damasus is said to have first introduced the Psalms into the service. Platina in Damasus, Isaac. Chron. anno 371.

It is very doubtful whether any thing like an antiphony existed at this time, or indeed whether St. Ambrose did any thing more than institute the tones, leaving it to the fingers, under the regulations thereby prescribed, to adapt such musical sounds to the several offices as they should from time to time think fit; and to this the confusion that had arisen in the church-service was in a great measure owing. What methods were taken by Gregory to remedy this evil will be related in the following account of him.

### C H A P. VIII.

**G**REGORY the First, surnamed the Great, was born at Rome of an illustrious family, about the year 550. He studied with great success, and his quality and merit so recommended him, that the emperor Justin the younger made him prefect of that city. After he had held this high office for some time, he discovered that it made him too fond of the world, and thereupon he retired to a convent which he had founded in his own house at Rome; but he was soon called out of this retirement by pope Pelagius II. who, in 582, made him one of his deacons, and sent him to Constantinople, there to reside in the court of the emperor Tiberius, in quality of his nuncio or surrogate, though his immediate business there was to solicit succours against the Lombards. Upon the death of Tiberius in 586, Gregory returned to Rome, and was there employed as secretary to Pelagius; but at length he obtained of him leave to retire again to his monastery, the government whereof he had formerly bestowed on an ecclesiastic named Valentius, whom for his great merit he had taken from a monastery in the country. Here he thought to indulge himself in the pleasures of a studious and contemplative life, but was soon drawn from his retirement by a contagious disease, which at that time raged with such violence, that eight hundred persons died of it in one hour\*. To avert this calamity Gregory quitted his retreat, came forth into the city, and instituted litanies and a sevenfold procession, consisting of several orders of the people, upon whose arrival

\* One of the symptoms of this disease was a violent sneezing, which was looked upon as mortal, and upon this occasion gave rise to the ejaculation 'God bless you!' in favour of such as were suddenly taken with that convulsion. Isaacson's Chronology, anno 590.

at the great church it is said the distemper ceased. Of this disease Pelagius himself died, and by the joint suffrage of the clergy, the senate, and people of Rome, Gregory was chosen for his successor; but he was so little disposed to accept this dignity, that he got himself secretly conveyed out of the city in a basket, thereby deceiving the guards that were set at the gates to hinder his escape, and went and hid himself in a cave in the middle of a wood; but being discovered, he was prevailed on to return, and was consecrated on the third of September 590, and was the first of the popes that used the style ‘*Servus servorum Dei.*’ He was of a very infirm and weakly constitution, but had a vigorous mind, and discharged the duties of his station with equanimity and firmness. He possessed a great share of learning, and was so well skilled in the tempers and dispositions of mankind, that he made even the private interests and ambitious views of princes subservient to the ends of religion. One of the greatest events which by his prudence and good management he brought about during his pontificate, was the conversion of the English to Christianity, which, as related by Bede, makes one of the prettiest stories in our history. But what gives him a title to a place in this work is his having effected a reformation in the music of the church\*.

Maimbourg in his *Histoire du Pontificat de St. Gregoire* has collected from Johannes Diaconus and others, all that he could find on this subject. The account given by him is as follows.

‘ He especially applied himself to regulate the office and the singing of the church, to which end he composed his antiphony—  
 ‘ nothing can be more admirable than what he did on this occasion.  
 ‘ Though he had upon his hands all the affairs of the universal  
 ‘ church, and was still more burthened with distempers than with  
 ‘ that multitude of business which he was necessarily to take care of  
 ‘ in all parts of the world, yet he took time to examine with what

\* Johannes Diaconus, who wrote the life of this pope, says that he imitated the most wise Solomon in this respect; and that he with infinite labour and great ingenuity composed an antiphony; and other writers add a gradual also, not in the way of compilation, or by collecting the offices therein contained, but that he dictated or pointed, and actually neumatized the musical cantus both to the antiphony and gradual. Neuma is a word possibly derived from the Greek *πνευμα*, and, as explained by Sir Henry Spelman, signifies an aggregation of as many sounds as may be uttered in one single respiration. Spelm. Gloss. voce NEUMA: and in this sense it is used by Guido himself, Franchinus, and other writers.

' tunes the psalms, hymns, oraisons, verses, responses, canticles,  
 ' lessons, epistles, the gospel, the prefaces, and the Lord's Prayer  
 ' were to be sung; what were the tones, measures, notes, moods  
 ' most suitable to the majesty of the church, and most proper to in-  
 ' spire devotion; and he formed that ecclesiastical music so grave and  
 ' edifying, which at present is called the Gregorian music. He  
 ' moreover instituted an academy of singers for all the clerks to the  
 ' deaconship exclusively, because the deacons were only to be em-  
 ' ployed in preaching the Gospel and the distributing the alms of the  
 ' church to the poor; and he would have the singers to perfect them-  
 ' selves in the art of true singing according to the notes of his music,  
 ' and to bring their voices to sing sweetly and devoutly; which, ac-  
 ' cording to St. Isidore, is not to be obtained but by fasting and ab-  
 ' stinence: for, says he, the ancients fasted the day before they were  
 ' to sing, and lived for their ordinary diet upon pulse, to make their  
 ' voices clearer and finer; whence it is, that the heathens called  
 ' those singers bean-eaters\*. \* \* \* \* However, St. Gregory took  
 ' care to instruct them himself, as much a pope as he was, and to  
 ' teach them to sing well. Joannes Diaconus says, that in his time,  
 ' this pope's bed was preserved with great veneration, in the palace  
 ' of St. John of Lateran, in which he sung, though sick, to teach the  
 ' singers; as also the whip, wherewith he threatened the young clerks  
 ' and the singing boys, when they were out, and failed in the notes.'

The account given by Johannes Diaconus is somewhat more parti-  
 cular than that of Maimbourg, and is to this effect: ' Gregory insti-  
 ' tuted a singing school, and built two houses for the habitation of the  
 ' scholars, and endowed them with ample revenues; one of these  
 ' houses was near the stairs of the church of St. Peter, and the other  
 ' near the Lateran palace. For many ages after his death, the bed  
 ' on which he modulated as he lay, and the whip which he used to  
 ' terrify the younger scholars, were preserved with a becoming vene-  
 ' ration, together with the authentic antiphony, above said to have  
 ' been compiled by him †.'

\* ' Pridie quam cantandum erat cibus abstinebant psallentes, legumine in causa vocis  
 ' assidue utebantur, unde et cantores apud gentiles Fabarii dicti sunt.' Isid. de Eccl.  
 ' Offic. lib. II. cap. xii.

† ' Deinde in domo Domini (Divus Gregorius) more sapientissimi Salamonis propter  
 ' musicæ compunctionem dulcedinis, antiphonarium centonem cantorum studiosissimus  
 ' nimis utiliter compilavit. Scholam quoque cantorum, quæ hæctenus ejusdem institutioni-  
 ' bus

Other additions to and improvements of the service are attributed to St. Gregory. It is said, that he added the prayers, particularly this, ‘Diesque nostros in pace disponas,’ and the Kyrie Eleeson; and the Alleluia, both which he took from the Greek liturgy; and that he introduced many hymns, and adopted the responsaria to the lessons and gospels: nay, some have gone so far as to assert that he invented the stave. Kircher speaks of a MS. eight hundred years old, which he had seen, containing music, written on a stave of eight lines; but Vincentio Galilei, in his Dialogo della Musica, shews that it was in use before Gregory’s time †: this is a matter of some uncertainty; but the merit of substituting the Roman letters in the room of the Greek characters, the reformation of the antiphonary, the foundation and endowment of seminaries for the study of music and the introduction of four additional tones, are certainly his due; and these are the chief particulars which historians have insisted on, to shew Gregory’s affection for music. The augmentation of the tones must doubtless be considered as a great improvement; the tones, as they stood adjusted by Saint Ambrose, were only four, and are defined by a series of eight sounds, in the natural or diatonic order of progression, ascending from D, from E, from F, and from G, in the grave, to the same sounds in the acute.

But before the nature of this improvement can be understood, it must be premised, that although the ecclesiastical tones, consisting merely of a varied succession of tones and semitones, in a gradual ascent from the lower note to its octave, answer exactly to the several

‘bus in Sancta Romana Ecclesia modulatur constituit; eique cum nonnullis prædiis duo habitacula; scilicet, alterum sub gradibus Basilicæ B. Petri Apostoli, alterum verò sub Lateranensis Ecclesiæ Patriarchii domibus fabricavit; ubi usque hodie lectus ejus, in quo recubans modulabatur, et flagellam ipsius, quo pueris minabatur veneratione congrua, cum authentico antiphonario reservatur.’ Johann. Diacon. in Vita Greg. lib. II. cap. vi.

Johannes Diaconus flourished about the year 880; so that these relics might have been two hundred and seventy years old at the time when he wrote the life of Gregory.

† It is worthy of remark, that the musical stave has varied in its limits since it was first invented. By the passage in Galilei above referred to, it seems to have been originally contrived to include the system of a diapason, as containing eight lines; on which only, and not in the spaces, the points or notes were originally placed: Guido Aretinus, by making use of the spaces, reduced it to five lines. After his time, that is to say in the thirteenth century, the stave was finally settled at four lines, in consequence. It is supposed, of that correction of the antiphonary of the Cistercian order, which St. Bernard undertook and perfected some years before; and this number has ever since been found sufficient for the notation of the Cantus Gregorianus.

keys, as they are called by modern musicians; yet in this respect they differ; for in modern compositions the key-note is the principal, and the whole of the harmony has a relation to it; but the modes of the church suppose another note, to which that of the key seems to be but subordinate, which is termed the Dominant, as prevailing, and being most frequently heard of any in the tone; the other, from whence the series ascends, is called the Final †.

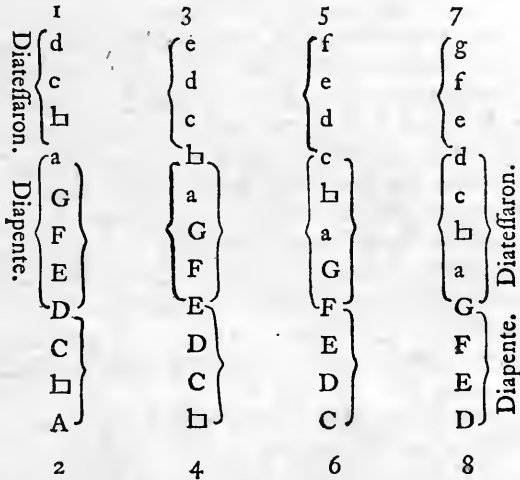
Farther, to understand the nature and use of this distinction between the dominant and final note of every tone, it is to be observed, that at the introduction of music into the service of the Christian church, it was the intent of the fathers that the whole should be sung, and no part thereof said or uttered in the tone or manner of ordinary reading or praying. It seemed therefore necessary, in the institution of a musical service, so to connect the several parts of it as to keep it within the bounds of the human voice; and this could only be done by restraining it to some one certain sound, as a medium for adjusting the limits of each tone, and which should pervade the whole of the service, as well the psalms and those portions of scripture that were ordinarily read to the people, as the hymns, canticles, spiritual songs, and other parts thereof, which, in their own nature, were proper to be sung.

Hence it will appear, that in each of the tones it was necessary not only that the concords, as, namely, the fourth, the fifth, and the octave, should be well defined; but that the key-note should so predominate as that the singers should never be in danger of missing the pitch, or departing from the mode in which the service should be directed to be sung; this distinction, therefore, between the dominant and final, must have existed at the very time of instituting the Cantus Ambrosianus, and the same prevails at this day.

The characteristics of the four primitive modes were these: in each of them the diatessaron was placed above the diapente, which is but one of the two kinds of division of which the diapacon is susceptible. Gregory was aware of this, and interposed four other tones between the four instituted by St. Ambrose, in which the diapente held the uppermost place in the diapacon: in short, the tones of St. Ambrose arise from the arithmetical, and those of St. Gregory from the har-

† Niv. sur le Chant Gregorien, chap. xii.

monical, division of the diapason\*. The addition of the four new tones gave rise to a distinction which all the writers on the subject have adopted; and accordingly those of the first class have the epithet of Authentic, and the latter that of Plagal: the following diagram may serve to shew the difference between the one and the other of them.



Occasion has already been taken to remark, that there are three different species of diatesaron, and four of diapente; and that from the conjunction of these two, there arises seven species of diapason. Authors have differed in their manner of characterising these several systems, as may be seen in Bontempi, who calls the comparison of them an unprofitable operation †. That of Gaffurius seems best to correspond with the notions of those who have written professedly on the Cantus Gregorianus, particularly of Erculeo, who, in his treatise, intitled *Il Canto Ecclesiastico*, has thus defined them :

\* We have no authentic formula of the tones in musical characters more ancient than what is to be found in the writings of Franchinus: there is indeed one in MS. in the British Museum, which was part of the Cotton library, Nero, A. xii. 13. beginning ‘ Si vis scire artem musicam;’ but the notes, which were written in red ink, are effaced by time.

† Hist. Mus. pag. 177.

THREE Species of DIATESSARON.

I.	II.	III.
Re	Sol	Mi
	La	Fa
		Fa

FOUR Species of DIAPENTE.

I.	II.	III.	IV.
Re	La	Mi	Mi
	Mi	Fa	Fa
		Do	Sol

SEVEN Species of DIAPASON.

I.	II.	III.	IV.
Re	La	Mi	Mi
	Mi	Fa	Fa
		Re	Sol

V.	VI.	VII.
Mi	La	Fa
	Fa	Do
		Sol

I.	II.	III.	IV.	V.	VI.	VII.	VIII.
Sentenziose.	Mette.	Disflegno.	Pacifiche.	Allegre.	Flebile.	Divote.	Misteriose.
D.	E.	F.	G.				



It now remains to shew how the tones correspond with the seven species of diapason; and this will most clearly appear from the description which Gaffurius has given of them in his *Practica Musicae utriusque Cantus*, lib. I. wherein he says,

‘ The first tone is formed of the first species of diapente, between D SOL RE and A LA MI RE, and the first species of diatessaron from the same A LA MI RE to D LA SOL RE in the acute, constituting the fourth species of diapason, D d.

‘ The second is formed of the same species of diapente and diatessaron; but so disposed as to form the first species of diapason, A a.

‘ The third is formed of the second species of diapente, between E LA MI, grave, and H MI; and the second species of diatessaron from the same H MI, to E LA MI, acute, constituting the fifth species of diapason, E e.

‘ The fourth is formed of the same species of diapente and diatessaron; but so disposed as to form the second species of diapason, H h.

‘ The fifth is formed of the third species of diapente, between F FA UT, grave, and C SOL FA UT; and the third species of diatessaron, from the same C SOL FA UT to F FA UT, acute; constituting the sixth species of diapason, F f.

The sixth is formed of the same species of diapente and diatessaron; but so disposed as to form the third species of diapason, C c.

‘ The seventh is formed of the fourth species of diapente, between G SOL RE UT, grave, and D LA SOL RE; and the first species of diatessaron from the same D LA SOL RE, to G SOL RE UT, acute; constituting the seventh species of diapason, G g.

‘ The eighth is formed of the same species of diapente and diatessaron; but so disposed as to form the fourth species of diapason, D d, which is the characteristic of the first tone: but the dominant of the one being A, and that of the other G, there is an essential difference between them.’

Hence it appears, that the difference between the Authentic and Plagal Modes, arises from the different division of the diapason in each; the Authentics being divided in harmonical, and the Plagals in arithmetical proportion. The nature of these is fully explained in the treatise *De Musica* of Boetius, lib. II. cap. xii.; and by Dr.

Holder, in his treatise of the Natural Grounds and Principles of Harmony, chap. v. \*

From the principles laid down by the latter of these writers †, it will follow, that taking the numbers 12, 9, 8, 6, to express the proportion of the diapason, and its component intervals, the diatessaron and diapente; when the division of the diapason is thus, 12, 9, 6, or A D a, giving to the diatessaron the lowest position, the proportion is arithmetical: When it is 12, 8, 6, or A E a, in which the diapente holds the lowest place, it is harmonical ‡.

Having adjusted the number and limits of the tones, Gregory proceeded to the invention of a Cantus, such as he thought would be consistent with the gravity and dignity of the service to which it was to be applied. A plain unisonous kind of melody, frequently inflected to the concords of its key, seemed to him the fittest for this purpose; and having prescribed a rule to himself, as well as to others, he proceeded to apply to the divine offices that kind of Cantilena which prevails in the Roman church even at this day; and which is known in Italy by the name of Canto Fermo, in France by that of Plain Chant, and in Germany and most other countries by that of the Cantus Gregorianus. Cardinal Bona gives this description of it: ‘The cantus  
‘instituted by Saint Gregory was plain and unisonous, proceeding by  
‘certain limits and bounds of tones, which the musicians term  
‘Modes or Tropes, and define by the octonary number, according to  
‘the natural disposition of the diatonic genus.’

Considering that the right understanding of the ecclesiastical tones is essential to the regular performance of choral service, it is not to be wondered at, that almost every writer on music, who professes to treat the subject at large, has taken them under his consideration; and though it may seem, that after they were first established and promulgated through the church, they ceased to be an object worthy the attention of theorists in musical science, yet there is no assignable period

\* See an extract from it, supra, chap. v.

† Vide Hold. pag. 86.

‡ Malcolm, in his Treatise of Musick, page 162, says that the arithmetical division puts the 5th next the lesser extreme, and the harmonical next the greater, as in the numbers 6, 8, 9, 12, as they certainly do. Again he says, page 563, that the harmonical division places the 5th lowest, which is also true; hence it appears that he looks upon the lesser extreme to be the lowest position, but in this he errs; for if six parts give a, twelve must give the octave below it, i. e. A. Bontempi is also grossly erroneous in pages 70 and 173, et seq. of his history, and has made strange confusion, by giving the smaller number to the graves, and the larger to the acutes, and in the consequent misapplication of the adverbs *setto* and  *sopra*.

in which it was not necessary to review them, and purge them from those errors which the levity and inattention of the singers were from time to time, introducing; for, for near a century after Gregory's time, innovations of this kind were so frequent, that it seemed hardly possible to preserve the Cantus Gregorianus in any degree of purity; and, therefore, the court of Rome was continually troubled with applications from the princes of Europe, expressing their fears that the Cantus Gregorianus was in danger of being lost, and praying its interposition in order to its restoration.

A more particular account of these applications, and the success they met with will shortly follow; they are mentioned in this place to shew that the Cantus Gregorianus was esteemed a matter of great importance in divine worship, and to account in some measure for the numerous tracts that are extant in the world concerning it.

## C H A P. IX.

**I**N the earlier ages the treatises written with a view to preserve the integrity of the ecclesiastical tones, were composed in monasteries: Guido Aretinus, a Benedictine monk, in a tract entitled *Micrologus*, a very particular account whereof will hereafter be given, has bestowed three chapters on the explanation of the modes or tropes, which are no other than the eight ecclesiastical tones. Many other discourses on the same subject are also extant in manuscript; and in print they are innumerable.

Of manuscripts none can pretend to greater authority than the *Micrologus* of Guido Aretinus, the twelfth, thirteenth, and fourteenth chapters whereof contain a general description of the eight ecclesiastical modes, tropes, or tones, but without any distinction of their respective finals and dominants. In a manuscript in the library of Baliol college, containing the *Micrologus* of Guido, and several other musical tracts, is a dialogue beginning with these words ' *Quid est Musica?*' in which the tones are treated with a somewhat less degree of obscurity; but this also is defective in that it contains no Formula to ascertain the relation between the Dominant and the Final in each of them. But the manuscript of greatest value and curiosity, in respect of its copiousness and perspicuity, of any now extant, is

one on vellum with the following title, ' Hunc Librum vocitatum Musicam Guidonis scripsit Dominus Johannes Wylde, quondam exempti Monasterii Sancta Crucis de Waltham Præcentor,' the property of Mr. West now president of the Royal Society, and which formerly belonged to Tallys, as appears by his hand-writing on a blank leaf thereof \*. In this book, of which a more particular account will be given hereafter, are contained a great number of discourses on the subject of music, composed by sundry persons, as namely, the above-mentioned Johannes Wylde, Kendale, Johannes Torkesey, Thomas Walsyngham, Lyonell Power, Chilston, and others; and among these are several short tracts on the tones or tropes as they are called. The first in the book, which seems to have been not barely copied, but composed by Wylde, is on the subject of what he calls Guidonian music. It is divided into two parts, the one treating of Manual, i. e. elementary music, from the figure of the left hand, which Guido is said to have made use of for explaining his system; and the other of Tonal music, containing the doctrine of the ecclesiastical tones.

In the thirteenth chapter of this second part of Wylde's tract it is said that all the tones are produced from the seven species of diapason; but as there are eight of the former, and only seven of the latter, the author first takes upon him to explain how the eighth tone was generated: he says that Ptolemy considered the seventh species as produced from the third, and thought that the fourth was also capable of producing another tone, which he added to the seven, making thereby an eighth: he adds, that he disposed one after another, the fifteen letters, which comprehended the bisdiapason; constituting A for the first note thereof, and P for the last; and having drawn seven semicircles, which pointed out seven species or tones, he added the eighth, extending from the middle letter  $\square$  or H to the last letter P; which was the only eighth that wanted a semicircle;

\* This manuscript past through the hands of Morley, and was of great use to him in the annotations on his Introduction: many years after his death it had for its owner Mr. Powle, speaker of the house of commons in the reign of king William; from him it came to lord Somers; and after his decease to Sir Joseph Jekyll, at an auction of whose books it was bought by a country organist, and he in gratitude for some kindnesses done him, prest the acceptance of it on its present worthy possessor. A copy of it was found in the library of Dr. Pepusch upon his decease, but it is from the original that this and the subsequent extracts from it are taken.

pointing out thereby the fourth species, which has its mediation in G, in which the eighth tone is terminated : and this, says he, Boetius asserted to be the eighth mode or tone which Ptolemy superadded. The same author observes that though the species are Eight, yet the genera of tones are in truth but Four, each being divided into authentic and plagal ; and that each genus is by some writers termed a *Maniera*, which appellation he rejects, as coming from the French. He says that no cantus in any of the tones can with propriety exceed the limits of a tenth ; and so indeed do all the writers on this subject\*.

In the same manuscript are several other tracts, one in particular composed by a certain monk of Sherborne, in metre, tending to explain the precepts of what was then called tonal music.

Many other manuscripts on this subject there are, which, by the assistance of the printed catalogues may be found ; but as a comparison of the several definitions therein contained, might introduce a degree of confusion which no diligent enquirer would wish to encounter, it is safest to rely on those authors who have written since the invention of printing, and whose works have stood the test of ages.

Of these Gaffurius, as he is of the greatest antiquity, so is he of unquestionable authority. In his book intitled *Practica Musicae utriusque Cantus*, printed in the year 1502, he has entered into a large discussion of the ecclesiastical tones, and has exhibited them severally in the following forms.

\* This rule must be understood as referring only to that unisonous cantus which is used in the intonation of the psalms and other parts of the service, and not to that of the antiphons and hymns ; for to these a double, triple, and frequently a quadruple cantus is adapted ; and in these the interior parts have often anomalous initials and finals ; and in the extreme parts the ambit of the grave and acute sounds will often necessarily exceed the interval of a tenth.

## TONE I.

Primus tonus sic incipit sic mediatur & sic fini

Seculo rum a men Euouae Euouae

## TONE II.

Secundus tonus sic in-ci-pit sic me-di-a-tur

& sic fini-tur Euouae

## TONE III.

Tertius tonus sic incipit sic me-di-a-tur & sic

fi ni tur Euouae Euouae

## TONE IV.

Quartus tonus sic incipit sic me-di-a-tur & sic

fi ni tur Euouae Euouae

TONE V.

357.

Quintus tonus sic in-ci-pit sic me-di-a-tur  
& sic fi ni tur Euouae

TONE VI.

Sextus tonus sic in-ci-pit sic me-di-a-tur  
& sic fi ni tur

TONE VII.

Vel sic

Septimus tonus sic incipit sic media-tur & sic  
fi ni tur Euoua e Euouae Euoua e

TONE VIII.

Vel sic folennis

Octauus tonus sic incipit sic me-di-a-tur  
& sic fi ni tur Euouae

The above characters exhibit the essential parts of each of the tones, that is to say, the beginning, the mediation, and the close, which is generally contained in the *Euouae*, a word, or rather a compages of letters, that requires but little explanation, being nothing more than the vowels contained in the words *Seculorum Amen*; and which whenever it occurs, as it does almost in every page of the antiphonary, is meant as a direction for singing those words to the notes of the *Euouae*.

From *Gaffurius* the tones have been continued down to this time, through all the books that have been written on the subject of music at large, in almost every country in Europe. Of those written professedly on the ecclesiastical tones, there are two that merit a particular attention, the one entitled *Armonia Gregoriana*, by *Gerolamo Cantone*, Master of the Novices, and vicar of the convent of *St. Francis*, at *Turin*, published in 1678, oblong quarto. The other has the title of *Il Canto Ecclesiastico*, the author *D. Marzio Erculeo*, printed at *Modena* in 1686, in small folio.

The first of these books contains the rudiments of singing, and the most important rules for the *Canto Fermo*, which for the most part are comprized in short memorial verses. The author has given a brief designation of the eight tones, but in his twenty-second chapter, entitled *De' Toni Misti*, he has assumed a licence which seems unwarranted by any precedent, at least in ancient practice, of combining together the first and second, the third and fourth, the fifth and sixth, and the seventh and eighth tones, and thereby exceeded the limits prescribed by the ancient writers, who all concur in restraining the *canto fermo* to the ambit of a tenth.

The latter of these books gives very ample directions for the singing of all the offices in the Roman service, and a representation of the tones in the following order.



The first Tone has its final in D. and its dominant in A.<sup>359</sup>  
 the fifth above its final and is intonated by RE. LA.

I  
 RE. LA. FA SOLLALA &c. EVOVAE  
 Final in D. dominant in F. a third above; intonated RE. FA.

II  
 RE FA. DO. RE. FA &c: EVOVAE  
 Final in E. dominant in C. a sixth above; intonated MI. FA.

III  
 MI FA. DO RE FA FA &c: EVOVAE  
 Final in E. dominant in A. a fourth above; intonated MI. FA.

IV  
 MI. LA. RE. DO RE RE &c: EVOVAE  
 Final in F. dominant in C. a fifth above; intonated FA. FA.

V  
 FA. FA. FARE FA FA &c: EVOVAE  
 Final in F. dominant in A. a third above; intonated FA. LA.

VI  
 FA. LA. FA SOLLALA &c: EVOVAE  
 Final in G. dominant in D. a fifth above; intonated UT. SOL.

VII  
 DO SOL FA mi fa sol sol &c: EVOVAE  
 Final in G. dominant in C. a fourth above; intonated DO. FA.

VIII  
 DO FA DO RE FA FA &c: EVOVAE

In Ex-i-tu If-rael de Egypto Domus EVOVAE

There is also another tone used in the Romish service, called by some of the writers on the *Cantus Gregorianus*, *Il Tuono Pellegrino*, i. e. the Wandering Tone; and by others *Tuono Misto*, or mixed; the manner in which it is intoned appears by the last stave in the preceding plate.

The writers on the *Cantus Gregorianus* have assigned to each of the eight ecclesiastical tones a peculiar character, supposing that each is calculated to excite different affections of the mind: this notion is to the last degree fanciful, as will appear from what Bontempi and Kircher severally say touching the power and efficacy of each\*. *Erculeo* has distinguished them in the manner represented at the end of his scheme of the species of diatessaron, diapente, and diapasen, herein before inserted †.

The consequence of these and other publications of the same import, was that the doctrine of the *Cantus Gregorianus* was rendered so perspicuous, and the forms of the tones so well established, that they became familiar even to children; but the stability they had acquired was not so great, but that about the beginning of the seventeenth century the levity and wantonness of the singers gave reason to fear the corruption of them ‡. It was about this time that the theatric style of music began to be formed, in the performance whereof *Castrati*, and others with flexible and extensive voices, were principally employed; these singers, for very obvious reasons, made use of divisions and all the other usual artifices to excite applause; and these were so grateful to the ears of the vulgar, that the singers employed in the choral service became infected with the like passion, and so mutilated and distorted the *Cantus Gregorianus*, that the dignity and simplicity of it was almost lost. This gave occasion in the year 1683 to an excellent French musician, *Guillaume Gabriel*

\* Vide Bontemp. pag. 241. Kirch. *Musurg.* lib. VIII. pag. 142.

† Doctor *Pepusch*, in his short Introduction to Harmony, pag. 65, has remarked of the key E that it differs from all others, as in truth it does; for it has for its second a semitone, for which reason, and because of certain peculiarities in the modulation of it, and which render it very solemn; he says it is as it were appropriated to church-music, and called by the Italians *Tuono di Chiesa*.

This assertion of the Doctor may possibly be well grounded, but it is to be remarked that no such distinction occurs in the writings of *Guido* or *Franchinus*, or any of the other authors who have been consulted in the course of this work, for the purpose of explaining the *Cantus Gregorianus*, and the nature of the ecclesiastical tones.

‡ *Erculeo*, pag. 52.

Nivers, organist of the chapel of Lewis XIV. and master of music to his queen \*, to publish a book entitled *Dissertation sur le Chant Gregorien*. In the composition of this learned and judicious work, the author appears to have derived great assistance from the writings of Amalarius Fortunatus and St. Bernard, and from Cardinal Bona's book *De Rebus Liturgicis*, Durandus's *Rationale Divinorum Officiorum*, and, above all, from a more modern author, named Peytat, who wrote a history of the chapel of the king of France, a book abounding with a great variety of curious particulars.

Nivers succeeded so well in his endeavours to reform the *cantus ecclesiasticus*, that he was employed by the king to correct the Roman antiphony, for the use of the churches in France; and the editions of that great volume since his time, bear testimony to the skill and industry which he must have exercised in so laborious and important a reformation. In short, he has not only reduced the tones to the standard of primitive purity, but has given such directions for the performance of the *Cantus Gregorianus*, and guarded so well against innovations in it, that there is very little reason to fear the loss of this precious relic of antiquity.

\* Nivers was also organist of the church of St. Sulpice, in Paris. He was the author of a book, entitled, *Traite de la Composition de Musique*, printed at Amsterdam, in octavo, 1697, and of some motets and pieces for the organ, which are also in print.

G E N E R A L H I S T O R Y  
O F T H E  
S C I E N C E and P R A C T I C E  
O F  
M U S I C.



B O O K I V. C H A P. I.

**T**HE first eight chapters of Nivers's Dissertation sur le Chant Gregorien, contain a history of the primitive institution of it, and a vindication of the practice of antiphonal singing in general, from Socrates, Theodoret, and other ecclesiastical writers, with answers to the objections of such as either denied its authority or had contributed to the increase of those errors in the practice of it which it is the purpose of his book to detect and reform.

In the ninth chapter the author enumerates the several characters necessary in the notation of it, and describes them thus :

• Twelve characters are sufficient for the plain-song ; the first consists of four lines, upon which, and in the spaces between them, all the notes are situate ; the fifth line, which certain innovators have added, is useless and embarrassing.

• The second character is the key of C SOL UT FA, or else by the

• method of the SI ; the key of C SOL UT made thus  or thus 

• cannot be situate but on the first, the second, or the third, and



• never or very rarely on the fourth, because the key on the second



• line with a b soft commonly in B, has altogether the same effect


• as the same key on the fourth line without b soft ; for it is always said the note on this fourth line is always sung UT, and the other

• notes,

• notes consecutively in order. This is to be understood of the song,  
 • but not of the organ or other instruments.

• The third character is the key of F UT FA, made thus  or  
 • thus  which is generally situated on the second line, and some-  
 • time, but very rarely, upon the first.

• The fourth and fifth characters are the two notes, the long and  
 • the breve, made thus  , but as the number of characters neces-  
 • sary in it is one of the grand questions relating to the cantus, we  
 • defer speaking of it till in the next chapter, to confute the opinion  
 • of those who admit but one of them, namely, the long\*.


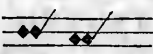
• The sixth and seventh characters are the two bars; the great and  
 • the less, made thus  which are used to denote the place  
 • where all the choir together ought to take breath and make  
 • a little pause. These are the same in a song as stops are to words,  
 • wherefore we always at two points or a colon, and sometimes at  
 • commas, put a great bar to make the song complete, answering to  
 • a full stop. The principal use of the lesser bar is to give time for  
 • the whole choir together to draw breath, to the end that none of the  
 • singers may go on faster than the rest, and that the uniformity of the  
 • cantus may be preserved by all, and in all with an equal measure.  
 • At the end of every piece there are put two great bars to mark the end  
 • of the song; these bars are the most efficacious contrivance that can


\* Nivers, in the subsequent chapter, undertakes the discussion of a question which it seems had subsisted for a long time, namely, how many characters or marks of time were necessary in the cantus ecclesiasticus? He contends that no more than two, namely, the long and the breve, are admissible into it; for this he cites the acts of the council of Rheims in 1564, in which it was decreed that the cantus should contain but one note on a syllable, and that the quantities of each should be observed in the notation. He seems to think that this was the very reformation intended by the council of Trent, in that decree of it which is mentioned by Father Paul, pag. 559. of his history, to have been made in 1562, against over-curious and wanton singing. He also cites Rabanus Maurus to prove that all clerks should perfectly understand the nature of the accents, and accommodate their notation to it. Farther he asserts, on the authority of Radulphus, that in the gradual of the blessed Gregory at Rome there are but few notes, and that there is reason to believe that many characters in those of an hundred years after him have no warrant for their admission.

In the course of this disquisition Nivers seems not to be in the least aware of a reformation of the cantus ecclesiasticus made by Palestrina and Francesco Suriano, about the year 1580, which consisted in the reduction of the characters to three, namely, the long, the breve, and the semibreve; and is expressly mentioned by Marzio Ercoleo, in his Discourse on the Cantus Ecclesiasticus above-cited.

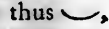
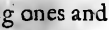
• be thought on to remedy all the cacophonies and contrarieties  
 • the voices of the singers, who, without them, could not guess  
 • when to rest; but the abuse of these bars is become almost general,  
 • for the markers or writers of notes and the printers imagine  
 • there must be one at every word; so that if there are four, five, six, or  
 • seven monosyllables following one another, they put as many bars  
 • as there are notes, as if all the notes were not of themselves as well  
 • separated, without bars, as the words are. St. Bernard speaks of  
 • this confusion in these words: “ What sort of liberty is this  
 • which introduces the confusion of uncertainty, &c.” And in effect  
 • this confusion of bars is of no service, since all the notes are of  
 • themselves as distinct as the words; and all these bars are not  
 • only useless and embarrassing, but they yet (which is remarkable)  
 • destroy the benefit of their institution, because the singers, no  
 • longer knowing where to repose themselves, some stop while others  
 • advance, which occasions the greatest disorders in the song; and the  
 • excess of bars puts the song again into its former abuse, when it  
 • had no bars, which we see in the more ancient manuscripts.

• The eighth character is the guidon, made upon the line, or

• in the space thus  or thus  to mark where  
 • the following note will be situate in the other line.

• The ninth character is the bemol, made thus in a space, but  
 • rarely on a line  which is always marked in B, and very rarely  
 • in E.

• The tenth is the point • between two short notes: the use of it is  
 • to augment the precedent one, and diminish that following it, to ob-  
 • serve a certain regulated measure, for example, that of two times.  
 • Sometimes the point is also put between a long note and a short  
 • one; and in such case it only augments the long note with the half  
 • of its own value, so that the point and the following breve con-  
 • sidered together complete the just measure of a long note.

• The eleventh character is the bond or joining, made thus ,  
 • or thus , which serves to tie two or more notes, or long ones and  
 • breves on one and the same syllable, to keep the regulated measure.

\* This is the form of the guidon in ancient missals, and other books written or printed with musical notes: it is an indication of the first note in a succeeding stave, and is that note in a smaller character. This kind of guidon is now disused, and has given place to that other above described.

‘ The last character is the diesis, made thus ✕, or thus x; the use of it is to soften the following note, or that above or under which it is placed; the dieses are rarely marked in the plain-song, because the voice itself naturally leads to it\*.

Having thus explained the characters, Nivers, in his twelfth book, proceeds to a discrimination of the tones by the finals and dominants of each in their respective order, in the words following:

‘ The first has its final in D, and its dominant in A, the fifth to its final; RE LA.’

\* The following directions of Nivers contain the principal rules to be observed in the performance of the cantus ecclesiasticus.

‘ To begin to sing or intonate an anthem, or any other part of the office whatsoever, the rule is to attend particularly to the dominant of the choir, which ought to be regulated according to the voices which compose it; for it would be acting quite contrary to nature and reason to pretend to establish the same dominant for the low, the middle, and the highest voices.

‘ To arrive at a perfect knowledge of these things, it ought to be known that the whole song consists in eight modes or tones, which may be reduced to four by their finals, and even to two, by only the difference of the greater third and the lesser third.

‘ The uneven tones, which are only so termed, as being distinguished by the odd numbers 1, 3, 5, 7, are called authentics or principals: the others are named plagals or dependents, because they have one and the same final each with their authentic, and thus the first and second have one and the same final, so the third and fourth, the fifth and sixth, the seventh and eighth; all their difference consists only in the extent, which in the authentics is above, and in the plagals below.

‘ Every tone has two essential chords, called the final and the dominant, upon which all sorts of songs turn and are founded. The final is that by which the tone ought for the most part to begin, but always to end. The dominant is that which rules or prevails the oftenest in the song, and upon which the tenor of the psalms, oraisons, and all that is to be sung strait forward, or nearly strait forward, is made. Wherefore this dominant ought to be a little higher than the middle of the natural voice, and not lower, because that in all the tones the extent of the notes is greater below than above the dominant; but it is not a small difficulty to take it just and in a good pitch.

‘ For the common and ordinary voices they put the dominant of the choir in A of the organ; I mean the organs which have the tone of the king’s chapel, which all the famous organs of Paris and elsewhere have, wherefore this tone is called the tone of the chapel, to distinguish it from the tone of the king’s chamber, which is a semitone higher, and so commonly are, or ought to be, the organs in nunneries; the nuns having generally an extent of voice higher by an octave than the common voices of men.

‘ For the low voices they put the dominant in G of the organ.

‘ For the high voices they put the dominant in B of the organ.

‘ For the voices of religious women they put the dominant in C, or even in D of the organ, according to the quality of the voices.

‘ The first thing therefore that ought to be known is the dominant of the choir, which is only a general sound, or tone if you will, and not fixed to any note or degree, that is to any rule or interval on which this dominant can be placed.

‘ The second thing to be observed is the mode or tone of the anthem which is to be sung, and to regulate the dominant of the anthem to the unison of the dominant of the choir which performs it, and then to proceed from this dominant regularly, and pass through

‘ The second has its final in D, and its dominant in F, a third to its final; RE FA.’

‘ The third has its final in E, and its dominant in C, a sixth to its final; MI UT\*.’

‘ The fourth has its final in E, and its dominant in A, a fourth to its final; MI LA.’

‘ The fifth has its final in F, and its dominant in C, a fifth to its final; UT SOL, or else FA UT with B  $\bar{\text{L}}$ , not b.’

‘ The sixth has its final in F, and its dominant in A, a third to its final; UT MI, or else FA LA, with B  $\bar{\text{L}}$ , not b.’

‘ The seventh has its final in G, and its dominant in A, a fifth to its final; SOL RE.’

‘ The eighth has its final in G, and its dominant in C, a fourth to its final; SOL UT.’

The dissertation of Nivers contains also Formulæ Cantus Ordinarii Officii Divini. These he has given in Latin, together with the musical notes: they contain directions for singing the oraisons and responses, and for reading the prophets, the epistles, and gospels, and for the intonation of the psalms. There are also several litanies and antiphons, and that famous lamentation of the Virgin, in monkish rhyme,

Stabat mater dolorosa  
Juxta crucem lachrymosa.

The formula of the tones intitled Tabula tonorum, is also given in musical characters, and contains the following examples:

‘ through all the degrees as far as the note by which the anthem ought to begin; for example, if I would intonate the first anthem of the Feast of the Holy Sacrament, “ Sacerdos in æternum,” I sing slowly the dominant of this anthem, which is LA, to the unison of the dominant of the choir, and descend by degrees to the final of the anthem, by which it begins, singing LA, SOL, FA, MI, RE, to find the just tone of the first note of the said anthem, “ Sacerdos in æternum,” and after the same manner in other anthems and tones. But one should not be ignorant of the essential chords of every tone.’

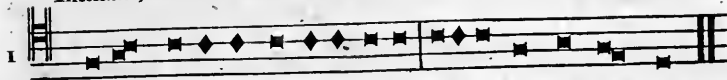
It should seem by these several tracts of Erculeo and Nivers, and other authors who might be named, that the doctrine of the tones is now so well established, that there is not the least reason to fear any corruption of them. In England the little book entitled A pious Association, published for the instruction of persons of the Romish persuasion in the true church plain-song, contains a formula of the eight tones, exactly corresponding with that of Nivers above given; and it farther appears, that in the seminaries throughout Italy it is taught to children in a way that admits of no variation. In short, its principles seem to be as well understood as those of arithmetic, or any other mathematical science.

\* According to the French method of solmifation; but Erculeo makes it LA.

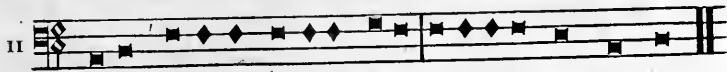


Intonatio; Tractus Notarum; Mediatio; Tractus Terminatio

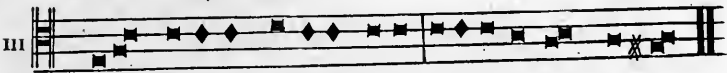
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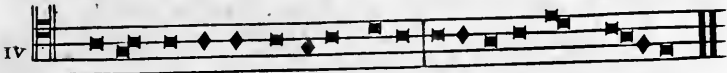
Dixit Dominus Domino meo: Sede à dextris me - is.



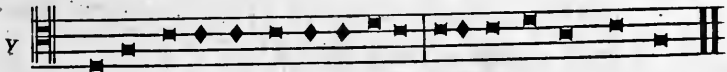
Dixit Dominus Domino meo: Sede à dextris me - is.



Dixit Dominus Domino meo: Sede à dextris me - is.



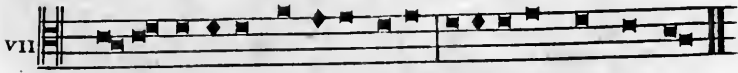
Dixit Dominus Domino meo: Sede à dextris me - is.



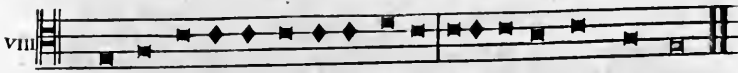
Dixit Dominus Domino meo: Sede à dextris me - is.



Dixit Dominus Domino meo: Sede à dextris me - is.



Dixit Dominus Domino meo: Sede à dextris me - is.



Dixit Dominus Domino meo: Sede à dextris me - is.

To facilitate the remembrance of the formula of each of the tones, and particularly to impress upon the minds of children the finals and dominants that characterise them, memorial verses have been composed, of which the following are a specimen.

Primus habet tonus F SOL LA, sextus et idem :  
 UT RE FA octavus : fit tertius, atque secundus :  
 LA SOL LA quartus : dant UT MI SOL tibi quintum :  
 Septimus at tonus FA MI FA SOL tibi monstrat.

Septimus et sextus, dant FA MI RE MI quoque primus.  
 Quintus et octavus, dant FA SOL FA sicque secundus.  
 SOL FA MI RE FA tertius, RE UT RE MI reque quartus.

Primus cum quarto dant A LA MI RE, quoque sextus.  
 E FA UT secundus : C SOL FA UT tertius tibi notat,  
 Cum eo quintus, octavusque signat ibidem :  
 Septimus in D LA SOL RE suum ponit EUOUEAE.

By the foregoing deduction of the nature of the Cantus Gregorianus, nothing more is intended than to explain its original form, for it will be observed that none of the authors above-cited presume to make any additions to, or amendments of it, on the contrary they labour to represent it in its purity, and to preserve it from corruption. This was evidently the design of Nivers ; and his book, which is of the controversial kind, is calculated to correct certain abuses in the service that arose from the wantonness and levity of the singers, and were peculiar to his time ; but the Cantus Gregorianus suffered greatly from corruptions that were the effect of ignorance, and which took place within a century after its institution ; and these corruptions, their nature and causes, and the methods taken to remove them by the several princes of Europe, especially those of Germany, France, and England, make a very considerable part of the History of Music, and therefore require to be particularly mentioned ; and if the foregoing digression may seem to deviate from the rule which chronology prescribes in the relation of events, let it be remembered that in this case a strict adherence to it would have been absurd ; for who can understand a relation of the several corruptions of the Cantus Gregorianus, who is not first made-

sensible.

sensible of its nature and application ; in short, who has not a clear conception of the thing itself, in its original state of purity and perfection.

That the Cantus Gregorianus became corrupt in a short time after its institution, may be gathered from the ecclesiastical and other writers, from the seventh century downwards. Saint Bernard, in a preface to the antiphony of the Cistercians, has enumerated many abuses, disorders, and irregularities which had crept into the church-service before his time, and this even at Rome itself : he speaks of the singers of his time as ignorant and obstinate to a degree that is scarce to be credited ; for he represents them as confounding the rules, and preferring error to truth ; and referring to an Antiphon, ‘ Nos qui vivimus, the proper termination whereof is in D, he adds, that those unjust prevaricators, the singers of his time, would terminate it in G, and assert with an oath or wager, that it was of the eighth tone.

Sir Henry Spelman (whom Gerard Voffius has followed, in an account given by him of this matter) \* upon the authority of an anonymous commentator on Hugo Reutlingensis, relates that the Cantus Gregorianus was very much corrupted by the Germans. The words of the author thus referred to are, ‘ Certain Germans, and particularly the clergy of the order of St. Benedict, who had learned perfectly and by heart the musical cantus, not only theoretically, but also by practice and exercise, leaving out the keys and lines which are required in the musical Neuma, † note or character, began to note them down simply in their books ; and after that, their successors sung in the same manner, and taught their scholars, not theoretically, but by frequent practice and long exercise ; which cantus thus learned by practice, became various in different places, wherefore it was then termed practice, usus ‡, and not music. In this cantus however the scholars afterwards began to differ in many things from their masters, and the masters from their scholars ; from which difference, and the ignorance of the theory,

\* Voci Frigidæ. Sed vide Ger. Voff. De Scientiis Mathematicis, cap. xxi. §. 12.

† This word, which Sir Henry Spelman has elsewhere said is synonymous with the noun Note, has two significations ; that which Gassurius has given of it is its primitive and true one ; and he says it is an aggregation of as many sounds or notes as may be conveniently uttered in one single respiration. Vide Spelman's Gloss. voce NEUMA ; and Gassurius, Pract. Mus. lib. I. cap. viii. Probably it is derived from the Greek Πνευμα.

‡ For which reason, the terms Salisbury use, Hereford use, the use of Bangor, York, Lincoln, are taken to describe the ritual of those several cathedrals in the preface to the book of Common Prayer.

‘ the practice was said to be confused, which confused practice being  
 ‘ despised, almost all the Germans, who were hitherto miserably se-  
 ‘ duced by that cantus, are returned to the true art.’

These corruptions, according to the author above-cited, seem to have been peculiar to Germany; but there were others of an earlier date which prevailed in France and also in Britain, for the latter of which countries Gregory seems to have entertained such a degree of affection, as makes it highly probable that the inhabitants of it were some of the first people to whom the knowledge of the Cantus Gregorianus was communicated, and that they became Christians and singers at one and the same period.

The history of the conversion of the Saxon inhabitants of this island to christianity in the year 585, is related by all our historians, particularly by Bede, whose account of it, as exhibiting a very natural representation of the simplicity of manners which then prevailed, is here inserted.

‘ It is reported that merchants arriving at Rome, when on a  
 ‘ certain day many things were to be sold in the market-place,  
 ‘ abundance of people resorted thither to buy, and Gregory himself  
 ‘ with the rest, where, among other things, boys were set to sale  
 ‘ for slaves, their bodies white, their countenance beautiful, and  
 ‘ their hair very fine: having viewed them, he asked, as is said,  
 ‘ from what country or nation they were brought, and was told  
 ‘ from the island of Britain, whose inhabitants were of such a pre-  
 ‘ fence\*. He again enquired whether those islanders were Christians,  
 ‘ or still involved in the errors of paganism, and was informed that  
 ‘ they were pagans. Then fetching deep sighs from the bottom of  
 ‘ his heart, “ Alas! what pity said he, that the author of darkness  
 ‘ is possessed of men of such fair countenances, and that being re-  
 ‘ markable for such graceful aspects, their minds should be void of  
 ‘ inward grace.” He therefore again asked what was the name of  
 ‘ that nation, and was answered, that they were called Angles:  
 ‘ Right, said he, for they have an angelical face, and it becomes  
 ‘ such to be coheirs with the angels in heaven. What is the name,  
 ‘ proceeded he, of the province from which they are brought?”  
 ‘ It was replied, that the natives of that province were called Deiri †,

\* William Thorn, a monk of St. Augustine’s Canterbury, says there were three of these boys: ‘ *Vidit in foro Romano tres pueros Anglicos lactei candoris.*’ Decem Scriptores, pag. 1757.

† i. e. of Deirham, or Durham.

“ Truly Deiri, said he, withdrawn from wrath and called to the  
 “ mercy of Christ. How is the king of that province called ?”  
 • They told him his name was Elle ; and he, alluding to the name,  
 • said, “ Hallelujah, the praise of God the creator must be sung in  
 • those parts.” Then repairing to the bishop of the Roman and  
 • apostolical see (for he was not himself then made pope) he intreated  
 • him to send some ministers of the word into Britain, to the nation  
 • of the English, by whom it might be converted to Christ \*.

The above relation is very characteristic of the humanity and simplicity of the reverend father. Fuller, who labours hard to make all mankind as merry as himself, thinks that in his ready application of the answers of the merchants to his purpose, his wit kept pace with his benevolence, and having a mind to try whether he could not be as witty as the father, he has given the whole conversation a dramatic turn, by putting it into the form of a dialogue †.

The sight of these children, and the knowledge which Gregory thereby acquired of this country and its inhabitants, were the motives for sending Augustine the monk hither, with whom, as we are expressly told by Johannes Diaconus, who wrote the Life of St. Gregory, singers were also sent with Augustine, then going to Britain, and afterwards dispersed through the west, who thoroughly instructed the barbarians in the Roman institution. The same author proceeds to relate that after the death of these men ‡ the

\* Bed. Hist. Ecclesiast. lib. II. cap. i.

† Church Hist. of Britain, Cent. VI. book ii.

‡ The names of the singers who came into Britain with Augustine are no where particularly mentioned. We learn however from Bede that the church song was at first only known in Kent ; that afterwards, that is say about the year 620, when Paulinus became bishop of the Northumbrians, a deacon of his, named James, had rendered himself very famous for his skill in the church song ; and that Wilfrid, a succeeding bishop of the same see, about the year 664 invited out of Kent Eddi, surnamed Stephen, for the purpose of teaching the same in the several churches of the Northumbrians. Farther, Bede gives a particular account of John the singer above-mentioned, whom he styles archchanter or precentor of the church of the holy apostle Peter, and abbot of the monastery of St. Martin, and elsewhere singer of the apostolic see: he says he was sent into Britain by pope Agatho, that he might teach the method of singing throughout the year, as it was practised at St. Peter's at Rome ; and that he settled in a monastery which Egfrid king of the Northumbrians had founded at the mouth of the river Wire. He farther says that John did as he had been commanded by the pope, teaching the singers of this monastery the order and manner of singing and reading aloud, and committing to writing all that was required throughout the whole course of the year for celebrating festivals, all which were in Bede's time observed in that monastery, and transcribed by many others elsewhere: he says farther that the said John did not only teach the brethren of that monastery, but that such as

modulation of the western churches became very corrupt, and continued so till pope Vitalianus the First, who introduced the organ into the choral service, sent John, a famous Roman singer, together with Theodore, afterwards archbishop of Canterbury, by the way of

had skill in singing resorted from almost all the monasteries of the same province to hear him.

The reverend Mr. Johnson, late of Cranbrook in Kent, has given a summary of this relation, with his own sentiments thereon, in a book which hardly any one now looks into, but which abounds with a great variety of curious learning, his Collection of Ecclesiastical Laws; in the general preface to which he says, upon the authority of Bede, that pope Agatho, above eighty years after Augustine's coming over, sent John, the precentor of St. Peter's church in Rome, to instruct the monks of Wirmuth in the annual course of singing; and that he did accordingly teach them the order and rite of singing and reading in the celebration of feasts through the circle of the whole year, and that he wrote down and left behind him whatever was requisite to this purpose. And that the sum of what he taught them consisted in new tunes or modes of music, some variations of habit, gesture, and perhaps of the series of performing religious offices according as the fashions had been altered at Rome since Augustine's coming hither—that he taught them *viva voce*, and what he wrote down concerned only the celebration of the festivals—that John was sent to one monastery only, and is not said to have taught any but the Northumbrians.—That upon Theodore's first coming to Canterbury, which was ten or twelve years before this, the Roman way of singing was well known in Kent, and then began to be taught in other churches—that Wilfrid soon after invited Eddi, otherwise called Stephen, out of Kent into the North, to teach this practice there.—But thirty-five years before Theodore's arrival, James the Kentish deacon had been left at York by Paulinus when he retired to Rochester, on purpose to teach them the way of singing used by the Romans and the Kentish. The same author adds as a conjecture of his own, that it is probable that neither of these Kentish singing-masters went farther than Hexham, however not to Wirmuth.

The same Collection contains a decree of the Roman council, which as it relates to music, and was made to reform an abuse of it that prevailed about this time, it may not be improper here to mention. By this act it is decreed that bishops, and all whatsoever that profess the religious life of the ecclesiastical order, do not use weapons, nor keep musicians of the female sex, nor any musical concerts whatsoever, nor do allow of any buffooneries or plays in their presence.

Of James, the deacon of Paulinus above-mentioned, he says that he lived to his [Bede's] time. If so, and considering that Paulinus was bishop of Northumbria, in which province Bede's monastery was situate, it is more than probable that Bede and James were intimately acquainted.

Bede also mentions as living in the time of Theodore, Putta, a man of great simplicity in his manners, extremely well versed in ecclesiastical discipline, and remarkably skilful in church-music, and who, on account of these his excellencies, was preferred to the see of Rochester. Mention will be made of this person hereafter, in the interim it is to be observed, that the testimony of Bede is of great weight in all matters that relate to church discipline, and that hardly any man of his time was better acquainted with the music of the church than himself: in a summary of his own life, at the end of his Ecclesiastical History, he mentions his being a priest of the monastery of Wiremouth, the very monastery where John the precentor settled upon his arrival in Britain; and that he there applied himself to the meditation of scripture, the observance of regular discipline, and the daily care of singing in the church; and that he always delighted in learning, teaching, and writing.

France

France into Britain, who corrected the abuses that had crept into the church-service of this, as it should seem, favourite people.

Farther he says, that afterwards the Gregorian chant became again corrupt, particularly in France, for which reason Charlemagne sent two clerks to Rome with a request to Adrian, the then pope, that they might be instructed in the rudiments of the genuine Roman song; these brought back the metropolis of Metz to its original purity of singing, and that city communicated its example to all France. The same author adds that the death of these two men produced the same effect; though in a less degree, in France, as that of the others had done in Britain; wherefore the king wrote again to Adrian, who sent him two singers, who found that the church of Metz had deviated a little from the true rule of singing, but the other churches a great deal. The same author adds, that this diversity was remarkable in his time, for that the rest of the French and all the German churches were then as much inferior in the purity of their choral service to that of Metz, as the latter were to the Roman; but for the present he says these men reduced the church of Metz to order.

Monsieur Nivers, from Peytat, a modern writer, and a countryman of his, who it seems wrote an ecclesiastical history of the chapel of the king of France, cites the following passage:

Pope Stephen II. being constrained to seek to Pepin king of France for protection of the holy see against the Lombards, arrived in that kingdom so soon after Pepin's ascent to the throne, as to perform the ceremony of his consecration in the abbey-church of St. Denys. From Rome the pope had brought with him chaplains and singers, who first made it their business to instruct the choir of St. Denys in the Roman office; and afterwards, for the pope made a considerable stay in France, assisted in communicating the knowledge of it to the other churches in that kingdom. At that time the chapel of Pepin consisted of the very flower of the clergy, and, with the assistance of the Romans, not only the plain-chant but the use of instruments was spread throughout the realm. This reformation it is true did not last long, for upon the death of Pepin his son Charlemagne found the choral service in as great disorder as ever, which, says the monk of St. Cibard of Angoulesme, was the reason that induced this emperor to apply to Adrian for assistance from Rome.

## C H A P. II.

THE account given of this matter by another ancient writer, a monk of St. Gal, is that the pope sent to France, at the request of the emperor Charlemagne, twelve excellent singers, answering to the number of the apostles, whose instructions were to reform the music of the French churches, and regulate the service, so as that there might be an uniformity in this respect throughout the kingdom; but that these men, jealous of the glory of France, in their way thither plotted to corrupt and diversify the plain-chant in such a manner as to increase the confusion in which it was involved, and thereby render the people for ever incapable of performing it correctly. As soon as they arrived in France, where they were received with great honour, they were, by order of the emperor, dispersed to different parts of the kingdom; but how well they answered the purpose of sending for them, the event soon shewed; for every man teaching a different chant for the true one of St. Gregory, which they were sent for to restore to its original purity and propagate, the confusion was greater than ever\*.

The emperor it seems was too well skilled in music for this deceit to pass upon him unnoticed: he had, in the life-time of his father, heard the true Roman chant at Treves, where he had passed the Christmas, and at Metz also he had been present when it was sung in its perfection; but after the arrival of these people, spending part of that festival at Paris and the rest at Tours, he was surprised to hear a melody different from that which before he had so much admired; his disappointment excited in him a curiosity to hear the service as it was performed in the other churches; but among the singers he found such a disagreement, that he complained to the pope of the behaviour of those whom he had sent; the pope recalled them to Rome, and condemned some of them to banishment, and the rest to perpetual imprisonment. After this it was that Adrian sent to France the two singers who reformed the French church-music, as above is related.

\* Vid. Niv. sur le Chant. Greg. chap. iv. pag. 33.



None of the historians who relate the transactions of this period, except Baronius, assign the reason of the emperor's application to pope Adrian for assistance in the reformation of choral music in his kingdom of France. It seems that that pope had established the use of the Cantus Gregorianus by the decree of a council, which he had summoned for that purpose, and that his zeal to render it universal was the effect of a miracle, which, if we may believe the writers of those times, had then lately been wrought in its favour. It is said, that after the death of Gregory the method of singing instituted by him began to decline, and the Ambrosian cantus to revive. Adrian had entertained an opinion of the superior excellence of the former, and was determined to establish the use of it throughout the church; for this purpose he summoned a council above-mentioned, who being unable to determine the preference between the one and the other of the offices, referred the decision of the matter to God, and a miracle announced that the preference was due to the Gregorian office.

Durandus has given a very circumstantial relation of this extraordinary event in the following words\*.

• We read in the life of St. Eugenius that till his time the  
 • Ambrosian office was more used by the church than the Gre-  
 • gorian: pope Adrian summoned a council, by which it was  
 • decreed that the Gregorian ought to be universally observed.  
 • Moreover St. Eugenius coming to a certain council, summoned  
 • for this purpose, and finding that it had been already dissolved  
 • three days, he persuaded the lord pope to recall all the prelates who  
 • had been present thereat. The council, therefore, being reassem-  
 • bled, it was the unanimous opinion of all the fathers, that the Am-  
 • brosian and Gregorian missals should be laid upon the altar of St.  
 • Peter the apostle, secured by the seals of most of the bishops, and  
 • the doors of the church shut, and that all persons present should  
 • spend the night in prayer that God would shew by some sign which  
 • of these missals he chose to have used by the church; and this was  
 • done in every respect. Accordingly, in the morning, when they en-  
 • tered the church they found the Gregorian missal torn to pieces,  
 • and scattered here and there, but they found the Ambrosian only

\* Afterwards pope; the second of that name. Du Pin, Hist. Eccl. vol. III. pag. 6.

‘ open upon the altar, in the same place where it had been laid.  
 ‘ By which sign they were taught from heaven that the Gregorian  
 ‘ office ought to be dispersed throughout the whole world, and that  
 ‘ the Ambrosian should be observed only in that church in which it  
 ‘ was first instituted. And this regulation prevails to the present day ;  
 ‘ for in the time of the emperor Charles, the Ambrosian office was  
 ‘ very much laid aside, and the Gregorian, by the imperial  
 ‘ authority, was brought into common use. Ambrose instituted  
 ‘ many things according to the ritual of the Greeks.’ Gulielm. Du-  
 randus *Rationale Divinorum Officiorum*. Lugd. 1574, lib. II. cap. iii.  
 numb. 5.

The historians of the time take notice, that in the year 787 a violent contest arose between the Roman and French singers, concerning the true method of singing divine service, which was carried on with so much heat and bitterness, that neither side could be made to yield. At length, the matter was brought before the emperor ; who, after hearing the reasons and arguments of each party, determined in favour of the Roman practice, by declaring, that the French singers had corrupted the *Cantus Gregorianus*. Baronius has related the transaction at length in these words :

‘ In the ancient chronicle of Charles king of France, which Pi-  
 ‘ thoeus published, these things then done at Rome are recorded.  
 ‘ The most pious king Charles returned, and celebrated Easter at  
 ‘ Rome with the apostolical lord. Behold a contention arose, during  
 ‘ the time of the paschal feast, between the Roman and French  
 ‘ singers : the French said that they sung better and more gracefully  
 ‘ than the Romans ; the Romans said they performed the ecclesiasti-  
 ‘ cal cantus more learnedly, as they had been taught by St. Gregory,  
 ‘ the pope ; and that the French sung corruptly, and debased and  
 ‘ ruined the true cantilena. This contention came before the em-  
 ‘ peror Charles ; and the Gauls, relying on his favour, violently ex-  
 ‘ claimed against the Roman singers ; and the Romans, upon the  
 ‘ authority of their great learning, affirmed that the Gauls were fools  
 ‘ and rustics, and as unlearned as brute beasts, and preferred the learning  
 ‘ of St. Gregory to their rusticity : and the altercation ceasing on  
 ‘ neither side, the emperor said to his singers, “ Tell me plainly,  
 ‘ which is the purer, and which the better, the living fountain, or its  
 ‘ rivulets running at a distance.” They all, with one voice, answered,

‘ the fountain ; as the head and origin is the purer, and the rivulets, ‘ the farther they depart from the fountain, are by so much the more ‘ muddy, foul, and corrupted with impurities. “ Then, said the ‘ emperor, return ye to the fountain of St. Gregory, for ye have ‘ manifestedly corrupted the ecclesiastical cantus.”

‘ The emperor, therefore, soon after desired singers of pope Adrian, ‘ who might reform the French singing ; and he sent to him Theo- ‘ dore and Benedict, two of the most learned singers of the Roman ‘ church, who had been taught by St. Gregory ; and he sent by ‘ them the antiphony of St. Gregory, which he had marked with ‘ the Roman note. The emperor returning into France, sent a singer ‘ of the city of Metz, with orders that the masters of schools ‘ throughout all the provinces of France should deliver their anti- ‘ phonaries to them to be corrected, and that they should learn to sing ‘ of them. Upon this, the antiphonaries of the French were correct- ‘ ed, which every one had corrupted, by adding or diminishing ac- ‘ cording to his own fancy, and all the singers of France learned the ‘ Roman note ; except that the French who with their voices, which ‘ are naturally barbarous, could not perfectly express the delicate or ‘ tremulous, or divided sounds, in music, but broke the sounds in ‘ their throats, rather than expressed them : but the greatest singing ‘ school was that in the city of Metz ; and as much as the ‘ Roman school excels the Metensian in the practice of singing, by ‘ so much does the Metensian excel the other schools of France. ‘ In like manner, the aforesaid Roman singers instructed the singers ‘ of the French in the art of instrumental music ; and the emperor ‘ Charles again brought with him from Rome into France, masters ‘ of grammar and mathematics, and ordered the study of letters to ‘ be every where pursued ; for before his time, there was no atten- ‘ tion paid to the liberal arts in Gaul. This account is given of these ‘ affairs in that chronicle. Moreover, there is an ordinance of ‘ Charles the Great himself concerning the performance of the Ro- ‘ man music in Gaul, in these words : “ That the monks fully and ‘ regularly perform the Roman singing in the nocturnal stated ser- ‘ vice, according to what our father king Pepin, of blessed memory, ‘ decreed should be done, when he introduced the Gallican singing ‘ for the sake of unanimity in the Apostolic See, and the peaceful ‘ concord of the Holy Church \*.”

\* Baron. Annual. Ecclesiast. tom. IX. pag. 415.

The zeal which this prince discovered through the course of a long reign, in favour of the church, and for the re-establishment of ecclesiastical discipline, has procured him a place among those ecclesiastical writers enumerated in Du Pin's voluminous history. It was the good fortune of this emperor to have in his service a secretary, named Eginhart, a man not more eminent for his knowledge of the world, than celebrated for his skill in the literature of those times. To him we are indebted for a life of this great prince, one of the most curious and entertaining works of the kind at this day extant: in this are recorded, not only the great events of Charlemagne's reign, but the particulars of his life and character, a very exact description of his person, his studies, his recreations, and, in short, all that can gratify curiosity, or tend to exhibit a lively portrait of a great man. Not to enter into a minute detail of his wars and negotiations, or the other important transactions during his government, let this short sketch of his personal and mental endowments, and his labours to restore the service of the church to its original purity, suffice, as having a more immediate relation to the subject of this work.

CHARLEMAGNE was born in the year of Christ 769, at Ingelheim, a town in the neighbourhood of the city of Liege, in Germany. His father was Pepin, king of France, surnamed the Little, by reason of the lowness of his stature; who, upon his decease, made a partition of his dominions between his two sons, bequeathing to Charlemagne, the elder, France, Burgundy, and Aquitain, and to Carloman, Austria, Soissons, and other territories; but Carloman surviving his father a very short time, Charlemagne became the heir of all his dominions, and at length emperor of the West.

The stature and person of Charlemagne are very particularly taken notice of and described by the writers of his history, by which it appears, that he was as much above the ordinary size of men, as his father Pepin was below it. Turpin, the archbishop of Rheims, relates, that he was eight feet high, that his face was a span and an half long, and his forehead one foot in breadth, and that his body and limbs were well proportioned. He had a great propensity to learning, having had some of the most celebrated scholars of the age in which he was born, for his tutors; and it is to the honour of this country that Alcuin, an Englishman, and a disciple of Bede, surnamed the Venerable, was his instructor in rhetoric, logic, astronomy, and the

the other liberal sciences\*; notwithstanding which, there is a very curious particular recorded of him, namely, that he never could, though he took infinite pains for the purpose, acquire the manual art of writing or delineating the letters of the alphabet †; so that whatever books or collections are ascribed to him, must be supposed either to have been dictated by him, or written by others under his immediate inspection: indeed, the works attributed to him are of such a kind as necessarily to imply the assistance of others, and that they are to be deemed his in no other sense than as they received his sanction or approbation; for they are chiefly either capitularies, as they are called, relating to ecclesiastical matters, as the government of the church, the order of divine service, the observance of rites and ceremonies, and the regulation of the several orders of the clergy; or they are letters to the several princes and popes, his contemporaries, and to bishops, abbots, and other ecclesiastical persons ‡. Two works in particular are ascribed to him, and the opinion that they were of his composition is generally acquiesced in; these are letters written in his name to Elipandus, bishop of Toledo, and other bishops of Spain, on certain points of doctrine; and four books against the worship of images: and it is with a view to these, and some other compositions that passed for his, that Sigebert, Du Pin, and others, give him a place among the ecclesiastical writers of the eighth century.

The zeal of this emperor to introduce the Cantus Gregorianus into his dominions, and to preserve it in a state of purity, has drawn upon him an imputation of severity; and upon the authority of that single passage in the Rationale of Durandus, above-cited, he is censured as having forced it upon the French with great cruelty. But there is nothing either in his relation of the supposed miracle in its favour, or in that of Baronius touching the contention at Rome, which will warrant this charge; for in that dispute at which Eugenius was pre-

\* Alcuin was well versed in the liberal sciences, particularly in music, as appears by a tract of his on the use of the Psalms, and by the preface to Cassiodorus *De septem Disciplinis*, first printed in Garetius's edition of that author, and which is expressly said by Du Pin, Fabricius, and others, to have been written by Alcuin. It was at the instance of Alcuin that Charlemagne, in the year 790, founded the university of Paris.

† *Tentabat et scribere, tabulasque et codicillos ad hoc in lectulo sub cervicalibus circumferre solebat, ut cum vacuum tempus esset, manum effingendis literis assuefaceret. Sed parum prospere successit labor præposterus ac sero inchoatus.* Eginhart *De Vita Caroli Magni*, cap. xxv. edit. Besséliei.

‡ Du Pin, *Nouv. Biblioth. de Auteurs Ecclesiast. Sicc. VIII.*

sent, it does not appear that he at all intermeddled; and in the other, the question which he put to his own clergy, is manifestly an appeal to reason, and no way indicates a disposition to coercive measures. ‘Tell me, said the emperor, which is the purer, the living fountain, or its rivulets?’ They answered, ‘the former.’ Then said the emperor, ‘Return ye to the fountain of St. Gregory; for in the rivulets the ecclesiastical cantus is manifestly corrupted.’ Eginhart has mentioned in general that Charlemagne laboured to rectify the disorderly manner of singing in the church\*; but he mentions no circumstances of bloodshed, or cruelty, to enforce a reformation: and the fact is, that several churches in his dominions, particularly those of Milan and Corbetta, were suffered to retain either the Ambrosian or a worse use, notwithstanding his wishes and efforts to the contrary †. In short, it seems that his behaviour upon this occasion was that of a wise man, or, at least, of one whose zeal had a sufficient

\* Eginhart, De Vita Caroli Magni, cap. xxvi. edit. Besselii.

† Mosh. Eccl. Hist. 8vo. vol. II. pag. 98.

The notes of Besselius and others upon this passage of Eginhart [Legendi atque psallendi disciplinam diligentissime emendavit] are very curious, as they declare what were the abuses in singing which Charlemagne laboured to reform. Quantum veteres sono vocum distincto studuerint, vel illud argumento est, quod *phonaso* sedulam dederint operam, teste etiam de *Augusto* Sueton. cap. lxxxiv. Cæterum de *missaticis cantionibus et officio Ambrosiano* à Carolo correctis, prolixè Sigebertus, ad an. 774 & 790. Gobelin. Person. *etat.* 6. *Cosmogram.* cap. xl. p. 193. *Guliel. Durandus*, lib. V. *Rational. Divin. Offic.* cap. ii. Frid. Lindembrogius *Glossar. L. L. Antiq.* fol. 1369, & Goldast. in *Ekkhardi Junioris casus*, pag. 114. tom. I. *Res. Alamannic.* Besselius. Carolus dissonantia cantus inter Romanos & Francos offensus, eum conciliare & emendare omnibus viribus studuit; ideo à papa cantores Romanos sibi mitti petiit, qui Francos vera psallendi ratione imbuerent. Horum duos accepit, ex quibus unum palatio suo præfecit, alterum metas misit, qui etiam ejus urbis incolas ita in canendi scientia erudit, ut sicut Roma inter omnes cantu, sic meta inter Francos emineret, & seminarium quasi cantorum Cisalpinorum esset. Ab hac igitur urbe cantilena ecclesiastica Germanice tunc temporis *mette* dicebatur, quia hic præcipue cantus excolebatur, cujus denominationis vestigia adhuc hodie in vulgari locutione, *die Früh mette singen*, deprehenduntur. Horifonus maxime majorum nostrorum erat cantus, quem Monach. Egoism. in Vita Karoli M. ita describit: *Tremulus vel vinnulus, seu collisibiles, seu sicabiles voces in cantu non pterant perferre exprimere Franci, naturali voce barbarica frangentes in gutture voces potius, quam experimentes.* Clarius Ekkhard. Minim. in vit. Notkeri, cap. viii. *Alpina siquidem corpora, ait, vocum suarum tonitruis altifone persfireptentia, susceptæ modulationis dulcedinem proprie non resulant, quia bibuli gutturis barbara grossitas, dum inflexionibus et reperculsionibus et diaphonarium diphongis mitem nititur edere cantilenam, naturali quadam fragore, quasi plaustra per gradus confuse sonantia, rigidas voces jactat, sique audientium animos, quos mulcere debuerant, tales exasperando magis ac obstrependo conturbant.* Nemo hæc opinor, mirabitur, qui fragmenta antiquæ Germanorum linguæ legit, ex quibus facis æstimari potest, quam difficilis fuerit Teutonice linguæ pronuntiatio, ac proin modulatio. Schmincke.

allay of discretion \* ; and that he was possessed of a very considerable portion of this latter quality, and entertained a mild and forgiving disposition towards those who had offended him, may be inferred from that very pretty story related by Mr. Addison, in the Spectator, N<sup>o</sup> 181, of the princess Imma, his daughter, and his secretary Eginhart, and her ingenious device, by carrying him on her back through the snow, to prevent the discovery of an amour which terminated in their marriage.

The purity to which the Gregorian chant was restored by the zeal of Charlemagne, subsisted no longer in France than to the time of Lewis the Debonnaire, his son and immediate heir, who succeeded to the empire of the West in 814 ; for in his reign the music of the church was again corrupted to that degree, that the Gregorian chant subsisted only in the memory of certain Romans, who had been accustomed to the singing it ; for neither were there in France or at Rome, any books wherein it had been written. This strange circumstance is related by Amalarius Fortunatus, a principal ecclesiastic in the chapel of Lewis le Debonnaire, who himself was sent by Lewis to request of Gregory IV. then pope, a sufficient number of singers, to instruct the

\* His behaviour in this respect seems to have been widely different from that of Alphonso, king of Spain, who, in the year 1080, banished the Gothic liturgy out of his kingdom, and introduced the Roman office, though miracles were pleaded in favour of the former. Talent. ann. 1080. col. I. and vide Mariana, in his History of Spain, book IX. pag. 152. The circumstances of this extraordinary event, and the miracles that preceded it, are more particularly related by other historians, who speak to this purpose : Alexander II. had proceeded so far in the year 1068, as to persuade the inhabitants of Arragon into his measures, and to conquer the aversion which the Catalonians had discovered for the Roman worship. But the honour of finishing this difficult work, and bringing it to perfection was reserved for Gregory VII. who, without interruption, exhorted, threatened, admonished, and intreated Sancius and Alphonso, the kings of Arragon and Castile, until, fatigued with the impertunity of this restless pontiff, they consented to abolish the Gothic service in their churches, and to introduce the Roman in its place ; Sancius was the first who submitted to this innovation, and in the year 1080 his example was followed by Alphonso. The methods which the nobles of Castile employed to decide the matter were very extraordinary. First, they chose two champions, who were to determine the controversy by single combat, the one fighting for the Roman liturgy, the other for the Gothic. The fiery trial was next made use of to terminate the dispute; the Roman and Gothic liturgies were committed to the flames, which, as the story goes, consumed the former, while the latter remained unblemished and entire. Thus were the Gothic rites crowned with a double victory, which however was not sufficient to maintain them against the authority of the pope, and the influence of the queen Constantia, who determined Alphonso in favour of the Roman service. Vide Bona De Rebus Liturg. lib. I. cap. ix. pag. 216. Le Brun, loc. citat. pag. 292. Jo. de Ferreras, Hist. de l'Espagne, tom. III. pag. 237. 241. 246. Mosh. Eccl. Hist. vol. II. pag. 341.

people; by whom the pope sent to the emperor for answer, that he could not comply with his request, for that the last of those men remaining at Rome had been sent into France with Walla, who had formerly been ambassador from Charlemagne on the same errand. The words of Amalarius, in the preface to his book *De Ordine Antiphonarii*, are these: ‘ When I had been a long while affected with anxiety, on account of the difference among the fingers of antiphons in our province, and did not know what should be rejected and what retained, it pleased him who is bountiful to all, to ease me of my scruples; for there having been found in the monastery of Corbie, in Picardy, four books, three whereof contained the nocturnal, and the other the diurnal, office, I strove to make all the fail I could out of this sea of error, and to make a port of quiet; for when I was sent to Rome by the holy and most christian emperor, to the holy and most reverend father Gregory, concerning these books, it pleased his holiness to give me the following answer: “ I have no fingers of antiphons, whom I can send to my son and lord the emperor; the only remaining ones that we had, were sent from hence into France with Walla, who was here on an embassy.” By means of these books, I discovered a great difference between the antiphons of our fingers and those formerly in use; the books contained a multitude of responsaria and antiphons, which they could not sing: among them I found one of those which were ordained by the apostolic Adrian. I knew that these books were older than that which remained in the Roman city, and though in some respects better instituted, yet they stood in need of some corrections, which, by the assistance of the Roman book, might made of them: I therefore took the middle way, and corrected one by the other.’ Notwithstanding this labour of Amalarius to reform the antiphonary, Nivers asserts, that the corruptions of music were then so great, that it was very difficult to say where the Gregorian Chant lay\*; and, after all, the corrections of it by

\* The true causes of the first corruptions of the *Cantus Gregorianus* are plainly pointed out by the interpreter of Hugo Reutlingensis, who, in the passage cited by Sir Henry Spelman, ascribes it to the disuse of the stave, the clefs, and other characters, necessary in the notation of music. To the same purpose Nivers relates, that they were not marked by notes, but by little points and irregular characters; which account is confirmed by some manuscripts, in which the corrupt method of notation above hinted at does most evidently appear. Martini of Bologna has exhibited some curious examples of this kind, and has, with



Amalarius Fortunatus were very ill received, as will appear by the following account of him.

SYMPHOSIUS AMALARIUS, or, as he is called by most writers, AMALARIUS FORTUNATUS was a deacon of Metz, and, as some ancient manuscripts assert, also an abbot. There seems to have been another of the latter name, archbishop of Treves, with whom he is often confounded; they both flourished about the middle of the ninth century. This of whom it is meant here to speak was a great ritualist, and wrote four books on the ancient ecclesiastical offices, which he dedicated to Lewis the Debonnaire, by whom he seems to have been greatly favoured. In these books he gives mystical reasons for those rites and ceremonies in divine worship, which wiser men look on as mere human inventions. To give a specimen of his manner of treating this subject, speaking of the habits of the priests, he says, ‘ The priest’s vest signifies the right management of the voice; his albe, the subduing of the passions; his shoes, upright walking; his cope, good works; his stole, the yoke of Jesus Christ; the surplice, readiness to serve his neighbour; his handkerchief, good thoughts; and the pallium, preaching\*.

with no less ingenuity than industry, from characters the most barbarous that can be conceived, and which were intended to express the initial clauses, and also the vowels of sundry antiphons, as used in particular churches, extracted a meaning, and reconciled them to the true method of notation.

\* An opinion something like this, touching the mystical signification of habits and the manner of wearing them, seems to have been entertained by the common-law judges in the reign of king James, as appears by a solemn decree or rule, made by all the judges of the courts at Westminster, on the fourth day of June, 1635, for the purpose of appointing what robes they should thenceforth wear, upon ordinary and special occasions. In this decree mention is made of the scarlet casting-hood, which is by the decree directed to be put above the tippet, for which it is given as a reason that ‘ justice Walmesley and justice Warburton, and all the judges before, did wear them in that manner, and did declare, “ that by wearing the hood on the right side and above the tippet, was signified “ mere temporal dignity; and by the tippet on the left side only, the judges did resemble “ priests.” Dugd. Origines Juridicales, pag. 102.

The author from whom the above passage is cited, craves leave to mention a word or two concerning the collar of SS, worn by the chief justices and chief baron, some orders of knights, the kings at arms, and others. Touching this badge of distinction, he, upon the authority of Georgius Wicelius, relates, that it has a reference to two brethren, Roman senators, named Simplicius and Faustinus, who suffered martyrdom under the emperor Dioclesian; and gives the following description of it from his author: ‘ It was the custom of those persons (the society of St. Simplicius) to wear about their necks silver collars, composed of double SS, which noted the name of St. Simplicius. Between these double SS the collar contained twelve small plates of silver, in which were engraved the twelve articles of the creed, together with a single trefoyle. The image of St. Simplicius

But the book of Amalarius Fortunatus which more immediately relates to choral service, or the music of the church, is intitled, *De Ordine Antiphonarii*. In this he vindicates the disposition of the antiphons, responses, and psalms, which he had made in the antiphony, for the use of the churches in France. It seems, that in this and other of his works, he had censured the usage of the church of Lyons: this drew on him the resentment of two very able men, Agobard, archbishop of that city, and Florus, a deacon of the same church; the former of these wrote three treatises against his book of offices, and his correction of the antiphony; and the latter accused him, in the councils of Quierci and Thionville, of maintaining erroneous opinions touching the moral and mystical significations of the ceremonies, and of insisting too strenuously on the use of the Roman ritual, which, notwithstanding its authority, had never been generally acquiesced in.

Agobard himself had corrected the antiphony of his own church; and the treatises which he wrote against Amalarius, were not only a defence of those corrections, but a censure of his adversary. He says, that the poetical compositions of vain and fantastical men are not to be admitted into divine service, the whole of which ought to be taken from the scriptures: he complains, that the clergy spent more time in the practice of singing than in the study of the holy scriptures, and the discharge of their duty in the ministry of the gospel.

The writings of Amalarius upon the offices had given rise to many very captious questions; and to this in particular, Whether it be lawful to spit immediately after receiving the eucharist? His opinion on this point of theology is contained in one of his letters, wherein, after premising that he himself was very much troubled with phlegm, he holds it lawful to spit, when the communicant can no longer forbear that evacuation\*.

From the time of the attack on him by Agobard, and Florus, his deacon, we hear no more of Amalarius Fortunatus; and there is good

\* plicius hung at the collar, and from it seven plates, representing the seven gifts of the Holy Ghost.

Dugdale adds, 'that the reason of wearing this chain was in regard that these two brethren were martyred, by tying a stone with a chain about their necks, and casting their bodies into the river Tiber.'

\* Du Pin, *Nouv. Biblioth. des Aut. Ecclesiast. Sicc. IX.*

reason to believe, that immediately after it, his memory sunk into oblivion.

Before we dismiss this subject of the Cantus Gregorianus, it may not be improper to mention, that it has ever been held in such high estimation, that the most celebrated musicians in every age since its first institution, have occasionally exercised themselves in composing harmonies upon it; and numberless are the antiphons, hymns, misereres, and other offices, which have one or other of the ecclesiastical tones for their fundamental harmony. In a collection of madrigals, intitled *Musica Divina*, published by Pietro Phalesio, at Antwerp, in 1595, is one composed by Gianetto Palestina, beginning ‘*Vestiva i Colli*,’ in five parts, which is evidently a praxis on the fourth tone; and in 1694, Giov. Paolo Colonna, of Bologna, published certain of the psalms, for eight voices, ‘*Ad ritum ecclesiasticæ musices concinendi*.’

### C H A P. III.

**I**T is highly probable that from the time of its original institution the cantus ecclesiasticus pervaded the whole of the service; but this at least is certain, that after the final improvement of it by St. Gregory, all the accounts of the Romish ritual, and the manner of celebrating divine service in the western church, lead to the belief that, excepting the epistles and gospels, and certain portions of scripture, and the passional or martyrology, the whole of the service, nay that even the prayers and penitential offices, were sung. Among the canons of Elfric, made anno 957\*, is the following.

‘Now it concerns mass-priests and all God’s servants to keep their churches employed with divine service. Let them sing therein the seven tide-songs that are appointed them, as the synod earnestly requires, viz. the uht-song, the prime-song, the undern-

\* Elfric is supposed to have been archbishop of York about the time above mentioned, and Wulfen, to whom they are directed, bishop of one of the ancient sees of Dorchester or Shirburn, but which of the two is rather uncertain. This, as also some other collections of ecclesiastical laws here cited, are to be found in Sir Henry Spelman’s Councils; but the extracts above given are from Mr. Johnson’s valuable and useful work, which in some respects is preferable to the former.



‘gory into Britain] that we find the same word *ſingān* to ſignify ‘both to pray and ſing, as in the preſent inſtance.’

Farther, among the canons of Elfric above-cited is one containing directions for viſiting the ſick, wherein that rule of St. James, ‘And ‘they ſhall pray over him,’ is expreſſed in theſe words, *ſ hi him oꝛeþe ſingon*, that is, ‘they ſhall ſing over them.’ The paſſage above-cited is part of the thirty-fiſt of Elfric’s canons, and is in truth a paraphraſe on the words of St. James in his General Epistle, chap. v. ver. 13, 14, and, to give it at length, is as follows.

‘If any of you be afflicted, let him pray for himſelf with an even ‘mind, and praife his Lord. If any be ſick among you, let him ‘fetch the maſs-prieſts of the congregation, and let them ſing over ‘him, and pray for him, and anoint him with oil in the name of the ‘Lord. And the prayer of faith ſhall heal the ſick, and the Lord ‘ſhall raiſe him up; and if he be in ſins, they ſhall be forgiven him: ‘confels your ſins among yourſelves, and pray for yourſelves among ‘yourſelves that ye be healed.’

The ſeveral paſſages above-cited, as they ſhew in ſome meaſure the ancient manner of celebrating divine ſervice, and prove that ‘almost the whole of it, particularly the leſſer offices, was ſung to muſical notes; ſo do they account for that care and aſſiduity with which the ſtudy of muſic appears to have been cultivated in the ſeveral monaſteries, ſchools, and univerſities throughout Europe, more eſpecially in France and England. That the knowledge of muſic was confined to the clergy, and that monks and prebysyers were the authors of moſt of the treatiſes on muſic now extant, is not ſo well accounted for by the general courſe of their lives, and the opportunities they had for ſtudy, as by this conſideration, it was their profeſſion; and to ſing was their employment, and in a great meaſure their livelihood \*. The works of Chaucer and other old poets abound with alluſions to the practice of ſinging divine ſervice, and with evidences that a knowledge of the rudiments of ſinging was eſſential in every cleric, indeed little leſs ſo than for ſuch a one to be able to read. In the Viſions of Pierce Plowman, Sloth, in the character of a prieſt, among other inſtances of lazineſs and ignorance, confeſſes that he

\* The ſtatutes of All-Souls college in Oxford, which are but declaratory of the uſage of ancient times, require that thoſe elected to fellowſhips ſhould be ‘*bene nati, bene veſtiti, et mediocritur docti in plano cantu.*’

cannot perfectly repeat his Pater-noster as the priest singeth it; and that though he had been in orders above thirty years, he can neither sol-fa, nor sing, nor read the lives of saints: the whole of his speech, which is exceedingly humourous and characteristic, is here inserted.

Than came Sloth, all beslaberd, with two stimp eyne,  
 I must sit laid the leg, or els I must nedes ray,  
 I mai not stond ne stoupe, ne without my stole knele,  
 Wer I brought a bed, but if my talend it made,  
 Should no ringing do me rise, or I were ripe to dine,  
 He began benedicite wirth a belke, and on his brast knocked  
 And raskled and rored, and rut at the last.  
 Awak, reuk quod Srepentaunce, and rape thee to the thrist.  
 If I should die by this day, me lyst not to looke:  
 I can not persfily my pater noster, as the prist it singeth,  
 But I can rimes of Kobenhod, and Kandal of Chester  
 But of our Lord or our Lady, I lerne nothing at all;  
 I have made volvs xl, and forgotten hem on the morow;  
 I performed never penance, as the priest me hight,  
 He right sorp for my sinnes, yet was I never;  
 And if I bid any beades, but it be of wrathe  
 That I tel wirth my tong, is two mile from my hart;  
 I am occupied every day, holy day and other  
 Wirth idle tales at the ale, and ocher while in churches.  
 Gods peyne and his passion, ful selde I thinke thereon,  
 I visited never feble men, ne fettered folk in pitte  
 I have leber hear an harlotry, or a sommers game  
 Or lessinges to laugh at, and helpe my neighbours  
 Than al that eber Marke made, Marthew Ihon and Lucas,  
 And vigiles and fasting daies, all these I let passe,  
 And lie in bed in lent, and my lemman in mine armes  
 Till mattens and masse be done, & than go I to the steres,  
 Com I to 'Ite missa est' \* I hold me serbed  
 I am not thriben sometime, but if sickenes it make

\* i. e. See an explanation of these words in a subsequent note. The meaning of the above passage is, 'If I come before the instant the people are dismissed from mass, I hold it sufficient.'

Not twise in two year, and than up guesse I thrive me  
 I have been priest and person passing thirty winter  
 Yet can I neither solke nor sing, ne sainetes libes read  
 But I can kinde in a fælde, or a furlong an hare  
 Better than in Beatus vir, or in Beati omnes  
 Construe one claufe, and ken it to my parishens  
 I can hold loue daies, and heare a rebenes rekening  
 And in cannon and in decretals I cannot read a line  
 If I bugge and borow ought, but if it be tailed  
 I forget it as sonne, and if men me it aske  
 Six siches or seven, I forsake it with othes  
 And thus rene I true men, ten hundred times,  
 And my serbauntes salary sometimes is behind,  
 Nuth is to hear the rekening, when we shal mak account ;  
 So with wicked wil and with wrath my workimen I pai.  
 If any man do me benefite, or helpe me at nede  
 I am unkind against his curtesy, I cannot understand ic  
 For I have & have had some deale haukes maners  
 I am not lured with love, but if ought be under the thombe  
 That kindnes that mine eben christen, kid me fether  
 Sixe siches I sloth, have forgotten it sihe.  
 In spech and in sparing of spence, I spilt many a time  
 Both flesh and fish, and many other vitailles  
 Both bread and ale, butter, milke, and chese  
 For sloth in my serbiec til it might serbe no man.  
 I ran about in pouth, and gabe me not to learning  
 And eber sith have ben a beggar for my soule sloth\*.

The foregoing account, as it relates solely to the Cantus Gregorianus, must be supposed to contain only the history of the choral music of the western church; for it is to be remembered that antiphonal singing was introduced by the Greek fathers, and was first practised in the churches of the East; and that the cantus of the Greek church, whatever it was, was not near so well cultivated and refined as that of the Roman; this consideration, together with the

\* Visions of Pierce Plowman, Passus quintus.

short duration of the eastern empire, may serve to shew how little is to be expected from an enquiry into the nature of the ancient Greek choral music. Vossius says in general, that the Greek church made use of modulations different from those of the western \*; but for a formula of them we are very much to seek. As to the method of notation made use of by the Greeks in after-times, it did not in the least resemble that of the Latins, and was widely different from that of the ancient Greeks. Montfaucon, in his Palæographia Græca, lib. V. cap. iii. gives the following curious specimen of Greek musical notation from a manuscript of the eleventh century.

Pag. 390.

Δελεφοι Δια του ονοματος του κυ ημοοριυχι  
 ρατο αυτο λεγει τωσαρ τωικαι μι η βρ υμηροχο  
 ματου :: η τε δε καταρτισα βροι εν τω αυτω ρο  
 ι και εν τη αυτη γραμμη :: εδη λαοθηρση μοι τω ρι  
 υμων αδελφοι μου υπο τωσρ χλοκο οτι εριδω  
 η υμηρ εισι :: η γω δδ του το οτι ε καταρτισα  
 λερ :: η γω μβρ ειμ παυ λου η γω δε ασο λλω η γω δε  
 κηφ α η γω δδ χ ::  
 ερι φσο ερχομενο εμ φαρ σοσ θεοσ κυσορ  
 η εξα αιου χρομ ιει εξα πωιρο σαμου ρυμφο  
 φθ κ σται και σση λαιωικη θλοτημ προσαμα  
 παω σται κ φα τρη τωρ αλοσωρ ορου χωρ ειοου  
 ρηω σσ υ πο δε χου μελλομ τω πασ ραμ ου δαιεν  
 σοι τωρ τω λογω λν σαυ τα πωσ αλοησ ημοσ α  
 φηρ κηρ υ ειμα σοι προσ κωου οτι πωμ μερ σο αρω  
 λον σι θαωμια ορωμ τεσ το φρικ τομ κοιατελομ ιελ  
 πωνοσ η επι ησο θσο μεμοι τκμα πολλυ τρωσ η του  
Ling. v. 10.

\* Ger. Voff. De Scientiis Mathematicis, cap. xxi. § 12.



Dr. Wallis had once in his hands a manuscript, which upon examination proved to be a Greek ritual; it had formerly been part of the famous library founded at Buda by Matthæus Corvinus, king of Hungary, in 1485. In 1529 the city of Buda was taken by the Turks, and in 1686 retaken, after a long siege, by the forces of the emperor Leopold.

A description of this manuscript, and a general account of its contents is extant in a letter of Dr. Wallis to some person, probably the owner of it, who seems to have referred to the Doctor as being well skilled in music; the doctor's opinion of it may be seen in the copy of his letter inserted at length at the bottom of the page. It has lately been discovered that the MS. abovementioned was the property of Mr. Humfrey Wanley, as appears by a letter of his to Dr. Arthur Charlett, inserted also in the note, in which he offers to part with it to the university of Oxford. It is to be conjectured that the university declined purchasing it, and that Mr. Wanley disposed of it to the earl of Oxford, for in the printed Catalogue of the Harleian manuscripts in the British Museum, No. 1613, is the following article.

\* Sir, I have seen and curiously perused that ancient Greek manuscript which is said to have been found in Buda, at the taking of that place from the Turks in the present war between the German emperor and the Turk.

It is elegantly written in a small Greek hand, and is judged to be at least three hundred years old. The form of the letter is much different from that of those which we now use, and not easy to be read by those who are not acquainted with the Greek hand used in the manuscripts of that age.

It bears, after the first three leaves, this title *Αρχη του Θεου αγίου της παπαδικης Τεχνης*, which I take to intimate thus much: Here begins, with the assistance of the sacred Deity, the patriarchal art; for I take *παπας* then to signify as much as pope or patriarch, which is farther thus explained: *ακολουθιαι ψαλλόμεναι εν Κωνσταντινουπολει, συντιθεισαι ταρχ των κατὰ χαιρος ευρισκομενων εν αυτη ποιητων παλαιων τε και νεων*. That is, the order of services in Constantinople composed by poets, such as from time to time have been there found, as well ancient as modern; so that it seems to be a pandect or general collection of all the musical church-services there used, as well the more ancient, as those which were then more modern; after which it thus follows: *ω η αρχη σημειοια και αι τετων φωναι*, beginning with the musical notes and their sounds.

After which title we have accordingly for about five leaves, an account of the musical notes then in use, their figures, names, and significations; without which the rest of the book would not be intelligible, and even as it is, it will require some sagacity and study to find out the full import of it, and to be able to compare it with our modern music.

The rest of the book consists of anthems, church-services for particular times, and other compositions, according to the music of that age, near a thousand I guess of one sort or other, or perhaps more.

The whole consists of four hundred and thirteen leaves, close written on both sides in a small Greek hand, in the shape or form of what we would now call a very large octavo, on a sort of thick paper used in the eastern countries at that time.

There is for the most part about twenty-eight lines in each page, that is fourteen lines of Greek text, according to which it is to be sung; not such as those which we now use,

‘ Codex chartaceus in 8vo, ut ajunt, majori, diversis manibus scriptus, et Græcorum more compactus; quem Dño Henrico Worslejo in-

nor like those of the more ancient Greeks, which they called of which Meibomius gives us a large account out of Alypius. But a new sort of notes, later than those of the ancient Greeks, but before those of Guido Aretinus, which we now use; and commonly two or three compositions in one leaf, with the author’s name for the most part.

‘ I do not find in it any footsteps of what is now common in our present music; I mean compositions in two, three, four, or more parts; all these, for ought I find, being only single compositions.

‘ That which renders it most valuable is this; we have of the more ancient Greek musicians seven published by Marcus Meibomius in the year 1652, Aristoxenus, Euclid, Nicomachus, Alypius, Gaudentius, Bacchius, and Aristides Quintilianus, before that of Martianus Capella in Latin. I have since published Ptolemy’s Harmonics in the year 1682, and I have now caused to be printed Porphyry’s Commentary on Ptolemy and Bryennius, which are both finished some while since, and they will thereby come abroad as soon as some other things are finished which are to bear them company. All these, except Martianus Capella, in Greek and Latin, and these are thought to be all the Greek musicians now extant.

‘ But all these concern only the theoretical part of music, of the practical part of it, that is, musical compositions of the ancient Greeks, it hath been thought till that, there was not one extant at this day, whereby we have been at a loss what kind of compositions theirs were, and how theirs did agree or disagree with what we now have, and it is a surprize to light at once upon so many of them.

‘ Tis true that all these are more modern than those of Aristoxenus, Euclid, Nicomachus, and others of the more ancient Greeks, being all since the times of Christianity; and such as were used in the Greek church of Constantinople: but they are much more ancient than any were thought to be extant.

Your’s  
‘ JOHN WALLIS.’

Copy of Mr. Wanley’s letter to Dr. Charlett.

‘ Honoured Sir,

London, June 13, 1698.

‘ I cannot forbear sending you word of the good fortune I have lately had to compass a Greek manuscript, which contains the art of singing, with the names, powers, and characters of their musical notes, in great variety. And a collection of anthems, hymns, &c. set to their musick by the best masters of Constantinople, as intended and used to be sung in their churches upon all the chief festivals of the year. It has likewise the musical part of their common liturgy with the notes; and both these, not only of the later music of the said masters, but very often the more ancient too, used before their times. The names of these masters prefixed to their compositions, are about threecore in number, some of which I here set down: [Here follows a long list of Greek names, which it is needless to insert, as the MS. is yet in being and accessible.]

‘ I believe many of their names, and much more their works, might have been long enough unknown to us without the help of this book. Here is likewise a sprinkling of the music used in the churches of Anatolia, Thessalonica, Thebes, and Rhodes, besides that piece called *Περσικὴ*, and other tracts.

‘ The MS. was taken from the Turks in plundering Buda, about the year 1686, and was afterwards bought by an English gentleman for 4l. but I lying here at great charges, cannot afford to sell it so cheap. It is about 300 years old, fairly written upon cotton paper, taking up above four hundred leaves in a large 8vo.

‘ The book ought to be placed in the publick library; and if, Sir, you are willing to think that the university will consider me for it, I will bring it along with me the next week: If not, I can be courted to part with it here upon my own terms.

‘ For the Rev. Dr. Charlett,  
Master of University college,  
in Oxford.

I am reverend and honoured Sir,  
Your most faithful and obedient servant,  
HUMFREY WANLEY.’

‘ Terra

‘ Terra Sancta peregrinanti dono dedet Notara (Notarañ an Notaríos;) tunc Metropolita Cæsariënsis; qui exinde, de mortuo doctissimo suo avunculo, factus est Patriarcha Hierosolymitanus; adhuc, ni fallor, superstes. In illo habentur varia Ecclesiæ Græcæ Officia, Cantica, &c. Græcè descripta, Notulifq; Græcis Musicalibus insignita. Non iis dico, quæ priscis seculis apud Ethnicos Poetas et Philosophos in usu fuerunt; quarum etiamnum nonnullæ restant quasi e Naufragio Tabula: sed alterius planè formæ, quas ante plurima secula introductas adhuc retinet hodierna Græcorum Ecclesia.’

Mr. Wanley has inserted the rubrics in the order in which they occur; these are to be considered as so many distinct heads, and give occasion for an explanation of many difficult words made use of in them, and also in the offices\*; in which he discovers great learning and sagacity.

\* To give a few instances. 295. Τροπαρίον. Vox generica, et Canticis in Ecclesia Græca receptis communis: MODULUM semper vertit, et ANTIPHONAS Latinorum quadrantenus respondere solet. Du Cang.

In Ecclesia Orientali, canebantur certis diebus certi CANONES, quos in TROPARIA dividebant plerumque 30. et nonnumquam plura: excepto uno MAGNO CANONE, qui 250 complectebatur. Suicer. ex Triodio.

CANONES in ODAS dividuntur; ODÆ in TROPARIA, ex quibus componuntur. Singula namque Troparia continent aut plura aut pauciora, cum eorum Numerus determinatus non sit. Troparia quandoque Libera ac Vaga relinquuntur: quandoque primis Literis quasi Annulis in Verbis veluti Catenula inferuntur, quam Acrostichida autores vocant. Du Cang. ex Allatio de Georgiis.

298. Αντίφωνον. Fœmineum ANTIPHONA à Neutrio ANTIPHONUM discrimen apud nos continet maximum: quamvis ab uno Græco vocabulo, utrumque fuerint Latini mutuati: ANTIPHONA namque est Sententiæ vel Modulus cuilibet Psalmo decantato adjunctus, et quasi EX OPPOSITO RESPONDENS, inquit Honorius Solitarius, lib. ii. cap. 17. ANTIPHONUM autem ut hic usurpatur Psalmi sunt plures Versus, ad quorum singulos, una et eadem sit semper ab altero Choro Responso: et propter hanc Unam, et Reciprocam Sententiam semper illatam, αντίφωνον, quasi vox OPPOSITA, seu Vocis oppositio vocatur. Ejus forma qualis sit, ex his Mysallibus. Antiphonis (i. e. Liturgia S. Chryostomi) fol. 105, et seq. positis innoscit. Exat enim ibi Psalmus ἀγάθῶν τὸ ἐξουκλογεῖσθαι τῶν κυρίων, cujus singulis versibus respondet αντίφωνον ταῖς προσβόλαις τῆς θεοτόκου καὶ τοῦ ἔξου, illis sæpius OPPONENDUM. Quamvis fatear rem potius in adversum sensum trahendam: cum enim Psalmus ipse vocatur αντίφωνον, ejus Versus sunt qui uni et eidem dicto, i. e. resumpto (ἐφώνια ejus frequentius repetito) OPPONUNTUR. Vel certe, quia mutua et utriusque Chori ad invicem Responso: et voces jam audita, rursus vel ex toto, vel ex parte, iterantur prout quoque in Latinis RESPONSORIIS contingit) αντίφωνον appellatur. Unde, tum propter Vocis Significationem, tum propter Compositionis formam, Latine RESPONSORIUM congrue reddi possit. Vetat tamen Usus loquendi antiquus, ut Missæ Introitum alio quam ANTIPHONI vel ANTIPHONÆ Nomine dicatur, &c. Coar.

428. Τρισάγιον, TRISANCTUM, Hymni genus, cujus hæc erant Verba. Ἄγιος ὁ Θεός, ἄγιος ἰσχυρὸς, ἄγιος ἀθάνατος, ἐλευσεν ἡμᾶς in quo, ἄγιος ὁ Θεός referrebat ad Deum Patrem; ἄγιος ἰσχυρὸς ad Deum Filium; ἄγιος ἀθάνατος ad Spiritum sanctum. Vocatur etiam τρισάγιος ὑμνολογία, χερεβικὸς ὕμνος, ἀγγέλων ὑμνολογία, τρισάγιος σπῆμα.

But as a mere verbal description of this MS. would fail to convey an adequate idea of the character in which it is written, or of the musical notes, which are the principal object of the present enquiry, the initial and final pages of the volume are here given in that kind of transcript which the curious distinguish by the appellation of fac-simile.

Page 394.

✠

+ ηνεκαρτια φασγολια δε τις εστι σπλαισιρται,  
 σιν ποκατθ φειθηπυ

**Κ** ρι ε ε κε ε ε κρ α ζα προς  
 ε ε ε σα α α κω σπρ μου ου  
 ε ι σα κω σο ο ον μου κω ε ε ε ε ε  
 ε ε κω ε ε ε ε ε ε ε ε ε ε ε  
 κρ α ζα προς ο σι ε ε ε ε ε ε ε  
 α κω σο ο ον μου ου προς ο ο κρ ε ε  
 ε ε ε ε ε ε ε ε ε ε ε ε ε ε ε  
 ε ε ε ε ε ε ε ε ε ε ε ε ε ε ε  
 σε ω ως μου. ερ πωκε ε ε ε ε ε  
 με ε ε προς σε ε σα κω σο ο ον μου  
 ε ε ε ε ε ε ε ε ε ε ε ε ε ε ε  
 κω ε ε ε ε ε ε ε ε ε ε ε ε ε ε ε

**Κ** αν τεν θευ θη πη η η προς ο σεν  
 η η κω ως θυ με α μα ε ε η η η η η

*Βιβλιογραφ.*

αγγελων τριωδρια et τρισαγια ρωνη. Anno enim Theodofii Junioris quinto (vel trigesimo secundum Cedrenum, &c) magno existente Terræ Motu, et Muris corruentibus, quia Amalechite intra Urbem inhabitarent, et adversus Hymnum hunc Blasphemias proloquerentur: Preces et Supplicationes in Campo Tribunalis, Theodofius cum Proclo Patriarcha instituit. Cum vero Κύριε έλεησον clamarent Horis aliquot continuis, Adolescenculus quidam in conspectu omnium in aërem sublatu est, audivitque Angelos clamantes, Αγιο ο θεος, αγιο ισχυρος, αγιο αδύνατος, έλεησον ημάς. Quod cum mox demissus narrasset, omnes eodem modo TRISAGIUM canere cœperunt, et cessavit Terræ Motus. Huic Hymno Imperator Anastasius post illa αγιο αδύνατος addi voluit ο σαυροδεις υπέρ ημεν, verum id cum magno Malo et suo, et Constantinopolitanorum.—Observandum tandem discrimen quod est inter το Τρισάγιον et ΗΥΜΝΟΝ ΕΡΙΝΙCΙΟΝ, in quo similiter

\*Αγιο\*

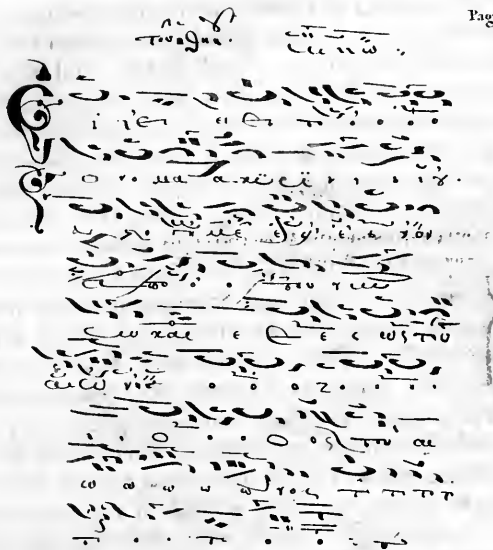


Fig. 395.

*Bapt. Sculp.*

It is very clear from the above-mentioned letter that Dr. Wallis looked upon manuscripts of this kind as a very great curiosity ; and this judgment of his is founded upon an opinion which he says prevailed at the time of giving it, that there was no such thing as an ancient Greek musical composition extant.

Ἄγιος caneatur, hunc in modum, ἄγιος, ἄγιος, ἄγιος κληροῦ σαββάτου. — Ergo τρισάγιον initio Liturgiæ ante Epistolæ Lectionem caneatur. Hymnus vero CHERUBICUS et ἱπινίσιος, post Catechumenorum et Pœnitentium dimissionem. Τρισάγιον quoque usurpabant pro Sacrosancta Trinitate. Suicer

441. Χορός, proprie notat Canentium atque Saltantium collectam Multitudinem. notum est in Ecclesia hodie Psalmidiam retineri, et quidem CHORO, quibusdam in Locis, bifariam diviso. Improperie notat multitudinem amice conspirantium in doctrina, &c. Suicer.

Χορός dividebantur χοροὶ in δεξιόν, DEXTRUM, et ἀριστερον, SINISTRUM. Triduum in Sabbato Sancto αρχεται εὐθις μετὰ μελὸς ὁ δεξιὸς ἦ γων ὁ ἀριστερος χορός, in quo quidem DEXTRO ac PRIMO CHORO consistit Sacerdos qui sacre Liturgiæ preest. Du Cang.

The practice of dividing the chorus into two parts, and disposing the singers on both sides of the choir, seems best of any method to correspond with the intention of antiphonal or responsive singing. But it is to be remarked that in the Romish service there are many offices composed for four, and even eight choirs as they are termed. These are in fact not distinct choirs, but rather so many smaller chorusses, singing alternately with each other, and together at stated intervals ; and these are also divided according to the

The causes of this scarcity of Greek ritual music are to be sought in the history of that church. It has already been related that choral service was first introduced by the Greek fathers, and that as the pomp and splendour of the Greek worship was very great, and calculated to engage the affections of the people, the greater part of the offices were sung. The consequence thereof was, that the clerks employed for that purpose were of little less estimation than those that exercised the sacerdotal function. This appears from a passage in the liturgy of St. Mark, wherein is a prayer for priests, deacons, and singers\*. We may hence conclude that a ritual of some kind or other subsisted in that very early age; and it is very probable that that kind of melody which St. Ambrose instituted in his church at Milan, was no other than what was used by St. Basil and Chrysostom in their several churches in Asia, since it is apparently founded on the ancient Greek modes. The music of the Greek church might in all probability continue to flourish until the translation of the imperial seat from the East to the West; and as after that important event that church lost the protection of an emperor, and was left in a great measure to shift for itself, its splendor, its magnificence and discipline declined apace, and it was not the authority of a patriarch that was sufficient to support it.

But the ruin of the Greek church was completed in the taking and sacking of Constantinople by the Turks in the year 1453, when their libraries and public repositories of archives and manuscripts were destroyed, and the inhabitants driven to seek shelter in the neighbouring islands, and such other places as their conquerors would permit them to abide in.

From that time the Greek Christians, excepting those who inhabit the empire of Russia, have lived in a state of the most absolute subjection to the enemies of true religion and literature, and this to choral order, and stationed on both sides of the choir. In our English service-books the two different sides are distinguished by the names of the officers that superintend them respectively; for instance, as the seat of the Dean is on the right, those on that side are directed when to sing by the word *Decani*; and as the station of the precentor or chanter is on the left, those on that side are directed by the word *Cantoris*.

442. *Κανονάρχης*, PRÆFECTUS CANONUM, qui Monachos ad psallendos in Vigilis Canones excitabat. Suicer.

509. *Πρωτοψαλτής*, PRIMICERUS CANTORUM; qui dictus etiam *δωμέσιχ* τῶν *ἱερῶν*. Verum non habebant Ecclesie PROTO-PSALTAS, sed DOMESTICOS Cantorum; cum PROTO-PSALTÆ proprie essent Cleri Palatini, &c. Du Cang.

\* See a collection of the principal liturgies used in the celebration of the holy eucharist, by Dr. Thomas Brett, pag. 34.

so great a degree, that the exercise of public worship is not permitted them but upon conditions so truly humiliating, as to excite the compassion of many who have been spectators of it. Maundrell in his Journey from Aleppo to Jerusalem, mentions his visiting a Greek church at a village called Bellulca, where he saw an altar of no better materials than dirt, and a crucifix of two bits of lath fastened cross-wise together\*.

A modern traveller, Dr. Frederic Hasselquist, who visited the Levant in the year 1749, indeed mentions that in the church at Bethlehem he saw an organ, but it seems that it belonged to the Latin convent: as to the Greek Christians he represents them as living in a state of absolute poverty and dejection in almost all the places that he visited.

Laying all these circumstances together, it will cease to be a wonder that so few vestiges of the Greek church-music are now remaining, whatever others there are may possibly be found in the Russian ritual; but as no one can say how far that may have deviated from the primitive one, it is to be feared that an enquiry of this kind would elude the utmost efforts of industry †.

\* ' Being informed that here were several Christian inhabitants in this place, we went to visit their church, which we found so poor and pitiful a structure, that here Christianity seemed to be brought to its humblest state, and Christ to be laid again in a manger. It was only a room of about four or five yards square, walled with dirt, having nothing but the uneven ground for its pavement; and for its ceiling only some rude traves laid athwart it, and covered with bushes to keep out the weather. On the east side was an altar built of the same materials with the wall; only it was paved at top with pot-sherds and slates, to give it the face of a table. In the middle of the altar stood a small cross composed of two laths nailed together in the middle: on each side of which ensign were fastened to the wall two or three old prints, representing our blessed Lord and the blessed Virgin, &c. the venerable presents of some itinerant friars, that had passed this way. On the south side was a piece of plank supported by a post, which we understood was the reading-desk, just by which was a little hole commodiously broke through the wall to give light to the reader. A very mean habitation this for the God of heaven! but yet held in great esteem and reverence by the poor people; who not only come with all devotion hither themselves, but also deposite here whatever is most valuable to them in order to derive upon it a blessing. When we were there the whole room was hanged about with bags of silk-worms eggs; to the end that by remaining in so holy a place, they might attract a benediction and a virtue of encreasing.' Maundrell's Journey from Aleppo to Jerusalem, pag. 7.

† A gentleman, who has lately obliged the world with an account of the Greek church, in Russia, speaking of the ritual of the Russians, takes notice that the music of their service books is written on a staff of five lines, from which he rightly infers that the ecclesiastical tones as sung by them are either corrupted, or have widely deviated from their original institution. The Rites and Ceremonies of the Greek Church in Russia, by Dr. John Gledhill King, pag. 43, in not..

## C H A P. IV.

**I**SIDORE, bishop of Seville, is frequently ranked among the writers on music, for this reason, as it seems, that he was the author of *Originum, five Etymologiarum*, a kind of epitome of all arts and sciences, in which are several chapters with the following titles, as Cap. i. *De Musica et ejus Nomine*. Cap. ii. *De Inventoribus ejus*. Cap. iii. *Quid sit Musica*. Cap. iv. *De tribus Partibus Musicæ*. Cap. v. *De triformi Musicæ Divisione*. Cap. vi. *De prima Divisione Musicæ harmonica*. Cap. vii. *De secunda Divisione organica*. Cap. viii. *De tertia Divisione rythmica*. Cap. ix. *De Musicis Numeris*; and also a Treatise on the Ecclesiastical Offices, in both of which there are many things relating to music, and in the former especially, many etymologies of musical terms, and names of musical instruments. His father was Severianus, a son of Theodoric king of Italy; he succeeded his brother Leander in the bishopric of Seville about the year 595, and governed that church near forty years: he was very learned in all subjects, more especially in geometry, music, and astrology; his book on the Offices contains the principal points of discipline and ecclesiastical polity. Mosheim in his chronological tables makes him the principal compiler of the Mosarabic liturgy, which is the ancient liturgy of Spain. He died in the year 636, and has a place in the calendar of Romish saints.

Of the introduction of music into the church-service, of the institution of the four tones by St. Ambrose, and of the extension of that number to eight by St. Gregory, mention has been made; we are now to speak of another very considerable improvement of church-music, namely, the introduction of that noble instrument the organ, which we are told took place about the middle of the seventh century. Authors in general ascribe the introduction of organs into churches to pope Vitalianus, who, as Du Pin, Platina, and others relate, was advanced to the pontificate in A. C. 663: the enemies of church-music, among whom the Magdeburg commentators are to be numbered, invidiously insinuate that it was in the year 666 that organs were first used in churches, from whence they infer the unlawfulness

ness



ness of this innovation, as commencing from an era that corresponds with the number of the beast in the Apocalypse: but the wit of this sarcasm is founded on a supposition that, upon enquiry, will appear to be false in fact; for though it is uncontroverted that Vitalianus introduced the organ into the service of the Romish church, yet the use of instruments in churches was much earlier; for we are told that St. Ambrose joined instruments of music with the public service in the cathedral church of Milan, which example of his was so well approved of, that by degrees it became the general practice of other churches, and has since obtained in almost all the Christian world besides. Nay, the antiquity of instrumental church-music is still higher, if we may credit the testimony of Justin Martyr and Eusebius, the latter of whom lived fifty, and the former two hundred years before the time of St. Ambrose. But to return:

Sigebert relates that in the year 766 the emperor Constantine \* sent an organ as a present to Pepin, then king of France, though the annals of Metz refer to the year 757; from hence some with good reason date the first introduction of the organ into that kingdom, but it was not till about the year 826 that organs became common in Europe.

Whoever is acquainted with the exquisite mechanism of this instrument, and considers the very low state of the manual arts at that time, will hardly be persuaded that the organ of the eighth century bore any very near resemblance to that now in use. Zarlino, in his *Sopplimenti Musicali*, libro VIII. pag. 290, has bestowed great pains in a disquisition on the structure of the ancient organ; the occasion of it he says was this, a lady of quality, Madonna Laura d'Este, in the year 1571, required of Zarlino, by his friend Francesco Viola, his sentiments of the organ in general, and whether he took the modern and the ancient instrument of that name to be alike or different: in giving his opinion on this question he attempts a description of the hydraulic organ from Vitruvius, which he leaves just as he found it; he then cites a Greek epigram of Julian the Apostate, who lived about the year 364, in which an organ is described. A transla-

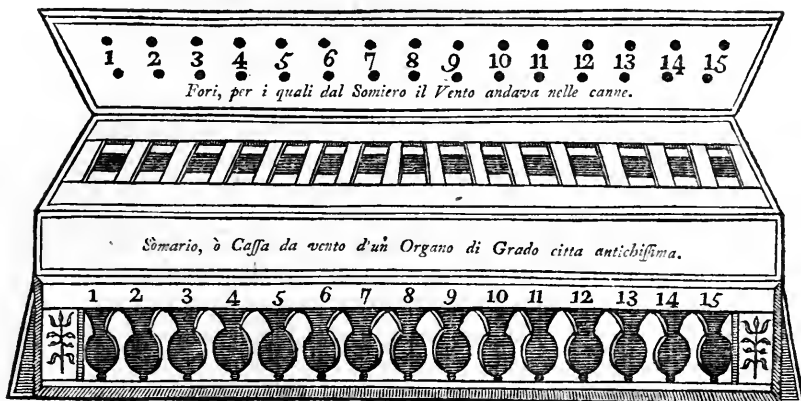
\* Surnamed Copronymus, because he is said to have defiled the font at his baptism. Mosh. vol. II. pag. 92. in not.

Other writers speak particularly, and say that the first use of organs in the western church was at Acon. Isaac. Chron. Anno Christi 826. Church Story.

tion of this epigram in the following words is to be found in Merfennus, lib. III. De Organis, pag. 113.

Quam cerno, alterius naturæ est fistula : nempe  
 Altera produxit fortasse hæc ænea tollus.  
 Horrendum fridet, nec nostris illa movetur  
 Flatibus, et missus taurino e carcere ventus  
 Subtus agit læves calamos, perque ima vagatur.  
 Mox aliquis velox digitis, insignis et arte  
 Adstat, concordēs calamis pulsatque tabellas :  
 At illæ subito exiliunt, et carmina miscēt.

As to the organ of the moderns, he says the common opinion is that it was first used in Greece, and from thence introduced into Hungary, and afterwards into Bavaria; but this he refutes, as he does also the supposed antiquity of an organ in the cathedral church of Munich, pretended to be the most ancient in the world, with pipes of one entire piece of box, equal in magnitude to those of the modern church organ: he then speaks of the *sommiero* of an organ in his possession that belonged to a church of the nuns in the most ancient city of Grado, the seat of a patriarch before the sacking of it by Pepo the patriarch of Aquileia, in the year 580. This *sommiero* he describes as being about two feet long, and a fourth of that measure broad, and containing only thirty pipes and fifteen keys, but without any stop; the pipes he says were ranged in two orders, each containing fifteen, but whether they were tuned in the unison or octave, as also whether they were of wood or metal, he says is hard to guess: he says farther that this instrument had bellows in the back part, such as are to be seen in the modern *regali*, and exhibits a draft of this instrument in the following form.



Zarlino speaks also of an ancient organ in the church of St. Anthony of Padua, of a convenient bigness, which had many orders of pipes, but no stops; and both these instruments he makes to be much more ancient than that of Munich in Bavaria; concerning the accounts of which he seems to be dissatisfied; for as to the pipes, he says there are no box-trees, except such as grow in the country of Prester John, of a size sufficient to make pipes of one piece so large as those are said to be; and that, after such were found, an organ so constructed as that a single pipe should require a whole tree, is not easily to be conceived of.

He farther takes some pains to shew the error of those who imagine that the organ mentioned by Dante, in the ninth canto of his Purgatory, was different in many respects from that of the ancients. The passage in Dante is an imitation of Lucan, lib. III. 'Tunc rupes tarpeia sonat.'

Non ruggiò sì, ne sì mostro sì acra  
 Tarpea; come tolto le fu' il buono  
 Metello; donde poi rimase maca.  
 I mi rivolsi attento al primo tuono;  
 Et Te Deum laudamus mi pareo.  
 Udir in voce mista al dolce suono.

Tal imagin a punto mi rendea  
 Cìò, ch' i udia, qual prender si fuole,  
 Quand' a cantar con organi si stea :  
 C' hor si hor, non s' intendon le parole.

But upon the whole, he is clearly of opinion that the hydraulic organ of Vitruvius, that other mentioned in the epigram of Julian above cited, the Bavarian organ, and that in the city of Grado, were essentially the same with the organ of his time\*.

That choral music had its rise in the church of Antioch, the metropolis of Syria, and that from thence it spread through Greece, and was afterwards brought into Italy, the several testimonies above adduced sufficiently shew: from thence it made its way into France, Britain, Spain, and Germany, and at length was received throughout Christendom. As to the time and manner of its introduction into Britain, history has ascertained it beyond a possibility of doubt; for we are expressly told, that at the time when Austin the monk arrived here, charged with a commission to convert the inhabitants of Britain to Christianity, singers attended him: and so watchful were the Roman pontiffs over its progress in this island, that in little more than half a century, one of the most excellent chanters that Rome afforded was sent hither, by Agatho, to reform such abuses as in that short period he might find to have crept into it. That it was received with great eagerness by the people of this country, there are many reasons for thinking; for, first, their fondness for music of all kinds

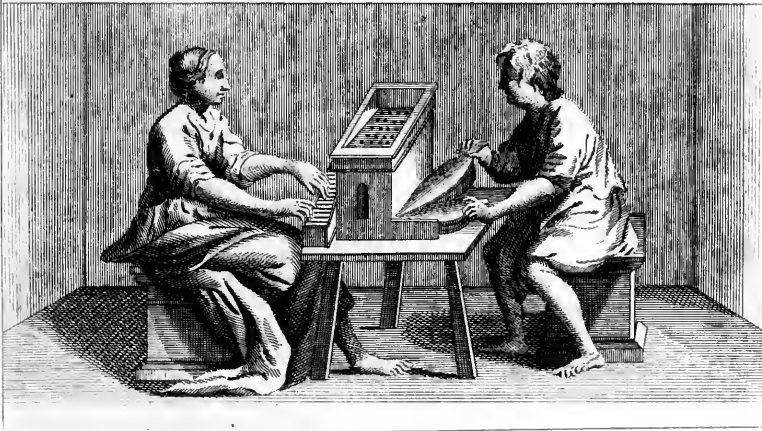
\* Merfennus seems to carry the antiquity of the organ farther back than Zarlino has done in the passage above cited, and to think that not only the hydraulic but the pneumatic organ, was in use among the Romans, though he has left it to the antiquaries to ascertain the precise time; for speaking of the epigram made in its praise by the emperor Julian, and which is inserted in his [Merfennus's] Latin work, he relates 'that the Sieur Naudé had sent him from the Mathei gardens at Rome, the form of a little cabinet of an organ, with bellows like those made use of to kindle a fire, and a representation of a man placed behind the cabinet blowing the bellows, and of a woman touching the keys.' He says, 'that on the bottom of the cabinet was the following inscription: L. APISIUS C. F. SCAPULA CAPITOLINUS EX TESTAMENTO FIERI MONUMEN. JUSSIT ARBITRATU HEREDUM MEORUM SIBI ET SUIS; concerning which, he adds, the antiquaries may conjecture what they can; for that it is sufficient that he has given the practice of his own age, which, he says, by far surpasses any thing that the ancients have left behind on this subject.' Harm. Univer. lib. VI. pag. 387.

The monument above spoken of has been recovered. Probably it is extant in some one or other of the collections of antiquities, published since the time of Merfennus, but the following representation of it was found among the papers of Nicola Francesco Haym, the  
 author

was remarkably great ; Giraldus Cambrensis asserts, almost in positive terms, that the natives of Wales and the northern parts of Great Britain were born musicians.

author of *Il Tesoro Britannico delle Medaglie Antiche*, and as it corresponds exactly with the description of it by Merfennus, it is here inserted.

L. APISIUS C. F. SCAPTIA CAPITOLINUS EX  
TESTAMENTO FIERI MONUMEN. JUSSIT  
ARBITRATU HEREDUM MEORUM SIBI ET SUIS;



The same author takes occasion to mention an organ described in an epistle to Dardanus, in the fourth volume of the works of St. Jerome, which, from the many barbarisms that appear in it, he says, ought not to be attributed to that excellent man. This organ, he says, is represented as having twelve pair of bellows and fifteen pipes, and a wind-chest, made of two elephant skins ; and as yielding a sound as loud as thunder, which might be heard at more than a thousand paces distance. Merfennus adds, that in the same epistle mention is made of an organ at Jerusalem, which was heard at the Mount of Olives. He says, there are many other instruments described in the same epistle ; but he remarks, that if the elephant skins above mentioned were sewed together, and were fitted by bellows, the instrument was more properly a cornamusa, or bagpipe, than an organ.

To this account of organs of a singular construction, the following may be added of some less ancient. Fuller, in his *Worthies of Denbighshire*, pag. 33, mentions an organ with golden pipes. Leander Alberti, in his *Description of Italy*, says, he saw one, in the court of the duke of Mantua, of alabaster ; and another at Venice, made all of glass ; and Pope Sylvester the Second made an organ that was played on by warm water. See *Oldys's British Librarian*, N<sup>o</sup> 1. pag. 51.

Besides this, there are proofs in history that in a very short time after its first planting amongst us, music was observed to flourish; and that, in short, it loved the soil, and therefore could not fail to grow.

It was in the cathedral church of Canterbury that the choral service was first introduced; and till the arrival of Theodore, and his settlement in that see, the practice of it seems to have been confined to the churches of Kent; but after that, it spread over the whole kingdom. The clergy made music their study, they became proficient in it, and, differing perhaps in that respect from those of other countries, they disseminated the knowledge of it among the laity. Hollinshed, after Bede, describes the progress of singing in churches in these words:

‘ Also, whereas before-time there was in a manner no singing in the English churches, except it were in Kent, now they began in every church to use singing of divine service, after the rite of the church of Rome. The archbishop Theodore, finding the church of Rochester void by the death of the last bishop, named Damian, he ordeyned one Putta, a simple man in worldly matters, but well instructed in ecclesiastical discipline, and namely well seene in song, and musicke to be used in the church, after the manner as he had learned of Pope Gregories disciples\*.’

After this, viz. in 677, Ethelred, king of the Mercians, invaded the kingdom of Kent with a great army, destroying the country before him, and amongst other places the city of Rochester; the cathedral church thereof was also spoiled and defaced, and Putta driven from his residence; upon which, as the same historian relates, ‘ he wente unto Scroulse, the bishop of Mercia, and there obteyning of him a small cure, and a portion of ground, remayned in that country; not once labouring to restore his church of Rochester to the former state, but went aboute in Mercia to teach song, and instruct such as would learne musicke, wheresoever he was required, or could get entertainment.’ †

\* First volume of the Chronicles of England, Scotland, and Ireland, pag. 178, col. iii. edit. 1577.

† Ibid. pag. 181.

## C H A P. V.

**T**HE several improvements herein before enumerated, related solely to that branch of music which those who affect to use the terms of the ancients, called the *Melopœia*; what related to the measures of time, which, as has been shewn, were regulated solely by the metrical laws, as they stood connected with poetry, or, to use another ancient term, the *rhythmopœia* was suffered to remain without innovation till the beginning of the fourteenth century, as it is said, when John De Muris, a doctor of the Sorbonne, and a native of England, though the generality of writers suppose him to have been a Norman, invented characters to signify the different lengths of sounds, and, in short, instituted a system of metrical music.

It has already been mentioned, that till within these few years it was a dispute among the writers on music, whether the ancients, by whom we are to understand the Greek harmonicians and their followers, were acquainted with music in consonance, or not: the several arguments of each party have been stated, and, upon a comparison of one with the other, it does most clearly come out, that music in consonance, though as to us it be of great antiquity, is, with respect to those of whom we are now speaking, a modern improvement.

In fixing the æra of this invention, those who deny that it was known to the ancients are almost unanimous in ascribing it, as indeed they do the invention of the polyplectral species of instruments, which are those adapted to the performance of it, to Guido Aretinus. Kircher was the first propagator of this opinion\*, which he confesses is founded on a bare hint of Guido; but in this he is mistaken, both in his opinion and in the fact which he assigns as a reason for it; for neither in the *Micrologus* nor in the other tract of Guido, intitled, *Argumentum novi Cantus inveniendi*, of both which a very particular account will be given hereafter, is there the least intimation of a claim to either of the above inventions.

\* *Musurg.* tom. I. pag. 215.

Not to insist farther on this mistake, the fact is, that symphonic music was known in the eighth century, and that Bede does very particularly mention a well-known species of it, termed Descant: and this alone might suffice to shew that music in consonance, though unknown to the ancient Greeks, was yet in use and practice before the time of Guido, who flourished not till the beginning of the eleventh century; for what are we to understand by the word Descant, but music in consonance?

But lest a doubt should remain touching the nature of the practice which the word Descant is intended to signify, let us attend to a very particular description of it, contained in an ancient manuscript, formerly part of the Cotton library, but which was destroyed by the accident of fire which happened some years ago at Ashburnham-house, where it was deposited. The passage above mentioned may be thus translated\*.

‘ If two or three descant upon a plain-song, they must use their best endeavours to begin and proceed by different concordances; for if one of them should concur with another, and sing the same concord to the plain-song, then ought they immediately to constitute another. If you would descant under the plain-song, in the duple, [i. e. octave] in the sixth, the fifth, the third, the twelfth, or in the fifteenth, you ought to proceed in the same manner as you would were you to descant above the plain-song; whoever sings above it must be experienced in the grave sounds, their nature and situation; for on this the goodness of the harmony in a great measure depends. Another method of descanting is practised, which, if it be well pronounced, will, though easy, appear very artificial, and several will seem to descant on the plain-song, when in reality one only shall descant, and the others modulate the plain-song in different concordances: it is this, let there be four or five singers, and let one begin the plain-song in the tenor; let the second pitch his voice in the fifth above, the third in the eighth, and the fourth, if there be four besides him who sings the tenor or plain-song, in the twelfth, and all begin and continue in these concordances to the end; only let those who sing in the eighth and

\* From a copy made for the use of Dr. Pepusch. Vide Mr. Casley's catalogue



' twelfth break and flower the notes in such manner as may best grace  
 ' the measure ; and note well, that whosoever sings the tenor must  
 ' pronounce the notes full in their measure, and that he who descants  
 ' must avoid the perfect, and take only the imperfect concords,  
 ' namely, the third, sixth, and tenth, both ascending and descending ;  
 ' and thus a person who is skilled in the practice of descant, and  
 ' having a proper ductility of voice, may make great melody with  
 ' others, singing according to the above directions ; and for this kind  
 ' of singing four persons are sufficient, provided there be one to  
 ' descant continually, in a twelfth above the plain-song.'

Morley, in his Introduction, pag. 70, speaking of the word Descant,  
 indeed says, that ' it is a word usurped of the musitions in divers  
 ' significations ;' yet he adds, ' that it is generally taken for singing a  
 ' part extempore, on a playne-song ; so that when a man talketh of a  
 ' descanter, it must be one that can extempore sing a part upon a  
 ' playne-song.'

The practice of descant, in whichever of these two senses the  
 word is accepted, may reasonably be supposed to have taken its rise  
 from the choral service, which, whether we consider it in its primitive  
 state, as introduced by St. Ambrose, or as improved by pope Gre-  
 gory, consisted either of that plain and simple melody which is un-  
 derstood when we speak of the Ambrosian or Gregorian chant, or of  
 compositions of the hymnal kind, differing from the former, in that  
 they were not subject to the tonic laws which at different periods had  
 been laid down by those fathers of the church.

Continual practice and observation suggested to those whose duty  
 obliged them to a constant and regular attendance at divine service,  
 the idea of a polyphonous harmony ; by means whereof, without dis-  
 turbing the melody, the ear might be gratified with a variety of con-  
 cordant sounds, uttered by a number of voices ; and indeed little less  
 than a discovery of this nature was to be expected from the introduc-  
 tion of music into the church, considering the great number of per-  
 sons whose duty it became to study and practise it ; considering also,  
 the great difference, in respect of acuteness and gravity, between the  
 voices of men and boys ; and, above all, that nice discriminating  
 sense of harmony and discord, resulting from an attention to the  
 sound of that noble instrument the organ. Platina has fixed the

æra when the organ was first introduced into churches at the year 660, and gives the honour of it to Vitalianus; and in less than half a century afterwards, we discover the advantages arising from it, in that which is the subject of the present enquiry, the invention of a kind of music consisting of a variety of parts, called descant, the nature whereof is explained above, and is mentioned by Bede, who flourished at the beginning of the eighth century, and not only was extremely well skilled in the science of music, but spent the far greater part of his life in the study and practice of it.

An Italian writer of good authority\*, whose prejudices, if he had any, did not lead him to favour the moderns, has gone farther, and ascribed the use of the term to our countryman; and there is extant, in the *Cambriæ Descriptio* of Giraldus Cambrensis, a relation of a practice that prevailed in his time among the inhabitants of this country, not inconsistent with the supposition that either Bede himself, or some of the brethren of the monastery where he resided, might be the inventors of music in consonance.

The relation of Giraldus Cambrensis above referred to is to the following effect:

‘ In the northern parts of Britain, beyond the Humber and on the borders of Yorkshire, the people there inhabiting, make use of a kind of symphonic harmony in singing, but with only two differences or varieties of tones or voices. In this kind of modulation, one person [submurmurante] sings the under part in a low voice, while another sings the upper, in a voice equally soft and pleasing. This they do, not so much by art as by a habit, which long practice has rendered almost natural; and this method of singing is become so prevalent amongst these people, that hardly any melody is accustomed to be uttered simply, or otherwise than variously, or in this twofold manner\*.’

\* Gio. Bat. Doni, in his treatise *De Generi e de Modi della Musica*, pag. 97.

\* In musico modulamine non uniformiter ut alibi, sed multipliciter multique; modis & modulis cantilenas emittunt, adeo ut in turba canentium, sicut huic genti mos est, quot videas capita, tot audias carmina discriminatæ vocum, varia in unam denique sub B. Mollis dulcedine blanda consonantiam & organicam convenientia melodiam. In borealibus quoque majoris Britannicæ partibus trans Humbrum, Eboracique finibus Anglorum populi qui partes illas inhabitant simili canendo symphonicæ utuntur harmoniæ: binis tamen solummodo tonorum differentiis & vocum modulando varietatibus, una inferius sub murmurante altera verò supernè demulcente pariter & delectante. Nec arte tantum sed usu longæus

As this method of finging seems by the account above given of it to have been subservient to the laws of harmony, an enquiry into its origin may lead to a discovery when and where music in consonance was first practised. The author above cited would insinuate that the inhabitants of this country might receive it from the Dacians, or Norwegians; but he has not shewn, nor is there the least reason to think that any such practice prevailed among either of those people; and till evidence to that purpose shall be produced, we may surely suspend our belief, and refer the honour of the invention to those who are admitted to have been in possession of the practice. It will be remembered, that in the foregoing pages it has been related that the monastery of Wiremouth, in the kingdom of Northumbria, was famous for the residence of John the arch-chanter, and other the most skilful musicians in Britain. It is therefore not improbable that symphonic music might have its rise there, and from thence it might have been disseminated among the common people inhabiting that part of the kingdom; nay, it is next to impossible that a practice so very delightful, and to a certain degree so easily attainable, could be confined within the walls of a cloister.

It is true, that the reasons above adduced will warrant nothing more than a bare conjecture that music in consonance had its rise in this island; but it may be worth considering whether any better evidence than that it was known and practised in England so early as the eighth century, can be produced to the contrary.

But without pursuing an enquiry touching the particular country where symphonic music had its rise, enough has been said to ascertain, within a few years, the time of its origin; it remains to account for the error of those writers who ascribe the invention of it to Guido.

longævo & quasi in naturam mora diutina jam converso, hæc vel illa sibi gens hanc specialitatem comparavit. Qui adeo apud utramque invaluit & altas jam radices posuit, ut nihil hic simpliciter, ubi multipliciter ut apud priores, vel saltem dupliciter ut apud sequentes, mellitè proferri consueverit. Pueris etiam (quòd magis admirandum) & ferè infantibus, (cum primum à fletibus in cantus erumpunt) eandem modulationem obseruantibus. Angli verò quoniam non generaliter omnes sed boreales solùm hujusmodi vocum utuntur modulationibus, credo quòd a Dacis & Norwagiensibus qui partes illas infulte frequentius occupare ac diutius obtinere solebant, sicut loquendi affinitatem, sic canendi proprietatem contraxerunt. Cambriæ Descriptio, cap. xiii.

Besides the application of the syllables UT, RE, MI, FA, SOL, LA, to the first six notes of the septenary, it is universally allowed that he improved, if not invented the stave; and that if he was not the first who made use of points placed upon one or other of the lines to signify certain notes, he was the first that placed points in the spaces between the lines, and by the invention of the keys or cliffs, compressed, as it were, the whole system of the double diapason into the narrow limits of a few lines.

After he had thus adjusted the stave, and had either invented or adopted, it matters not which, the method of notation by points instead of letters, it was but a consequence that the notation of music of more points than one should be by points placed one under another: and as in his time, the respective notes contained in the several parts, being regulated by one common measure, viz. that of the feet or syllables to which they were to be sung, they stood in need of no other kind of discrimination than what arose from their different situations on the same stave, or on different staves, and, by consequence, the points must have been placed in a vertical situation, and in opposition to each other; and this method of notation suggested for music of more than one part the name of Counterpoint, a term in the opinion of some favouring of the barbarity of the age in which it was invented, but which is too expressive of the idea intended to be conveyed by it to be quarrelled with.

What has been said above respecting the improvements of Guido, will furnish a rule for judging of the credibility of the assertion which it is here proposed to refute, namely, that he was the inventor of polyphonous or symphonic music, and lead to the source of that, which by this time, cannot but be thought an error. The writers who maintain this position, and they are not a few, have mistaken the sign for the thing signified, that is to say, Counterpoint, for Music in Consonance, the thing characterised by counterpoint. The fact in short is, that music in consonance was in use before Guido's time; he invented a method of notation, calculated to define it, called Counterpoint: this is the whole relating to the invention now under consideration that can be ascribed to him; and it must have been the effect of strange inattention that a different opinion has prevailed so long in the world.

Towards the end of the eighth century flourished BEDE, well known to the world by the epithet of VENERABLE. He was born about

about the year 672, and was educated in the monastery situate at Weremouth, near the mouth of the river Tyne, in the bishopric of Durham. He studied with incredible diligence, and, in the opinion of the famous Alcuin, was, for learning, humility, and piety, a pattern for all other monks. He wrote an Ecclesiastical History of Britain, at the end whereof are some memoirs of his own life, from which it appears that he was very assiduous in acquiring a knowledge of music, and punctual in the performance of choral duty in the church of his monastery. He had the good fortune to be very intimately acquainted with some of the singers whom pope Agatho had sent into Britain to teach the method of singing, as it was practised at Rome; and was, in a word, one of the greatest men of his time. He died in the year 735. His works have been many times printed, and in the latter editions make eight volumes in folio; the last is that of Cologne, in 1688. The first volume contains a great number of small tracts on arithmetic, grammar, rhetoric, astronomy, chronology, music, the means of measuring time, and other subjects. On that of music, in particular, there is a tract intitled *De Musica Theorica*; and another, *De Musica Quadrata, Mensurata, seu Practica* \*. It is said, that he had no fewer than six hundred pupils; and that Alcuin, the preceptor to Charlemagne, was one of them. There is a well written life of him in the *Biographia Britannica*, and an accurate catalogue of his works in the *Bibliotheca Britannico-Hibernica* of bishop Tanner.

NOTGERUS, or NOTKER, surnamed LE BEGUE, a monk of St. Gal, flourished about the year 845, under the emperor Lotharius, son of Lewis the Pious. Among other things, he is famed for his book *De Musica et Symphonia*. He is supposed to have been the inventor of the *Sequentiæ*, which are those parts of the office in which the people answer to the priest, and which pope Nicolas I. ordained to be sung at mass. He died in 912. Innocent III. had taken order for his canonization, but his design was never carried into execution. There was another of the name, bishop of Liege: Trithemius has confounded them together.

RABANUS MAURUS, a Moor, as his surname imports, is reckoned in the number of those who have written on music. He was born at

\* Vide Tan. Biblioth. pag. 89, in not. col. ii.

Mentz, in 788, and bred up in the monastery of Fulda. He studied at Tours, under Alcuin, and returning to his monastery, was chosen abbot thereof, in 822. Having enjoyed that dignity twenty years, he laid it down to please the monks, who said he applied himself too much to study, and too little to the affairs of the monastery. He retired to Mount St. Pierre; and was at last chosen archbishop of Mentz, in 847. In a treatise of the universe, consisting of twenty-two books, which he wrote and sent to Lewis le Debonnaire\*, he has comprised an infinite number of common places, amongst which, it is supposed, are many relating to music, since Brossard has ranked him in his second class of writers on that subject. In a commentary of his upon the liturgy, he expatiates on the sacrifice, as it is called of the mass †, which latter word he supposes to be derived from the ‘Ite missa est,’ Go, ye are dismissed, the form used for the dismissal of the catechumens, and to signify that the service was ended.

WALAFRIDUS STRABO, so surnamed because he squinted, was first a monk of Fulda, and afterwards abbot of Richenou, in the diocese of Constance. He is reckoned among the musical writers, and had been a disciple of Rabanus Maurus. He flourished about the year 842, and wrote *De Officiis Divinis*, the twenty-fifth chapter of which tract is intitled *De Hymnis & Cantilenis eorumque incrementis, &c.* ‡ The Benedictines, compilers of

\* Du Pin. *Nouv. Biblioth. des Auteurs Ecclef. sec. ix.*

† As the word Mass will frequently occur in the course of this work, the following note of the translator of Du Pin’s *Bibliothèque*, vol. VI. pag. 3, may serve for an explanation of that rite.

“The word *Missa*, or *Mass*, is an old Latin word, and signifies generally the whole service of the church, but more especially the holy sacrament of Christ’s body and blood. It was called *Missa*, or *Dimissio*, because no man was suffered to remain in the church that could not or would not receive the sacrament; and therefore such persons as had a mind to see and hear, but not receive, were all, without exception, dismissed by the deacon, after the sermon was ended, with these words, “*Ite, missa est; Go, ye are dismissed:*” and if any delayed, they were urged to depart by the deacons and exorcists, saying aloud, “*Si quis non communicet det locum;* Whoever will not receive, let him go out.” The Roman church puts a different sense upon this word *Mass*, understanding by it that solemn service wherein they do pretend to offer unto God the body and blood of his Son, as a propitiatory sacrifice for the sins, both of the quick and dead. Isidore here takes it in the first sense, calling it *Ordo Precum*, i. e. the Form of Prayers. But Du Pin, by joining it with the word *Canon*, (a word of a much later use, and which signifies, in the Roman church, the rule or form of celebrating their mass) seems to bring it over to the latter, but against the sense of St. Isidore of Seville.’

‡ Vide Du Pin. *Biblioth. cent. ix. cap. xiii.*

the *Histoire Litteraire de la France*, have discovered that there was another of his name, dean of the abbey of St. Gal, in the preceding century, with whom he is often confounded. *Hist. Lit. de la France*, tom. IV. pag. 59, in not.

BRISTAN, or BRICSTAN, a native of England, a Benedictine monk, and precentor in the monastery of Croyland, is celebrated by Pits as an excellent mathematician, poet, and musician\*. *Ingulphus*, pag. 867, speaks thus of him: 'Bristanus, quondam cantor monasterii, musicus peritissimus et poeta facundissimus.' He lived about 870, at the time when, in one of the invasions of the Danes, his monastery was burned, and the monks slain: he had, however, the good fortune to escape, and composed certain elegiac verses, wherein he relates the cruelties exercised by the invaders, the sufferings of his brethren, and the misfortunes attending this disastrous event.

As it is proposed in this work to give an account as well of practical as theoretical musicians, there will need little apology for inserting in this place a few particulars of our own king ALFRED, who is celebrated by Bale, and other writers, for his skill in music, and his performance on the harp: that he was very sedulous in his endeavours to promote the study of music in his kingdom, we are told by Sir John Spelman, in his life of this great monarch, pag. 135; and particularly that he procured to be sent from France one Grimbald †, a man very skillful in music, of a singular good life, great learning, and who besides was an excellent churchman. Sir John Spelman adds, that the king first came to the knowledge of this person by his courtesy, he having made very much of him in his childhood, at Rheims, when he was in his passage towards Rome.

† Pits. De Reb. Angl. pag. 167. Tann. 124.

‡ Of this Grimbald very honourable mention is made in the *Histoire Litteraire de la France*, tom. V. pag. 694. Alfred had written to Fulk, archbishop of Rheims, intreating him to send to England a person skilled in the liberal sciences, particularly music. The archbishop wrote the king a long letter in answer, recommending Grimbald, a monk of St. Bertin, the person above mentioned. This was about the year 880; and had Grimbald been a much greater man than he was, the French would have been bound in gratitude to have spared him to us; for a few years before, they had from us Alcuin, the tutor of Charlemagne. It appears that Grimbald behaved very well whilst he was here. In the chronicle of Nic. Harpsfield are the heads of a speech of his, in a synod at London, before king Alfred and archbishop Æthelred, wherein he discoursed gravely and wisely of the primitive dignity of human nature, and of its corruption by the fall of Adam. The whole is said to be in the *Annals of Winchester*. Vide Spelm. *Life of Alfred*, pag. 135, in not.

Again, the same author relates, that among the rest of his attendants, he is noted, Solomon like, to have provided himself of musicians, not common, or such as knew but the practice part; but men skilful in the art itself, whose skill and service yet farther improved with his own instruction, and so ordered the manner of their service as best befitted the royalty of a king. Spelm. Life of Alfred, pag. 199.

That he himself was also a considerable proficient on the harp, were other evidences wanting, the well-known story related by Ingulphus, William of Malmesbury, and succeeding historians, of his entering the Danish camp, disguised like a harper or minstrel, is a proof.

The substance of which relation is, that being desirous to know the strength and circumstances of the Danish army, then in Somersetshire, he disguised himself like a minstrel, and taking with him a harp, and one only confidant, he went into the Danish camp, the privilege of his disguise intitling him to free admittance every where, even into the king's tent; and there, for many days, he so employed himself as that, while he entertained his enemies with his mirth and music, he obtained the fullest satisfaction touching their ability to resist the attack on them, which he had for some time been meditating. This was in the year 378\*.

HUCBALD, HUGBALDUS, or HUBALDUS, for by all these names is he called, is spoken of as the most celebrated doctor in France at the close of the ninth century. He was a Benedictine monk, of the abbey of St. Amand, in the diocese of Tournay, and flourished about the year 880, under Charles the Bald. He is celebrated for his profound skill in the learning of those days, and particularly for his excellence in poetry and music †. He is said to have invented a division of the monochord, by means whereof music might be learned without the help of a master; and to have invented certain signs, independent of lines and letters, to mark the sounds in the octave. Martini, who sometimes calls him Ubaldo, has given a specimen of this his method

\* Vide Spelman's Life of Alfred, pag. 63.

† Hist. Littéraire de la France, tom. VI. pag. 210.

Sigebert, Trithemius, and others, mention a poem of Hugbald's composing, and of a very singular kind. It is an encomium on Baldness, in heroic verse, inscribed to the emperor Charles the Bald, in which every word begins with the initial letter of the emperor's name, as in the following line.

*Carmina clarifona clavis cantate Camene.*





Te plebs æternùm lugens sibi deflet ademtum.  
 Vigè juge, sophista, vâle, Theophile care.  
 Ediderat stylo examussum certamen honesto  
 Matris Julitæ, Cirici prolisque venustæ,  
 Ceu doctor, celebrè gnâvus per cuncta magister.  
 Laudetur, vigeat, quod quæso legatur, ametur.  
 Hæc quisquis legis, requièm dic det Deus illi,  
 Palmam cum superis gestet super astra choreis  
 Gloria pauper hæc peregit, metra clienter.

The above Hucbald is usually styled Hucbald de Saint Amand; notwithstanding which he is sometimes confounded with two other writers of the same name, the one a monk of Orbais, the other a clerk in the church of Liege, neither of whom seem to stand in any degree of competition with him\*.

AURELIANUS, a clerk in the church of Rheims, lived in the year 890, under the emperor Arnulphus, and on to the reign of Lewis IV. He was in great estimation for his learning, and author of a treatise on the tones, intitled, *Tonarius regularis*, which he composed for the use of his church, and inscribed to Bernard, the precentor of the choir. He is placed by Trithemius among the ecclesiastical writers †.

## C H A P. VI.

WE are now arrived at a period, namely the commencement of the tenth century, when learning began to flourish throughout Europe. In France, particularly, not only mathematics, but the arts of painting, sculpture, and architecture, were cultivated with great assiduity. The abbies of Corbie, of Rheims, and Cluni, were the great seminaries of that country, and produced a succession of men eminent in all faculties: the former of these was so famous for musical institution, that young monks from England were usually sent thither to be taught the true method of singing in divine service. Letald, Remi de Auxerre, Notker le Begue, Wigeric bishop of Metz,

\* Storia della Musica, pag. 214.

† Vossius De Scientiis Mathem. cap. ix. § 6.

and Hucbald de St. Amand, before-mentioned, were all skilled in music, and are some of the most celebrated names that occur in the literary history of those times\*.

Odo, abbot of Cluni, in the province of Burgundy, a Frenchman of noble descent, also flourished in this age, that is to say, about the year 920. He is highly celebrated by the writers of those times, for his learning, his piety, and his zeal to reform the manners of the clergy. The authors of the *Histoire Litteraire de la France* speak of him as one of the great luminaries of that kingdom. As to his skill in music, they represent him as surpassing most of his contemporaries: they speak also of a manuscript of his, which is no other than the *Enchiridion*, mentioned by Gerard Vossius, and commended by Guido himself, beginning ‘*Quid est musica?*’ as a great curiosity, and being extant only in the Vatican library, and in that of the queen of Sweden; nevertheless, it is to be found in the library of Baliol college, and makes part of a volume, that contains the *Micrologus*, and other tracts of Guido, with some others on the subject of music, of great value; and Martini refers to another, in the conventual library at Cesana, near Ravenna, in Italy.

The *Enchiridion* of Odo is in the form of a dialogue between a teacher and his disciple: it begins with directions for the making and dividing of the monochord, and contains a general definition of the consonances, the method of notation by the Roman letters, as instituted by Gregory, a formula of the tones, and concludes with general directions for antiphonal singing.

It is to be remarked, that all the tracts written about this time, which profess to teach the knowledge of music, and there are innumerable of them extant, begin, as this does, with directions for making and dividing the monochord: the reason of this is, that the method of ascertaining the places of the semitones in the diatason, by the syllables, was not then discovered; and hardly any instrument then in use, excepting the organ, would answer the end of impressing upon the memory of a child, the difference between the greater and lesser intervals; the teachers of music therefore invariably directed their pupils to find out the intervals themselves, and lay

\* *Hist. Litteraire de la France*, tom. VI. pag. 71.

the foundation of their studies in the knowledge of the monochord.

SILVESTER, the second pope of that name, is justly celebrated as one of the great ornaments of the tenth century. He was a monk of Aurillac, in the province of Auvergne, a monastery which had been founded at the latter end of the preceding age. His pursuits were so various, and his excellence in all branches of learning so great, that it is difficult to say in what class of learned men he merits most to be placed; or whether we should consider him as a divine, a mathematician, or a philosopher at large. It is certain that he wrote upon geometry, particularly on the quadrature of the circle, on astronomy, logic, and rhetoric; that he was deeply skilled in the science of music, as a proof whereof it is said that he made some considerable improvements of the organ, on which he was an excellent proficient: William of Malmesbury speaks, with admiration, of an improvement made by him in the hydraulic organ\*. He was born of obscure parents, in the neighbourhood of Aurillac: his name of baptism was Gerbert, or Girbert: his great merit, and a disposition to communicate to the world the discoveries he made in the course of his studies, facilitated his promotion to the highest dignities of the church; for he was successively archbishop of Rheims and Ravenna, and at last pope. While he was archbishop of Rheims, he had the misfortune to see that city sustain a close siege, which obliged him to seek refuge in the court of the emperor Otho III. who had been his disciple. During his residence there, he invented an instrument for the measuring of time by the motion of the polar star, which some writers have confounded with the astrolabe. By the interest of his patron Otho, in the year 998, he was promoted to the archbishopric of Ravenna, and the following year to the papacy on the death of Gregory V. which he held but four years, for he died in 1003.

Mosheim has bestowed an eulogium on Gerbert as characteristic of the age in which he lived, as of the person he means to celebrate. He relates that he derived his learning in a great measure from the

\* Said to have been played on by warm water. See the History of the Manual Arts, by Dr. Thomas Powell, octavo, 1661, abridged in Oldys's British Librarian, N<sup>o</sup> I. pag. 51.

Arabians, among whom at that time there were many very considerable men; though it is remarkable that we meet with the name of but one writer on music of that country, viz. Alfarabius, who is barely mentioned in a note in the life of Hai Ebn Yokdhan, an ingenious fiction translated from the original Arabic by Simon Ockley, 8vo. 1708. A treatise of his on music is referred to in the *Margaritha Philosophica* of Georgius Reischius, printed at Basil in 1517. Mosheim speaks thus of the state of learning in Gerbert's time.

‘ It was not however to the fecundity of his genius alone that Gerbert was indebted for the knowledge with which he now began to enlighten the European provinces; he had derived a part of his erudition, particularly in physic, mathematics, and philosophy, from the writings and instructions of the Arabians, who were settled in Spain. Thither he had repaired in pursuit of knowledge, and had spent some time in the seminaries of learning at Cordoua and Seville, with a view to hear the Arabian doctors; and it was, perhaps, by his example, that the Europeans were directed and engaged to have recourse to this source of instruction in after-times. For it is undeniably certain, that, from the time of Gerbert, such of the Europeans as were ambitious of making any considerable progress in physic, arithmetic, geometry, or philosophy, entertained the most eager and impatient desire of receiving instruction either from the academical lessons, or from the writings of the Arabian philosophers, who had founded schools in several parts of Spain and Italy. Hence it was that the most celebrated productions of these doctors were translated into Latin, their tenets and systems adopted with zeal in the European schools, and that numbers went over to Spain and Italy to receive instruction from the mouths of these famous teachers, which were supposed to utter nothing but the deepest mysteries of wisdom and knowledge. However excessive this veneration for the Arabian doctors may have been, it must be owned nevertheless that all the knowledge, whether of physic, astronomy, philosophy, or mathematics, which flourished in Europe from the tenth century, was originally derived from them, and that the Spanish Saracens in a more particular manner may be looked upon as the fathers of European philosophy.’ *Mosh. Eccles. Hist.* vol. II. pag. 199.

The diligence with which Gerbert pursued his studies, and his proficiency in so many various branches of learning, raised in the vulgar a suspicion of his being addicted to magic, which Platina has without hesitation adopted; for he says he obtained the papacy by ill arts, and that he left his monastery to follow the devil. He however allows him the merit of a sincere repentance, but mentions some prodigies at his death, which few can believe on the authority of such a writer. Naudeus has written a justification of a great number of learned men who have undergone the same censure, and has included Silvester among them; but long before his time a certain poet had done him that good office in the following epigram.

Ne mirare Magum fatui quod inertia vulgi  
 Me (veri minime gnara) fuisse putat.  
 Archimedis studium quod eram sôphiæque sequutus  
 Tum, cum magna fuit gloria scire nihil.  
 Credebant Magicum esse rudes, sed busta loquuntur  
 Quam pius, integer & religiosus erant.

The following epitaph bespeaks his character, and is an epitome of his history.

Iste locus mundi Silvestri membra sepulti  
 Ventura Domino conferet ad sonitum.  
 Quem dederat mundo celebrem doctissima virgo.  
 Atque caput mundi culmina Romulea.  
 Primum Gerbertus meruit Francigena sede  
 Remensis populi metropolim patriæ.  
 Inde Ravennatis meruit conscendere summum  
 Ecclesiæ regimen nobile, sicque potens  
 Post annum Romam mutato nomine sumit,  
 Ut toto pastor fieret orbe novus.  
 Cui nimium placuit sociali mente fidelis.  
 Obtulit hoc Cæsar tertius Otho sibi.  
 Tempus uterque comit clara virtute sôphiæ;  
 Gaudet, & omne seclum frangitur omne reum  
 Clavigeri instar erat cælorum sede potitus,  
 Terna suffectus cui vice pastor erat.

Iste

Iste vicem Petri postquam suscepit, abegit  
Lustrali spatio sæcula morte sui.

Obriguît mundus discussa pace triumphus  
Ecclesiæ mutans, dedidicit requiem.

Sergius hunc loculum miti pietate sacerdos,  
Successorque suus comsit amore sui.

Quisquis ad hunc tumultum devexa lumina vertis,  
Omnipotens Domine, dic, misere sui.

BERNO, abbot of Richenou, in the diocese of Constance, who flourished about the year 1008, is celebrated as a poet, rhetor, musician, philosopher and divine. He was the author of several treatises on music, particularly of one *De Instrumentis Musicalibus*, beginning with the words 'Musicam non esse contem!' which he dedicated to Aribon, archbishop of Mentz. He also wrote *De Mensura Monochordi*: but the most celebrated of his works is a treatise *De Musica seu Tonis*, which he wrote and dedicated to Pelegrinus, archbishop of Cologne, beginning 'Vero mundi isti advenæ et Peregrino': this latter tract is part of the Baliol manuscript, and follows the *Enchiridion* of Odo, above referred to: it contains a summary of the doctrines delivered by Boetius, an explanation of the ecclesiastical tones, intermixed with frequent exhortations to piety, and the application of music to religious purposes. He was highly favoured by the emperor Henry II. for his great learning and piety, and succeeded so well in his endeavours to promote learning, that his abbey of Richenou was as famous in his time as those of St. Gal and Cluni, then the most celebrated in France. He died in 1048, and was interred in the church of his monastery, which but a short time before he had dedicated to St. Mark.

From the account herein before given of the rise and progress of choral service, and of the institution of the ecclesiastical tones, modes, tropes, or whatever else they may be termed, it is clear that before the eleventh century they were in number eight, besides which, the actual existence at this day of manuscripts, such as those of Aurelianus, Odo of Cluni, and this of Berno above-mentioned, in which not only eight tones are spoken of, but a formula of each is given in words at length, are indisputable evidence of the fact. A learned gentleman, Dr. King, the author of a book lately published, intitled the *Rites and Ceremonies of the Greek Church in Russia*, has intimated

mated, pag. 43, that the addition of the four plagal tones; as they are called, to the four authentic of St. Ambrose, is by some ascribed to Guido Aretinus, who, by the way, in his *Micrologus* lays not the least claim to this improvement, but speaks of the eight ecclesiastical tones as an ancient establishment. We are therefore necessitated to conclude that the contrary opinion is without foundation, and the rather, as no writer of authority among the many that have been consulted in the course of this work, has intimated the least doubt but that the *Cantus Gregorianus* consisted of eight tones.

Through all the variations that attended music, the ancient system of a bisdiapason, constituted of tetrachords, retained its authority; we do not find that even in the time of Boetius the system itself had received any alteration; the Latins it is true had rejected the ancient Greek characters, and introduced the Roman capital letters in their stead; and pope Gregory reduced those letters to the first seven of the Roman alphabet, which, by repeating them in each septenary, he made to serve the purpose of a great number, calling the first series graves, the second acutes, and the third, distinguished by double small letters, super-acutes; but the tetrachord system, said to be immutable, as also the Greek names anciently appropriated to the several chords, continued in use till the close of the tenth century, soon after which such a reformation of the ancient scale was made, as was thought worthy of commemoration, not only by chronologers, but by the gravest historians. The person to whose ingenuity and industry we owe this inestimable improvement was an ecclesiastic, GUIDO ARETINUS, a Benedictine monk. The relation given by Cardinal Baronius of this event is to the following effect; viz. That in the pontificate of Benedict VIII. Guido Aretinus, a monk, and an excellent musician, to the admiration of all, invented a method of teaching music, so that a boy in a few months\* might learn what no man, though of great ingenuity, could before that attain in several years.—That the fame of this invention procured him the favour of the pope, who invited him to Rome, as did afterwards John XX. his successor.—That in the thirty-fourth year of his age he composed a treatise, which he called *Micrologus*, and dedicated to Theodald, bishop of Arezzo. *Annal. Eccl. tom. XI. pag. 73, et seq.*

\* Guido in the prologue to the *Micrologus* says, in the space of one month, ‘ unius mensis spatium.’



To this account Baronius has subjoined the epistle from Guido to a friend of his Michael of Pomposa, beginning, 'Clarissimo atque dulcissimo fratri Michaeli,' containing the history of his invention, and of his invitation to Rome and reception by the pope; the particulars whereof are referred to an extract from the epistle itself, which is given in a subsequent page of this work\*. General accounts of the reformation of the scale made by Guido are to be met with in almost every treatise on the subject composed since his time; yet among these some improvements are attributed to him, as namely, the invention of the staff, and of the figure of a hand, to explain his method of notation, to the merit whereof, if we are to judge from his own writings, he does not appear to have made the least claim.

It has been related that the method of notation among the Greeks was by the letters of their alphabet, as also that the Latins in their stead made use of the Roman capital letters, A, B, C, D, E, F, G, and so on to P, as is mentioned by Boetius in his fourth book; and that afterwards Gregory rejected all but the first seven, which he made to serve for the whole scale, distinguishing the grave series by the capitals and the acute by the small letters. Their manner of singing was from A to B, a tone; from B to C, a semitone; from C to D, a tone; from D to E, a tone; from E to F, a semitone; from F to G, a tone; so that, to speak of the diapason only, the seven capital letters served to express, ascending and descending, either gradually or by leaps, the seven notes\*; but so difficult was it ac-

\* By the epistle above referred to, it appears, that Baronius has been guilty of an error in saying that Guido was invited to Rome both by Benedict and John; for it was from John only that he received this mark of favour. Neither does he clearly distinguish between the Argumentum novi Cantus inveniendi and the Micrologus; the former contained his method of singing by the syllables, and procured him a general reputation, and the favour of Benedict; the latter, his reformation of the scale, and, as Guido himself expressly says, was composed in the thirty-fourth year of his age, John XX. being then pope. Besides this, he adds, that the Micrologus was written at the monastery of Pomposa, whither he retired not, till after his interview with the pope.

\* Zarlino has been guilty of a gross mistake in asserting, as he does in his Institutions, part ii. chap. 30. that Guido first made use of the method of notation by the capital and small Roman letters: the current opinion is, that Gregory introduced it; but supposing that matter doubtful, there is sufficient evidence to prove that the practice in question prevailed before Guido's time; for the Enchiridion of Odo, abbot of Cluni, contains directions for dividing the monochord, and marking the first septenary with the capital, and the second with the small Roman letters; and Vincentio Galilei, in his Dialogo della Musica, pag. 96, has given the following specimen of Canto Fermo.

d	c	H	c	d	e	d	c	H	a	H	c	d	a	G	F	G	G
Sit	nomen	Do				mi			ni	bene	dictum,	in	se			cula	
F	G	a	G	F	F	G	F	F	E	F	G	F	E	D	C	D	D
Adju	to					rium	nostrum	in	no		mine	Do				mi	ni

ording to this method to know and to hit precisely the place of the two semitones, that before the pupils were able to acquire a knowledge of the Canto Fermo, ten years were usually consumed. Guido studied with great diligence to remove this obstruction; and the current account of this invention is, that being at vespers, and singing the hymn to St. John, 'Ut queant laxis,' it by chance came into his head to apply, as being of easy pronunciation, certain syllables of that hymn to as many sounds in a regular succession, and thereby he removed those difficulties that had a long time retarded the improvement of practical music.

UT queant laxis REsonare fibris  
 MIRA gestorum FAMuli tuorum  
 SOLVe polluti LABii reatum.

Sancte Joannes\*.

This is the substance of what is related by Gaffurius, Glareanus, Vicentino, Galilei, Zarlino, Kircher, Merfennus, Bontempi, and other writers, touching the invention of the syllables; but the scale,



which he asserts was composed many years before Guido was born.

The perusal of the Enchiridion of Odo has furnished the means of refuting a vulgar error, namely, that Guido, to perpetuate the memory of his reformation of the scale, prefixed to it the Greek  $\Upsilon$ , the initial letter of his name; the contrary of this is manifest in the directions of Odo for dividing the monochord, in which he assumes that very character.

\* The words of the above hymn were composed by Paulus Diaconus, Paul, a deacon of the church of Aquilea, about the year 770, and in the reign of Charlemagne, as Possevin relates. Dr. Wallis, from Alstedius, in the room of the Adonic, Sancte Joannes, has inserted O Pater Alme. Broffard, and others after him say, that Angelo Berardi has very prettily compressed the six syllables in this line.

UT relevet MISERUM FATUM SOLITOSQUE LABORES.

But Gerard Voffius, De quatuor Artibus Popularibus, pag. 93, without taking notice of Berardi, says it is only part of the following verse composed by some person who lived after Guido.

Cur adhibes tristi numeros cantumque labori?  
 UT relevet MISERUM FATUM SOLITOSQUE LABORES.

as it stood in the time of Guido, was not adapted for the reception of six syllables, and therefore the application which he made of them does necessarily imply some previous improvement of the scale, either actually made by him, or which he had at that time under consideration. It is pretty certain that this improvement could be no other than the converting the ancient tetrachords into hexachords, which, to begin with the tetrachord Hypaton, he effected in this manner: that tetrachord was terminated in the grave by Hypate hypaton, or  $\flat$ ; for though the Proslambanomenos A, carried the system a tone lower, it was always considered, as its name imports to be, *acquisitus*, *supernumerary*, or *redundant*; the addition therefore of a tone below A immediately converted the tetrachord Hypaton into a hexachord, and drove the semitone into a situation that divided the hexachord into two equal parts. To this additional tone Guido, as some say, in honour of the Greeks, the fathers of music, or, as others suggest, to perpetuate the memory of his invention, and thereby acquire honour to himself, affixed the Greek gamma  $\Gamma$ , which fortunately for such a supposition, was the initial letter of his name\*.

By this constitution the position of the semitone was clearly pointed out to every theorist; but the thing in pursuit was a method of hitting it in practice, the want whereof rendered the singing extempore so very difficult, that few could attain to it without great labour; but the accidental hearing of the hymn above-mentioned suggested to Guido a thought that the six syllables therein contained might be so fitted to the six sounds in his newly-formed hexachord, as to furnish a rule for this purpose; accordingly he made the experiment, and applying the syllable *UT* to the first note of the hexa-

\* Meibomius denies that Guido extended the ancient Greek system either upwards or downwards, or that he even made any addition to the tetrachord Hypaton; for he asserts, with an unwarrantable degree of confidence, that though the Proslambanomenos was generally understood as the lowest sound in the ancient system, yet that the Greeks in truth recognized another, which was a tone below it, but that as it prolated a confused and undistinguishable sound, it was neglected. He says that when Guido determined to re-assume this tone, he was necessitated to mark it with the Grecian gamma,  $\Gamma$ ; for that otherwise, as he had given the Latin *G* to its diapason *Lychnos meson*, he must either have introduced a strange character, or doubled the letter *G*, which latter method could not please him so well. Meibomius also says that the Greek system proceeded even farther in the acutes than that of Guido; but the truth of this assertion will be best judged of by a comparison of the ancient system with that of Guido, as they stand opposed to each other in a subsequent page of this volume.

chord, and the rest to the others in succession, he gave to every note an articulate sound.

The view of Guido in this contrivance was to impress upon the minds of learners an idea of the powers of the several sounds, as they stood related to the first sound in the hexachord; for he saw that from an habitual application of the syllables to their respective notes, it must follow that the former would become a common measure for the five intervals included within the limits of the hexachord, and that in a short time the idea of association between the syllables and the notes would become so strong as to make it almost impossible to misapply them.

Finding that this invention was likely to succeed, he added two tones to the tetrachord Meson, thereby making that also a hexachord, and to this also he applied the syllables.

Lastly, he made a like addition of two tones to the tetrachord Synemmenon, and thereby formed a third tetrachord.

The several combinations and conjunctions of these tetrachords for the purpose of ascertaining the intervals in any given system, exceeding the limits of the hexachord, will be hereafter explained; the result of the invention was clearly this, that in a regular succession of six sounds in their natural order, beginning either from  $\Gamma$ , from C, or from F, taking in B b, the progression with respect to the tones and semitone in each was precisely the same: and supposing the learner to have acquired by constant practice a habit of expressing with his voice the interval G C, which is an exact fourth, by the syllables UT FA, the two sounds proper to the interval G C would become a kind of tune, which he must necessarily apply to UT FA, wherever those syllables should occur; and in what other situation they occur the above constitution of the different hexachords shews; for as in the hexachord from G to E the syllables UT FA express the fourth G C, so in that from C to A do they express a fourth C F, and in the hexachord from F to D the fourth F B b.

The introduction of B b to avoid the Tritonus has been related at large; and here it may be proper to add that the exceeding discordancy or hardness of B  $\square$ , when taken as a fourth, gave occasion to the epithet soft, which for the sake of distinction was given to B b; for this reason the hexachord from F is called the molle or soft hexachord, as that from G is called durum or hard; these appellatives begot

begot another, namely, that of the natural hexachord, which is given to the hexachord from C. The method of fingering each is termed a property in fingering, and is thus described in the following distich.

C Naturum dat, f b molle nunc tibi signat,  
g quoque b durum tu semper habes caniturum \*.

The intervals thus adjusted in the several hexachords, became alike commensurable in each by the syllables; and UT MI would as truly express the ditone CE or FA as GB, to which they were originally adapted: the same may be said of every other interval in each of the hexachords, and their exact uniformity is visible in this, that the semitone has the same situation in them all, and divides them into two equal parts.

## C H A P. VII.

THE writers on music, as has been mentioned above, have also attributed to Guido another very considerable improvement of the musical scale, which they suppose to be coeval with the formation of the hexachords, namely the Stave, consisting of parallel lines in a horizontal position, such as is now used in the writing of music: in this they seem to have been mistaken, for all the examples made use of by him to illustrate his doctrine, are given in the Roman capital and small letters, agreeable to the method of St. Gregory. Besides which it is demonstrable that the stave was of a much earlier invention than this opinion supposes. The proof of this assertion is to be found in the Dialogo della Musica of Vincentio Galilei, pag. 37, which contains a diagram of musical punctuation on a stave consisting of no less than seven lines, which he says was in use long before the time of Guido †.

\* Morley in the Annotations on book I. of his Introduction to Practicall Musicke.

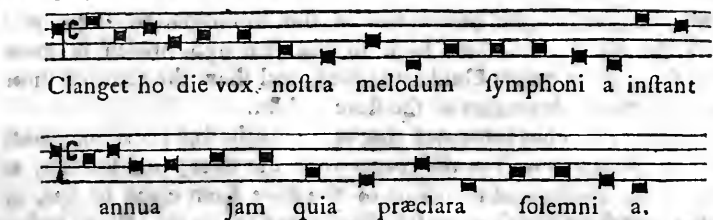
† By an unaccountable accident the examples here referred to, are in some copies of Galilei's book defective, as giving only the stave, and not the points; but they are here supplied from Martini, who has rendered them into the characters of modern notation. Vid. Stor. della Musica, pag. 185.

And immediately after he exhibits an example of notation on a staff of ten lines, concerning which he thus expresses himself: 'Eccovi l' effempio d' una Cantilena tra le altre, che mi sono capitate in mano, la quale mi fu gia da un gentiluomo nostro Fiorentino donata, ritrovata da lui in un antichissimo suo libro: ed è delle piu intere, è meglio conservata d' altra che io abbia mai veduta.'

Clanget hodi e vox nostra melodum symphoni a instant.

annua jam qui a præclara solemni - a, &c.

Clanget



To these examples of lineal punctuation another may be adduced from the *Musurgia*, tome I. pag. 213, wherein the points are placed on a staff of eight lines. We owe this discovery to Kircher, who relates that being on a voyage to Malta he went to visit the library of S. Salvator in Messina, which is well furnished with Greek manuscripts; and that one of the monks there produced to him a manuscript book of hymns, which had been written about seven hundred years, in which was contained the following.



Kircher mentions that while he was writing the *Musurgia*, he received from a friend of his, the reverend abbot Didacus De Franchis, an extract from a very ancient antiphony in the monastery of Vallombrosa, containing an example of interlineary punctuation in the following form.



In which he says the points correspond with the notes of a well-known antiphon, beginning with the words 'Salve Regina.'

These evidences sufficiently prove that the staff is more ancient than is generally supposed; for it is agreed that the *Micrologus* was written between the years 1020 and 1030; and a period of seven hun-

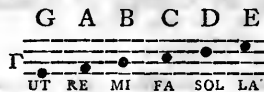
dred years before the publication of the *Mufurgia*, in 1650, will carry the use of the stave back to the year 950, which is more than forty years before Guido was born, and shew the error of those who ascribe the invention of the stave to him.

Indeed Guido has intimated that in his method of notation, points may be placed as well in the spaces as on the lines; and for this, as also for the consequent reduction of the stave from eight to five, or rather, for the purpose of ecclesiastical notation, to four lines, posterity are undoubtedly obliged to him.

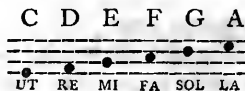
It will be remembered that the ancient Greek scale was composed of tetrachords, and that it exhibits a succession of chords from *Prof-lambanomenos*, or A, to *Nete hyperboleon*, or aa. As to the *Prof-lambanomenos*, it was termed *Acquisitus* or *Assumed*, and therefore made no part of the tetrachord *Hypaton*. In prosecution of his scheme of converting the tetrachords into hexachords, with respect to the lowest tetrachord in the scale Guido had nothing more to do than to add to it a single chord, to which he affixed the Greek letter  $\Gamma$ , and this he termed the *durum* hexachord, to distinguish it from that other beginning at F, in which B is flat, and which therefore is called the *molle* hexachord: but of this, and also of the natural hexachord beginning at C, mention is made before.

The hexachords, constituted in the manner above described, with the additional improvement of the stave, and before they were incorporated into the scale assumed the following form.

#### DURUM HEXACHORD.



#### NATURAL HEXACHORD.



MOLLE



## MOLLE HEXACHORD.



The power or situation in the scale, of each of these points is signified by the letters respectively placed above them: but the intention of the staff was to supersede the literal scheme of notation; it may therefore be said, supposing the letters away, that each hexachord is but a repetition of the other two, and that the power of each point in all the three is similar: but the case is far otherwise; for by a contrivance, which shews the admirable sagacity of the inventor, the staff of four lines is rendered capable of expressing every one of the three different hexachords which the reformed musical scale requires.

To manifest this diversity Guido invented certain characters called Cliffs, in number three, whereof the first was  $\Gamma$ , the other two were the letters C and F: the first of these indicated a progression of sounds from the lowest note in the scale upwards to E: the second denoted a series from C to A, and the third another series from F through B $\flat$  to D: these cliffs, which were also termed claves or keys, were placed by Guido on the lower line at the head of his staff. It is evident from hence, that by the application of the characters  $\Gamma$ , C, F, the power of the six points used to denote the hexachord, were, without the least change of their situation in respect of the staff, made capable of a threefold variety, and consequently required different denominations.

That Guido invented some method for ascertaining the initial chords of each of the hexachords is certain, but that he made use of the letters, or cliffs,  $\Gamma$ , C, F, for that purpose, is rather conjecture than fact. Indeed the contrary seems to be clear from his own words, and that his method of discriminating the hexachords was not by the cliffs, but by making those lines of the staff, which were their proper stations, of a different colour from the rest. In the Micrologus we meet with these verses.

Quasdam lineas signamus variis coloribus  
Ut quo loco sit sonus mox discernat oculus;

Ordine terciæ vocis splendens crocus radiat,  
Sexta ejus, sed affinis flavo rubet minio.

To understand which, it is necessary to observe that the third and sixth notes here mentioned are the third and sixth from A; for  $\Gamma$ , as has been frequently said, was an assumed chord: Hypo-Proflambanomenos is the appellation given to it even by modern musicians, and for some ages after its introduction it was not in strictness considered as part of the scale. That this is Guido's meaning is clear from the following passage in the *Micrologus*: 'We make use of two colours, viz. yellow and red, which furnish a very useful rule for finding the tone and letter of the monochord to which every Neuma and note belongs. There are seven letters in the monochord, and wheresoever you see yellow it is the third, and wherever red it is the sixth letter.' The third and sixth letters here mentioned are most evidently the third and sixth from A, the first of the seven letters on the monochord, that is to say C and F, which are the stations of two of the cliffs; and the above citations incontestibly prove that to indicate the key of C, Guido made use of a yellow, and for that of F, a red line\*.

Hitherto we have considered the hexachords as the integral parts of Guido's system, and as independent of each other; but their use, and indeed the ingenuity and excellence of his invention, can only be discerned in that methodical arrangement of them by means whereof they are made to coincide with the great or immutable system: this, as has been shewn, was comprehended in the Hypaton, Meson, Diezeugmenon, and Hyperboleon tetrachords; for the tetrachord to which they gave the name Synemmenon was merely auxiliary, as being suited to that kind of progression only, which leads through what we now call *b flat*. The system of Guido, supposing it to terminate as that of the ancients did at *aa*, and exclusive of the chord  $\Gamma$  added by him, to contain the *bisdiapason*, includes five hexachords differently constituted, the *molle hexachord* being auxiliary, and answering to the tetrachord *synemmenon*, which five hexachords respectively have their commencement from  $\Gamma$ , from C, from F, from G, and from C: but he found it capable of extension, and by adding four chords above *aa*, and a consequent repetition of the *molle*

\* See an example of this kind in a subsequent page of this book.

and

and durum hexachords from f and from g, he carried it up to ee, beyond which it was so seldom extended, as to give occasion to a proverbial exclamation, by which even at this day we reprehend the use of hyperbolical modes of speech, viz. 'that was a note above e la.' By this addition of chords the hexachords were encreased to seven, that is to say, so many as are necessary for the conjugation of the system included within F and ee.

But between the tetrachords of the ancients, and the hexachords of Guido, this difference is most apparent: the former were simply measures of the diatessaron system; they succeeded each other in an orderly progression through the whole bisdiapason: the hexachord is also, at least in the opinion of the moderns, the measure of a system; but their collateral situation, and the being made as it were to grow the one out of the other, varies the nature of their progression, and points out, in the compass of twenty-two notes, seven gradations or deductions, for so they are termed by the monkish writers, of six notes, each beginning at a different place in the diapason, and yet in all other respects precisely the same. Add to this that the hexachords with the syllables thus adapted to them, become as it were, so many different conjugations, by which we are able to measure and try the musical truth of the several intervals of which they are composed.

The chords contained in the enlarged system of Guido are twenty-two in number, reckoning b in the acutes, and bb in the super-acutes: otherwise in strictness they are but twenty, seeing that b and bb can never occur in one and the same hexachord: for the designation of them two staves of five lines each are necessary; and in that conjoint position which the ascending scale requires, the hexachords will have this appearance\*.

\* The representations of Guido's system are many and various; for he not having exhibited it by way of diagram, succeeding writers have thought themselves at liberty to exercise their several inventions in schemes and figures to explain it. Franchinus, and others after him, have enclosed each column of syllables, as they apply to F, and the letters above it, in two parallel lines, with a point at bottom, exactly like an organ-pipe; but as there is not the least analogy to warrant this form, others have rejected it. Peter Aron and others have placed the hexachords in a collateral situation, resembling the

d e f gg aa bb bb cc dd ee

The diagram illustrates Guido's hexachord systems on a four-line staff. It shows the progression of hexachords: Durum Hexachord (G-A-B-C-D-E), Natural Hexachord (C-D-E-F-G), and Molle Hexachord (F-G-A-B-A-G). Each hexachord is represented by a set of six notes on the staff, with solfège syllables (Ut, Re, Mi, Fa, Sol, La) and letter names (G, A, B, C, D, E, F, g, a, b, b) written below. The Durum Hexachord is associated with the letter G, the Natural Hexachord with C, and the Molle Hexachord with F. The diagram also shows the relationships between these hexachords and their mutations.

tables of the decalogue. Bontempi makes use of the following scheme of the hexachords to represent their mutations, and dependence on each other. Hist. Mus. pag. 183.

1536	ee	-	-	-	-	-	la
1728	dd	-	-	-	-	-	la fol
1944	cc	-	-	-	-	-	fol fa
2048	bb	-	-	-	-	-	mi
2187	bb	-	-	-	-	-	fa
2304	aa	-	-	-	-	-	la mi re
2592	g	-	-	-	-	-	fol re ut
2916	f	-	-	-	-	-	fa ut
3972	e	-	-	-	-	-	la mi
3456	d	-	-	-	-	-	la fol re
3888	c	-	-	-	-	-	fol fa ut
4096	b	-	-	-	-	-	mi
4374	b	-	-	-	-	-	fa
4608	a	-	-	-	-	-	la mi re
5184	G	-	-	-	-	-	fol re ut
5832	F	-	-	-	-	-	fa ut
6144	E	-	-	-	-	-	la mi
6912	D	-	-	-	-	-	fol re
7776	C	-	-	-	-	-	fa ut
8192	C	-	-	-	-	-	mi
9216	A	-	-	-	-	-	re
10368	F	-	-	-	-	-	ut

It may seem strange, as Guido has characterized the durum hexachord by the key G, that that of F should be the first that occurs in the scale; but the reason of this is, that the placing of F on the fourth line of the staff, does as much determine the series as F on the first would have done: the same reason may serve for postponing the clef C to F. As to

The above scheme is intended to shew the situation of the notes on the lines and spaces, and the relation which the hexachords bear each

g, it occurs as soon as is necessary, and not before; and here it may be remarked that g is situated on the third line above C, as C is on the third line above F. Farther, a staff of five lines, with the *cliff* F on the fourth, is supposed to signify the five lower lines of the scale. One with C on the third, the five above F inclusive, and one with g on the second, the five above C. All this will most clearly appear from the two foregoing schemes, which exhibit an example of ingenuity and sagacity that has stood the test of ages, and is worthy the admiration of all men.

Many have thought Guido's scheme defective in that it gives no syllable to F. Dr. Wallis was of this opinion, and says what a wonder it is that he did not apply to it the syllable SA, from the first word of the Adonic verse Sancte JOANNES? Merfennus, Harmonie Univerfelle, pag. 183, seems to have thought much in the same manner, by his adding the syllable s1, which is used by the French at this day. The original introduction of this syllable is by him and other writers attributed to one Le Maire, a French musician, who says he laboured for thirty years in vain to bring it into practice; but that he was no sooner dead than all the musicians of his country made use of it. Notwithstanding which the general opinion is that the syllable s1 was introduced into the scale by Ericius Puteanus of Dort, who lived about the year 1580, and wrote a treatise on music entitled Musathena.

This is in substance the account which Monf. Broffard has given of the introduction of the syllable s1; but another writer, Monf. Bourdelot, has given a very different account of this matter; for he relates that about the year 1675 a certain Cordelier introduced the syllable s1 into the scale. He seems however to doubt the fact, as being founded only on tradition; and goes on to relate that the abbé de la Louette, master of the choir of the cathedral church of Paris, had assured him that the syllable in question was invented, or perhaps a second time brought into practice, by one Metru, a famous singing-master in Paris about the year 1676. Bourdelot adds that Le Moine, an excellent lutenist, of sixty years practice, had assured him that he knew Metru very well, and that he introduced the syllable s1; and that he remembered also a Cordelier of the convent of Ave Maria, who had made some variation in the ancient scale about the latter end of the last century. For these reasons Bonet inclines to think that the honour of the invention might be due to the Cordelier, but that the merit of reviving it is to be ascribed to Metru. But whichever of the above relations is true, it is pretty certain that both Merfennus and Broffard are mistaken in what they say respecting the invention of the syllable s1 by Le Maire.

The same author, Bourdelot, insinuates, that notwithstanding the use of the syllable s1 is much approved of by the French musicians, yet in Italy they disdain to make use of it, as being the invention of a Frenchman. Histoire de la Musique et de ses Elets, par Bourdelot, Amsterd. 1725, tom. I. pag. 17.

It seems that the musicians of other countries have been aware of the necessity of a seventh syllable in order to get rid of the difficulties which the mutations, as they are called, are attended with in the practice of singing; for in the Porque de la Musica of Andrea Lorente of Alcalá, published in 1672, we find the syllable B1 applied to B in the progression from C to c.

And here it may not be improper to observe, that the Italians at this day make use of the syllable DO instead of UT, as being more easy of pronunciation: this variation may be traced back to the year 1678, and is to be found in a treatise herein before cited, entitled Armonia Gregoriana, written by Gerolamo Cantone, and printed at Turin in that year.

Merfennus, Harm. Univerf. pag. 183, intimates that for expressing the semitone between A and B, some of the musicians of his country made use of the syllable ZA, that of s1 being appropriated to B; but this distinction seems not to prevail at this day. Monf. Loulie, the author of Elements ou Principes de Musique, printed at Amsterdam, 1698, rejecting the syllable ZA, has retained only s1; and this method of solmisation is practised throughout France.

to the others : this that follows, compounded of two schemes, the one of Bontempi, and the other of Doctor Wallis, contains the reformed scale of Guido in a collateral situation with that of the ancients.

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DIAGRAM OF THE ANCIENTS

la	tone.	Nete hyperbolæon.	2304
sol	tone.	Paracte hyperbol.	2592
fa	hemitone.	Trite hyperbolæon.	2916
mi	la	Nete diezeugmenon	3072
la	tone. tone.	Paracte diezeugme non diateno s	3456
sol	tone. tone.	Trite diezeugmenon	3888
fa	hemit. mi	Paramefe	4096
mi	tone.	Mefe	4374
la	hemit. la	Mefe	4608
sol	tone.	Licbanos hypaton diatonos.	5184
fa	hemitone.	Parypate meson	5832
la	tone.	Hypate meson	6144
sol	tone.	Licbanos hypaton diatenos	6912
fa	tone.	Parypate hypaton	7776
mi	hemitone.	Hypate hypaton	8192
la	tone.	Proslambanomenos	9216

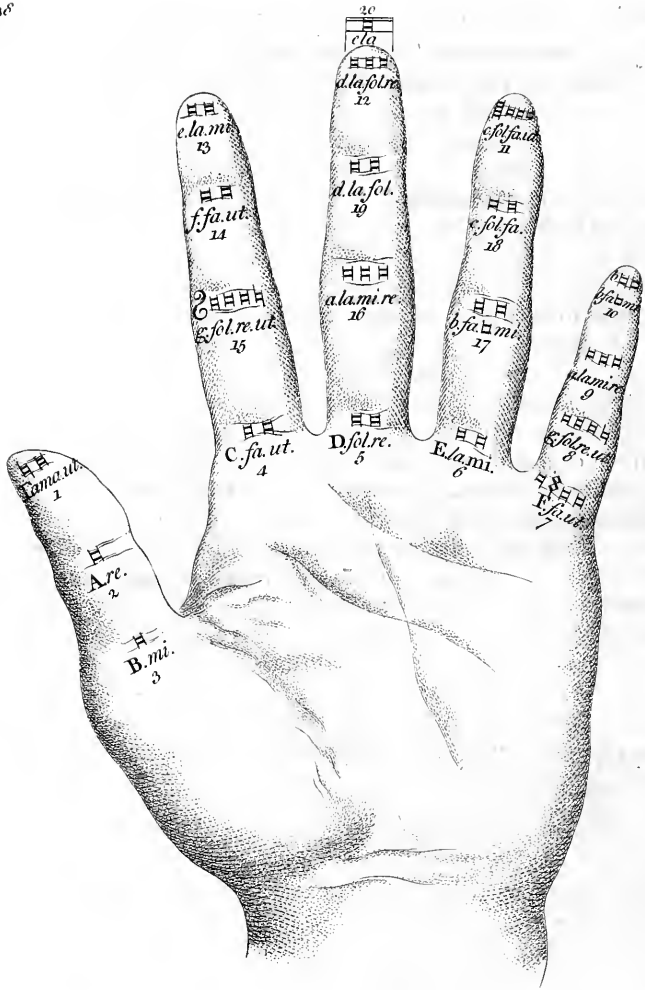
SCALE OF GUIDO

1536	ee	la
1728	dd	la sol
1944	cc	sol fa
2048		ma
2187	bb	fa b
2304	aa	la mi re
2592	g	sol re ut
2916	f	fa ut
3072	e	la mi
3456	d	la sol re
3888	c	sol fa ut
4096		mi b
4374	b	fa b
4608	a	la mi re
5184	G	sol re ut
5832	F	fa ut
6144	E	la mi
6912	D	sol re
7776	C	fa ut
8192	B	mi
9216	A	re
10368	I	ut

To the lower chord the moderns have given the name Hypo-Prof-lambanomenos; the number assigned to it may, by the rule herein before given, be easily found, it being nine of those parts of which 9216 is eight, and shews the ratio of  $\Gamma$  to A to be sesquioctave, in the proportion of 9 to 8. The same rule will also suggest the means of bringing out the numbers proper to the notes added to the scale by Guido, which are those from a a upwards; for, to begin with bb, it is in a subduplicate ratio to b, its number therefore will be the half of 4374, that is to say 2187. The next note  $\flat\flat$  having the same ratio to  $\flat$ , will in like manner require the subduplicate of 4096, which is 2048.

From the foregoing disposition of the tetrachords we learn the true names of the several sounds that compose the system; for it is observable that though in fact each septenary contained in it is but a repetition of the former, and that therefore the generical name of each chord is repeated, yet their specific differences in respect of situation are admirably distinguished by the different names assigned to each: thus, for instance, the lower chords is  $\Gamma$  UT, or GAMUT, but its replicate is for a very obvious reason termed g-SOL RE UT; the replicates of A RE are a LA MI RE, those of C FA UT are c SOL FA UT and c SOL FA; those of D SOL RE, d LA SOL RE, and d LA SOL; and here it is to be remarked that as well the recession as the addition of a syllable expresses the situation of a note; for the last of the seven hexachords cuts off a syllable from the names of the three upper chords, leaving to the uppermost one only, e la, as may be seen in the example.

As a farther improvement of his system, and to facilitate the practice of solmifation, for so we are to call the conjugation of any given cantilena by means of the syllables UT, RE, MI, FA, SOL, LA, most authors relate that he made use of the left hand, calling the top of the thumb  $\Gamma$ , and applying the names of the rest of the notes to the joints of each finger, giving to the top of the middle finger, as being the highest situation, the note e LA, as in the following page is shewn.





But to warrant this opinion there seems to be no better authority than bare tradition; for in no part of Guido's writings does the mention of the hand occur: nay it seems from a passage in the manuscript of Waltham Holy Cross, herein before cited, that the hand was an invention posterior in time to that when Guido is supposed to have lived\*; its use was to instruct boys in the names and respective situations of the notes of his scale; and for choosing the left hand rather than the right this notable reason is given, 'that it being nearest the heart, the instruction derived from thence is likely to make the deeper impression on the minds of learners.'

As to the precise time when he lived, authors are very much divided. Zaccone and others assert it to have been about the year of Christ 960; Baronius, that it was about 1022; Alstedius, and after him Bontempi, place him under pope Leo IX. and the emperor Henry III. in the year 1049; but Sigebert testifies that he flourished in the time of the emperor Conrade the younger, and that 1028 was the precise year when the reformation of Guido took place; and for this opinion we have also the authority of Trithemius†. But Guido has decided this question in a relation given by him of his invitation to Rome by John XX. and he it is agreed began his pontificate in the year 1024.

## C H A P. VIII.

**S**OME account of Guido is to be gathered from his writings, particularly an epistle from him to his friend Michael, a monk of Pomposa, and the tract to which that is an introduction, entitled *Argumentum novi Cantus inveniendi*: from these, and some scattered passages to be met with in ancient manuscripts, the following memoirs are collected.

He was a native of Arezzo, a city in Tuscany, and having been taught the practice of music in his youth, and probably retained as a chorister in the service of the Benedictine monastery founded in that city, he became a monk professed, and a brother of the order of St. Benedict: the state of learning was in those times very low, and the

\* Kircher, in the *Musurgia*, tome I. pag. 115, says this expressly.

† *De Viris illustr. ord. Bened. lib. II. cap. 74.*

ecclesiastics had very few subjects for study, if we except theological controversy, church history, logic, and astrology, which was looked on by them as the most considerable of the mathematical sciences: these engaged the attention of such members of those fraternities as were endued with the most active, not to say contentious, spirits; while the exercises of devotion, the contemplating the lives of saints, and the qualifying themselves for the due discharge of the choral duty, employed those of a more ascetic and ingenuous turn of mind. Vossius makes Guido to have been at first a monk in the monastery of St. Leufred in Normandy\*; but this is by a mistake, which will be accounted for hereafter; so that the only places of his settlement, of which we can speak with certainty, are the Benedictine monastery of Arezzo, the city where he was born, and that of Poppo in the duchy of Ferrara.

In this retirement he seems to have devoted himself to the study of music, particularly the system of the ancients, and above all to reform their method of notation. The difficulties that attended the instruction of youth in the church-offices were so great, that, as he himself says, ten years were generally consumed barely in acquiring the knowledge of the plain-song; and this consideration induced him to labour after some amendment, some method that might facilitate instruction, and enable those employed in the choral office to perform the duties of it in a correct and decent manner. If we may credit those legendary accounts that are extant in old monkish manuscripts, we should believe he was assisted in his pious intention by immediate communications from heaven: some speak of the invention of the syllables as the effect of inspiration; and Guido himself seems to have been of the same opinion, by his saying it was revealed to him by the Lord; or as some interpret his words, in a dream; but graver historians say, that being at vespers in the chapel of his monastery, it happened that one of the offices appointed for that day was the above-mentioned hymn to St. John Baptist, written by Paulus Diaconus, and that the hearing thereof suggested this notable improvement.

We must suppose that the converting the tetrachords into hexachords had been the subject of frequent contemplation with Guido, and that a method of discriminating the tones and semitones was the

\* De Scient. Mathem. cap. xxii. § 7.

one thing wanting to complete his invention. During the performance of the hymn he remarked the iteration of the words, and the frequent returns of UT, RE, MI, FA, SOL, LA : he observed likewise a dissimilarity between the closeness of the syllable MI, and the broad open sound of FA, which he thought could not fail to impress upon the mind a lasting idea of their congruity, and immediately conceived a thought of applying these six syllables to his new formed hexachord.

Struck with the discovery, he retired to his study, and having perfected his system, began to introduce it into practice : the persons to whom he communicated it were the brethren of his own monastery, from whom it met with but a cold reception, which in the Epistle to his friend, above-mentioned, he ascribes undoubtedly to its true cause, envy ; however, his interest with the abbot, and his employment in the chapel, gave him an opportunity of trying the efficacy of his method on the boys who were training up for the choral service, and it exceeded the most sanguine expectation.

The fame of Guido's invention soon spread abroad, and his method of instruction was adopted by the clergy of other countries : we are told by Kircher that Hermannus, bishop of Hamburg, and Elvericus, bishop of Osnabrug made use of it ; and by the authors of the *Histoire Litteraire de la France* \*, that it was received in that country, and taught in all the monasteries in the kingdom. It is certain that the reputation of his great skill in music had excited in the pope a desire to see and converse with him, of which, and of his going to Rome for that purpose, and the reception he met with from the pontiff, himself has given a circumstantial account of in the epistle before cited,

The particulars of this relation are very curious, and as we have his own authority, there is no room to doubt the truth of it. It seems that John XX. or, as some writers compute, the nineteenth pope of that name, having heard of the fame of Guido's school, and conceiving a desire to see him, sent three messengers to invite him to Rome ; upon their arrival it was resolved by the brethren of the monastery that he should go thither attended by Grimaldo the abbot, and Peter the chief of the canons of the church of

\* Tom. VII. pag. 143, 144.

Arezzo. Arriving at Rome he was presented to the holy father, and by him received with great kindness. The pope had several conversations with him, in all which he interrogated him as to his knowledge in music; and upon sight of an antiphonary which Guido had brought with him, marked with the syllables agreeable to his new invention, the pope looked on it as a kind of prodigy, and ruminating on the doctrines delivered by Guido, would not stir from his seat till he had learned perfectly to sing off a verse; upon which he declared that he could not have believed the efficacy of the method if he had not been convinced by the experiment he had himself made of it. The pope would have detained him at Rome, but labouring under a bodily disorder, and fearing an injury to his health from the air of the place, and the heats of the summer, which was then approaching, Guido left that city upon a promise to revisit it, and explain to his holiness the principles of his new system. On his return homewards he made a visit to the abbot of Pomposa, a town in the duchy of Ferrara, who was very earnest to have Guido settle in the monastery of that place, to which invitation it seems he yielded, being, as he says, desirous of rendering so great a monastery still more famous by his studies there.

Here it was that he composed a tract on music, intitled *Micrologus*, i. e. a short discourse, which he dedicated to Theodald, bishop of Arezzo, and finished, as he himself at the end of it tells us, under the pontificate of John XX. and in the thirty-fourth year of his age. Vossius speaks also of another musical treatise written by him, and dedicated to the same person.

Divers others mention also his being engaged in the controversy with Berenger about the Eucharist, particularly Mersennus and Vossius; the latter of whom, who, by the manner in which he has spoken of Guido elsewhere, can hardly be supposed to have mistaken another person for him, says expressly that in the year 1070, namely, in the time of Gregory VII. flourished Guido, or Guidmundus, by country an Aretine, first a monk of the monastery of St. Leufred, and afterwards a cardinal of the church of Rome, and archbishop of Averfa; that while he was a monk he wrote two books on music to the bishop Theodald, the first in prose, the other partly in heroic verse, and partly in rhythmical trochaics; and that he is the same who



' In the above symphony you see six different particles, which are  
 ' to be applied to as many different notes; and whenever the finger  
 ' is able to apply these to such of the six notes as they properly be-  
 ' long to, he will be able to sing his devotions with ease. When  
 ' you hear any Neuma, examine in your own mind which of these  
 ' particles does best agree with its ending, so as that the final note  
 ' of the Neuma, and the principal particles may be equisonous,  
 ' whereby you will be certain that the Neuma ends in that note with  
 ' which the particle agreeing therewith begins: but if you under-  
 ' take any written cantus which you never saw before, you must  
 ' sing it often over, that you may be able to end every Neuma por-  
 ' perly, so that the end of each Neuma may in the same manner be  
 ' joined with the beginning of the particle which begins by the same  
 ' note in which the Neuma ends. By this method you will pre-  
 ' sently be able to sing any new cantus by the notes; and  
 ' when you hear any that is not noted, you will soon perceive  
 ' how it is to be written down, in the doing whereof this rule  
 ' will greatly assist you. I have set down some short symphonies  
 ' through every note of these particles, and when you shall carefully  
 ' have looked them over, you will be glad to find out the depres-  
 ' sions and elevations of every note in order in the beginnings of  
 ' these particles: but if you should have a mind to temperate cer-  
 ' tain particles of different symphonies by connexion, you may by a  
 ' very short and easy rule learn all the difficult and manifold varieties  
 ' of Neumas; but these cannot all be so well explained by letter,  
 ' and would be more plainly opened in a familiar colloquy.

C  
 UT que ant la xis RE so na re fibris MI ra ges torum FA mu li tu orum

C  
 SOL ve pollu ti LA bi i re atum Sancte Jo an. nes.

Berardi adds, that the method of notation by the letters of Gregory, as in the above example, was used in his time in Hungary, and other parts of Germany. He also cites as passage from the *Practica Musica* of Herman Finek, or Fink, to prove that these were the notes which Guido applied to the hymn 'Ut queant laxis.' Fink has asserted this fact on the authority of Albertus Magnus, who wrote on music, and lived in the thirteenth century.

who wrote against Berengarius three books concerning the body and blood of our Lord in the sacrament of the Eucharist \*. Trithemius refers him to the year 1330, and Sigebert to 1028, which latter speaks also of the musical notes found out by him.

Du Pin, who in his Ecclesiastical History has given an account of Berenger and his errors, has enumerated the several authors that have written against him; among these he mentions Guimond or Guitmond, bishop of Aversa, as one who, in opposition to Berenger, maintained the real presence of the body and blood of Jesus Christ in the Eucharist. Nay, he goes so far as to cite several books of his writing in the controversy with Berenger, as namely, a treatise *De Veritate Eucharistia*, wherein he charges him with maintaining, among other errors, the nullity of infant baptism, and the lawfulness of promiscuous embraces.

Supposing this to be true, and Guimond and Guido to be one and the same person, the generality of writers have done his memory an injury in representing Guido as simply a monk, who was not only a dignitary of the church, but an archbishop, and a member of the sacred college. But it seems that Vossius and those whom he has followed are mistaken in these particulars: Bayle has detected this error, and has set the matter right, by relating that Guido and Guitmond were nearly contemporaries, but that it was the latter who was the monk of St. Leufred, in the diocese of Evreux in Normandy, afterwards bishop of Aversa in Italy, and at length a cardinal, and who wrote three books *De Veritate Corporis et Sanguinis Christi in Eucharistia adversus Berengarium*, which, he adds, have been printed separately, and in the *Bibliotheca Patrum* †.

Most of the authors who have taken occasion to mention Guido, speak of the *Micrologus* as containing the sum of his doctrine: what are the contents of the *Micrologus* will hereafter be related; but it is in a small tract, intitled *Argumentum novi Cantus inveniendi*, that his declaration of the use of the syllables, with their several mutations, and, in short, his whole doctrine of solmification, is to be found. This tract makes part of an epistle to a very dear and intimate friend of

\* *De Scientiis Mathem.* cap. xxii. § 7.

† Art. *ARETIN* [Guy] in not. Vide also *Hist. Litter. de France*, tom. VIII, Guitmond Evêque d'Averle, pag. 561, where this error is taken notice of, and rectified.

Guido, whom he addresses thus, ‘ Beatissimo atque dulcissimo fratri ‘ Michaëli ;’\* and at whose request the tract itself seems to have been composed. In this epistle, after lamenting very pathetically the exceeding envy that his fame had excited, and the opposition that his method of instruction met with, he relates the motives of his journey to Rome, and the reception he met with there, and then proceeds to an explanation of his doctrine.

It seems that in the time of Guido, musical instruments were either scarce or ill tuned, and that the only method of acquiring a true knowledge of the intervals was by means of the monochord ; for both in the *Micrologus*, and in this shorter work, of which we are now speaking, the author gives directions how to construct and divide properly this instrument ; but upon the whole he seems to condemn the use of it, comparing those who depend on it to blind men ; for this reason he discovers to his friend a method of finding out an unknown cantus, which he says he tried on the boys under his care, who thereby became able to sing in no greater a space of time than three days what they could not have mastered by any other method in less than many weeks : and this method is no other than the applying the syllables to the hexachords in the manner before directed. But here perhaps it may be fitting that he should speak for himself, and the following is a translation of his own words.

‘ I have known many acute philosophers, not only Italians, but ‘ French, Germans, and even Greeks themselves, who, though they ‘ have been sought out for as masters in this art, have trusted to this ‘ rule, the monochord alone ; but yet I cannot say that I think ei- ‘ ther musicians or singers can be made by the help of it. A singer ‘ ought to find out and retain in memory the elevations and depres- ‘ sions of notes, with their several diversities and properties ; and ‘ this by our method you may attain to do, and also be able to com- ‘ municate the means of doing it to others ; for if you commit to ‘ memory any Neuma, so as that it may immediately occur to you ‘ when you find it in any cantus, then you will directly and without ‘ hesitation be able to sound it : and this Neuma, whatever it be, ‘ being retained in your memory, may with ease be applied to any ‘ new cantus of the same kind. The following is what I made use ‘ of in teaching the boys.

\* The copy inserted in Baronius reads, ‘ Charissimo atque dulcissimo, &c.



A  
 F Alme rector mores nobis sacratio ; Summe pater fer-  
 D  
 A  
 F vis tuis miserere ; Salus nostra honor noster esto Deus.  
 D  
 A  
 F Deus, judex justus fortis, et patiens : Tibi totus fer-  
 D  
 A  
 F vit mundus uni, Deus.    Stabunt justi ante dominum  
 D  
 A  
 F Semper læti : Domino laudes omnis creatura dicat \*.

He then proceeds thus : ‘ In writing we have twenty-three letters, but in every cantus we have only seven notes ; for as there are seven days in a week, so are there seven notes in music, for all that are added above are the same, and are sung alike through the whole, differing in nothing but that they are sounded doubly higher. We say there are seven grave and seven acute, and that the second order of seven letters is written different from the other in this manner.

a	b	c	d	e	f	g
A	B	C	D	E	F	G

Towards the end of this tract Guido directs the manner of constructing and dividing the monochord, which because he has done it more at large in the *Micrologus*, we forbear to speak of here ; the rest of the epistle is taken up with a short disquisition on the ecclesiastical tones, at the close whereof he recommends the perusal of his *Micrologus*, and also a *Manual*, written with great perspicuity by the

\* It is supposed that the above are the initial sentences of some hymns or other offices anciently used in the church, and which were part of the choral service. Guido has intimated that these examples can hardly be rendered intelligible without a verbal explanation ; but it is conjectured by the letters D F A, that they are to be sung in the first of the ecclesiastical tones, that having A for its dominant, and D for its final.

most reverend abbot Obdo \*, from whose example he owns he has somewhat deviated, choosing, as he says, to follow Boetius, though he gives it as his opinion that his work is fitter for Philosophers than Singers.

The Micrologus, though, as its title imports, a short discourse, is considerably longer than the former tract. The title of it, as given by some transcriber of his manuscript, is, *Micrologus, id est brevis Sermo in Musica, editus a Domine Guidone piiffimo Monacho et peritiffimo Musico.*

In this tract too the author complains very feelingly of the envy of the times, and the malignity of his detractors.

In the dedication of the Micrologus to Theodald, the bishop of Arezzo, his diocesan, Guido confesses the goodness of his patron in vouchsafing to become his associate in the study of the Holy Scriptures, which he attributes to a desire to comfort and support him under the weight of his bodily and mental infirmities, and acknowledges, that if his endeavours are productive of any good to mankind, the merit of it is due to his patron, and not to him. He says that when music was employed in the service of the church, he laboured in the art not in vain, seeing that his discoveries in it were made public by the authority, and under the protection of his patron, who as he had regulated the church of St. Donatus, over which it was his office to preside, so had he rendered the servants thereof, by those privileges by him conferred on them, respectable amongst the clergy. He adds, that it is matter of surprize to him to find that the boys of the church of Arezzo should, in the art of modulation, excel the old men of other churches; and professes to explain the rules of the art for the honour of their house, not in the manner of the philosophers, but so as to be a service to their church, and a help to their boys, for that the art had a long time lain hid, and, though very difficult, had never been sufficiently explained.

The dedication is followed by a prologue, in which the author attributes to the grace of God the success of his endeavours to facilitate the practice of music; which success he says was so great, that the boys taught by his rules, and exercised therein for the space of a month, were able to sing at first sight, and without hesitation, music

\* Odo of Cluni, of whom, and also of his *Enchiridion*, see an account in chap. 6. of this book.

they had never heard before, in such a manner as to surprisè most people.

It appears, as well from the epistle to his friend Michael, as from the Micrologus, that in the opinion of Guido the only way of coming at a knowledge of the intervals so as to sing them truly, was by means of the monochord; for which reason, though he condemns the use of it for any other purpose than the bare initiation of learners in the rudiments of singing, he constantly recommends the study of it to young people. In the very beginning of the Micrologus he says, 'Whoever desires to be acquainted with our exercise, must learn such songs as are set down in our notes, and practise his hand in the use of the monochord, and often meditate on our rules, until he is perfect in the power and nature of the notes, and is able to sing well at first sight; for the notes, which are the foundation of this art, are best to be discerned in the monochord, by which also we are taught how art, imitating nature, has distinguished them.'

Guido proposes that the monochord shall contain twenty-one notes, concerning the disposition whereof he speaks thus.

'First set down  $\Gamma$  Greek, which is added by the moderns, then let follow the first seven letters of the alphabet, in capitals, in this manner, A, B, C, D, E, F, G; and after these the same seven letters in the smaller characters; the first series denotes the graver, and the latter the acuter sounds. Nevertheless, among the smaller letters we insert occasionally b or  $\text{h}$ , the one character being round, the other square, thus a, b,  $\text{h}$ , c, d, e, f, g; to these add the tetra-chord of superacutes, in which b is doubled in the same manner, aa, bb,  $\text{hh}$ , cc, dd, ee. These letters make in all twenty-two,  $\Gamma$ , A, B, C, D, E, F, G, a, b,  $\text{h}$ , c, d, e, f, g, aa, bb,  $\text{hh}$ , cc, dd, ee, the disposition whereof has hitherto been so perplexed as not to be intelligible, but it shall here be made most clear and plain, even to boys.'

For the division of the monochord he gives the following directions.

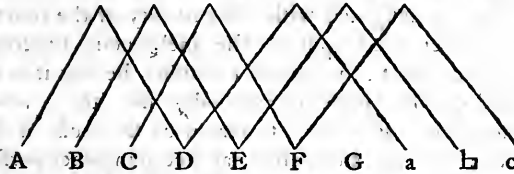
'Gamma  $\Gamma$  being placed at one extremity of the monochord, divide the space between that and the end of the chord into nine parts, and at the end of the first ninth part place A, from whence the ancients fixed their beginning; then from A divide the space to the end of the chord into nine parts, and in the same manner

place B; then returning to  $\Gamma$ , divide the whole space to the end into four parts, and at the end of the first fourth part place C. In the same manner as from  $\Gamma$  you found C, by a division of four parts, you will from A find D; from B, E; from C, F; from D, G; from E, a acute; from F, b round; the rest that follow are easily found by a bisection of the remaining parts of the line in the manner above directed, as for example, in the middle between B and the end place  $\sqcup$ . In like manner from C you will find a new c; from D a new d; from E another e; from F another f; and from G another g; and the rest in the same manner, proceeding upwards or downwards, ad infinitum, unless the precepts of the art should by their authority restrain it. Out of the many and divers divisions of the monochord, I have set down this in particular, it being easily to be understood, and when once understood is hardly to be forgotten.—Here follows another method of dividing the monochord, which, though not so easily to be retained, is more expeditiously performed. Divide the whole into nine parts, the first part will terminate in A, the second is vacant; the third in D, the fourth vacant; the fifth a, the sixth d, the seventh aa, the rest vacant. Again, divide from A to the end into nine parts; the first part will terminate in B, the second will be vacant, the third E, the fourth vacant, the fifth  $\sqcup$ , the sixth e, the seventh  $\sqcup\sqcup$ , the rest vacant: again, divide the whole from  $\Gamma$  to the end into four parts, the first will terminate in C, the second in G, the third in g, and the fourth finishes. Divide from C to the end likewise into four parts, the first part will end in F, the second in c, the third in cc, and the fourth finishes. Divide from F into four parts, the first will end in b round, the second in f: divide from b round into four parts, in the second you will find bb round, the rest are vacant. Divide from aa into four parts, the first will be dd, the rest are vacant. For the disposition of the notes these two methods of division are sufficient; the first is the more easy to be remembered, the second the more expeditious.

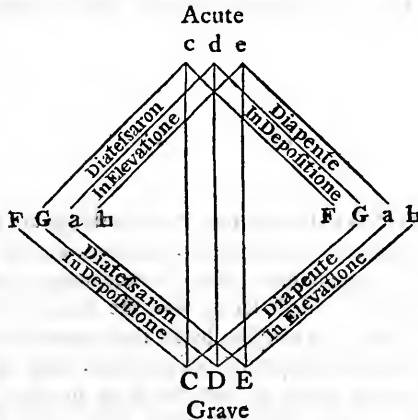
Upon this division of the monochord he observes, that there appears a greater distance between some of the notes, as  $\Gamma$ , A, and A, B, than between others, as B, C: he says the greater distance is called a tone, and the lesser a semitone, from semis an half; that a ditone is an interval consisting of two tones, as C, D, E, and that that is called a semiditone which contains only a tone and half, as  
from

from D to F. He says that when between any two notes there occurs in any order whatever, two tones and a semitone, as from A to D, from B to E, and from C to F, the extreme sounds make a diatessaron, but that a diapente is greater by a tone; as when between any two notes there occur three tones and a semitone, as from A to E, or from C to G. He reckons up six consonances, that is to say, the tone, semitone, ditone, semiditone, diatessaron, and diapente, to which number he says may also be added the diapasos as a seventh; but that as it is seldom introduced, it is not so commonly ranked among them\*.

In the seventh chapter of the Micrologus the author treats of the affinity of notes, or, in other words, of the consonances; those of the diatessaron and diapente he explains by the following figure.



In the eighth he shews the affinity between b and b̄, and distinguishes between the diatessaron and diapente in this diagram.



\* The manuscript must certainly be erroneous in this place, for the semitone can in no sense whatever be deemed a consonance; and as to the diapasos, it is so far from being seldom introduced, that it is the most usual and perfect of all the consonances.

In the twelfth and thirteenth chapters he speaks of the division of the four modes into eight, and says that as there are eight parts of speech, and eight forms of blessedness, i. e. beatitudes, so ought there to be eight modes in music. In the fourteenth chapter he treats more particularly of the modes, which he calls Tropes, and of the effects of music: of these he says their properties are so different, that in the same manner as a person accustomed to different countries is able out of several men placed before him, to say 'this is a Spaniard, this an Italian, this a German, and this other a Frenchman;' so may one that is skilled in music by their diversities distinguish the tropes. Farther he ascribes to the tropes different properties; for 'one person,' says he, 'delights in the broken leaps of the second authentic; another in the softness of the third plagal; a third shall be delighted with the garrulity of the fourth authentic, and another shall approve the mellifluous sweetness of the fourth plagal.' As to the power of music, he says it is so great as to cure many diseases of the human body; he cites a relation of a frantic person who was restored to reason by the music of Asclepiades the physician; and mentions also that a certain other person was by the sound of the lyre, so stirred up to lust, that he attempted to force into the chamber of a young woman with intent to violate her chastity, but that the musician, immediately changing the mode, caused him to desist from his purpose.

## C H A P. IX.

**A**CCORDING to Guido, cap. xv. four things are required in every cantus, sounds, consonances, neumas, and distinctions: from sounds proceed consonances, from consonances neumas, and from neumas distinctions: this it seems was the ancient scholastic division of vocal music, and it is adopted by all the monkish writers on the art. A Neuma is the smallest particle of a cantus, and is elsewhere said to signify as many notes as can be sung in one respiration. By distinctions the author seems to mean nothing more than the different

ferent measures of time, which, for ought that any where appears to the contrary, were regulated solely by the metre of the verse to which the notes were sung. Speaking of neumas, he says they may be reciprocated, or return by the same steps as they proceeded by; and adds that a cantus is said to be metrical when it scans truly, which, if it be right, it will do even if sung by itself. Neumas, he says, should correspond to neumas, and distinctions to distinctions, according to the perfectly sweet method of Ambrosius. Farther he says that the resemblance between metres and songs is not small, for that neumas answer to feet, and distinctions to verses; the neuma answers to the dactyl, spondee, or iambic; the distinction to the tetrameter, the pentameter, or the hexameter, and the like. He adds, 'Every cantus should agree with the subject to which it is adapted, whether it be grave, tranquil, jocund, or exulting; and that towards the end of every distinction the notes should be thinly disposed, that being the place of respiration; for we see that when race-horses approach the end of the course they abate of their speed, and move as if wearied.'

Cap. xvi. he treats of the manifold variety of sounds and neumas, and says that it ought not to seem wonderful that such a variety should arise from so few notes, since from a few letters syllables are formed, which, though not innumerable, do yet produce an infinite number of parts. 'How many kinds of metre' adds he, 'arise out of a few feet, and by how many varieties is each capable of diversification? but this he says is the province of the grammarians.' He proceeds to shew what different neumas may be formed from the six consonances; he assumes that every neuma, or, as we should now say, every passage, must necessarily either ascend or descend; an ascending neuma he terms *Arsis*, a descending, *Thesis*; these he says may be conjoined: and farther he says that by means of a total or partial elevation or depression of any neuma, different combinations may be formed, and a great variety of melody produced.

In cap. xvii. he lays it down as a rule, that as whatever is spoken may be written, so there can be no cantus formed but what may be designed by letters; and here he exhibits a rule for a kind of extemporaneous musical composition, which must doubtless appear very strange to a modern: he says in singing no sound can be uttered but  
by

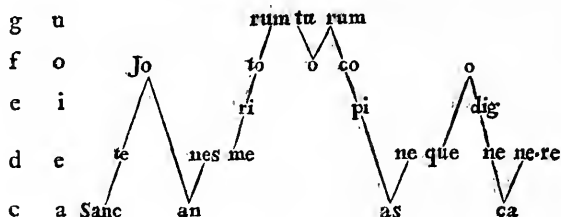
by means of one or other of the five vowels, and that from their changes a sweet concord will ensue; he therefore first directs the placing the letters of the monochord, and the vowels under them in this order:

Γ A B C D E F g a h c d e f g a  
a e i o u a e i o u a e i o u a

And, to exemplify their use, recommends the taking some such known sentence as this:

Sancte Joannes, meritorum tuorum copias; neque digne canere.

In this example the vowels determine the music; for as in the above scheme the power of each sound is transferred to its correspondent vowel, the succession of the vowels will exhibit a series of sounds to which every syllable may be fung.

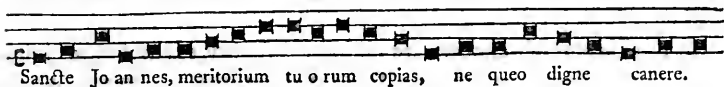


It is clear from the connection between the vowels and the letters of the monochord, that the diapente here made use of is taken from among the acutes; because in the disposition above made, the vowel a answers to Γ; but had he chosen the graves for an example, the progression of the cantus had been precisely the same; for as d is to c, so is A to Γ, and as f is to c, so is C to Γ; as g is to c, so is D to γ, and so of the rest.

This it must be confessed is but a fortuitous kind of melody; it seems however to have suited well enough with the simplicity of the times, which affords us no reason to believe that the art of composing music



was arrived at any great degree of perfection. By the rule here given the above cantus may easily be rendered into modern notes, in which it will have this appearance.



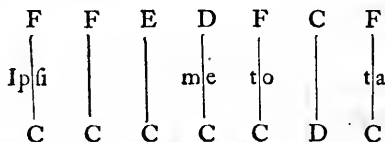
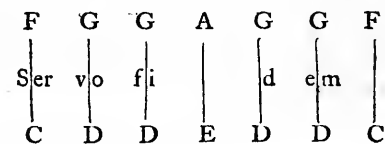
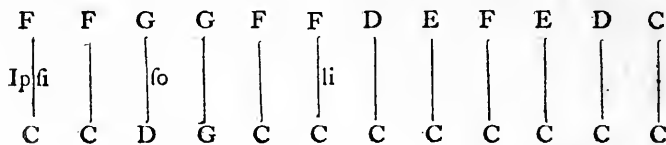
The eighteenth chapter of the Micrologus is an explanation of the Diaphonia, by which term we are to understand those precepts that teach the use of the organ, and its application to vocal melody; concerning which Guido says, that supposing the finger to utter any given sound, as for instance A, if the organ proceeds to the acutes, the A may be doubled, as A D a, in which case it will sound from A to D, a diateffaron, from D to a, diapente, and from A to a, a diapasfon: he farther says, that these three kinds, when uttered by the organ, commix together with great sweetness, and that the apt copulation of notes is called Symphony. He gives this which follows as an example of the diaphonia.

Diapasfon	{	Diapente	{	c	d	e	d	c	d	e	d	c	c	B
		Diateffaron	{	F	G	A	G	F	G	A	G	F	F	E
														D
														F
														C
														D
														E
														D
														C
														C
														B
														A
														F
														G
														a

And adds that a cantus may be doubled by the organ, and the organ itself in the diapasfon, as much as the organist pleases. He says that having made the doubling of sounds sufficiently clear, he will explain the method of adapting grave sounds to a cantus, in the doing whereof he premises that the Diaphonia admits not of the semitone nor diapente, but that it accepts of the tone, ditone, semiditone, and diateffaron, among which consonances the diateffaron holds the principal place. Of the modes, which he calls Tropes, he says that some are fit, some more fit, and others most fit, for the Diaphonia; and these

these degrees of fitness seem to bear a proportion to the number of concordant intervals in each. As an instance of the highest degree of this kind of perfection, he mentions the third and fourth tones, which he says follow kindly and sweetly, with a tone, ditone, and diatessaron.

In the nineteenth chapter are contained sundry examples to illustrate the precepts delivered in the chapter preceding, among which are the following.



The several precepts contained in the *Micrologus*, together with the examples above given, may serve to shew the inartificial contexture of the music in those early days: they farther tend to confirm those accounts which carry the antiquity of the organ back to a time, when, from the uncultivated state of the mechanic arts, it would hardly be supposed that an instrument so wonderfully constructed could have been fabricated\*.

\* The state of the mechanic arts, so far as they relate to the constructing and making the several utensils and conveniences for domestic life, would, were it possible to come at it, afford great satisfaction to a curious enquirer, as it would enable him, by a comparison of two very remote periods, to estimate the degree of perfection at which we are now arrived. Few of those persons, who are curious enough to attend to the manual operations of our  
English

After delivering the precepts of the Diaphonia, the author from Boetius relates the discovery of the consonances by Pythagoras. He exhorts such as mean to become excellent in music to take the monochord for their guide, and repeats his instructions for making and dividing it.

A little farther on he resumes the consideration of the tones, and is somewhat precise in ascertaining their respective limits, and distinguishing between the authentic and the plagal. He says that the same antiphon may be sung in different sounds without changing the harmony: or, in other words, that it may be so transposed, as that the sounds may bear the same relation to each other as if not transposed. He says that the second letter, by which we are to understand  $\text{B}$ , is rejected as ignoble, and unfit to be the principal of any tone: the reason of this is, that its fifth is defective, as being less than a true diapente by a semitone.

The residue of this tract, the Micrologus, consists of miscellaneous reflections on the use and efficacy of music: towards the close of it is the following tetraëtic.

Quædam lineas signamus variis coloribus  
 Ut quo loco sit sonus mox discernat oculus;  
 Ordine terciæ vocis splendens crocus radiat,  
 Sexta ejus, sed affinis flavo rubet minio.

Upon which he observes, that if a letter and colour be not affixed to a Neuma, it will be 'like a well without a rope.' These verses are an absolute enigma, and it would be a vain attempt to explain them, did not a passage in another part of this author's writings afford some intimation that by the red line he intended to denote the  $\text{F}$ , and by the yellow the  $\text{C}$  cliff: however we are not to look on this method of distinguishing the cliffs by lines of different colours as

English artificers, are ignorant that they work with an amazing degree of truth and accuracy. A very curious book, now extant, called the Book of St Alban's, written by dame Julyans Bernes, prioress of the nunnery of Sopwell, near St. Alban's, describes the method of making an angling rod in the year 1496; and gives us to understand that the mechanics of that time thought the neatest method of hollowing a stick for that purpose was the burning it through with a hot spit; and it is not unlikely but that four hundred years before that, an organ-pipe was perforated in no better a manner: and if we suppose the same want of neatness in the various other parts of that complicated machine of which we are now speaking, we may fairly conclude that both the organ and the music of the eleventh century were equally rude and inartificial.

the invention of Guido, since it appears to have been in use so early as the year 900, which is at least an hundred years before the time when he wrote.

He seems to close his tract with an assurance that he has made the rules clear, and laid open to singers the regular and perfect manner of singing, in a method unknown to former times. But he immediately resumes his subject in these words, ‘*Temporibus nostris super omnes homines fatui sunt cantores;*’ and goes on to explain some particulars that are before but obscurely treated of; in the doing whereof Guido takes occasion to represent the woful state of music, and the deplorable ignorance of singers at the time when he wrote; the whole is curious, and will be best understood if given in his own words, which are nearly these.

‘ In these our times no set of men are so infatuated as singers; in every other art we improve, and in time attain to a greater degree of knowledge than we derived from our teachers: thus by reading over the simple psalter, boys are enabled to read other books; the countryman by use and exercise acquires the knowledge of agriculture; he who has pruned one vine, planted one shrub, or loaded one ass, is able not only to do the same again, but to do it better; but, miserable disciples of singers, they, though they should practice every day for an hundred years, would never be able to sing even one little antiphon themselves, nor without the help of a master, but lose as much time in attaining to sing, as would have enabled them fully to understand the divine writ. And what is more to be lamented is, that many clerks of the religious orders, and monks too, neglect the psalms, the nocturnals, and vigils, and other lessons of piety, by which we are led to everlasting glory, while they with a most foolish and assiduous labour prosecute the art of singing, which they are never able to attain. Who then can refrain from tears to see such an evil creep into the church? from whence such discord ensues, that we are unable to celebrate the divine offices. Nor is this all, for this ignorance of their duty begets reproach, from whence proceeds contention; scarce the scholar with the master can agree, and much less one fellow scholar with another. Neither is there any uniformity of music at this day in the churches; for there are as many kinds of antiphons as there are masters; insomuch that no one can say as heretofore, this is the  
‘ antiphon

‘ antiphon of Gregory, of Leo, or Albert, or any other; but every  
 ‘ one either varies these, or forms others, at his pleasure. It ought  
 ‘ not therefore to give offence if I contend with the corruptions of the  
 ‘ times, and endeavour to render the practice of music conformable  
 ‘ to the rules of the art: and as all these corruptions have arisen from  
 ‘ the ignorance of musicians, I must earnestly request that no one  
 ‘ will presume to make antiphons, unless he be well skilled in the  
 ‘ art of forming them according to the known and established rules  
 ‘ of music; it being most certain that he who is not the disciple of  
 ‘ truth will be a teacher of error. And for these reasons I intend,  
 ‘ with the help of God, to note down a book of antiphons, by means  
 ‘ whereof any assiduous person may attain to sing truly, and without  
 ‘ hesitation; and if any one doubts the efficacy of our method, let  
 ‘ him come and see what our little boys can do, who labouring un-  
 ‘ der their ignorance, as not being able to read the common psalter,  
 ‘ are yet capable of singing the music to it, and can without the  
 ‘ help of a master sing the notes, though they cannot pronounce  
 ‘ the words.’

The letters of Gregory, he says, ‘ are so disposed, that if a note be  
 ‘ repeated ever so often it will always have the same character; but the  
 ‘ better to distinguish the order of notes, lines are drawn near to each  
 ‘ other, and notes are placed on these lines, and also on the spaces be-  
 ‘ tween the lines.’ He adds, ‘ we make use of two colours, yellow  
 ‘ and red, by means whereof I give a rule very useful and convenient  
 ‘ for finding out the tone and the letter of the monochord, to which  
 ‘ any given neuma is to be referred. There are seven letters in the  
 ‘ monochord; and wherever you see the yellow it is the sign of the  
 ‘ third letter, and wherever red it denotes the sixth, whether the  
 ‘ colours are drawn in the lines or over them.’

This is the passage above hinted at as containing a solution of the  
 enigmatical tetrastrich at the latter end of the *Micrologus*: the author  
 has said that the letters of the monochord are seven; it is supposed  
 that he means to exclude  $\Gamma$  from the number, as the chord of which  
 that letter is a sign is assumed; if so, the letters must be A, B, C, D,  
 E, F, G, and then the yellow line will denote the place of C, and  
 the red that of F. Father Martini, who had an opportunity of con-  
 sulting a greater variety of missals and other manuscripts than are to  
 be found in this country, makes no scruple to assert that this is Guido’s

meaning, and produces divers fragments from ancient books of the church-offices, which have both a yellow and a red line, the first ever with the letter C, and the other with F, in the usual place of the cliff.

The examples of the use of the yellow and red lines produced by Martini are very many, but as the lines do all stand single, and as upon, above, and below them divers characters are placed, which bear not the least resemblance to the points used by Guido and his successors, it may be questioned whether this variety of colours was not originally adapted to a method of notation in use before his time, notwithstanding that it coincides so well with the stave. But Kircher, in the *Musurgia*, tome I. pag. 555, has reduced this question to a certainty; and, notwithstanding the general opinion, that before the time of Guido the only method of notation in use was by the Roman capital and small letters, which St. Grégory introduced, Martini proves that the notators, as they are called, of that time, made use of certain marks in this form  $\gamma$   $\pi$   $\omega$   $\bullet$   $\sqrt{\quad}$   $\cdot$   $\ast$  and as to lines of different colours, Kircher relates that he had found in the monastery of Vallombrosa sundry very ancient books, written for the use of the choir there, before the time of Guido; and that the method of notation in those books was by a red line, with certain notes or points placed in different situations above and below, according to the intervals intended to be marked by them  $\dagger$ . Nivers speaks also to the same purpose; for enquiring into the causes of the corruption of the Cantus Gregorianus, he assigns for one, the uncertainty of the method of notation before the time of Guido; for he says till his reformation of the scale, the characters were only small points, commas, accents, and certain little oblique strokes, occasionally interposed; which great variety of minute figures he says was very difficult to comprehend, still more to retain, and impossible to reduce to practice without the assistance of a master. In proof of this assertion he waves the authority of Kircher, who has mentioned the same fact, and says that he engaged in an exact and

\* *Stor. della Musica*, pag. 183.

† What Guido has said respecting the stations of the cliffs, and the practice of distinguishing them by red and yellow lines, is confirmed by the specimens above inserted from Martini; but it may here be remarked that they were also distinguished by lines of a different thickness from the others in the stave, as appears by the following example, taken from the *Lexicon Diplomaticum* of Johannes Ludolphus Walther, fol. Ulm. 1756.



and had received from thence, memoirs and extracts from manuscript antiphonaries, and graduals, many of which were above nine hundred years old, in which these characters appear. He farther says, that in this method of notation, by points and other marks, it was impossible to ascertain the difference between the tone and semitone, which is in effect saying that the whole contrivance was inartificial, productive of error, and of very little worth. Dissertation sur le Chant Gregorien, chap. vi. Specimens of this method of notation, taken from Martini, vol. I. pag. 184, are inserted in the following plate\*.

Celi cęlorum laudate deum

Cę li Cęlorum laudate deum

of pęrfice gres sus meos in se mi tus tu is

Perfi ce gres sus meos in se mi tus tu is

By Popu le me us qđ feci aut &c.

Do pu le me us qui fe ci aut &c.

Dęsiderium anime eius turbasti ei &c.

Dę si de ri um a ni me eius tur ba sti ei et

INCIPUNT KIRIELE PERCU  
CULUM ANNI CANENDE

X PĒREDEUPTOR MISĒRE RĒNOBIS KĪR  
rieleſon.

B. J. S. sculp.

\* There has lately been discovered in the library of Bennet college in Cambridge, a manuscript containing examples of the method of notation by irregular points above  
spoken



From what has been said some idea may be formed of the nature and tendency of the *Micrologus*, and other tracts of Guido. Whether he was the author of any other than have been mentioned, is not easy to determine; but it seems that those from which the foregoing extracts are taken, contain as much of his doctrine as he thought communicable by writing; for it is to be remarked that he frequently takes occasion to say that some particulars of it are not to be understood but by a familiar conversation, and it is to be feared that most of his readers must entertain the same opinion.

It no where appears that any of his works were ever printed, except that Baronius, in his *Annales Ecclesiastici*, tom. XI. pag. 73, has given at length the epistle from him to his friend Michael of Pomposa, and that to Theodald bishop of Arezzo, prefixed to the *Micrologus*, and yet the writers on music speak of the *Micrologus* as of a book in the hands of every one. Martini cites several manuscripts of Guido, as namely, two in the Ambrosian library at Milan, the one written about the twelfth century, the other less ancient: another among the archives of the chapter of Pistoja, a city in Tuscany; and a third in the Mediceo-Laurenziano library at Florence, of the fifteenth century, these are clearly the *Micrologus*. Of the Epistle to Michael of Pomposa, together with the *Argumentum novi Cantus inveniendi*, he mentions only one, which he says is somewhere at Ratibon\*.

Of the several tracts above-mentioned, the last excepted, a manuscript is extant in the library of Baliol college in Oxford. Several fragments of the two first, in one volume, are also among the Harleian manuscripts now in the British Museum, Numb. 3199, but so very much mutilated, that they afford but small satisfaction to a curious enquirer. The Baliol manuscript contains also the *Enchiridion* of Odo, which Guido, at the close of the *Argumentum novi Cantus inveniendi*, highly commends; as also the tract of Berno abbot of Richenou before mentioned.

spoken of; and a learned and ingenious gentleman of that college has furnished this work with the following article from the catalogue of that collection.

473. N. xxxviii. Codex membranaceus minoris formæ, ante Conquisitionem exaratus. Hymni (sive ut sæpius in hoc Codice nominantur Tropi) recitandi diebus Dominicalibus et festis inter sacra celebranda cum notis musicis.

The last specimen in the above plate is inserted from the manuscript thus described.

\* Storia della Musica, passim, et pag. 457, GUIDO.

The above particulars of the life and labours of Guido, which have indeed the merit of being immediately collected from his own writings, are possibly all that we shall ever be able to learn about him; for by a kind of fatality, very difficult to account for, his memory lives only in his inventions, and though there is scarce a dictionary, not to mention the innumerable tracts that direct the practice of vocal music, but mention him as having taken the syllables UT, RE, MI, FA, SOL, LA from a hymn of St. John the Baptist, and applied them to certain notes in the scale of music, yet no one author of credit, if we except cardinal Baronius, and he seems more desirous of recording the Invention, than perpetuating the Memory of its author, has thought him worthy of a more honourable testimony than is every day given by the writers of Biliotheques, Memoirs, and Anecdotes, to any scribbling professor of the Belles Lettres.

This supineness, or ignorance, or whatever else it may deserve to be called, with respect to Guido and his improvements, has been the source of many mistakes, as namely, that he was the inventor of music in consonance, and of the organ and harpsichord; and that he was the first that introduced the practice of descant in singing. In the course of the present work some of these inventions have been, and the others severally will be, fixed at periods very remote from that in which Guido lived: at present it shall suffice to refute them by saying, that as to the organ, it was invented probably about the middle of the eighth century; for that in 797 the emperor Constantine Copronymus sent one as a curious and valuable present to Pepin king of France; and in 828 pope Vitalianus introduced the organ into the service of the church; and farther, Guido himself in his *Micrologus* frequently mentions the organ as an instrument in common use in his time. As to the harpsichord, the name of it, or of the spinnet, of which it is manifestly but an improvement, does not once occur in the writings of the monkish musicians who wrote after Guido, nor in the works of Chaucer, who seems to have occasionally mentioned all the various instruments in use in his time. Gower indeed speaks of an instrument called the citole, in these verses:

He taught hir, till she was certeyne  
Of harpe, citole, and of riote,  
With many a tetrae, and many a note.

*Confessio Amantis*, fol. 178, b.

And

And by an ancient list of the domestic establishment of Edward III. it appears that he had in his service a musician called a cyteller, or cýteller: the citole or cistole, derived from cistella, a little chest, might probably be an instrument resembling a box with strings on the top or belly, which by the application of the tastatura or key-board, borrowed from the organ, and jacks, became a spinnet. But as to the harpichord, the earliest description of it which, after a careful research, could be found, is, that of Ottomarus Luscinus, in his *Murgia*, published at Strasburg, in 1536. As to descant, it was the invention, as some imagine, of Bede, and he lived under the Saxon heptarchy, about the year 673; and lastly, whether the common use of the organ and the practice of descant, do not presuppose music in consonance, is submitted to the judgment of all who profess to know any thing of the science.

As Guido made no pretensions to great learning, or skill in philosophy, but seems indeed to have been absorbed in the study of his psalter and the church-offices, no one of the many writers who have occasionally mentioned him, has entered into the particulars either of his character or his institution; but his reformation of the scale, his improvement of the stave, and the method of notation invented by him, which has introduced into the world a kind of universal character \*, bespeak his merit more than the most laboured encomium could do, and have procured him a reputation that must in all probability endure as long as the love of music shall subsist.

\* It is literally true, that for the purpose of representing musical sounds by writing, the system of Guido is an universal character; and every day's experience informs us that men of different countries, and who speak different languages, and therefore are incapable of verbal communication, have yet the same idea of the power of the musical characters, which they discover by their readiness in performing compositions that they have never studied. And this consideration has induced some men to assert that the scale of music might be made to serve the purpose of an alphabet. Bishop Wilkins first started this notion, and it is very ingeniously prosecuted in his tract entitled *The secret and swift Messenger*, chap. xviii. and by Mr. Oldys in the life of Peter Bales, the famous penman, in the *Biographia Britannica*.

