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The History of Music (Art and Science)

From the Earliest Records to the Fall of the Roman Empire

William Chappell

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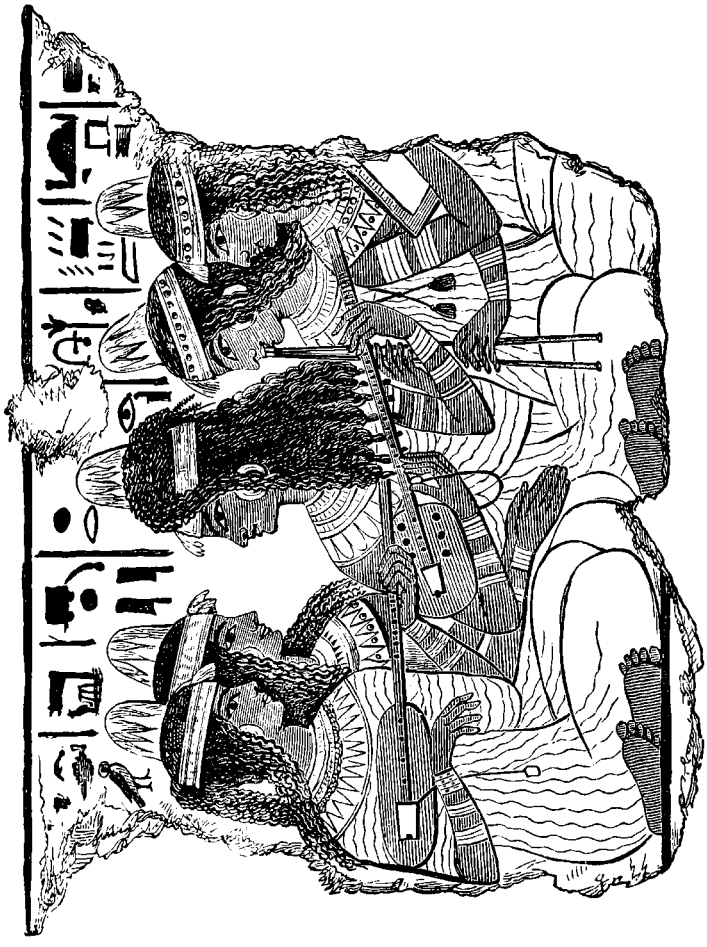

Egyptian Ladies, of about the time of Moses, engaged in Music. 18th Dynasty.
From the original painting upon plaster; taken from a tomb at Thebes, now in the British Museum.

THE

HISTORY OF MUSIC.

(Art and Science.)

VOL. I.

FROM THE EARLIEST RECORDS TO THE FALL OF THE ROMAN EMPIRE.

WITH EXPLANATIONS OF ANCIENT SYSTEMS OF MUSIC, MUSICAL INSTRUMENTS, AND OF THE TRUE PHYSIOLOGICAL BASIS FOR THE SCIENCE OF MUSIC, WHETHER ANCIENT OR MODERN.

BY

W. CHAPPELL, F.S.A.,

AUTHOR OF "A HISTORY OF THE BALLAD LITERATURE AND POPULAR MUSIC OF THE OLDEN TIME."

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INTRODUCTION.

IT is now nearly a century since the two General Histories of Music from the earliest times, by Sir John Hawkins and by Charles Burney, Mus. Doc., F.R.S., were first published. The subsequent minor histories by Dr. Busby, by Stafford, by George Hogarth, and by others, were not offered as original, but are avowedly derived, either wholly or mainly, from the works of their predecessors.

The following is a really new History of the Art and of the Science of Music from the earliest records. The study was undertaken as an amusement, without any intention of writing; but the inducements to publish have been threefold. First, that I am now able to clear away difficulties which have hitherto been reputed as insurmountable; secondly, that this solution will afford a clue to many passages in the classics as to the interpretation of which learned men have been doubtful; and, thirdly, because I trust to be able to explain the whole system of ancient music, theoretical and practical, so that any reader may understand it. Besides this, I can give the reasons for so many

things hitherto unexplained, that I hope to make a book which will be *useful* for any one interested in music. The most ancient music is extremely simple; for the only difference between the musical notes sounded even in ancient Egypt and those of a well-tuned scale of to-day is the introduction of minor tones alternating with major, and they differ but by the eighty-first part of a string. This change made the intervals of major Thirds consonant, as from C to E on the pianoforte. In melody the former imperfection would commonly pass unnoticed, but not so in harmony.

I will first say a few words about our two musical historians, and thus show the desirability of a new history. Sir John Hawkins's complete work and Dr. Burney's first volume were printed in the year 1776. Dr. Burney's second volume was delayed till 1782, and his third and fourth were not published before 1789. In the last-named year Sir John Hawkins died, but Dr. Burney lived on till 1814; so that many now living may claim to have been his contemporaries for the last few years of his life, and among them I am one.

On the first appearance of the two histories, they met with very opposite fortunes. Popularity ran altogether on the side of Dr. Burney. For six years after the publication of Sir John Hawkins's complete work there was but one volume of Dr. Burney's to afford a fair comparison with it; and yet the world decided unhesitatingly in favour of Dr. Burney. The plan of Sir John Hawkins was too elaborate.

It combined the biography of musicians and the bibliography of music with the history of the art. Sir John's reason for attempting so much was because at that time there was no satisfactory work to be found upon any one of the three branches—at least, not in the English language.

In pursuance of this triple design, Sir John discusses the merits of author after author, and of book after book, just as he might take them in chronological order from the shelves of his extensive and valuable musical library. He adds an analysis of each work, but it is too slight to embrace some of the most important points. His history thus becomes of a very desultory character; and it involves much repetition, because the same subjects and the same branches of the art are treated on by authors of very different dates. The plan is as fatal to condensation as to continuity of subject; and thus Sir John has supplied a book of reference, containing stores of materials for history, rather than one consecutive and well-digested whole.

It was further unfortunate for him that only one volume of his rival's work should have been issued when the comparison was so over-hastily instituted. Sir John had found that he could not understand ancient Greek music; and my impression is, that he had not learnt the Greek language, which would sufficiently account for it. He therefore contented himself with giving "an impartial state[a] of the several opinions that at different times have pre-

[a] The word "statement" had not been coined when Sir John wrote.

vailed among the moderns." In this, whether from a desire to demonstrate the obscurity of the subject, or from unwillingness to trouble himself with the translation of technical words which he might not fully understand, he wrote quite unintelligibly for general readers. By passing over technical words, and even others which were not limited to technical use, he raised grave doubts as to the sufficiency of his scholarship. He anglicised Greek words; and no one but a Greek scholar could understand them, because they had not been admitted into the English language. Sometimes, indeed, he added notes to explain these words, but the notes were not always intelligible. For example, having formed a new adjective, "hemiolian," he subscribes to it:—"This is but another name for *sesquialtera*, as Andreas Ornithoparcus asserts in his *Micrologus*, lib. ii., on the authority of Aulus Gellius."—(I., 86, 4to.) But who was Andreas Ornithoparcus? The world would not know that he was a German writer of the end of the fifteenth century, whose proper name is said to have been Vogelsang. And wherefore rely upon the authority of Aulus Gellius, a Roman of the second century, for the meaning of a Greek word? It is simple enough in itself, and is to be found in every, or nearly every, treatise upon music written by a Greek. If Sir John deemed it necessary to add "hemiolian" to the English language, he should have explained its meaning to be "in the ratio of 3 to 2." Then he would have been intelligible; but to describe it by "sesquialtera" is not so.

In the same obscure style he defines a monochord as consisting of one string stretched over two "magades;" these are simply "bridges;" again, of "diastems;" meaning "intervals;" and he gives such charmingly long words, as "*sesquidecima-septima* ratio," instead of "the ratio of 18 to 17."

It is true that Sir John had ample authority for this style of writing. It had been adopted by most of the translators of Greek works upon music into Latin; and it has one great advantage, that the words are sure to be right, which might not have been the case if he or they had attempted to render them into another language. There was, however, one objection to the plan—the reader must first understand the subject, and perhaps be better acquainted with the meaning of the Greek terms than the writer. Unluckily that did not always prove to be the case; indeed, readers so well informed would naturally prefer an original text.

English musicians were not prepared for the numberless new words which Sir John incorporated into the language. One of them, Dr. J. W. Callcott, the celebrated glee-writer, turned this style of composition into ridicule by a mischievous catch, of which he wrote both the words and the music:—

1*st Voice.* Have you Sir John Hawkins' Hist'ry?
Some folks think it quite a myst'ry.
2*nd Voice.* Music filled his wondrous brain—
How d'ye like him? Is it plain?
3*rd Voice.* Both I've read, and must agree
That Burney's Hist'ry pleases me.

When the the third singer has sung his part, the

three take up the cross-readings in the following order :—(1), "Sir John Hawkins ;" (2), "How d'ye like him?" (3), "Burney's Hist'ry, Burney's His-t'ry"—the last sounding like "Burn his Hist'ry! burn his Hist'ry!"

This piece of waggery was fatal to the success of a work upon which the labour of many years had been expended. Its merits remained in the back-ground until within the second half of the present century. In 1853 Sir John Hawkins's History of Music was republished in two closely printed large octavo volumes, with the addition of posthumous notes by the author, and a few curtailments.

Dr. Burney had the triumph of a second edition of his first volume during his life; but the three remaining volumes of his history have never been, and are not likely to be, republished. There are great objections to them, to which I shall presently refer, because I cannot find that others have noticed a twentieth part of them; but, in the meantime, as to his first volume.

Dr. Burney's system of writing upon ancient Greek music was identical with that of Sir John Hawkins, so far as reliance upon the moderns to have done all that was possible towards under-standing it. Therefore the subject was not further advanced by the one than by the other, although Dr. Burney had the advantage in being at least an intelligible writer. It may, at first, appear un-accountable that, among the numbers of learned men who made the attempt to understand the

Greek system during so many ages, no one should have succeeded, especially considering that it will hereafter be shown, even to the quarter-tone, to be our modern system of music. So simple a result seems ludicrous. But this general failure is to be accounted for by the fact, that the Romans had twisted round the meanings of the Greek words in so extraordinary a fashion, that perhaps "tone" and "diatonic" are the only two which remain nearly identical in the two languages. So that, to unriddle the subject, the student had first to unlearn all that he had been taught as to the meanings of musical terms, and then to begin again, trusting only the Greek authors. No Latin treatise would avail, nor would any modern language in which musical terms had been derived through the Latin, or through the Western Church. The misuse of Greek technical language by Romans was by no means limited to music.

Dr. Burney's education was sure to include Greek, he having been a pupil at Shrewsbury School. He had copies of the treatises on music by Greek authors under his hand, in two volumes, which were printed only a century before. But he did not consider it necessary that he should study them, because he had been examined as to his knowledge of Greek music from the Latin treatise of Boethius, when he took his degree in music at the university. He therefore employed the works of the Greeks only as books of reference in case of need.

The treatise on music by Boethius, upon which

Dr. Burney relied, has proved a most unfortunate inheritance for modern Europe. Scholars of various countries have flown to it to learn ancient music, because it is written in Latin, instead of in Greek; but no one of them ever did, or could, learn from it. Boethius was unable to teach that which he did not himself understand; and he took up music simply as a branch of arithmetic. Boethius had no practical knowledge of music; he could not even tell whether a Greek scale began at the top or at the bottom. Bewildered by the two words, *nete* and *hypate* ("lowest" and "highest"), he did not succeed in discovering that they referred to length of string; and that therefore the "highest" string (in *length*) is the one which yields the lowest sound, and must be consequently at the bottom of the musical scale. And yet it is inexcusable that he should not have arrived at so elementary a piece of information, because he makes several extracts from the treatise on music by Nicomachus, and Nicomachus is one who fully explains the two words. The reader will find the explanation given by Nicomachus in one of the following pages. (See p. 36.)

Having dispensed with the only sound grammars of Greek music, by rejecting the Greek treatises, Dr. Burney's difficulties soon began. At p. 17 of his first volume he says:—

"The perplexity concerning the scale is a subject that required more time and meditation than I was able to bestow upon it;" (!) "however, I was very unwilling to leave it till I had discovered, by some indisputable rule, how to determine the question, as the few fragments left of Greek music, by a mistake in this particular,

would be as much injured as a poem, by reading it backwards. At length, an infallible rule presented itself to me, in the works of the great Euclid, who has been regarded for so many ages as the legislator of mathematicians, and whose writings have been their code."

Even this polished compliment to Euclid will not palliate Dr. Burney's utter neglect of Euclid's treatise, which is the first complete one in point of date, and the most necessary of all for beginners. If he would but have opened the pages of Euclid before he began to write, he would have been spared all his "time and meditation:" he would have found a diagram which sufficiently distinguishes the bottom of the scale from the top, without even the trouble of reading. After all, it was from that diagram that he learnt the scale, although he refers his readers to the page of text which accompanies it.

As another specimen of Dr. Burney's method of writing history, he devotes a chapter of 37 pages to discuss the question, "Whether the ancients had counterpoint, or music in parts."[a] He there collects all the "opinions" and all the "conjectures" of the moderns, both *pro* and *con*, and sums up as the constituted judge. Unhappily, neither the disputants nor the judge had first ascertained the correct meaning of the Greek word *harmonia*. Burney did not even think it necessary to include Greek definitions of *harmonia* in the chapter.

Dr. Burney had a strong preference for deriving his knowledge of the Greek authors at second-hand; and the reason was evidently because it saved him

[a] P. 108 to 145 of the second edition of vol. i., from which edition all my after-quotations are derived, unless otherwise specified.

the trouble of deciphering the contractions used in Greek books printed during the preceding century. He read Meibomius's notes upon the Greek authors, and adopted his views even too indiscriminately; so that when Meibomius trips, Burney stumbles also. Meibomius is usually a good authority, therefore any particular lapses on his part are noticed in the following pages.

Burney was, indeed, a bold man to undertake second and third volumes without the help of some one more capable than himself to read for him. He had proved in his first volume that old English printing was too much for him to decipher, and what could he do among manuscripts? The second and third volumes of his history were to embrace the period of the Middle Ages, down to the sixteenth century; therefore it could only be sought for in manuscripts, or in early printed books.

Burney's deficiencies have been so generally overlooked that I must recall the reader to his first volume (p. 235 of the first edition and p. 241 of the second). I examined both editions, to give him the benefit of any doubt. In the first line on p. 241 he states the text to be "*after the Psalmes before whyche it is prefyred*," instead of "prefyxed;" and, only a few lines below, we read as follows:—"The same expounder informs us that the Hebrew word, *Nehiloth*, used in the title to Psalm v., *signifyeth, by interpretation*, beretrages." The last word is plainly printed "Heretages" in the original. All this is from an English Bible printed,

in 1549,[a] in the usual black letter. The capital *H* is indeed more nearly like a *B* in black letter than in modern print, and the small *x* is a little like an *r*; but, considering that milkmaids had their ballads printed in black letter, down to the end of the seventeenth century, it seems strange that Dr. Burney should not have been able to decipher it.

The reader may from this form an opinion as to the value of Dr. Burney's readings from manuscripts, when there was no Sir John Hawkins from whom he could copy, and no Twining to help him, as in his first volume. I have necessarily followed some of Burney's steps, and have found that, in manuscripts, his guessing is even more objectionable than "beretrages." There he makes harmless nonsense, but in manuscripts he frequently inverts the sense of the author. A comparison would be amusing, if it were not also provoking to observe the shallowness and the assurance of the man who has so long been allowed to impose his blunders upon us under the name of history.

When Dr. Burney proceeded to Oxford, armed with letters of introduction from Dr. Johnson, every attention was shown to him, every facility was afforded him. He dined well, he was allowed to make transcripts, after his fashion, from any of the manuscripts in the libraries, and he published his judgments upon their authors in his history. In 1869 I had also occasion to go to Oxford. It was

[a] It is the first edition of Edmund Becke's Bible, which includes Tindale's Prologues, fol. 1549. Printed by John Daye and William Seres.

for the purpose of collating a manuscript treatise on music, written in the fourteenth century, by Theinred of Dover, the only known copy of which is included in the Bodleian Library. I then observed some short rules for singing descant, which are written in old English, and are bound up with Theinred's treatise. (Bodley, No. 842, fol. 48.) At my request Mr. George Parker, one of the very able assistants in the Bodleian library, copied those rules for me; and, as they related to church music, I sent Mr. Parker's transcript to the musical periodical, *The Choir*. I made only the additions of a modernization of the language, to be printed by the side of the old text, and wrote a few lines of introduction. It had then escaped me that the rules had been published by Burney; for, after having once read his work, I did not often refer to it. The difference between the two versions is, however, remarkable. Where the directions in the text are that the voice should rise "abown" ("above"), Dr. Burney writes "belowyn" (Burney language for "below"); and where it is "levyd" ("leaved" or "permitted" to do so and so), he says it is "*denyd*." If any reader should be curious to make a comparison between two such opposite versions from one manuscript, he has but to invest twopence in the purchase of *The Choir* of the 9th of April, 1870, and to compare Mr. Parker's transcript with that of Burney, at p. 434 of his second volume. Burney states these rules to be the "*compositio* Ricardi Cutell de London"—perhaps an ancestor of the famous Captain Cuttle—but

the manuscript attributes to him only the *operatio*, the "copying," instead of the "composition." So, again, with Theinred's treatise; although Burney quotes only the first line of the Latin, he states it incorrectly. Instead of "Quoniam musicorum de his cantibus frequens est *distinctio*," the last word should be "*dissensio*." Well might he complain of "the barbarism and obscurity of the Latin," as he read it (p. 397); but this is only another proof of his unfortunate incompetence.

If Dr. Burney had been able to contribute a few examples of ancient music, and to present them in an intelligible form, he would have done something towards history; but he could only copy specimens from others. "The study of ancient music," says he, in his Preface, "is now become the business of an antiquary more than of a musician;" and he, at least, would not claim to be an antiquary. It might have been as well if his sense of deficiency in that respect had acted as a check upon his flippant judgments of old musicians whose works he could not read; but then he would have lost occasions for smartness, upon which he relied as a great attraction in his writing.

Although Dr. Burney was admitted as a Fellow of the Royal Society, he does not exhibit great qualifications either in musical or in acoustical science. At p. 445 of his first volume, he says:—"The compound interval, for instance, of the 8th and 4th, though undoubtedly concord, they" (the Pythagoreans) "would not admit as such." Dr. Burney

is here peculiarly unhappy in his correction of the Pythagoreans. Reader, try the Burney concord; strike C, C, F, on the pianoforte. Now take away the lower C, and substitute F for the base. That is what other people call concord, and the first they term discord. Burney is demonstrably wrong, because no such sound as our F can ever arise from the root of C. This is unequivocally proved in the following chapter upon the basis of the science of music. No concord can arise between any two sounds if they cannot be traced to one root.

To cultivate a lively style and to follow the fashionable tastes of the day were Dr. Burney's two ideas of the desiderata for a history of music. His direct model was his admired J. J. Rousseau, as evinced in Rousseau's clever and caustic, but shallow and unjust writings upon musicians and upon music. The Troubadours of Provence, and Italian music, especially Italian opera, are Rousseau's all but exclusive themes of praise; and he raises them to greater prominence by an undue disparagement, if not a sweeping condemnation, of the music of other countries. Burney is, in some cases, a direct plagiarist from Rousseau; but, as often happens with imitators, he exceeds his original. In order to appear very smart and very clever, Dr. Burney does not scruple to misstate the words of an author in order to make jokes at his expense, and to be thought to correct him. I have given so many proofs of his habit of perversion in my Introduction to *Popular Music of the Olden Time*, that, although those quotations are

limited to one subject, they afford sufficient evidence of the fact, without further devotion of space.

Unfortunately, our two historians were equally unable to judge of the age of early manuscripts, and neither the one nor the other took the precaution of enquiring from those who were skilled in paleography. Thus they have inverted the course of history, and sometimes in a curious manner. An important manuscript, written in the first half of the thirteenth century, is postponed to the fifteenth, and one of the second half of the fifteenth is antedated as of the fourteenth century. A new history would therefore be necessary, if it were only to re-work the old materials, but the whole face of those times is now changed by new evidence.

It is unfortunate that Dr. Burney's History of Music should not have been adequately tested before it was adopted as an authority ; for, since his death, we have been too often treated to lectures upon music which are simply cut out of his work. This is the most melancholy part of the affair. Every allowance may be made for a man who fails in some of the very numerous requirements for histories of music. The various languages, ancient and modern, the obsolete technicalities within those languages, the obsolete notation in which ancient music is written, the chronology of manuscripts and their decipherment, the necessity of a grounding in general as well as in particular science, the wide extent of general reading required, mastery of the subject to draw sound conclusions, and, finally, the unremunerative

character of the amusement, or the task, as the chance may be, will afford some excuses; but it would be difficult to find any for one who seeks, by a perversion of texts, to gain undue credit for himself as of superior ability to their authors.

Histories of music require one who is willing to devote time to them, especially for the earlier portions. But, when once the foundations have been securely laid, the great difficulties of the task are overcome, and then abler men, who have made special studies upon particular branches, may well step in and raise the general standard of knowledge. Hitherto we have lost those advantages for want of the secure basis to start upon. I hope to have at last succeeded in that fundamental part, and to submit an ample number of good authorities in proof of it. Henceforth how simple and continuous is the chain. Commencing from our modern end, note first the long or white keys of the pianoforte. Their arrangement was copied from the keys of organs. Modern Europe derived organs originally from the Greeks. The white keys in question, our A, B, C, D, E, F, G, form the "Common" Greek scale, conveyed to us through the organ. The intervals of tone and semitone will hereafter be proved to be precisely the same in every Greek "diatonic" scale.

Next, the Greeks and Romans derived their organs from ancient Egypt. In evidence of this, and carrying the proof even to the very action of the key, we go back to an extant work on Pneumatics, written in Greek in the third century before the birth of

Christ, by Herōn of Alexandria. It includes a then new kind of pneumatic organ, one to be set in action by a windmill, as well as a full description of the organ called hydraulic, which had been recently invented by Ctesibius, the Egyptian barber of Alexandria, and the reputed teacher of Herōn. After translating Herōn's description of the latter, I made, with the assistance of a friend, a working model sufficient to test the principle of the hydraulic organ, according to Herōn's directions, and it answers perfectly. By a little consideration, I find that the especial object, and the one advantage of his invention is, that it prevents the possibility of overblowing the instrument so as to injure it. If too much pressure be applied to the bellows, the surplus air will escape through water before it reaches the wind-chest, and so the instrument will remain uninjured.

With this information, we go back to the history of the ordinary pneumatic organ, blown like those of to-day, by bellows directly into the wind-chest. Through an oracle referred to by Herodotus, I find evidence that the ancient Greek "pairs of bellows" were precisely the same as those which we see depicted in Egyptian smithies on the paintings in the tombs, one of which is here copied to illustrate them. Next, that those identical "pairs of bellows" are to be seen sculptured upon Roman organs as late as the fourth century of our era. The blower stood upon the bellows, and exhausted them alternately by throwing his weight first upon one leg,

and then upon the other. Therefore the pressure upon the wind-chest was the weight of the man, whether the organ was large or small. But in the hydraulic organ the pressure could be regulated, not only by making the receiver of a size in proportion to the instrument, but even to the nicety of a pound, by the proportionate weight of water applied; therefore, at once, the advantages of the Egyptian barber's improvement become evident.

After Herōn, I found no difficulty in translating the description of a double-acting hydraulic organ, as given by Vitruvius about 20 years B.C., although his description has been reputed to be unintelligible. Neither Sir John Hawkins nor Dr. Burney would attempt it, and the translations of architects, Newton, Gwilt, and others, are really unintelligible.

Then turning to another subject, I found, through a quotation upon an astronomical computation, that the number of notes in the Egyptian musical scale was precisely the same as in the Greek, including the three Greek scales, diatonic, enharmonic, and chromatic. This quotation had been open to all preceding readers of the Greek authors upon music, but its importance had passed unnoticed. The evidence is altogether in accordance with my expectation, because no Greek writer alludes to any difference between the Egyptian and Greek systems of music, although the best Greek works upon the science of music, saving the Problems of Aristotle, were written on the soil of Egypt, and the Egyptians were undoubtedly the teachers of musical science to the

Greeks. It effectually disposes of claims set up by comparatively late Greek writers for their countrymen as originators of the enharmonic and chromatic scales.

Then next to the Chaldæans, or learned men of Babylon, and again I find, through an astronomical comment which, as usual, supposes the motion of the planets to be regulated by musical intervals, and thus to make everlasting harmony, that the Chaldæans had the same musical intervals of Fourth, Fifth, and Octave, as the Egyptians. By that means we may identify the musical systems of the two great nations between which the Hebrews were situated, and with whom they had frequent communications. Next, as to the musical system of the Hebrews. There I should have been at a loss, through not understanding the Hebrew language. I could but have referred to Jewish writers who flourished under the empires of Greece and Rome, and who wrote in Greek—such as Philo Judæus and Josephus—and have said that they make no mention of any differences of system, although they not infrequently refer to music. Also that the musical instruments named in the Book of Daniel, if Jewish, are wonderfully like Greek, and that there are lyres of unmistakable Greek forms upon Jewish coins. But here my learned friend, Dr. Ginsburg, one of the committee for revision of the Old Testament, assists me, and enables me to state, upon his authority, that the names of the musical instruments in the Book of Daniel are not derived from Hebrew

roots ; and, further, that he has found proofs in the Talmud of the use of the hydraulic organ by the Jews. So henceforth we may fairly conclude that we have at last arrived at the musical system of ancient Asia, and that it is our A, B, C, D, E, F, G.

Then the interesting question arises, "Did the ancients practise harmony?"—Undoubtedly they did, even at the time of building the Pyramids of Egypt. It is not a matter of doubt, but a mathematical certainty. This is shown in the following chapter on Egypt, and the reader will find, towards the end of this volume, an Egyptian caricature of a quartet concert at the Court of Rameses III., in which the King plays, not first fiddle, because the Egyptians had not arrived at the use of bowed instruments, but, instead of it, he sounds the lyre.

All this tends to show the *vast* antiquity of the science of music ; also what an open and neglected field there has been for any diligent enquirer into musical history who started with an elementary knowledge of the principles of sound.

Now, in another direction, as to the changed meanings of technical words. Let us take the two last named, "enharmonic and chromatic." The Greek enharmonic scale is the diatonic A, B, C, D, E, F, G, A, minus the Fourth and the Seventh. If we count it from the key-note upwards, as in modern scales, it is our A, B, C, E, F, A. As to the quarter-tones of this scale, they were merely added to utilize the two unemployed strings, D and G. Quarter-tones

both were, and are, insusceptible of harmony, and, therefore, they could only be used as grace-notes, to give a little graceful whine at the end of a phrase, just as the modern player sometimes whines, for expression, upon his violin. It rests upon the best authority that the quarter-tones were not an essential part of the scale, and that they were not sung originally. Plutarch states that ancient singers, and singers in the ancient manner, did not employ them; and when Aristotle says, as in his fifteenth problem of Section 19, that enharmonic melodies were preferred to diatonic, on account of their ease and simplicity, so long as it was the custom for gentlemen to sing in the dithyrambic choruses, it may be taken for certain that the gentlemen did not attempt to sing quarter-tones in chorus. The gentlemen's reason for preferring the enharmonic was a valid one. The ascending Fourth and the minor Seventh are not easy to sing by ear without accompaniment, because they come from different roots to that of the key-note, and want the support of a different base. The reader will find this fully explained in the chapter on the basis of the science. The minor Seventh is rejected, and the major Seventh, only half a tone below the octave, is substituted for it in our present minor scales because the former is so unsatisfactory to the ear.

The Greek chromatic scale was a great improvement upon the Greek enharmonic. It includes the enharmonic minor scale of the A, B, C, E, F, A, but it changes the two quarter-tones into F sharp and C sharp.

By these sharps, when used instead of the corresponding naturals, it adds a major scale of the same number of notes as the minor; each wanting the Fourth and the Seventh. This kind of major has been popularly called the Scotch scale, and it has been recently named *pentatonic*, or "five-toned." The last is not a happy designation, because it consists, not of tones only, but of tones and minor Thirds. If the name must be Greek, *pentaphōnic* would be a less equivocal compound. The minor Thirds are caused by the omission of the two semitones of the scale. Supposing it on the white keys of the pianoforte, the notes would be C, D, E, G, A, C, omitting F and B. If transposed to the black keys of the pianoforte, it would be in regular ascending order from F sharp. I offer explanations in this digested form in order to bring the points more vividly before the mind of the reader. The mere recapitulation of the notes, or intervals, would make but little impression on the memory; but by the system of explanation which I make a rule to employ, we see at a glance the use of the scales, and we appreciate the ears of the Egyptians and of the Greeks. It is remarkable that, out of the three specimens of Greek music, which the readers will find here given in a more intelligible form than by Dr. Burney, one hymn should be in a major key, although the Greek diatonic system hardly admits of such a scale. It could only be by change of key in a piece of music, thus making a second key-note, or *Mese*, on the third note of the scale. Yet how

natural it is, having A, B, C, D, E, F, G, as a scale, to begin sometimes on the third note, C, and thus to change a minor into a major key. The ear guided to it, against the laws of the time.

And now to a point which more immediately concerns the reader of classics than the musician, and which, being now developed through music, may deserve a little further consideration from the lexicographer. The misapplication of Greek words by the Romans was by no means limited to musical terms; it extended into various arts and sciences, and it has affected the translations made within the last three or four centuries from Greek authors. One extract from Vitruvius (here quoted in a note at p. 380) will suffice to establish the case as to the admitted corruption of terms in architecture; but, I submit, a very simple and general example of a perverted meaning in the Greek preposition *anti*. When *anti* is compounded into newly invented English words, it is invariably in the Roman sense of "against;" while in translations from the Greek, where "against" would contradict the sense of the author—as in all references to a future time—it is commonly rendered by the Latin "*loco*," or "in the place of." If a thing be "against" another, it cannot be "in its place;" therefore one of these two must be incorrect, or, at best, but a secondary sense, due to the word with which *anti* is then compounded. But there is a third translation, which should be brought more strongly than hitherto into notice, and one too firmly supported by the highest Greek authorities to