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STUDIES IN THE MUSIC OF THE MIDDLE AGES

HISTORICAL FACTS
FOR THE
ARABIAN MUSICAL INFLUENCE

BY

HENRY GEORGE FARMER

M.A., Ph.D.

Author of "A History of Arabian Music,"
"The Arabian Influence on Musical Theory."
"The Arabic Musical MSS. in the Bodleian Library."
"The Organ of the Ancients: From Eastern Sources. (Hebrew, Syriac and Arabic.)"
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FOREWORD.

"Man yaṭul dhailuhu yaṭā' fihi."—*An Arabic Proverb.*

ONE of the most deplorable things in history, said Dr. J. W. Draper, the author of "The Intellectual Development of Europe," is the systematic way in which European writers have contrived to put out of sight the scientific obligations to the Arabs. This was substantially true at the time it was written, but nowadays no person, save the merest tyro, can afford to adopt such an attitude. Specialised research has allocated the precise position of the Arabs in the culture history of Mediæval Europe. In three of the courses of the *quadrivium* or *mathesis*, that is to say, in arithmetic, geometry and astronomy, we now know quite definitely that if it had not been for the improvements, discoveries and inventions of the Arabs, these sciences, in Europe, would have been much slower in their evolution. Concerning the remaining course of the *quadrivium*, that is "music," no one had attempted to demonstrate the definite position of this Arabian science and art in the cultural development of Europe. I essayed to fill in this hiatus meanwhile, in a monograph, entitled "[Clues for] The Arabian Influence on Musical Theory,"[1] in which I furnished a number of

[1] Written in 1921. Delivered as a lecture before the Glasgow University Oriental Society, October, 1923. Published in the "Journal of the Royal Asiatic Society," Part I, 1925. Re-issued as a pamphlet by Harold Reeves, London, February, 1925.

"clues" in a carefully documented way. Savants from many parts of the globe interested themselves in the discussion, some, indeed, with helpful suggestions, for which I am very grateful. In this country, Miss Kathleen Schlesinger made a contribution to the discussion in a pamphlet entitled "Is European Musical Theory Indebted to the Arabs?; Reply to The Arabian Influence on Musical Theory."[2]

I said in my monograph that if my work aroused sufficient interest and discussion, I would be prepared to deal with the question in a more extended and permanent way. The criticisms of Miss Schlesinger and others urged me to carry out my promise, and the present work is a part-fulfilment of this. I say *part-fulfilment*, because the most important section of my monograph, that on "Mensural Music," has not yet received attention. My monograph comprised only twenty pages of letterpress, the first ten of which dealt with "clues" for the Arabian influence in: (1) "Musical Instruments," (2) "Discant," (3) "Organum," (4) "Laws of Consonances," (5) "Solfeggio," and (6) "Instrumental Tablature," whilst the ensuing ten pages were devoted, almost entirely, to (7) "Mensural Music," save for a few lines about (8) "Notation." Obviously, the most important contribution concerned "Mensural Music," as the London "Times" was careful enough to notice.[3] Yet Miss Schlesinger had no words for my carefully documented "clues" on this question, nor even a nod of recognition for my discovery,

[2] Published originally in the "Musical Standard," May 2 and 16, 1925, and re-issued as a pamphlet by Harold Reeves, London.

[3] "The Times Literary Supplement," February 5, 1925, p. 90, d.

not only philologically but musically, of the *hocket* in the Arabic *īqā'āt*.[4] She devoted her attention to the relatively minor questions enumerated above. In justice to this writer I must, however, admit that she had reasons for this omission, for she says: "The question of the acceptance of an Arab rather than a Greek origin of 'Mensural Music' is a weighty matter which must be left to those who have made a specialised study of the subject."

At the outset, let me say that Miss Schlesinger was very appreciative of my monograph, and more than once paid a compliment to "the great value of the research work accomplished."[5] At the same time, she made definite strictures, and fundamental historical facts were challenged, and in view of that I contributed a "reply" in the pages of "The Musical Standard" entitled "Facts for the Arabian Musical Influence."[6] Thereupon, Miss Schlesinger made a "counter-reply" under the title, "The Greek Foundations of the Theory of Music."[7]

On account of the fresh ground that was being broken, the discussion attracted still further attention, and finally I was asked to reprint my articles on the "Facts for the

[4] The musical identity was dealt with later by Professor Julian Ribera in his "La Música de las Cantigas" (1922) and "Historia de la Música Árabe Mediæval y su Influencia en la Española" (1927). Dr. Robert Lachmann, the author of "Musik des Orients" (1929) informs me that my "clues" on the musical side are being followed up by a German musico-Orientalist.

[5] Pp. 3, 15, 16, 17, 18.

[6] "Musical Standard" (1925-26), Vol. XXVII, Nos. 477 to 489.

[7] "Musical Standard" (1926), Vol. XXVII, Nos. 479 to 490.

Arabian Musical Influence" in book form. This I could not do very well without taking cognisance of Miss Schlesinger's "counter-reply," and the difficulty was to combine the two. Fortunately, Mr. William Reeves agreed to reprint the "Facts," together with a number of Appendices which would enable me to deal with Miss Schlesinger's "counter-reply."

Thanks to the energy of Mr. Reeves, the "Facts" were reprinted by the close of 1926, but, unfortunately, owing to indifferent health, other literary work, and the more pressing demands of one's vocation, the final Appendices were not completed until spring, 1929. Indeed, I feel that it is incumbent upon me to take this opportunity of acknowledging my indebtedness to both the publishers and printers for their extreme leniency and courtesy in this matter.

To enable my readers to appreciate what the "Arabian Influence" really means, Chapter I has been specially written as an introduction to what follows. Chapter II to Chapter VIII comprise the "Facts" as they appeared as articles in "The Musical Standard." They have been revised in places, typographical errors corrected, Miss Schlesinger quoted in full when necessary (primarily to meet her objections), and some sentences rewritten so as to make my meaning clearer. The "Facts" themselves remain, however, precisely as they appeared in "The Musical Standard."[8] In the forty-eight Appendices I have

[8] I have omitted the article on "The Question of Consonances." Miss Schlesinger admitted ("Musical Standard," XXVII, p. 177) that she had made a mistake in her calculations in her pamphlet (pp. 9-10). No purpose could therefore be served in reprinting the article, which dealt mainly with the point raised.

dealt at length with Miss Schlesinger's "counter-reply" entitled "The Greek Foundations of the Theory of Music."

As the author of the "Precursors of the Violin Family" and of the numerous articles in the "Encyclopædia Britannica" (eleventh edition), I have a high regard for Miss Schlesinger's gifts in matters of research, and in the history of musical instruments she has probably done the most creditable pioneer work in Britain. I would therefore like it to be borne in mind that if I am somewhat critical of Miss Schlesinger's opinions, I am, more often, actually countering what is perhaps the "accepted opinion" among musicologists to-day. Indeed, it will be obvious that my work is something more than a mere personal "reply," as I frequently use my critic as a "theme" for my "variations."

In concluding this preface, I would like to express my indebtedness to friends who have read my "proofs" and bestowed other courtesies. Among them are Mr. Wilson Steel, Mrs. Wilson Steel, M.A., Mr. Adam Henderson, B.Litt., and Mrs. Margaret G. Weir, M.A.

HENRY GEORGE FARMER.

GLASGOW.

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ARABIAN MUSICAL INFLUENCE

CHAPTER I.

THE ARABIAN INFLUENCE.

1. THE POLITICAL CONTACT.
2. THE LITERARY AND INTELLECTUAL CONTACT.

"The efforts which have been made to ascribe to Greek influence the science of Egypt, of later Babylon, of India, and that of the Arabs, do not add to the glory that was Greece."—Professor L. C. Karpinski, "The American Mathematical Monthly," XXVI.

WHAT is implied by the words, "*Arabian culture*" in the question under discussion? I pointed out in my monograph that the phrase had reference to "*Arabic* speaking peoples."[1] The expression has been too long in vogue to disturb scholars,[2] and it is still current.[3] Yet, as Professor D. B. Macdonald,

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[1] Page 3. See Appendix 1.

[2] Wüstenfeld, "Geschichte der arabischen Aerzte u. Naturforscher" (1840). Leclerc, "Histoire de la médecine arabe" (1876). Suter, "Die Mathematiker u. Astronomen der Araber" (1900).

[3] Browne, E. G., "Arabian Medicine" (1921). O'Leary, "Arabic Thought and its Place in History" (1922). Campbell, D., "Arabian Medicine and its Influence on the Middle Ages" (1926).

of Hartford Theological Seminary, reminds me, the general reader must be borne in mind, and so let us make it quite clear that when we speak of *Arabian*[4] culture, we do not mean that its *fons et origo* are claimed for the Arabs themselves or for Arabia, but simply that this culture arose under a polity that was *Arabian*, and that the language by which it was propagated was *Arabic*. That the Syrians, Byzantines and Persians played an important part in this culture movement is well known. At the same time we must not forget that it was at the bidding of their Arab masters, who were too proud to be anything but a military aristocracy, that these people supplied this culture, for indeed, the Syrians, Byzantines and Persians knew but little of the treasures of Greek science, until the Arab khalifs rescued it from oblivion.[5]

When the Arabs planted the banner of the Prophet in Persian and Byzantine lands, they came in contact with civilisations which had an immense influence on their cultural outlook. The secret was that the outstanding features of these civilisations were peculiarly adaptable to Arab requirements, for they were of Semitic origin. Persia itself owed much of its culture to the ancient Semitic peoples of Babylonia-Assyria. Greece was similarly indebted. Indeed, the great literary transmitters of Greek lore to the Arabs were the Heathen Sabæans of Mesopotamia, and the Christian Syrians.

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[4] To use the term *Islamic* in place of *Arabian* would deprive the Christians, Jews, and other votaries who took an outstanding part in this culture, of their just claims, whilst the word *Saracenic* is equally open to objection, since it includes the 'Uthmānlī Turks, and, moreover, it is meaningless to the Oriental.

[5] See Appendix 2.

Yet the Arabs outdid their masters, and their achievements in art, science and literature dwarf into insignificance anything of a like nature in the East or West. All of this was to be of profound importance to European civilisation, because Europe owes it to the Arabs not only that they preserved for the apostles of the Renaissance all that was left of Greek science and philosophy, but that their scrutinising spirit and initiative in this direction was a tremendous force in the intellectual uprising that led to the Renaissance. Libri, the historian of mathematics, has truly said: "Efface the Arabs from history, and the renaissance of letters would have been retarded for several centuries."[6]

The Arabian influence in Europe, can be traced, as I have already pointed out in my "Arabian Influence on Musical Theory," in two directions: (1) the mere *political contact* which began in the eighth century, and (2) the *literary and intellectual contact* which may be traced from the tenth century. The *political contact* was brought about by the world-wide dominion of the Khalifate and the succeeding Muslim states, whilst the *literary and intellectual contact* was due to the superiority of Arabian culture. Much of the influence due to the former came viva voce, or was handed on "by rote," whilst the influence arising from the latter was a definite transmission by means of literature. The *political contact* began earlier, and we can view its import to better advantage by spreading out the lands that fell to the sword of Islām, before our eyes.

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[6] Libri, "Hist. Math.," i, p. 151.

THE POLITICAL CONTACT.

At the time of the accession of the first khalif, Abū Bakr (632), the Khalifate was confined to the Arabian peninsula. By the following year the Eastern conquests of the Arabs had begun, and they followed in quick succession—'Irāq 'Arabī (633), Mesopotamia (637), Persia (642), Afghānistān (661), Bukhārā (674), Sind (708), and Farghāna (712). Northern conquests gave them—Syria (638), Adharbaijān (642), and portions of Armenia and Asia Minor (647). Western conquests embraced Egypt and Tripoli (647), Tunisia (670), and Morocco (708).

Of greater importance to our present inquiry are the conquests in Asia Minor, Italy and Spain. Asia Minor was first invaded in 647, and later, an army overawed the land to the very threshold of Constantinople, which was more than once besieged, and an adjacent island held for seven years. During the Umayyad and early 'Abbāsid period, the frontiers of the Khalifate extended through a line of towns along the Taurus Range, including Tarsus, Adana, Tyana and Melitene. The Ṭūlūnids (868-905) took over most of this territory, but later, when the Saljūqs of Rūm (1077-1300) and the Dānishmandids (*c.* 1097-1165) assumed power, almost three-fourths of Asia Minor was held by the Muslims, i.e., as far as Aidīn in the West, and up to the borders of Sulṭānonī in the North.

In Italy and contiguous islands, Muslim contact may be traced as early as the eighth century, when Sardinia was occupied. This island remained in Muslim hands, on and off, for three centuries (720-1050). Malta also

became a Muslim possession (810-1090), and an attempt was even made to hold Corsica (810, *et seq.*). The greatest of all the Muslim possessions in these parts was Sicily (827-1071). On the mainland of Italy, were other Muslim states or colonies—Calabria (*c.* 837-80), Taranto (840-80), Bari (841-71), Trajetto (*c.* 878-915), as well as the Pontine Islands, Ischia, Cape Miseno, the Ligurian coast, and Lombardy.

In Spain, the conquests of the Muslims were more thorough. In 711, Ṭāriq crossed from the African shore, and invaded Spain. By 713, the whole of the peninsula as far as the Pyrenees and Cantabrian Range was in the hands of the invader, who maintained a footing on the land until 1492. The Pyrenees were crossed and the territory as far as Narbonne was annexed (720-59), and the Balearic Isles were seized and held fitfully (798-1232). In 751 the Christians pushed the Muslims back in Spain to a line which ran approximately from Coimbra along the Sierra de Guadarrama to Pampeluna, whilst in the East, a Christian advance was made in 801 beyond Pampeluna and Barcelona. This remained the frontier practically for two centuries and a half, until Salamanca (1055), Madrid (1083), Toledo (1086), Tarragona (1089), and Huesca (1096), fell before the onslaughts of the Christians. By the mid-twelfth century the Tagus was reached in the West, and by 1260 all that was left to the Muslims was the present province of Granada. In 1484 the final struggle began, and in 1492 the city of Granada surrendered to Ferdinand and Isabella.

The Khalifate, as a political force, did not hold sway over its vast dominions for much more than a century. Disintegration soon showed itself, and petty dynasties

sprang up in Spain, North Africa, Syria and Persia, which, however, acknowledged the spiritual authority of the Khalif save in the case of the Umayyads in Spain, and the anti-Khalifate of the Fāṭimids in Egypt. This disintegration of the Khalifate, however ruinous it was eventually to the body politic, was helpful to general culture and to commercial prosperity. Just as Baghdād, the capital of the Khalifate, had ousted Byzantium as a culture centre, and had become the emporium of the Eastern world, so the capitals of the newly-founded dynasties, freed from the leash of Baghdād, now vied with the mother capital for cultural and commercial supremacy. Whatever political or sectarian differences existed, a common culture prevailed from Samarkand beyond the Oxus to Cordova in Spain, a culture, by the side of which that of Western Europe was mere barbarism.

The glories of the "Golden Age" of Arabian civilisation have often been penned. It was the cynosure of every eye beyond its confines. The grandeur of its edifices, the splendour of its courts, the puissance of its warriors, together with the ease, prosperity and general well-being of its people, became a byword. In all the great cities colleges, schools and libraries flourished. The *Bait al-Ḥikma*, the *Niẓāmiyya*, and the *Bīmāristān* of Baghdād, and the *madāris* of Damascus, Cairo, Cordova and Palermo, were long famous as seats of learning. Khalif, sulṭān and amīr patronised virtuosi and scholars unstintedly. Art, science and letters rose to an eminence unheard of since the days of Grecian splendour. The sciences were especially studied, and the inventions, discoveries and improvements made by Arabian savants in

astronomy, geometry, medicine, chemistry, mechanics and botany, are generally admitted.[1]

It was inevitable that Europe should find this new spirit arousing her from the heavy slumber of the Dark Ages.

Professor Leo Wiener, of Harvard University, has shown that the Goths were the first carriers of Arabian culture into Western Europe. Dispersed by the Muslim conquerors of Spain, they found sanctuary with their Germanic kin, who protected them not only because of their reputed superior culture, but because they brought with them "the new learning and arts of the conquerors."[1a] Hence, we can appreciate why Alcuin should speak of the Goths as a God-favoured nation, and that Charlemagne should encourage them as colonists.

About 760, we find these Goths influencing St. Gall, since we find Arabic nomenclature in the domestic language of that region.[2] This is traceable in the vocabularies which are based on Arabico-Gothic glosses. In the Anglo-Saxon charters, there is quite a host of Arabico-Gothic words,[3] and we know that the Anglo-Saxon glossaries came from St. Gall.[4] Indeed, Wiener thinks that "it is very doubtful if the alleged Greek renaissance of Irish scholarship is independent of, and older than the Arabico-Gothic renaissance of Greek learning."[5] Verona

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[1] See Appendix 3.

[1a] Wiener, "Contributions towards a History of Arabico-Gothic Culture, 1, xxxiii-xxxvi. See his "Germanic Laws," 77 *et seq.*

[2] *Ibid.*, II, p. 329. [3] *Ibid.*, I, p. 194.

[4] Hessels, J. H., "A Late Eighth-Century Latin-Anglo-Saxon Glossary," xiii.

[5] Wiener, *op. cit.*, II, p. 329.

and other cities of Northern Italy also had colonies of Goths in the eighth and ninth centuries. The greater part of Gothic literature was preserved in Italy, and Spanish bibles abounded there in the tenth century.[6]

The Muslim rulers were sought by the emperors and princes of Europe as allies, and embassies passing to and fro were not uncommon. Pepin and Charlemagne, as well as the Byzantine Emperors, sent their envoys to Muslim courts, and in return received the plenipotentiaries of the latter. That such missions were the means of introducing Oriental ideas into the West is generally acknowledged.[7] Similar diplomatic relations existed between the Normans of Sicily and Muslim Egypt, and between Byzantium and Muslim Spain. Muslim armies fought on Italian soil for the Lombard princes, the Byzantines, and even the Pope. They marched side by side with the soldiers of the petty Christian princes north of the Pyrenees. The Norman armies of Roger I and Frederick II of Sicily contained whole divisions of Muslims.

The cultural influence due to the presence of this Muslim civilisation in Europe or in close proximity cannot be over-estimated, for "the blessings of culture which were given to the West by its temporary Islāmitic elements are at least as important as the influence of the East during the time of the Crusades."[8] Spain, Italy and Byzantium became the great highways for the infiltration

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[6] *Ibid.*, II, p. 276. Berger, "Histoire de la Vulgate," p. 140.

[7] "Cambridge Mediæval History," ii, p. 592. Bury, "History of the Eastern Roman Empire," p. 438.

[8] "Cambridge Mediæval History," ii, p. 390.

of this culture, although we must not lose sight of the fact that these lands had been the centres of the Visigothic, Roman and Greek civilisations, because this helps us to appreciate why the Arabian influence was able to make itself felt so effectively.

The Crusades, too, had some influence on Western Europe, although, probably, the military arts gained most by the contact. One is inclined to think that more was accomplished "in the quiet contacts of peace,"[9] as in the sphere of commerce.

The argosies of the Muslims plied the Mediterranean long before Venice, Genoa and Pisa dominated its waters,[10] and the caravan routes had been in Arab hands since the dawn of history. We know from Papal records of the eighth and ninth century, that Arab Spain supplied Rome with fine vestments and tapestries for ecclesiastical purposes.[11] Venice, as early as the ninth century, already had a trade with Syria and Cairo.[12] The commercial ties between Bari and the Arabs of the East are said to date from the days when the Muslims held this town.[13] Amalfi too, was trading with the Muslims in the same century,[14] and this town was the centre of the Oriental trade,[15] until the Normans broke its independence at the close of the eleventh century.

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[9] Robertson, J. M., "Evolution of States," p. 69.

[10] "Cambridge Modern History," i, Chapter I.

[11] Vignoli, ii, pp. 243-5.

[12] Heyd, "Hist. du Commerce du Levant," i, 110.

[13] Heyd, op. cit., i, p. 97.

[14] *Ibid.*, p. 99.

[15] *Ibid.*, p. 107. Dutt, D. C., "History of India," ii, p. 312.

France in the ninth century is claimed to have had commercial ties with Egypt,[16] and certainly Russia and the Baltic provinces were in touch with the East before the opening of the eleventh century.[17] Probably Greece, in spite of her political enmity, was as big a trader with Syria and Egypt as any other country. Up to the tenth century the commercial traffic between Byzantium and the East was highly developed.[18]

Our vocabularies reveal the incisions made on Western Europe through its commercial intercourse with the Muslims. Through the Arabic come a host of words of every-day usage such as *cotton*, *muslin*, *damask*, *tabby*, *taffeta*, *camlet*, *sugar*, *saffron*, *borax*, *orange*, *lemon*, *sherbet*, *lozenge*,[19] *musk*, *camphor*, *amber* and *sandalwood*. Needless to say, the influence was not confined to the mere nomenclature of articles of exchange. The arts and crafts of the Muslims, as well as their manners and customs, were freely borrowed. The Muslim sailor brought the compass to Europe, and its *gimbal*[20] is an Arabic term. The *alidade* of the sextant, the *admiral* of the fleet, and the *lee*[1] of the ship, all tell the tale of their origin. The land trader with his *caravan* and his *guide*,[2] and, above all, his *tariff*, added to the European stock of words. The soldier found the Muslim tactics worthy of adoption, and even his artillery and the Moor-

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[16] Heyd, i, p. 92.

[17] *Ibid.*, i, p. 57, *seq.*

[18] *Ibid.*, p. 53.

[19] See Al-Mas'ūdī, "Prairies d'or," viii, p. 18.

[20] Arabic, *ḥamala* = "to bear."

[1] Arabic, *'alī* = "high."

[2] Arabic, *qā'id* = "leader."

ish pike. Such words as *magazine* and *accoutre*[3] are derived from the Arabic. The builder with his *alcove*, the leather-worker in *cordwain*, the potter with his *jar*, and the industrial artist with his *arabesque* and *majolica*, copied the Muslim workman.

If we look at the sports and pastimes of Europe we cannot fail to note those of Arabian origin. In chess, the word *rook*, and in cards the term *nap* came through the Arab contact. It is highly probable that the word *baccara* is Arabic. Dances, especially in Southern Europe, reveal the influence of the Arabs of Spain, as in the *zarabanda*, and our *morris dance* is but the Moorish dance. Hawking, a favourite pastime with the Spanish Arabs, was reduced to an art, and the *saker* and other Arab-bred falcons were eagerly sought by Christian Europe. How much the knightly customs of chivalry and the tournament owe to the Muslims is generally admitted, as we know from the *zalagârda*, and one strange officer, the *tabarder*, took his office or name from the Arabs.[4]

We have taken a fairly broad view of the general cultural influences of Arabian civilisation on Europe through the *political contact*, and we can now enquire how far music was involved. Those who are acquainted with the literature of the Arabs can fully appreciate the statement that music with the Arabs was part and parcel of their daily lives. The courts of the khalifs, sulṭâns and amîrs were crowded with virtuosi, whilst every man who could boast of a social position had his *qaina* or female musi-

[3] Arabic, *aḥḍara* = "to make ready."
[4] See Al-Maqrisî, i, p. 100.

cian, who was as common in the Golden Age of Muslim civilisation as the piano was in the Victorian era. With the common people, apart from the great public festivals fixed by Islām, there were the household feasts, at births, circumcisions, marriages, when music was "the one thing needful." The song was to be heard on every side, whether from the professional musician or from the workman, whilst the dance was, as with all the Semites, indispensable. As for musical instruments, whilst the names of those used in Europe might be counted on the fingers, those of the Arabs can be enumerated by the dozen.

The tremendous vogue of music in all its branches can best be appreciated from the pages of the famous "Kitāb al-Aghānī" or "Book of Songs," written by Abū'l-Faraj al-Iṣfahānī (d. 967), and the "'Iqd al-Farīd," or "Unique Necklace," by the Spanish Arab, Ibn 'Abd Rabbihi (d. 940). The former comprises twenty-one volumes, and contains a collection of poems that had been set to music from pre-Islāmic times to the ninth century, together with biographical details of authors, composers, singers, instrumentalists and musical *littérateurs*. During the thousand years that have elapsed since this monument of erudition was produced, nothing of its kind in worth or merit has been accomplished by any writer of Western Europe. If we look at the "Fihrist" of Muḥammad ibn Isḥāq al-Nadīm (*c.* 988), or the works of Ibn al-Qifṭī, Ibn Abī Uṣaibi'a, or Abū'l-Fidā, we can see a long list of Greek musical theorists whose writings were known to the Arabs, as well as innumerable Arabian musical theorists and *littérateurs*.

During the *political contact*, the musical influence of

Muslim peoples on Europe was mainly that which could be transmitted by hand, as with musical instruments, and what could be learned "by rote," for in those days not only melodies, but verse and story also, were frequently communicated in this way. Christian Spain was possibly the first to feel the new contact. A glance at the musical instruments of mediæval Spain, as delineated in manuscripts of the tenth and eleventh centuries,[7] and in the "Cantigas de Santa Maria" (thirteenth century) reveals the debt owed to the Arabs,[8] whilst the names of these instruments, preserved in the verses of Juan Ruiz (fourteenth century) fully supplement this assertion. *Laud, rabé morisco, caño, atambor, guitarra morisca, tamborete, panderete, gayta, exabeba, albogón, añafil,* and *atambal,* were names which came through the Arabic. Other documents tell us of the *dulçayna, adufe, exaquir, chirimia* and *xelami,* all of which are derived from the same source. In the word *zambras* the Spaniards preserve the name of the musical festivals of the Arabs, as they do in such expressions as *algazara* and *alarido.*[9]

Casiri, the famous Arabic bibliographer, says that the Arabian melodies were great favourites with the Catalans, not only when sung by the professional minstrels, but by the rough sailors at the ports.[10] Juan Ruiz, the fourteenth century poet already mentioned, quotes an

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[7] Riaño, Fig. 39. Lavignac's "Ency. de la Musique," iv, p. 1928.

[8] Miss Schlesinger holds that "the greatest proportion of these (instruments) can be traced to an Oriental origin, through the Arabs." ("Precursors, etc.," p. 410.) See Appendix 4.

[9] Ribera, "La Música de las Cantigas," p. 83.

[10] Casiri, "Bibl. Arab.-Hisp. Escur."

Arabian tune entitled "Cabel el orabin," or "Cabel el garabi."[11] It would appear to be the identical tune given by Salinas (d. 1590), who says that it probably came from the Arabs, since the words *calvi vi calvi calvi orabi*, are Arabic.[12] This brilliant mathematico-musician gives examples of Spanish music of his day which show Arabian influence.[13] Another Arabian tune mentioned by Juan Ruiz is entitled "Caguil Hallaco." The word for song in Spanish is *caña*, and it is the Arabic *ghanīya*, just as the Castilian *anaxir* is the Arabic *al-nashīd* (song, verse).

The older authorities, Eximeno,[14] and Andres,[15] openly admitted the influence of the Arabs on the music of Spain. Nowadays, savants like Pedrell would fain deny this influence.[16] A more recent writer says that the influence is not one of a type of construction, but rather a mere scheme of decoration, which, he says, is identical with what is seen in the Mudéjar style of architecture.[17]

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[11] Juan Ruiz, "Libro de buen amor" (Ducamín edit.), coplas 1,250 *et seq.* Riaño, op. cit., 129.

[12] Salinas, "De musica libri VII," p. 339. See Ribera, op. cit., 84.

[13] The melody beginning "Que me querys el Cavallero," has the rhythm of the modern *jazz*, a word derived from the Arabic *jazz* (= to apocopate, to cut off). Cf., *jazā'a* (= to curtail a verse). The jazz passed into North-West Africa with the full tide of Islāmic culture, and was thus introduced into the southern slave states of America, from whom we obtained it. See my article, "The Arab Influence on Music in the Western Soudan" ("Musical Standard," Nov. 15, 1924).

[14] Eximeno, "Dell' origine . . . della musica" (1774), p. 403.

[15] Andres, "Dell' origine e progressi e dello stato attuale d'ogni letteratura" (1782-99), i, 289-92, iv, 259, 264. See Appendix 5.

[16] Pedrell, "Cancionero popular español," pp. 69, 84.

[17] "The Criterion," Feb., 1924, pp. 218-19. See Appendix 6.

Yet when we peruse the monumental work of the erudite Julián Ribera, "La Música de las Cantigas," the conclusion seems inevitable that the Arabian influence is far deeper than any previous writer had imagined.

In Portugal, the Arabian influence is equally as patent, especially in the sports and pastimes of the people.[18] As in Spain, they have their *zambras* or festivals, where one may hear them sing the *hudas*[19] and *aravias* or dance the *mouriscas*, words alone which tell of their origin. The musical instruments, like those of Spain, bear names which are mostly Arabic, whilst their form and structure are from the same source.

In France, contact with Arabian culture must have begun at an early period. In the industrial arts of the ninth-tenth centuries there can be no mistaking the Oriental influences which prevail.[20] Both Pepin and Charlemagne had intimate dealings with the Arabs of Spain and the East, and it was Charlemagne who "probably was the means of introducing the new Arabian instruments to the rest of Europe."[1] The designs of musical instruments in the art works of the period are, in many cases, derived from Oriental models. Miss Schlesinger points out that the instruments delineated in Evangelarium of St. Médard (eighth century), and the Lothair, Aureum and Labeo Notker psalters (ninth-tenth centuries) "are all Ori-

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[18] Braga, T., "O povo portuguez nos seus costumes, crenças e tradiçoes," p. 75.

[19] Arabic, *ḥudā'* = caravan song.

[20] See Appendix 7.

[1] Schlesinger, "Precursors," p. 280. Miss Schlesinger is quite confident that these instruments came from the Muslims of Spain or Sicily. See pp. 329, 342, 371, 374, 398, 399, 420.

ental instruments derived from the Egyptian or older Asiatic civilisations *and disseminated in Europe mainly through the Arabs.*" Yet a great deal more than the instruments themselves was borrowed. The roving Arab minstrel was the chief means whereby these Oriental instruments became known, and he passed on at the same time a new type of music. He may, indeed, have been the originator of the wandering minstrel class that spread all over Europe.[2] Germanic and Romance rhyme undoubtedly came from the Semites, as Meyer has shown.[2a] That the Spaniards imitated Arabic verse is stated by Alvarus in the mid-ninth century.[2b] Prose was also affected. In the beginning of the twelfth century, the Counts of Barcelona became rulers of Provence, and here the troubadour and his *jongleur* re-acted the parts of the Arab amīr and his *ghannā'ī*.

Dr. J. M. Clark, the most recent (1926) historian of St. Gall, says, after reading the evidence put forward by the present writer: "It is now definitely proved that the Arabic contribution to the theory and practice of music in the Middle Ages was considerable, and I think it highly probable that it made itself felt at St. Gall."[2c]

France carried the Arabic and other Oriental names for many of its musical instruments for centuries. Guillaume de Machaut (*c.* 1364) mentions the *micanon, rubebe, morache, guiterne, naquaire, cor Sarrasinois, doussainne,*

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[2] Fauriel, "Hist. de la Poésie," iii, p. 338. See Appendix 8.

[2a] Meyer, "Gesammelte Abhandlungen zur mittellateinischen Rythmic," I, p. 6.

[2b] "España Sagrada," xi, p. 274. Amador de los Rios, iii, p. 48.

[2c] Clark, "The Abbey of St. Gall," vi.

tabour, muse d'Aussay and the *eschaquier.* Besides these we find the *quesse, timbale, gighe* and *luth.* It was probably through the Basques (and the Neapolitans) that the tambourine got a real hold on Europe, and it is still called the *tambour de Basque.* (See Appendix 4.)

Italy, like the other lands in close proximity to Muslim culture, moved forward under the stress of the contact.[3] The earlier literature of Italy bears ample trace of Oriental influence. Poetry was certainly affected by Sicilian modes, and later by Provençal devices. The brilliant artistry of the Muslim minstrels in Sicily was bound to find an echo in the South of Italy. When the Normans became masters in the eleventh century, this Oriental influence continued with as much vigour as before.[4] Such instruments as the *liuto, rebecca, tambura, nacchera, theorba, joch, canone,* and *mezzo canone,* carry, in their names, the story of their birth, as do the instruments delineated by Fra Angelico, Bellini and Mantegna.[4a]

Although it was only among the Normans of the South that any active support was given to the Crusades, yet no country in Europe perhaps, was more influenced by this movement, than Italy. The great ports of Pisa, Venice and Genoa played a conspicuous part during the Crusades because of their hold on shipping, and they became not only the portals of Europe for the Crusaders themselves, but for the *ideas* which the latter had brought from the East.

The Crusades (1096-1291) had a profound influence on Western Europe, though probably not so momentous as

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[3] Tiraboschi, iii, p. 396.

[4] "Ency. Brit.," xxv, p. 32. [4a] See Appendix 4.

that due to the actual presence of the Muslim. Still, the fact that for two hundred years there were thousands of Crusading pilgrims journeying to the East, and returning with thoughts of the strange world that they had seen, must have counted considerably in culture progress. So far as our present subject is concerned, we are able to trace the influence of the Crusaders as distinct perhaps from other *media*, by means of Oriental words and customs which are Persian, Turkish, or Syrian. As we have pointed out already, the military arts gained considerably by this contact. The Christian armies, hitherto only supplied with military music comprised of trumpets and horns, now adopted a regular military band which had special functions.[5] In these Muslim bands would be found such instruments as the *naqqāra*, *ṭabl*, *kūs*, *qaṣ'a*, *ṭinbāl*, *ṭabīr* and *balābān*, all of which belonged to the drum class. To these were added the *zīl* (cymbals) and the *juljul* (gong) and the *jaghāna* (jingling johnny).[6] Of wind instruments there were the *zamr*, *surnāy*, *nafīr* and *būq*.

Many of these instruments were borrowed by Europe, together with their names—the *naker* or *naquaire*, the *tabel*, *tabor* or *tambour*, the *quesse* or *caisse*, the *tymbala* or *timbale*, the *balābān*, the *jingling johnny*, the *sumer* or *sumber*, the *dulçayna* or *doussaine*, the *anafil* or *anafin*, and the *albogon* or *alboque*.

Words like *ṭinbāl*, *ṭabīr* and *balābān* are Persian and Turkish, and, apparently, were introduced at the time of the Crusades. *Qaṣ'a* and *naqqāra* were not usual with the

[5] See my "Rise and Development of Military Music," p. 12, and Ramsay's "Angevin Empire," pp. 302-3.

[6] The *jaghāna*, hence "Johnnie," or "Jingling Johnnie," was re-introduced into Europe by the Turks in the seventeenth century.

Arabs of Europe, and they, too, ought to be placed to the credit of the Crusaders. I have already pointed out that the European term *fanfare* is the plural of *nafīr (anfār)* in metathesis. In a similar way, the word *tucket* would perhaps appear to be the Hebrew *taqa'* and the Arabic *tuqā*.

Through Byzantium came another tide of Arabian culture. Oriental influence had been streaming into Byzantine lands since Sāsānid times, much of it Persian, and not a negligible amount Arabian, for Arabs were in the army and administration.[7] With the rise of the Khalifate, clear and definite traces of a fresh influx of Arabian culture show themselves, and so much so, that we can count them in the "ingredients of Byzantine civilisation."[8] From the mid-seventh to the beginning of the ninth century, the arts were at low ebb in Byzantium. When the revival came, it was due, in the main, to Arabian influences. Baghdād and other centres of Arabian culture had aroused the envy of Theophilus (829-42), and his craze for building probably came from a desire to outdo the Muslims.[9] Strange to say, a revival of interest in science also dates from this century,[10] and our oldest Byzantine MSS. of classical authors belong to this period.[11] Clearly the Arabian influence reveals itself here. In the *cloisonné* technique of the ninth century, we can

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[7] "Cambridge Mediæval History," iv, p. 735. See Appendix 9.

[8] *Ibid.*, iv, pp. 152, 773.

[9] *Ibid.*, iv, p. 39. Bury, "History of the Eastern Roman Empire," p. 435.

[10] Gibbon (Bury edit.), vi, p. 104.

[11] Omont, "Facsimiles des plus anciens MSS. grecs du IX^e^ au XIV^e^ siècle." See Appendix 2.

trace the Oriental hand or mind,[12] as much as in the fabrics, and also perhaps in other industrial arts.

What Byzantium borrowed from the musical art of its Eastern neighbour is not easily determined. One of the earliest examples of an Arab *rabāb* (the European *rebec*), however, may be found represented on a casket of Byzantine workmanship of the eighth (?) or ninth century, now in the Carrand Collection at Florence.[13] Later Byzantine music was deeply influenced by Arabian models.[14]

THE LITERARY AND INTELLECTUAL CONTACT.

Whilst the *political contact* brought a host of fresh Oriental customs and ideas to the West, a deep impulse came also from the *literary and intellectual contact.* This latter was also heightened by the fact that the Muslims themselves were on European soil from the eighth to the fifteenth century. Muslim Spain, in its passion for literary, artistic and scientific culture, became the rival of the Eastern khalifate. This land was, says Stanley Lane Poole, "the marvel of the Middle Ages, and which, when all Europe was plunged in barbaric ignorance and strife, alone held the torch of learning and civilisation bright and shining before the Western world."[1] Its colleges and libraries at Cordova, Toledo, Seville, and other towns, became world-

[12] Bury, op. cit., p. 433. Diehl, "L'art Byzantine," p. 642.
[13] "L'Art," i, p. 24.
[14] Tillyard, "Byz. Mus. and Hymn.," pp. 44, 63.
[1] Poole, S. L., "Moors in Spain," p. 43.

renowned. The college at Cordova reckoned its students by the thousand.[2] Material and intellectual wealth seemed to go hand in hand. The coffers of the sulṭān 'Abd al-Raḥmān III (d. 961)[3] brimmed over with twenty million pieces of gold,[4] whilst the library of the sulṭān Al-Ḥakam II (d. 976) contained four hundred thousand books.[5] This latter monarch founded twenty-seven free schools in Cordova and paid the teachers from his own purse, whilst the former brought the Greek monk, Nicolas, to Cordova in 951, to supervise translations from the Greek.[5a]

Italy, after the Lombard invasion in the sixth century, was left in desolation culturally,[6] and the educational reforms of Charlemagne in the ninth century scarcely contributed to repair the damage. In Muslim Sicily, on the other hand, "colleges and schools sprang up on all sides, and learning and art were patronised."[7] That is why this island became, between the tenth and twelfth centuries, "a source of both Greek and Arabic learning for Western Europe."[8]

Strange as it may seem, the Arabian influence was given even greater impulse after the Norman conquest (1071), for "the Normans came into the inheritance of the two most civilised nations of the time (the Arabs and

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[2] Dozy, "Hist. des Musul. d'Espagne," iii, p. 109.

[3] He claimed the title of *khalif*.

[4] Dozy, iii, 90.

[5] Casiri, i, p. 38. [5a] See Appendix 10.

[6] Tiraboschi, "Storia," iii, p. 47.

[7] Ameer Ali, "Short History of the Saracens," p. 599.

[8] Hearnshaw, "Mediæval Contributions to Modern Civilisation," p. 121.

Byzantines) and allowed them to flourish side by side."[9] Roger II (d. 1154) and the Emperor Frederick II (d. 1250) were both ardent Arabo-philes. The court of the latter monarch was as oriental as that of any amīr of the Sicilian Aghlabids. Here were maintained Jewish savants who translated Arabic works for the colleges, astrologers from Baghdād, Saracen dancers, both male and female, and Moorish trumpeters.[10] Libraries were filled with Greek and Arabic works, and it was Frederick II who established the University of Naples and gave the College of Salerno his special attention. Through their portals Western Europe was to receive the bounties of the Arabian contact. Professor C. H. Haskins says:[11] "Both historically and geographically Sicily was the natural meeting-point of Greek, Arabic and Latin civilisation, and a natural avenue for the transmission of Eastern art and learning to the West. . . . . The distinctive element in southern learning lay, however, not on the Latin side, but in its immediate contact with Greek and Arabic scholarship, and the chief meeting-point of these various currents of culture was the royal court at Palermo, *direct heir to the civilisation of Saracen Sicily*."

This *literary and intellectual contact* of Muslim Spain and Sicily with Christian Spain and Italy, can be traced in two directions: (1) mere borrowings from Arabic works or Arab teachers, and (2) compilations and translations from Arabic works.

The *first movement* might be said to have started in

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[9] "Ency. Brit.," xxv, p. 32.

[10] Schack, "Poesie und kunst der Araber in Spanien und Sicilien," ii, p. 151.

[11] Haskins, "The Normans in European History," pp. 235, 238.

the eighth century. One of the oldest documents bearing definite evidence of the Arabic influence is the "Codex Toletanus" of Isidore's "Etymologiæ."[12] In this document we have "glosses" in Arabic which date from the eighth century, revealing the fact that "some Goths were already more conversant with Arabic than with Latin, even though they remained Christians."[13]

In the ninth century, Bishop Alvarus of Cordova complains of the neglect of the Latin tongue in favour of the Arabic, and of the study of Arabic books rather than the Holy Scriptures. Alvarus says:

"Who is there among the faithful laity sufficiently learned to understand the Holy Scriptures, or what our doctors have written in Latin? Who is there fired with love of the Gospels, the Prophets, the Apostles? All our young Christians . . . . are learned in infidel erudition and perfected in Arabic eloquence. They assiduously study, intently read and ardently discuss Arabic books *(volumina Caldæorum)*.[14] . . . . The Christians are ignorant of their own tongue; the Latin race does not understand its own language. Not one in a thousand of the Christian communion can write an intelligent letter to a brother. On the other hand, there aré great numbers of them who expound the Arabic splendour of language, and metrically adorn, by mono-rhyme, the final clauses of songs, better and more sublimely than other peoples."[15]

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[12] Lindsay, W. M., "Isidori Hispalensis Episcopi Etymolog. sive Originum Libri XX."

[13] Wiener, L., "Hist. of Arabico-Gothic Culture," ii, p. 332.

[14] The *Caldai* are the Arabs, as proved by the contemporary "Chronicon Sebastiani" ("España sagrada," xiii, p. 480).

[15] "España sagrada," xi, p. 274. See Appendix 11,

In the mid-tenth century we have direct evidence of the result of these Arabic studies in such works as the Ripoll MS. (tenth century) from Spain,[16] the writings of Sabbatai ben Abraham or Donnolo (*c.* 946), from Italy,[17] and the Alcandrius treatise (*c.* 950) from Southern France (?).[18] We then have traces of the Arabian influence in Bernelinus (*c.* 990), Gerbert (d. 1003), and Hermann Contract (d. 1054), all three being known as musical theorists or writers.

The *second movement* can certainly be traced to the tenth century, when we have vague hints in Gerbert, who tells us (in 984) about a certain Joseph the Wise, and Lupitus of Barcelona, who undoubtedly were translators from the Arabic. By the following century, the steady and systematic translation of Arabic works had begun with Constantine the African (d. 1087), and was continued by Petrus Anfusi (*c.* 1106), Abraham ben Hijja (*c.* 1116), Adelard of Bath (*c.* 1120), Stephen of Antioch (*c.* 1127), Peter of Monte Cassino, (*c.* 1127), Hugh of Santalla (*c.* 1130), John of Seville (*c.* 1135), Hermann of Carinthia (*c.* 1138), Robert of Retine (*c.* 1141), Rudolf of Brughes (*c.* 1144), Plato of Tivoli (*c.* 1145), Eugenius of Sicily (*c.* 1154), Gerard of Cremona (d. 1187), and others.

These translators and their successors rendered into Latin not only the Arabic translations of the Greek, but

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[16] Haskins, "Studies," p. 8. See Beer, "Sitz. der Wien. Akad. (Phil.-Hist.)," clv, pp. 57-9. See Appendix 12.

[17] Steinschneider, "Virchow's Archiv.," xxxii, p. 65. See Castelli, "Il Commento di Sabbatai Donnolo."

[18] Hearnshaw, op. cit., p. 120. See Thorndyke, "Hist. of Magic and Experimental Science."

the most famed works of Arabian scholars were presented in this tongue. Among the *physicians* whose works were translated were: Isḥāq ibn Imrān (called Isaac), Muḥammad ibn Zakariyyā al-Rāzī (Rhazes), Isḥāq ibn Sulaimān al-Isrā'īlī (Isaac Israeli), Ibn Sīnā (Avicenna), Ibn Riḍwān (Rodoam), Abū'l-Qāsim al-Zahrāwī (Abulcasis), and Ḥunain ibn Isḥāq (Oncin). In *astronomy*, there were rendered the works of Abū Ma'shar (Albumaser), Al-Battānī (Albategnius), Al-Farghānī (Alfraganus), Yaḥyā ibn Abī al-Manṣūr (Almansor), Al-Zarkalī (Arzachel), Maslama al-Majrīṭī (Moslema). In *mathematics*, Europe took the fullest advantage of translations from Abū 'Abdallah al-Khwārizmī (Algaurizim), Ibn al-Haitham (Alhazen), Thābit ibn Qurra (Thebid), Aḥmad ibn al-Dāya (Admet), and the Banū Mūsā ("Liber trium fratrum"). In *philosophy*, there were the books of Al-Kindī (Alchindus), Al-Fārābī (Alpharabius), Ibn Sīnā (Avicenna), Ibn Maimūn (Maimonides), Ibn Bājja (Avenpace), and Ibn Rushd (Averröes). Hundreds of treatises on the arts and sciences were translated from the Arabic into Latin, and it is to this movement of study and translation that we must look for those influences which directly affected the Renaissance.[19]

Through the scholarly researches of Wüstenfelt[20] and Moritz Steinschneider,[21] we are able to view the vast treas-

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[19] Haskins, "Studies in the History of Mediæval Science," p. 3. Owen, "Skeptics of the Italian Renaissance," p. 66.

[20] Wüstenfelt, "Die Uebersetzungen arabischer Werke in das Lateinische seit dem XI Jahrhundert."

[21] Steinschneider, "Die arabischen Uebersetzungen aus dem Griechischen," "Die europäischen Uebersetzungen aus dem Arabischen," "Die hebräischen Uebersetzungen des Mittelalters," etc.

ures of the Latin translations from the Arabic that have been preserved, including what the Arabs themselves had translated from the Greek. Unfortunately, in spite of the considerable Arabic literature that existed on music, as I will show, not a solitary Latin musical work from the Arabic has come down to us, beyond the "De scientiis" and the "De ortu scientiarum," of Al-Fārābī, although a Hebrew translation of the *madkhal* to Al-Fārābī's "Kitāb al-Mūsīqī" was known to Ibn 'Aqnin (*c.* 1160-1226). Yet almost every other field of Arabian art and science is well represented in Latin translation, especially in such writers as Al-Kindī, Thābit ibn Qurra, Muḥammad ibn Zakariyyā al-Rāzī, Al-Fārābī and Ibn Sīnā, *all of whom had written works on music.*

That there is almost a complete absence of the musical treatises of the Arabs in Latin, need not seriously discount the theory that they may have existed, seeing that we know of many Latin translations of original Arabic works that have not come down to us, and that we possess many Latin translations the Arabic originals of which have not been preserved. Music was the one science that interested the Church, and it is not improbable that she might have effaced any recognition of the "infidels," for we must remember that the Renaissance was as yet at the dawn. In spite of this hiatus, however, there are still a number of legitimate reasons why we may suggest that besides the obvious and palpable influence which accrued from the *political contact*, as already demonstrated, there was also a considerable influence due to the *literary and intellectual contact.*

I have already pointed out that between the eighth and eleventh century, and especially during the flourishing

period of the scholiasts of the *Bait al-Ḥikma* ("House of Wisdom"), under Khalif Al-Ma'mūn, the musical treatises of Aristoxenos, Aristotle, Euklid, Ptolemy and Nikomachos had been translated into Arabic.[22] Yet the Arabian savants did not stop there. Works on musical theory were written by the Arabs themselves, many of which, such as the treatises of Al-Kindī, Al-Fārābī and Ibn Sīnā, are of the highest importance. Their contributions to the physical side of music, their careful descriptions of instruments, and their treatment of many points of Greek and Byzantine theory that have been lost to us, must be taken into account. That we may grasp the full significance of this movement of study among the Arabs, both East and West, I submit the following list of the most important theorists (I do not include *littérateurs* or biographers) from the eighth to the twelfth centuries:

Yūnus al-Kātib (d. *c.* 760).
Al-Khalīl (d. 791).
Isḥāq al-Mauṣilī (d. 850).
Al-Kindī (d. 874).
Al-Sarakhsī (d. 899).
The Banū Mūsā (ninth century).
Ibn Khurdādhbih (ninth century).
Thābit ibn Qurra (d. 901).
Manṣūr ibn Ṭalḥa ibn Ṭāhir (*c.* 900).
'Ubaidalla ibn 'Abdalla ibn Ṭāhir (d. *c.* 912).
Yaḥyā ibn 'Alī ibn Yaḥyā (d. 912).
Muḥammad ibn al-Mufaḍḍal (d. 920).
Qusṭa ibn Lūqā (d. 932).

[22] Farmer, "Arabian Influence," p. 10.

Muḥammad ibn Zakariyyā al-Rāzī (d. 932).
Al-Fārābī (d. 950).
Abū'l-Wafā al-Būzjānī (d. 997).
The Ikhwān al-Ṣafā' (tenth century).
Muḥammad ibn Aḥmad al-Khwārizmī (tenth century).
Maslama al-Majrīṭī (d. 1007).
Ibn Sīnā (d. 1037).
Al-Ḥusain ibn Zaila (d. 1048).
Abū'l-Ṣalt Umayya (d. 1134).
Ibn Bājja (d. 1138).
Abū'l-Ḥakim al-Bāhilī (d. 1154).
Muḥammad al-Ḥaddād (d. 1165).
Abū Naṣr ibn Maṭarān (d. 1191).
Ibn Rushd (d. 1198).
Fakhr al-Dīn al-Rāzī (d. 1209).

Most of these theorists belonged to the East, but we know that the works of many of them were known in the West. In Muslim Spain, musical didactics existed in the ninth century, and we can be almost positive that the theory of music taught in the school of Ziryāb, who settled at Cordova in 822,[23] was that of Yūnus al-Kātib and Isḥāq al-Mauṣilī. In the same century, Ibn Firnās (d. 888?) is said to have introduced music as a department of the *quadrivium*.[24]

It was this savant who introduced the writings of Al-Khalīl into Muslim Spain.[25] Maslama al-Majrīṭī spread abroad the tracts of the Ikhwān al-Ṣafā'.[26] The treatises

[23] Al-Maqqarī, "Muh. Dyn.," ii, p. 116.
[24] *Ibid.*, i, pp. 148, 426.
[25] *Ibid.*, loc. cit.
[26] *Ibid.*, i, p. 429. Cf., i, p. 150.

of Al-Fārābī,[27] Al-Kindī Qusṭa ibn Lūqā, the Banū Mūsā, Thābit ibn Qurra, Muḥammad ibn Zakariyyā al-Rāzī, and Abū'l-Ṣalt Umayya, were also known in the West.

Christian Spain had little interest in science or letters at this period, and the ignorance of the clergy was deplorable.[1] But the new learning of the infidels in their midst had compelled attention, and we have Bishop Alvarus (ninth cent.) of Cordova complaining that his co-religionists spent more time in acquiring the culture and language of the Arabs than with Christian books and Latin.[2] Even Alvar Fáñez, the lieutenant of the gallant Cid (d. 1099) signed his name in Arabic.[3]

The intercourse between the Christians of Spain itself and the Spanish March and beyond, must have contributed to the dissemination of this Arabian intellectual culture. We have evidence of the contact in a Ripoll MSS. (tenth century) from Spain,[4] whilst the existence of a Latin-Arabic glossary of the eleventh century speaks volumes.[5] We see it in Italy in the works of Sabbatai ben Abraham (d. 970).[6] His book on astrology is

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[27] I do not know Mitjana's authority for saying that Ibn Firnās introduced the theories of Al-Fārābī into Spain. It was Al-Khalīl's theory, as Al-Maqqarī says, that he taught. Another writer ("The Criterion," ii, p. 210) gratuitously describes Ibn Firnās as a "professor of music at Toledo when Pope Sylvester (? Gerbert) was a student there."

[1] Lafuente, "Hist. Gen. de España," iv, p. 342.

[2] Dozy, "Hist. des Musulmans d'Espagne," ii, p. 103.

[3] For a collection of Spanish documents written in Arabic characters see Pablo Gill "Textos Aljamiados."

[4] Haskins, op. cit., pp. 8, 9.

[5] Seybold, "Glossarium Latino-Arabicum."

[6] Hearnshaw, op. cit., p. 120.

dated 946. Sabbatai says that he had studied "the *sciences* of the Greeks, *Arabs*, Babylonians and Indians."[6a] Translations from the Arabic were fairly common in the Spanish March and Aquitaine.[7] One great name which caught the fancy of mediæval European savants was that of Maslama al-Majrīṭī.[8] It was through him that Western Europe got its knowledge of the astronomical tables of Al-Khwārizmī, whilst the "Planisphere" of Ptolemy has been preserved for us solely through his version. It was Maslama who introduced the tracts of the Ikhwān al-Ṣafā, including the treatise on music, and the Bodleian Library contains two copies of the latter work bearing his name.[9]

The question now arises, "What is the evidence that European musical theorists borrowed from these Arabian culture sources?" From what has already been emphasised, it is obvious that we cannot derive testimony from any Latin compilations or translations from the Arabic, save the aforementioned "De scientiis" ("*Iḥṣā al-'Ulūm*") and the "De ortu scientiarum" of Al-Fārābī. We are compelled therefore to fall back on such hints of the Arabian contact as appear in the Latin treatises. These may not, of course, have been borrowed direct from actual Arabic writings or from Latin translations from the Arabic, but may have been transmitted viva voce.

[6a] Virchow's "Archiv.," xxxii, p. 65.

[7] "English Historical Review," vii, p. 627.

[8] Leclerc ("Hist. de Méd. Arabe") suggests that Gerbert's Arabian learning was obtained from Maslama's works.

[9] See my "Arabic Musical MSS. in the Bodleian Library," pp. 4-6.

Aurelian of Réomé (mid-ninth century) is, with Remi of Auxerre, the first of the musical theorists since the barbarian invasion in the sixth century.[10] He follows Boëthius, Cassiodorus and Isidore slavishly. Yet one very important point in this writer is his reference to *a new theory of eight tones*, which is clearly stated to be of recent adoption. He says it is Greek! What Greek source was open to him that was denied his masters? Further, no Greek source known to us to-day has the innovation he introduces.

Pseudo-Hucbald, Pseudo-Bernelinus and Notker Labeo (1022), all use a phonetic (alphabetic) notation which might very well have been prompted by Arabian methods. It was certainly used by Al-Kindī (d. 874). A chapter will be devoted to this question. The real Bernelinus (*c.* 990), let us bear in mind, was one of the earliest European scholars to refer to the Arabic *(ghubār)* numerals.

Odo of Cluny (d. 942) offers another very tempting "clue." In his section concerning the *eight tones*, the *chordæ* bear such names as *buq*, *re*, *schembs*, *cæmar*, *neth*, *uciche (uiche)*, *caphe (kaphe?)*, *ascl*, *suggesse (succgesse)* and *nar*.[11] Many of these names have a decided Semitic physiognomy,[11a], and several are unmistakably *Arabic*. I confess to not having yet discovered the key that would enable us to link it up with the Arabian sys-

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[10] I ignore Isidore of Seville, Pseudo-Bede, and Pseudo-Alcuin.

[11] Gerbert, "Scriptores," i, pp. 249-50.

[11a] There is a rabbinical proverb which runs:

"What saith the art of music among the Christians?
I was assuredly stolen from the land of the Hebrews."
—Buxtorf, "Florilegium Hebraeorum."

tem, but the subject is still in its infancy, and the future always holds promise in its hands.

Gerbert of Aurillac (d. 1003) was a name that illumined the pages of mediæval learning. His contact with the Muslims of Spain is closer than that of his predecessors, so far as written testimony is concerned, and for that reason he merits our special attention. Richer tells us that Gerbert took Holy Orders at Aurillac, but Barcelona, having some recommendation to scholars by virtue of its proximity to the great centres of Muslim learning,[12] attracted Gerbert, and he went to this Christian province with Borel, Duke of the Spanish March. Here, he was placed under the care of Bishop Hatto of Vich, where he made great progress in the mathematical sciences *(mathesis)*. Adhemar (d. *c.* 1035) tells us that Gerbert went as far afield as Cordova.[13] This has been doubted by his modern biographers, although William of Malmesbury says that he went to Spain especially to learn the sciences of the Arabs, and that it was among them that he became proficient in arithmetic, music, astronomy and geometry.[14] There is no reason why Gerbert should not have studied at Cordova, since it was not uncommon for European students to study there at this period.[15] At any rate, he could easily have studied among the Arabs on the borders of the Spanish March, as did the son

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[12] Richer, "Historiarum," iii, 43. Havet, "Lettres de Gerbert," vii. "English Historical Review," vii, p. 627.

[13] "Recueil des Historiens des Gaules," x, p. 146.

[14] Richer, op. cit., iii, 44.

[15] Eulogius, "Memorialis Sanctorum" ("Bibl. Max. Patr., ix, pp. 218, 646). Salverte, "Sciences occultes," p. 177. Dozy, "Hist. des Musul. d'Espagne," iii, p. 107.

of Alonzo of Asturia. The Muslim towns of Saragossa, Huesca, Tarragona and Lerida were all within eighty to one hundred and seventy miles from Vich. There were three eminent Arab mathematicians in the Iberian peninsula in the second half of the tenth century whose works were famed—Maslama al-Majrīṭī, Abū'l-Qāsim al-Zahrāwī and Ibn al-Ṣaffār. Probably their treatises were part of the store from which Gerbert and his teachers drew,[16] since Arabic works had already been passing over the Pyrenees.[17]

On the other hand, it is argued that Gerbert did not know Arabic. Without even knowing Arabic, he could still have been influenced by Arabian culture, since we know from Latin MSS., notably the Ripoll MS. from Spain,[18] and the Alcandrius MS. from Southern France,[19] that Europe had felt the *literary and intellectual contact* with Muslim Spain as early as the mid-tenth century. From Gerbert's mathematical writings we are informed that no direct influence from Arabic sources can be traced.[20] At the same time, his treatise on the *astrolabe*, carries Arabic terminology,[21] showing that the author must

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[16] See Leclerc, op. cit., i, p. 421. Cf., Smith and Karpinski's "Hindu-Arabic Numerals," p. 113, and Büdinger, "Ueber Gerberts wissenschaftliche und politische Stellung," p. 10.

[17] Tiedemann, "Disputatio de Quæstione," p. 98.

[18] Haskins, op. cit., p. 8.

[19] Hearnshaw, "Mediæval Contributions to Modern Civilisation," p. 120. For another tenth century MS. showing Arabic influence, see Thorndyke, "Hist. of Magic and Experimental Science," I, 698, and Bubnov, op. cit., xlvii.

[20] Bubnov, "Gerberti Opera Mathematica," p. 124.

[21] "Patr. Lat.," cxliii, 389-404. Bubnov, op. cit., 109, *seq.* Haskins, "Studies," 51. Thorndyke, op. cit., I, 698, *seq.*

have known at least a work or works translated from the Arabic, perhaps the "Liber de astrologia," of Lupitus, which we know that he was acquainted with.[1] After he had left Spain, he frequently requested to be supplied with Spanish mathematical writings,[2] and expressly mentions translations, presumably from the Arabic.[3] Nowadays, in spite of the long-drawn debate on the question, Gerbert is still credited with having introduced several "Arabian sciences" into Europe, including the Arabic numerals.[4]

What most concerns us here, is Gerbert's musical reputation. Music, as we have said, was part of the *quadrivium* or *mathesis*, and Gerbert's skill in this art and science can only be satisfactorily accounted for by recognition of the Arabian contact. Richer, his contemporary, tells us that of the science of music and astronomy the Italians were *entirely ignorant*,[5] and about 970-1, Gerbert was engaged in Rome, teaching these sciences (*mathesis*). The science of music was *equally neglected in France*[6] until Gerbert remedied this sad state of things.[7] He was

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[1] Richer, op. cit., iii, 43.

[2] Gerbert, "Epist.," 17, 24, 25.

[3] Gerbert, "Epist.," pp. 17, 25. The legends handed down by Vincent de Beauvais and William of Malmesbury concerning Gerbert and his Arabic treatises, may have a substratum of fact.

[4] "Encycl. Brit." (eleventh edition), xxv, p. 119.

[5] Richer, iii, 44. "Musica et astronomia in Italia tunc penitus ignorabantur."

[6] Richer, iii, 49. "Inde etiam musicam, multo ante Galliis ignotam."

[7] William of Malmesbury, "Gest. Reg. Angl.," ii, 167.

called "Gerbert the Musician," and was "probably beyond his age in this science."[8]

Hermann Contract (d. 1054) was intimately connected with the sciences of the Arabs. Early writers like Trithemius[9] credited him with a knowledge of Arabic, but that has been abandoned since the time of Jourdain, at least.[10] That he was deeply influenced by Arabian learning is evidenced by his writings on the astrolabe, which are based on Arabic documents or Arabic sources. Three of these works are given under his name by Migne,[11] but modern research only allows one of these to bear the name of Hermann Contract, and that is "De mensura astrolabii."[12] This writer is also known as the author of two treatises on music, whose titles, according to Trithemius, are "De musica lib. I," and "De monochordo, lib. I." Martin Gerbert in his "Scriptores," includes two treatises by Hermann under the headings of "Musica," and "Versus Hermanni ad discernendum cantum."[13] A critical edition may be consulted in W. Brambach's "Her-

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[8] "Encycl. Brit.," loc. cit. For his musical studies see Richer, ii, 49. Gerbert several times mentions organs in his letters, and the wonderful hydraulic organ is described by William of Malmesbury. For a new translation of the organ passage in the latter author, see my book, "The Organ of the Ancients from Eastern Sources, Hebrew Syriac and Arabic." See Appendix 13.

[9] Trithemius, "Annalium Hirsangensium," i, 149.

[10] Jourdain, "Recherches critiques sur l'Age . . . des Traductions latines d'Aristote" (1819).

[11] "Patr. Lat.," cxliii, 379, *seq.*

[12] Haskins, "Studies," 52-3. Thorndyke, op. cit., i, 701. Cf. Clerval, "Les écoles de Chartres."

[13] Gerbert, "Scriptores Eccles. de musica," ii, 124.

manni Contracti Musica" (Leipzig, 1884).[14] I have suggested that Hermann's curious pitch notation may have been due to the Arabian contact.[15]

Constantine the African (d. 1087) is another writer closely associated with Arabian learning. He was born at Carthage (presumably Tunis) about the close of the tenth century, when Carthage was held by the Muslim Zairid dynasty (972-1148). We are told that he spent thirty-nine years in the East, acquiring scientific knowledge, which, in those days, could only be obtained there. His first sojourn was at Babylon (probably Cairo),[16] where he studied the grammar, dialectics, physics, geometry, arithmetic, astronomy, necromancy and *music* of the Chaldæans, *Arabs*, Persians and Egyptians. After he had mastered these sciences he went to India, returning to Carthage by way of Æthiopia and Egypt. Settling in Carthage, he became suspected, by reason of his immense knowledge, of sinister purposes, and was compelled to flee to Salerno. Here he remained until a brother of the ruler of Babylon (? Cairo), who had arrived at Salerno, introduced him to Robert Guiscard, the King of Sicily, when he became his secretary. Finally, Constantine retired to the monastery of Monte Cassino.[17]

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[14] Cf. the *kritik* of P. Spitta in "Vierteljahrsschrift für Musikwissenschaft," ii, 367.

[15] Farmer, "Arabian Influence," 13, 22.

[16] Both Cairo and Baghdād were named Babylon by mediæval Latin writers, but the title more properly belongs to the former. See "Encycl. of Islām," i, p. 550. At the time when Constantine was at Cairo, Ibn al-Haitham was its famed teacher in mathematics.

[17] Petrus Diaconus, "Chronicon Casinense," iii, p. 35. Paulus Diaconus, "Lib. de viribus illustr. Casinens.," p. 23. Jourdain, "Recherches critiques sur . . . . Aristote," p. 502.

The influence of Constantine and his pupils on the scientific culture of Southern Europe was considerable. He spent the latter years of his life in translating or adapting Arabic scientific works into Latin. The greater part of these works (those that have come down to us) concern medicine, but we know that he worked at other sciences also. Whether music was amongst them we are not told, but in a place like Monte Cassino, music could scarcely have been ignored.[17a] Yet how much of that Arabian musical science, which Constantine had learned at Babylon, Sicily and elsewhere, was passed on to Southern Europe by this savant and his pupils, we can only conjecture. Constantine was known to one of the old musical writers of the thirteenth century, Johannes Ægidius Zamorensis,[18] a protégé of that royal Arabo-phile, Alphonso X the Wise.

It was not until the twelfth century, however, that the Latin translators from the Arabic made their historic contributions to European culture. Among these translators were Plato of Tivoli, John of Seville, Gundisalvi, and Gerard of Cremona, to mention those connected with musical studies. Through these translators, some further ideas of the Arabian musical theorists were made known in Latin, including Al-Fārābī (Alpharabius), and Ibn Sīnā (Avicenna). These ideas were borrowed by Vincent de Beauvais (d. 1264), Pseudo-Aristotle (*c.* 1270), the author of the "Anonymous IV" MS. (*c.* 1273-80), Roger Bacon (d. 1280), Walter Odington (*c.* 1280), and Jerome of

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[17a] See Appendix 14.

[18] Gerbert, "Scriptores," ii, p. 392.

Moravia (thirteenth century), as I have signalised in my monograph. Al-Fārābī was a name to be conjured with until the sixteenth century [19]

In addition to these "clues" for the infiltration of Arabian musical ideas, we have the evidence of Arabic terminology, for just as we find such words as *cipher*, *algebra*, *algorism*, appearing in mathematics, *zenith*, *nadir* and *azimuth* in astronomy, and *alembic*, *alcohol* and *alkali* in chemistry, so we have such words as *elmuahym*, *elmuarifa* and *alentrade* appearing in music. Certainly, we have but a solitary example of their usage, and critics have the right to ask why these ghosts should flit in like this, and then disappear from view.[20]

These questions, however, together with my identification of the *hocket* in the Arabian *īqā'āt*, will be dealt with in another book which will be devoted to "Mensural Music." In the meantime, I proceed to discuss some of the *facts* which led me to specify the other "clues" for the Arabian influence on musical theory in my recent monograph.

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[19] "Denique, Alfarabio auctore, per harmonias, gratiâ contemplationis et divinarum scientiarum, studia non mediocriter juvantur." G. Reisch, "Margarita Philosophica" (Basil, 1508), lib. v, tract. i, cap. i.

[20] They may, indeed, be due to Toletan Mozarabian influence, as I have already suggested in my monograph. After the capture of Toledo by the Christians in 1086, this city became the chief home of the Arabian sciences and arts for European students. It was through the portals of Toledo that many of the Latin translations from the Arabic came. In 1242, when the Christians took Murcia, a Muslim savant, Muḥammad ibn Aḥmad al-Raqūtī, who was famed as a writer on music and mathematics, was retained by the Christian King, to teach in his schools. Casiri, ii, pp. 81-2.)

CHAPTER II.

THE TRUE HISTORICAL PERSPECTIVE.

"During the early mediæval centuries the Byzantine Empire, Syria and Egypt, *after they had been conquered by the Arabs*, the busy streets of Baghdād and Cordova, and Persia, undoubtedly produced a far more flourishing activity in the fine arts and the industrial arts than was the case in backward western Christian Europe."—Professor Lynn Thorndike, "A History of Magic and Experimental Science," 1, p. 762.

AFTER Ptolemy (fl. 127-151) and Galen (d. 201) Greek science began to decline and by the end of the fourth or the beginning of the fifth century, it was utterly gone.[1] The Dark Ages had commenced. In Rome, Martianus Capella (*c.* 500), Boëthius (d. 524), and Cassiodorus (d. *c.* 570), attempted to lift the veil, but, with the barbarian inroads, the night of intellectual darkness settled completely on the Western world, illumined only by a stray beam of light here and there.[1a] Even in Byzantium itself, the very hub of the intellectual world, there was scarcely any indication of interest in learning.[2] After Justinian had closed the

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[1] Hearnshaw, "Mediæval Contributions to Modern Civilisation," pp. 109-10.

[1a] See Appendix 15.

[2] Bury, "History of the Later Roman Empire," ii, p. 387.

schools in 529, intellectual studies were at a premium, whilst from the mid-seventh to the beginning of the ninth century, the Eastern Roman Empire is sterile in literary productions.[3]

In the meantime, a new power had arisen in the East, the Arabs, who, in less than a century, claimed dominion from the borders of China to the Atlantic, and from the Indus and Sudan to the Caspian and Pyrenees. Just as the Arabs accomplished this rapid world-conquest, so did they demonstrate their greater intellectual mobility in their conquest of learning. It is to their achievements in art, science and letters that we owe those influences which directly affected the European Renaissance.

That there were influences at work "which laid the foundations of the intellectual, artistic and spiritual development of the peoples of Western Europe . . . . long before the rise of Islam," as Miss Schlesinger says,[4] no student of history would seriously deny. Yet the admission in no way prejudices the claim for the Arabian influence. It rather enhances this claim, because we see in these earlier influences, where the cultural ground is well prepared and ploughed, the reason why the sowers in the Arabian contact were so successful. At the same time it is possible to overstate these early influences, and a case in point may be found in Miss Schlesinger, who says:

"The ideals, principles and practice of the music of ancient Greece survived in Europe, and travelled west-

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[3] Bury, "History of the Eastern Roman Empire," p. 435.

[4] Schlesinger, "Is European Musical Theory Indebted to the Arabs?; Reply to the Arabian Influence on Musical Theory," pp. 3-4.

ward by many channels; these principles were preserved and propagated, if not understood, in the scriptorium of the monastery. The musical treatise of Boëthius formed the common textbook of music in the schools, with the addition, here and there, of the works of Ptolemy, Nikomachos, Theōn of Smyrna and Aristoxenos, and of other of the later Greek theorists."[6]

This statement is not quite satisfactory. Prior to the Arabian contact there was only one channel by which the *practice*, but not necessarily the *ideals* or *principles*, of Greek music travelled westward, and that was via Rome. For the first five centuries the music of the Christian Church was Greek. Just as in the plastic arts did Christianity "assume the garb of decaying Greek art," as Lübke says, so in music do we find the more popular expression of the art, such as existed in the relatively decadent Græco-Roman period, adapted to her ritual. As for *ideals*, there could not possibly be any chance of their survival at this period, for, as Professor Wooldridge points out, "the intention and value of a Greek composition, both words and music, was purely artistic," whilst "the aim of the Christian composer was entirely different, for the intention and value of the words set by him is not artistic but religious." Similarly, we cannot accept the statement that the *principle*s of Greek music survived in the way that has been suggested, for although the early Church had, as I have said, adopted the Greek modes and melodies in its liturgy, it must be remembered that the theory of composition in these modes, and the knowledge of the melodies, were *preserved entirely by*

[6] Page 4.

oral tradition.[6] The fifth-sixth centuries saw Boëthius, and he revived the ancient Greek theory, but alas! there came the great catastrophe in the fall of the Roman Empire, which swept away the last vestiges of the ancient world, *including the classical theory of music!*[7] From that date until the mid-ninth century, not a solitary musical theoretical document has come down to us from European sources.[8] When Miss Schlesinger speaks about the *principles* of Greek music having survived in Europe, I ask for *evidence*, which many of us will only be too glad to see.[8a]

It is so easy to *say* that the monastery contained and used the works of Boëthius, Ptolemy, Nikomachos and Aristoxenos, as *textbooks*,[9] but it all vanishes into thin air when we know what the precise culture conditions were at this period. Although some of the early Christian Fathers, and even some of the early Popes, were favourable towards Pagan culture, the Church, as a whole, viewed all external learning as its most formidable enemy. Many of the Fathers exhorted the faithful to avoid all contact with Pagan learning, whilst councils and synods heaped interdicts upon Pagan books, and even

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[6] Wooldridge, "Oxford History of Music," i. p. 33.

[7] Wooldridge, loc. cit.

[8] *Ibid.*, Isidore of Seville (*c.* 570-636) came within this period, but his musical knowledge as displayed in his encyclopedic "Etymologia" reveals the fact that he was simply a "copyist," and did not understand the theory of the ancients. He can be left out of account. See Appendix 15.

[8a] See Appendix 16.

[9] It would have been interesting to have heard the monk who used *both* Boëthius and Aristoxenos as textbooks!.

went so far as to destroy them.[9a] The result was, as the ecclesiastical historians, Mosheim and Jortin, openly admit, that learning was considered destructive to true piety and godliness.[9b] The sciences especially, were held in contempt, as being inconsistent with revealed truth. Lecky, in his "History of European Morals," says: "Greek was suffered to become almost absolutely extinct. . . . . The study of the Latin classics was for the most part positively discouraged. . . . . the monks were too inflated with their imaginary knowledge to regard with any respect a Pagan writer."[9c] The great Buckle also testifies that "from the sixth to the tenth centuries there were not in all Europe more than three or four men who dared to think for themselves . . . . The remaining part of society was, during these four centuries, sunk in the most degrading ignorance. Under these circumstances, the few who were able to read, confined their studies to works which encouraged and strengthened their superstition, such as the legends of the saints and the homilies of the Fathers."[9d]

All learning, meagre as it was in these days of intellectual darkness, was confined to the clergy, and yet *in one of the most famous monasteries of the period, that*

[9a] See Appendix 17.

[9b] Mosheim, "Inst. of Eccles. Hist." (Murdock-Reid Edit., 1876), pp. 217, 244, 291, 329, 351. The superiority of the Arabs in the *quadrivium* is stressed by this author, as well as Europe's indebtedness to the Arabs. Jortin, "Remarks on Eccles. Hist." (Trollope Edit., 1846), i, p. 338, ii, pp. 234, 265.

[9c] Lecky, "Hist. of Eur. Morals" (1869), ii, p. 215.

[9d] Buckle, "Hist. of Civ. in England" (J. M. Robertson Edit., 1904), p. 153.

of Monte Cassino, the library scarcely contained a classical author.[10] Even the few classics that did survive the general neglect and devastation were looked upon as useless, and the writings were often erased so as to make room for sermons or lives of saints.[11] It is no wonder therefore that Libri, the historian of mathematics, could say that works on the sciences of the ancients were rare,[12] a complaint which Wooldridge echoes concerning music books.[13].

If the monastery was so replete with the works mentioned by Miss Schlesinger, and *if* these formed the *textbooks* of the period, how are we to explain the complete absence of musical theorists from the end of the sixth to the mid-ninth century? Even the earliest of the theorists in the mid-ninth century, I refer to Aurelian of Réomé, does not quote the direct authority of the Greeks, *but merely Boëthius, Cassiodorus and Isidore.*[14]

Miss Schlesinger then proceeds as follows:

"Before the full tide of Islām swept over the southwest of Europe in the eighth century, the foundations for the study of music had been laid, and at the end of the eighth century Charlemagne founded three schools of music at Metz, Soissons and St. Gallen. By the ninth

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[10] Muratori, "Antiq. Ital.," iii, p. 817.

[11] Muratori, "Antiq. Ital.," iii, p. 834. Libri, "Hist. Math.," i, p. 160.

[12] Libri, "Hist. Math.," i, p. 158.

[13] Wooldridge, op. cit., i, p. 33. See Appendix 18.

[14] It is precisely the same, even in the thirteenth century. The hand of Boëthius is heavy on musical writers until the appearance of Berno (d. 1048). See Brambach's "Die Musiklitteratur des Mittelalters," p. 15.

century many musical tracts in Latin on organ building, on the proportion of pipes, on the monochord, on the tones and modes had been written" (p. 5).

The "full tide of Islām" in the south-west of Europe was reached in October, 732, when Charles Martel stemmed it at Tours, so that it must have been prior to this that the "foundations" for the study of music were laid. Yet one naturally asks what these "foundations" could be.[15] I have already shown that the "theorists" did not exist, and "foundations," however admirably adapted they may be for the finest of edifices, are not of much use *unless we have the material and the builders.*

As for Charlemagne and his schools, where is it manifest that the latter were, on the musical side, anything more than "singing-schools"? Charlemagne, as the ballad literature shows, was one of the characters of the Middle Ages, whose every circumstance in life is played upon *forzando* by the annalists. He was eight feet in stature, and all that he did (and did not) is kept in proportion. We read all about his reforms in church singing in the monkish chronicles,[16] yet what amazes me is that, in spite of the "foundations" for the study of music, and the schools of Charlemagne, when his son, Louis le Débonnaire, came to the throne (814) the church singing was as bad as ever, and the Gregorian song, which is supposed to have been so carefully fostered by Charlemagne, *was only known to a few Roman singers who had*

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[15] Cf., Gevaert, "La Musique de l'Antiquité," i, p. 16.

[16] "Mon. Germ. Hist." (Leges), i, pp. 106, 131. Mansi, "Concilia," xiii, p. 861; xiv, p. 13. "Recueil des Hist. des Gaules," v, p. 445.

learned it by rote, since there were no books in which it was noted.[17]

By the mid-ninth century, however, and that is *more than a century after* the "full tide" of Islām in the south-west of Europe, a few musical writers begin to show themselves, and the earliest of these are Aurelian of Réomé (mid-ninth century) and Remy of Auxerre (late ninth century).[18]

To sum up: (1) *The principles of music of ancient Greece did not survive in Europe.* In fact, to speak of *ancient Greece* is entirely misleading. The work of Ptolemy (fl. 127-51) clearly reveals that the musical art of *ancient Greece* was no more.[19] Even Boëthius (d. 524) cannot be said to represent contemporary principles as Wooldridge says, since his work is merely a scholastic compilation.[20] (2) *After the fall of Rome there is not a solitary original work on music by the Greeks known to the musical theorists of Western Europe until centuries after the Arabian contact.*[20a] (3) *From the end of the sixth century to the mid-ninth century no work on the theory of music in Western Europe is known to us.* (4) *We have no evidence that the theory of music was even the subject of investigation during the last-mentioned period.*

It was with these facts in my "mind's eye" that I had a negative reason for assuming my "Arabian Influence."

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[17] Amalarius Fortunatus, "De Ordine antiphonarii." See Appendix 19.

[18] See Appendix 20.

[19] Wooldridge, op. cit., i, p. 13.

[20] Wooldridge, op. cit., i, p. 22.

[20a] I know of no authority for the mention of Aristoxenos in the Benedictine "Paléographie Musicale," i, p. 20.

Peoples do not suddenly become wise in the practical and speculative "theory of music" by magic! Emil Naumann makes Christianity the prompting, at which one immediately asks why it should take a millennium? Miss Schlesinger adopts an empirical convention, which, at best, really begs the question. In her view, this "theory of music" was "*already within the grasp of Western races*" *before the Arabian contact.* That *may* have been the case, but the fact remains that they did not make up their mind to "take hold of it" until *after the Arabian contact!!* The facts are these, that whilst Western Europe was sunk in barbarism following the fall of Rome, the torch of culture and civilisation was being held aloft by the Muslims. That can scarcely be questioned.[21]

[21] Even Scaliger ("Epist.," i, p. 362) admits the "profound ignorance" in the Church whilst the "liberal arts" were flourishing with the Arabs.

CHAPTER III.

THE OLD ARABIAN MUSICAL THEORY.

"If we except the Persians and Byzantines there is no nation that can show a more pronounced taste for music and musical instruments than the Arabs."—Ibn Khurdādhbih (ninth century).

WHAT are the facts concerning Arabian musical theory? We are told that: "Musical science, as developed with great prolixity by Arab writers, *was acquired in the first instance deliberately and of set purpose by command of the Prophet from the Persians* whom the Arabs had just conquered, and more thoroughly still from the Greeks."[1]

Let me say quite frankly, that *there is no justification for the opinion that the Prophet "commanded" any such thing!* The "fact" is, as Orientalists know, that music, in Islām, is counted among the *malāhī* or "forbidden pleasures," and each of the four orthodox sects prescribes "listening to music" *(al-samā')* as sinful, or, if not sinful, at least "religiously unworthy." Hundreds of treatises have been written on the Prophet's *ḥadīth* on the "unlawfulness of music."[1a]

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[1] Miss Schlesinger, p. 5.

[1a] For a full discussion of the question of Islām in relation to music see my "History of Arabian Music to 945 A.D.," Chapter II.

Arabian culture and civilisation did not originate with nomads nor with Islām, as Miss Schlesinger would suggest. As early as the second millennium B.C. we have evidence of a South Arabian kingdom, where we come upon traces of "a high state of civilisation,"[2] whose culture had much in common with that of Babylonia-Assyria.[3] Indeed, the Greeks were culturally indebted to the Arabs, and Hommel and others hold that Greece probably borrowed from South Arabia, not only Apollo, Leto, Dionysos and Hermes, but also the ϕ, χ, and ψ of its alphabet.[4] Long before Islām we read, here and there, of the musical proclivities of the ancient Arabs,[5] and it would be idle to pretend that they possessed no musical theory, in the face of what we know of the general culture of the Arab Chaldæans, Minæans, Sabæans, Nabaṭæans and Palmyræans, and the later Lakhmids and Ghassānids.[5a]

Miss Schlesinger, however, follows the old school, which for a century or more has told us that the Arabs had no musical theory save what they borrowed from the Persians and Greeks.

"Both these nations," continues Miss Schlesinger, "possessed distinctive musical systems of their own, whereas the Arabs had no system which they had, up to that time, been able to reduce to theory."

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[2] Hommel, "Ancient Hebrew Tradition," pp. 42, 77.

[3] Sayce, "Early Israel," p. 127.

[4] "Encycl. of Islām," i, p. 380.

[5] Schrader, "Keilinschriftliche Bibliothek," ii, p. 234. Strabo, xvi, iv, 27. Julius Pollux, iv, 9, 60. Suidas, sub 'Αράβιος.

[5a] See Appendix 21.

We have a similar (as well as a dissimilar) statement in the same author's "Precursors of the Violin Family" (pp. 397-8), where we are informed:

"In the *sixth century*, the Arabs conquered Persia, and from their own records we read that, finding the musical system of the Persians so far in advance of their own, they adopted it, making a profound study of it with native teachers."

The "facts" are: (1) *the Arabs conquered Persia in the seventh century*, (2) *the Arabs did have a system which had been reduced to theory prior to the conquest of Persia*, and (3) *Arabic "records" do not tell us that the Arabs made a profound study of the Persian system under native teachers.*

Time after time we have Arab musicians boasting of handing down the old traditional music of pre-Islāmic times, such as the pagan songstress, Rā'iqa, taught 'Azzat al-Mailā' (d. *c.* 700)[6] Indeed, at the very period when these alien "borrowings" are supposed to have been made, the Arabs were too jealous of encroachments upon that sacred and superior thing called Arab nationality to permit of "foreign" ways and customs to any great extent. Every word of 'Umar tells us this. Islām meant much in these days, but the word *Arab* meant more.[7]

To say that "the Arabs had no system which they had, up to that time (the conquest of Persia) been able to reduce to theory," is not in accordance with "facts." We have plenty of references to music and musicians in pre-

[6] "Kitāb al-Aghānī," xvi. p. 13.

[7] Jurji Zaidān, "Umayyads and 'Abbāsids," pp. 29-31.

Islāmic times,[8] and it is almost impossible to conceive that these people (to whom music was almost an absolute necessity), who could systematise their poetry, as we see in the "Mu'allaqāt," "Ḥamāsa" and "Mufaḍḍaliyyāt," were not able to systematise their music. Fortunately, Al-Fārābī has preserved for us details of a pre-Islāmic system in the scale of the *ṭanbūr al-Baghdādī*, which was arrived at by dividing a string length into forty parts.[9] Probably this scale was passed on to the Arabs of the peninsula by the Chaldæans, who were also Arabs, who had received it from Babylonia-Assyria. Whilst it was superseded by Pythagorean intonation in the cultured Near East and Persia, as well as among the Arabs of Syria and Al-Ḥīra, it subsisted in more remote corners of Al-Ḥijāz and Al-Yaman, and found its votaries even down to the tenth century A.D.[9a]

In pre-Islāmic times, the great literary centre of Arabia, from whence poetry radiated to all parts of the peninsula, was Al-Ḥīra,[10] and seeing how closely music was allied to poetry,[11] it may be safely conjectured that music

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[8] "Kitāb al-Aghānī," viii, pp. 2, 77, 79, ix, p. 164, x, pp. 18, 48, xiii, pp. 140, xvi, p. 48, xxi, pp. 49, 191. "Al-Mas'ūdī, ii, p. 296, viii, p. 93. Ibn Badrūn, pp. 53, 65. Al-Ṭabarī, i, p. 1.240. Evliyā Chelebī, ii, pp. 113, 226, 233, 239. Suyūṭī, "Muzhir," ii, p. 236. Al-Tibrīzī, p. 83. Al-Mufaḍḍal (Lyall), xxx, xxxvi, lxxi, lxxii, etc.

[9] Kosegarten, "Lib. Cant.," p. 91. Land, "Recherches," p. 108, *seq.*

[9a] See Appendix 22.

[10] Huart, "Arab. Lit.," p. 12. Nicholson, "Lit. Hist. of the Arabs," p. 37.

[11] "Encycl. of Islām," i, p. 403. St. Guyard, "Théorie Nouvelle de la Métrique Arabe" ("Journal Asiatique," 1876).

was equally favoured. Indeed, Al-Ḥīra must have possessed a considerable musical culture, seeing that the famous Persian King, Bahrām Ghūr (430-8) was sent to the Arab Lakhmid court in that city to be educated, and here he was taught *music* among other Arabian accomplishments.[12] This was "before" the Arabs had conquered the Persians, and one might reasonably ask why Yazdigird I and the Persians should have sent the young prince to learn from a people who had no technique in the art to impart (*vide* Miss Schlesinger). It is strange, also, that this same Persia, the reputed fount of the Arabian musical system, should, under Bahrām Ghūr, be so lacking in professional musicians that they had to be imported.[13] The last Lakhmid ruler of Al-Ḥīra was Nu'mān III (*c.* 580-602), among whose shortcomings Al-Ṭabarī places his passion for *music*. It was from Al-Ḥīra that Al-Ḥijāz borrowed, about the close of the sixth century, the artistic song *(ghinā')* in the place of the *naṣb*, and also the wooden-bellied lute called the *'ūd*, in the place of the skin-bellied *mizhar*.[14]

That *the Arabs had an indigenous musical system, is clearly testified by numerous authorities.* That this system was *influenced* by both Persian and Byzantine theories, and later still, by ancient Greek principles, may be readily admitted, just as we cannot deny that both Persia and Byzantium were themselves *influenced by Ara-*

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[12] "Al-Ṭabarī," i, p. 185.

[13] Mīrkhwānd, "Rauḍat al-Ṣafā," i, ii, p. 357. Spiegel, "Eranische Alterthumskunde," iii, p. 550, 833.

[14] "Al-Mas'ūdī," viii, p. 94.

bian musical theory,[15] but that is quite different from the point of view of Miss Schlesinger.

The alien influences in Arabian music were for the most part quite superficial, and, at first, had no bearing on theory. We read of early musicians like Ṭuwais (d. *c.* 710) and Sā'ib Khāthir (d. 683), who imitated the style of singing of the Persians.[16] At the same time we find a Persian musician like Nashīṭ taking lessons in the style of singing of the Arabs.[17] There is no question of "theory" involved, since it is clearly no more than one nationality borrowing from the other a particular type or style of song.[18]

Ibn Khaldūn, however, may be responsible for the view of a much deeper foreign musical impress. He tells us in his "Muqaddima," or "Prolegomena,"[19] that musicians from Persia and Byzantium passing into Al-Ḥijāz playing upon the lute *('ūd)*, pandore *(ṭanbūr)*, barbiton *(?) (mi'zaf)*, and reed-pipe *(mizmār)*, led to the Arabs adopting Persian and Byzantine melodies for their poetry. This does not fully agree with the earlier chroniclers, Ibn 'Abd Rabbihi, Al-Iṣfahānī and Al-Mas'ūdī. In the first place, the account is likely to mislead people into giving credit to Persia and Byzantium for the intro-

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[15] If nomenclature is a guide, then Persian theory could be said to be based almost entirely on Arabian principles. See also, "Kitāb al-Aghānī," i, p. 151. Jeannin, "Mélodies Liturgiques Syriennes et Chaldéennes," i, pp. 106-7. Tillyard, op. cit., 46, 63.

[16] "Kitāb al-Aghānī," ii, p. 170, i, p. 188.

[17] *Ibid.*, vii, p. 188.

[18] Freytag, "Arab. Prov.," vii, p. 124.

[19] Ibn Khaldūn, "Prolégomènes," ii, p. 360. ("Notices et Extraits," xvii.)

duction of the above instruments into Arabia. It is not the case, since the Arabs possessed them already.[20] Secondly, there is not one Byzantine musician mentioned in the Kitāb al-Aghānī which is the great mine of information for early Arabian music, and, with the exception of Nashīṭ, probably, all the so-called Persian musicians (i.e., of Persian extraction) were either born or were educated in Arabia. Indeed, there were only four musicians of importance during this period who did not come from Al-Ḥijāz, and they were, Nashīṭ the Persian, Abū Kāmil al-Ghuzayyil, of Damascus Ibn Ṭanbūra of Al-Yaman, and Ḥunain of Al-Ḥīra. So we see that whatever outside influence came to Arabian music, even in the slight way that has been mentioned, *it came through Arab hands.*

What the Arabs borrowed from Persia and Byzantium in the question of "theory" is nowhere definitely stated by the chroniclers. At the outset, however, let us disabuse our minds of the notion that the Arabs acknowledged that the Persians possessed a musical system "far in advance of their own." Further, so far as extant treatises are concerned, *the earliest Persian work on music dates from the twelfth century,*[1] *whilst we have Arabic*

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[20] "Ḥamāsa," i, p. 502. "Al-Mas'ūdī," viii, p. 89 *seq.* "Al-Ṭabarī," i, p. 1,807. "Kitāb al-Aghānī," ii, p. 172.

[1] "Bahjat al-rūh," Bodleian Lib., 1841. What Albert de Lasalle, in his "La Musique des Persans," says of ancient Persian treatises on music, is erroneous. He says: "Il est avéré que, dès les temps les plus reculés, il existait en Perse de nombreux traités de musique. Cependant il n'est pas moins certain que lorsque cette contrée fut conquise, au septième siècle, par les musulmans, la plus grande partie de ces documents, qui nous seraient précieux aujourd'hui, furent brûlés. Il n'échappa à l'incendie qu'un seul manuscrit intitulé: 'Heela Imaeli,' et dont

treatises on music which date from the ninth century,[2] *and we have evidence of works dating from the eighth century.*[3] Indeed, all that we know of early Persian music, save what the art remains tell us, comes from Arabic sources, and the only authority who deals with the question at any length is Al-Mas'ūdī (d. *c.* 956), who, quoting an older writer, Ibn Khurdādhbih (ninth century), says that it was the Persians who invented the modes *(nagham)*, the rhythms *(īqā'āt)*, the cæsuræ *(maqāṭi')*, and the Royal Melodies *(ṭurūq al-mulūkiyya)*.[4] Yet to fully appreciate this passage, we must remember that music was "unlawful" to the Arabs, and historians were not anxious to allow an indigenous origin for an "abomination" like music, as the Muslim legists would term it. In the question of the "rhythms" and Persian "modes," I believe that it can be demonstrated that the Arabs did not "borrow" these at any rate.

What Byzantium followed precisely in the question of musical "theory" *we do not know.* From the fourth to

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Fraser, écrivain anglais, fait mention dans son 'Histoire de Nadir-Shah.'" The work which Fraser refers to in his "Catalogue of MSS. in the Persic, Arabic and Sanskerrit Languages," printed at the end of his "History," is entitled "Heelha Ismaeli." It is in *Arabic*, not Persian, and since its author is Abū'l-'Izz Ismā'īl al-Jazarī (twelfth-thirteenth century), it is certainly not one of those MSS. supposed to have been saved from the alleged destruction by the Arabs in the seventh century!

[2] Al-Kindī (d. 874).

[3] Yūnus al-Kātib (d. *c.* 760); Al-Khalīl (d. 791).

[4] Al-Mas'ūdī, "Prairies d'or," viii, p. 90. See my article, "The Old Persian Musical Modes," in "Journal of the Royal Asiatic Society," January, 1926.

the eleventh century,[5] which covers the greater part of the Byzantine period, no writings from Byzantium have come down to us. Probably, in the face of what we know of the culture conditions,[6] none were written. The Latins certainly supply Martianus Capella, Boëthius and Cassiodorus in the fifth and sixth centuries, but they do not register contemporary theory or practice even for the Latins, since their works are merely compilations from the ancient Greek theorists. What little we do know of Byzantine theory and practice in music at this period, comes from Arabic and Syriac sources.

In the face of the fact that we have no Byzantine or Persian treatises on music extant until the eleventh and twelfth centuries respectively, whilst the Arabs can boast of dozens of treatises earlier, we ought, prima facie, to be rather chary of accepting statements as to what the Arabs borrowed from the Persians and Byzantines. That some sort of *influence* accrued from these sources may, however, be allowed.

The first information that we have of the definite *influence* of Persia and Byzantium in Arabian musical theory, also tells us of an *indigenous Arabian system.* It is given in the famous "Kitāb al-Aghānī" (tenth century), where we are told about a certain Ibn Misjaḥ (d. *c.* 705-14)

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[5] i.e., from the "Anonymous" II of Vincent to Psellos. The musical section of the latter's work on the *quadrivium*, shows us that the author was not dealing with contemporary musical theory.

[6] Bekélas, D., "Seven Essays on Christian Greece," p. 104. See *ante*, p. 19.

who was responsible for grafting sundry "foreign" musical customs upon the native art. Here is the passage in full:[7]

"In Syria, he (Ibn Misjaḥ) learned the melodies *(alḥān)* of Byzantium and received instruction from the barbiton players *(barbaṭiyya)* and the theorists *(asṭūkhūsiyya)*. He then turned to Persia, where he learned much of their song *(ghinā')* as well as the art of accompaniment. Returning to Al-Ḥijāz, he chose the most advantageous of the modes *(nagham)* of these countries, and rejected what was disagreeable, for instance, the intervals *(nabarāt)* and modes *(nagham)*, which he found in the song *(ghinā')* of the Persians and Byzantines, *which were alien to the Arabian song.* And he sang (henceforth) according to this method. And he was the first to demonstrate this (method), and after this the people followed him in this." (See Appendix 23.)

In the life of his contemporary, Ibn Muḥriz, we read a somewhat similar record,[8] and one can appreciate why that distinguished musico-Orientalist, J. P. N. Land, should say quite definitely that "*the Persian and Byzantine importations did not supersede the national music, but were engrafted upon an Arabic root with a character of its own.*"[9]

What was further borrowed from Byzantium and Persia cannot be affirmed with certainty. Probably the two systems known as the "Courses" (sing., *majrā*) were of Byzantine origin. The general principles of the Byzan-

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[7] "Kitāb al-Aghānī," iii, p. 84.

[8] "Kitāb al-Aghānī," i, p. 150.

[9] Land, "Trans. IXth Congress of Orientalists," ii, p. 156.

tine theorists *(asṭūkhūsiyya)* were certainly not adopted, or at least not much, since we are informed in the Al-Kindī MS. already mentioned, that the principles of the *asṭūkhūsiyya* of Byzantium were different from those of the Arabs.[10] The latter certainly did not borrow the Persian scale, since we find Arab musicians in the early ninth century, being blamed for using Persian notes,[11] which were probably those represented by the scale of the *ṭanbūr al-Khurasānī*. What the Arabs did borrow was the Persian *accordatura* of the lute. (See Appendix 24)

On the question of rhythm and mensural values, we know that the Arabs possessed a system as early as the seventh century,[12] which, like their prosody, was a native one. In the eighth century, the famous Al-Khalil ibn Aḥmad wrote his "Book of Rhythm" *(Kitāb al-Īqā')*,[13] and in the ninth century we have the system fully described by Al-Kindī.[14] *Here we have an integral part of Arabian music, the principles of which appear to have been developed in accordance with an indigenous system.*[15] The Persians borrowed their rhythms, as they did their prosody, from the Arabs,[16] and I have already suggested that the mensural music of Western Europe came partly, if not wholly, from the same source.

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[10] "Berlin MS.," 5530, fol. 30.

[11] "'Iqd al-Farīd," iii, p. 190.

[12] "Kitāb al-Aghānī," ii, p. 170; xvi, p. 13.

[13] "Al-Fihrist," p. 43.

[14] "Berlin MS," 5503.

[15] Cf., Miss Schlesinger's remarks on p. 18, line 33.

[16] In spite of Al-Mas'ūdī's opinion (see *ante*) it is doubtful whether the Persians possessed rhythm at this time, since they do not seem to have had metre. See Browne, "Litt. Hist. of Persia," p. 12, and his "Sources of Dawlatshāh" (J.R.A.S., 1899, p. 56).

The old Arabian theory was recast by the famous Isḥāq al-Mauṣilī (767-850). This actually came about at the time when ancient Greek theories were being translated into Arabic,[17] yet we have the positive information that this recasting was done without recourse to Greek writers. The "Kitāb al-Aghānī" says that it was Isḥāq who perfected the "modes" and the "rhythms," and classified them in a way hitherto unknown, although they had been indicated by an earlier savant named Yūnus al-Kātib (d. *c.* 760). In this accomplishment we are told that Isḥāq had reached the conclusions of Euklid and other of the "ancients" *(awā'il)* who had written on the science of music, but that he had done this *solely by his own endeavours, and without having known a solitary book of the "ancients."*[18] That Isḥāq did not know the ancient Greek theorists, is confirmed by another passage.[19]

The old Arabian system of Isḥāq was in vogue in the late ninth and early tenth centuries, which statement is explicitly made by the author of the "Kitāb al-Aghānī,"[20] and by Yaḥyā ibn 'Alī,[1] the latter clearly distinguishing it from the Greek system. What we know therefore of the old Arabian system prior to the period of the Greek Scholiasts, as illustrated by Al-Kindī, Al-Mas'ūdī, and the above-mentioned writers, is sufficient to assure us that this system was different from that of Persia, Byzantium, and that of ancient Greece.

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[17] "Kitāb al-Aghānī," v, p. 53.

[18] "Kitāb al-Aghānī," v, pp. 52-3.

[19] *Ibid.*, v. p. 53. See Appendix 25.

[20] *Ibid.*, i, p. 2.

[1] "Brit. Mus. MS.," Or. 2361, fol. 236, v.

In the history of the "modes" we are able to gauge how far the Arabs were implicated in borrowing from Persia or Byzantium.

According to the Rāmāyaṇa (400 B.C.-200 A.D.), India possessed seven *jātis* which were similar to *rāgas*.[2] Persia had seven "modes," as a certain Amīn tells us,[3] but in the time of Khusrau Parwīz (590-628), there were twelve modes.[4] According to the Syrian, Bar Hebræus, the Persians are generally credited with these twelve modes,[5] and although some of them were adopted by the Arabs, either as they stood or in a modified form, *at a later period*, we must bear in mind that for a long time the Arabs used their own national modes, of which I will now speak.

In the eighth century, Yūnus al-Kātib (d. *c.* 760) and Al-Khalīl (d. 791) wrote a "Book of Modes" *(Kitāb al-nagham)*. In the "Kitāb al-Aghānī" (written tenth century) we read of *eight modes*, which did not have fanciful names like those of Persia or Greece, but were named after the fingers. The Syrians, too, had their *ikhadias* (= Ὀκτώηχος)[6], and similarly the Jews,[7] which were not the same as the Greek modes, a circumstance which ought not to be lost sight of. That the "modes" of the Arabs,

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[2] Popley, "Music of India," p. 10.

[3] Jones, Sir W., "Music of Hindustan," p. 63.

[4] See my article on "The Old Persian Musical Modes" in the "Journal of the Royal Asiatic Society," January, 1926. Here I have referred to the *Turūq al-mulūkiyya* and the *Sī laḥn* as "modes," whereas, strictly speaking, they should be termed "melodies" or "modal melodies."

[5] Bar Hebræus, "Ethikon" (Bedjan Edit.), p. 69. Villoteau, "De l'état actuel de l'art musical en Égypte," p. 613.

[6] Jeannin, "Mélodies liturgiques Syriennes et Chaldéennes," p. 85.

[7] Saadia, in "Beth 'oçar haṣṣpharoth," year, I, xxx.

Persians and Byzantines were different in the ninth century, is definitely stated in the assumed Al-Kindī MS. mentioned above.[8] Indeed, the fundamental system of each of these peoples appears to have had a significant trait.[9] The Ikhwān al-Ṣafā' say:

"Consider each nation, and the *melodies* and *modes* which they enjoy and are pleased with, which others do not enjoy nor are pleased with, for example, the music of the Dailamites, the Turks, the Arabs, the Kurds, the Armenians, the Æthiopians, the Persians, the Byzantines, and other nations who differ in language, nature, morals and customs."[10]

What influence this old Arabian system may have had precisely on Western Europe, I am not, as yet, prepared to say, but that Western Europe felt the influent Arabian culture stream in general, through what I have called the *political contact*, cannot be doubted. I suggested that popular music was influenced in this way, mainly through the wandering minstrel, who was often an Arab or Moor. What the West borrowed from the East in this way was chiefly on the instrumental side, for, as Carl Engel said: "The Arabs, when they came to Europe, in the beginning of the eighth century, were more advanced in the cultivation of music, or at all events in the construction of musical instruments, than were the European nations. Thus only can their astounding musical influence be accounted for."[11] Indeed, it is the Arabs who first give us a really

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[8] Op. cit., fol. 30. See Appendix 26.

[9] "Kitāb al-Aghānī," v, p. 57.

[10] Ikhwān al-Ṣafā' (Bombay Edit.), i, p. 93.

[11] Engel, C., "Early History of the Violin Family," p. 79. See Appendix 27.

scientific description of musical instruments,[12] which the Persian theorists continue,[13] and the only didactic instrumental methods that we possess in the Middle Ages come from the Arabic.[14] Miss Schlesinger fully acknowledges that "Mediæval Europe was indebted to the Arabs" in the matter of musical instruments,[15] but she denies that it learned any "theory" from them! This overlooks the specific indication that I made of the two points of Arabian culture contact—(1) the *political contact* which began in the eighth century, spread abroad by the instrumentalists mainly, and (2) the *literary and intellectual contact* which began in the tenth century, due chiefly to the *intellectuals*. In the *political contact*, it must obviously be allowed that, in the face of the advanced state of instrumental music with the Arabs, a certain amount of *practical theory* must have passed over with the instrumental borrowings. Indeed, I believe, with others, that the major mode, due directly to the *accordatura* and fretting of the Arabian lute, was among the new musical ideas introduced in this way.[16] What evidence we have for the transmission, by means of *practical theory* perhaps, of solfeggio, notation, tablature, organum, consonances, etc., will be dealt with under separate headings.

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[12] Kosegarten, "Lib. Cant.," p. 76, *seq.* Land, "Recherches."

[13] "Kanz al-Tuḥaf," fol. 261, v. "Brit. Mus. MS.," Or. 2361.

[14] "Berlin MS.," 5530.

[15] The acknowledgment had already been made in her "Precursors of the Violin Family," and her articles in the "Encycl. Brit." (eleventh edition), although with modifications in the latter. See *ante*, p. 15.

[16] Rowbotham, "Hist. Mus.," iii, p. 547. Jeannin, op. cit., p. 107. Villoteau, "Descr. des instruments de musique des orientaux," p. 858. See Appendix 28.

CHAPTER IV.

THE GREEK SCHOLIASTS.

"As to how the Ancients (the Greeks) named them (the notes), and how we follow them worthily, and the reasons for that, then we have already explained this."—Al-Kindī, "British Museum MS." 2361, fol. 165, v.

"The principles which the Ancients (the Greeks) framed and employed in their books (on music) gave explanation of the art to us, for it is from the Ancients and not the Moderns that we take directions."—Al-Fārābī, "Leyden MS." 1423, fol. 2.

IN the seventh century, when the Arabs became masters of almost half of the then-known civilised world, the Muslim conquerors found in Byzantine and Persian lands vestiges of the literature of that wonderful civilisation of ancient Greece. Save for a few Syrian devotees in the monasteries, these treasures were but as pearls before swine, for Byzantium and Persia had stagnated culturally as well as politically. The Syrians, with a ready eye on the almost innate literary propensities of their conquerors, turned some of these treasures into Arabic. The result is well known. Monasteries and libraries were ransacked so as to secure copies of Greek books on science and philosophy, which were translated into Arabic, and, indeed, if it had not been for the zeal

of the Arabs in this direction, many of the works of ancient Greece would not have come down to us.[1]

I pointed out in my monograph that "*between the eighth and eleventh centuries the Arabs had translated from the Greek many musical treatises hitherto unknown to Western Europe*," and among them I named Aristoxenos ("Harmonics" and "Rhythmics"), Aristotle ("Problems"), Euklid ("Harmonics" and "Canon"), Ptolemy ("Harmonics") and Nikomachos ("Harmonics"). The Arabs also possessed a work on music by Pythagoras, which has not come down to us either in Greek or Arabic.[2] There were also works on organ construction attributed to Mūrisṭus (= Ἀμέριστος),[3] which have only been preserved in Arabic, whilst Arabic literature mentions other Greek writers on music, such as Fandurūs al-Rūmī, *who is unknown in the Greek literature that has survived*,[4] unless Pindar (Πίνδαρος = Findarūs) is intended, which is doubtful.

The immediate result of all this was that music became one of the courses of scientific study, as we see in such writers as Al-Kindī (d. *c.* 874), Al-Sarakhsī (d. 899), the

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[1] What the Arabs knew of the literature of ancient Greece, and what was translated into Arabic, may be seen in the "Fihrist," Ibn al-Qifṭī, and Ibn Abī Uṣaibi'a. See M. Steinschneider's "Die arabischen Uebersetzungen aus dem Greichischen" in (1) "Beihefte zum Centralblatt für Bibliothekswesen," v, and xii (Leipzig, 1889-93); (2) "Archiv. für Pathologie," cxxiv (1891); (3) "Zeitschrift für Mathematik" (hist.-litt.), xxxi (1886); (4) "Zeit. der deutschen morgen. Gesellschaft," l (1896).

[2] Wenrich, "De auct. græc.," p. 88. See Appendix 29.

[3] "Al-Mashriq," ix. See Appendix 30.

[4] Al-Mas'ūdī, viii, pp. 91, 418.

Banū Mūsā (ninth century), Thābit ibn Qurra (d. 901), Muḥammad ibn Zakariyyā al-Rāzī (d. 923), Qusṭā ibn Lūqā (d. 932), Al-Fārābī (d. 950), the Ikhwān al-Ṣafā' (tenth century), Muḥammad ibn Aḥmad al-Khwārizmī (*c.* 980), Ibn Sīnā (d. 1037), Al-Ḥusain ibn Zaila (d. 1048). It is at this point that Miss Schlesinger, like many others in the past, is under a misapprehension. She sees the ancient Greek theories and systems being dealt with in the musical treatises of the Arabs, and she immediately concludes that this is *Arabian theory!* It is nothing of the kind. The knowledge of the music of the ancient Greeks was a scholastic accomplishment with the Arabs, in precisely the same way as Boëthius was incumbent upon the music students of Western Europe until quite modern times.

In the works of Al-Kindī, Al-Fārābī, Ibn Sīnā, Al-Ḥusain ibn Zaila, Ṣafī al-Dīn 'Abd al-Mu'min, and others, the theories of the "ancients" (i.e., the ancient Greeks), are quite separate and distinct from the native practical art. Indeed, that the two systems were opposed at first we know from Yaḥyā ibn 'Alī, who tells us definitely about "the disagreement between the Masters of Arabian music *(ghinā')* and the Masters of (Greek) music *(mūsīqī)*."[5]

Concerning the Arabs in their treatment of the theories of the Greeks, Miss Schlesinger is rather contemptuous

[5] Yaḥyā ibn 'Alī, "Brit. Mus. MS.," 2361, fol. 236, v. In the "Fihrist" it is interesting to note that the "Masters of Arabian Music" like Isḥāq al-Mauṣilī are included among the "musicians," whilst the "Masters of (Greek) Music" like Al-Kindī, are among the "philosophers." See Appendix 31.

of what they did, which is quite unjust in the face of what Helmholtz, Land and Ellis have shown to the contrary. Miss Schlesinger says:

"The theoretical principles set forth in their (the Arabs') writings were borrowed from the Greeks. The Arabs did not develop these principles in accordance with any evolving musical system of their own; they merely elaborated and intellectualised the knowledge derived from other races."

The incorrectness of her first statement I have already shown in the preceding section on the "Old Arabian System" which obtained prior to the period of the Greek Scholiasts. What the Arabs "borrowed" from the latter can be traced. The Arabic word *ghinā'*, which had been the general term for music, now became applied to the practical art, whilst theoretical music was represented by the term *mūsīqī* or *mūsīqā* (μουσική). In the same way the musician, hitherto the *ghannā'ī* or *mughannī*, was now occasionally termed the *mūsīqār*,[6] just as the instruments of music, the *ālāt*, were sometimes named the *mūsīqāt*.[7] The names of musical instruments also became affected when we see the flat-chested *murabba'* being termed the *qītāra* (κιθάρα)[8] and the *mi'zafa* the *qānūn* (?) (κανών).[9] Much of this nomenclature soon passed away.

What was more permanent was the newly-adopted nomenclature in "theory." The *interval*, previously called

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[6] Al-Khwārizmī, p. 236.

[7] Ikhwān al-Ṣafā', i, p. 87.

[8] Al-Khwārizmī, p. 236. Al-Mas'ūdī, viii, p. 91. Casiri, "Bibl. Escur.," i, p. 527.

[9] Ibn Khallikān, iii, p. 307.

the *nabra*, was now the *bu'd*, whilst each specific interval was given a name. The *quarter-tone* was the *irkhā'*, the *semitones* were the *baqiyya*[10] (λεῖμμα) and *infiṣāl* (ἀποτομή), the *whole-tone* was the *ṭanīn* (τόνος), etc. The Greek devices of *genres* (γένη) and *species* (εἴδη) were adopted as the *ajnās* and *anwā'*, and became important factors in the later theory. With the Systematists, the *genre* became the basis of the mode, and it enabled them to build up their *dawā'ir* or "circulations." That the Arabs did "develop" these principles in accordance with their own musical system, is patent on every hand, in spite of what Miss Schlesinger argues *per contra*.

To say that the Arabs "merely elaborated and intellectualised the knowledge derived from other races," is rather a dubious stricture, since to have *elaborated* and *intellectualised* what the Greeks had left, would, in itself, have been sufficient to give the "crowning glory" to the Arabs! But I fear that Miss Schlesinger does not mean to admit all that is implied by these words. Fortunately we have plenty of documents that prove that we cannot afford to ignore the contributions of the Arabs to the *speculative* art of music. Nothing demonstrates the critical attitude of the Arab theorists better than the opening lines of the monumental "Kitāb al-Mūsīqī" of Al-Fārābī. He says:

"The aim of a writer in every theoretical art should be determined by three axioms: The *first*, a complete statement of fundamental principles. The *second*, the ability to elucidate what follows from these principles. The *third*, the *ability to combat errors which meet him in that*

[10] Or *faḍla*.

science, and strength to restrict the opinions of others, to discriminate between the right and the wrong, and to rectify the imperfections of those whose opinions are obscure."

In accordance with this, Al-Fārābī devoted the second book of his treatise to a criticism of his predecessors in the field of speculative music, including the Greeks. In this work he says:

"I have commented on what was obscure in their sayings, and I have examined the opinion of one after another of those whom we knew as holding an opinion which was set down in a book. And we have explained the value of what each of these has attained . . . . in this science, and *we have rectified the errors of those who have fallen into error.*" (See Appendix 32.)

When Andres[11] and Munk[12] said that Al-Fārābī was more scientific than the Greeks in the speculative art of music, they had good grounds for the statement. The Ikhwān al-Ṣafā', in their treatment of the laws of the sensations of sound, are certainly in advance of the Greeks, especially in their mention of *spherical propagation.*[13] In the Jew, Rabbi Isaiah ben Isaac, we have quite a thoughtful animadversion on the "Kanōn" of Euklid.[14] Ibn Sīnā, Al-Ḥusain ibn Zaila, Ṣafī al-Dīn 'Abd al-Mu'min, Al-Lādhiqī, and the author of the Muḥammad ibn

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[11] Andres, "Orig. d'ogni lett.," iv, pp. 259-60.

[12] Munk, "Mélanges de philosophie juive et arabe," p. 350.

[13] Ikhwān al-Ṣafā' (Bombay Edit.), i, p. 87. See Appendix 33.

[14] "Beth 'oçar haṣṣpharoth," Year I, xxxi. "The theory and expression of music . . . . belongs, like all similar sciences, originally to the Arabian school."—Steinschneider, "Jewish Literature," p. 154.

Murād MS., never lose an opportunity to be critical of Greek and Arab theories, whilst the "Commentaries" on the "Kitāb al-Adwār" of Ṣafī al-Dīn reveal the spirit of enquiry of the Arab theorists on every hand. Indeed, there is nothing comparable in contemporary theorists of Western Europe to this disposition to scrutiny and investigation which is displayed by the Arabs.

The question now arises, how much of this newly acquired musical science of the ancient Greeks were the Arabs responsible for introducing into Western Europe? I have already pointed out that the ancient sciences had long fallen into desuetude, and that music was among them, is testified by an Arab author, Al-Mas'ūdī (d. *c.* 956), who is worthy of quotation on this topic.[15] He says:

In the days of the ancient Greeks, and in the first period of the kingdom of Byzantium, science was developed and scholars were honoured. *Natural science* was particularly studied . . . . as well as the *quadrivium*, i.e., arithmetic, geometry, astronomy and *music*. These sciences were honoured by all, and made progress day by day. Then came the Christian religion, which became fatal to scientific knowledge, since it destroyed and blotted out the teachings of science. All that the ancient Greeks had placed before the world vanished, or was distorted. *Among the noble sciences which were thrown aside with the advent of Christianity was the science of music.*

It was the Arabs who restored these sciences to mediæval Europe. Renan sees two distinct periods in the

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[15] Al-Mas'ūdī, ii, p. 320.

Middle Ages: "In the first, the human mind has, to satisfy its curiosity, only the meagre fragments of the Roman schools heaped together in the compilations of Martianus Capella, Bede, Isidore, and certain technical treatises whose wide circulation saved them from oblivion. In the second period, *ancient science comes back once more to the West, but this time more fully, in the Arabic commentaries or the original works of Greek science* for which the Romans had substituted compends."[16]

Of Latin translations from Arabic translations of the ancient Greek musical theorists, we have no examples nor references, save perhaps the section on sound in Aristotle's "De Anima." The statements of Laborde, "Essai sur la Musique," iii, p. 567) and Forkel ("Allgemeine Litteratur der Musik," p. 488) that Adelard of Bath translated Euklid's "Harmonics" into Latin from the Arabic, is erroneous. It was the "Elements" that he translated. On the other hand, it is interesting to note that the "Pneumatics" of Philōn, the "Mechanics" of Herōn, and the treatises on the "Automatic Wind Instruments" of Archimedes and Apollonios have only survived in Arabic versions. This is of some importance to the question of the revival of the ancient *hydraulis* in Europe.[17]

Before leaving the Greek Scholiasts, I would like to emphasise the extreme value of these writers in the study of ancient Greek musical theory. Not only are many doubtful points in the Greeks made perspicuous by the

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[16] Renan, "Averroès," p. 200.

[17] See my new work, "The Organ of the Ancients from Eastern Sources, Hebrew, Syriac and Arabic," Chapter VI. See Appendix 34.

Arabs, but a few things have been handed down to us which have been ignored or else dealt with superficially in extant Greek theoretical works. Among them are the "Figures of Melody" (*μέλους σχήματα*), and the doctrine of the *ēthos* (*ἦθος*). Concerning the former, there are but two Greek documents upon which we can rely, one dating from about the fourth century of our era, and it is the "Anonymous II" of Vincent, and the other dating from the fourteenth century which is the work of Bryennios. Between these dates, however, we have the Arabic treatises of Al-Kindī, Al-Fārābī, Ibn Sīnā and Al-Ḥusain ibn Zaila, which deal with these interesting subjects.[18]

[18] See Appendix 35.

CHAPTER V.

THE SYLLABLES OF SOLFEGGIO.

"On sera sans doute étonné du rapport qui se trouve entr'elle (la gamme Arabe) et la gamme Italienne. Ce rapport est si frappant, qu'il suffit d'avoir des yeux pour s'en convaincre, en ne faisant attention qu'aux lettres initiales de chacun des mots."—Laborde, "Essai sur la musique ancienne et moderne."

THE suggestion of the Arabian origin of the syllables of *solfeggio* was not made by me but by others. This was made clear by my identification of Pigeon de Saint Paterne, utilised by Laborde, as the main source for this claim. It was pointed out that there appeared to be no authority for the statement in the Arabic musical MSS. from which this Orientalist had gathered his other material. In the face of this, and the fact that there was no known example in Arabic manuscripts of the Arabic alphabet used in this sequence for musical notation, it was suggested that all that one could admit was the "phonetic likeness."[1]

At the same time it was hazarded[2] that Europe was *possibly* influenced by the Arabian contact in this matter,

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[1] Pp. 8-9.

[2] P. 22.

because there was another direction from which this influence might have come, as we shall see in dealing with phonetic (alphabetic) notation. Further, there is a statement, *a century older than Laborde*, which was not mentioned in my monograph, but which will be adverted to presently.

Miss Schlesinger has preference for the old theory of a European origin, and she comments on the Arabian claim as follows:[3]

"The unsubstantial nature of the scanty data upon which the suggestion or claim for an Arab origin of solfeggio rests compares unfavourably with the well authenticated data upon which is based the accepted theory of a European origin for the unmistakably Latin syllables of our *do, ré, mi, fa, sol, la, si.*"

Miss Schlesinger makes no further contribution to the discussion than to suggest that these vocables are "unmistakably Latin syllables." Most people will consider them, from a syllabic point of view, to be common to the human race!

Guido of Arezzo (*c.* 995-1050) is usually credited with the "invention" of the hexachord system, for which the above monosyllables were used, but that does not necessarily allow that he is to be credited with the latter.[4] It is said that these monosyllables were borrowed from the initial syllables of the Hymn to St. John beginning "Ut queant laxis," and were used as a sort of *memoria*

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[3] P. 9.

[4] It is told by all the old musical writers—Gafurius (1492), Glareanus (1547), Vicentino (1557), Galilei (1581), Zarlino (1589), Kircher (1650) and a regiment of "copyists."

technica. That, I presume, is the "*accepted theory.*"[5] But it was also the "accepted theory" that Guido was the "inventor" of the Γ and scale, the hexachord, the stave, the clefs, diaphony, solmisation, organum, counterpoint, the harmonic hand, the mensural note, the monochord, etc. Nowadays, we know better, since research has consigned these "inventions" to their proper place, and Guido is now only credited with the hexachord, solmisation, and the harmonic hand.[6]

When, therefore, we are asked to disregard the Arabian claim, because of the "*well authenticated data*" which are said to justify the "accepted theory," we have the right to enquire what these "proofs" are. It appears that about a thousand years ago someone said that these syllables had their origin in the Hymn to St. John![7] But surely this evidence is just as "unsubstantial" as that of Laborde, who, a hundred and fifty years ago, showed that they were identical with the Arabic. We certainly cannot establish the truth or falsity of a statement merely by an appeal to its antiquity or otherwise. Indeed, it is because students refuse to accept a criterion of this sort, that the hymn origin is *not* the "accepted theory," as Miss Schlesinger suggests. There have been many solutions

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[5] Riemann, "Dictionary of Music" (fourth edition, English translation), p. 744; "Encyclopædia Britannica," xii, p. 688; Grove's "Dictionary of Music," iv, p. 500.

[6] Riemann, "Dictionary of Music," p. 310; Grove's "Dictionary of Music," ii, p. 258, says: "There is strong reason for believing that he invented the hexachord, solmisation and the harmonic hand; or at least first set forth the principles upon which these inventions were based."

[7] Sigebertus Gemblacensis (died 1113).

of the problem offered, and some have been reviewed by George Lange in an interesting paper, "Zur Geschichte der Solmisation."[8]

Among the claims put forward for the origin of the solmisation syllables are the Sanscrit and Greek names of the notes. *Sā, Ri, Ga, Ma, Pa, Dha, Ni,* is the order of the notes of the scale in Indian music, which have been in use from pre-Christian days.[9] The main argument for the claim is the phonetic similarity. Bassermann, on the same grounds, proposed to make Ταῦ, Ἠῶ, Μῦ, Φῖ, the parents of *Do, Re, Mi, Fa,* etc. But it must be urged against both these claims, as has been done against the Arabian, that the order, when translated into the European system, is irregular, and does not correspond with any known notation. Further, the Greeks already possessed vocables for the mutations of the tetrachords in Τα, Τε, Τη, Τω, and one would have thought that the natural tendency would have been to add two like vocables so as to reach the hexachord. Yet in spite of the "deeply rooted" influence of Greece on the growing civilisation of Europe, which Miss Schlesinger tells us of, it inspired nothing in this direc-

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[8] "Sammelbände der Internationalen Musikgesellschaft," July-September, 1900.

[9] Sylvan Lévi in the "Grande Encyclopédie" (sub "Inde") makes the Arabs borrow the solfeggio (notation) from India. See also the "Proceedings of the Musical Association" (XIXth Session, p. 38) for other authorities on the Indian origin. The suggestion that our word *gamut* (usually derived from *gamma* and *ut*) comes from the Sanscrit *grāma* (via the Prākit *gāma*) is most unlikely. Indeed, the purely Arabic words *jam'*, *jamā'a*[*t*] (*gam'*, *gamā'a*[*t*], which the Arab-Greek scholiasts from the time of Al-Kindī (d. 874) used for the Greek σύστημα, are far more likely to have been the parent words. See Al-Fārābī's use of the word on p. 90, and cf. the definition in the "Mafātīḥ al-'Ulūm," p. 241.

tion. What happened instead, according to the "accepted theory," was that certain "*unmistakably Latin syllables*" were adopted. Even the Latin origin of the syllables has been challenged on its own threshold, since it has been shown that the somewhat bombastic style of the language of the hymn, "Ut queant laxis," coupled with the glaring vocal arrangement of the syllables, suggests that *the hymn was based on the syllables.*[11]

It is also rather curious that Joannes Cotto (*c.* 1110) tells us that whilst the English, French and Germans used the syllables *ut, re, mi, fa, sol, la, the Italians had others!*[12] Why was it that Italy, the supposed home of the syllables, should use a different system? Unfortunately, we do not know what the difference amounted to, but the circumstance lends colour to another view that the *original* system used by the Italians, perhaps that based on the Arabic, may have been altered so as to agree with the hymn, "Ut queant laxis."

What is the Arabian claim for the origin of the syllables for solmisation? Laborde was certainly the source for some of the claims, as I have pointed out, but there was another source, *a century earlier.* Meninski, in his "Thesaurus Linguarum Orientalium" (1680) gives, under Durr-i-Mufaṣṣal ("Separated Pearls"), which equates with *notæ musicæ*, the following solmisation scheme as being in use in the Orient.

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[11] "S.I.M.G." as cited, p. 548.

[12] Gerbert, "Scriptores," ii, p. 232.

Durr-i-Mufaṣṣal.

Alif	(A)	Lām	Mīm	Rā	(A) ... *(la)* ... *(mi)*... *(re).*
Bā	(B)	Fā	Pā	Mīm	(B) . . *(fa)* ... *(be)* ... *(mi).*
Jīm	(J)	Ṣād	Fā	Dāl	(C) ...*(sol)* ... *(fa)* ... *(ut).*
Dāl	(D)	Lām	Ṣād	Rā	(D) ... *(la)* ... *(sol)*... *(re).*
Hā	(H)	Lām	Mīm		(E) ... *(la)* ... *(mi)*...
Wāw	(W)	Fā	Dāl		(F) ... *(fa)* ... *(ut)* ...
Zā	(Z)	Ṣād	Rā	Dāl	(G) ... *(sol)*... *(re)* ... *(ut).*

Laborde, in his "Essai sur la Musique Ancienne et Moderne" (1780), on the authority, presumably, of Pigeon de Saint-Paterne, said that solmisation was to be met with among the Arabs. He did not suggest that the usage was either ancient or modern, nor did he claim that the Arabian system was the fount of the Guidonian. This latter claim was started by others. It is advisable to quote this Arabian solmisation scheme as given by Laborde, since two well-known writers like Kiesewetter[13] and Soriano-Fuertes[14] have made blunders in copying Laborde.

Durr Mufaṣṣal.

Alif	(A)	Mīm	Lām	(A)	... *(mi)*... *(la).*
Bā	(B)	Fā	Sīn	(B)	... *(fa)* ... *(si).*
Jīm	(J)	Ṣād	Dāl	(C)	... *(sol)*... *(do).*
Dāl	(D)	Lām	Rā	(D)	... *(la)* ... *(re).*
Hā	(H)	Sīn	Mīm	(E)	... *(si)* ... *(mi).*
Wāw	(W)	Dāl	Fā	(F)	... *(ut)* ... *(fa).*
Zā	(Z)	Rā	Ṣād	(G)	... *(re)* ... *(sol).*

Kiesewetter, in 1842, tried to show that the Laborde solmisation syllables were borrowed by the Arabs from Europe in the fourteenth century. This was evidently

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[13] Kiesewetter, "Musik der Araber," p. 22.

[14] Soriano-Fuertes, "Historia de la musica Española," i, p. 80.

done to back up his erroneous notion that Christian missionaries introduced, at this period, the European musical system into Persia, a theory which has been rightly discredited.[15]

Lange, on the authority of an Armenian named Komitas Keworkian, with whom he was acquainted, was persuaded that the European musical system was introduced into Turkey and its dominions in the second half of the seventeenth century, and thus, says Lange, "it becomes comprehensible in the simplest way, how the Guidonian syllables were conceived in Arabic."[16] Soriano-Fuertes, on the other hand, makes Spain the fount of the solmisation syllables, and argues that both the Guidonian and the Arabian system (as given by Laborde) were borrowed from Spain.

Not one of the authorities gives the slightest *evidence* for his statements. Kiesewetter did not know, or at least does not mention the Meninski source. Even Lange, who is inclined to believe in a European origin, realises the weakness of the case as presented by Kiesewetter. Concerning this "very unlikely hypothesis" of Kiesewetter, that Europe influenced the Orient, the learned Helmholtz says: "The Europeans of those days could teach the Orientals nothing that they did not already know better themselves."[17] Lange, too, does not mention the Meninski source, or otherwise he might not have so readily accepted the Keworkian statement.

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[15] Helmholtz, "Sensations of Tone" (third English edition), p. 285.

[16] Lange, "S.I.M.G.," July-September, 1900, p. 552.

[17] Helmholtz, op. cit., p. 285.

Although Doni (d. 1647) was the first to use the vocable *do* in place of *ut*,[18] yet it was some time taking root. In Italy, it was just finding acceptance at the time of Lorenza Penna,[19] Bononcini[20] and Cantone,[1] in the "seventies" of the seventeenth century. About the same time, Meninski, writing in Vienna, equates *dāl* with *ut*, which shows that Austria still clung to the old syllable. If we are to accept the Lange theory that the Turks, and subsequently the Arabs, borrowed from Europe, how is it that we find *do* (=*dāl*) in use in Turkey and not in Austria?

This alleged borrowing from Europe, said to have taken place in the second half of the seventeenth century, must have happened before 1680, the date of Meninski's "Thesaurus," but when we glance at the history of Turkey at this period when she was under the Köprili discipline, it seems scarcely probable that any such borrowing took place. It is also strange that the contemporary Turkish writer, Ewliyā Chelebī, whose chatty "Siyāḥat-Nama" is full of details about Turkish and European music, should not mention this "borrowing," which is said to have been made in his time. The Keworkian story may have originated in the Cantimir (b. 1673) claim to have "invented" the notes in Turkish music.[2] They were, how-

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[18] Fétis, "Biog. Univ."

[19] Penna, "Albori musicali" (1672).

[20] Bononcini, "Musico Prattico" (1673).

[1] Cantone, "Armonia Gregoriana" (1678).

[2] Cantimir, "Histoire de l'empire othoman," ii, p. 237; Villoteau, "De l'état actuel de l'art musical en Egypte," p. 627 (folio edition); Toderini, "Lett. Turch.," i, p. 225; Raouf Yekta Bey, "Demetrius Cantemir" ("Revue Musicale," 1907).

ever, no more than the letters of the alphabet which had been used in this way by the Arabs for eight hundred years.[3]

As for the Soriano-Fuertes claim for the Spanish origin of the syllables, it is bound up with his theory that the Arabs of Al-Andalus took their music from Spanish sources, a position which is quite untenable. For the origin of the syllables he brings forward no evidence save that the hymn, "Ut queant laxis," was known in Spain prior to Guido, which is quite irrelevant to the question of the origin of the solmisation syllables.

The "phonetic likeness" between the Arabian systems and the Guidonian, as I have already pointed out, is certainly striking. It was probably this fact, in consort with Villoteau's theory that Guido borrowed his musical system from the Arabs,[4] that induced Dalberg,[5] Crichton[6] and Pocock[7] to opine a "probable" Arabian origin for these syllables. The "phonetic likeness" also carries some agreement in the mutations except in the use of the leading note, which was not used by Guido. Indeed, the use of the Persian-Turkish syllable *Pā (be)* is of considerable interest. The earliest known use of a syllable for the leading note in Western Europe is the "Pallas Modulata" (1599) of Puteanus, who introduces the vocable

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[3] Cf., Glynn, "Analysis of the Evolution of Musical Form," p. 32.

[4] Villoteau, "Desc. des instruments de musique des orientaux," p. 857.

[5] Dalberg, "Ueber die musik der Indier," p. 112.

[6] Crichton, "History of Arabia," ii, p. 117.

[7] Pocock, "Flowers of the East," p. 41.

bi, derived, it is said, from the second syllable of *labii* in the "Ut queant laxis" hymn. In Laborde, however, we find *sīn (si)*, a vocable advocated by Sethus Calvisius in his "Exercitatio Musicæ Tertia" (1611).

I have already pointed out that the Arabic names of the solmisation syllables occur in an irregular sequence, which I have not seen any other example of. Yet it must be admitted that all our Arabic musical documents which give notations (except the Madrid "Ma'rifat al-naghamât al-thamān") belong to the Eastern Arabs, and it is to the Western Arabs that we ought to look rather, for influences in this respect. Further, this unconformity need not necessarily be of much import, since we find Al-Fārābī indulging frequently in inconstant sequences of this sort.[8] We also have proofs of an irregular sequence due to the fact that the initial letters of the actual names of notes and modes could be used as a notation.[9]

In the various claims for the origin of the syllables of solmisation, two only would appear to be deserving of consideration—the time-honoured hymn theory, and the Arabian. That we have "*well authenticated data*" for the former, as Miss Schlesinger thinks, is unproven. The Arabian claim also lacks documentary proof, but it certainly looks quite as real as the hymn theory. Indeed, it has been so tempting, that well-known German investigators like Professor E. M. von Hornbostel and Dr. Robert Lachmann have tried to solve the key to the Ara-

[8] Kosegarten, "Lib. Cant.," pp. 78, 85 and 88.

[9] "Madrid MS." No. 334 (Robles Cat.), No. 2; "Gotha MS." No. 1350, folio 19, v.

bian clue in Laborde, but in vain. Yet, as the latter once said to the present writer in a communication on this topic: "All that one can do is to keep it in mind and wait for a chance solution."[10]

[10] Although Laborde gives us no clue to the source of his information, it is only fair that it should be pointed out, that he is equally lax in this respect in other statements concerning Arabian music, although in these latter cases we are able to trace his sources. Even with Meninski, we do not know whether he refers to ancient or modern usage.

CHAPTER VI.

NEW DATA FOR NOTATION ORIGINS.

"L'écriture musicale des Grecs ne laissa aucune trace dans l'art chrétien; après un intervalle assez long, elle fut remplacée par deux systèmes de notation propres aux peuples occidentaux: les *neumes* et les lettres latines."—Gevaert "La musique de l'antiquité."

REGARDING the subject of notation, I said that the curious notation of Hermann Contract (1013-1054) "is, *perhaps*, nothing more than a 'borrowing' from the Arabs" (p. 13), and again, that through the Arabian contact, "Europe *may* have got its first idea of a definite pitch notation" (p. 22). Miss Schlesinger will have none of this tentation, because, she says:

"If we examine cursorily the science of music which Europe inherited from ancient Greece independently of Arab influence, we find a wonderfully complete scheme of pitch notation (see Alypios and Aristeides), designed by Pythagoras for the modal system, and having different symbols for the vocal and instrumental music. This notation—like the Byzantine neumes—presupposing familiarity with the modal system, indicates definite pitch values (which have until now been misinterpreted) with

the assistance of the nomenclature by degrees borrowed from the kithara. This notation does not exist solely in theoretical treatises; that it was extensively used may be concluded from the fact that many valuable fragments in this notation have been discovered, from time to time, inscribed on marble or on papyri and covering a period ranging from the fourth or third century B.C. to the fourth century A.D.—the latest being a Christian hymn in Greek, found among the Oxyrhynchus Papyri" (pp. 7-8).

It is interesting to note that the Pythagoras "invention" is accepted by Miss Schlesinger, although the attribution is stated only by *one comparatively late author*, Aristeides (first-second century A.D.)[1] a circumstance, as Gevaert says, which does not inspire much confidence.[2]

Admitted, that the Greeks had a "wonderfully complete scheme of notation," yet the point at issue is—What influence did it have on mediæval Europe, and through what channel did this influence filter? We are told that this Greek notation was in use as late as the fourth century A.D., which *may be* true enough, but we must also bear in mind the remark of Gaudentios, who speaks of this notation as belonging to the ancients.[3] At any rate, Boëthius[4] and Cassiodorus[5] knew of no contemporary

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[1] Aristeides (Meibom), p. 28.

[2] Gevaert, "Mus. de l'antiq.," i, p. 423.

[3] "Veteres porro utebantur nominibus ad notationem octodecim illorum sonorum, et literis, quae Notae Musicae vocabantur, de quibus nunc est dicendum." Gaudentios (Meibom), p. 20.

[4] Boëthius, "De inst. mus.," iv, 3.

[5] Cassiodorus, "De art.," cap. v.

method of notation, although Miss Schlesinger would try to persuade us that Boëthius was one of the media by which Western Europe adopted the notation of the Greeks. Here is what she says:

"This modal notation [the one mentioned above, H. G. F.] is used by Boëthius in its proper context; but for the monochord division, he notes the points on the canon diagrammatically with consecutive letters of the alphabet, thus following Ptolemy.

"These are the elements which in the course of the development of music in the West along its natural path of evolution, as a creative art, led to the substitution of phonetic symbols for the purely diagrammatical, hitherto used for the divisions of the monochord, which gradually replaced the modal neumes. The notation of the West, born of practical necessity, was established once again, like the Greek, by means of the monochord, upon a generally accepted octave scale" (p. 8). (See Appendix 36).

If we examine this question "cursorily" as Miss Schlesinger suggests, it is quite likely that some people may agree; yet if we enquire "*carefully*" I submit that few will admit this theory for one moment. Indeed, it is to Boëthius that we owe "the certainty that *the Greek notation was not adopted by the Latins.*"[6] Boëthius certainly uses the first fifteen letters of the Roman alphabet, but they are purely relative and not absolute. They have no constant or fixed values, as Gevaert and others have

[6] "Encyclopædia Britannica," xix, p. 86.

pointed out long since.[7] The interval A-B, for instance, may signify an octave, a fifth, a fourth, or a semitone.[8] It is as palpable as the noonday sun that neither the Greek notation *(per se)* nor the so-called Boëthian notation had the influence upon the notation of Western Europe which Miss Schlesinger claims.

I have already shown that *after the fall of Rome, there was no work of import on the theory of music known to us in Western Europe until the mid-ninth century.*[9] Even Isidore of Seville (d. 638) fails to tell us about a notation, although he does not neglect to mention many similar things.[10] Even the first of the so-called theorists, Aurelian of Réomé and Remy of Auxerre, are silent. Obviously, we must look elsewhere for the fount which influenced the adoption of a notation in Western Europe, the earliest appearance of which dates from the tenth century.[11] Here we have the first seven letters of the Roman alphabet used to express the sounds of the major mode. Unlike the *diastematic* notation of the neumes which belonged to the church and vocal music, the *phonetic* notation by means of letters was originally secular and belonged to instrumental music,[12] a very significant fact, because it strikes a new note in Western Europe. On the other hand, *a phonetic notation had been known to the Arabs for more than a century earlier, and with them*

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[7] Gevaert, "Mus. de l'antiq.," i, p. 436; David et Lussy, "Hist. de la Notation musicale," p. 38.

[8] Boëthius, op. cit., iii, 1, 3-4 and 9-11.

[9] See *ante*, p. 46.

[10] Isidore, "Etym.," xx, 1.

[11] Gerbert, "Scriptores," i, p. 118.

[12] *Ibid.* i, p. 318.

it belonged especially to instrumental music. In both cases, these notations were in the hands of practical musicians, to whom the "theorist" was almost a closed book. The Arabian "practicians" cared little for the "theorists," as we know from the "Kitāb al-Aghānī,"[13] and Yaḥyā ibn 'Alī.[14] It was the same in Western Europe, where Guido of Arezzo tells us in plain language that "the book of Boëthius is useless for singers, and is intended merely for philosophers." This leads us to enquire what the Arabs possessed in the matter of a phonetic notation prior and subsequent to its adoption by Western Europe.

There is a story told of Al-Fārābī at the court of Saif al-Daula, where the famous musician is said to have distributed pieces (i.e., parts) of music among the court musicians. The story is told by Pocock[15] and Clouston,[16] but it is entirely erroneous. The mistake appears to have been due to D'Herbelot, who wrote, "Il tira sur le champ de sa poche une piece, avec toutes ses parties, qu'il distribua aux musiciens."[17] The story probably had its origin in the "Risālat al-mūsīqī" of the Ikhwān al-Ṣafā' where the account runs, "The man (? Al-Fārābī) brought out implements[18] (for a lute), which he had, and he put

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[13] "Kitāb al-Aghānī," v, p. 53.

[14] Yaḥyā ibn 'Alī, "British Museum MS.," 2361, folio 236, v.

[15] Pocock, "Flowers of the East," p. 41.

[16] Clouston, "Flowers from a Persian Garden," p. 8.

[17] D'Herbelot, "Bibl. Orient.," ii, 438.

[18] "Khashabāt" implies "unfinished or unassembled implements."

them together, and spread strings over them, and played them."[19]

The truth is that the Arabs did not use "pieces" of music in this way to perform from. Everything was learned by rote. That they used a *phonetic* notation, however, for their practical theory is well testified. As early as Al-Ma'mūn (d. 833)[20] and Isḥāq al-Mauṣilī (d. 850),[1] a practical notation appears to have been known.

We see this practical notation in the work of Yaḥyā ibn 'Alī ibn Yaḥyā (d. 912), a follower of the school of Isḥāq al-Mauṣilī. Here is his notation, a practical one, for the lute ('ūd),[2]

Symbols: A. B. J. D. H. W. Z. Ḥ. Ṭ. Y.

Notes: G. a. b♭. b. c. d. e♭. e. f. f♯ or g

With the western Arabs, i.e., those of Spain and North Africa, a practical notation, not unlike the above, was also in use, as we know from the Madrid MS. on the *Ma'rifat*

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[19] Ikhwān al-Ṣafā ("Cairo Edition"), i, p. 114; ("Bombay Edition"), i, p. 85, has khashībāt. It is the lute *('ūd)* that is meant. Cf. Ibn Khallikān, "Biog. Dict.," iii, p. 309, and the text of the "Wafayāt al-A'yān," where the word "'idān" ("pieces of wood") is used instead of "khashībāt."

[20] "'Iqd al-Farīd," iii, p. 188.

[1] "Kitāb al-Aghānī," ix, pp. 54, 56.

[2] Yaḥyā ibn 'Alī, "British Museum MS.," Or. 2361, folio 237. Yaḥyā says that the tenth note is f♯, i.e., the octave of the *binṣir al-mathlath*. This is possibly a copyist's error, and perhaps it should be *khinṣir al-mathlath*, as he distinctly says that the interval is a *whole tone* from the preceding note, i.e., "the interval that is between the fret of the *sabbāba* and that of the *binṣir*," which was $\frac{9}{8}$. Therefore the tenth note would be g. The word *sabbāba* could not possibly be a slip for *wusṭā*, because *wusṭā* to *binṣir* was the Pythagorean *apotomē* $\frac{2187}{2048}$, but it might be *sabbāba* to *wusṭā*, as this would give the *limma* $\frac{256}{243}$. Yet the argument

al-naghamāt al-thamān, which gives the following notation for the lute:[3]

Symbols: A. B. J. D. H. W. Z. Ḥ.
Notes: C. D. E. F. G. a. b. c.

A theorist like Al-Kindī (d. 874) has a notation which takes in the chromatic (?) scale. Here is the Al-Kindī scheme.[4]

Symbols: A. B. J. D. H. W. Z. Ḥ. T. Y. K. L.
Notes: a. b♭ b. c. c♯. d. e♭. e. f. f♯. g. a♭.

This was long before a phonetic notation was adopted by Western Europe, and it was prior to Al-Fārābī, whose notation has been criticised by Miss Schlesinger.

She says:

"Al-Fārābī has used the names of the letters of the Arabian alphabet as correspondences for the nomenclature of the Perfect Immutable System of two octaves of ancient Greece, and it is surely more than a coincidence

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in favour of f♯ is nullified by a remark on fol. 237, v, where the tenth note is given as the octave (*ḍi'f*) of the base (*'imād*), and therefore the note was g. (Cf. also the remark on fol. 238, v, where the tenth note is mentioned as being the first fret on the *zir* string!) The lower notes of the lute gave A. B. C. C♯. D. E. F. F♯. There would appear to be another *lapsus* of the copyist in the notation, in the omission of a symbol. Ten symbols are required, and he only gives nine. The palpable omission is D. On the other hand, if we accept the author's symbols as they stand we get the following scale without the question of the tenth note being raised:

Symbols: A. B. J. H. W. Z. Ḥ. Ṭ. Y.
Notes: G. a. b♭. b. c. d. e♭. e. f.

(See Appendix 37.)

[3] "Madrid MS.," No. 334 (2). See Appendix 38.

[4] Al-Kindī, "British Museum MS.," Or. 2361, fol. 167, v. See Appendix 39.

that he has chosen the same series as did Ptolemy, placing the S (instead of the Greek Xi used by Ptolemy) between N and O, calling it *sine*" (page 8).

These statements are misleading, and could have been avoided had careful reference been made to the notations of Ptolemy and Al-Fārābī, and had more attention been paid to the cultural "borrowings" of Greece from the Semites. Had Al-Fārābī chosen the "same series," as Miss Schlesinger suggests, it would not necessarily prove that he had copied Ptolemy. The "coincidence" would have been due to the fact that *the Greeks owed their alphabet to the Semites*, and that is why both Ptolemy and Al-Fārābī would have chosen the "same series."

Yet, strictly speaking, Al-Fārābī did not choose the "same series" as Ptolemy.

Here is the σύστημα τέλειον διεζευγμένον ἀμετάβολον of Ptolemy, which is the *jamā'at al-tāmmat al-munfaṣilat ghair al-mutaghayyirat* of Al-Fārābī:[5]

Notes.	*Ptolemy's Symbols.*	*Al-Fārābī's Symbols.*
Nētē hyperbolaiōn .....a'	..... ζ	..... F.
Paranētē hyperbolaiōn ...g	..... ς	..... '
Tritē hyperbolaiōn .....f	..... ε	..... S.
Nētē diezeugmenōn .....e	..... δ	..... N.
Paranētē diezeugmenōn ...d	..... γ	..... M.
Tritē diezeugmenōn c	..... β	..... L.
Paramesē .....b	..... α	..... K.
Mesē .....a	..... ζ	..... Y.
Lichanos mesōn .....G	..... ς	..... Ṭ.
Parhypatē mesōn .....F	..... ε	..... Ḥ.

[5] Ptolemy, ii, 5. Kosegarten, pp. 61-2.

Hypatē mesōn	E	δ	Z.
Lichanos hypatōn	D	γ	H.
Parhypatē hypatōn	C	β	D.
Hypatē hypatōn	B	α	J.
Proslambanomenos	A	ζ	A.

Both of these theorists use other alphabetical or numerical symbols, *but in no case do they express an absolute notation in our sense of the term.*[6]

With the later Arabian and Persian theorists however, whilst there is sometimes the same inconstant application of the letters of the alphabet in the treatment of the theoretical art, yet there is a general agreement in the practical notation. This may be seen in such writers as Ṣafī al-Dīn 'Abd al-Mu'min,[10] Al-Shirāzī,[11] Ibn Ghaibī,[12] and the authors of the Muḥammad ibn Murād MS. (fifteenth century)[13] and the "Sharḥ Maulānā" (fifteenth century).[14]

Ibn Sīnā (d. 1037) tells us that the practical musicians had a notation for the playing of the lute as follows:

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[6] For proofs, see Ptolemy, ii, 3-6 and 10; and Kosegarten, pp. 61, 78, 101, 104, 106, 114 and 119. By her use of the term *sine*, Miss Schlesinger evidently takes Rouanet (Lavignac's "Encyclopédie de la musique," v, p. 2,716) as her authority, and here, a mere glance will convince the reader that the "same series" is not used. There are several typographical and other errors at this point in Rouanet. The Arabic "yā," "kāf" and "'ain" are not correct, whilst "qāf" should be "fā." See Appendix 40.

[10] Ṣafī al-Dīn, "Bodleian MS.," 992, folio 30.

[11] Al-Shīrāzī, "British Museum MS.," Add. 7694, folio 217, v.

[12] Ibn Ghaibī, "Bodleian MS.," 1842, folios.

[13] Muḥammad ibn Murād, "British Museum MS.," Or. 2361, folios 177 and 191 *seq.*

[14] "Sharḥ Maulānā," "British Museum MS.," Or. 2361. On fol. 131, v, of this MS. there is an archaic Greek notation after the σημεῖα in Alypios that is worth calling attention to.

(?) = fourth string *(bamm).*
L = third „ *(mathlath).*
M = second „ *(mathnā).*
Z = first „ *(zīr).*
W = open „ *(muṭlaq).*
S = first finger *(sabbāba).*
(?) = middle „ *(wusṭā).*
B = third „ *(binṣir).*

The rhythm and mensural values were generally noted by means of *onomatopœia*, such as *tan*, *tanan*, *tananan*, etc., but letters were also used, as Ibn Sīnā distinctly informs us. He says: "I have seen those who were writing the rhythm as they heard it, as quickly as possible."[15].

Al-Ḥusain ibn Zaila (d. 1048) uses the lute fret names in the practical part of his treatise on music, as well as a letter notation, which also occurs in the theoretical part.[16] Strange to say, the notation of Ibn Zaila is identical with that given in the Arabic Mūriṣtus treatise on the pneumatic organ,[17] which can be traced to the tenth century, and probably to the ninth century. For that reason I quote it:

Symbols: A. B. J. D. H. W. Z. Ḥ. Ṭ. Y. Ya. Yb.
Notes: A. B. C♯ D. E. F♯ G. a. b. c. d. e.

Rhythmic and mensural values, as I have pointed out, were generally expressed either by *onomatopœia* or by letters. We find the actual beats numbered as early as Al-Kindī (d. 874).[18] Al-Fārābī (d. 950) uses the *onoma-*

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[15] Ibn Sīnā, "India Office MS.," 1811, folio 172, v.
[16] Ibn Zaila, "British Museum MS.," Or. 2361, fols. 226 v. 236.
[17] "Al-Mashriq," ix, 24.
[18] Al-Kindī, "Berlin MS.," 5503, folio 32.

topœia and *puncta*.[19] Sometimes the verbal root of the prosodists, *fa'l*, was used, as in the Ikhwān al-Ṣafā' (tenth century).[20] Ibn Zaila uses letters. Later we find something like the Greek signs for metrical quantities in vogue.[21]

I have examined *carefully*, not merely *cursorily*, the "wonderfully complete scheme of pitch notation" which Miss Schlesinger suggests was the original of our phonetic notation, and I have to confess that I fail to agree that we can trace it *directly* to the Greeks. *First*, there is the fact that Western Europe did not know of the Greek theorists *themselves* until *after* its adoption of a letter notation. *Second*, there is no agreement between that of Greece, and that first adopted by Western Europe. *On the other hand the latter does agree with the Western Arabian notation.* Let us compare the Western Arabian notation in the "Ma'rifat al-naghamāt al-thamān," and that which first appears in Europe in the treatise, "De harmonica institutione."

Ma'rifat al-naghamāt al-thamān:

Symbols:	A.	B.	J.	D.	H.	W.	Z.	H.
Notes:	C.	D.	E.	F.	G.	a.	b.	c.

De harmonica institutione:[22]

Symbols:	A.	B.	C.	D.	E.	F.	G.	A.
Notes:	C.	D.	E.	F.	G.	a.	b.	c.

The Arabian notation was purely instrumental, just as the first western European notation was. It was the beginning of the modern major mode, the introduction of

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[19] Kosegarten, p. 131, *seq.*, 145, *seq.*

[20] Ikhwān al-Ṣafā' (Bombay Edition), i, p. 115.

[21] Ṣafī al-Dīn 'Abd al-Mu'min, "British Museum MS.," Or. 136, folio 35, *seq.*

[22] See Appendix 41.

which has even been attributed to the Arabs,[1] or at any rate to the Semitic Orient.[2]

It is not until the eleventh century that we see in Western Europe any direct or indirect contact with Greek methods of notation, such as in the "Musica Enchiriadis," and the "Dialogus" of Pseudo-Odo.[2a] But all this was long after the Arabian contact, and it evidently prompted European theorists to improve upon the existing system, which they eventually did. This is where Miss Schlesinger goes astray in her remarks on Hermann Contract when she says that his intervallic notation "was purely sporadic and exercised no influence upon the subsequent development of our notation." My point was that the Arabs already possessed a practical notation, as I have shown, and that *perhaps* Hermann Contract was one of those theorists who was *influenced* by it. Whether his effort was "sporadic" or otherwise is beside the point.

A still further statement by Miss Schlesinger deserves attention. It runs:

"What the Arabs learned from the Greeks and Persians in the matter of notation, they carried no further, they developed no science of notation, for use in transcribing melodies; the names given to the frets of the lutes were not used in our sense of notation, but rather as a tablature or nomenclature for the degrees of certain scales."

Here are three statements, all of them either erroneous or misleading. (1) That the Arabs learned something from the Greeks in this question may be allowed, *but from*

[1] Rowbotham, "History of Music," iii, p. 547.

[2] Jeannin, "Mélodies Liturgiques Syriennes et Chaldéennes," p. 107, *seq.*

[2a] See Appendix 42.

the Persians, seeing that the Arabic musical documents are earlier than the Persian, we cannot say what they *learned*. (3) The *names* given to the frets on the lute, such as *muṭlaq* (open string), *sabbāba* (first finger), etc., were quite distinct from the *notation* which represented the sounds which these gave. But even a *tablature* is a *notation*. This might be proved from Miss Schlesinger herself, since she speaks of the alphabetical *notation* of the modes of the Greeks, which can be no different from the alphabetical *tablature* of the scales of the Arabs. (2) That the Arabs carried the notation that they adopted no further, is quite untrue. At one sweep, Al-Kindī brushed aside the cumbersome Greek notation, by using the same symbols for each octave. The practitioners did not all follow his lead, as we have seen in Yaḥyā ibn 'Alī ibn Yaḥyā (?) and the "Ma'rifat al-naghamāt al-thamān" MS. The Systematist school of the Eastern Arabs from the time of Ṣafī al-Dīn 'Abd al-Mu'min, certainly fell back upon a symbol for each note, but it is with these people that we find "a science of notation for use in transcribing melodies" in a developed form, in spite of what Miss Schlesinger thinks to the contrary. It may be seen in the "Kitāb al-adwār" of Ṣafī al-Dīn 'Abd al-Mu'min,[3] and the "Jāmi' al-alḥān" of Ibn Ghaibī the Arab-Persian theorist.[4] Here we have melodies transcribed by means of the phonetic notation already mentioned, with mensural values under each note.

That the Arabs developed beyond this stage is evidenced by the treatise of Shams al-Dīn al-Ṣaidāwī al-

[3] Ṣafī al-Dīn, "British Museum MS.," Or. 136, folio 38, v.
[4] Ibn Ghaibī, "Bodleian MS.," 1842, folios 93, v, 94, v.

Dhahabī.[5] Here we have an eight-lined stave for the purposes of notation.[6] This system is little different from a tenth century European method which has been given by Vincenzo Galilei,[7] and Kircher.[8] C. F. Abdy Williams, quoting the example given by the latter (although he wrongly attributes it to the former), says that "it is untranslatable, since the Greek letters belong to no system of notation."[9] This, however, is made up of the first eight letters of the alphabet and it agrees with the Arabian method of Shams al-Dīn al-Ṣaidāwī quoted above.[10]

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[5] Shams al-Dīn, "Bodleian MS.," 42, fol. 69, v, *seq.* See Appendix 43.

[6] J. B. Trend, in "The Criterion," February, 1924, in an article, "The Moors in Spanish Music," says that "with one possible exception no genuine Arab tune was recorded until the end of the eighteenth century." Besides the three writers mentioned above, reference can be made to Salinas (sixteenth century) for Arabian melodies, as well as an interesting MS. collection of the seventeenth century in the British Museum, Sloane MS., 3114.

[7] Galilei, "Dialogo della musica antica," p. 36.

[8] Kircher, "Musurgia Universalis," i, p. 213.

[9] Grove's "Dictionary," iii, p. 397.

[10] Cf., the sixth letter in Kircher (op. cit.), Hawkins (i, p. 429), and Grove (iii, p. 397).

CHAPTER VII.

ARABIAN INFLUENCE IN INSTRUMENTAL TABLATURE.

"Mais il est arrivé jusqu'à nous un document du plus vif intérêt technique. Je fais allusion au curieux 'Art de jouer le luth (Ars de pulsatione lambuti).' . . . . Il n'est pas nécessaire de signaler l'importance du dit document, qui par malheur ne nous découvre qu'une faible partie de la technique d'un instrument comme le luth arabe, ayant joué un si grand rôle dans la musique du moyen âge."—Rafael Mitjana, "Le Monde Oriental" (1906).

REFERENCE to my monograph will show that irrespective of any claim on my part, Europe itself has acknowledged that it borrowed one type of its instrumental tablature from the Arabs. It is to the erudite Fr. Jayme Villanueva that we owe the "clue" to this Arabian influence. In his "Viaje literario à las Iglesias de España" (Valencia, 1821) he gave some extracts from a MS. in the Capucin convent of Gerona, and one concerns the art of playing certain stringed instruments with a neck (?), as revealed by a celebrated, though anonymous Moor of the kingdom of Granada. The MS. is dated 1496-7, but the date of the anonymous Moor, whose system is quoted, is obviously much earlier, because the kingdom of Granada ceased in 1492, and further, the

Latin author does not, apparently, quote direct from the Moor, but from a certain Jayme Salvá. I gave the opening lines of this MS. in my monograph, but in view of its general interest, I now append the original Latin as published, together with an English translation.[1]

"Sequitur ars de pulsatione lambuti,[2] et aliorum similium instrumentorum, inventa à Fulan mauro regni Granatæ.

"Mirum est, ut dona sancti spiritus ipsis infidelibus infundantur. Ea propter hoc dico quoniam quidam Fulan nomine, maurus de regno Granatae *apud Ispanias inter Ispanos cytharistas laude dignus, per pulsatus spiritus scientiæ* invenit artem dandam his qui diligunt pulsare lambutum, cytharam, violam et his similia instrumenta. Et dicit dictus Fulan quod, postquam bonus cytharista grupaverit suum instrumentum per bonam artem, attendendum est, ubi sunt semythonia in ipso instrumento. Est etiam attendendum, ubi sunt semythonia in cantilena ponenda in ipso instrumento. Et ponat tali modo cantilenam in instrumento, quod semythonia cantilenæ respondant semythoniis instrumenti; alias autem in vanum laborat. Dicit denique dictus Fulan, quod omnis punctus qui sit sine positione alicuis digitorum in grupis, est Alif in eorum littera, quod in nostra sonat A. Alphabetum ipsorum maurorum ego ponam per ordinem; verum ipsi mauri incipiunt in manu dextra, et tendunt versus

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[1] The text was quoted by Rafael Mitjana in an article in "Le monde oriental" (1906), p. 210 *seq.*

[2] What was the "lambutum"? At first sight it looks as though the word is a scribe's error for "sambutum" ("sambuca"), but an instrument with a neck is surely implied, and perhaps it should be "barbutum" ("barbiton").

sinistram. Nos vero latini cum græcis e contra, quoniam incipimus in sinistra et finimus in dextra. *Sequitur alphabetum ipsorum maurorum* . . . .

"Primus grupus post Alif in ipso instrumento est semythonium. Secundus grupus respondet ipsi Alif per thonum. Tercius grupus in instrumento respondet ipsi Alif cum thono et semythono. Quartus grupus debet correspondere ipsi Alif per duos thonos. Quintus grupus respondet ipsi Alif per duos thonos cum semythono, et sic faciunt *dyathessaron.* Sextus grupus distat ab Alif per tres thonos, et sic faciunt trithonum. Septimus grupus respondet ipsi Alif per tres thonos con (?) uno semythono, et faciunt *dyapentam.* Tu vero, David[5] pone alia plura: ego enim tedio aquarum multarum (quae me scribere non permittunt) fessus sum.

"Omnia ista de pulsacione lambuti ego habui a fratre Jacobo Salvá. ordinis Praedicatorum, filio den Bernoy (vel Banoy) de linariis, dioc. Barchin. qui caritate devictus revelavit mihi ista. Deus sit tibi merces."

Translation.

"*Here follows the art of playing the lambutum and other similar instruments, invented by Fulan, a Moor of the Kingdom of Granada.*

"It is marvellous that the gifts of the Holy Spirit should be poured down on infidels. I say this for the reason that a certain Fulan by name, Moor of the Kingdom of Granada, *worthy of praise in Spain among Spanish guitarists, by the impulse of the spirit of learning,* has discovered the art to be given to those who have an inclination for playing the lambutum, guitar, viol and

[5] Probably the dedicatee.

instruments similar to these. And the said Fulan says that after a good guitarist has arranged (fretted) his instrument with skill, he must take care where the semitones are in the instrument itself. Attention must also be paid as to where the semitones are in the song which is to be played on the instrument itself. And he must place a song on an instrument in such a way that the semitones of the song correspond with the semitones of the instrument; otherwise he labours in vain. The said Fulan says further, that every note which may be without a position for any of the fingers in the frets (i.e., the open string H. G. F.) is Alif (A) in their letters, which sounds A in ours. I shall place the alphabet of the Moors themselves in order; but the Moors themselves write from right to left. We Latins with the Greeks, on the contrary, write from left to right. *Here follows the alphabet of the Moors* . . .

"The first fret after Alif in the instrument itself is a semitone. The second fret answers Alif by a tone. The third fret in the instrument answers Alif with a tone and semitone. The fourth fret ought to correspond to Alif by two tones. The fifth fret answers Alif by two tones with a semitone, and thus they make a *diàtessárōn*. The sixth fret is distant from Alif by three tones, and thus they make a tritone. The seventh fret answers Alif by three tones with one semitone, and they make it a *diàpente*. But you, David, do the rest: for I am tired with the weariness of many waters (which prevent me from writing)."

"All these instructions for playing the lambutum I have from Brother Jayme Salvà. of the order of Preachers, son of Bernoy (or Banoy) of the linen weavers, in

the diocese of Barchin. who, filled with kindness, has explained this to me. May God be your recompense."

This Fulan, the supposed name of the Moor of the Kingdom of Granada, is evidently a lapsus of the Latin scribe. The word *fulān* in Arabic refers to "an unknown person," and the term being used in some Arabic treatise in reference to the authorship appears to have led the Latin translator to conjecture that this was the author's name. This in itself goes to prove that the original Moorish teacher or author must have lived long anterior to the Jayme Salvá, who it was that passed on his knowledge to the writer of the Latin MS.

When we compare this Latin treatise with Arabic works like the "Ma'rifat al-naghamāt al-thamān" already quoted, we can fully appreciate what has been borrowed. Certainly this system, as Rafael Mitjana suggests,[4] bears a strange resemblance to that used by the great Spanish *vihuelistas* in the fifteenth century. The tablature of the Frenchman, Adrien Le Roy, in his instruction books for the *luth* (1557) and the *guiterne* (1578) is identical with the old Spanish Latin MS. quoted above.[5]

The "clues" for the Arabian influence in both *phonetic notation* and *instrumental tablature*, are, clearly, not to be ignored. What influence took place in *diastematic notation*, I attempted to hint at in my monograph by a number of fairly reasonable proofs. These have not as yet been challenged, and I can afford therefore to wait, so that I can deal with the whole question of the Arabian influence in *mensural theory* at one time.

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[4] "Le monde oriental" (1906), p. 213.

[5] See the "Vierteljahrsschrift für Musikwissenschaft," ii, p. 34.

CHAPTER VIII.

THE RISE OF ORGANUM.

"Nunc id, quo proprie symphoniæ dicuntur et sunt, id est, qualiter eædem voces sese invicem canendo habeant, prosequamur. Hæc namque est, quam Diaphoniam cantilenam, vel assuete, organum, vocamus."—"Musica Enchiriadis."

"Symphonia quid est? Dulcis quarumdam vocum commixtio; quarum tres sunt simplices, Diapason, et Diapente, ac Diatessaron. Tres sunt compositæ Disdiapason, Diapason et Diapente, Diapason ac Diatessaron."—"Scholia Enchiriadis."

"WHO was it that took the first step of *magadizing* to *organising*? Could it have been the Arabs?" Thus I wrote in my monograph.[1] I followed this query by giving two "clues," one from an Arabic source and another from a Latin source. The former was a quotation from a MS. (the *Shifā'*) of Ibn Sīnā (d. 1037), containing a specific reference to *organizing*, whilst the latter appeared to me to be a distinct reference to Arabian music schools teaching *organum* at Cordova. In the face of these "clues" it was hazarded that "Europe *seems* to have come in contact with *organum*" when it touched upon Arabian culture.[2] Yet Miss Schlesinger says:[3]

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[1] P. 6.
[2] P. 22.
[3] Pp. 10-11.

"When Mr. Farmer claims for the Arabs the credit of introducing the *organum* to Western Europe, while at the same time pointing out that the device was alien to pure Arabian music, one may crave indulgence for treating the claim with scepticism until more convincing data are produced." (See Appendix 44.)

It is highly probable that some people may require "more convincing data" before they are relieved of their "scepticism" of the Arabian claim, but surely, in the meantime, the proper course ought to be the sifting of the data already adduced. If these can be shown to be "unconvincing," then, and only then, should any "indulgence" be claimed for ignoring them. Excuse from pronouncing an opinion on the Arabic "clue" is perhaps natural, and for that reason, I give a translation of this particular passage.[4] Ibn Sīnā says:

"And there is connected with this chapter the *tarkībāt* (sing., *tarkīb* = compound, organum), and they are produced by means *of one beat which continues upon two strings, the note sought and that which is along with it, upon the Fourth* ($\frac{4}{3}$) *or Fifth* ($\frac{3}{2}$), *and other than these*, as if *these two were falling in the one time.* And the *taḍ'īfāt* (sing., *taḍ'īf* = double, octave), and you know them, and they are included under the *tarkībāt*, except that they are in the Octave ($\frac{2}{1}$)."

When I wrote my monograph, I mentioned that I could find no reference to any such device as *organum* in Al-Kindī (d. 874). Since then, however, I have discovered what I believe to be another treatise by Al-Kindī, which

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[4] Ibn Sīnā, "India Office MS.," 1811, folio, 172, v. See Appendix 45.

brings some partial corroboration of the device mentioned by Ibn Sīnā.[6] From this treatise, I believe that it can be shown that the *tarkīb* of the Arabs was originally one of the schemes of the *tā'līf al-luḥūn* or composition of melodies, this latter being similar to the μελοποιία of the Greeks.

In the Al-Kindī MS. a section is devoted to a device on the lute known as the *jass*. In the "Mafātīḥ al-'Ulūm" (tenth century) this *jass* is described as "the beating of the strings with first finger and the thumb."[6a] Al-Kindī deals with two species of *jass*: (1) that consisting of three distinct movements, i.e., thumb, first finger, and thumb successively, for example: ; (2) that consisting of one solitary movement, i.e., the thumb and first finger plucking the strings *simultaneously*, for example: [6b].

In one of the Arabic-Mūrisṭus MSS. on the organ, which we know of in the tenth century, and probably in the ninth century,[6c] we have reference to the *tarkībāt* (compounds). The symbols used in this document are identical with those of Ibn Zaila which have already been given. If we may assume that these symbols have the same pitch

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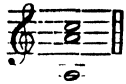
[6] I hope to issue the musical treatises of Al-Kindī in text and translation. See my article, "Some Musical Manuscripts Identified," in the "Journal of the Royal Asiatic Society," Jan., 1926.

[6a] Al-Khwārizmī, 239. The text has *awqār* instead of *awtār* (strings).

[6b] Al-Kindī, fol. 30 and 30v. Examples given by Al-Kindī.

[6c] See ante, p. 92.

values, some interesting examples of *tarkībāt* result. This *tarkīb*  we are told, could not be heard by man "except that grief enters into him"; whilst this incited to "courage and wakefulness."[5d]

How did it happen that the Arabs took to this *tarkīb* which appears to have been alien to their musical practice? The answer may partly be sought in Miss Schlesinger's own view of the causes of the rise of *organum*. She says:[6]

"The rise of *organum* may be found foreshadowed in the insistent enquiry into the *simultaneous consonances* of octave fifth and fourth, and the numerous discussions on the subject in connection with the use of the monochord, which fill the pages of Ptolemy and of the later Greek theorists, of Boëthius and of the mediæval treatises. . . . . *It is inconceivable that such experiments should not, in time, naturally result in some such device as the organum.*"

Yet we must bear in mind that early mediæval treatises of Western Europe showing "insistent enquiry" into the consonances and "numerous discussions" on the monochord *did not exist*, for we must not lose sight of the fact already stated, that *from the end of the sixth century to mid-ninth century not a solitary theoretical work on music* is known to us. Yet Miss Schlesinger, who

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[5d] "Al-Mashriq," ix, 25-6. A fuller discussion of the *tarkībāt* in the Mūrisṭus MS. will be found in my "Organ of the Ancients from Eastern Sources."

[6] P. 12.

quotes a passage from John Scotus as evidence, says: "*Thus, early in the ninth century*, the art of the *organum* was constituted already in theory and practice in Europe."[7] On the other hand, the Arabs had been acquainted with the Greek theorists from the eighth century onwards. "Insistent enquiry" is written on many a page of Al-Kindī (d. 874), but I fail to discover any corresponding diligence in Western Europe.

We know later that the Arabian colleges at Cordova were teaching music, which meant the art known as *organum*; so we are told by Virgilius Cordubensis ["*et duo magistri legebant de musica, de ista arte quæ dicitur organum.*"]

That European students were sitting at the feet of these music professors at Cordova,[8] lends some colour to the suggestion that *organum* was being taught at this hub of Arabian culture and civilisation. Otherwise, it is difficult to appreciate why European students were studying there at all, if it was merely homophony and not harmony that was being taught. Of course, the *quadrivium* may, strictly speaking, have only included the purely physical side of music, what the Arabs called the *naẓarī* art, in contradistinction from the *'amalī* or practical art, but Virgilius Cordubensis makes it quite clear as to what is meant by the term *musica*; it included the art of *organum*. Indeed, I find that the scholarly Julián Ribera in his "La Música de las Cantigas" (1922) allows that the Andalusian Arabs practised harmony, which Soriano-Fuertes also believed.

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[7] P. 11.

[8] Soriano-Fuertes, op. cit., i, p. 82. See Appendix 46.

However one may feel that these "clues" upset our accepted views that the Arabs never got beyond the stage of homophony, and that harmony is a European product and practice, it is to little purpose for Miss Schlesinger to attempt to label my "clues" with such a phrase as "shreds—mostly hypothetical." The proper attitude is to face them and seek for some explanation. I have already said that the device was "alien to pure Arabian music, and it was only adopted by the Arabs after contact with Greek theories." Indeed, anyone who cares to turn to my "Music and Musical Instruments of the Arab,"[9] (p. 256), published many years ago, will see that I condemned Sir C. Hubert H. Parry and Ernest Newman for suggesting that the Arabs and other Oriental peoples had some "notion of harmony."[10] I still maintain that the Arabs, as a whole, have been committed to homophony from their earliest appearance in musical history. To enquire into the process by which the Arabs developed their *tarkīb* or simultaneous consonance from its early use in the *tā'līf* or composition of melodies, up to the

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[9] London: William Reeves Bookseller Ltd. See Appendix 47.

[10] See the review of this book by Ernest Newman in an article entitled "Oriental and Western Music," in the "New Witness" (Dec., 1915, Jan., 1916), in which he replies to my contention on this point. See also an interesting review by George Underwood (Francis Woolett) in the "Freethinker" (Feb. 6, 1916), in which the writer says: "The (Arab) *gloss* itself which converts the melodic outline, or pattern, into an arabesque of sound by surrounding it with a delicate festooning of grace-notes and roulades, is, when two or more instruments are playing, a primitive counterpoint; and when it is admitted that, at times, some of the instruments, sustain a note, and the drums, tuned to different notes, enforce the rhythm, I do not see how it can be denied that we have here the beginning of the harmonic system."

organum that was taught in the schools at Cordova, would be an interesting speculation. Yet, it may be hazarded that if harmony originated in Spain, as Soriano-Fuertes and Julián Ribera would almost persuade us, then it is not improbable that the first impetus came from the *tarkīb* of the Arabs, as well as that "insistent enquiry" into such things as these people were busy with long before the Western Europeans. That Europe played the leading part in its fruition cannot be doubted for one moment, but it is through this Arabian civilisation in cultural contact with the old Visigothic civilisation, that one sees a further proof of one of the laws of artistic and intellectual development which allows that the highest civilisation is that in which the greatest number of culture-influences meet.[11]

That the Arabs have preserved in present-day practice scarcely a vestige of this art of *tarkīb* or *organum*, need not discount this thesis in the slightest.[12] It is accounted for by socio-political laws of cultural retrogression. We see this reversion in other spheres. In spite of the progress made in medicine and surgery by the Arabs of the Middle Ages, when their pharmacopœias were the accepted textbooks of the civilised world, present-day practice (outside the Europeanised cities) has fallen back on the most primitive ideas of cure.

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[11] J. M. Robertson, "The Evolution of States" (1912), Chapter IV.

[12] See the primitive methods of the modern Arabs as given by Loret, "Quelques documents relatifs à la littérature et la musique populaires de la Haute-Égypte" ("Mémoires de la Mission archéologique du Caire," i, i, pp. 329-63). Cf., Niebuhr, "Voyage en Arabie," i, p. 143.

As a counter to my Arabian "clues" discussed above, Miss Schlesinger introduces a European author, John Scotus, as proof that *organum* was known "early in the *ninth century*." *Organum* may have been known "early in the ninth century," but if Miss Schlesinger is to be consistent in her argument that it was the "insistent enquiry" into the consonances and the "numerous discussions" on the monochord, that "foreshadowed" the rise of *organum* she ought to produce these mediæval enquirers and discussers. Further, John Scotus wrote his "De Divisione Naturæ," which contains the so-called reference to *organum*, after 851, that is to say after "De Prædestinatione," which is scarcely "early in the ninth century." Here is what Miss Schlesinger says:

"It would seem that Mr. Farmer has overlooked the writings of John Scotus Erigena (*c.* 800-877) brought forward by Hugo Riemann. . . . . In his 'De Divisione Naturæ,' Erigena gives a terse description of the *organum* which, considering the age in which he lived, may justly be regarded as that of an expert, who wrote from practical knowledge and understanding, and was not a mere compiler of the work of others."

I know of no authority for the statement that John Scotus was an "expert" in music, or that he had any "practical knowledge" of the art. No subsequent writer that I am aware of, mentions him in this way, and the mere passing references to music which are to be found in his works, are little different in substance from what we find in contemporary writers. Yet more important points concern us.

First of all let me say that John Scotus had not been

"overlooked." On the contrary, I believe that it is Miss Schlesinger that had "overlooked" the Neo-Platonist.[13] She certainly did not know his so-called *organum* when she wrote in the "Encyclopædia Britannica" (xx, p. 268) that *organum* was "*first practised by Hucbald in the tenth century.*" Most students of mediæval music know of this John Scotus passage, which has been "*so often quoted,*" as Professor Wooldridge says.[14] It was "brought forward" by Edmond de Coussemaker in his "Histoire de l'Harmonie au Moyen Âge" (1852),[15] over half-a-century before Riemann. But this is neither here nor there, since the point at issue is what our countryman, the scholastic John Scotus, says, and whilst I regret the iteration, we had better have the passage as used by the above mentioned writers before our eyes:

"Ut enim organicum melos ex diversis qualitatibus et quantitatibus conficitur dum viritim separatimque sentiuntur voces[16] longe a se discrepantibus intensionis et remissionis proportionibus segregatæ dum vero sibi invicem coaptantur secundum certas rationabilesque artis musicæ regulas per singulos tropos naturalem quandam dulcedinem reddentibus."

One is now compelled to ask where, in this passage, is there "a terse description of *organum*," and by *organum* I mean the accepted definition of the term, including that

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[13] Her "authority" is Riemann's "Gesch. d. Musiktheorie im 9 bis 19 Jahrhundert" (second edition, 1920).

[14] Wooldridge, op. cit., i, p. 61.

[15] Coussemaker, op. cit., p. 11.

[16] The word *voces* is omitted by Coussemaker. For the proper passage see Appendix 48.

of Riemann himself.[17]. Even the accommodating yet always critical Professor Wooldridge was sceptical of this "doubtful passage," as he called it. He says: "*If* the difficult passage so often quoted from the 'Divisio Naturæ' of [John] Scotus Erigena *can be supposed* to throw any light upon the subject, *it would seem* that the free Organum of the Fourth *may* already have been in existence about the middle of the ninth century, that is to say, about one hundred and fifty years before the probable date of the *Enchiriadis*; for the writer's description of the alternate separation and coming together of the voices quite admits of application to this method. Apart from this *doubtful passage*, however, there seems to be no actual reference to the free Organum until the period at which we have now arrived [*c.* A.D. 1000], when it was described as a part of the general account of Organum in the treatises which have just been considered [the 'Musica Enchiriadis' and 'Scholia Enchiriadis']."[18] Miss Schlesinger says that when the account of the rise of *organum* (including the John Scotus passage) as given by Riemann, "is weighed in the balance with the shreds—mostly hypothetical—offered in favour of an Arab origin and introduction into Europe of this initial stage of harmony, the case for the Arab fades into insignificance."[19]

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[17] "*Organum.*—The oldest kind of polyphonic music, consisting of continued parallel movement of voices in fifths or fourths." "*Diaphonia* was identical with *Organum*, i.e., the most primitive kind of polyphony—continued parallel motion in fourths or fifths, only broken in exceptional cases, by thirds, seconds or unisons." Riemann, "Dictionary of Music," as cited.

[18] Wooldridge, op. cit., 1, p. 61. *Italics mine.*

[19] P. 11.

The "facts" are that Riemann does not contribute an iota of information on the *rise* of *organum*. His account reveals *organum* as *an established practice*! On the other hand, my Arabian "clues" furnish details of the rudimentary *tarkīb*, which, I suggest, was probably the forerunner of the European *organum*.

Fortunately, the authorities have been quoted, Ibn Sīnā, Virgilius Cordubensis and John Scotus. Careful students of musical history can judge for themselves how far the Arab claim is deserving of credence. One thing is certain, and that is that *Ibn Sīnā unmistakably describes the performance of the simultaneous consonances of the fourth, fifth and octave*, and the passage does not occur in the theoretical part of his treatise, *but in the practical*. Further, we have the very important evidence of the Al-Kindī document.

PART 2.

Appendices.

APPENDICES.

1. The Pan-Grecian Conceit.
2. The Greek Sciences in Pre-Islāmic Times.
3. The Arabian Contribution to the *Quadrivium*.
4. Arabian Influence on Musical Instruments.
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14. The Study of the Theory of Music in the Middle Ages.
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24. The Accordatura of the Arabian Lute.
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27. Arabic Treatises on Musical Instruments.
28. Villoteau and the Arabian Musical Influence.
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31. Yaḥyā ibn 'Alī ibn Yaḥyā.
32. Al-Fārābī and Aristoxenos.
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35. The Value of the Arabic Musical Documents.
36. The Musical Notation of the Greeks.
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44. The Meaning of *Organum*.
45. Al-Kindī, Ibn Sīnā, and *Organum*.
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47. Harmony in Oriental Music.
48. John Scotus and *Organum*.

I.

THE PAN-GRECIAN CONCEIT.

ONCE upon a time it was considered the "proper thing" to attribute all the sciences to the Greeks. The position is now quite untenable, for, as Professor Lynn Thorndike has recently pointed out, "it is contrary to the law of gradual and painful acquisition of scientific knowledge and improvement of scientific method that one period of a few centuries should have thus discovered everything. We have .... not held that either the Egyptians or Babylonians had made great advance in science before the Greeks, but that is not saying that they had not made some advance."[1] Some years ago, Professor Jules Combarieu made a similar protest in regard to music. He said: "It is customary to commence the history of music with the Greeks, the founders of the theory of the gamut and the modes, but this is evidently incomplete and shortsighted. Too long have the Greeks, intelligent and artistic as they were, prevented us from

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[1] Thorndike, "A History of Magic and Experimental Science" (1923), i, 31. See also Professor Karpinski's statement in "Nicomachus of Gerasa, Introduction to Arithmetic." Edited by D'Ooge, Robbins and Karpinski (1926), p. 5. Rostovtzeff, "A History of the Ancient World" (1926), i, 9-10.

seeing humanity as a whole. *Before their time there existed the whole of the East.*[2]

Yet the Pan-Grecian school still has votaries it would seem, including Miss Kathleen Schlesinger, who says: "We owe our very conception of a theory of music, of an organised and far-reaching body of knowledge concerned with music *to Greece alone.*"[3]

Whilst it may be admitted that Greece alone, among all the nations of antiquity, has handed down its system of music in a complete form, this fact does not warrant us concluding that the theory of music began *in vacuo* in Greece, or that other nations of antiquity did not possess a theory of music. The tradition among the Greeks themselves, as well as among the Romans, that the outstanding features of Greek civilisation, including the art and science of music, came from the Orient, is too persistent to be ignored.

Even if we did not have the explicit statement of Iamblichos that the Babylonians had a theory of music which was borrowed by the Greeks, the conclusion would still have been inevitable that Babylonia must have possessed "an organised and far-reaching body of knowledge concerned with music" in view of its sidereal religion which was based on a highly organised astrological science. It was among the Semites of the Mesopotamian plains that the "Theory of Numbers," the belief in the "Harmony of the Spheres," and the doctrine of the *ēthos* first saw light. *Greece borrowed these theories and passed on her acquisitions to others.*

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[2] Combarieu, "Music: Its Laws and Evolution," p. 178.

[3] "Musical Standard," xxvii, 23, b.

What did Greece actually owe to the Orient in matters musical? At the very threshold of our enquiry we are met by Apollo, the titular god of music for the Greeks, whose name (=Jubal) has been claimed to be Semitic.[4] Diodorus Siculus informs us that it was Linos who first introduced verse and music to the Greeks, just as Kadmos taught them letters. Both of these names represent Semitic traditions although the persons themselves may be quite mythical. It is also significant that two other proto-musicians of Greece, Orpheos and Amphion, are characters bearing strong resemblance to the Babylonian *ash-shipu*, a word and personage adopted by the Greeks in *sophos*. Athēnaios says: "They called everyone who devoted himself to the study of this art [music] a *sophos*."[5] Strabo says (x, iii, 19) that "the cultivators of ancient music are said to have been Thracians," and that "all Thracian music is supposed to be Asiatic."

Asia Minor was the real and acknowledged home of Greek music. This land owed most of its culture to the Semites of Babylonia-Assyria and Phœnicia, and, indeed, a large proportion of its population was Semitic. The two semi-mythical originators of flutes and reed-pipes in Greece, Hyagnis and Marsyas, were Phrygians.[6] The addition of a fifth and sixth string to the lyre were made by Attis, a Lydian, and Hyagnis, a Phrygian. Aristoxenos divides the early musical history of Sparta, the cradle of Greek civilisation, into two periods. The great-

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[4] Gesenius, "Heb. and Chald. Lexicon" (London, 1853). Cf. "Bulletin of the John Rylands Library, Manchester," iii, 47.

[5] Athēnaios, xiv, 32. Strabo, "Geog.," x, iii, 10.

[6] Plutarch, "De musica," v-vii. Strabo. "Geog.," x, iii, 13-16.

est musicians of the first period (730-665 B.C.)[7] were Terpander and Olympos, both of whom came from Asia Minor. Terpander was the first to systematise Greek music by the introduction of the *nomoi*, which regularised the liturgic chants and kitharoidic music, whilst Olympos, the founder of the Phrygian school of musicians, introduced the *nomoi* for the liturgic flute chants.[8] In the second period (665-510 B.C.) we read of Thalētas of Crete, Xenodamos of Lokri, Polymnēstos of Kolophon, and Sakadas of Argos, all of them "foreigners," some of them from Phœnician lands.[9]

Strabo writes as follows: "Those who regard the whole of Asia, as far as India as consecrated to Bacchus, refer to that country as the origin of a great portion of the present music. One author speaks of 'striking forcibly the *asias kithara*'; another calls the pipes Berecynthian and Phrygian. Some of the instruments also have barbarous names, as *nablas*, *sambykē*, *barbitos*, *magadis*, and many others."[10] The *nablas* (= Heb. *nebel*), the *kinyra* (=Heb. *kinnor*), the *phoinix*, the *gingras* and the *tibiæ Sarranæ* came from Phœnicia. The *sambykē* was of Syrian origin. The *barbitos*, together with the *pēktis* and *magadis*, came from Lydia, the *elymoi*, the *kroumata*, and a certain *trigōnon* from Phrygia,[1] whilst it was acknowledged that the *monochordon* and *pandoura* were

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[7] These are the dates given by Gevaert ("La Musique de l'Antiquité").

[8] Plutarch, op. cit., vii.

[9] Plutarch, op. cit., ix.

[10] Strabo, "Geog.," x, iii, 17.

[1] Athēnaios, iv, xiv.

borrowed from the Arabs and Assyrians respectively.[2] Among other "foreign" instruments, as Aristoxenos informs us, were the *klepsiambos*, *skindapsos* and *enneachordon*.

It is worthy of note that Athēnaios says that both the Greeks and barbarians were taught instrumental music by Egyptian refugees,[2a] and Diodorus Siculus states that poets and musicians went to Egypt for instruction.[3] Strange to say, some of the best works on music in Greek were written in Egypt. Syrian and Arabian musicians were employed in both Greece[4] and Rome.[5]

Although we have this spate of testimony as to the indebtedness of the Greeks to the Semites in matters musical, I can quite conceive Miss Schlesinger saying that this does not reach the level of her contention which concerns the "theory of music," which to her means speculative theory, i.e., the physical basis of sound, the laws of intervals, etc. Yet here, too, I will show that Greece was indebted to alien sources, and actually acknowledged her borrowings.

The explicit statements made by the Greeks themselves concerning their adoption of the mathematical sciences of Babylonia,[6] Phœnicia and Egypt have, in many cases,

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[2] Julius Pollux, iv, 74.

[2a] Athēnaios, iv, 25.

[3] Diod. Sic., i, 96.

[4] Athēnaios, iv, 76.

[5] Suidas, sub Ἀράβιος, Horace, "Epist.," i, 14. "Satires," i, 1.

[6] Bretschneider, "Die Geometrie und die Geometer vor Euklides" (1870), 3-35. D'Ooge, Robbins and Karpinski, "Nicomachus of Gerasa, Introduction to Arithmetic" (1926), 3-15.

been confirmed by materials from the original sources.[7] The labours of the Babylonian astronomers were found useful to the Greeks, and both Hipparchos and Ptolemy used their observations and computations.[8] The very foundation of Greek astronomy, the ecliptic, the signs of the zodiac, the planetary system, came from these Semites.[9] It was Anaximander who introduced the *gnōmon* from Babylonia.[10] We owe our division of the day into twenty-four hours, the hour into sixty minutes, and the minute into as many seconds, to the same source.[1] So much for astronomy, a science indissolubly bound up with religion and *music* in Babylonia.

It is very much the same in the question of the loaning of the Greeks from the Orient in the sciences of arithmetic and geometry. Sokrates in Plato's "Phædrus," repeats a story that the Egyptian god Theuth (= Thoth, Hermes) invented arithmetic, calculation, geometry and astronomy.[2] Aristotle certainly credits the Egyptians with the origin of the mathematical arts,[3] and Proklos,[4]

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[7] Cumont, "The Oriental Religions in Roman Paganism" (1911), and "Astrology and Religion among the Greeks and Romans" (1912), Milhaud, "Nouvelle Études sur l'Histoire de la Pensée Scientifique" (1911), and especially Wirth, "Homer und Babylon" (1921).

[8] Ptolemy, "Composition Mathématique de Claude Ptolémée" (Edit. Halma), Paris, 1813, vol i, bk. iv.

[9] Cumont, "Astrology and Religion," etc., 42-3.

[10] Herodotos, ii, 109.

[1] Cajori, "Hist. of Mathematics" (1919), 6.

[2] Plato, "Phæd.," 274, c.

[3] Aristotle, "Metaph.," 981, b.

[4] Proklos, "Comm. on Euklid," bk. 1.

Herodotos,[5] Herōn,[6] Diodorus Siculus,[7] and Strabo,[8] all bear like testimony so far as geometry is concerned. Arithmetic, or more properly "exact arithmetic," is said by Proklos to have started with the Phœnicians.[9]

And now let us turn our attention to the science of music. Pythagoras himself is said to have discovered or determined the numerical ratios of the fourth, fifth and octave, but the account of the discovery as given by Nikomachos,[10] Gaudentios,[1] Boëthius,[2] and others, is so absurd that we are justified in considering the ascription to be spurious. On the other hand, we have the statement of Iamblichos, who says: "*They say that it (the harmonical proportion) was a discovery of the Babylonians, and that it was by Pythagoras first introduced among the Greeks.*"[3] Then there is the statement of Philo Judæus that the belief in the Harmony of the Spheres first arose with the Chaldæans,[4] as well as the tradition of Plutarch that the Chaldæans connected certain intervals, the *diatessarōn* ($\frac{4}{3}$), *diapente* ($\frac{3}{2}$), and *diapasōn* ($\frac{2}{1}$), with the seasons.[5] One of Hilprecht's brick text-books from Nippur has revealed the mystic "Platonic number" that we read of in Plato's

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[5] Herodotos, ii, 109.
[6] Herōn, "Geom.," c. 2.
[7] Diod. Sic., i, 69, 81.
[8] Strabo, xvii, c 3.
[9] Proklos, loc. cit.
[10] Nikomachos (Meibom), 10, 11.
[1] Gaudentios (Meibom), 13.
[2] Boëthius, i, 10.
[3] Iamblichos, In "Nikom. Arith. Intro." (Edit. Pistelli), 10.
[4] Philo Judæus, vi, 32, 33.
[5] Plutarch, "Opera" (Edit. Reiske), vol. x, p. 261.

"Republic."[6] Plato took his ideas on this subject from the Pythagoreans, who themselves received this knowledge from the Babylonians.[7]

Turning meanwhile to Egypt, it is interesting to note how Plato makes the Egyptian priest tell Solon that the Greeks had only recently taken to literature and other amenities of civilised life.[8] In Egypt, music was established by law, and in the temple, as elsewhere, no change was permitted in the established system. Plato's Athenian guest, commenting on this says: "What they ordained about music is right; and it deserves consideration that they were able to make laws about things of this kind, firmly establishing such melody as was fitted to rectify the perverseness of nature."[9] In the Pseudo-Dēmētrios Phalēreos writings we are told that in Egypt "the priests hymn the gods through the seven notes [or vowels]."[10] All this testimony tends to show that a definite theory of music existed in Egypt before Greece began to build upon the foundations of this science that she borrowed in the first place from both Babylonia and Egypt. That Egypt was indebted musically to the Semites is borne out by history and philology.[1]

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[6] Hillprecht, "Mathematical, Metrological and Chronological Tablets from the Temple Library of Nippur," in Vol. XX, of Cuneiform Texts, published by the University of Pennsylvania (1906).

[7] See Tannery, "Revue philosophique," i, 170; xiii, 210; xv, 573.

[8] Plato, "Timæus," 22-23.

[9] Plato, "Laws," 657, a.

[10] "De elocutione," 71.

[1] Under the Ancient Empire music was in quite a primitive state. A new era began after the eighteenth century B.C. in con-

The Pythagorean traditions and materials bring very strong evidence in support of the theory of the alien origin of the science of music among the Greeks. It is with Pythagoras that the theory or science of music began in Greece. Pythagoras, although usually said to have been born at Samos in the Ægean, is also claimed as a Phœnician by both the Greeks and Arabs, the former making Tyre[2], and the latter Sidon[3] his birthplace. His first teacher was Pherekydēs, the Syrian. At Sidon he was instructed by the "prophets" descended from Mochos the Sidonian, and by the Phœnician hierophants. After having been initiated into the mysteries of Byblos and Tyre, and in other of the sacred rites of Syria, Pythagoras passed into Egypt, where he remained twenty-one years sedulously engaged in study. Cambyses, the Persian ruler of Babylonia-Assyria, carried him as a captive

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sequence of the Asiatic conquests and fresh culture influences. Semitic words are quite common in musical nomenclature in Egyptian. The term *aann* ("to sing") is akin to the Assyrian *en*, the Hebrew *'anah*, and the Arabic *ghanna*. (Cf. Pelagaud's suggestion in Lavignac's "Encyclopédie de la musique," i, 59.) Again in the word *nehes* ("to mutter the incantation") we see the Hebrew *nahash* and the Arabic *nahasa*. Among the musical instruments one can recognise that the *kenanaur* is the Hebrew *kinnor*; the *tebn* the Assyrian *ṭabbalu* and Arabic *ṭabl*; the *teb* the Hebrew *toph* and Arabic *duff*; the *thupar* the Hebrew *shophar*; and the *uara* the Arabic *yarā'*.

[2] Porphyres, "Vita Pyth." The East, including Egypt (see Plato's "Timæus"), was often made the birthplace of famous men, for it was not compatible with fame that they should be "home products." Hence Pseudo-Kallisthenēs gives Alexander the Great an Egyptian parentage, and Stephen the Byzantine makes Arabia (Gerasa) the birthplace of Plato, Ariston and Kerykos.

[3] Mīrkhwānd, "Rauḍat al-Ṣafā'," i, ii, 268.

to Babylon. Here he came in contact with the *magi*, by whom he was instructed, says Iamblichos, "in their venerable knowledge, and learned from them the most perfect worship of the gods. *Through their assistance likewise, he arrived at the summit of arithmetic, music and* other disciplines."[4] After a twelve years' stay in Babylon, Pythagoras returned to Samos a fully-fledged *ashshipu*, as the people of Babylon called their soothsayer, for his practice of divination, as well as his actions and sayings, reveal him clearly as a typical Semitic soothsayer. He rose, however, to such a high estate among his people that he scorned the title of *sophos*, a term which the Greeks, following the Semites, gave to "a wise man," and he adopted instead the term *philosophos*.[5]

We know from Valerius Maximus[6] and Apuleius[7] that Pythagoras learned in Babylon the motion of the stars, their intrinsic properties, and their effect and influence on mankind. All that issued from the scheme of "cosmical music"—the Harmony of the Spheres, the Theory of Numbers, the doctrine of the *ēthos*, and musical therapeutics, would appear to have been introduced to the Greeks by Pythagoras or Pythagoreans from Babylonia and Egypt.[8]

We have already seen that Iamblichos said that Pythagoras introduced the theory of the harmonic proportion from Babylonia, and we can have little hesitation in ac-

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[4] Iamblichos, iii, 4.

[5] Diog. Laertes, "Proem."

[6] Val. Max., iii.

[7] Apuleius, "Flor.," ii.

[8] See my "Influence of Music; from Arabic Sources," p. 5 *et seq.*

cepting the statement as substantially correct, since any people who could, like the Babylonians, have made the very creditable advance in arithmetical and geometrical progressions that we know of, and who possessed rules for finding the areas of squares, rectangles, right triangles and trapezoids, could most certainly have devised the harmonical proportion and have had as complete a knowledge of the speculative theory of music as that possessed by the earliest Greek theorist of music in Greece, Pythagoras.

That Greece gloriously surpassed all other nations in her study of, and contributions to, the mathematical sciences is gratefully acknowledged. That she discreetly cast aside much of the mystical paraphernalia that enshrouded the sciences that were borrowed is also allowed to her supreme genius.[9] But in testifying to the glory of Greece we must not depreciate the services of those peoples who actually gave Greece her first promptings in these sciences. I refer to the Babylonians, Phœnicians and Egyptians.

My reason for introducing the foregoing discussion on the "pan-Grecian conceit" is not only to dispel the illusion of the "Greek foundation of the theory of music." but also to justify the title of my monograph, "The Arabian Influence on Musical Theory." In Miss Schlesinger's reply to this brochure, entitled "Is European Musical Theory Indebted to the Arabs?" we are told at the threshold what is meant by the word "influence" as follows:

"The word 'influence,' as used in the pamphlet under consideration ('The Arabian Influence on Musical

[9] The mystical element is the mark of Oriental science.

Theory'), implies the possession by the Arabs of *a body of theoretical and practical knowledge developed by them, and not only bearing an impress of their race acquired during the process of transmission, but also displaying novel features of which they were the originators*" (page 5).

But nowhere in my monograph have I used the word "influence" to mean anything more than it has meant in the English language. By "influence" I mean, "*the bringing about of an effect, physical or moral, by a gradual process, agency, force, or tendency of any kind which effects, modifies, or sways.*[10] All that I have been concerned with is whether the Arabs "brought about an effect" on the art and science of music in Western Europe, or, by some "agency, force, or tendency of any kind," "effected, modified, or swayed" this art or science. Whether the Arabs were the "originators" of the "novel features" which "effected, modified, or swayed," is beside the point.

In the reply to my rejoinder, which Miss Schlesinger entitled "The Greek Foundations of the Theory of Music,"[1] she refers to this point anew, and says she would only be disposed to accept my claim for the Arabian "influence" provided (among other things) "that the features claimed as innovations were *originated* by the Arabs not merely mentioned by their theorists," and concludes by saying that "an innovation cannot be understood to be merely a further step in an evolutionary sequence, the earlier stages of which are demonstrably present already."

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[10] Webster's "Dict. of the English Language" (London, 1907).
[1] "Musical Standard," xxvii, 23 *et seq.*

The upshot of this is that in the face of her own proposition, many a claim for "the Greek foundation of the theory of music" becomes invalid, since I have demonstrated that the "earlier stages" of many of the Greek "innovations" are "demonstrably present" in the ancient Orient. Yet the fact that Greece did not *originate* them ought not to debar us from saying that it was due to Greek "influence" that the Western world learned them.

2.

THE GREEK SCIENCES IN PRE-ISLAMIC TIMES.

TO appreciate fully what the Arabian revival of the Greek sciences meant, one must gauge the prevailing intellectual interests in Byzantium, Syria and Persia during pre-Islāmic and early Islāmic times.

After the days of Proklos (d. 485) the schools of Athens declined rapidly, and in 529 they were abolished by Justinian, who drove the teachers into exile. By the eighth century, science was practically unknown in Byzantium. Historians are unanimous in their verdict of the poverty of Byzantine intellectual culture at this period.[1]

Syria had its famous school of Edessa from the days of St. Ephraim (d. 373). It became the chief centre of Hellenic studies until Nestorian heresies led to the break-up of the school in 489. Yet even in the heyday of the Syrian schools, intellectual interest in Greek did not go much beyond theology. Of science there is but the faintest trace.[2]

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[1] Gibbon, "Decline and Fall" (Edit. Bury), vi, 103. Bury, "History of the Later Roman Empire" (1923), ii, 366. "History of the Eastern Roman Empire," 434.

[2] Severus Sebokht (seventh century) dealt with mathematical studies. See Wright, "Syriac Literature," 138.

Persia derived benefit from Hellenic culture through fugitive Nestorians (489) and Athenians (529), and it was due mainly to the latter[3] that Khusrau I or Nūshīrwān (d. 578) founded a school of Greek medicine at Jundeshāpūr in Khūzistān. Beyond this, we have no evidence of any interest in science in Persia.

As for the theory of music, there is not the slightest manifestation of its study, or of any treatises being written until long after the Arabian revival. The first Byzantine treatise that we know of after the "Anonymous II" (fourth century)[4] is that of Psellos (fl. 1050)[5] In Syriac there is nothing earlier than Jacob bar Shakko or Severus (d. 1241).[6] The earliest treatise on music in Persian is the "Bahjat al-Rūḥ" (twelfth century).[7] For Rome, see Appendix 15.

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[3] They were not all Athenians. Syrians and Phœnicians were among the fugitive teachers from Athens.

[4] Iamblichos and Alypios both lived in the fourth century, but the above is probably later than either of these.

[5] See Psellus, "De arithmetica, musica, geometria . . . . Elia Vineto Santone interprete" (Paris, 1557).

[6] "Brit. Mus. MS.," Add. 21454. See Wright, "Catalogue," p. 1165.

[7] "Bodleian Library," 1141. See *ante* Chap. III, p. 54.

3.

THE ARABIAN CONTRIBUTION TO THE QUADRIVIUM.

"INTELLECTUAL leadership," says Dr. Charles Singer, "passed about the eighth century to people of Arabic speech and remained with them until the thirteenth century."[1] Their "leadership" in the *quadrivium* cannot be seriously questioned. The *quadrivium* (*'ulūm riyāḍiyya*) with these people of Arabic speech comprised *arithmetic*, *geometry*, *astronomy* and *music*, and it may not be unprofitable to inquire what particular contribution they made to those sciences of the *quadrivium* other than music. Florian Cajori in his "History of Mathematics" (1919) says: "It has been said that the Arabs were learned, but not original.[2] With our present knowledge of their work, this dictum needs revision; they have to their credit several substantial accomplishments. They solved cubic equations by geometric construction, perfected trigonometry to a marked degree, and made numerous small advances all along the line of

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[1] Singer, "The Evolution of Anatomy" (1925), p. 67.

[2] This is also Miss Schlesinger's dictum. See her pamphlet, "Is European Musical Theory Indebted to the Arabs?," p. 18.

mathematics, physics and astronomy."[3] What were these "substantial accomplishments" in detail?

It is well known that our numerals came through the Arabs,[4] and that we owe our words *cipher*, *algebra*, and *algorism* to the same carriers of culture to Western Europe.

It was the *arithmetic* of the Arabs, under the name of *algorism* that succeeded the Boëthian system in Europe. The word was derived from the name of the Arabian mathematician, Al-Khwārizmī. Arithmetical processes were treated as part of *algebra* by the Arabs, and so when Europe borrowed *algorism* it also took *algebra*, a word derived from the Arabic *al-jabr*. It was the Arabs who invented (or popularised) the rule for testing the results of addition by "casting out the nines." The line separating the numerator from the denominator of a fraction also came from the Arabs. Suter says: "In the use of arithmetic and algebra in geometry and vice versa the solution of algebraic problems with the aid of geometry, *the Arabs far outstripped the Greeks as well as the Indians*." To them is due the credit of having recognised as an obstacle the strict distinction between arithmetical (discontinuous) and geometric (continuous) magnitudes, which had so severely hindered the Greeks in mathematical progress. They solved twenty problems in geometry with the help of linear, pure and mixed quadratic and reducible biquadratic equations, nearly all of which were borrowed by Leonardo of Pisa.

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[3] Page 112.

[4] For a full discussion, see Smith and Karpinski, "The Hindu-Arabic Numerals" (1911), and Hill, "The Development of Arabic Numerals in Europe" (1915).

In *trigonometry*, where we also find the applications of arithmetic to geometry, "*the Arabs made the greatest advance on their Greek and Indian predecessors*," says Suter. The trigonometrical expressions now current were derived from them. The sine, cosine and versed sine, the Arabs borrowed from the Indians, but they added other functions to these; found the chief formulæ between the various functions; completed the trigonometrical tables; and finally solved all cases of the plane and spherical triangle with the aid of rules discovered, i.e., the rule of the four quantities, theorem of tangents, rule of the plane and spherical sines, etc.[5]

In *astronomy*, it is to the credit of the Arabs that they observed the heavens methodically, with the result that they were able to *correct* the numbers in Ptolemy's "Almagest." "This task," says Nallino, "they splendidly performed." The Greeks believed the apogee of the sun to be immobile, but the Arabs demonstrated that it is subject to the movement of the precession of the equinoxes. They saw that the obliquity of the ecliptic is not invariable, as the Greeks taught, but that it is subject to a slow secular diminution. Nallino says that the Arabs investigated the elements of the sun and partly also of the moon, the length of the tropical and the sidereal year, and the precession of the equinoxes. Finally, in the application of trigonometrical formulæ, in the number and quality of their instruments, and in the technique of their observa-

[5] See Suter's brilliant contributions to the "Encyclopædia of Islām," especially ii, 257, 315.

tions, says Nallino, "*the Arabs have splendidly outstripped their predecessors the Greeks.*" In *astrology*, the science as developed by the Arabs, shows a distinct advance upon that of the Greeks by "the degree of perfection attained in the mathematical processes."[6]

[6] See Nallino's splendid articles in the "Encyclopædia of Islām," i, 494, *et seq*, 497, *et seq.*, as well as in Hastings's "Encyclopædia of Religion and Ethics," xii, 101.

4.

ARABIAN INFLUENCE ON MUSICAL INSTRUMENTS.

THE influence due to the Arabian culture contact in respect to musical instruments was far wider than has been generally acknowledged, although it must be admitted that a very considerable influence has been admitted generously on all sides I do not hold, however, as may be seen from my reference to the Crusades, that the infiltration of Arabian culture came from Spain and Italy alone. Byzantium itself was an important highway for this influence. and there were other points of contact.[1] Neither do I hold that this "influence" means that all the instruments bearing Arabic names in mediæval Europe were necessarily of Arabian introduction. Some of them were already known in Europe, and the reason for the alien nomenclature may have been due to a particular Oriental type having been adopted, possibly an improvement, or else that an older European type may have fallen into desuetude and in the revival under the Arabian culture movement it came to have an Arabic name attached to it.

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[1] See *ante*, pp. 9-10.

The origin of the words *lute*, *rebec*, *guitar* and *naker* from the Arabic *al-'ūd*, *rabāb*, *qitāra* and *naqqāra*, is an established fact.[2] That we owe three of these instruments themselves to the Arabs we know for certainty.[3] It is also acknowledged nowadays that we are indebted to the Arabs for the words *adufe*, *albogón*, *añafil*, *exabeba*, *atabal* and *atambal*, their originals being the Arabic *al-duff*, *al-būq*, *al-nafīr*, *al-shabbāba*, *al-ṭabl* and *al-ṭinbāl*. How far these instruments themselves were new to Western Europe is another question. Some of the names were confined to Spain and Southern France.

The *adufe* was a square tambourine, and, as such, was probably an innovation. The "snares" stretched across the head would also appear to have been new to Western Europe. I have also mentioned another tambourine, a round type, called the *panderete* (dim. of *pandero*), by Juan Ruiz. The word equates with the Arabic *bandair*. Another tambourine with jingling plates in the rim was the *ṭār*. This found its way into Europe by a Westward route, and survives in the Polish *tur*.

The *albogón*, like the Arabian *būq*, was in one case a horn, and in another a sort of saxophone improved by the Andalusian sulṭān, Al-Ḥakam II (d. 976).[4] Al-Shalāhī (thirteenth century) tells us that the Christians borrowed the instrument from the Arabs. It is described by Ibn

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[2] See "The Oxford Dictionary."

[3] As for the fourth, the *guitar*, the question of its introduction into Western Europe is still under discussion. I have dealt with several questions concerning the *lute*, *rebec* and *guitar* of the Arabs in the "Journal of the Royal Asiatic Society" (1928).

[4] "Bibl. de Autores Españ.," li, p. 410. See Al-Maqqarī, "Mohammedan Dynasties," i, 366. Ibn Ghaibī writes it *bāq*.

Khaldūn (d. 1406),[5] and we appear to have it delineated in the "Cántigas de Santa Maria."[6]

The *añafil* was a long straight trumpet, and in the time of Ibn Ghaibī (d. 1435) its progenitor, the *nafīr*, was 168 cm. in length.[7] It has been generally admitted by our musical antiquaries that the straight cylindrical bore trumpet came from the Arabs.[8] Could this have been the particular feature of the *nafīr* and *añafil*? We read in the "Alf Laila wa Laila" ("Thousand and One Nights") that a horn-player "blew" *(nafakha)* the *būq*, but that a trumpeter "blasted" (*sāḥa*, lit. "split") the *nafīr*. It is possible that these terms convey the distinction between the tones of the conical bore horn and the cylindrical bore trumpet.

The *exabeba* (= *ajabeba*) was another instrument confined to Spain. Save that it was a small flute like its parent, the Arabian *shabbāba*, we have no further information concerning it.

The origin of the words *atabal* and *atambal* from the Arabic *al-ṭabl* and the Persian *al-ṭinbāl*, is, I believe, clear enough philologically. It would follow in consequence that the former is the older word, and that the latter was adopted at the time of the Crusades. It is possible, however, that the latter word *(atambal)* was a mere corruption

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[5] Ibn Khaldūn, "Prol.," ii, 411.

[6] Riaño, op. cit., fig. 41, b.

[7] Ibn Ghaibī, "Bodleian MS.," 1842, fol. 80.

[8] Galpin, "Old English Instruments of Music," 200. See also Buhle, "Die musikalischen Instrumente in den Miniaturen des Frühen Mittelalters," 28. Kastner, "Manuel Général de Musique Militaire," 126. Naumann, "Hist. Mus.," i, 110. "Ency. Brit.," xxvii, 326, 353.

of the former *(atabal)* without admitting the influence of the Persian word.

The words *tabur* and *tambor* raise a similar question. Du Cange says, "ex Arabico al-tambor." This cannot be accepted, because the *ṭanbūr* was not a drum with the Arabs of mediæval times.[9] Others actually deny an Arabic source,[10] but scarcely with sufficient reason. It is highly probable that the word *tabur* was derived either from the Arabic *ṭabl* by way of the mediæval Latin *tabel*, or else the change came through the Persian *ṭabīr* at the time of the Crusades. As for *tambor*, it was a mere corruption.[11] So far we have been dealing with the more palpable Arabic names which occur among musical instruments in European languages.

In addition to the above-mentioned instruments, there are many others whose Arabic name or origin have not been noticed or scarcely so. Practically the entire drum family came into Western Europe through the Arabian contact, or was popularised by this medium. In particular, there was the kettledrum *(naker, timbale)*, which even as late as the sixteenth century was called "*le tambour des Perses*."[12] In my monograph I have surmised that the Arabic word *qaṣ'a* was the parent of the French *caisse* and the Portuguese *caixa*. Most people will probably fall back on the conventional Latin *capsa* (= "a case"),

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[9] The modern Arabs use the word *tambūr* for a drum, but this has been borrowed from the French *tambour*.

[10] See "Romania," xxxi, 412-13, 418. Dozy and Engelmann, "Glossaire des mots espagnols et portugais dérivés de l'Arabe." Littré, "Dict. de la langue Française."

[11] Du Cange, "Gloss.," s.v.

[12] Thoinot Arbeau, "Orchésographie."

but the Arabic etymon is far more likely.[13] Another drum name that passed into Europe during the Arabian contact was the Persian *balābān*. The *sonajas de azofar*, mentioned by Juan Ruiz (fourteenth century) were metal castanets, and the name is derived from the Arabic *ṣunūj al-ṣufr*.[14] Even the word "castanet," in spite of other derivations, would appear to have originated from the Arabic *kāsatān* (dual of *kāsa*). The latter were the bowl-shaped type, whilst the former were flat, like a miniature cymbal.

Among the "wood-wind" instruments, the Arabian influence is, perhaps, equally as noteworthy, as it appears to be generally acknowledged that the conical bore instruments were either introduced or popularised by this means. The mediæval *xelami* must surely be the Arabian *zulāmī*, an instrument invented at Baghdād at the end of the eighth or beginning of the ninth century.[15] In the thirteenth century "Vocabulista in Arabico," it equates with *fistula*,[16] but Ibn Khaldūn (d. 1406) says that it was

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[13] In the sixteenth century, Etienne Pasquier says in his "Recherches": "Ainsi en est-il de *tabour*, que les soldats appelent maintenant *quesse*, sans scauoir dire pourquoy."

[14] There were two instruments known to the Arabs by the name of *ṣanj* (sing. of *ṣunūj*), one a harp (*ṣanj dhū'l-awtār*), and the other the castanets mentioned above.

[15] See the "Tāj al-'Arūs," s.v., and Lane, "Lexicon," s.v. Dr. Curt Sachs says that both *xalamía* and *xeremía* = *chirimía*. ("Reallexikon der Musikinstrumente.") See also this work, p. 433, where he mentions the fourteenth century for the *zulāmī* or *zulāmīy*.

[16] *Fistula* need not of course mean of necessity "a flute," but a "musical pipe," as in the eleventh century "Glossarium Latino-Arabicum," where it stands for *zammāra*, a reed-blown instrument.

played with a reed. As we are also told that it was fingered in the same way as the flute called *shabbāba*, the instrument evidently had a conical bore.[17]

I said in my monograph that "the Arabian reed instruments known as the *zamr* and *al-surnā* or *al-surnāī*, were doubtless the parents of the *shawm* and *dulcayna*."[18] The language used is certainly slightly misleading, because I did not have the actual instruments in mind, but merely the names. In fact, we cannot be sure what either the Arabian or European instruments were like at this period, i.e., whether they were cylindrical or conical tubes, or if played with single or double reeds. Miss Schlesinger says: "The reed-blown instrument, *zamr*, or primitive Arab oboe, cannot seriously be claimed as the parent of the *shawm*, or *schalmey*, or of the *chalumeau*, both names being derived from *calamus*, the mediæval Latin equivalent of the Greek *aulos* and Roman *tibia*."[19] Since the dual "both" is used, I presume that Miss Schlesinger means that the word *zamr* as well as *shawm* is derived from the Latin *calamus*? *Zamr* is pure Arabic, and the root *zamara* may be traced back to the ancient Semites of Babylonia-Assyria.[20] That *calamus* is the ultimate European parent of *calamella, zalamella, cialamello, caramillo, charamela, chalameau, schalmey, shalm, shawm*, and other forms, is ancient history. The question that I was interested in was the phonetic influence of the Arabic

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[17] Ibn Khaldūn, "Prolégomènes," ii, 411.

[18] Farmer, "Arabian Influence on Musical Theory," p. 5.

[19] Schlesinger, "Is European Musical Theory Indebted to the Arabs?," p. 15.

[20] Muss-Arnolt, "Dict. of the Assyrian Language," i, 284.

zamr in the formation of the word *shawm*. Since then I have considered the possibility of the Middle High German words, *sumer* and *sumber*, being connected with the Arabic *zamr*. If the latter is allowable, then the former conjecture is scarcely admissible, since both the *schalmey* and *sumer* occur together.[1]

As for *al-surnā* or *al-surnāī* being the nominal parent of the *douçaine* or *dulçayna*, we have, *per contra*, the conventional derivation from the Latin *dulcis*. Stainer and Barrett in their "Dictionary of Musical Terms" say that *dulçayna* "may be derived from the same root as the Egyptian *dalzimr* (? *al-zamr*), both instruments being of the oboe or reed kind." The latter derivation is certainly inadmissible. An Arabic origin, as suggested above, appears to be the more likely one, the prefixing of the "d" being due to Latin influence.

Without offering any definite opinion on the question, I would also like to call attention to the *phonetic* identity between the Arabic *ghaiṭa* and the Spanish-Portuguese *gaita*, English *wayght*.[2] The *rackett* has never had a satisfactory explanation given for its name, yet practically the identical name and instrument have existed in the *'irāqiyya* or *'irāqya* of the Arabs. Then there is the German *zink*, a name which may have come through the

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[1] Hugo von Trimberg, "Der Renner," 23735. Dr. Curt Sachs says that the *sumer* was a drum, no doubt following the authority of Lexer, "Mittelhochdeutsches Handwörterbuch."

[2] The instrument, however, is not mentioned in Arabic documents earlier than Ibn Baṭṭūṭa (d. 1377).

Arabic *zanbaq*[3] (= Lat. *sambucus*).[4] At any rate, we read at the time of the Crusades of *cors sarrasinois* and *buccins turcs*,[5] and it is not improbable that these were *zinken*, since Michaud tells us that the Saracens had horns pierced with many holes.[6] They were certainly novel to the Crusaders. Finally, there was the small flute known as the *joch*, quoted by Muratori from a thirteenth century MS. (*tabur et joch* = drum and fife), and it is obviously the Arabic *juwāq*.

Among stringed instruments, there are several others beside those already referred to which are of sufficient importance to be mentioned. Elsewhere,[7] I have already dealt at length with the Arabian *qānūn*, which became the European *kanon*, *canon* and *canale*, at the same time justifying the philological identity between the Arabic *al-shaqira* and the European *eschaquiel* or *exaquir*.

The derivation of the word *geige* and the origin of the instrument itself have not been satisfactorily explained. Could they have originated in the Persian *ghichak*?[8] If we may suppose that the *lira dicta*[9] entered Europe not only from the South by means of the *rabāb*, hence the

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[3] The word dates from the ninth century at least.

[4] *Sambucistria* = *zāmira* ("wind instrumentalist") in the eleventh century "Glossarium Latino-Arabicum."

[5] Guillaume de Machaut and "Chronique de Morée."

[6] Michaud, "Histoire des Croisades," 1re part., tome i, p. 188. Du Cange, "Gloss.," s.v.

[7] "Journal of the Royal Asiatic Society," April, 1926, p. 239.

[8] Also written *ghizhak* and *gichak*.

[9] This was the generic mediæval Latin term for the *rebec* and *geige* family. See Vincent de Beauvais, "Spec. Doc.," Bk. i, Sect. 34. *Rabāb* = *lira dicta* in the eleventh century "Gloss. Lat.-Arab."

rebec, but also from the East by means of the Persian *ghichak*, we may be able to account for the *geige* via the Russian *guiga*, the old Norse *gigja*, the old Slavonic *gega*, the old French *ghighe*, and the Middle High German *gîge*. Indeed, we appear to have a survival in the Moorish *ghuga (gougue)*.[10]

I have already pointed out in another place that the Arabs and Persians had a whole family of lutes and pandores from the small *'ūd qadīm* ("ancient lute") and *ṭanbūr baghlama* (= *bighilma*), ("youth's pandore") to the large *shahrūd* (arch-lute) and *ṭanbūr būzūrk* ("grand pandore"). Two other varieties of the lute family were the *ṭarab al-futuḥ* ("*ṭarab* of wide compass") and the *ṭarab zūr* ("powerful *ṭarab*"). *Ṭarab* was a synonym for "musical instrument" or "music," hence *muṭrib*, an "instrumentalist" or "musician." Could these have been the progenitors of the European *tiorba*, *tuorba*, *theorbo*, etc., derived either direct from the Sicilian Arabs, or through Byzantium or Turkey, who passed on the Oriental *ṭarab* to the Slavonic peoples as the *torban* (old Russian)?

Not only in Western Europe, but in Eastern Europe, North and Central Africa, Persia, India, the Malay archipelago, and as far afield as China, may be traced the Arabian influence in musical instruments.

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[10] Mahillon, "Catalogue . . . . du Musée Instrumental du Conservatoire Royal de Musique de Bruxelles," i, 417.

5.

ANDRÉS AND VIARDOT ON THE ARABIAN MUSICAL INFLUENCE.

REFERENCE is made in the present work to an article by Mr. J. B. Trend in "The Criterion" (February, 1924), entitled "The Moors in Spanish Music." This has since been incorporated with his recent work entitled "The Music of Spanish History to 1600" (1926), but with several judicious alterations. Mr. Trend says in his latest work (p. 63) that P. Juan Andrés, in his "Dell' origine, progressi e stato attuale d'ogni letteratura," had suggested that Alphonso X (d. 1284) in his "Cantigas" had taken his system of notation from Arab music."[1] Mr. Trend only mentions the book of Andrés by name, omitting any precise reference by which this statement might be traced, but so far as I am aware, no such claim is made by Andrés in the book mentioned.[2] Probably Mr. Trend is depending on the authority of Rafael Mitjana, who makes a similar assertion.[3]

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[1] Mr. Trend repeats this statement in another book, "Alfonso the Sage" (1926), p. 16, and in Grove, "Dict. Mus.," third edition, i, 66.

[2] Andrés wrote another work, "Cartas sobre la música de los arabes" (Venice, 1787), which I have not seen. Cf. Fétis, "Biog. Univ."

[3] "Le Monde Oriental" (1906), p. 200.

In rebutting the alleged Andrés claim, Mr. Trend says: "This statement, though manifestly absurd, seeing that the Arabs never used a musical notation, is true of the form of the poems, the instruments used (when they were used) to accompany the voice, and even the musicians who played them, for there are miniatures in the MSS. [of the 'Cantigas'] showing musicians in Arab dress playing upon instruments known to have been of Arab origin" (pp. 63-4). As I show in Chapter VI, the Arabs did use a musical notation, though not the same as that in the "Cantigas."

Strange to say, a statement of this kind was also made concerning Louis Viardot by Pascual de Gayangos in his "Mohammedan Dynasties in Spain." This, too, appears to have been without foundation. Viardot certainly said that Europe borrowed many of its musical instruments from the Arabs (and in this way he attributes to the Arabs "*une notable part à la création de la musique moderne*"); that Alphonso X benefited by the writings of the Arabs in his "Cantigas"[4] and that the Arabs possessed a musical notation;[5] but I have failed to trace in his "Histoire des Arabes et des Mores d'Espagne" (1851) the statement, with which he is credited, that Europe borrowed its notation from the Arabs.

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[4] Viardot, ii, 183. He mentions the works of Al-Fārābī and Al-Iṣfahānī among the writings that might have influenced Alphonso X. Whilst Al-Iṣfahānī's work might have prompted the idea of compiling the famous "Cantigas," it is difficult to see what influence the theoretical treatises of Al-Fārābī could have had. In the University of Salamanca which Alphonso X reconstituted in 1254, and where he founded a chair of music, such a writer as Al-Fārābī might conceivably have exercised an influence.

[5] Viardot, ii, 183. See also ii, 85, where he speaks of the "écriture musicale des Arabes."

6.

J. B. TREND AND PROFESSOR JULIAN RIBERA ON THE ARABIAN MUSICAL INFLUENCE.

THE "Music of Spanish History to 1600," by J. B. Trend, already referred to, contains some interesting points on the "borrowings" of Spain from the Arabs in matters of literature[1] and music. He accepts the view that the Spanish *villancico* is dependent on Arabic forms.[2] He says also, that "recent research seems to show" that the troubadours, so long considered the "inventors" of modern poetry, really derived their sense of form, and even their subject matter, from the Spanish Muslims.[3] That the Arabian *zajal* is the regular pattern of the "Cantigas de Santa Maria" of Alphonso X, is admitted.[4]

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[1] The question of the influence of the Arabs on the literature of Europe has been a crowded arena of wordy combat since the appearance of Huet's "Origine Fabularum Romanensium" (1693).

[2] Trend, op. cit., p. 29.

[3] Op. cit., p. 30. What does Mr. Trend mean by "Spanish Muslims"? Does he mean "Arabs or Berbers of Spain," or "Spaniards who accepted Islām," i.e., the *Muwalladūn*? Cf. Trend, "Alfonso the Sage," p. 14.

[4] Op. cit., pp. 29, 62. See "Appendix," 8.

He is critical, however, of what he considers to be Professor Julián Ribera's theory, that "the musical settings of the 'Cantigas' are Moorish melodies." But is this really the theory of the savant Arabist of Madrid? Surely the recent work of Ribera does no more than demonstrate that the musical structure of the "Cantigas" reveals that Moorish musical idiom (especially in the rhythm) had impregnated Spanish music, or at least, the music of the court of Alphonso X, which is probably nearer the truth.[5]

[5] Cf. Ribera, "La Música de las Cantigas" (Madrid, 1922), cap. xii-xiii. See also Hurtado and Palencia, "Historia de la Literatura Española" (Madrid, 1925), p. 93.

7.

ORIENTAL INFLUENCES IN CAROLINGIAN ART.

THE Oriental influences in Carolingian art, which are to be discerned for the most part in the industrial arts, are generally considered to be Syrian.[1] Syrian, Arabian and Persian elements had already affected the development of Byzantine art in general.[2] From the fifth to the seventh century, Syria, Palestine, Mesopotamia and Egypt were centres of the industrial arts.[3] Then came the specific influence of the Islāmic dominion.[4] The question now arises—"How did this Oriental art reach Western Europe?"

Italy, France, Spain and Germany harboured considerable colonies of peoples from the East, for the most part

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[1] Janitschek, "Gesch. der Deutchen Malerei" (1890-—), 29. Leitschek, "Gesch. der Karolingischen Malerei" (1894), 38-53. Strzygowski, "Byzantinische Denkmäler," i, 53-67. Choisy, "Hist. d'Architecture," ii, 84. Peirce and Tyler, "Byzantine Art" (1926), p. 11.

[2] Taylor, "The Classical Heritage of the Middle Ages," 340. Peirce and Tyler, op. cit., pp. 5, 10.

[3] Dennison and Morey, "Studies in East Christian and Roman Art" (1918), 67. Dalton, "The Crystal of Lothair" ("Archæologia," lix, 30). Garrucci, "Storia dell' Arte," 52.

[4] See Appendix 9.

Jews and Syrians, who were engaged in commercial pursuits.[5] Here was a sure and certain channel for the introduction of Oriental art wares. Yet there were other means whereby this Oriental art could have penetrated Europe—(1) the nomadic habits of artists and craftsmen, and (2) the adoption of a foreign style by native artists trained abroad.[6] These were more likely to engender or suscitate fresh artistic impulses than the mere acquisition of *objets d'art* through traders. Where could these artists and craftsmen be found in close proximity to the Carolingian empire? Obviously in Al-Andalus or Arab Spain.

From the day when 'Abd al Raḥmān I (756-88) entered Cordova as Sulṭān, down to the collapse of the Umayyad dynasty in the eleventh century, the Syrian Arabs dominated in Al-Andalus. Like their forebears who had supported the Umayyads at Damascus, they cared little for the precepts of Islām,[7] and fostered the arts with open-handed generosity. We see Syria looming rather largely in the literature of these Umayyads, whose hearts were gladdened by reminders of their ancestral home. The Syrian influence in the architecture of Al-Andalus is unmistakable. From this one can only conclude that a considerable influx of Syrian artists and craftsmen, includ-

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[5] Bréhier, "Les Colonies d'Orientaux en Occident" ("Byzantinische Zeitschrift," xii, 1. Dill, "Roman Society in Gaul in Merovingian Times," p. 245. Heyd, op. cit.

[6] Dalton, op. cit., 32.

[7] It is curious that the Spaniards who had accepted Islām (the *Muwalladūn*), were, on the other hand, most fervid and bigoted in their religious temper, as much so as the Berbers.

ing Arabs as well,[8] followed on the heels of the establishment of the Umayyad dynasty in Al-Andalus. Perhaps the fame of Al-Andalus in its textiles and ceramics was due originally to Syrian artists.

Dr. W. Cunningham pointed out in his "Essay on Western Civilisation" (ii, 116) that there was no art in which the Arabs could not have given much instruction to their Christian antagonists, even though so much hostility severed the two polities. There was a fairly constant political and commercial intercourse,[9] and there was nothing to prevent Andalusian artists and craftsmen from journeying to Christian Spain and France. So long as the artist had his handicraft to display, the merchant his wares to barter, or the minstrel his instrument to play, there would appear to have been no hindrance to the foreigner in those days.

In the early days of the Umayyad régime, the Spanish Christians, known as the *Muzárabes*, had complete liberty of worship as well as political freedom.[10] That they practised the arts and crafts of the Muslims is evident, for indeed, they had adopted Muslim civilisation in almost everything save religion.[11] They, too, were free to travel, and so to pass on their arts and crafts to other lands. Rivoira thinks that it was the refugee *Muzárabes* seeking shelter from the persecutions of 'Abd al-Raḥmān II (d.

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[8] This certainly obtained in music, as we read of a large influx of musicians from the East. Al-Maqqarī, "Analectes," i, 225; ii, 89, 96.

[9] Embassies and cordial relations from 778 are emphasised more than once by the Carolingian writers.

[10] Dozy, "Recherches," i, 78 *et seq.*

[11] Ticknor, "Hist. of Spanish Literature," iii, 347.

852) and Muḥammad I (d. 886), who took the Arabian architectural devices into northern Christian Spain,[12] which only seems to have advanced culturally by imitating the Muslims.[13]

What happened in the industrial arts could similarly have taken place in music. The instruments delineated in the St. Menard, Lothair, Notker, and other documents of the eighth to tenth centuries have their *raison d'être* made palpable by such culture contacts as I have tried to visualise in the foregoing conditions.[14]

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[12] Rivoira, "Moslem Architecture," 241, 284, 346.

[13] Northup, "An Introduction to Spanish Literature," 12. See Hurtado and Palencia, "Historia de la Literatura Española," pp. 22-3: Asín, "Islam and the Divine Comedy" (1926), p. 238 *et seq.*

[14] See Schlesinger, "Precursors," pp. 280, 328, 370-1, 399.

8.

THE MINSTREL CLASS IN THE MIDDLE AGES.

"OF the science of music," as I remarked in my monograph,[1] "the wandering minstrel knew but little, for indeed, he was a mere performer who learned *for the most part*, 'by rote.'" Miss Schlesinger uses this point so as to prove that these wandering minstrels could not have influenced Europe in the theory of music.[2]

That the Arabian minstrels in general (especially the *qainât*, or female minstrels) were quite learned and scholarly people, we have, fortunately, plenty of evidence.[3] Possibly, the wandering type was not so likely to contain these elements as the domiciled class, but, at any rate, the Arabian, unlike the generality of European minstrels, were to some extent educated. They could read and write, at the very least, which was more than even many of the Christian clergy could do at that time.

What the ordinary Arabian minstrel possessed was not a knowledge of the science of music, of speculative theory,

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[1] "Arabian Influence on Musical Theory," p. 4. *Note my italics.*

[2] "Musical Standard," xxvii, 164, b.

[3] See the lives of the minstrels in the "Kitâb al-Aghânî" and the "'Iqd al-Farîd." See also Mrs. Burton's edition of the "Arabian Nights," i, 314; iii, 281-2.

but something that was more necessary to him in his vocation. This was the practical theory of his art, which was passed on from master to pupil. With the Arab minstrel it necessitated a knowledge of the various modes, of the "circulations" or compound modes, and of the transpositions of both. Of the rhythmic modes, of mensural values, of the art of "melody making," and of the "gloss," he was also required to have a complete mastery.[4]

That this individual had something fresh and novel to impart to Western Europe in melodic and rhythmic themes will be readily understood by those who are acquainted with Oriental music. That he brought instruments of the lute, pandore, and perhaps the guitar type into Europe, although he was not necessarily the originator of them, is generally acknowledged. A new era dawned in consequence. The minstrel class, as Naumann says,[5] were the real disseminators of music in the Middle Ages, "carrying the themes and a knowedge of the musical elements from one people to another." It was to their credit also that "many an original and singular rhythm" was introduced. This class had hitherto been served by the cithara and harp among stringed instruments, but with the advent of the Arabian minstrels, the new types of instruments mentioned above were introduced. The European citharist and harpist had only their ears to guide them when tuning their instruments, whereas the Arabian lutenist, pandorist and guitarist had their notes determined by frets on

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[4] For a typical account of the requirements of practical theory, see the "Kitāb al-Aghānī," i, 125, which is quoted in my "History of Arabian Music," Chap. IV.

[5] Naumann, "History of Music," i, 228.

the necks of their instruments, which were adjusted by *measurement*. This was one of the reasons why I stressed the importance of the culture contact with Arabian minstrels. That they influenced European minstrels in the matter of practical theory is highly probable. At any rate, the Arabs possessed written didactical methods in the ninth century,[5a], long before we have the slightest hint of their existence in Western Europe, as well as manuals on the manufacture of musical instruments in the thirteenth century.[6]

[5a] Al-Kindi (d. 874).

[6] Ibn Sa'īd Al-Maghribī (d. 1274-86) says that works on the science of melody "as well as on the various instruments and *the art of making them* are common among us." In the time of Ibn Rushd (d. 1198) and Al-Shaqandī (d. 1231), Seville was the centre for the manufacture of musical instruments, in which it had an export trade. Al-Maqqarī, "Moh. Dyn.," i, 43, 197, ii, 143.

Miss Schlesinger states, however, that in Europe, "*by the ninth century many musical tracts in Latin on organ building, on the proportion of pipes, ... had been written*" (p. 5). What are the "facts"? The earliest mediæval treatise on organ building in Latin is that of Theophilus, which dates from the eleventh century. This work, which deals with "divers arts," reveals incidentally how much Europe was indebted to the Arabs. (See "Theophili, qui et Rugerus, Presbyteri, et Monachi, Libri III, De Diversis Artibus." Opera et studio, R. Hendrie, London, 1847.)

As for writings on the proportion of pipes, we possess *one* MS. dating from the ninth century which contains a section, "De mensura fistularum." (Bibl. Nat., Paris, No. 12949, MS. Lat., fol. 43.) It is identical with an item in the treatise, "De mensuris organicarum fistularum," attached to the name of Hucbald, and with portions of tracts attributed to Bernelinus and Gerlandus in Gerbert's "Scriptores" (i, 148, 329; ii, 277). There is, of course, the section "De mensura fistularum organicarum" in the works ascribed wrongly to Notker Balbulus (d. 912), whereas the real author is Notker Labeo (d. 1022).

That the minstrel class in general was better equipped on the theoretical side of the art than were the church singers, is actually admitted by the monkish author of the Pseudo-Hucbald "Commemoratio brevis" treatise.[7] He bears testimony to the fact that the minstrel class (citharists, pipers, and other instrumentalists, as well as singers) possessed a practical theory,[8] whilst the church singers had no such advantage.

I have already mentioned that as early as the ninth century the Spaniards were imitating Arabian models in rhyme and metre.[9] Indeed, some of the *coplas* are but translations of Arabic songs.[10] Mr. J. B. Trend, the most recent English writer on Spanish music, says:[11] "There is no doubt . . . . that poetry in the form of *villancicos* was sung in Arabic, and even written down, by the Moors in Spain, and there are even supposed to be *villancicos* in which the refrain is in Old Spanish while the verses are in Arabic." The Jews were similarly affected. The rhyme and metre in the verses of such tenth century writers as Donnolo, Menahem ben Saruq, and Dunash ben Labrat, are imitations from the Arabic.[12]

In view of all this may we not reasonably suggest that the music which accompanied these verses was also borrowed or imitated? Indeed, Dr. T. G. Tucker, in his

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[7] Gerbert, "Scriptores," i, 213.

[8] "*Ad delectandos audientes artis ratione temperare.*"

[9] See *ante* pp. 16, 23.

[10] J. Fitzmaurice-Kelly, "A History of Spanish Literature," 16.

[11] Trend, "Proceedings of the Musical Association," Fifty-second Session (1925-6), p. 14.

[12] Steinschneider, "Jewish Literature," 151-2.

work on "The Foreign Debt of English Literature" (1907), observes that in dealing with the borrowings of Spain and Provence from the Arabs in verse, we must take cognisance of the music.[13] Mr. Trend quoted above says: "My own experience leads me to the belief that what is 'Oriental' about Southern Spanish music is not the music itself, but the manner of performance."[14] This judgment corroborates to some extent my own contention of the instrumental borrowings from the minstrel class in the matter of that scheme of decoration known as the *zā'ida* or "gloss," and that first step towards *organum* known as the *tarkīb* or "compound."[15]

That the Arabian minstrel contributed to the musical progress of Western Europe long before, as well as subsequent to the literary contact, there cannot be much doubt.[16] We see both the Muslim and the Jew[17] among the *juglares* and *juglaresas* in Christian Spain from the

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[13] Tucker, op. cit., pp. 127, 130, 217.

[14] Trend, loc. cit.

[15] Farmer, "Arabian Influence on Musical Theory," p. 4, *et seq.*

[16] The most recent authority, R. Menéndez Pidal, in his "Poesía Juglaresca y Juglares" (Madrid, 1924), says: "Pero particularmente los juglares musulmanes de Arabia, Persia, Siria y Egipto tuvieron especial acceso entre los musulmanes andaluces desde los esplendorosos tiempos del califato de Córdoba, y bayo su influjo se formaron en la España árabe importantes escuelas de juglares; . . . . La influencia de la juglaria musulmana hubo de ser muy grande. Los cristianos se recreaban con la música árabe y también con el canto, aunque por su excesivo tecnicismo fuese casi imposible de entender para un europeo" (pp. 136-7).

[17] The Jew in both poetry and music was dominated by Arabian models. Steinschneider, "Jewish Literature," 151-7.

eleventh century onwards.[18] Earlier documents showing their actual presence are wanting, but the instrumental types of the eighth, ninth and tenth centuries are eloquent testimony.[19]

Even among the wandering minstrels of Europe we can look with some certainty to the existence of a fair sprinkling of Orientals. Here the latter would be welcomed for their "novelties," just as the Oriental pedlar was similarly received in trading life. Creed or colour would matter little in the goodly fellowship of the wandering *ministrelli* and *joculatores*, so long as there was the ability to sing or play. Perhaps the gaudy raiment decked with festoon and ribbon, the long hair and painted face of the minstrel class were due to Oriental influence.[20] The morris dancers undoubtedly had their origin in the Moorish dancers,[1] and their hobby-horse and grelots are certainly reminiscent of the Arabian minstrels.[2] The fact that the morris dancers for a long time afterwards dyed

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[18] For the year 1064, see Al-Maqqarī, "Mohammedan Dynasties," ii, 269. For 1139, under Alphonso VII (not 1137, Alphonso VI, as Mitjana says), see "España Sagrada," xxi, 377. Out of the twenty-seven *juglares* of Sancho IV of Castille in 1294, thirteen were Moors and one was a Jew. (See "Apéndice I." of R. Menéndez Pidal.) We see them also with Alphonso X (d. 1284) and in the poem of Juan Ruiz (fourteenth century). Muslim and Jewish *juglares* are condemned in an edict of 1322 (J. Tejada y Ramiro, "Colección de Cánones y concilios de la Iglesia española," iii, 500).

[19] See Schlesinger, "Precursors," pp. 280, 328, 370, 371, 399.

[20] For the Arabs see the "Kitāb al-Aghānī" (sub "Ṭuwais"). "Alf laila wa laila" (Macnaughten Edit.), iv, 166. Al-Maqqarī, "Moh. Dyn.," ii, 108.

[1] Strutt's argument against the Arabian origin is quite invalid.

[2] Ibn Khaldūn, "Prolégomènes," ii, 421.

their faces, as Thoinot Arbeau said in 1589, almost bespeaks their genesis. The Spanish word *mascara* and the English *masker* ("play actor," *lit.* "wearer of a mask") is the Arabic maskhara ("buffoon"), just as the mediæval Spanish *zaharrón* is the Arabian *sukhara* or *sukhra* ("laughing-stock," "scoffer").[3]

Miss Schlesinger wishes literary proof (i.e., documents) of the Arabian influence due to the minstrel class.[4] I have already said that this influx of Oriental musical ideas is determined by circumstances which I have called the *political contact*, when documents are as rare as charity between fellow musicographers. It is quite distinct from the *literary and intellectual contact*. Perhaps the best illustration of the distinction may be shown by reference to literature itself. We can trace, for instance, the Hispano-Latin "Disciplina Clericalis" of Petrus Anfusi (fl. 1106) to the Arabic "Kalīla wa Dimna," itself translated from the Pahlawī by Ibn al-Muqaffa' (d. 757). Here, the literary ancestry of Spain's borrowing is quite definite. On the other hand, we have cases where the loaning, whilst palpable enough, as Professor W. P. Ker says,[5] "is not traceable in any literary manner." For example, the use of the word *serraglio* in "Flores and Blanchefloure," and the name *aucassin* in "Aucassin and Nicolette." Since the stories have "no literary ancestry that can be traced in books," we may not be far wrong in assuming that their origin must be due indirectly to the Arab minstrel, who was as often as not a *rāwī* or "story teller."

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[3] Dozy and Engelmann, "Glossaire," *sub voce*.

[4] "Musical Standard," xxvii, 164, b.

[5] "The Dark Ages," pp. 13, 14.

We see precisely the same thing in music. We know quite definitely that Gundisalvi or Gundissalinus (fl. 1130-50)[6] Vincent de Beauvais (d. 1264),[7] Roger Bacon (d. 1294),[8] and Jerome of Moravia (thirteenth century),[9] borrowed from two works of Al-Fārābī's known in Latin as "De scientiis" and "De ortu scientiarum." It is this knowledge that enables us to trace a definition here and there in other works where the name of Al-Fārābī is not mentioned.[10] On the other hand, we cannot trace the direct ancestry of European *organum* to the Arabs, but from the evidence that I have submitted, I believe that it is quite probable that the prompting came from the *tarkībāt* of the Arab minstrels.

The influence of the minstrel class in general on musical progress cannot be ignored. The minstrels were not only the real disseminators but the innovators. Indeed, how could music have made the progress that we see in the early Middle Ages had the church and written music been the only means? The explanation must be sought in the minstrel and the oral propagation of his art. The minstrel was not bound by conventional *usus* like the church singer. Further, the vast instrumental resources of the former gave him an immense superiority, especially

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[6] Baer, "Dom. Gundissalinus," p. 96, *et seq.*

[7] Vinc. de Beauvais, "Speculum doctrinale," Bk. i, Sect. 17.

[8] Bacon, "Opera quædam hactenus inedita" (1859), 231-2.

[9] Coussemaker, "Scriptores," i, 10.

[10] Johannes Cotto (*c.* 1100), Pseudo-Aristotle (thirteenth century), Johannes Ægidius (*c.* 1270), Kilwardby (d. 1279), Raimundo Lull (d. 1315), Johannes de Muris (fourteenth century), and Adam de Fulda (*c.* 1490).

after the Arabian contact. It was inevitable that the church had to follow the minstrel in the long run, for the church only moves when the world moves.[11]

NOTE.—Since the above was written fresh literature on the subject has appeared, and I would especially call attention to Professor Julián Ribera's "La música árabe y su influencia en la española" (Madrid, 1927), and Professor S. Singer's article, "Arabische und europäische Poesie im Mittelalter," in "Zeitschrift für Deutsche Philologie," Bd. 52 (April, 1927).

[11] See the interesting lecture by Professor C. H. Haskins in "Speculum" (April, 1926), entitled "The Spread of Ideas in the Middle Ages."

9.

PRE-ISLĀMIC ORIENTAL INFLUENCES.

THERE is scarcely a phase of Greek intellectual and artistic life that does not reflect some trace of the Orient, some of it specifically Arabian. Coming to the days of Byzantium, how much of the so-called Syrian influence ought to be accounted Arabian, is still to be investigated. The recent researches of Professor J. H. Breasted have demonstrated that Byzantine painting can be traced back to an oriental source, and notably to Palmyræan art.[1] Palmyra was the chief commercial entrepôt in Northern Arabia. It fed Antioch, the mart of oriental trade for Europe. Paul of Samosata (third century), who was Bishop of Antioch, then part of the Arab kingdom of Palmyra, was the vice-regent of the Arab Queen Zenobia. He created a stir in ecclesiastic circles by his innovations in the music of the Syrian church, and one is inclined to ask what this new type of music was that so raised the ire of Eusebius? Could it have been the pagan music of Palmyra? He certainly employed

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[1] Breasted, "Oriental Forerunners of Byzantine Painting" (1923). See also Peirce and Tyler, "Byzantine Art" (1926). Bouchier, "Syria as a Roman Province" (1916), Chap. XII.

female singers in his choirs, and the music was accompanied by hand-clapping, the Arabian *ṣafq*.[1a]

Long ago it was suggested that the florid song, the antiphon, and the neumes, came from the Syrian church.[2] St. Basil (died 379), defending the practice of antiphonal singing, argued in justification, that the elect of the church in *Arabia*, Phœnicia, Syria, and neighbouring lands, indulged in this custom.[3]

The question of the origin of the neumes has been discussed by many able writers,[4] but the derivation of the mediæval word *neuma*, from the Greek νεῦμα ("a nod, sign"), is not satisfactory. It seems far more likely that the word came from the Syriac *ne'mo* (= *sonus, vox, cantilena*), which we find in St. Ephraem (died 378) and Philoxenos (died *circa* 523). The Hebrew *ne'imah* and the Arabic *naghma* have the same meaning as the Syriac.[5]

[1a] Cf. "Bulletin of the John Rylands' Library, Manchester," xi, 160-1.

[2] Gevaert, "Mélopée Antique," xxxii, *et seq.*

[3] Sozomen, "Hist. Eccles.," li, lv, cap. xxvi.

[4] Coussemaker, "Hist. de l'harmonie au Moyen-Age" (1852); Schubiger, "Die Sängerschule San Gallen" (1856); Pothier, "Les mélodies grégoriennes . . ." (1880); Fleischer, "Neumenstudien" (1895-1904) and "Die germanischer Neumen" (1923); Gassier, "Les hirmoi de Pâques dans l'office grec" (1905); Gastoué, "Les origines de Chant Romain" (1907); Thibaut, "Origine byzantine de la notation neumatique de l'Église Latine" (1907); Banister, "Monumenti Vaticani" (1913).

[5] Riemann noticed the likeness of the Latin to the Talmudic-Hebrew word. ("Handbuch d. Musikgeschichte," 1904-13, i, ii, 82.)

In the middle ages the Latin *neuma* stood for *vocum emissio, modulatio.*[6]

It was certainly from Syria that the eight church modes of Western Europe came.[7] They were the Syriac *ikhadias* (= Ὀκτώηχος).[8]

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[6] See Du Cange, "Gloss.," s.v. "Neuma" and "Pneuma." See also Nicholson, "Early Bodleian Music" (1901); and Thibaut, "Monuments de la notation ekphonétique et neumatique" (1912).

[7] Gevaert, "Mélopée Antique," 106; Jeannin, "Mélodies Liturgiques," i, 85.

[8] Cf. "Bulletin of the John Rylands' Library, Manchester," xi, 140.

10.

ISLAMIC SCHOOLS AND COLLEGES.

AS for the schools and colleges of the Arabs, Miss Schlesinger suggests that the late tenth century is the earliest that can be adduced for the Arabs of Spain.[1] She says: "Mosheim speaks of the seminaries of learning established by the Arabs in Cordova and Seville late *in the tenth century* and gives them full credit for the excellence of their teaching."[2] The impression is erroneous since the Arab schools in Spain can be traced to the eighth century. First of all, however, let us examine the reference to Mosheim. Maclaine's translation, to which Miss Schlesinger refers, is now authoritatively discarded,[3] although in the question at issue the point is unimportant.

In the first place, Mosheim refers to the learning of the Arabs *in the ninth century*. He says: "The Arabians began to find pleasure in Grecian science, and to propagate it by degrees not only in Syria and Africa, but also in

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[1] The words are *italicised* by her.

[2] "Musical Standard," xxvii, 209 b.

[3] Mosheim, "Institutes of Ecclesiastical History," translated by Murdock and Reid, 1848; preface, iii. "Encyclopædia Britannica," xviii, 898.

Spain and even in *Italy*."[4] Further, when he does come to *the tenth century*, not *late in the tenth century* as Miss Schlesinger writes, he shows that Europe was deeply indebted to the Arabs. He says:[5] "Truth requires us to say that the Saracens or Arabs, particularly of Spain, were the principal source and fountain of whatever knowledge of medicine, philosophy, astronomy and mathematics, flourished in Europe from the tenth century onwards." In the eleventh, twelfth and thirteenth centuries, Western Europe was still borrowing from the Arabs, says Mosheim.[6] In view of the importance of this question of the date of Arab schools and colleges, especially in Al-Andalus or Spain, the matter deserves attention.

Schools in Islāmic lands may be traced back to the dawn of Islām, when Abū'l-Dardā (died 652) taught in the mosque. Knowledge of the Qur'ān had made schools imperative, and the mosque was invariably the *locus* of the teaching.[7] In the elementary schools, reading, writing and computation were taught. When 'Abd al-Raḥmān I (died 788) founded the principal mosque at Cordova, he took care to endow colleges and schools attached to it.[8] His successor Hishām I (died 796) founded more schools.[9] whilst 'Abd al-Raḥmān II (died 852) raised schools in many other cities, and at the principal mosque at Cordova

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[4] Mosheim, op. cit., 291.
[5] *Ibid.*, 332.
[6] Mosheim, op. cit., 352, 400, 441.
[7] Ibn Khallikān, "Biog. Dict.," i, xxx, *et seq.*
[8] Conde, "Hist. of . . . . the Arabs in Spain," i, 223.
[9] *Ibid.*, i, 239.

he maintained three hundred orphan scholars.[10] Precisely the same sort of thing may be traced in other Islāmic lands. It was said of Hārūn (died 809) that he never built a mosque without endowing a school attached to it.

Out of the *Ḥadīth* ("Traditions"), law schools grew where Qur'ānic exegesis and criticism, as well as jurisprudence, metaphysics (?), rhetoric and lexicography were taught. These were controlled by the various legal sects. Generally speaking, however, these law schools did not teach the *quadrivium*. This course was reserved for technical colleges and the schools of private professors,[11] except in Al-Andalus where "all the sciences were taught in the mosques" and not in technical colleges.[12]

Students desirous of treading the "seven-fold path" after leaving the elementary schools, entered the law schools and technical colleges or the schools of private professors. After a prescribed course, they received a *licentia (ijāza)* which permitted them to teach, and was the only passport to the liberal professions. The oldest of these technical colleges was probably the *Bait al-Ḥikma* at Baghdād founded by Khalif Al-Ma'mūn (died 833). Some were devoted to special branches such as the Baghdād *Bīmāristān*, which was primarily a hospital. In others, such as at the *Dār al-Ḥikma* at Cairo, the entire *quadrivium* and other sciences were taught. In the schools of the private professors the student was lodged

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[10] *Ibid.*, i, 274.

[11] Ibn Khallikān, i, xxx; Narendra Nath Law, "Promotion of Learning in India during Muhammadan Rule," page 117.

[12] Ibn Khallikān, i, xxxi; Al-Maqqarī, "Moh. Dyn.," i, 140-1.

and boarded, and many interesting particulars of this type of teaching have been preserved.[13]

Al-Andalus, and its interest in science is of particular moment on account of its political and intellectual contact with Western Europe. An Arab of Al-Andalus named Ṣā'id ibn Aḥmad (died 1069) gives important information on this question.[14] He says that in the days of Muḥammad I (852-86) "the learned of Al-Andalus ex-

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[13] A pupil of the famous mathematician, Kamāl al-Dīn ibn Man'a (born 1156), who was a collegiate professor, relates his first interview with his master as follows: "He [Kamāl al-Dīn] asked me by what science I wished to begin. 'By [the theory of] music,' said I. 'That happens very well,' said he, 'for it is a long time since anyone studied it under me, and I wished to converse with some person on that science so as to renew my acquaintance with it.' I then commenced [the theory of] music, after which I passed successively to other sciences, and, in about the space of six months, I went over more than forty works under his tuition. I was already acquainted with [the theory of] music, but I wished to be enabled to say that I had studied that science under him." See Ibn Khallikān, iii, 471-3; and Abū'l-Fidā'," "Annal. Mosl.," iv, 528.

For pictures of these private schools, see Martin, "Miniature Painting and Painters of Persia, India and Turkey." A critical work dealing with the schools and libraries of Islāmic peoples is badly needed. Middeldorpf, "Commentatio de institutis literariis in Hispania" (1810); Murphy, "History of the Mahometan Empire in Spain" (1816); and Viardot, "Histoire des Arabes et des Mores d'Espagne" (1841), are out of date. More recent works, such as Ribera, "Bibliófilos y bibliotecas en la España musulmana" (1896) and "La Enseñanza entre los musulmanes españoles" (1893); "Sánchez Pérez, "Biografías de matemáticos árabes que florecieron en España" (1921); Khudā Bakhsh Khān, "Islāmic Libraries"; and Narendra Nath Law, "Promotion of Learning in India during Muḥammadan Rule," are useful.

Since the above was written the article on the *Kitābkhāna* has appeared in the "Encyclopædia of Islām."

[14] Al-Maqqarī, "Moh. Dyn.," i, 140, and Appendix xl.

erted themselves in the cultivation of science, and laboured in it with assiduity, giving evident proofs of their acquisitions in all manner of learning." In the science of music, the first fruit was Ibn Firnas (died 888).[15] This continued, we are told, until the reign of Al-Ḥakam II (died 976) when "the torch of science shone brighter than ever." The scientific writings of the ancient Greeks were especially studied. After his death the theologians gained political power, and the study of some of the sciences of the "Ancients" (the Greeks) was forbidden. The sulṭān's magnificent library of four hundred thousand volumes was ransacked of "heretical" books which were destroyed wholesale. Throughout the land, the same puritanical spirit prevailed.

The special subjects banned at this period would appear to have been natural philosophy and astronomy (= astrology), whilst the sciences of medicine, arithmetic and presumably music, were permitted. That mathematics in general flourished in spite of the ban, we know from the fame of several contemporary professors. Of the celebrity of Al-Andalus in these departments we have the panegyric of Ibn Ghālib (died 1044) who likens the Andalusians to the Indians "in their love of learning, as well as their assiduous cultivation of science," and to the Greeks "in their knowledge of the physical and natural sciences."[16] Ibn al-Ḥijārī (died 1194) says that during

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[15] See Aḥmad Zākī Bāshā, "L'Aviation chez les Musulmans" (Cairo, 1912).

[16] Al-Maqqarī, "Moh. Dyn.," i, 117-8. It is interesting to note Ibn Ghālib's explanation for the superiority of the Arabs of Al-Andalus in the arts and sciences. According to him it was due to planetary influence. Venus endowed them with "a lively imagin-

the rule of the Umayyads in Al-Andalus (eighth to eleventh century), "students from all parts of the world flocked . . . . to learn the sciences of which Cordova was the most noble repository, and to derive knowledge from the mouth of the doctors and *'ulamā* who swarmed in it."[17]

On the fall of the Umayyads in the eleventh century, learning languished for a time, but with the rise of the petty states there came a widespread revival, and it was especially due to the Amīr Yaḥyā al-Ma'mūn (died 1074) of Toledo that the mathematical sciences were particularly fostered.[18] Indeed, Al-Shaqandī (died 1231) says that "the cause of science and literature, instead of losing, gained considerably" by the break-up of Al-Andalus into the petty states.[19]

It is worthy of notice that the phrases *studium generale* and *universitas collegium* are equivalent to the Arabic *madrasa kulliyya*.[20] In the Islāmic colleges in Cairo under the Fāṭimids, the doctors in the various faculties wore distinctive gowns *(khila')*, and it is said that the ordinary gown of British universities retains the original form of the Arabian *khil'a*. In the Alhambra at Granada there is a wall painting (thirteenth century) depicting the sulṭān in conclave with two of the *'ulamā* or *fuqahā*. The latter wear the bands or labels on their collars that we see

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ation, elegance of manners . . . . love of pleasure and music," whilst Mercury was responsible for their "ardour in the acquisition of learning, love of philosophy and the natural sciences." Al-Maqqarī discreetly criticises this view.

[17] Al-Maqqarī, i, 30.

[18] *Ibid.*, i, 384.

[19] *Ibid.*, i, 35. See also i, 37, 40, 42, 53, 67.

[20] Davidson, "History of Education," 169.

on the vestments of our ecclesiastics and lawyers even to the present day.[1] The greater part of Spanish words derived from the Arabic are concerned with the arts and sciences.[2]

[1] Murphy, "The Arabian Antiquities of Spain," pl. xlv.

[2] Hurtado and Palencia, "Historia de la literatura Española" (1925), page 50. See also Dozy and Engelmann, "Glossaire des mots espanols et portugais dérivés de l'Arabe."

11.

THE ARABIC LANGUAGE IN SPAIN.

THE reference by Alvarus (ninth century) to "Arabic books" *(volumina Caldaeorum)* being studied so assiduously by Spanish Christians may refer especially to the so-called "Chaldæan sciences."[1] As early as 719 (?724) we read that Johannes Episcopus Seviliensis had translated the Bible into Arabic.[2] In 804 we find Arabic having official use in charters, and even Arabic versions of canonical decrees appeared, to say nothing of the records of Christian churches being kept in this language. From all this it may be taken for granted that the Christian clergy were as well if not better acquainted with Arabic than with Latin.[3] Indeed, it is confessed that "it is a marvel with what rapidity Arabic was adopted in the conquered territories; in fact it seems to have spread like wild-fire."[4]

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[1] See Bubnov, op. cit., 372; Thorndike, op. cit., i, 711.

[2] Juan de Mariana, "Hist. gen. de España," vii, 3; Walton, "Bibl. Polyglot" (Prol. xiv), i, 93-7. See the article by the orientalist, H. S. Gehman, in "Speculum," April, 1926.

[3] Wiener, op. cit., i, 42; Hume, "Spanish Influence on English Literature," 12.

[4] "Speculum," April, 1926, page 221.

Concerning the *Codex Toletanus* of Isidore's "Etymologiæ" which contains Arabic "glosses" said to date from the eighth century, it may be of interest to mention that there is but a solitary Arabic "gloss" in the section on "Music." It occurs in *lib.* iii, *cap.* xxi, which deals with "Wind Instruments." Opposite the exordium is the Arabic "gloss," *al-nay.* This is the generic Arabic term for "wood-wind instruments."[5] It is accompanied by a design of a horn or trumpet.[6]

It was the same with the Jews. From the ninth century Arabic was used by them even in liturgical writings, prayers and poems,[7] for this language, with the study of the *Halacha,* flowed with the Arabs over North Africa and Spain.[8] The complaint of Alvarus that the Christian congregation spoke Arabic was echoed by Ibn Gabirol or Avicebron (died *circa* 1070) concerning his Jewish co-religionists, when he said that one half of them spoke Idumean (Romance) and the other half the tongue of Kedar (Arabic).

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[5] This is the Persian way of writing the word. In Arabic it is usually written *al-nāy.*

[6] See Beer's phototype edition of this codex (Leyden, 1909), fol. 28.

[7] Steinschneider, "Jewish Literature," 65.

[8] *Ibid,* page 61.

12.

THE FIRST ARABIC LATIN TRANSLATIONS.

CONCERNING the Latin translation of Arabic works, Miss Schlesinger says:[1]

"This would probably not be before the end of the twelfth century or the beginning of the thirteenth century at the earliest, for the college of translators from Arabic into Latin, founded in 1130 by Raymund, Archbishop of Toledo, set to work first of all upon Aristotle and the medical, mathematical and philosophical writings of the Greeks."

The first statement is erroneous, and the remainder is assumption. As Professor Lynn Thorndike has recently said: "The first translations of mathematical and astronomical works from the Arabic go back to the tenth century *at least*,"[2] a point I have fully demonstrated.[3] From the evidence of the vogue of Arabic among the Spanish clergy in the eighth to ninth centuries (see Appendix 11) it is not improbable that the work of translation began

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[1] "Musical Standard," xxvii, 23 b.

[2] Thorndike, "History of Magic and Experimental Science," i, 772.

[3] See *ante*, p. 24.

even as early as this. I do not see how it could be otherwise, seeing that it is now generally admitted by the best authorities that the Arabs could claim intellectual leadership from the eighth century,[4] and the sciences were already in full swing in Al-Andalus by the ninth century.[5] Latin translations from the Arabic of the Greek treatises on the sciences can possibly be traced *two centuries earlier* than the date given by Miss Schlesinger. Certainly they were made *one century earlier* (i.e., in the eleventh century), as we know of Constantine the African (d. 1087) as a translator. There were also many workers outside of Spain,[6] such as Adelard of Bath (c. 1120), Stephen of Antioch (*c.* 1127), Peter of Monte Cassino (*c.* 1127), and Eugenius of Sicily (*c.* 1154).

As for the statement[7] concerning a "college of translators . . . . founded in 1130 by Raymund," it must be pointed out that history knows absolutely nothing of a formal "college of translators,"[8] much less a specific date for its foundation. What we do know is from the dedications of two Toletan translators of the period, Gundissalinus (= Gundisalvi) and Johannes (ibn) David (= John

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[4] The latest are, Dr. Charles Singer, "The Evolution of Anatomy" (1925), 67; and F. E. Robbins and L. C. Karpinski, "The Arithmetic of Nicomachus" (1926), p. 143.

[5] Al-Maqqarī, "Moh. Dyn.," i, 140, and xl.

[6] In Spain, it was not merely at Toledo that the translations were made. Pamplona, Tarazona, Leon, Barcelona and Segovia are mentioned in this respect.

[7] Schlesinger, "Musical Standard," xxvii, 23, b.

[8] The phrase has certainly been used by others.

of Seville, John of Spain) that they worked at the bidding of Raymund, whose archiepiscopate dates from 1125-51.[9]

In the question of Latin translations of Greek works from the Arabic, it is interesting to note that the bulk of the Greek MSS. are later than the Latin, and that the Latin are later than the Arabic.[10]

[9] Jaffe-Lowenfeld, "Regesta," No. 7273.
[10] Campbell, "Arabian Medicine" (1926), i, 122.

13.

GERBERT AND THE ARABIAN CONTACT.

GERBERT (d. 1003) played a very important part in the renewal of scientific pursuits which had fallen into desuetude after the collapse of the Carolingian Empire.[1] War and rapine—the Norsemen, the Slavs, and the Muslims, as well as internecine strife, had brought exhaustion of intellectual activity, at any rate in the sciences, to Western Europe. Rheims, the centre of culture in France, had seriously declined since the days of Remy of Auxerre (d. 908), and by the manner in which Bishop Adalberon (d. 989) speaks, it would appear that studies had practically ceased.[2] At Cluny things were not much better. The reforms of Odo (d. 942), primarily a moral ordering, had a reflex influence on letters, although Odo looked on the classics with disfavour,[3] a lead which was followed by many monasteries. At Cluny, the subjects of the *quadrivium* were but little studied.[4] In Italy the condition of learning was equally

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[1] Gevaert, "Mélopée Antique," 187.

[2] Richer, iii, 42.

[3] Mabillon, "Acta Sanct. O.S.B.," Sæc. V, 154.

[4] Pfistner, "Études sur la règne de Robert le Pieux," 2. Cf. Sackür, "Die Cluniacenser," ii, 330.

as deplorable.[5] Germany, however, had already moved forward under the impulse of Bruno (d. 965). It was he, it is said, who restored the long-ruined fabric of the seven liberal arts.[6]

With the Capetian rule in France, the Saxon in Germany, and the influence of Otto I in Italy at the close of the tenth century, there came social and political stability. In their train there followed a revival of culture. The external forces contributing to this revival were Byzantium and Al-Andalus, the latter probably the greater on account of its proximity and because its culture was nearer the level of that of Western Europe.[7] In Al-Andalus of the Arabs, learning flourished on every hand, as we have already seen,[8] especially under Al-Ḥakam II (961-76), the period of Gerbert's sojourn in the Spanish March.

The socio-political importance of Al-Andalus in the tenth century must have enhanced the propagation of Arabian culture. Quite apart from the *Muzárabes* and *Mudéjares*,[9] to say nothing of the Jews who acted as the

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[5] Gregorovius, "History of the City of Rome in the Middle Ages," iii, 136, 146.

[6] R. L. Poole, "Illustrations," 86.

[7] This is the view of C. W. Previté Orton, "Outlines of Mediæval History" (1924), p. 91.

[8] See Appendix 10.

[9] The *Mudéjares* were the Arabs who remained in the Spanish lands after the Christian reconquest. We read of them as early as the ninth century, and they remained until the final expulsion of the Arabs in 1606-10. Of their political importance under Christian rulers we have ample proof in the numerous *fueros* or capitulations granted them, notably those of Huesca (1081), Tudela (1115), and Játiva (1251), where we see the *Mudéjares* in full possession of rights to exercise their religion, laws, language, dress and *customs*.

via media between Eastern and Western civilisations, the constant intercourse, political, industrial and commercial,[10] between Western Europe and Al-Andalus and Sicily must have counted considerably in the question of the loaning of ideas.[11] "Saragossa was fast growing into an important seat of Arabic learning. Christians met with little persecution at the hands of the Muhammadans, and Jews travelled freely between the two states. It is therefore by no means improbable that much Arabic learning was common in the Spanish March."[12] It was in the latter that Gerbert spent the formative years of his intellectual life. (See *ante*, p. 32.)

Smith and Karpinski ("The Hindu-Arabic Numerals," III), following Havet ("Lettres de Gerbert," vii), say that Barcelona was the only Christian province in immediate

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[10] The political intercourse was rather important. From the time of 'Abd al-Raḥmān III (912-61) to Al-Hishām II (976-1009) many important embassies from foreign courts visited Cordova, including Asturias and Leon, Navarre, Catalonia (= Barcelona), Castille, France, Germany, Normandy, Rome, Byzantium and the Slav kingdom. The importance of these embassies from a point of view of culture diffusion can best be gathered from the accounts of Al-Maqqarī ("Moh. Dyn.," ii, 137-43; 159-68). On two occasions, at least, the Khalif's ambassadors to foreign courts were Christian bishops! Al-Maqqarī, i, 482; ii, 139.

[11] Cunningham, "An Essay on Western Civilisation," ii, 116.

[12] "English Historical Review," vii, 627. In Christian Spain, outside of the monasteries and abbeys, illiteracy prevailed, and even the judges in civil courts could not sign their own names. See Adreth, "Jüdische Unterrichtswesen während der Spanisch-Arabischen Periode," i, 982; vii, 74, and Kayserling, "Jüdische Erziehungswesen." The people bartered commodities as they had no coinage. "España Sagrada," xix, 383. Arabian and Jewish scholars were always welcome. Indeed, for measuring their land the Spaniards had to rely on the help of the "infidels," F. de Berganza, "Antiguedades de España," i, 197.

touch with Arabian civilisation at this time. This is not correct. The kingdom of Asturias and Leon as well as that of Navarre were in the closest touch with Al-Andalus. It was 'Abd al-Raḥmān III who restored Sancho to his throne in 962. His rival, Ordoño, was busy at Cordova in the reign of Al-Ḥakam (d. 976) with political intrigue. During the Gerbert period, Asturias and Leon under Ramiro III (967-82) was in peaceful contact with Al-Andalus.[13] Barcelona, which partly derives its name from the Arabic form of Barshilūna, was occupied by the Arabs from 713 to 801. It was again held by them for a short time in 856, and once more in the following century from 985 to 987.[14]

What Gerbert learned from Arabic sources, either from books or from teachers, direct or indirect, during his sojourn in the Spanish March we have no precise evidence of. What accrued later from his contact with Arabian culture is palpable. There are strong reasons for believing that whilst he was teaching at Rheims a more definite prehension of Arabian culture was made by Western Europe. After the death of Al-Ḥakam (976) and the elevation of the wazīr Al-Manṣūr to the chief position of state in Al-Andalus, the "Greek" sciences were proscribed. (See Appendix X.) The inhibition was rigorously en-

[13] As for the chief cities in culture contact, Zamora in Leon was only forty miles distant from Salamanca in Al-Andalus. The Andalusian cities of Tudela and Saragossa were about fifty and eighty miles respectively from Pamplona, in Navarre, whilst the Andalusian towns of Tarragona and Lerida were about sixty and eighty miles respectively from Barcelona.

[14] Dozy, "Hist. des Musul. d'Espagne," iii, 199, says that the final capture of Barcelona by the Christians was in 987, but Al-Maqqarī, "Moh. Dyn.," i, 74, says that it was in 993-4.

forced, and it is not unlikely that many of the professorial class were compelled to leave Cordova and contiguous cities, and to seek refuge in the semi-independent Arab states in the north, or even in the Spanish March.[15]

It was possibly partly due to this immigration that a fresh tide of Arabian culture was spread northward, reinforcing the movement of translation into Latin of Arabic works that had already begun.[16] We see how this culture had penetrated by reference to two MSS. of northern Spain which date from 976 and 992.[17] At any rate, Gerbert was imbued with the new culture from the south, which we have a fair index of in his demands for books, and above all in his treatise on the astrolabe. We are told that Gerbert "was the first to introduce into the schools instruments as an assistance to the study of arithmetic, astrology and geometry."[18] It is not improbable that he was also the first to make *practical* use of the monochord in the speculative and practical theory

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[15] Immigrants from Al-Andalus had been carriers of its culture on other occasions. The persecutions of the Muzárabes in the ninth century, drove them into Christian lands, where they carried with them the new architectural devices of Al-Andalus. Rivoira, "Moslem Architecture" (1918), 241, 284, 346. In the twelfth century, much Arabian science was spread abroad by Arabian and Jewish savants, who sought an asylum beyond Al-Andalus out of the reach of the persecuting Muwaḥḥids, to say nothing of the ten thousand Muzárabes who were driven out. Farmer, "Arabian Influence on Musical Theory," 10, 12. Geiger, "Lit. bl. der Israeliten" (1846), 134.

[16] See *ante*, p. 24.

[17] P. Ewald, "Mittheilungen, Neues Archiv. d. Gesells. für ältere deutsche Geschichtskunde," viii, 354 *et seq.* Steffens, "Lateinische Paläographie," xxxix, *et seq.*

[18] "Engl. Hist. Rev.," vii, 631.

of music. Whatever the earlier theorists of music had to say about the monochord and its divisions, they merely echoed the book-lore of Boëthius. Gerbert, on the other hand, appears to have used it for practical demonstration to his pupils, and was probably the first to do so in Western Europe.[19]

Music theory was one of the courses of the *quadrivium*, and was purely a question of mathematics.[20] Richer, the biographer and pupil of Gerbert, deals with his master's contribution to the *quadrivium*. After the science of arithmetic was studied, says Richer,[1] Gerbert "passed to the theory of music, which was unknown to the Gauls before his time. He established on the monochord its divisions *(genera)*, distinguishing the consonances or symphonies in tones and semitones, ditones as well as dieses; and by dividing the notes *(toni)* into sounds consistent with reason, he brought the theory of music to the greatest perfection."[2]

The fact that Gerbert was known in the twelfth century as "The Musician," shows quite definitely that he must have made an important impression in this sphere

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[19] This opinion of the *practical* use of the monochord is in harmony with Gerbert's practice in the other mathematical sciences: his use of the *abacus* in arithmetic and of spheres in astronomy.

[20] Hearnshaw, op. cit., 195. Maître, op. cit., 238.

[1] St. Thomas Aquinas (d. 1274), in his "Summa Theologiæ," makes music proceed from arithmetic. Robert Kilwardby (d. 1279) linked them together.

[2] Richer, "Hist.," iii, 49. See also Guadet, "Richer: Histoire de son temps," ii, 55. Maître, "Les Écoles Episcopales et Monastiques de l'Occident," 238.

in his day.[3] What his definite contribution was to music we cannot say, since we have no word (outside his reputation in organ construction) beyond what Richer has vouchsafed. Since the time of Regino (d. 915) and probably Hucbald (d. 930) there had been no real contribution to the theory of music.[4] The former was for the most part a servitor of Martianus Capella, Boëthius, Cassiodorus, Isidore, and Aurelian of Réomé.[5] As for the latter, although the critics have only left "De Harmonica Institutione" to his credit, one cannot be too sure that even this is his.[6] In fact, the reputation of Gerbert and that of his illustrious successor, Guido of Arezzo (d. 1050), (to whom almost every invention in music has been attributed), leads one to wonder how many of the treatises on the theory of music ascribed to the ninth-tenth centuries really belong to the eleventh. Modern research

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[3] "Histoire Littéraire de la France," vi, 606. So great was Gerbert's reputation in the *quadrivium* that students came from many lands to study under him (Richer, iii, 55). Some are claimed as his pupils who could not have been. Odericus Vitalis says that both Remy of Auxerre (d. 908) and Hucbald (d. 930), studied under him, when, as a matter of fact, they were dead before Gerbert was born. Possibly Remy of Trèves, for whom Gerbert made spheres, is intended for the former, whilst the latter may have been a later Hucbald. See Riemann, "Dict. Mus.," *sub* "Hucbald."

[4] The works of Hrotswitha and Odorannus (late tenth century) contain *opuscula* on music which have been generally ignored by historians of music. See "Pat. Lat.," cxxxvii, 1029, cxlii, 807-14. Hrotswitha sang the praises of Cordova.

[5] Fifteen out of the nineteen chapters of his treatise are taken up by these borrowings.

[6] See Müller, "Hucbald's echte u. unechte Schriften über Musik."

has apportioned a number of these to their proper places,[7] but there still remain some anomalies.

The *quadrivium*, says Mosheim, was more generally omitted in the course of studies, the *trivium* (grammar, logic, rhetoric) being thought sufficient. It was a difficult course,[8] and the most arduous of its subjects was music. Regino (d. 915) was alarmed at the vastness of the study (music) and the difficulty of grasping its technicalities, which only the favoured few could master.[9] The famous logician, Garamnus, Archdeacon of Rheims and Lothair's ambasssador to Otto I, who became a pupil of Gerbert's for the theory of music in the year 971, was compelled to relinquish the study because he found it too difficult.[10] The *musicus* in these days was concerned only with the speculative theory of music as a branch of mathematics. He was therefore quite distinct from the *cantor* or *præcentor*, who, as a rule, only dealt with the practical theory of music.[11] The time had come when the speculative

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[7] In Martin Gerbert's "Scriptores" the tracts called "De octo tonis," "De tetracordis," "De octo modis" and "De mensura fistularum organicarum," attributed to Notker Balbulus (d. 912), really belong to Notker Labeo (d. 1022). As for Hucbald (d. 930), the "Musica enchiriadis," "Scholia enchiriadis," "Commemoratio brevis," and the additional fragments appended to "De harmonica institutione" (Martin Gerbert, "Script.," i, 122, *et seq.*) also belong to a later period, some, indeed, to the eleventh century. Similarly, the tracts ascribed to Odo of Cluny (d. 942) are much later, the "Dialogus" probably eleventh century, and the "Intonarium" (Coussemaker, ii, 117) may be thirteenth century. Cf. Grove, "Dict. Mus.," second edition, iii, 427.

[8] "Pat. Lat.," cxxxvii, 1029.

[9] Gerbert, "Script.," i, 246-7.

[10] Richer, "Hist.," iii, 45.

[11] Maître, "Les Écoles episcopales et monastiques," . . . . 238. Guadet, "Richer," ii, 51, 55. Hearnshaw, op. cit., 195.

theory of the Greeks had to take a secondary place in view of the needs of practical theory, and this would appear to have been the teaching of Gerbert.

Gerbert's teaching in the *quadrivium* was soon spread abroad by his pupils, and we can see the extent of some of it in Bernelinus (*c.* 990), Adalboldus (d. 1027), and Fulbertus (d. 1028). Bernelinus passed on the teaching of the new Arabian *ghubār* numerals,[12] which he appears to have learned from Gerbert.[13] The Pseudo-Bernelinus "Cita et vera divisio monochordi in diatonico genere" contains these numerals,[14] and so does the Pseudo-Odo of Cluny tract entitled "Regulæ Domni Oddonis super abacum."[15] It was to Adalboldus that Gerbert addressed "the first mathematical paper of the Middle Ages which deserves this name."[16] The musical tract of Adalboldus that has been preserved is based, however, on Boëthius, and is unoriginal.[17] Of Fulbertus we know only of his general interest in the *quadrivium.* When he arrived at Chartres, says Guitmundus of Aversa, "the liberal arts

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[12] Olleris, "Œuvres de Gerbert," 361. Picavet, "Gerbert," 182.

[13] Bubnov, "Gerberti postea Silvestri II papæ opera mathematica," x.

[14] Martin Gerbert, "Scriptores," i, 312, *et seq.* Much of the contents is identical with Pseudo-Hucbald (Gerbert, "Script.," 121, *et seq.*). Whilst setting off from Boëthian premises, it reveals some independent thought.

[15] Gerbert, "Script.," i, 296, *et seq.* See, however, the footnote on p. 296.

[16] Hankel, "Zur Geschichte der Mathematik in Alterthum u. Mittelalter" (1874), 86. Cajori, "Hist. of Maths." (1919), 116.

[17] Gerbert, "Script.," i, 303, *et seq.*

had all but become extinct in the land." He certainly advanced the music of the liturgy at Chartres.[18]

Notker Labeo (d. 1022) is another name worthy of mention at this period, whether he was affected by Gerbertian studies or not. The fact that he translated Martianus Capella's "De Nuptiis" into German rather puts him back into the early Middle Ages culturally. Several of his tracts on music written in German are of interest.[19]

[18] Taylor, "The Mediæval Mind," i, 299.

[19] Gerbert, "Script.," i, 95, *et seq.* Here they are ascribed to Notker Balbulus.

14.

THE STUDY OF THE THEORY OF MUSIC IN THE MIDDLE AGES.

THAT the theory of music was studied at Monte Cassino at this period we know from works written by Albericus and Alphagus. At the same time we must not forget that the theory of music invariably meant a knowledge of Boëthius, or Martianus Capella, or Cassiodorus, or Isidore, or even St. Augustine. Even when the earliest of the theorists appeared in the mid-ninth century, their works scarcely found acceptance outside the land of their birth. Some years ago, when collecting material for a history of mediæval music, I drew up a table of the treatises on the theory of music mentioned in the library catalogues (private collections excepted) from the eighth to the twelfth century, as given in Becker's "Catalogi Bibliothecarum Antiqui" (Bonn, 1885). I append it because it has a certain interest. We must bear in mind, however, that this table only has a comparative value, and it must not be assumed that only this number of books was in existence. Obviously, only the library catalogues that have come down to us have been scheduled. Boëthius is a case in point, for although only *six* manuscripts of the ninth-eleventh century are

mentioned by Becker, yet we actually possess to-day, at least seven copies covering this period.[1]

It is significant how Boëthius and the old compends still held sway in the twelfth century. Out of the eighty-two treatises, only twelve can be said to represent ninth-twelfth century *teaching*.[2]

[1] See Friedlein's edition of Boëthius (Leipzig, 1867), pp. 1-2.

[2] I.e., from Aurelian of Réomé onwards, including Remy of Auxerre and the doubtful Folcrad.

Century.	8th	9th	10th	11th	12th
Number of catalogues consulted.	2	22	13	30	48
Total number of volumes indexed.	54	2359	2455	1890	4974
Total number of volumes on the theory of music indexed.	—	24	25	19	82
Vitruvius.[3]	—	1	—	1	1
Macrobius.[4]	—	1	1	4	13
St. Augustine.	—	7	3	1	4
Martianus Capella.	—	—	3	3	4
Commentaries and glossaries on Martianus Capella.	—	—	2	1	—
Boëthius.	—	1	4	1	24
Cassiodorus.	—	2	2	—	2
Isidore.	—	8	9	4	20
Alcuin.[5]	—	1	—	—	—
Hraban Maur.	—	—	—	—	2
De sept. art. lib.	—	2	—	—	—
Sept. art. quæst.	—	1	—	—	—
De musica.	—	—	—	1	—
Aurelian [of Réomé].	—	—	—	—	2
Remy of Auxerre.	—	—	1	—	1
Folcrad.	—	—	—	1	—
Hupald [? Hucbald].	—	—	—	—	1
Otto [? Odo].	—	—	—	—	1
Musica enchiriadis.	—	—	—	2	3
Berne [? Berno].	—	—	—	—	1
Guido.	—	—	—	—	3

[3] The title "De Architectura" occurs twice without author's name, but I have not counted these.

[4] Macrobius and Martianus Capella are frequently given as authors of works without any further identification. Only the works mentioned under their names in Appendix XV are counted in the above.

[5] Or Pseudo-Alcuin.

15.

THE ROMAN THEORISTS OF MUSIC.

ALTHOUGH Rome copied Greece in philosophy and the fine arts, its imitation, so far as music was concerned, stopped at the practical art, and even then, Syrian influences had almost as weighty a claim. At no period of Roman history does the theory of music appear to have been studied with any diligence. Cicero (d. 43 B.C.) is a fair specimen of the Roman temper on this question when he deplores in "De Finibus" (v, 19) that the great Aristoxenos should have devoted so much attention to the theory of music. Music is certainly included in the "Libri novem disciplinarum" of Varro (d. 27 B.C.), but we do not know what it amounted to, since the work has not survived.[1] It was Varro probably who introduced or popularised the *quadrivium* (arithmetic, geometry, music and astronomy)[2] in the education of a *liber homo*. Undoubtedly, this was the curriculum in the time of Seneca (d. 65 A.D.)[3] and Quintilian (d. 96 A.D.),[4] both of whom refer to Varro.

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[1] Ritschl, "Opuscula," iii, 371. Cf. Bossier, "Étude sur la Vie et les Ouvrages de M. T. Varron."

[2] Astronomy = astrology.

[3] Seneca, "Epist. Moral.," lib. xiii, ep. iii.

[4] Quintilian, "Inst. Orat.," i, 10.

Yet we must realise what was meant by the term "theory of music" as implied in the courses of the Roman *quadrivium*, and why it was studied. Cicero shows us quite plainly that the ideal in education was the orator. Therefore whilst it was necessary that an educated man should know all the so-called "liberal arts," his knowledge of them need only be sufficient for the purposes of description. He illustrates the point by selecting as an example so famous a man as Aratus, who treated of the heavens and the constellations in so excellent a manner, and yet was really *ignorant of astronomy*.[5] Clearer still is the testimony of Quintillian, who insists that grammar and rhetoric form the bases of education, to which a brief study of music, astronomy, geometry and philosophy might be added. Music was a supplement to grammar, for, as Quintillian says, the grammarian has to deal with metre and rhythm.[6] Again, he says, music ought to be studied so that one could appreciate the modulation of the voice in oratory, and also so that one could understand the references to music in the poets.[7]

Among the early Latins who dealt with the theory of music were Vitruvius, Censorinus, Albinus and Macrobius. Since all of these writers had some influence directly or indirectly on Western Europe, it may be profitable to consider their works.

Vitruvius (fl. 70 A.D.) reveals in a few words the actual state of music theory in his day. He says: "The science of music is an obscure and difficult subject, more so for

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[5] Cicero, "De Orat.," lib. i, cap. iv, xiv, xvi. Tacitus, "Dial. Orat.," 30.

[6] Quintilian, op. cit., lib. i, cap. iv, x.

[7] See Seneca, "Epist.," lxxxviii, for a view of the *artes liberales*.

those who do not know Greek, as the use of Greek words is so necessary, seeing that there are no corresponding Latin appellations." He then goes on to summarise the teachings of Aristoxenos, but erroneously.[8] Vitruvius was but little known in the Middle Ages.[9]

Censorinus (fl. 230) was the author of a work, "De die natali," in which there are several chapters devoted to music.[10] Another treatise found in some of the editions of Censorinus entitled "Fragmentum Censorini," also deals with music.[11] Neither of these works is of much importance.

Albinus (fl. 335) is a writer on music only known to us through Boëthius[12] and Cassiodorus.[13] Carl von Jan has written concerning him.[14]

Macrobius (fl. 402) deals with music in his "Commentarius ex Cicero in Somnium Scipionis" and in his "Saturnaliorum Conviviorum," the chief contribution being in the former. He borrows from Nikomachos, and is mainly concerned with the theory of the Harmony of the Spheres.[15]

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[8] Vitruvius, "De Architectura," lib. v, cap. iv. There are other references to music, including the well-known description of the *hydraulis*. The work has been translated into English by Newton (1771) and Gwilt (1826).

[9] See Appendix 14.

[10] Censorinus, "De die natali," x-xiii. It has been translated into French by Mangeart (1843), and Nisard (1857).

[11] See the edition of Jahn (1845).

[12] Boëthius, "Inst. Mus.," i, 12, 26.

[13] Cassiodorus, in "Pat. Lat.," lxx, 1212.

[14] "Philologus," lvi, 163.

[15] There is a French translation by Nisard (1863).

These are the best known Latin theorists of music prior to the barbarian invasions, and what they had to impart had scarcely an iota of value for practical purposes. Meanwhile, political and social forces were at work which were rapidly changing the cultural outlook. The shifting of the political centre from Rome to Byzantium (330) took the practitioners, the real conservators of Greek theory, away from Western Europe, and the art fell into desuetude.[16] The decay was heightened by the new social forces introduced by Christianity.

In the fifth, sixth and seventh centuries there were five other "theorists" whose works filled the pages of almost every writer on music from Aurelian of Réomé (*c.* 850) to Berno (d. 1048), when their authority began to fade,[17] I refer to St. Augustine, Martianus Capella, Boëthius, Cassiodorus and Isidore of Seville.

St. Augustine (d. 430) is counted among the theorists of music by virtue of the treatise, "De musica libri, vi," that bears his name.[18] We know that he wrote such a work in his thirty-third year (387) as part of a series on the "liberal arts" *(disciplinarum libri)*,[19] and the work named agrees with the description given by Cassiodorus.[20] Outside of *lib. i*, which gives a few definitions, the work

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[16] Gevaert, "Mélopée Antique," 55.

[17] Boëthius, however, held a place at Oxford University until the eighteenth century.

[18] A good edition is that issued at Paris in 1836.

[19] "Retractationes," i, 6. See also "De Ordine," ii, 16. "Confessiones," iv, 16, 30. In later years, St. Augustine appears to have regretted his earlier "sinful" intellectual labours. See his letters ("Epist.," 116), where he refers to his treatise, "De musica."

[20] "Pat. Lat.," lxx, 1,212.

is not concerned with the theory of music proper, but with *rhythmi* and *pedes metrici*, and bears out the point already emphasised that with the Romans the "theory of music" was more frequently studied as a complement to grammar, as Quintillian says. Westphal calls the tract a "very wordy and superficial discussion on rhythm and metre."[1] It had considerable popularity,[2] and was even circulated in an abridged version.[3]

Martianus Capella (fl. 500)[4] was the author of "De nuptiis Philologiæ et Mercurii," a work which became one of the textbooks of the Middle Ages. In the time of Gregory of Tours (d. 594) it was practically the only textbook in Gaul. Critics have almost unanimously condemned his atrocious Latin. As for the material, it is, on the whole, poor stuff that he offers as mental *pabulum*, revealing lack of technical knowledge as well as careless handling.[5] His music section is perhaps the best, which may be due to the fact that it is in many cases a literal translation of Aristeides (first-second cent. A.D.). Yet even here he reveals his ignorance of his subject.[6]

Boëthius (d. 524) was undoubtedly the greatest of the authorities upon whom the scholars of the Middle Ages

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[1] Westphal, "Metrik der griechischen Dramatiker u. Lyriker" (1868), i, 129.

[2] See Appendix 14.

[3] Printed in Mai, "Scriptorum veterum nova collectio," iii, 116.

[4] For his date see the "English Historical Review," v, 417.

[5] Teuffel and Schwabe, "Hist. of Roman Literature" (1900), ii, 448.

[6] Westphal, "Die Fragmente u. Lehrsätze d. griechischen Rhythmiker" (1861), 47. Deiters, "Über das Verhältniss der M. Capelle zu Aristides Quint." (1881). For sources see also the preface to Eyssenhardt's edition of "Mart. Cap.," xxxi.

depended for the *quadrivium*, although not until the second half of the ninth century.[7] His "Geometria" is now practically accepted by most later critics to be an interpolated work of a much later date.[8] His "Arithmetica" and "Musica," however, may be considered genuine, save perhaps for some tables in the latter. Boëthius was not a practical musician, and he tells us nothing about contemporary practice, being mainly interested in the mathematico-musical science of the Greeks. His sources have been partly traced by Miekley.[9] He is not free from errors,[10] and one of these rather invites the suspicion that his apparent knowledge of music was not so great after all.[11] On the whole, the influence of Boëthius wrought more harm than good.

Cassiodorus (d. *c.* 570), in his "De institutione divinarum litterarum," which deals with the *trivium* and *quadrivium*, naturally has a section on music. It treats of the subject in a few words,[12] but, at any rate, its author knew more about practical music than either Martianus Capella or Boëthius.[13] He also gives us an occasional glimpse of contemporary music in his interesting letters ("Variæ

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[7] The oldest MS. is the "Codex Bambergensis" (ninth century), and the earliest use of Boëthius is in Aurelian of Réomé (*c.* 850).

[8] Ernst, "De Geometricis illis quæ sub Boëthii nomine nobis tradita sunt quæstiones" (1903), and "Harvard Classical Studies" (1907).

[9] Miekley, "De Boëthii libri de musica primi fontibus" (1899).

[10] W. Chappell, "Hist. of Music," i, 6-10.

[11] Boëthius, "Inst. Mus.," i, 10. The best edition of Boëthius is that of Freidlein (1867). A German translation of "De Musica" was issued by Oskar Paul in 1872.

[12] "Pat. Lat.," lxx, 1,208. Gerbert, "Script.," i, 14.

[13] See Chappell, "Hist. of Music," i, 5-6.

epistolæ").[14] For the sources in Cassiodorus see Abert, "Zu Cassiodor."[15]

Isidore of Seville (d. 636) "stands last in the list, closing the development of Christian school learning in the midst of a barbarism that was extinguishing not only learning but civilised society in Western Europe."[16] His "Etymologiæ" contains a book (No. III) entitled "De quatuor disciplinis mathematicis," of which music is one. Almost everything on this question the author derives from Cassiodorus, but clearly he knew little about the subject.[17]

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[14] For an English translation see Hodgkin, "The Letters of Cassiodorus" (1886).

[15] In "Sammelbände der Internationalen Musikgesellschaft," iii, 439.

[16] West, "Alcuin," 27

[17] "Pat. Lat.," lxxxii. Gerbert, "Scriptores," i, 19.

16.

THE SURVIVAL OF GREEK THEORY.

THE statement that "the ideals, principles and practice of the music of ancient Greece survived in Europe," I have demonstrated was open to objection.[1] That the *practice* survived we have plenty of evidence. As for *ideals*, there could be no question of their survival under a Christian dispensation. On the question of *principles*, however, Miss Schlesinger says:[2]

"Mr. Farmer seems to think that if he shows *tant bien que mal* the paucity of classical works surviving in the libraries after the fall of the Roman Empire, and the absence of any new Greek works after that date (so that musicians could no longer study at first hand the treatises of the Greek theorists) *he will have proved that the principles of Greek music did not survive in Europe!* That is an incredible fallacy, as we shall see, for not all the formidable array of quotations . . . will avail if we are *able to show the main principles of the Greek musical system actually underlying the musical practice and theory of the growing art of music at the dawn of West-*

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[1] See *ante*, p. 40.

[2] "Musical Standard," xxvii, 23 b.

ern civilisation. And after all, as Wooldridge says, oral tradition took care of the theory of composition in the modes (and so did the neums.—K. S.)."

The mere absence of Greek works, either in the original Greek or in Latin translation, was not, in itself, a determining factor with me in this question. I fully realise the proverbial inconclusiveness of the *argumentum ex silentio.* Reference to pp. 42-3 will show that my "formidable array of quotations" was concerned with the *causes* which led to the decline of learning in the Middle Ages. The paucity of classical works in the libraries was simply one of the *effects.* Further, I was not concerned with "the absence of any *new* Greek theoretical works." What I did was to ask for evidence of *any Greek work whatsoever* on the theory of music being used as a textbook in Western Europe of the Middle Ages, as had been stated. *This evidence has not been produced.* If these works had existed, Vitruvius would not have written as he did. Nor would Cassiodorus have been compelled to admit that his sole Latin authorities were Albinus, St. Augustine, Apuleius and the Greek Gaudentios *translated into Latin* by Muciannus (?). The latter is the solitary Greek writer known in Latin in the Middle Ages, and Miss Schlesinger has not named him. He is of value because he follows Aristoxenos. Yet Cassiodorus is the only person who mentions this translation. Boëthius himself is excellent testimony to the question at issue. Music theory, like arithmetic and geometry, was locked away in a language which the Latins were almost entirely ignorant of, and Boëthius declared that

he wrote on these topics because he was a Greek scholar, and Greek scholars alone could master them.[3]

What Vitruvius, Censorinus, Albinus, Macrobius, St. Augustine, Martianus Capella, Cassiodorus and Isidore have to tell us about Greek theory is of little importance, and absolutely worthless to "the growing art of music at the dawn of western civilisation" that Miss Schlesinger speaks of. Even Boëthius might be included in this statement, for I am not certain that we ought not to blame him for the slow progress of music theory and practice in the early Middle Ages. Instead of solving practical problems, music theorists (! save the mark) were spending their days thumbing the pages of this old Roman, who himself did not solve any problems, but likewise thumbed the pages of the "Ancients" before him. In viewing all these old Latins, one feels inclined to echo Burney when he wrote about them: "They teach no part of music but the alphabet, nor can anything be acquired by the most intense study of them, except despair and the headache."[4]

But Miss Schlesinger says that the main principles of Greek music can be shown to be actually underlying the musical practice of the Middle Ages, and that oral tradition and the neumes "took care of the theory of composition in the modes." But we have no evidence of neumes before the eighth century at the very earliest (we have no examples before the ninth century), and one naturally asks what took care of "theory" during the preceding centuries? Of course, Miss Schlesinger still has "musical practice" and "oral tradition" to fall back on, but

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[3] Boëthius, "Inst. Arith.," præf.

[4] Burney, "Hist. of Music," i, 476.

if so, what becomes of the argument against my theory of the oral influence in the Arabian political contact when she writes: "None but the literary contact could be proved to have influenced the theory?"[5] Apparently, "musical practice" and "oral tradition" may be urged in favour of a Greek influence, but not of an Arabian influence!

[5] Cf. also two other similar statements: "It is extremely debatable . . . . that the technique of a musical instrument could be considered to constitute a 'theory of music,'" and: "Singers and executant musicians are not theorists."—"Musical Standard," xxvii, 23b, 44b.

17.

THE CHURCH AND CULTURE.

TO attempt to account for the low state of learning in the Middle Ages early by laying blame on the pagan incursions alone will not be accepted at this time of day.[1] Even Dom Mabillon, himself a Benedictine, refuses to consider this seriously as a cause. A veritable ocean of Patristic literature has flowed down to us practically intact. If the pagan depredations were responsible for losses in the classics, why did not the former class of literature suffer in a similar way? Obviously the losses were not due to any such cause, or at least only in an infinitesimal degree. The root of the trouble lay elsewhere, as I have already outlined. *First*, the general cultural stagnation due to socio-political forces, and *secondly*, the indifference and hostility of the Church to pagan literature.

Under the early Benedictine rule, there were but slender chances of classical studies being pursued.[2] St.

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[1] Miss Schlesinger, "Musical Standard," xxvii, 23a.

[2] R. R. Cuthbert Butler, in his "Benedictine Monasticism," written primarily for the Benedictines (v) says: "The idea of a universally learned benedictine body is a myth. . . . . At no time have the general mass of Benedictines been learned" (p. 337).

Benedict himself names only the Holy Scriptures and exposition thereon by the Catholic Fathers and orthodox doctors to be read.[3] That was only natural, since the monastery was but "a school for the service of the Lord," the concern of the monks being "the work of God." Had not the proscription of the liberal arts come from the very bosom of the Church? Tertullian (d. *c.* 240) had decried pagan literature,[4] and the authoritative "Apostolic Constitutions" had said: "Hold aloof from Pagan books entirely."[5] Eusebius (d. 340) was against the study of the Greek sciences. In the next century St. Jerome (d. 420) was warned against reading these Pagans,[6] and he actually laments that so few knew about Aristotle and Plato.[7] Even St. Augustine (d. 430) pandered to the crowd when he said, "Heaven is for the ignorant."[8] Cassian (d. 480), the founder of the monastic institutions in the West, reveals that the fiat against the classical authors was still in full force.[9]

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[3] "Reg. S. Benedict," c. 8 (Waitzmann Edit., 1843), p. 32.

[4] "Quærendum autem est etiam de ludi-magistris et de cæteris professoribus litterarum, imo non dubitandum affines illos esse multimodæ idololatriæ."—"Pat. Lat.," 1, 750.

[5] Τῶν ἐθνικῶν βιβλίων πάντων ἀπέχου. Cotelerius, "Pat. Apost.," i, 206.

[6] "Pat. Lat.," xxii, 416.

[7] "Pat. Lat.," xxvi, 428.

[8] "Indocti cœlum rapiunt."

[9] "Pat. Lat.," lxxi, 161.

18.

THE ARABS AND MONTE CASSINO.

MY reference to the paucity of classical authors in the library at Monte Cassino, in Italy, drew the following criticism:[1]

"This is an unfortunate instance to bring forward; it illustrates the danger of depending too much on reckless quotation, for this celebrated monastery and library, founded by St. Benedict in the sixth century, was ruined shortly afterwards by the Lombards; it was then rebuilt, and the library was in time reformed, *only to be pillaged again in the ninth century by the Saracens and destroyed by fire.* It was no wonder, therefore, that the classical authors had disappeared from the library. That was unfortunately a common vicissitude of monastic libraries during the dark ages, and it explains the rarity of early copies of the classics, but there were many exceptions of which examples may be given later on"

Miss Schlesinger brings this forward, *italicising* the passage about the Saracens, as suggestive of the idea that the Arabs are to be regarded as vandals rather than as disseminators of culture. Even if the Saracens referred to had been Arabs (which is doubtful), my critic's argument only reveals once more the fallacy of the inductive inference. It is rather strange that when I claim any-

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[1] "Musical Standard," xxvii, 23a.

thing of merit for the Arabs (using the word in the generic sense already defined) my critic would show that they were *Persians*. When, however, any blame is to be apportioned to the Arabs she would use the still more generic term *Saracens*, a name used indifferently by the annalists for Arabs or Berbers.[2]

The *Saracens* who destroyed Monte Cassino came from Trajetto on the Garigliano, and we have every reason to believe that they were Berbers.[3] The political and military situation of the time account for its destruction. Ever since the days when the Neapolitans helped the Muslims to conquer Sicily, treaties and alliances had been common between Christian and Muslim states in those parts. Pope John VIII (872-82) aimed at the extermination of the Muslims in Italy, and the establishment of a Roman theocratic state. His attempts at territorial expansion southwards brought Salerno, Naples, Gaeta, Amalfi and the Muslims into a common offensive and defensive league against him.[4] Although the Muslim states of Bari, Taranto and Calabria had been crushed, a new colony had arisen at Trajetto (originally at Itri). This was actually founded by Duke Docibilis of Gaeta about 878, as a protection against Papal inroads.

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[2] We read of the *Saraceni*, *Mauri*, *Poeni*, *Hismælitæ*, as well as the *Arabi*. See also Villari, "Mediæval Italy," 21, and cf. Amari, "Storia," i, 369. Constantine the African (d. 1087) distinguishes between the Arabs and Saracens.

[3] "Chron. Vult." and "Chron. S. Monast. Casin.," in Muratori, "Rerum Ital. Script.," i, 405; iv, 317.

[4] "Mon. Germ. Hist." (Script.), iii, 253.

On the death of Pope John VIII and the Carolingian Louis III in 882, a state of anarchy prevailed for some time, and in consequence, the annals are almost silent of the particular events of the period. What we do know is that within thirty miles of the Muslim fortress at Trajetto was Monte Cassino, the capital of a small state adjoining Roman territory. It was also a fortified place, and the abbot, its ruler, was a feudal vassal of the Pope, who was in arms against the Allies. Fire and sword were the sole arbiters in these tumultuous days. The Muslims had to take care of themselves as well as their allies, and in 883 or 884, either on their own initiative or at the bidding of Gaeta, they attacked and destroyed Monte Cassino, which was both a political and military menace to them.[5] So the event which my critic would suggest was a piece of sheer vandalism, is to the historian merely an act of political and military necessity.

What the loss was to general culture from the destruction of Monte Cassino can be mere conjecture. In view of the appalling state of ignorance that prevailed everywhere in Italy at the time,[6] the loss would appear to be negligible. As to the books destroyed, this is an idle speculation, since the earliest library list at Monte Cassino only dates from 1023, when *twenty* books are listed, seventeen concerning religion, and three on history, in-

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[5] Cf. the attitude of the scholarly Gregorovius, op. cit. (iii, 146) in these matters.

[6] Gregorovius, op. cit., iii, 136, 146. Cf. Ozanam, "Œuvres," ii, 355; iv, 455. Salvioli, "L'Istruzione publica in Italia nei secoli," viii, ix, x. (Florence, 1898). Even Giesebrecht, "De litter. studiis ap. Italos," and Montalembert, "The Monks of the West," allow the backwardness of Italy in this respect.

cluding a "Historia Saracenorum!"[7] Yet we can perhaps determine its scope by reference to other libraries of the period (see Appendix XIV). We certainly have no definite information that the monastery books perished in the Muslim destruction. We do know, however, that when the monastery was destroyed by the Lombards in 589, the monks took their books with them in their flight.[8] In 883-4, on the approach of the Muslims, the monks fled to Teano, leaving their abbot, who was the secular as well as the religious head, to direct the defence. That these monks took some of their books with them is proved by the express mention by an annalist that the "Regula" of St. Benedict was saved, and from the existence of the "Regesta" of Pope John VIII, which now forms part of the Vatican "Regesta."[9]

On the whole, the losses to libraries due to pagan depredations were small, and those attributable to the Muslims direct almost infinitesimal. As Dom Mabillon, the Benedictine historian, says, the losses to literature owing to pagan incursions (including those of the Muslims) dwindle into insignificance by the side of the ravages

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[7] Caravita, "I codice e le arte a Monte Cassino," ii, 77. The present library of Monte Cassino contains some forty MSS. dating from the sixth-ninth centuries, although we must not necessarily conclude that they were possessed by this monastery at these dates. With the exception of five works by Hippocrates, Galen (?), Martianus Capella, Boëthius, and Isidore of Seville, they are all concerned with theology.

[8] Paul Diacon, "De gest. Long.," iv, 18. Miss Schlesinger was doubtless not aware of this, or otherwise she would not have referred to the library being "reformed" after this event.

[9] Levi "Il Tomo I dei Reg. vaticani (Arch. della Società Romana)," iv, 162.

caused by the later religious wars of Europe.[10] Of course Monte Cassino was rebuilt in the following century, and in the eleventh century, when it reached the "highest point of prosperity and influence," it was the adornment of the monastery by Byzantine or *Moorish* artists that gave it special renown.[11]

In view of the foregoing details, one is inclined to ask what becomes of the suggestion of "reckless quotation," and further why the examples of the "early copies of the classics" were not produced, for preference the writings of Ptolemy, Nikomachos, Theōn of Smyrna, and Aristoxenos, whose works were claimed by Miss Schlesinger to have been studied in the Middle Ages. (See *ante*, pp. 40-1.)

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[10] See Martene, "Voyage Littéraire de Deux Bénédictins" (1717-24), ii, 13.

[11] Leo Ostiensis, "Chron. Cassinens," iii, 11, 20, 28, 29, 30, 33. See also Caravita, op. cit., i, 67, 74.

19.

THE CAROLINGIAN SCHOOLS.

WE have already seen how swiftly the decadence of learning ensued after the fall of Rome in the sixth century. By the eighth century, little change had come upon the cultural horizon. Indeed, if anything, it was darker still in France. Mullinger says, "Under the Merovingians, learning almost ceased to exist."[1] West adds: "Whatever traditions had found their way from the early Gallic schools into the education of the Franks had long since been shattered and obliterated in the wild disorders which characterised the times of the Merovingian kings. The monastic and cathedral schools . . . . were then rudely broken up. . . . . The copying of books almost ceased."[2] "Up to the time of Charlemagne," writes Putnam, "there appears to have been so little facility in writing and so few scribes were available, that government records were not kept at the courts. The schools established by Alcuin at Tours . . . . were in fact the first schools of writers which had existed in Europe for centuries."[3] Even if we dismiss the opin-

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[1] Mullinger, "The Schools of Charles the Great," 37.

[2] West, "Alcuin and the Rise of the Christian Schools," 40.

[3] Putnam, "Books and their Makers in the Middle Ages," i, 111.

ions of the historians of European culture, there still remain the *ipsissima verba* of the Monk of St. Gall: "*When the illustrious Charlemagne began to reign in Western Europe . . . . the study of letters was everywhere unknown.*"[4]

With "the illustrious Charlemagne" intellectual interests were aroused. Learned men were invited to his court *from abroad*, and schools were eventually founded. In this restoration of learning, the prompting evidently came from the competitive spirit of the time, Charlemagne trying perhaps to emulate the cultured courts of Baghdād and Cordova, the talk of which had set the whole world agog.[5] The later Louis IX (d. 1270) did precisely the same thing when he founded a library and took interest in intellectual pursuits in adumbration of the Muslim sulṭāns.[6]

The quality of the intellectual studies inaugurated by Charlemagne was based on the old Latin tradition accumulated in the compends of Cassiodorus, Isidore (the latter for the most part), and the writings of the Church Fathers. Although the empire of Charlemagne touched on the superior civilisation of the Arabs of Al-Andalus, there could scarcely have been much direct literary contact *of a documentary nature* between the two polities at this period. Yet there was intellectual contact for all that.

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[4] "Mon. Germ. Hist. (Script.)," ii, 731. Exaggeration is symptomatic of this annalist, and his statements have to be received with care.

[5] Dr. Donald Campbell, "Arabian Medicine in the Middle Ages" (1926), i, 111-12, looks upon the Carolingian movement as "the echo of the Arabian Renaissance in the East."

[6] Taylor, "The Mediæval Mind," i, 541.

How much was the Adoptionist heresy in Christian Spain strengthened by Muslim thought? How much was the denunciation of image-worship by the Carolingian Goths due to similar influences?[7] The Spanish clergy sat on many of the church councils, and after three-quarters of a century of political domination by the Arabs we cannot but allow that they had imbibed some elements of Arabian culture.

The influence of Alcuin (d. 804), Hrabanus Maurus (d. 856) and John Scotus (d. *c.* 877) in this intellectual revival has received the fullest praise, and rightly so. Yet there were three other men of brilliant gifts who contributed to the Carolingian renaissance of learning, and they were Theodulfus (d. 821), Claudius (d. *c.* 839), and Agobardus (d. 840), *all of them Goths who were either born or educated in Spain or Southern France.* That they were influenced by Arabian modes and habits there cannot be very much doubt.[8] The fact that the "Saracen" looms so large in the literature of the period and in the *chansons de geste* is ample proof of the powerful social and intellectual forces from the South that were operating.

The chapter entitled "The True Historical Perspective" was designed to meet the contention of Miss Schlesinger as already expressed.[9] In reply, my critic says that I am "satisfied to quote statements of general

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[7] J. M. Robertson, "Short Hist. of Freethought" (1906), i, 292.

[8] Theodulfus, travelling as a *missus dominicus* in the south, recounts how he was offered bribes of Arabian gold and Cordovan leather work. It reveals how highly the products of Al-Andalus were valued.

[9] See *ante*, p. 40, line 27.

historians . . . . in order to solve questions that engage the attention of specialists, and to go to ballads for information about the schools founded by Charlemagne and the work of the Carolingian renaissance."[10]

The reader is reminded that I quoted from such writers as Lecky and Buckle (who can scarcely be called "general historians") because they were actually "specialists" in the history of European civilisation and culture, which was the subject under discussion.[11] As for my reference to "ballad literature," I did not use it as my authority for information regarding the schools of Charlemagne and the work of the Carolingian renaissance. What I did say was that the ballad literature shows that Charlemagne was one of the grandiose characters of the Middle Ages.[12] Miss Schlesinger advises readers to "*see rather the contemporary biography by Einhardus, 'Vita Karoli Magni,'*" for information concerning the schools of Charlemagne. As a matter of fact, all that Einhardus gives us in this work on the particular question is a mere reference to the Palace School, mainly a family concern, and to what Charlemagne *himself* learned there.[13]

My authorities for the Carolingian reforms in singing had been given,[14] although Miss Schlesinger does not seem to have noticed them. They are the *capitularies*, and I presume that they are the final authority, as not

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[10] "Musical Standard," xxvii, 23a.

[11] See *ante*, pp. 42-3.

[12] See *ante*, p. 45. One *chanson de geste* makes Charlemagne spend seven years in Spain, which is about as likely as his alleged invasion of Arabia!

[13] "Œuvres complètes d'Éginhard" (Edit. Teulet), 1, 64, 80.

[14] See *ante*, p. 45, note 16.

even the authority of an Einhardus is of the slightest avail against these. From these documents we know precisely what Charlemagne's chief concern was in the establishment of "singing schools" and similar institutions. It was political expediency as much as love of culture.[15] Liturgical uniformity would bring peace within the Church which, in these days, was the keystone of the arch politic.

Miss Schlesinger says: "At the end of the eighth century Charlemagne founded three schools of music at Metz, Soissons and St. Gall."[16] What are the facts? In a capitulary of 789 Charlemagne *recommends* the establishment of monastic and episcopal schools where boys could be taught the psalms, writing, singing, computation and grammar.[17] It was not until 803, as the "Vita Alcuini" tells us, that Charlemagne established "singing schools."[18]

Even in these "singing schools," as I have already pointed out in reference to Amalarius Fortunatus, there were no books in which the Gregorian Song was noted (i.e., by neumes). Amalarius, who was at the head of the chapel of Louis le Débonnaire (814-40), tells us that he was troubled with the divergencies in the singing of the *antiphonale*, and that there were no antiphonaries at the

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15 "Ob unanimitatem apostolicæ sedis et sanctæ Dei ecclesiæ pacificam concordiam."

16 Schlesinger, "Is European Music Theory Indebted to the Arabs?," p. 5.

17 "Et ut scholæ legentium puerorum fient, psalmos, notas cantus, computum, grammaticam per singula monasteria vel episcopia discant." I have translated the word *notas* by "writing," although some have used the words "musical notes." See Cajori, "Hist. Math.," 114.

18 "Mon. Hist. Germ. (Script.)," i, 306.

very hub of Carolingian culture, which would enable him to correct these differences. Finally, however, four books were found at Corbie in Picardy, but even these did not help very far as they, too, were divergent. He then applied to the Holy See, the very fountain-head, as Charlemagne himself would have said, for singers of the antiphonale in the hope of getting *oral confirmation.* Pope Gregory IV informed him that *he had no singers of the antiphonale to send.*[19] In the light of the Amalarius testimony, one might ask what value can be placed either on the "neumes" or on "oral tradition" to "take care" of anything?[20]

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[19] "Pat. Lat.," cv, 1243.

[20] See Appendix 16.

20.

THE PRE-AURELIAN THEORISTS OF MUSIC.

IT will be remembered that I made certain affirmations concerning the state of music theory in the Middle Ages.[1] Miss Schlesinger replies as follows: "Let us *pro tem.*, affect to accept Mr. Farmer's conclusions: '(1) *The principles of music of ancient Greece did not survive in Europe.* (2) *From the end of the sixth century to the mid-ninth century no work on the theory of music in Western Europe is known to us.*'"[2]

The writer then proceeds to give details of Greek music theory dealt with in the works attributed to Bede, Alcuin, Aurelian of Réomé, Remy of Auxerre, and Hucbald, so as to establish that "Mr. Farmer's verdict, that these principles did not survive in Europe, is hopelessly wrong."[3] Unfortunately Miss Schlesinger does not discriminate between a museum specimen and a living organism. What I said was that they did not *survive*. We find them *mentioned* much later, and for precisely the same reason, when

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[1] See *ante*, p. 46, and cf. pp. 41, 42 and 44.

[2] I prefer to give my own words rather than those which are attributed to me.

[3] "Musical Standard," xxvii, p. 110.

they could have had no bearing whatever on contemporary "theory."[4]

We now come to the second point. Miss Schlesinger says that whilst she is "not an authority on the music of the early Middle Ages," she wishes to call attention to "three writers of musical theoretical tracts of the eighth century, that have been overlooked by Mr. Farmer (there may be others), viz., the Venerable Bede (died 735), Alcuin (born 735), and Hrabanus Maurus (776-856)."[5]

I am told that "On turning to the earliest treatises and writings on music by the Christian monks and scholars of the West, we find an early eighth century treatise—missed by Mr. Farmer—attributed to the Venerable Bede (672-735), 'De musica,' Part 1, 'Musica theoretica' [= 'De musica theorica'], in which, among other things, Bede describes . . .[6] The second part of Bede's 'De musica' bears the title, 'Musica quadrata seu mensurata.'" The "facts" are that the two "parts" referred to do not form one work called "De musica," but two separate and distinct treatises. Indeed, Miss Schlesinger herself refers to them later as "opuscula." "We are well aware," she says, "that these 'opuscula' ascribed to Bede are placed by Migne among the 'dubia,' but what is known of his musicianship, practical and theoretical, from his 'Historia ecclesiastica' and other works, supports their authenticity, which is accepted by many musical experts. Bede's

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[4] Walter Odington (thirteenth cent.), Johannes de Muris (fourteenth cent.), and others.

[5] "Musical Standard," xxvii, pp. 23-4.

[6] Here occur several references to Greek theory in the work in question.

music-teacher was the renowned Irish monk Ceolfrid, who was responsible for the oldest monument extant of Latin neumes, viz., the Amiatina Bible in the Laur. Med. Library in Florence."[7]

I might mention that Ceolfrid was not Irish, but a member of a noble Anglo-Saxon family, and his name is purely Teutonic. If by the word "responsible" is meant that the Codex Amiatinus proceeded from the hand of Ceolfrid, the suggestion is I think unwarrantable.[8]

That Ceolfrid was Bede's music-teacher, we have no actual evidence. All that we know concerning this matter is, what Bede himself tells us, that he was "given to the most Reverend Abbot Benedict, and afterwards to Ceolfrid, to be educated."[9] Although we certainly know that Ceolfrid was a gifted singer,[10] it is more likely that Bede was taught *singing* by John the Archchaunter of St. Peter's, Rome, seeing that Bede entered the monastery at the age of seven (c. 680), and John the Archchaunter began teaching singing at the monastery c. 678-681.[11] I am afraid that the few references to singing and harp-playing

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[7] "Musical Standard," xxvii, p. 109. Both Burney and Chappell had already referred to this *one* work, "De musica," in two parts. The legend probably began with Bale ("Illus. Maj. Brit. Script.," fol 53), who refers to "De arte musices," lib. 1.

[8] "Studia Biblica et Ecclesiastica," ii, 282, 285-6. Plummer, "Ven. Bæda, Hist. Eccles.," etc. (Oxon., 1896), xviii-xix. If we accept the allusion of Fleischer ("Die Germanischen Neumen"), there is a much earlier monument extant of Latin neumes, but see my opinion on p. 199.

[9] "Hist. Eccles.," Notitia de se ipso.

[10] "Vita Beatorum Abbatum."

[11] "Hist. Eccles.," iv, 18. He was sent by Agatho who occupied the Papal chair from 678 to 681.

in the genuine works of Bede, *plus* his own "daily care of singing in the church," are but weak reeds to depend on to "support" the "authenticity" of the "opuscula" referred to.

As to the point that Migne places these "opuscula" among the "dubia," it is not the whole truth. They are placed by Migne among the "dubia et spuria." That they should be classed as either "dubious" or "spurious" has the sanction of responsible critics and editors like Giles and Plummer, whilst the positive internal evidence of one at least of these treatises practically negatives the idea that Bede could have been the author.

These two treatises were claimed for Bede in the early editions of his works published at Paris (1544 and 1554), Basel (1563) and Cologne (1612 and 1688).[12] These were uncritical times for questions of this sort, when a mere name on a MS. was often considered sufficient warrant to claim authorship. In addition, as Dr. Giles once pointed out, there was invariably the desire to augment pages so as to augment profits.[13] Even the learned Salinas was persuaded to accept Bede as a music theorist.[14]

One of the earliest to question the authenticity of the musical treatises attributed to Bede was Oudin.[15] He was tacitly followed by Muratori.[16] When the Abbé Gerbert refused to place them in his "Scriptores," he had good

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[12] I have not seen the work entitled "Venerabilis Bedæ de Musica libri duo" (Basel, 1565).

[13] "Bedæ Opera Omnia" (London, 1843, etc.), i, cxxxii.

[14] Salinas, "De musica" (1577), lib. iv, cap. v.

[15] Oudin, "Comm. de Script. Eccles. Ant." (1722), i, 1685.

[16] Muratori, "Antiq. Ital." (1738-42), iii, 362.

reason for so doing as we shall see presently.[17] Burney thought that whilst the "De musica theorica" treatise "may have been written" by Bede, the "De musica quadrata" treatise was "undoubtedly the work of a much more modern author," and suggested the twelfth century as its date.[18] Forkel held much about the same view and thought that the work may have been written by another author of the name of Bede.[19] It was Bottée de Toulmon, however, who demonstrated that the second treatise was the work of a thirteenth century French writer who used the *non de plume* of Aristotle.[20] Dr. Giles, the editor of the first complete edition of Bede in England, definitely rejected both of these works as "spurious," and pointed to the "shamelessness" with which these and other works had been attributed to Bede.[21] Coussemaker accepted the pseudo-Aristotle label for the tract "De musica quadrata," and included it as such in his "Scriptores."[1] Fétis agreed with this, but with reservations as to date, which, as I will show were unfounded.[2] That the learned Plummer has ignored these treatises is eloquent testimony of their spuriousness,[3] whilst they are definitely rejected in the

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[17] Gerbert, "Script." (1784), Præf.

[18] Burney, "Hist. Mus." (1789), ii, 57.

[19] "Allgem. Lit. der Musik" (1792), 117. "Allgem. Gesch. der Musik" (1788-1802), ii, 288. Eitner ("Quellen-Lexikon") tries to evade the difficulty by allotting these works respectively to a Presbyter Bede and the Venerable Bede.

[20] "Bulletin Archéologique," ii, 651.

[21] Op. cit., i, cxxxii: vi, xv.

[1] Coussemaker, "Script.," i, 251. "Hist. de l'Harmonie au Moyen-Age," 47.

[2] Fétis, "Biog. Univ.," s.v.

[3] "Ven. Bæda, Hist. Eccles." (Oxon., 1896).

more recent "Dictionnaire d'Archéologie Chrétienne et de Liturgie."[4]

As for the internal evidence, it is worth while noting that "De musica theorica" is actually made up of two distinct fragments. The first is a series of glosses upon an absent text. The second fragment begins at "Quid est Tonus," and could scarcely have proceeded from the same pen as the preceding. After comparison with the genuine works of Bede, one can only conclude that "De musica theorica" is by another writer or writers.

In regard to "De musica quadrata," it certainly *could not have been written earlier than the twelfth century.* In the first place it deals with *mensural music.* Secondly, the rather late French titles to some of the music prove *its late origin,* perhaps even fourteenth century. Finally, it contains passages from "De divisione philosophiæ" of Gundisalvi (Gundissalinus), which dates from 1130-50, and these same passages *were originally extracted from two Arabic works* by Al-Fārābī which had been translated into Latin under the titles of "De scientiis" and "De ortu scientiarum." Miss Schlesinger was nearer the truth than she may have imagined when she labelled this as an "advanced treatise." It is so "advanced" as to be in the twelfth to thirteenth century at least.

Let us enquire into her statement that these "opuscula" of Bede are "accepted as genuine by musical authorities such as Gevaert, Oskar Fleischer, Hermann Abert, Dom Jeannin, and many others."[5] Gevaert ("Mélopée Antique," 105) *merely refers to one of these "opuscula,"* the "De

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[4] ii, i, 646.

[5] "Musical Standard," xxvii, 109, 198.

musica theorica," without touching upon the question of authorship. Abert ("Die Musik. des Mittelalters, 77, 99) likewise only refers to *one* of these works, the "De musica quadrata."[6] Dom Jeannin ("Mélodies liturgiques syriennes et chaldéennes," i, 254) refers only to "De arte metrica," a genuine work of Bede's *which does not deal with the theory of music.* As for Fleischer, so far as his work "Die germanischen Neumen" is concerned, he only mentions Bede by name, but does not refer to either of these works.

As for the claim that the "authenticity" of these works is supported by "what is known of Bede's musicianship, practical and theoretical, from his 'Historia Ecclesiastica' and other works," this is a fallacy. The "Historia Ecclesiastica" does not give any hint of Bede's musicianship on the theoretical side, although my critic and M. Camille Le Senne may think otherwise.[7] This reference to "other works" is simply a revival of the old story of Chappell, Davey and others, about Bede's references to the organ, and about a passage which is supposed to "prove" that Bede had not only a "knowledge of music, but of all that constituted the 'regular' discant of the church."[8] The so-called passage which refers to *discant* occurs in a treatise "In psalmum lii commentarius,"[9] which is *rejected* by competent critics as spurious. One of the organ references occurs in a treatise, "Interpretatio

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[6] It is to be regretted that Dr. Abert was not careful enough to say *Pseudo-Bede.*

[7] Lavignac's "Encyclopédie de la musique," iii, 1863.

[8] Chappell, "Popular Music in the Olden Time," i, 17. Davey, "Hist. of English Music" (1921), p. 10.

[9] "Patr. Lat.," xciii, 1110.

psalterii artis cantilenæ,"[10] which is also *rejected by responsible students*. Even if this latter were genuine, its value would be discounted by the fact that the passage is copied *verbatim* from the "Expositio in psalterium" (Psal. cl., 4) of Cassiodorus. The other organ passage is certainly to be found in what is *probably* a genuine work, "De orthographia," yet here also, it is borrowed from St. Augustine's "Enarratio in psalmum cl," and another writer. Even the few unimportant definitions which may be found in the "Axiomata philosophica," "Elementorum philosophiæ"[11] and in "De computo dialogus,"[12] cannot be accepted since these works are *no longer acknowledged* as Bede's![13]

It is evident from the foregoing that there is scarcely a ghost of a claim for the "theoretical" musicianship of Bede based on the evidence of the "Historia Ecclesiastica" and "other works," as claimed, whilst the two "opuscula" on music attributed to him can scarcely be credited to Bede.

My critic's next reference is to the Carolingian theorists. She says: "Flaccus Alcuinus (*c.* 735-804), writing, therefore, in the eighth century, a pupil of Bede (likewise overlooked by Mr. Farmer), is the first, in the extant fragment of his treatise, 'De musica,' to record the use of the Ecclesiastical Modes . . . . and insisting on their Greek origin."[14]

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[10] "Patr. Lat.," xciii, 1102.

[11] "Patr. Lat.," xc, 1016, 1175.

[12] "Patr. Lat.," xc, 650.

[13] The former work introduces *Arabic writers*, a clear proof of its spuriousness.

[14] "Musical Standard," xxvii, p. 109.

Alcuin was *not* the pupil of Bede. Dates preclude the possibility of this. The error, however, is not new. It has been handed down from the days of the Monk of St. Gall, who wrote the line: "ut puta discipulus doctissimi Bedae."[15] Secondly, there are no grounds for the statement that the author of the "fragment" has "insisted" on the Greek origin of the Ecclesiastical Modes. All that the author has committed himself to is to give the Greek names for these modes. There are, however, more apposite matters for discussion, viz., the authenticity of the "fragment" in question, its value in the appraisement of its author as a "Carolingian theorist" of music, and the general claim that Alcuin may have to this title.

I have already referred to Pseudo-Alcuin, just as I have spoken of Pseudo-Bede.[16] This explains why he was "overlooked by Mr. Farmer." There are valid and adequate reasons for referring this fragment to Pseudo-Alcuin, as we shall see.

The "fragment" is given in the Abbé Gerbert's "Scriptores" (i, 26-7) and it consists of two distinct parts, obviously unconnected with each other: (1) a list of the "liberal arts," with two definitions, and (2) a short notice on the ecclesiastical modes, beginning, "Octo tonos in musica." The first part, with the exception of the second definition, "Musica est disciplina . . . ." which is borrowed from Cassiodorus,[17] and is repeated by Hraban Maur,[18] may be found in the *schemata* given by Froben-

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[15] "Mon. Hist. Germ." (Script.), ii, 731

[16] See *ante*, p. 31.

[17] "Patr. Lat.," lxx, 1209.

[18] "Patr. Lat.," cvii, 401.

ius[19] and Migne[20] at the end of Alcuin's "Dialogus de rhetorica." If it is genuine, then it must be compared with the more modest lists of the "liberal arts," which are included elsewhere in the works attributed to Alcuin.[1] There is, however, a certain trace of originality in the definitions of the *schemata* which does not lend itself to the spirit of Alcuin. At any rate, genuine or not, this first part of the aforementioned "fragment" is of little import in the "theory" of music.

The second part of the "fragment" beginning, "Octo tonos in musica," has more interest. Its authenticity is based solely on the fact that Gerbert found it attached to the works of Alcuin *in one MS.*[2] On the other hand it is ignored in the "complete works" of Alcuin collated by Frobenius, a proceeding which is ratified by Migne.[3] The "fragment" does not even find a place among the "dubia et spuria." It is true that several writers on music have mentioned the work as Alcuin's. That has been

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[19] "Alcuini opera" (Ratisbon, 1772).

[20] "Patr. Lat.," c, ci.

[1] Under *Physica* are the following sciences in the *schemata*—arithmetic, astronomy, astrology, mechanics, medicine, geometry and music. ("Patr. Lat.," ci, 945-50.) The arrangement in Gerbert's "Scriptores" is ridiculous as it stands, since it is meaningless. In the *dialogus* between *discipulus et magister*, which precedes the tract, "De grammatica," these sciences are listed as arithmetic, geometry, music and astrology. ("Patr. Lat., ci, 853). At the end of "De dialectica" the *quadrivium* includes arithmetic, geometry, music and astronomy. ("Patr. Lat.," ci, 976).

[2] Gerbert, "Script.," præf. and p. 26.

[3] West ("Alcuin and the Rise of the Christian Schools") in his detailed list (pp. 183-91) of Alcuin's writings, does not recognise this fragment given by Gerbert.

done, in most cases, obviously for the sake of identifying this precise treatise, but the circumstance is of little weight when the actual authenticity of the document is under discussion.[4]

The work as it stands has every appearance of having been derived from Aurelian of Réomé's "De musica disciplina." The general construction scarcely admits that the borrowing proceeded vice versa.[5] The author of the Gerbert "fragment" writes the names of three of the modes, as well as two other words, in Greek characters. Alcuin's knowledge of Greek would appear to have been rather limited, and it is curious that almost every quotation in Greek made by him in his genuine works is to be found in St. Jerome. Indeed, Alcuin is somewhat chary of using Greek characters, and generally falls back on transliteration, even where we naturally expect to find the former as in a treatise like "De orthographia." In the face of this, can we believe that Alcuin would use Greek characters where it was scarcely necessary as in the Gerbert "fragment" on music, and that in a work dealing in places with Greek etymologies, he would use a cumbersome and sometimes misleading transliteration?

Yet, taking the work at its face value, irrespective of authorship, what justification is there to consider its author as a musical "theorist"? A couple of definitions, and a mere list of the modes, whether he was the first to mention them or not, would hardly make him a "theorist."

The legend of Alcuin as a musical theorist is of long

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[4] Gevaert ("Mél. Ant.," 105) and H. Leclercq ("Dict. d'arch. et de liturgie," iii, i, 701), say "attributed" to Alcuin.

[5] Gerbert, "Script.," i, 40.

standing.[6] Hawkins said that 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 the 'De septem disciplinis' of Cassiodorus, first printed in the Garetius edition of that author,[7] and which is expressly said by Du Pin, Fabricius and others, to have been written by Alcuin."[8]

Unfortunately for the reputation of both Alcuin and Hawkins, the evidence obtainable from the treatises "De psalmorum usu liber,"[9] and "Expositio in psalmos poenitentiales"[10] is absolutely negligible. As for the preface adverted to, whether it is Alcuin's or not, it does not contribute anything that would substantiate the statement that Alcuin was "well versed" in music.

During the Middle Ages a treatise "De artibus liberalibus,"[11] seemingly an excerpt from Cassiodorus, was incorrectly ascribed to Alcuin,[12] and probably the treatises listed by me in Appendix XIV are in reality this work.[13]

Let us, for the sake of the argument, suppose that Alcuin may have written a work on music in the *quadrivium* group which has been lost, what could we have expected from him on this subject? Of the genuine works of this

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[6] Gerbert, "Script.," præfatio.

[7] Garetius (Rouen, 1679, and Venice, 1729). Migne has followed Garetius.

[8] Hawkins, "Hist. Mus.," Bk. iv, Chap 30.

[9] "Patr. Lat.," ci, 465.

[10] "Patr. Lat.," c, 569.

[11] Leland, "Comm. Script. Brit.," Bale, "Illus. Maj. Brit. Script."

[12] Ueberweg, "History of Philosophy" (1875), i, 355.

[13] See ante, p. 189.

nature there are—"De grammatica," "De orthographia," "Dialogus de rhetorica," "De dialectica," "Pippini regalis et nobilissimi juvenis disputatio cum Albino scholastico" and "De curso et saltu lunæ ac bissexto." Alcuin's fame as a teacher was based on his "De grammatica" and "De orthographia," and a most extravagant encomium was showered on his head as a grammarian by Notker,[14] which, incidentally, is an index to the mentality of the latter, since the works are quite rudimentary when they are not childish. As for his treatise on "Rhetoric," he borrows from Aristotle and Cicero, whom he mishandles. In "De dialectica" he is even less original, because he is reduced to verbally reproducing Isidore of Seville and Pseudo-Augustine on the "Categories." His unoriginality continues throughout the "Disputation with Pepin,"[15] whilst "De curso et saltu lunæ ac bissexto" depends on Bede. Even in the doubtful "Disputatio puerorum," where there is a reference to music,[16] there is no effort made by its author to get beyond Pseudo-Jerome ("Epist.," xxiii)[17] or Cassiodorus ("In psalterium").[18]

Alcuin's most distinguished pupil was Hraban Maur, and the latter tells us that whatever his master taught him by word of mouth he committed to writing.[19] We also know that he studied the "liberal arts" under Alcuin.[20]

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[14] "Patr. Lat.," ci, 849.
[15] "Zeit. f. deutsches Alterthum" (1869), 530.
[16] "Patr. Lat.," ci, 1126.
[17] "Patr. Lat.," xxx, 221.
[18] "Patr. Lat.," lxx, 15.
[19] "Patr. Lat.," cxii, 1600.
[20] "Patr. Lat.," cxi, 11.

It is reasonable to assume therefore that some of Alcuin's teaching would be reflected in Hraban Maur's works, and that in the subject under discussion, music, one might find some slight trace of the hand of Alcuin. Yet when we turn to the works in question, as we shall learn presently, the hand may be that of Alcuin, but the voice is that of Cassiodorus, Isidore of Seville, St. Augustine, and others.

And so, all the evidence available—the Gerbert "fragment," the testimony of "De psalmorum usu," the preface to Cassiodorus, and the work on music that may have been written by him, having been closely examined, the reader will probably understand why Alcuin was not considered a musical "theorist" and was thus "overlooked by Mr. Farmer."

Hrabanus Maurus (*c.* 776-856), a name, strange to say, which was once thought to mean Hraban "the Moor,"[1] was educated at Fulda, but had studied the liberal arts at Tours under Alcuin. What the latter knew of these we have already seen, and all that Hraban tells us confirms this view. Although Hraban follows in the beaten track, he is superior to his mentor Alcuin. He wrote about music, but he tells us absolutely nothing about contemporary theory or practice, for indeed, he merely repeats the Roman theorists and the Christian Fathers. In "De clericorum institutione" (*c.* 819) there is a section (lib. ii, cap. xxiv.) on music borrowed from these sources.[2] A quarter of a century later (c. 844) Hraban wrote "De universo," but the section on music shows no advance (lib.

[1] J. M. Robertson, "Short History of Freethought," i, 293.
[2] "Patr. Lat.," cvii, 401.

xviii, cap. iv.).[3] It is based almost directly on Isidore of Seville ("Etymologiæ," cap xv.) and Cassiodorus ("Expos. in Psal. CL").

In conclusion, I submit that the claim on behalf of Bede, Alcuin and Hraban Maur as "theorists" of music is now no longer tenable.

[3] "Patr. Lat.," cxi, 495.

21.

THE ARABS OF OLD.

PROFESSOR SAYCE warned us years ago to abandon the notion that the Arabs of pre-Islāmic days were merely nomads, and that Arabia was a desert. Indeed, gazing back through the dim vistas of the past, one cannot help realising what an important rôle the Semites of the Arabian peninsula played as a political and cultural force. The Akkadians of Babylonia, the twin cradle of civilisation, probably came from Arabia. Certainly, the dynasty of Hammurabi (*c.* 2123-2081 B.C.), the great law-giver, was of Arabian origin. Even the Neo-Babylonian dynasty (625-539 B.C.), whose Chaldæan descendants made such an incision on Greek and Roman civilisation, must also have been Arabian. There is even something deeper still. The Arab appears to have always been the fecundator of the urban stock from the Syrian littoral to the Mesopotamian plains.

The importance of the Sabæan and Nabaṭæan Arab kingdoms is testified by Greek and Roman authorities. From the time of Theophrastos (fourth cent. B.C.) to Pliny the Elder (first cent. A.D.), the Sabæans of South Arabia

excite admiration for the wealth and splendour of their kingdom. Its products, not only of myrrh, cinnamon and incense, but of gold and pearls, enriched the marts of Syria, Phœnicia and Egypt. Just as the Phœnicians held the trade of the seas, so the Sabæans held the great Southern trade routes. The excellence of their domestic and political life, the magnificence of their temples and palaces, and the inordinate luxury of their kings and merchants, were particular themes for Greek and Latin authors.[1]

Strabo (d. *c.* 23 A.D.) has remarked that "those who regard the whole of Asia, as far as India, as consecrated to Bacchus, refer to that country as the origin of a great portion of the present music." How far, it might be asked, was Arabia included in the term "India"?[2]

With the Nabaṭæans in the North-West, whose influence extended from Petra to Palmyra, including Damascus and Boṣrā, we meet with the leaders of the Northern trade routes. Of their culture, we have the eloquent testimony of the architectural and sepulchral remains. The Nabaṭæans were succeeded by the Ghassānids, whose shaikhs became the phylarchs of the Byzantine emperors. It was from these lands that the music theorists, Nikomachos

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[1] Theophrastos, "Hist. Plant.," ix, 4. Strabo, xvi, iv, 2, 18-22. Diodorus, iii, 38-48. Pliny, vi, 145 *et seq.*

[2] In the cosmographies of Æthicus and Julian Honorius, Arabia is included in "India." The church historians—Malalas, Nikephoros and Theophanes, also refer to the South Arabians as "Indians."

(*c.* 100), Porphyry (d. *c.* 302)[3] and Iamblichos (d. *c.* 330)[4] came, and *they were all Semites, if not Arabs racially.* In spite of the Greek culture which dominates these writers, the Semitic Orient conditions almost all their utterances.

[3] Assuming that he was born at Bashan and not at Tyre, as probably Τύριον was a corruption of Σύριον. His original name was *Malchos* (= Arabic *Malik*).

[4] The original Semitic form *Iamlīk* was quite common among the Arab Nabaṭæans.

22.

THE ṬANBUR AL-BAGHDĀDÎ SCALE.

IN her "Precursors of the Violin Family," Miss Schlesinger tells us that the Arabs of early Islāmic times had a system of music "of their own," but finding the musical system of the Persians so far in advance of their own, they adopted it.[1] A later pronouncement by her on this subject is that the Arabs "had no system which they had, up to that time [the conquest of Persia] been able to reduce to theory."[2] In reply to the latter statement I mentioned, among other things, the pre-Islāmic scale of the *ṭanbūr al-Baghdādī*.[3] Miss Schlesinger appears to doubt the statement so far as the pre-Islāmic Arabs are concerned. She says: "There is the division of the *ṭanbūr al-Baghdādī* described by Al-Fārābī, and claimed by Mr. Farmer (and also by Rouanet) as forming part of a pre-Islāmic system."[4]

It so happens that it is neither Jules Rouanet nor myself who makes this claim primarily, but Al-Fārābī himself! He tells us in plain terms that the *ṭanbūr al-Baghdādī* contained these pre-Islāmic frets *(al-dasātīn al-*

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[1] Schlesinger, "Precursors," pp. 397-8.

[2] "Musical Standard," xxvii, p. 24, a.

[3] See *ante*, p. 51.

[4] "Musical Standard," loc. cit.

jāhiliyya), and that they were used for the pre-Islāmic melodies *(al-alḥān al-jāhiliyya)* in his day, although he admits that the more unusual of the frets were being ignored.[5]

From the "Mafātīḥ al-'Ulūm" of Al-Khwārizmī (tenth cent.) we learn that the *ṭanbūr al-Baghdādī* was also called the *ṭanbūr al-mīzānī* ("measured pandore").[6] It is well known that Julius Pollux actually credits the Arabs with the one-stringed *pandoura* (= μονόχορδον) and attributes the three-stringed instrument to the Assyrians.[7] An Arabic author, Ibn Khurdādhbih (ninth cent.), ascribed the *ṭanbūr* to the people of Lūṭ (Sodom and Gomorrah),[8] and a similar statement is made by Ibn Ghaibī (d. 1435). I specially mention these details because the *pandore* is essentially an Oriental instrument. To the Greeks an instrument of this type had but little appeal,[9] and the point is of some importance.

Miss Schlesinger continues her criticism anent the *ṭanbūr al-Baghdādī* scale as follows:

"The scale of the *ṭanbūr al-Baghdādī* formed part of a system which was general all over the ancient East. . . . .

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[5] "Leyden MS., Or. 651, fol. 67. Land, "Recherches," 112.

[6] Al-Khwārizmī, p. 237.

[7] Julius Pollux, iv, 60. This author does *not* refer the *pandoura* to the Egyptians as Miss Schlesinger says in the "Encyclopædia Britannica" (xx, 676). See my "Studies in Oriental Musical Instruments," pp. 3-4. The *monochordos kanōn* depicted in Ptolemy's "Harmonics" (lib. ii, cap. xii) is the Asiatic pandore (Arabic, *ṭanbūr*). In the Middle Ages, Western Europe used the *rubeba* (Arabic, *rabāb*) for the same purpose. Coussemaker, "Scriptores," i, 152, ii, 462, iv, 208.

[8] "Studies in Oriental Musical Instruments," p. 55.

[9] See "Revue des Etudes grecques," viii, 371.

Ptolemy recorded the formula of that very scale as that of the enharmonic scale of Eratosthenes. . . . . I may perhaps be allowed to state with reference to this scale of the *ṭanbūr al-Baghdādī* . . . . that its theoretical and mathematical basis with the implications that it carries with it, is known to me, and that I can, therefore, assert with authority that Al-Fārābī *certainly did not know this basis.* The details he has preserved belong to the practical application of the scale to the frets of the *ṭanbūr*, and to the tuning of the strings, not to the theory or origin of the scale, the significance of which, it is quite clear, escaped Al-Fārābī just as it escaped Ptolemy."[10]

What is the upshot of all this? The merest dabbler in Greek music knows all about Ptolemy's reference to the enharmonic genus of Eratosthenes.[11] As to its origin, I have thrown out a hint in my "Influence of Music from Arabic Sources," which may be worth considering.[12] Miss Schlesinger's a priori argument concerning what Al-Fārābī "did not know," will hardly carry weight with those who are acquainted with the writings of "The Second Teacher" (i.e., the successor of Aristotle). Al-Fārābī was "quite a good mathematician,"[13] and the author of several treatises on pure and applied mathematics.[14]

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[10] "Musical Standard," xxvii, loc. cit.

[11] Ptolemy, "Harm.," ii, 14.

[12] "Proceedings of the Musical Association," Session lii, 121.

[13] "Encyclopædia of Islām," ii, 54.

[14] Among his mathematical works were: "An Introduction to Geometry," "A Commentary on the Elements of Euklid" and "A Commentary on the Almagest of Ptolemy." He also wrote other treatises on astronomy, optics, and mechanics (?). See Steinschneider's "Al-Fārābī" in "Mémoires de l'Académie Impériale des Sciences de St.-Pétersbourg," viie série, tome xiii, No. 4.

At any rate, he knew Euklid's "Elements" (Arab., "Iṣṭaqisāt") too well to deserve this censure, and a perusal of the particular section of his "Kitāb al-Mūsīqī," which deals with the *ṭanbūr al-Baghdādī*, will certainly confirm my statement.

The scale of the *ṭanbūr al-Baghdādī* belonged especially to the Semitic East. It was perhaps the very parent of the Enharmonic *genus* of Greece, which, we must not forget, was introduced by Olympos, a *Phrygian*.[15]

[15] Plutarch, "De musica," xi.

23.

IBN MISJAḤ AND HIS INNOVATIONS.

I HAVE already indicated that Ibn Misjaḥ (d. *c.* 705-714) was responsible for introducing Byzantine as well as Persian theories into Arabian music of Al-Ḥijāz,[1] the former being borrowed from the *aṣṭūkhūsiyya* (=στοιχειαται), as we are expressly told. Among the innovations probably, were the "Courses" (sing., *majrā*), and, seemingly, the Pythagorean scale.[2] At the same time, I pointed out that in all probability the Arabs of Syria and Al-Ḥīra already possessed the Pythagorean scale,[3] and that it was not unlikely that Al-Ḥijāz (i.e., Mecca) actually got a foretaste of the Pythagorean system when it borrowed the 'Irāqian or Persian *'ūd* (lute) about the close of the sixth century.[4] The system built up by Ibn Misjaḥ is the one which I have termed the "Old Arabian System" so as to distinguish it from a "Pre-Islāmic Sys-

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[1] See *ante* pp. 56-7. "Musical Standard," xxvii, p. 30, a.

[2] See my "Hist. of Arabian Music," p. 71.

[3] See *ante* p. 51 and Appendix 21.

[4] See my "Hist. of Arabian Music," p. 69, and "Studies in Oriental Musical Instruments," p. 62.

tem." The former was the system which obtained (with some additions) in the time of Isḥāq al-Mauṣilī (d. 850).

It was for the purpose of showing that there was a native system of music in vogue in the second half of the seventh century that I introduced the passage concerning Ibn Misjaḥ. I quoted the opinion of J. P. N. Land that the importations of Ibn Misjaḥ were engrafted on the older system. "I am not aware," says Miss Schlesinger, "that Land has given any indications of what this system is."[5] That Land has hinted what the *scale* of this older system may have been may be confirmed by reference to his "Recherches sur l'histoire de la gamme arabe."[6] It was evolved, says Land, from the scale which Al-Fārābī still found subsisting in the tenth century on the *ṭanbūr al-Baghdādī* or *ṭanbūr al-mīzānī*. Perhaps the old Arabian lute with the accordatura C—D—G—a, had this scale in a modified form originally.

Except for the innovations already hinted at, Arabian music kept to its national system, which made it distinct from that of Byzantium and Persia. It is to be noticed that Ibrāhīm al-Mauṣilī, the father of Isḥāq al-Mauṣilī, learned *both Arabian and Persian music (ghinā')* whilst in Al-Raiy in Northern Persia.[7] Obviously, the two countries had different systems at this time. There is also a story told of Isḥāq al-Mauṣilī recognising Byzantine music when he heard it, and the circumstance goes to prove

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[5] "Musical Standard," xxvii, p. 44, b.

[6] Land, "Recherches," sect. 7.

[7] "Kitāb al-Aghānī," v, 3.

the dissimilarity between Arabian and Byzantine music.[8] Finally, Al-Kindī states quite plainly that Arabian, Byzantine and Persian music possessed features quite distinctive from each other.[9]

There are two words of technical import in the passage quoted anent Ibn Misjaḥ which call for attention. The words are *nagham* and *nabarāt*, and they have been translated as "modes" and "intervals." *Nagham* (or *naghm*) sometimes occurs as a singular, the plural being *anghām*, and perhaps, strictly speaking, it ought to stand for "melody," "song," although it is used also for a "musical sound" (= "note").[10] In the Ibn Misjaḥ passage, however, the word *nagham*[11] is the plural of *naghma*, which, with the Arabic theorists of music, stood for a "musical sound" (= φθογγός). Not unfrequently, however, it had the meaning of "mode,"[12] just as the Greek τόνος had a similar double usage.[13]

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[8] *Ibid.*, v, 57.

[9] "Berlin MS.," 5530, fol. 29, v, 30.

[10] See my "Arabic Musical MSS. in the Bodleian Library," pp. 11, 14-15, 17.

[11] The Maghribī vocalisation was *nigham*. See Al-Fārābī's "Iḥṣā' al-'Ulūm" (Escorial MS., No. 646, fol. 38, v), and the thirteenth century "Vocabulista in Arabico."

[12] In the thirteenth century "Vocabulista in Arabico," *naghma* (plur., *naghmāt*, *nigham*) stands for "modus."

[13] Kosegarten ("Lib. Cant.," 10) translates *nagham* as "modulatio," but cf. p. 37. Caussin de Perceval ("Journal Asiatique," Nov.-Dec., 1873, p. 416) has "sons." Land ("Remarks," p. 156) has "sounds." Collangettes ("Journal Asiatique," Nov.-Dec., 1904, p. 370) has "notes." Ribera ("La Música de las Cantigas," 23) has "tonos."

Nabarāt (sing., *nabra*) has been taken in its literal signification by Kosegarten, Caussin de Perceval, Land and Ribera, to mean "liftings of the voice." This is simply the definition of the Arabic lexicographers.[14] I have preferred to use the word "intervals."

[14] "Tāj al-'Arūs." It is repeated by a native writer on Arabian music, Ḥasan Ḥusnī 'Abd al-Wahab, "Le développement de la musique arabe en Oriente, Espagne, et Tunisie." (Tunis, 1918.)

24.

THE ACCORDATURA OF THE LUTE.

THE late J. P. N. Land once suggested that the Persian lute at the time of the Arab conquest had but two strings, called the *bamm* and *zīr*.[1] Against this, however, there is to be urged the statement of Khālid al-Fayyāḍ (d. *c.* 718) that the lute of Bārbad, the favourite minstrel of the Sāsānid monarch, Khusrau Parwīz, had four strings.[2] Some colour could be lent to Land's theory, however, since Ibn 'Abd Rabbihi (d. 940) refers to a two-stringed lute (*'ūd*) in the seventh century, and its strings are given the Persian names mentioned above.[3] It was the circumstance of there being two strings that also persuaded Land that the Persian lute at this period was really a *ṭanbūr* or *pandore*. This can scarcely be correct, seeing that we have the testimony of Sāsānid art which clearly delineates a lute.[4]

The Arabs of Al-Ḥijāz borrowed the 'Irāqian or Persian *'ūd* about the close of the sixth century, as we have seen (p. 52). Prior to this, they used, in common with the

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[1] Land, "Remarks," 157, 160, *et seq.*

[2] "Journal of the Royal Asiatic Society," 1899, p. 59.

[3] "'Iqd al-Farīd," iii, 181.

[4] Dalton, "Treasures of the Oxus," 190.

Arabs of the interior, lutes of a different type, known as the *mizhar*, *kirān*, and *muwattar*.[5]

In the early years of the eighth century (720-4) we know that the Arabs generally were using a four-stringed lute.[6] Whether the latter device was borrowed from Persia, or whether it was an indigenous innovation, cannot be said with certainty, but the fact that the lowest and highest strings were given the Persian names of *bamm* and *zīr*, whilst the third and second strings carried the Arabic names of *mathlath* and *mathnā*, would seem to point to an Arabian original modified perhaps by the adoption of a Persian *accordatura*. At first, it would seem, the *accordatura* was designed so as to simply reach the octave, hence the tuning was, C—D—G—a. Later, however, a new *accordatura* of fourths was introduced, A—D—G—c, which, by means of a shift, gave the double octave.

This latter *accordatura* was the normal method for seven hundred years at least, certainly from Isḥāq al-Mauṣilī (d. 850) to Ibn Ghaibī (d. 1435). At the same time, special tunings were adopted for particular purposes, but they are described as "makeshifts" by Al-Kindī (d. *c.* 874). Three special tunings are mentioned, and they consisted of an alteration of the low A string *(bamm)* to G, B, or C. In the ninth century, a fifth string called *ḥadd* was adopted by Ziryāb in Al-Andalus, and a simliar device is postulated in the East by both Al-Kindī and Al-Fārābī. In this new departure the tuning by "fourths" was still maintained.

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[5] Farmer, "History of Arabian Music," pp. 15, 16.

[6] "Iqd al-Farīd," iii, 201.

Side by side with this *accordatura* there still subsisted, among the Western Arabs, the older *accordatura* of C—D—G—a (implying a different fretting, if fretted), which only reached the octave. It is to be found in the Maghribī "Ma'rifat al-naghamāt al-thamān" treatise.

On the question of the *accordatura* of the Arabian lute in the days of Isḥāq al-Mauṣilī, Miss Schlesinger states that Isḥāq was responsible for an "innovation" in the *accordatura* of the lute, which was, she says, A—D—a—d,[7] and further that Yaḥyā ibn 'Alī, the pupil of Isḥāq, actually "*missed the significance of this so-called innovation,*"[8] and that even the modern writer on Arabian music, Jules Rouanet, "*has not noticed this.*"[9] Furthermore, we are told further that Al-Iṣfahānī also ascribed this *accordatura* to Isḥāq, but that he, too, had not noted its "*real significance.*"[10] Finally, "*Mr. Farmer clearly betrays the fact that, like Yaḥyā, he has not grasped the significance of Isḥāq's tuning.*"[11] Perhaps it is advisable to state quite definitely at this point, that the reason why all these people (save Al-Iṣfahānī, *who does not refer to it!*) missed the "significance" of Isḥāq's *accordatura* is—that it did not exist.

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[7] Miss Schlesinger's notes are, G—C—g—c. It is a matter of taste or convenience whether one makes the lowest string (*bamm*) "A," as with Collangettes and myself, or "C" with Land, or "G." It is, however, of importance that the strings should be shown in the proper position. My critic has reversed their order. The *bamm* or lowest string should be on the *left*, and not on the *right*. See my arrangement on p. 283.

[8] "Musical Standard," xxvii, pp. 46, a, 96, b.

[9] "Musical Standard," xxvii, p. 45, b.

[10] "Musical Standard," xxvii, p. 63, b.

[11] *Ibid.*, p. 134, b.

For her evidence of this *innovation* of Isḥāq al-Mauṣilī my critic relies on a passage from the article on Arabian music by Jules Rouanet in Lavignac's "Encyclopédie de la musique" (iv, 2701), which professes to be a translation from the "Risālat al-Mūsīqī" of Yaḥyā ibn 'Alī ibn Yaḥyā (d. 912).[12] The passage given by Rouanet is *not* a translation but a mere résumé, and even then it is misleading and incorrect. For instance, Rouanet quotes Yaḥyā ibn 'Alī as follows:[13] "We will repeat what Isḥāq and Ibrāhīm have said, and will show the difference which exists between the singers who, like Isḥāq, have known and practised music, and the musicians who assert that there are eighteen notes."

What Yaḥyā ibn 'Alī does actually say, and I quote from the text, is this: "We will explain what Isḥāq ibn Ibrāhīm al-Mauṣilī, the freedman, has named among the sounds *(aṣwāt)*, some of which he drew up in the 'course' *(majrā)* of the 'middle finger' *(wusṭā)* and some in the 'course' of the 'third finger' *(binsir)*, and the disagreement between the Masters of Arabian music *(ghinā')* like Isḥāq (and it seems that he is one of those who unite theory with practice and performance) and the Masters of

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[12] Students are warned against placing too much reliance on this article by Rouanet. *It abounds in errors* (some, however, purely typographical), and its author has used and quoted Kiesewetter, Fétis, Caussin de Perceval, Barbier de Meynard, Land, Carra de Vaux, Collangettes, Ronzevalle, and others, quite uncritically and without proper acknowledgment.

[13] I give Miss Schlesinger's translation from Rouanet, "Musical Standard," xxvii, p. 45, a.

[Greek] music *(mūsīqī)*,[14] who assert that there are eighteen [sounds]."[15]

The particular sentence upon which Miss Schlesinger has based her reasons for accrediting Isḥāq with the *accordatura* A—D—a—d, runs thus in Rouanet's article.[16] "These two strings [*bamm* and *mathlath*] only gave the notes of the higher strings [*mathnā* and *zīr*] an octave lower." There is, however, no passage in the treatise in question that is quite identical with that given here. The nearest to it, and it is obviously the one intended, reads as follows:[17] "Certainly the *mathlath* and *bamm* [strings] do not originate a note, because they [the people] found every note in them occurring in the *mathnā* and *zīr* [strings]. And that is because the open string *(muṭlaq)* of the *mathlath* is like the first finger *(sabbāba)* upon the *zīr*, and the first finger of the *mathlath* is like the third *(binṣir)* upon the *zīr*, and the second finger *(wusṭā)* of the *mathlath* is like the fourth finger *(khinṣir)* upon the *zīr*. . . . . "

The correspondences given between the notes of the *bamm* and *mathlath* and those of the *mathnā* and *zīr* prove conclusively the fallacy of my critic's contention, and her idea of segregating the theory of Isḥāq from that of Yaḥyā *on this point* is not justified by the treatise. However, Miss Schlesinger cannot blame Rouanet or any-

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[14] The word *mūsīqī*, when it was first adopted from the Greek, stood for the science of music as the Arabs had learnt it from the Greeks, as distinct from their own practical theory *('ilm al-ghinā')*.

[15] "British Museum MS.," Or. 2361, fol. 236, v.

[16] Lavignac's "Ency. de la mus.," iv, 2701. "Musical Standard," xxvii, p. 45.

[17] "Brit. Mus. MS.," Or. 2361, fol. 237.

one else for her opinions on the Christian origin of Isḥāq's accordance, which, in view of her circumstantial account of it, had better be noticed.

Miss Schlesinger says that "the accordance of Isḥāq's lute REVEALS ITS CHRISTIAN MONASTIC ORIGIN," and to show "the manner in which Isḥāq came upon the scale used upon his lute" she retails certain "significant passages" from Al-Iṣfahānī *via* Kosegarten.[18]

"In a passage," she says, ". . . . which tells of the poet Ka'b al-Ashqarī, we read: 'This is a song (cantilena) which, they say, he composed to the *mālekos* mode of the melodia (or musical mode), which he had heard from the monks.' Kosegarten then relates that: Al-Aswād ibn 'Umāra, the poet, says, as recorded by Al-Iṣfahānī: 'To these little verses one, Ḥijāzī, fitted a certain monkish melody.'"

The name *mālekos*, she says, "may be a modification of the Greek adjective *malakos*." She also points to the existence of a *rāg* (mode) in India called *mālkos*, founded on the Mixolydian, and says: "If, as I believe, some of the Persian and Arabian singers used the real ancient modes, which were akin—as were those of ancient Hindustan—to those of ancient Greece, then we see here indicated how the Christian monks taught the Arabs to accommodate these modes to the modified form used in the early Greek Church, and to tune their lutes in accordance with this form, as had evidently been the case with Isḥāq."[19]

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[18] Kosegarten, "Lib. Cant.," 200. "Kitāb al-Aghānī," xiii, 13-14, 64.

[19] "Musical Standard," xxvii, p. 97, b, 98, a.

Unfortunately, my critic has misunderstood the Al-Iṣfahānī-Kosegarten passages.

In his life of Ka'b al-Ashqarī, Al-Iṣfahānī speaks of a song set to music by Mālik al-Ṭāī', and then goes on to say, in the Latin translation of Kosegarten, "*hæc est cantilena, quam Mālekum ad modum melodiæ, quam ex monachis audiverat, composuisse ferunt.*" This, in the original Arabic, would read in English: "This is a song which, they say, Mālik [al-Ṭāī'] composed to a melody which he had heard from the monks." My critic has turned poor Mālik into a mode! The other passage, from the life of Al-Aswād ibn 'Umāra, is given by Kosegarten thus: "*Duobus illis versiculis Hidschāsensis quidam aptavit cantus quendam monachicum.*" Anglicised, this reads: "To these two little verses some Ḥijāzian has adapted a monkish song."[20]

We see therefore that there is nothing about a *mālekos* mode, nor any mention of an "accordance" or "theory" being borrowed by the Arabs from the Christian monks. All that is recorded is that some Arab musicians used monkish themes in their songs, just as Isḥāq himself introduced the chant of a muezzin, and Ibn Suraij a negro melody.[21]

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[20] Even Kosegarten does not give a precise translation.

[21] "Kitāb al-Aghānī," v, 69, vi, 80.

25.

ISḤĀQ AL-MAUṢILĪ.

ISḤĀQ AL-MAUṢILĪ (d. 850) was one of the greatest musicians in the annals of Arabian music. His father, Ibrāhīm al-Mauṣilī (d. 804), also a musician, was a Persian by parentage, but *an Arab by birth and education*, seeing that he was born at Al-Kūfa, adopted and reared by the Banū Tamīm, and received his earliest musical education at Al-Mauṣil, hence his surnames Al-Tamīmī and Al-Mauṣilī. Isḥāq, his son, happened to be born at Al-Raiy, in Northern Persia, where his father had gone to prosecute his studies in *both Persian and Arabian music.*[1] Isḥāq, as a mere child, accompanied his father to Baghdād, where the latter soon became famous. We know almost every step in Isḥāq's education. He was taught the *Qur'an* by Al-Kisā'ī and Al-Farrā', the "traditions" by Hushaim ibn Bushair, and history and *belles lettres* by Al-Aṣma'ī and Abū 'Ubaida al-Muthannā. In music, he was taught, not "mainly" by his father, as Miss

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[1] "Kitāb al-Aghānī," v, 3.

Schlesinger says, but by his uncle Zalzal and 'Atika bint Shudha, both of whom were famous musicians.[2]

It has been found necessary to emphasise the question of Isḥāq's family, birth, and education, because my critic has placed considerable importance on his *Persian parentage* in her criticism of my statement about Isḥāq and the "Old Arabian system."[3] All that was *Persian* about Isḥāq was that his grandfather came from Persia.

Isḥāq al-Mauṣilī was a man of wide culture who won a reputation, quite apart from music, as a poet, *littérateur*, philologist, and jurisconsult. His library was one of the largest in Baghdād, and was especially rich in works on Arabic philology from Isḥāq's own hand.[4] Some forty works were written by him, and seventeen of these concerned music or musicians. Unfortunately, not a solitary exemplar of these latter works has as yet been discovered. The author of the "Fihrist" (*c.* 988) praises Isḥāq as "a recorder of poetry and antiquities, ... a poet, clever in the art of music *(ghinā')*, and versatile in the sciences."[5] Yaḥyā ibn 'Alī (d. 912) says of him: "Isḥāq was the most learned of the people of his time in music, and the most

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[2] "Kitāb al-Aghānī," v. 54. Miss Schlesinger makes Zalzal a singer ("Musical Standard," xxvii, p. 62, b). He was a lutenist, singing not being his forte. (See my "Hist. of Arabian Music," p. 118.) Rouanet (op. cit., p. 2,693), borrowing from Caussin de Perceval ("Journal Asiatique," Nov.-Dec., 1873, p. 548), whom he misreads, shows Zalzal performing on the *zamr* (reed-pipe), and his companion, Barṣauma, on the *'ūd* (lute). It should be vice versa.

[3] "Musical Standard," xxvii, p. 46.

[4] Ibn Khallikān, "Biog. Dict.," i, 185.

[5] "Al-Fihrist," 141.

accomplished of them in all its branches, and the best performer on the lute and most of the other instruments of music."

Miss Schlesinger is contemptuous of Isḥāq al-Mauṣilī. "Isḥāq," she says, "was a proficient lute-player and singer —not a brilliant one, since it took him ten years to memorise his scale and fingering on the lute."[6] The statement is hardly correct, although it is Jules Rouanet who would seem to have been responsible for her making it. In the first place, the quotation is torn from its context, and further, its implication is misunderstood, as will be shown.

The proper passage occurs in the "Kitāb al-Aghānī," which describes a scene during one of those brilliant *soirées musicales* at the court of Al-Wāthiq (d. 847).[7] The dexterity and proficiency of lutenists both past and present were under discussion, and Isḥāq al-Mauṣilī declared that his uncle Zalzal (d. 799) was a superior performer to Mulāḥiẓ, who was then the *doyen* of his craft. The latter, who was present during the discussion, was piqued at this criticism, and Isḥāq himself was dragged into comparison. Isḥāq, although nearly eighty years of age, and long out of practice as a lutenist, accepted the challenge, and turning to Mulāḥiẓ, asked him to disaccord *(shawwash)* his lute, and then hand him the instrument. Mulāḥiẓ did so, and as soon as Isḥāq had taken the lute into his hands he struck the strings to ascertain its contingencies. Having done this, he again turned to Mulāḥiẓ and asked him to sing. Mulāḥiẓ then began a song, and

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[6] "Musical Standard," xxvii, p. 46, line 55. Cf. line 1.

[7] "Kitāb al-Aghānī," v, 57-8.

Isḥāq accompanied him on the lute which had been thrown into disaccordance, following the singer's melody precisely, up and down the frets *(dasātīn)* of the lute without a wrong note![8] Al-Wāthiq and the court were astounded at this *coup de maître*, and Isḥāq thereupon related the following.

Bārbad (Fahlīdh), the famous minstrel of the Sāsānid monarch Khusrau Parwīz (d. 628), found on one occasion, at the very moment when he was about to perform before the court, that his lute had been interfered with and thrown into disaccordance. Being a clever lutenist, however, Bārbad played his instrument just as it was, without exhibiting the slightest embarrassment. It was the desire to emulate the example of Bārbad, said Isḥāq on the above occasion, that led him to devote himself to the complete mastery of the lute. This took him ten years to accomplish, but what was achieved was something far different from what has been referred to by Miss Schlesinger. In the scales alone, an ordinary lutenist had to master the eight melodic modes *(aṣābi')*, the compound modes *(adwār)*, which were made up of the first tetrachord of one mode and the second tetrachord of another, as well as the transposition scales *(ṭabaqāt)*. These had to be learned not only in the normal accordance, but in at least three special tunings. Isḥāq, we are told, acquired in this way so complete a knowledge of the accordances *(taswiyyāt)*, frets *(dasātīn)*, and scales *(ṭaba-*

[8] In "Traité des rapports musicaux," by Baron Carra de Vaux, this feat is related of an "Isḥāq Zolzol" (Zalzal). The learned Arabist appears to have misread the text.

qât), that there was not a solitary note whose position *(mauḍa')* was unknown to him in any circumstance.

To have arrived at the height of technical skill as a lutenist that is credited to Isḥâq by all the annalists, an apprenticeship of ten years was certainly not too long. In Western Europe, two hundred years later, as Guido of Arezzo informs us, *it took ten years for choristers to learn to sing from music.*[9]

The ability of Isḥâq as a theorist is also in question. "It is clear," says my critic, "that Isḥâq was no theorist," and in proof of this statement a story is quoted from the article by Jules Rouanet already mentioned, who himself took it from Caussin de Perceval,[10] but truncated it! It is as follows:[11]

"The Amîr Muḥammad once asked Isḥâq this question: If a fifth string were added to the lute, in order to obtain the extra high note which you call the tenth and last of the scale, *what is the position* on that string which would give that note? Isḥâq was unable to answer the question [a very simple matter—K. S.] and suggested to a friend that the Amîr probably got the idea from some ancient treatise he had been reading," etc.

When we read the original, however, a different light dawns on the scene. Here is the story direct from the "Kitâb al-Aghânî":

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[9] Gerbert, "Scriptores," ii, 43.

[10] "Journal Asiatique," Nov.-Dec., 1873, pp. 588-9.

[11] Miss S. gives a page reference to the "Kitâb al-Aghânî," which she borrows from Rouanet, who borrowed from Caussin de Perceval. The latter was quoting from a MS., but there has been a printed edition of the work since 1868.

"'Alī ibn Yaḥyā al-Munajjim[12] said: 'I was with Isḥāq ibn Ibrāhīm ibn Muṣ'ab when he asked Isḥāq al-Mauṣilī (or else it was Muḥammad ibn Al-Ḥasan ibn Muṣ'ab who asked) in my presence, he said: 'O Abū Muḥammad [the surname of Isḥāq al-Mauṣilī], if one made on the lute a fifth string for [reaching] the high note which is the tenth in your method, where would you be fingering it on it?' (*lit.* 'where would you be going out from it?'). Isḥāq was annoyed for a long time [at this] and his ears became red (and they were of enormous size), for when anything like this befell him they [his ears] reddened, and his temper was great. He then said to Muḥammad ibn Al-Ḥasan: 'The answer in regard to this is not with words, but with playing. If you could play I would show you where the fingering would be.' And he [Muḥammad] held his peace, for he was an Amīr, and he had received an answer from him [Isḥāq] which was not pleasing. Yet he dealt lightly with him.

"'Alī ibn Yaḥyā [al-Munajjim] says: 'He [Isḥāq] came to me and said, 'O Abū'l-Ḥasan, this man [the Amīr] has asked me about the thing that you have heard, but his knowledge did not originate with the like of him. It is something that he has read in the writings of the Ancients [the Greeks], as it has come to my knowledge that the translators with them [the Amīr's family] translate books on music *(mūsīqī)* for them. So if anything of this comes

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[12] He was the father of the music theorist, Yaḥyā ibn 'Alī ibn Yaḥyā, and died in the year 888. He was a pupil of Isḥāq al-Mauṣilī in music, and the author of a biography of this virtuoso entitled "Kitāb akhbār Isḥāq ibn Ibrāhīm." See my "History of Arabian Music," p. 167.

your way, then give it to me.' And I promised him that I would do this, but he died before anything was available."[13]

This proper version of the story shows us that Isḥāq was quite able to answer the question of the Amīr, but he was dealing with a questioner who was ignorant of the technique of lute-playing. Further, Isḥāq looked upon the matter as "baiting," and answered accordingly. This was an ordeal which the virtuoso frequently had to submit to at the hands of courtiers, but Isḥāq always had a "trump card" to play, according to those who relate the stories. Of course, one recalls that even Guido of Arezzo (d. *c.* 1050) admitted to Brother Michael, that there were points in his method that he found difficult to explain on paper, which could be made quite clear *viva voce!*[14]

We now come to the question of my statement concerning the "Old Arabian System" which, I had said, was "recast" by Isḥāq al-Mauṣilī.[15] It is not my intention to deal with the various systems of Arabian music, as my concern here is simply to dispose of some erroneous points already raised.[16] In the first place, the "Old Arabian System" was not the "Pre-Islāmic System" as Miss Schlesinger infers. The former was the one laid down

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[13] "Kitāb al-Aghānī," v, 53.

[14] Gerbert, "Scriptores," ii, 43.

[15] See *ante* p. 59.

[16] I propose to issue a history of the Arabian systems of music as a companion volume to my "History of Arabian Music" (Luzac and Co., London).

by Ibn Misjaḥ—a native system modified by Byzantine and Persian borrowings, as already pointed out.[17] It was this system that was "recast" by Isḥāq al-Mauṣilī, as we shall see.[18]

An error that Miss Schlesinger has made in this discussion is in postulating that a "system" or "theory" of music simply means the scale! That the Arabs were using the Pythagorean scale at the time of Isḥāq and even earlier does not permit the deduction that Arabian music was identical with the Greek or Byzantine music. There are other things besides the scale that go to constitute a "system" or "theory" of music. There were the melodic modes *(aṣābi')*, compound modes *(adwār, dawā'ir)*, transposition scales *(ṭabaqāt)*, rhythmic modes *(īqā'āt)*, caesura *(maqāṭi')*, glosses *(zawā'id)* for both the melodic and rhythmic modes, and the various types of composition *(ta'līf)*, both measured *(mauzūn)* and unmeasured *(ikhtiyārī)*. It is in these other constituent parts that go to make up what is called the "Old Arabian System" that we can discern how far Byzantine practice had *not* found acceptance with the Arabs.

I have already said that the two "Courses" (sing., *majrā*) into which the melodic modes *(aṣābi')* were divided, were *probably* of Byzantine origin.[19] Indeed, the corres-

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[17] See *ante* p. 57.

[18] See Appendix 31.

[19] See *ante* p. 57. I said "probably" advisedly, because the "Courses" might be much older. With the Arabs the *majrā al-wusṭā* was "feminine" and the *majrā al-binṣir* "masculine." The idea is Chaldæan and Pythagorean.

pondence had already been noticed by others, including the late Père Collangettes.[20] When, therefore, Miss Schlesinger specially points out that "*even this feature* [*the 'courses'*], *which has been considered purely Arabian, has its prototype in the very perfect system of the Greeks*,"[21] this revelation is rather belated.

[20] "Journal Asiatique," Juil-Août, 1906, pp. 166-7.
[21] "Musical Standard," xxvii, 96, b.

26.

THE BERLIN AL-KINDI MANUSCRIPTS.

THE oldest Arab theorist of music whose actual works have come down to us is Al-Kindī (d. *c.* 874), although, with the exception of what I have brought forward here and elsewhere,[1] very little has been culled from this source. Until 1926, only two of his MSS. were known to Orientalists, the "Risāla fī khubr ta'līf al-alḥān," in the British Museum (Or. 2361) and the "Risāla fī ijzā' khabarriya al-mūsīqī," in the Berlin Staatsbibliothek (Ahlwardt, 5503). In the above year, however, I attempted to identify two other MSS. at Berlin as Al-Kindī's.[2] One entitled "Risāla fī'l-luḥūn" (Ahlwardt, 5531), is undoubtedly from the hand of Al-Kindī, and the other (Ahlwardt, 5530) is most likely his also.

The British Museum treatise is an incomplete and defective copy, but in it we get a fairly concise view of the theory of music under Ancient Greek auspices. The first of the Berlin MSS. mentioned above, deals fully with the question of rhythm and the doctrine of the "influence of music." The next Berlin treatise is one written for

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[1] See my "Influence of Music: From Arabic Sources."

[2] "Some Musical MSS. Identified" in "Journal of the Royal Asiatic Society," Jan., 1926.

Aḥmad, the son of Khalif Al-Mu'taṣim. It concerns the physical and physiological aspect of sound. The last of the Berlin treatises is a particularly interesting document, although incomplete and defective. In it may be found sections dealing with (1) the construction of the lute, (2) the strings, (3) the *accordatura*, (4) the notes, (5) the cosmical influences, and (6) the practical art of lute playing.

These treatises enable us to say quite definitely, in spite of Ancient Greek and Sabæan (= Ṣābi'a) influences which are everywhere apparent in the theories of Al-Kindī, that *Arabian theory was different from that of Byzantium and Persia.*[3]

Another interesting point which emerges from the study of this last tract, is the question of the language in which Al-Kindī's Greek authorities was written. Many savants have held that Al-Kindī was acquainted with Greek and was a translator from the Greek.[4] In the last-mentioned tract Al-Kindī uses the word *qīthūra*,[5] which would appear to show that in this instance, at any rate, the author had been consulting a Syriac work, probably a translation from the Greek.

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[3] See my "History of Arabian Music," p. 151.

[4] De Sacy, "Relation de l'Égypte," p. 488. Wüstenfeld, "Gesch. der arabischen Aerzte," 22. Sedillot, "Hist. des arabes," 340. Leclerc, "Hist. de la Médecine arabe," i, 135.

[5] Op. cit., fol. 24.

27.

ARABIC TREATISES ON MUSICAL INSTRUMENTS.

IT has already been stressed that the Arabs possessed treatises on musical instruments long before Western Europe.[1] Since antiquity has not handed down a solitary work of this type, the Arabic treatises of Al-Kindī (d. *c.* 874) and Al-Fārābī (d. 950) are the oldest works of their kind that we possess. The work of the former deals only with the lute (*'ūd*). The latter gives full details of instruments of the lute, pandore, and rebec class in separate sections on the *'ūd*, *ṭanbūr al-Baghdādī*, *ṭanbūr al-Khurāsānī*, and *rabāb*, as well as sufficiently concise references to the harp, psaltery or zither types in the *jank* (or *ṣanj*), *mi'zaf* (or *mi'zafa*), and *shāhrūd*. In addition, the wood-wind family as represented by the *mizmār wāḥid*, *suryānai* and *diyānai*, is dealt with.[2]

Miss Schlesinger derides the performance of Al-Fārābī in these matters. This is hardly just. At any rate, it should be pointed out that Al-Fārābī *does not* describe

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[1] See ante, p. 155.

[2] See my "Studies in Oriental Musical Instruments," p. 57, for these names.

a guitar "called *kithara*," nor even refer to it.[3] Nor does he speak of the frets of the *ṭanbūr al-Khurāsānī* producing "seventeen intervals of one-third tone each."[4] He *does not* say that the *rabāb* was known as the *lyra*,[5] and he *does not* include the *rabāb* among instruments with "frets."[6]

Special condemnation is reserved by my critic for Al-Fārābī's treatment of "wind instruments" as follows. "Unfortunately," says Miss Schlesinger, "Al-Fārābī omits the essentials in his description of flutes and reed-blown pipes, but it is quite certain from the particulars he has given that the notes of the lute, which he adapts—on paper—to the holes of the reed-pipe, would not result from the boring of the holes described."[8]

Al-Fārābī certainly omits measurements in dealing with the particular instruments described, although in the introduction to this section he lays it down that the length and diameter of tubes, as well as the size of the digit-holes, are material factors in determining pitch. As to the statement that the boring of the holes described by Al-Fārābī do not give the notes that he mentions, it must be pointed out that Al-Fārābī does not describe the boring of the holes, other than to specify their number, their position in a straight line or otherwise, and their equal size. That the notes described on the "wood-wind" of Al-Fārābī do correspond in general to those on the lute, there can be no

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[3] Schlesinger, "Precursors of the Violin Family," 446.
[4] Schlesinger, "Encyclopædia Britannica," xx, 676.
[5] Schlesinger, "Encyclopædia Britannica," xxii, 950.
[6] Schlesinger, "Musical Standard," xxvii, p. 62.
[8] "Musical Standard," xxvii, 62, b.

question. Fortunately, readers can judge this question for themselves as the entire section on the "wood-wind" (*mazāmīr*) from Al-Fārābī's "Kitāb al-Mūsīqī" may be consulted in a French translation (with Arabic text) in the appendix to Land's "Recherches sur l'histoire de la gamme arabe."

Miss Schlesinger then proceeds to inform us that in one of the reed-pipes described by Al-Fārābī there is a trace of "the Pre-Islāmic system," but that Al-Fārābī was unable to detect it, "obviously from lack of knowledge." This neglect, we are told, is "an example of how the Arab theorists break down and are nonplussed when dealing with the practice of Arab music *which does not come within the sphere of the* Greek theorists." The reference to Kosegarten's book and Al-Fārābī's manuscript being faulty, it cannot be deduced with certainty which pipe is referred to, although it would apear to be the *suryānai*. At any rate this pipe does not give a scale from which "the modal tetrachord, given by Ṣafī [al-Dīn 'Abd al-Mu'min] as *Iṣfahān*, is derived," as she states.[9]

All the scales on the pipes given by Al-Fārābī were "within the sphere of the Greek theorists," with the exception of those which gave the Zalzalian ($\frac{8}{9}\frac{7}{8}$) and Persian ($\frac{8}{68}\frac{1}{}$) thirds. As for the statement that the Arab theorists were nonplussed when dealing with non-Greek intervals such as the latter, we actually have succinct accounts as to how they arrived at these intervals. As to the suggested "lack of knowledge" on the part of Al-Fārābī it may be

[9] Cf. Land, "Recherches," . . . . , 128-9, 163-4. Carra de Vaux, "Le Traité des rapports musicaux," 60.

remarked that even if this alleged Pre-Islāmic scale did "peep through" in the pipes, it was not the business of Al-Fārābī to dissect it. His "Kitāb al-Mūsīqī" was not an antiquarian work, but was devised to meet the needs of the day, and especially to codify the native music on ancient Greek principles, as both Land and Collangettes have long since pointed out.[10] It is scarcely to be expected that Al-Fārābī should have dilated on systems to which he was opposed.

In comparing the development of musical instruments in Europe and among the Arabs Miss Schlesinger says: "If we turn our attention to European music, we find that every step in evolution is accompanied by corresponding developments in the musical instruments. . . . During the transition from the diatonic to the chromatic genus in Europe, every fresh urge in the direction of a chromatic compass was heralded or followed by a new key added to the flutes or to the reed-blown instruments. . . . The viol family enlarged its compass by tentative stretchings of the fingers in stopping the strings, which led eventually to the device of the 'shift' on the left hand of the neck. Many more examples might be given to show how every new idea that may be said to have influenced the theory

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[10] Land, "Remarks," etc., in "Trans. Ninth Int. Cong. of Orientalists," ii, 155. Collangettes, "Journal Asiatique," Nov.-Dec., 1904, p. 373. Following the statement of Casiri ("Bibl. Arab.-Hisp. Escur.," i, 347) several writers have imagined that the Escorial codex of Al-Fārābī's "Kitāb al-mūsīqī" contains *more than thirty figures of musical instruments, together with musical notes.* It is quite an exaggeration. Cf. Russell, A., "Nat. Hist. of Aleppo" (1794), i, 386. Crichton, A., "Hist. of Arabia," ii, 117.

of music arose out of the prophetic inspiration of the musicians, always in advance of the practice of their day."[11]

This theory, however, hardly works out successfully from a historical standpoint. We have the system of "forking" or a similar device (so as to obtain the accidentals on wood-wind instruments) in existence centuries before the so-called "transition from the diatonic to the chromatic genus in Europe, and it lasted long afterwards. Strange to say, the earliest reference to "forking" or a similar device that has come my way is to be found in the Arabic "Kitāb al-Kāfī fī'l-Mūsīqī" by Ibn Zaila (died 1048).[12] As for the "shift," it existed with the Arabs as far back as Al-Kindī (died 874)[13] and Yaḥyā ibn 'Alī ibn Yaḥyā (died 912).[14]

My critic continues as follows: "Now let us turn to the Arabs and Moors. What do we find? My *rabāb* with primitive bent wood bow, my *zamr* and *bagpipe* from Northern Egypt, are all of precisely the same shape and structure as those represented in use among the fifty-two musicians of the 'Cantigas de Santa Maria' (thirteenth century), which were introduced by the Moors into Spain. There is no development, no progress to be chronicled in all these seven centuries. The music of the Moors and Arabs is still purely melodic; the *organum* did not take root or develop in that soil, neither did keyboard instruments. The beautiful instruments of the lute family, rang-

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[11] "Is European Musical Theory Indebted to the Arabs?" p. 19.
[12] "Brit. Mus. MS.," Or. 2361, fol. 236, v. Cf. Lavignac, i, 354.
[13] "Berlin MS.," 5530, fol. 30, v.
[14] "Brit. Mus. MS.," Or. 2361, fol. 237,

ing from the large Roman chitarrone six feet high, and the Paduan theorbo five feet high, to the mandoline were developed in Italy. The Arab lutes are still rough and primitive in design and execution."[15]

It may be true that there has been little progress musically with the Arabs as suggested, and the reason is not far to seek. You cannot separate art and politics. The cultural and economic life of the Arabian East never recovered from the sack and destruction of Baghdād in 1258. Egypt, which maintained a vestige of the Khalifate, fell into Turkish hands in 1516, when the cultural decline was hastened there. Western Islāmic civilisation ceased with the fall of Granada in 1492, and in the subsequent expulsion of the Moors.[16] Under similar conditions the same results would come to any other people or country. Yet the question is of small import in the present argument because *the Arabian influence on the music of Western Europe had made itself felt long before these events took place.* Yet it is worth while remarking that if an Arab were to comment on the musical instruments of Britain by referring merely to a primitive one-stringed fiddle, a tin whistle and a bagpipe, such as one might see with itinerant musicians in this country, he would simply be laughed at. Yet this is precisely what my critic does in reference to Arabian instruments. If it be seriously desired to compare the modern Egyptian Arab instruments as used by professional musicians with those of Europe, there will be found plenty of well constructed

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[15] Op. cit., p. 10.

[16] See my "History of Arabian Music," Chapter VII.

specimens of the *'ūd*, the *kamānja* (both the *afranjī*[17] and *'ajūzī* species), the *qānūn*, the *nāy*, and really beautiful drums and tambourines. In the Middle Ages in the East, the manufacture of musical instruments was carried out with extreme care, as we know from the "Kanz al-Tuḥaf.[18] Woods, reeds and other materials were very carefully chosen and prepared. The adornment of these instruments, not merely with mother-of-pearl and ivory (which still survives in our mandolines and banjos), but with delicate gold and silver work as well as precious stones, was specially indulged in.

Miss Schlesinger essays to prove another point of her theory by introducing an instrument which was the outcome of the introduction of *organum*. "The first fruit of this new departure *(organum)* in the music of Western Europe was the invention of the *organistrum*, a new musical instrument designed specially, as the name indicates, for rendering the *organum*. In this instrument a new method of setting the strings in vibration appears for the first time, as far as is known at present, viz., by means of a rosined wheel, turned by a crank, which caused three or four strings to sound simultaneously."[19]

There would seem to be little doubt, as Canon Galpin points out, that the rosined wheel was suggested by the bow,[20] an implement which is generally acknowledged to have been borrowed from the East, and probably from the

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[17] Or *rūmī*. This is the European type of violin.

[18] "Kanz al-Tuḥaf," maqāla 3.

[19] Op. cit., p. 13.

[20] Galpin, "Old English Instruments of Music," p. 102.

Arabs.[1] The use of the bow is implied by Al-Fārābī (died 950),[2] the Ikhwān al-Ṣafā' (tenth century),[3] and Ibn Sīnā (d. 1037),[4] which disposes of Hugo Riemann's argument that the fourteenth century was the earliest mention of bowed instruments by Orientals.[5] That being so, the question arises that if Miss Schlesinger believes that "*every step in evolution is accompanied by corresponding developments in the musical instruments*" as instanced in *organum* > *organistrum*, may we not apply the same line of argument to the Arabs? If the rosined wheel of the *organistrum*, which caused several strings to sound simultaneously, was the "first fruit" of *organum* in Western Europe, then surely there is no reason why we should not

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[1] Miss Schlesinger states in her "Precursors of the Violin Family" p. 398 (see also her article, "Rebab," in the "Encyclopædia Britannica," xxii): "The Arabs declare that it was from the Persians they obtained the *rabāb*, and probably the fiddle-bow at the same time, but this is not stated, yet the Arab name for the bow [*kamān*] is derived from the Persian." I cannot recall any Arabic authority for the statement that the Arabs declare that they borrowed the *rabāb* from the Persians. On the other hand, there are good reasons for believing that the Arabs looked upon the *rabāb* as an indigenous production. ("Berlin MS.," We. 1233, fol. 47, v. See also "Bodleian MS.," 1842, fol. 78, v, where the rectangular instrument is specially referred to the *badawī* Arabs). The Arabs have always used their own word, *qaus*, for the fiddle-bow, so that her argument, taken from Carl Engel ("Early History of the Violin Family," 13) on the Persian name for the fiddle-bow is valueless! On the other hand, the Persians have borrowed the Arabic word *zakhma* for the plectrum, and even use the word to denote the fiddle-bow.

[2] Kosegarten, "Lib Cant.," 77.

[3] Ikhwān al-Ṣafā', i, 92.

[4] Ibn Sīnā, "India Office MS.," No. 1811, fol. 173.

[5] Riemann, "Dict. Mus." (4th edit.), s.v. "Arabians and Persians."

say that the bow of the *rabāb*, which was capable of a somewhat similar action, was the result of the self-same prompting (the *tarkīb*) with the Arabs?

We are also told that the various larger instruments of the lute family "did not take root or develop" among the Arabs or Moors, but with the Italians. I have already shown that the Arabs had the arch-lute, the *theorbo* and similar instruments, and have even suggested that the name *theorbo* may actually be a survival of an Arabic name.[6] It was easy enough for Italy to "develop" what the Arabs of Sicily and Al-Andalus had already brought to perfection.

[6] See Appendix 4, p. 144.

28.

VILLOTEAU AND OTHERS ON THE ARABIAN MUSICAL INFLUENCE.

VILLOTEAU (died 1839) was one of the early advocates of the Arabian influence on the theory of music. The resemblance between the scale of the Arabs and that of Guido of Arezzo (died *circa* 1050) led Villoteau to say that there was every reason to suppose that the latter had adopted the musical theory of the former. He admitted however, that it was out of the Greek system that the Arabian theory arose, but, he said: "according to all appearances it is this latter which served as the model for that of Guido of Arezzo."[1]

Some years earlier, Sir John Hawkins (died 1789) had hinted at the Arabian influence. He said: "With respect to the theory of music, it does not appear to have been at all cultivated in Spain before the time of Salinas, who was born in the year 1513, and it is possible that this sci-

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[1] Villoteau, op. cit., i, 858-9. See also his "Recherches sur l'analogie de la musique avec les arts," i, 357. Combarieu, "La musique et la magie," p. 181-2. Raouf Yekta Bey, "Revue Musicale," 15 Avril, 1908. Soriano-Fuertes ("Hist. de la música Española," i, 152) says that Guido of Arezzo studied in Catalonia, where Gerbert acquired his "Arabian sciences," and suggests that it was here that Guido acquired his knowledge of the solfeggio. "S.I.M.G.," i, 553.

ence, as in those of geometry and astronomy, in physics and other branches of learning, the Arabians, and those descended from them might be the teachers of the Spaniards."[2]

A century later, Oscar Fleischer also asked if there were not some influence upon Spanish music theory to be ascribed to the Arabs, seeing that France was quoting Al-Fārābī in the thirteenth century.[3] Of course, there were several Spanish theorists prior to Salinas (died 1590).[4] Two outstanding names are those of Raimundo Lull (died 1315), and Ramos de Pareja (died *circa* 1521), although perhaps, neither of them actually wrote in Spain. What benefits these writers could have derived from the teachings of the Arabs we can only conjecture. Lull was certainly an Arabist, and it might be conceded that he would be conversant with what the Arabs had to impart in this science. In Lull's definition of music, "*Musica est duplex: naturalis et artificialis*," we may perhaps have an echo of Al-Fārābīan teaching.[5] We see this definition

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[2] Hawkins, "A General History . . . . of Music," bk. ix, chap. 83.

[3] "Vierteljahrsschrift für Musikwissenschaft," iv, 277. Soriano-Fuertes appears to think that Al-Fārābī's "Kitāb al-mūsīqī" was a textbook in the Spanish Christian schools. "Hist. de la Música Española," i, 89. "Neue Nahrung erhielten diese allegorisierenden Bestrebungen durch das Eindringen arabischer Elemente im 10. bis 12. Jahrhundert." Abert, "Die Musikanschauung des Mittelalters," pp. 143, 169, 175.

[4] For early Spanish theorists see Riaño, "Notes on Early Spanish Music," p. 70.

[5] Raimundo Lull, "Opera" (1617), p. 209. Cf. Regino Prumiensis (Gerbert, "Script.," i, 232, 236). For the older classical definitions see Aristoxenos (Meibom, i, 1); Aristeides (Meibom, ii, 7, 207); Boëthius, i, 2; Cassiodorus (Gerbert, "Script.," i, 16); Isidore (Gerbert, "Script.," i, 21).

also in his contemporary Johannes Ægidius Zamorensis (*circa* 1270), a Spanish theorist who was acquainted with the writings of Constantine the African (died 1087), one of the early translators of Arabic works into Latin.[6]

The definition of Al-Fārābī may perhaps be traced as early as Johannes Cotto, whose "Epistola ad Fulgentium" has had the date *circa* 1100 assigned to it, and also as late as Adam de Fulda (*circa* 1490).[7] If the definition in Johannes Cotto is Al-Fārābīan, it may enable us to fix the date of his epistle a little later. Al-Fārābī's "Iḥṣā' al-'Ulūm" does not appear to have made its debut in Latin as "De Scientiis" or "De Divisione Omnium Scientiarum" until the mid twelfth century, when John of Seville and Gerard of Cremona made their versions. At the same time we must not overlook the fact that a mere definition could have been transmitted orally by European students who had imbibed the "Arabian sciences." If Johannes Cotto was English, as has been generally accepted, one might point to Petrus Anfusi (*circa* 1106), Adelard of Bath (*circa* 1130), Robert of Retine (*circa* 1141), or Abraham ben Ezra (*circa* 1158-9) as possible *media*.[8]

A reference by Mr. J. B. Trend to the influence of the

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[6] Gerbert, "Script.," ii, 378, 392. See ante p. 36.

[7] Wooldridge, op. cit., i, 77. Cf. Grove's "Dict.," s.v. Gerbert, "Script.," iii, 333.

[8] See my "Arabian Influence on Musical Theory," pp. 12-18. Many English students were to be found in Spain in the twelfth century, and John of Seville wrote a work specially for two Englishmen there, named Gauco and William. See Haskins, "Mediæval Science," 127.

gipsy on Spanish music,[9] leads me to introduce at this point the question of the origin of the gipsies which may have interest. "The gipsy tribes," says Mr. Trend, "came from the East." Their origin however is shrouded in mystery. Many years ago the famous Dutch orientalist, M. de Goeje, explained the origin of the name *Tsigan* or *Tzigane* from the Persian *chang* (a harp) or the Arabic *zanj* (the Blacks). It has been pointed out however that the proper form of the word was *Atzigan* or *Atzingan*, a name derived from the *Athinganoi* mentioned by the Byzantine historians in the ninth century. What was far more interesting in the theories of M. de Goeje was his account of the passage of the gipsies from Chaldæa through Asia Minor into Europe.

In the days of Khalif Al-Ma'mūn (813-33) and Al-Mu'taṣim (833-42), we read of an Indian community occupying the marshlands between Al-Baṣra and Al-Wāsiṭ in Chaldæa. They were called by the Arabs the *Zuṭṭs*, a word derived, it would seem, from the Sanscrit *jati* (properly *yati*). At this period, the *Zuṭṭs* were a serious menace to the state by reason of their lawless behaviour, and an expedition was sent against them. After several months' hostilities, the *Zuṭṭs* capitulated, and in January, 835, dressed in their national costume, and to the music of their national instruments, they were transported to Anazarba on the Byzantine frontier. Twenty years later, we are told, they entered Asia Minor, under the name of the *Athinganoi*.[10]

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[9] Trend, "The Music of Spanish History," 32-3.

[10] M. de Goeje, "Mémoire sur les migrations des Ziganes à travers l'Asie" (1903).

So far M. de Goeje. The question arises however: "How did the *Zuṭṭs* come to settle in Chaldæa?" A reasonable explanation of this may perhaps be found in the "Rauḍat al-Ṣafā'" of the Persian historian, Mīrkhwānd (died 1498). This author relates that the Persian Sāsānid monarch, Bahrām Ghūr (died 438) colonised ten thousand singers and dancers from Hindustān "all over the country." Mīrkhwānd says that the *Jats (Zuṭṭs)* were descended from them, and that not one of them could be found who was not a musician.[11] Probably, the *Zuṭṭs* had been in their marshland colony since the days before Islām when the Persian *dihqān* held sway in Chaldæa.

Gipsy music is oriental, and where we see it, perhaps to the best advantage, in the Balkans, it carries many of the salient features of Arabo-Turkish music. The gipsy *schetra* (violin) derives its name from the Persian *sitāra*. When therefore Mr. Trend tells us that "Southern Spanish song is probably more influenced by the gipsies, who still remain in the country and sing, than by the Moors, who have been gone for three hundred years," it simply means that the gipsy influence is actually a reinforcement of the oriental idiom that had already impregnated the music of the southern half of the Iberian peninsula during the Arab occupation.[12]

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[11] Mīrkhwānd, "Rauḍat al-Ṣafā'," i, ii, 357. See the Persian text in "Histoire des Sassanides" (Paris, 1843), p. 217.

[12] Chavarri, "Música Popular Española" (1927), 24-6.

29.

THE ARABIC TRANSLATIONS FROM THE GREEK.

IN reply to my statement that "between the eighth and eleventh centuries the Arabs had translated from the Greek many musical treatises hitherto unknown to Western Europe," Miss Schlesinger says:[1]

"We require to know by whom these translations were made or the date. We surmise that this work was accomplished between the eighth and eleventh centuries, by a college of translators founded at Baghdād by Ḥunain ibn Isḥāq. These Arabic translations, with very few exceptions, benefited only the Arab theorists themselves, *we need to know when they were retranslated into Latin, and thus became accessible to the cultured classes in Europe.* This would probably not be before the end of the twelfth century at the earliest, for the college of translators from Arabic into Latin, founded in 1130 by Raymund, Archbishop of Toledo, set to work first of all upon Aristotle and the medical, mathematical and philosophical writings of the Greeks."

What are the "facts"? Translations from the Greek

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[1] "Musical Standard," xxvii, p. 23, b.

into Arabic date from nearly a century before the foundation of the so-called "college of translators founded at Baghdād," as evidenced by the "'Arḍ Miftāḥ al-Nujūm" of Hermes in the Ambrosian Library which is dated 743. Treatises on other subjects of the *quadrivium* were translated during the reign of Al-Manṣūr (754-75),[2] and books on music theory *may* have been included. We even know the names of some of the translators, including Yūḥannā ibn al-Baṭrīq (died 815).

The *Bait al-Ḥikma* at Baghdād, was *not* merely a "college of translators," as has been suggested. It was a college in the broadest sense of the term, i.e., a body of scholars incorporated for the study and instruction of the higher branches of knowledge. Translation was only a part of the work accomplished by its scholars.[3] Further, Ḥunain ibn Isḥāq (809-73), although one of the translators, was *not* its "founder." He was one of the later translators who served his apprenticeship under Yaḥyā ibn Māsawaihi, the director of the translations from Greek works on science and philosophy, *including music*, as Leo Africanus tells us.

The real founder of the *Bait al-Ḥikma* was Khalif Al-Ma'mūn (reigned 813-33). The story of its foundation is related in the "Fihrist" (*circa* 988). The precise date, however, is not given, but it must have been between 813, the date of the accession of the Byzantine Emperor Leo the Armenian, and 831, the date of the death of Yaḥyā

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[2] Al-Mas'ūdī, viii, p. 291.

[3] The Banū Mūsā, who were among the first "Fellows" at the *Bait al-Ḥikma*, paid about 500 pieces of gold *(dananir)* a month to their translators. "Al-Fihrist," 43.

ibn Abī Manṣūr, who was one of the astronomers engaged at the college.[4]

There is no record of the actual dates when the treatises on music of Aristotle, Aristoxenos, Euklid, Nikomachos, Ptolemy and others appeared in Arabic, nor do we know for certain who the translators were. If we possessed these works to-day it is highly probable that both these questions could be answered. Unfortunately, all that has come down to us are some extracts from the Greek writers on music translated by Ḥunain ibn Isḥāq,[5] Aristotle's "De Anima," which contains a section on sound, and the treatises of Mūriṣṭus, Archimedes and Apollonios on the *hydraulis* and other instruments.[6] The holocausts in the East by the mamlūks of the Fāṭimids (eleventh century), the Mughal sulṭāns Hūlāgū (thirteenth century) and Tīmūr (fourteenth century), and in the West by the wazīr Al-Manṣūr (tenth century)[7] and Cardinal Ximenes (fifteenth century), must have resulted in the loss of millions of books.[8]

Whilst the earliest specific mention of the Arabo-Greek translations of Aristotle, Aristoxenos, Euklid, Niko-

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[4] Baron Carra de Vaux ("Avicenne," 55) thinks that it was founded "about 832," which is clearly too late.

[5] See my "History of Arabian Music," pp. 126-7.

[6] See my "Organ of the Ancients."

[7] See my "History of Arabian Music," pp. 184, 186.

[8] "Millions" is not an extravagant term. Ximenes alone was responsible for the destruction of 80,000 volumes, according to a conservative estimate. (Conde, "El Nubiense, Desc. de España," p. 1. Al-Maqqarī ("Moh. Dyn.," i, viii.) Cf. Prescott, "Hist. of Ferdinand and Isabella," and Lea, "The Moriscoes of Spain." A Catholic historian estimates the number as 1,005,000. (Robles "Vida de Ximenez," 104.)

machos and Ptolemy, occur in Ibn 'Abd Rabbihi (d. 940), Al-Mas'ūdī (d. c. 957), and the *Fihrist* (c. 988), they can be traced much earlier.[9] Al-Kindī (d. c. 874) certainly borrowed from the Greek theorists, and most probably from a translation. Seeing that his treatises on music appear to have been written during the reign of Al-Mu'taṣim (833-42), and certainly before the time of Al-Mutawakkil (847-61), it is obvious that the translations from the Greek must have been produced earlier.[10] We have already seen in the life of Ishāq al-Mauṣilī that some of these treatises were being translated even outside the *Bait al-Ḥikma*, and from internal evidence we know that this probably took place before the year 847.[11] The Banū Mūsā, one of whom Muḥammad, died in 873, were engaged in the study of the science of music.[12] They may indeed, have been responsible for some of the translations together with Ḥunain ibn Isḥāq. Ibn Firnās (d. 888), who is credited with having been the "first who taught the science of music in Al-Andalus," was probably so designated because he introduced the theories of the Greek scholiasts. At any rate, by the time of Al-Fārābī (d. 950) the Arab theorists appear to have been thoroughly acquainted with the Greek treatises on music, and in this last-named writer we have traces of Aristoxenos, Ptolemy, Euklid and Themistius.[13]

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[9] See my "Greek Theorists of Music in Arabic Translation" ("Trans. of the XVIIth Inter. Congress of Orientalists").

[10] See my "Hist. of Arabian Music," pp. 127, 139.

[11] See Appendix 25.

[12] "Al-Fihrist," 271. Ibn Khallikān, "Biog. Dict.," iii, 315.

[13] Cf. "S.I.M.G.," xi, 319.

Miss Schlesinger states that "these Arabic translations, with very few exceptions, benefited only the Arab theorists themselves." We are not told, however, who the "exceptions" were, but students of mediæval Oriental music will know that Persian, Indian, Turkish and Syrian writers on musical theory "benefited" directly or indirectly to a considerable extent.

As for the query that "we need to know when they were re-translated into Latin, and thus became accessible to the cultured classes in Europe," it might be pointed out that a re-translation into Latin was not necessarily an indispensable condition of Europe's "benefiting" by the Arabo-Greek translations. During the Umayyad period (eighth to eleventh century) in Al-Andalus, students from all parts flocked to Cordova,[14] and Arabic was spoken and written by the Muzárabes, i.e., the Christians living under Muslim rule, and the Mudéjares, i.e., the Muslims living under Christian rule.[15] Students could therefore have "benefited" from the Arabic fount direct. We know later that when Roger Bacon lectured to some Spanish students at Oxford, using faulty Latin translations from the Arabic, his listeners ridiculed him because they evidently knew his "authorities" *in Arabic*.[16] In Christian monasteries outside of Spain, Arabic MSS.

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[14] See Appendix 10.

[15] See Appendix 11.

[16] Wood, "Antiq. Univ. Oxon." Adelard of Bath (twelfth century) abandoned the schools of Gaul for those of the Saracens ("Quæst. Nat.") It would be interesting to learn whether Adelard took his theory of the spherical propagation of sound from the Arabs or from Vitruvius ("Quæst. Nat.," cap. 21).

were to be found in the eleventh century,[17] whilst they were quite common in Norman Sicily in the twelfth to the thirteenth centuries.[18]

I have elsewhere disposed of the suggestion that the end of the twelfth century was the earliest that translations could have been made from the Arabic into Latin on questions of music.[19] Indeed, whether the Arabo-Greek treatises were known in Latin translation or not, the fact remains that the mere existence of these works in Arabic, and the study of them by the Arabs, must have yielded beneficial results.

It is also clear that Byzantium itself neglected the sciences as has already been pointed out.[20] From the fourth century, right through the most brilliant period of Arabic translation from the Greek, Byzantium was dumb. Indeed, as Oman says, the seventh and eighth centuries constitute a "dark age" for Byzantium culture. Under the pressure of the Arabian culture movement in general we have something of a revival under the "literary emperors" (886-963).[1] In 968, when an envoy of the Emperor Otto I visited Constantinople, he found books on the *Arabian sciences* in use.[2] In the eleventh century, Psellos broke the Byzantine silence on the question of the

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[17] "Annales Corbeiensis," an. 1094.

[18] See *ante* pp. 21-2.

[19] See *ante* p. 174 *et seq.*

[20] See Appendix 2.

[1] In Christian Spain, when Khalif 'Abd al-Raḥmān III wanted to have a fresh translation made of a Greek work into Arabic, not a single Christian could be found in Cordova in 951 who knew Greek. Al-Maqqarī, "Moh. Dyn.," xxv.

[2] Liudprandi, "Legatio," cap. 39.

theory of music, although for all that he had to impart he might just as well have held his peace.[3] *It was the Arabs alone who showed any measure of interest in speculative theory.*

In spite of early indiscretions, the Arabic translations from the Greek were generally made with greater skill than the later translations from Arabic into Latin.[4] Roger Bacon roundly condemns the latter translations,[5] and urges the necessity of knowing Arabic for the acquisition of the sciences.[6] Like Adelard, he prefers the Arabian to the Gaulish schools, and ridicules the Paris schoolmen who quote Alexander of Hales "as if he were an Aristotle, or an *Avicenna*, or an *Averroës*"![7]

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[3] See ante, p. 131.

[4] Leclerc, "Hist. de la Méd. Arabe," ii, 346. Browne, E. G., "Arabian Medicine," 26.

[5] "Comp. Stud.," cap. viii.

[6] "Comp. Phil."

[7] "Op. Tern.," xxxi.

30.

THE MŪRISṬUS MANUSCRIPTS.

"WITH regard to the Mūriṣtus MSS. on the organ," says Miss Schlesinger, ... "there is the following to be said. Mūriṣtus, as Mr. Farmer tells us, was a Greek, Ameristos by name, whose original treatises in Greek are not extant, but are only preserved in Arabic."[1] The interpretation placed on my words (see *ante* p. 64) is rather misleading. What I meant was that the Arabic Mūriṣtus stood for the Greek Ἀμέριστος. The latter was a mathematician and a brother of Stēsichoros (*c.* 640-555 B.C.). Whether this Ameristos was the author of these treatises, or whether the name is a scribal error, I have discussed elsewhere.[2]

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[1] "Musical Standard," xxvii, 198, a.

[2] "Studies in Oriental Musical Instruments," p. 30.

31.

YAḤYĀ IBN 'ALĪ IBN YAḤYĀ.

YAḤYĀ ibn 'Alī ibn Yaḥyā ibn Abī Manṣūr al-Munajjim (856-912) was a "boon companion" of Al-Muwaffaq, the brother of Khalif Al-Mu'tamid. He was a learned metaphysician, and excellent poet, and a musical theorist.[1] He was the author of a "Kitāb al-Nagham" ("Book of Modes"),[2] and other works of a similar nature. One of the latter, a "Risāla fī'l-Mūsīqī," has been preserved for us.[3] His father, who was a pupil of Isḥāq al-Mauṣilī, was also a "boon companion," poet, and musician.[4] His grandfather was one of the celebrated scholiasts of the *Bait al-Hikma* ("House of Wisdom") at the time of Khalif Al-Ma'mūn.[5]

Yaḥyā ibn 'Alī, as did several other members of his family, belonged to a class of writers on music who dealt with the *'amalī* or practical theory, like Isḥāq al-Mauṣilī, 'Ubaidallāh ibn 'Abdallāh, and Ibn Khurdādhbih, rather

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[1] "Al-Fihrist," 143.

[2] "Kitāb al-Aghānī," viii, 26.

[3] "British Museum MS.," Or. 2361, fol. 236, v, *et seq.*

[4] "Al-Fihrist," 143. Ibn Khallikān, "Biog. Dict.," ii, 312.

[5] "Al-Fihrist," 143.

than with the *naẓarī*, or speculative theory, as did Al-Kindī, Al-Sarakhsī, Thābit ibn Qurra, and Qusṭā ibn Lūqā. His treatise mentioned above gives a fair insight into the bases of the "Old Arabian System" which was known to the virtuosi who figure in the great "Kitāb al-Aghānī."

I have already shown (Appendix 23) that the "Old Arabian System" had existed from the time of Ibn Misjaḥ (d. *c.* 705-14). After that date, however, several extraneous factors had entered the system, especially as regards the scale. First, there were the Persian ($\frac{8}{6}\frac{1}{8}$) and Zalzalian ($\frac{9}{2}\frac{7}{2}$) *wusṭā* notes, and possibly the consequent *mujannab* notes ($\frac{1}{1}\frac{0}{4}\frac{9}{9}$ and $\frac{5}{4}\frac{4}{9}$). Then there was the noteworthy influx of Persian and Khurāsānī musicians, who appear to have brought with them the scale of two *limmas* and a *comma*, as found in the *ṭanbūr al-Khurāsānī*. In addition, there was still the old "Pre-Islāmic Scale" of the *ṭanbūr al-mīzānī* (or *Baghdādī*). The new ideas, together with other alien innovations, made considerable headway, more so because they were championed by the Amīr Ibrāhīm ibn al-Mahdī (d. 839), the rival of Isḥāq al-Mauṣilī. So deeply had the novelties taken root that it was said that the old melodies could no longer be heard in their original form. A treatise on the merits of the innovators and the defenders of the Old Arabian School was written by 'Alī ibn Hārūn ibn 'Alī ibn Yaḥyā (d. 963), a nephew of Yaḥyā ibn 'Alī ibn Yaḥyā, entitled "Kitāb risāla fī'l-farq bain Ibrāhīm ibn al-Mahdī wa Isḥāq al-Mauṣilī fī'l-ghinā" ("Treatise on the Difference between Ibrāhīm ibn al-Mahdī and Isḥāq al-Mauṣilī concerning

Music").[6] It was these rather disturbing elements which had invaded Arabian music that appear to have roused Isḥāq al-Mauṣilī to "recast" the "Old Arabian System."

So far as rectifying the scale was concerned, the annalists boast, as I have said,[7] that Isḥāq reached the conclusions of Euklid and other of the "Ancients" (the Greeks), without actually having been acquainted with their writings.[8] Miss Schlesinger would show how Isḥāq came upon "this so-called new development in the scaling of the lute." It was "at first or second hand, as part of his training, in the *milieu* in which he was brought up." "Isḥāq's vaunted 'Old Arabian theory,'" continues this writer, "resolves itself into the Pythagorean scale of the Greek system of Euklid and other theorists." "The 'Old Arabian System' supposed to have been recast by Isḥāq al-Mauṣilī was not an Arabian system at all," "but merely that particular form of the Ancient Greek system known as the 'Greater Complete,' which was in use in Hellenistic Asia, in Alexandria, and the ancient kingdom of the Ptolemies."[9]

In the first place, I would observe regarding this that no one has referred to Isḥāq's "recasting" as a "*new development in the scaling of the lute.*" This is her own assumption. The idea of the "Christian monastic origin" theory as to "the manner in which Isḥāq came upon the scale used upon his lute" has already been disposed of (Appendix 24). When we are told that Isḥāq's scale is

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[6] "Al-Fihrist," 144.

[7] See *ante* p. 59.

[8] "Kitāb al-Aghānī," v, 53.

[9] "Musical Standard," xxvi, pp. 45, 46, 63.

merely the Pythagorean scale of Euklid, Miss Schlesinger is only reiterating what the author of the "Kitâb al-Aghânî" hinted at nearly a thousand years ago, and *which I had repeated.*[10] Yet this "recasting" or "re-establishment" of the "Old Arabian scale" did not actually necessitate the learning of a Euklid, as it was not so difficult a matter, after all, seeing that Isḥâq had the lute to work on,[11] although we are expressly told that he made a rule for the adjustment of these frets by *reckoning* or *calculation (ḥisâb).*[12]

As for the statement that the "Old Arabian System" was the "Greater Complete System" of the Ancient Greeks,

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[10] See Appendix 23.

[11] The ratios are not given in Yaḥyâ's *risâla*, but his description of the *accordatura (taswiyya)* and the octaves *(aḍ'âf)* fix the intervals of the frets with certainty. See also my "Studies in Oriental Musical Instruments," p. 61.

	Bamm	*Mathlath*	*Mathnâ*		*Zîr*
Muṭlaq (open string)	[A.]	[D.]	G.	(1/1).	c.
Sabbâba (1st finger fret).	[B.]	[E.]	a.	(8/9)	d.
Wusṭâ (2nd finger fret).	[C.]	[F.]	b♭.	(27/32)	e♭.
Binṣir (3rd finger fret).	[C♯.]	[F♯.]	b.	(81/128)	e.
Khinṣir (4th finger fret).	[D.]	[G.]	c.	(3/4)	f.
					[f♯.]
					g.

[12] "British Museum MS.," Or. 2361, fol. 237, v.

the clear and definite affirmations of both Isḥāq al-Mauṣilī and Yaḥyā ibn 'Alī ibn Yaḥyā rule this opinion out of court. A short quotation from the "risāla" of Yaḥyā on the question of the difference between Isḥāq and the "Masters of [Greek] music" has already been given,[13] but a more lengthy passage occurs elsewhere in this tract which is worth quoting. It is as follows:

"And the 'Ancients' [the Greeks], from among their Masters of music, say that the notes *(nagham)* are eighteen. And they choose among the notes those which are in the *mathlath* and *bamm* [strings], and they make the first of the notes the *muṭlaq* of the *bamm*, and the second the *wusṭā*[14] upon it. And they are unanimous upon this arrangement, and assert that the notes which are in the *mathlath* and *bamm* [strings] are like the notes which are in the *mathnā* and *zīr* [strings]. . . . Then the only difference [in this question] between Isḥāq and those who follow him, and the Masters of [Greek] music, is that Isḥāq made the notes nine, and the tenth note the octave *(ḍi'f)*, because he thinks that the octaves . . . .[15] And the Masters of [Greek] music betake themselves to these nine notes and then double them. . . . So they became eighteen notes."[16]

It is evident from this account that the "Greater Complete System" of the Ancient Greeks was "clearly distinguished" by Isḥāq and Yaḥyā from the *one octave* "Old Arabian System," as I had stated. Of course, the Ancient

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[13] See *ante* p. 65.

[14] This would appear to be a copyist's error for *sabbāba*.

[15] There appears to be a *hiatus* here.

[16] "British Museum MS.," Or. 2361, fol. 237, v.

Greeks also had a *one octave system*, but this comprised the two disjunct tetrachords—*Mesōn* (E, F, G, a) and *Diezeugmenōn* (b, c, d, e)—and was therefore quite dissimilar from the former. Yaḥyā states explicitly that it was the ten-note system that distinguished the Arabian theory. He says: "Thus all that conforms with the music *(ghinā')* of the Arabs is from the *ten* notes *(naghamāt)*, although the music itself [in one composition] comprises [only] *eight* notes, as some notes give place to others, which distinguishes their system in this particular. Most of what the vocal music *(ṣaut)* is built upon is *eight* notes, all of them. And with this conforms the notes *(nagham)* of the music of the Arabs, and according to it runs the whole of the forms *(aṣnāf)* of music."[17] Elsewhere we are told, that "Isḥāq ibn Ibrāhīm [al-Mauṣilī] and those who follow him say that the notes are *ten*. There is not in the lutes *('īdān)*, nor in the wood-wind instruments *(mazāmīr)*, nor in singing (*lit.*, the throat, *ḥalq*), nor in any of the instruments more than these notes."[18]

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[17] "Brit. Mus. MS.," Or. 2361, fol. 238.
[18] *Ibid.*, fol. 236, v.

32.

AL-FARABÎ AND ARISTOXENOS.

AL-FARABÎ'S great theoretical work on music, the "Kitāb al-mūsīqī," "a masterly treatise,"[1] was written at the special request of his friend, the wazīr Abū Ja'far Muḥammad ibn al-Qāsih al-Kurkhī, and the reason for it is related in the dedicatory preface, as follows:[2]

"You [Abū Ja'far] mentioned your desire to investigate the content of the art of music which is referred to the 'Ancients' [the Greeks], and you ask me to demonstrate this for you in a book which I should write, aiming to explain it [the art of music] in such a way that would make its attainment easy to him who investigates it. But I hesitated in this when I considered the books that have come down to us from the 'Ancients' on this subject, as well as what has been written by those who came after them, living nearer our own time. And I had hoped to find in them what would meet with your wishes, and so dispense with the need of writing a new book on a subject that had already been dealt with, because, seeing that

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[1] Land, "Remarks on the Earliest Development of Arabic Music" ("Trans. Ninth Congress of Orientalists," ii, 155).

[2] "Leyden MS.," Or. 651, fol. 1.

these earlier books dealt with all branches of the art, a man's writing a book, taking the credit to himself, which would merely confirm what had been said before him, would be a redundance, folly, or iniquity, unless, indeed, the original author had written unintelligibly, either in the expressions employed or in some other way. In that case a second author, following what he [the original author] says, may expound him and make him explicit, conformable to the text of the original. Therefore his purpose would be to perfect the work of his predecessor. But with the second author, where a sound description and interpretation [or translation] is imposed on him, he should only make explicit what was unintelligible.

"Now, I found in all of them [the Greek theorists] an incompleteness in the various branches of the art, and *lacunæ* in many things in what they state. And the chief aim of most of them is *speculative theory (al-'ilm al-naẓarī)*, but in the elucidation of it, unintelligible sayings have been employed in such a way that it is almost unthinkable that the ancient theorists *(naẓarūn)* should have been unable to deal with this art and did not attain to its perfection, considering their numbers and proficiency, and their eagerness for discovery in the sciences, and their preference for them over every other human thing, and the excellence of their understanding, and the transmission of it [their work] from generation to generation. . . . . Except [that we allow] that their writings in the perfection of this branch of knowledge have either perished, or what was handed down from them in Arabic were defective writings."

"In view of this, I think it proper that I should comply with your wish [and write the book requested]."

Then follows the passage which I have already quoted,[3] explaining the method upon which every writer on such a subject should base his enquiries, and then showing what Al-Fārābī's own contribution was in elucidating the obscurities and correcting the errors of his predecessors.[4] Upon these two latter passages Miss Schlesinger comments as follows:[5]

"Nothing," says Mr. Farmer, "demonstrates the critical attitude of the Arab theorists better than the opening lines of the monumental 'Kitāb al-Mūsīqī' of Al-Fārābī.' If this be so, then we may condole with the Arabs, for this quotation from Al-Fārābī by no means represents original critical faculty, it is ARISTOXENOS, pure and simple, as anyone familiar with that theorist must have seen at once."

In reply to this criticism, I have no hesitation in saying that it is farcical to suggest that Al-Fārābī copied Aristoxenos in the passages quoted by me (pp. 67-8).[6] In the

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[3] See *ante* p. 67.

[4] See *ante* p. 68.

[5] "Musical Standard," xxvii, 62, b, *et seq.*

[6] Miss Schlesinger gives the passages from Professor Macran's translation of the "Harmonics" of Aristoxenos, and invites comparison between the two writers. Here is the first Aristoxenos passage: "Our exposition cannot be a successful one unless three conditions be fulfilled. Firstly, the phenomena themselves must be correctly observed; secondly, what is prior and what is derivative in them must be properly discriminated; thirdly, our conclusions and inferences must follow legitimately from the premises," etc.

For the similarity between Al-Fārābī and Aristoxenos in the

first place, both of these writers subscribed to the Peripatetic school, and could scarcely have penned a scientific work without introducing the methodology of Aristotle's "Analytics," and in the passages under discussion we see this quite vividly. In the second place, the opening remarks of Al-Fārābī (given above) which precede the passages in question, show quite conclusively why Al-Fārābī wrote as he did. Further, it vindicates the truth of my remark that—"Nothing demonstrates the critical attitude of the Arab theorists better than the opening lines of the 'Kitāb al-Mūsīqī' of Al-Fārābī."

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second passage the following is quoted from the latter: "This has been clearly illustrated in a former work in which we examined the views put forward by the students of Harmonic. . . . . We shall find that they have been in part ignored, in part inadequately treated; and while substantiating our accusations we shall at the same time acquire a general conception of the nature of our subject."—Macran's translation, pp. 197, 165, 166.

33.

THE ARABS AND THE SPECULATIVE ART.

AL-FĀRĀBÎ, Ibn Bājja, and Ibn Rushd, each wrote a book or books which carried the title or titles of "Sharḥ Kitāb al-Samā' al-Ṭabī'ī," or "Kitāb al-Samā' al-Ṭabī'ī,"[1] or "Sharḥ Kitāb al-Samā' al-Ṭabī'ī li Arisṭūṭālīs," or "Talkhīṣ Kitāb al-Samā' al-Ṭabī'ī li Arisṭūṭālīs." Each of these works I considered to be (following the title)[2] a "Commentary on Aristotle's Theory of Sound," which was also the opinion of Pascual de Gayangos.[3] I had in mind a section of Aristotle's "De anima" (419, b), which was well known in Arabic,[4] as well as the Pseudo-Aristotelian "De audibilibus." The view was further strengthened by the title of an Aristotelian work translated from the Arabic into Latin by Gerard of Cremona, entitled "De naturali auditu."[5] I am now of opinion, however, that all these titles refer to Aristotle's "Physics" (φυσικὴ ἀκρόασις, "Auscultatio naturalis"),

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[1] Steinschneider, "Al-Fārābī," 220, considers these first two titles as separate works.

[2] "Musical Standard," xxvii, 44.

[3] Al-Maqqarī, "Moh. Dyn.," i, Appendix xv (*al-samā' al-ṭabī'ī* = "natural sound") Cf., however, Appendix 21.

[4] See Appendix 29.

[5] Steinschneider, "Die europ. Übersetz.," Index, p. 90.

because the Arabic work in the Leyden Library with the title, "Sharḥ al-Samā' al-Ṭabī'ī li Arisṭūṭālīs," certainly concerns the "Physics,"[6] and further, the text of the Latin version of the "Physics" at St. Mark's, Venice,[7] is based on Gerard's translation.

Miss Schlesinger derides the suggestion that the Arabs contributed to the speculative art of music, and asks for some passage showing how Al-Fārābī surpassed Aristotle in scientific knowledge.[8] In the Muslim world, Al-Fārābī was known as "The Second Teacher" *(al-mu'allim al-thānī)*, i.e., the successor to "The First Teacher," who was Aristotle. As a commentator of Aristotle, Al-Fārābī was not only *facile princeps* in the East, but in Western Europe also until Ibn Rushd (Averroës) eclipsed his fame.

The particular question that was under discussion was the theory of sound, and what we know of Aristotle's apprehension of this question as revealed in "De anima" and the doubtful "De audibilibus," demonstrates that he had little to say that was original,[9] and a few things that were erroneous.[10] It was not indeed, a very difficult matter for the Arabian theorists, many of whom were fairly good physicists, to add something to what the Greeks had to say. The Al-Kindī (died 874) treatise in the Berlin Staatsbibliothek entitled "Risāla fī'l-Luḥūn," written for

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[6] "Leyden MS.," 896 (583).

[7] "St. Mark's MS.," Lat. vi (37).

[8] "Musical Standard," xxvii, 63.

[9] Lones, "Aristotle's Researches in Natural Science," 77.

[10] In "De sensu," where one expects to find the question dealt with at length, since he considered hearing "the most important of the senses," Aristotle leaves the subject untouched.

Aḥmad ibn al-Mu'taṣim, is devoted almost entirely to the theory of sound, and in spite of Greek loanings, is highly original in places, especially in its physiological aspect.[11] The same author's other tract in the same library (No. 5530) is almost equally as interesting on this question.

As for Al-Fārābī (died 950), I venture to say that the *madkhal* or introduction to his famous "Kitāb al-Mūsīqī" is equal if not superior to the musical writings of Aristotle, including the pseudo-Aristotelian "Problems."[12]

Al-Fārābī openly borrows from the Greeks,[13] but he does *not* tell us that sound is heard in a less degree in water than in air, *nor* does he tell us that wool when struck produces no sound, as Aristotle states.[14] Neither did Al-Fārābī repeat the story of Nikomachos that Pythagoras discovered the consonances of the fourth, fifth and octave by comparing the weight of the *hammers* in the blacksmith's shop, a legend which was repeated by Gaudentios and Boëthius.[15]

The Ikhwān al-Ṣafā' (*circa* 970), as I have said, made an advance on Greek conceptions.[16] The second division

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[11] "Berlin MS.," 5531.

[12] In the Leyden MS. of the "Kitāb al-Mūsīqī," the whole of fols. 2 to 13 are devoted to this question. For some of Al-Fārābī's definitions see Kosegarten, "Lib. Cant.," i; Carra de Vaux, "Traité des Rapports musicaux," 6; but the translation of the "Kitāb al-Mūsīqī" promised by Baron R. d'Erlanger will soon satisfy enquirers in this field.

[13] See the heading of Chapter IV of the present work.

[14] "De anima," 419, b.

[15] Nikomachos (Meibom, 10-11); Gaudentios (Meibom, 13-14); Boëthius, i, 10.

[16] Greek and Latin musical theorists are little concerned with the physical explanation of the sensation of sound. Ptolemy (lib. i, cap. 4) and Boëthius (lib. i, cap. 3) are, perhaps, the best,

of their *risāla* on music deals with the theory of sound, and it redounds to their credit.[17] Unlike the Aristotelians, they do not teach that "the direction of sound follows a straight line."[18] The Ikhwān say: "When one body meets another, the air is dispersed from between them, causing rebounding waves *in all directions in the form of spheres*, which become wider in the same way as the bottle becomes wider at the hands of the glass blower. And in proportion to the sphere becoming wider, its motion and undulation become weaker until they cease and fail."[19] Aristotle said: "Not every object produces sound when struck. On the contrary, the object that is struck, must be smooth."[20] Hence, he says: "Bronze is resonant because it is smooth."[1] But the Ikhwān al-Ṣafā' show that smooth objects produce smooth sounds, while rough objects produce rough sounds.[2] In demonstrating the difference between noise and musical sound, the Ikhwān al-Ṣafā' define as clearly as almost any modern writer on acoustics, how the latter is distinguished by *force*, *pitch* and *quality*. According to Helmholtz, force depends

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Other references are, Aristoxenos (Meibom, 12), Pseudo-Euklid (Meibom, 1), Nikomachos (Meibom, 4-5, 7-8), Aristeides (Meibom, 7), Bakchios (Meibom, 2, 16), Martianus Capella (Meibom, 182), and Gaudentios (Meibom, 2, 3).

[17] See my "Arabic Musical MSS. in the Bodleian Library," p. 5.

[18] "De audibilibus," 802, a.

[19] Ikhwān al-Ṣafā' (Bombay Edit.), i, 88. The idea of *spherical propagation* of sound may have been derived from Greek sources, although I do not recall any Greek author who mentions it. It occurs, however, in Vitruvius, "De arch.," v, 3.

[20] "De anima," 420, a.

[1] "De anima," 419, b.

[2] Ikhwān al-Ṣafā', i, 89.

upon "the *amplitude* of the oscillations of the particles of the sounding body."[3] Preece and Stroh refused to accept this definition and pointed out that "loudness does not depend upon *amplitude* of vibration only, but upon *the quantity of air put in vibration.*"[4] The Ikhwān al-Ṣafā' knew this when they said: "Hollow bodies, like vessels, bottles and water jugs, will resound for a long time after they are struck, because the air within them reverberates time after time until it becomes still. Consequently, the wider the vessels are, the greater the sound, *because more air is put into vibration.*"[5]

The following table of the Ikhwān al-Ṣafā' illustrates to some extent how thoroughly these people approached the question of the physical basis of sound.[6]

- Animate nature.
  - Rational. — Man.
    - Articulate. — Speech. [Song].
    - Inarticulate. — Laughter. Weeping. Screaming.
  - Irrational. — Animals.
- Inanimate nature.
  - Natural. — Stone. Iron. Wood. Thunder. Wind, etc.
  - Instrumental. — Drum. Horn. Wood-wind instruments. Stringed instruments.

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[3] Helmholtz, "Sensations of Tone" (third English edit.), p. 10.

[4] "Proc. of the Royal Society," xxviii, 366.

[5] Ikhwān al-Ṣafā', i, 89.

[6] Ibid., i, 87-88.

34.

THE REVIVAL OF THE HYDRAULIS.

"THE revival of interest in the *hydraulis* in Europe," I said in my monograph, "appears to have been due to the Arabs. From the sixth to the ninth century there is no mention of the ancient *hydraulis* in Europe,[1] but in the ninth-twelfth century the Arabs were actually constructing both the pneumatic and the hydraulic organ."[2] My critic replies to this as follows: "Mr. Farmer will find . . . . a record of a fine hydraulic organ constructed in the palace of Louis le Débonnaire at Aix-la-Chapelle, by a monk named Georgius Benevento, for whom the king sent to Venice."[3]

The *organum hydraulicum* of Louis le Débonnaire is a commonplace in history. Indeed, it was on account of this instrument, constructed in 826 or 828, that I introduced the words "ninth century." To combat my argument, my critic should produce a reference to the *hydraulis between* the sixth and ninth centuries. It is also advisable to point out that the surname of the constructor of Louis's

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[1] Cf. Maclean ("Quarterly Magazine, Inter. Mus. Soc.," vi).

[2] Page 5.

[3] "Is European Musical Theory Indebted to the Arabs?," 15.

hydraulis was not Benevento, but Veneticus. Further, the chronicles *do not* record that the king "sent" to Venice for him.

The *hydraulis* appears to have fallen into desuetude about the sixth century. It is last mentioned in the East in Syriac and Hebrew documents by Isaac of Antioch (d. *c.* 460) and the authors of the "Talmud" (*c.* 500) respectively, and in the West by Apollinarus Sidonius (d. *c.* 483). From this period until the ninth century, as I have said, the *hydraulis* is not mentioned, and it is to be presumed that it fell into disuse.[4] The probable causes for this were: (1) the barbarian invasions; (2) the anathema of the Christian Church; and (3) the simpler construction of the pneumatic organ.

In the eighth and early ninth century, however, the Arabs were busy translating Greek documents into Arabic, and among them treatises on the *hydraulis*, hydraulic organs, and similar devices. We know that they were acquainted with these from the evidence of the "Kitāb al-Siyāsa" (late eighth cent.), the Mūriṣtus treatise (ninth cent. or earlier), and other works. By this time the Byzantines, who had long before discarded the idea of the hydraulic pressure stabiliser as exemplified in the *hydraulis*, in favour of the barystathmic principle of the weighted blast-bag, appear to have lost all knowledge of the construction of the *hydraulis*. It was not until the Arabs began to make the instrument about which they had learned from the ancient Greek treatises, that the Byzantines adopted the *hydraulis* again when they came under

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[4] Lavignac, "Encyclopédie de la Musique," 571-2.

the influence of the Arabian culture contact in the early ninth century.

Up to the sixth century, the Byzantines and Romans evidently knew of the keyboard. If the *hydraulis* had an unbroken history up to the ninth century, how does it come about that the early organs in Western Europe were furnished with primitive valves or sliders? Clearly, the instrument fell into desuetude. When it was re-introduced by Arabian or Syro-Arabian craftsmen, it made its appearance with valves or sliders for the simple reason that the texts used by these craftsmen dealt with a very early type of *hydraulis* (as with the pneumatic organ also) as the Mūrisṭus documents show.

I have dealt with the question at greater length in my "Organ of the Ancients: From Eastern Sources," but sufficient evidence is adduced here to justify my *suggestion* that "the revival of interest in the *hydraulis* in Europe *appears* to have been due to the Arabs."

35.

THE VALUE OF ARABIC MUSICAL DOCUMENTS.

THE Arabic documents on matters musical, I said, were of "extreme value" for the better appreciation of ancient Greek musical theory.[1] My critic asks for a "demonstration" of this, and not a "mere citation."[2] A "mere citation" was given in this instance because "the doubtful points in the Greeks made perspicuous by the Arabs," as said, were, in most cases, purely textual, a question only to be esteemed by scholars. As I have pointed out in my "Greek Theorists of Music in Arabic Translation,"[3] when the works of Al-Kindī, Al-Fārābī, Ibn Sīnā, Ibn Zaila, and others, are issued in a critical edition, many a debatable word and passage in the Greek texts will be cleared up. Even in the little that we know of the actual works of Aristoxenos, Euklid and Nikomachos in Arabic, we are able to add something to our knowledge of these writers, as I have already shown elsewhere.[4] For instance, it is the Arabic title of a work

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[1] See *ante*, p. 70.

[2] "Musical Standard," xxvii, 96.

[3] Lecture delivered before the Sixteenth Congress of Orientalists (1928).

[4] *Ibid.*

of Aristoxenos, the "Kitāb al-ru'ūs," which confirms the suggestions of Marquard, Westphal and Gevaert, that the Ἁρμονικὰ στοιχεῖα of Aristoxenos that has come down to us is actually made up of two works—the ἀρχαί (= "ru'ūs") and the στοιχεῖα.

Ruelle, in his "Problèmes musicaux d'Aristote," admits how "interesting" it would be to have the Arabic text of this work which was known in the Middle Ages.[5] It would be "interesting" to others also, for probably there is not another text on Greek musical theory so annoyingly replete with textual emendations as that of the nineteenth section of the Pseudo-Aristotelian "Problems," and if only an alien text were available, it would at least be a relief.

I also observed that the Arabs have handed down a few things that had been ignored or else dealt with superficially in extant Greek works. Among them, I mentioned the "Figures of Melody" (μέλους σχήματα) and the doctrine of the *ēthos* (ἦθος).[6] Against this the following objections have been raised.

"It is a little difficult to see how students of ancient Greek music desirous of studying the 'Figures of Melody,' for instance, would benefit from the treatment of the subject by Arab theorists, *whose works remain untranslated*, since there are available excellent first-hand authorities in the Greek—Anonymus II and Bryennios. Methods of acquiring knowledge of a difficult subject such as are suggested by Mr. Farmer *via the Arab Scholiasts* are more than a little dangerous and confusing to students; for the Arabs make liberal use of the Greek theorists without ac-

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[5] Page 2.

[6] See *ante*, p. 71.

knowledgment, paraphrasing with the utmost licence and rarely quoting. It is, moreover, my experience that when an opportunity arises of explaining a difficult point of Greek theory used by the Arabs and dressed up in Arabic terms and phrases, they break down entirely or else pass the matter over in silence."[7]

My critic is not an Arabist, and should hardly criticise the Arab theorists in this way. As for her mention of the "Figures of Melody," my point would appear to have been missed. Reference to p. 71 will show that I mentioned both Anonymus II and Bryennios as the original sources. My point was that between the former, which is a fourth century document, and the latter, which is fourteenth century, we had the Arab theorists to help us.

That Bryennios should be cited as a "first-hand authority" is strange, because he freely indulged in borrowing and quoting verbally *without acknowledgment*; whereas the statement that the Arab theorists did likewise cannot be demonstrated.

As for the doctrine of the *ēthos* readers can turn to my lecture on "The Influence of Music: From Arabic Sources," where they will find information on this question. Material will be found there which, although derived from Greek sources, cannot be traced in extant Greek writings.

I have already pointed out what a valuable treatise we have in the "Kitāb al-mūsīqī," of Al-Fārābī,[8] and his claim for having added something to the elucidation of the

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[7] "Musical Standard," xxvii, 96-7.

[8] See *ante*, p. 292.

theory of music,[9] is not an extravagant one, as we shall see in the translation of his *magnum opus* which is due to appear shortly. Even the similar claim made by Arab writers for Ibn Sīnā has some foundation.[10]

Since Miss Schlesinger is sceptical of my claim that Arabic documents can enlighten us concerning the music of the Greeks, may I call particular attention to the Mūrisṭus documents. In her article on the "History of the Ancient Organ" in the "Encyclopædia Britannica" (xx, 266), Miss Schlesinger says that it is probable that in the early organ the supply of wind was supplied "*by the mouth through an insufflation pipe.*" I do not know of a solitary Greek or Latin document other than Kircher's testimony,[11] to bear this out. That her conjecture[12] is admissible, however, is actually proved by one of the Mūrisṭus MSS., where we have *a blast bag with four insufflation pipes for the mouths of blowers not only described but delineated.*[13] This is the only example that has come down to us from antiquity.[14]

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[9] See *ante*, pp. 286-7.

[10] See my "History of Arabian Music," pp. 202, 218.

[11] Kircher, "Musurgia Universalis," 53.

[12] It was also mentioned by Matthews, "A Handbook of the Organ."

[13] British Museum MS., Or. 9649, fol. 10 v. "Al-Mashriq," ix, 24.

[14] The whole question is dealt with in my "Organ of the Ancients: From Eastern Sources."

36.

THE MUSICAL NOTATION OF THE GREEKS.

"TO say that Europe adopted the notation of the Greeks is sheer nonsense," is Miss Schlesinger's reply to my criticism in the chapter on "New Data for Notation Origins," in which I have stated that my critic believes that Europe adopted the notation of the Greeks.[1] She says that I have misrepresented her by omitting one of her paragraphs, and therefore the statement which, without justification, I have attached to her name, is both erroneous and misleading.[2] I may say that the omission, which has been rectified in the present work,[3] was not designed with a sinister purpose, but merely with an economic one. Its inclusion, however, makes no difference to the point as I saw it, and as I still see it.

In her pamphlet,[4] my critic opened her criticism of the Arabian influence on notation with the following: "If we examine cursorily the science of music *which Europe inherited from ancient Greece* independently of Arab influ-

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[1] See *ante*, p. 85.

[2] "Musical Standard," xxvii, 109.

[3] See *ante*, p. 85.

[4] "Is European Musical Theory Indebted to the Arabs?," 7. See *ante*, p. 83.

ence, we find a wonderfully complete scheme of pitch notation. . . ." *(Italics mine.)* Surely there is some "justification" in this for assuming that the passage meant that "Europe adopted the notation of the Greeks"? Unless, of course, my critic holds that Europe *inherited* but did not *adopt*.[5] But there is considerable doubt as to what my critic does actually mean, because in the same publication in which she states that it is "sheer nonsense" to say that Europe *adopted* the notation of the Greeks, she also informs us that "Greek notation was occasionally *used* by the musicians and theorists of Western Europe until *they had evolved out of it* a notation suited to their own needs."[6] *(Italics mine.)*

[5] Cf. my remarks on p. 214.

[6] "Musical Standard," xxvii, 109.

37.

THE YAḤYA IBN 'ALI NOTATION.

IN spite of Miss Schlesinger's confession that she is "not an authority on the music of the early Middle Ages,"[1] I have felt sufficient interest in debating the question with her, because of her researches into the history of musical instruments. Now, however, we enter on the threshold of a far different subject—the musical notation of the Arabs—in which my critic lacks the necessary acquaintance with the Arabic language which would enable her to do justice to the texts under discussion. This, however, has not hindered her from courageously dealing with the various aspects of the question at considerable length, in which different theories are propounded and half-a-dozen tables of notation drawn up, including an analytical one. Yet one of her own injunctions is that "in any attempt to interpret the symbols of notation and to identify them with those of our modern system, *it should be clearly stated on what grounds the interpretation is based, and whether the conclusions arrived at have been suggested or confirmed by the text of the treatise in question.*"[2]

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[1] "Musical Standard," xxvii, 23, b.

[2] *Ibid.*, 134, b.

Miss Schlesinger deprecates my method of approach in the examples of Arabian notation given by me. The objections are mainly these: (1) my use of the term "phonetic" for this notation; (2) my omission of grounds for the interpretation of the symbols; (3) my equating the Arabic letter "A" with various sounds.

(1) In objecting to my reading of the Yaḥyā ibn 'Alī notation my critic says: "No notation could be called phonetic in which the same symbol represented two different notes."[3] I quite agree, but as the system of Yaḥyā ibn 'Alī *embraced only ten notes*, for each of which a particular symbol was allotted, the same symbol could not possibly represent two different notes.

(2) "The first thing that strikes us in the examples of notation given by Mr. Farmer," continues Miss Schlesinger, "is precisely that no grounds whatever for the interpretations are stated, either from the Arabian theorists, or from Mr. Farmer's own reasoning." The omission on my part was intentional. One cannot devote pages to a question of this sort, and especially when, the texts being quite clear and definite, the symbols cannot be interpreted otherwise.[4]

(3) "We notice," also says my critic, "that the Arabic letters all follow the same sequence from 'A,' but that Mr. Farmer equates them variously with G, C, and A of our notation."[5] Of course they equate variously. The reason is that the three systems of Arabian notation given by me are of different periods and provenance. The letter "A"

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[3] "Musical Standard," xxvii, 135.

[4] In the case of Yaḥyā ibn 'Alī, there is some dubiety, and I have dealt with the doubtful points in a footnote.

[5] *Ibid.*, 134, b.

in the Latin notation of Western Europe as displayed in "De harmonica institutione" and the writings of Guido of Arezzo also equate variously with C and A of our notation, for precisely the same reason.[6]

I have already disposed of the statement that, according to the theory of Isḥāq al-Mauṣilī, the two middle strings of the lute were tuned a fifth apart.[7] Every word of the text of Yaḥyā ibn 'Alī disproves the contention. We can therefore afford to ignore the opinion given that Yaḥyā ibn 'Alī, whose father was a pupil of Isḥāq al-Mauṣilī, "had not grasped the significance of Isḥāq's tuning of the lute."[8]

[6] See Appendix 41.

[7] See *ante*, p. 242.

[8] "Musical Standard," xxvii, 184, b.

38.

THE MA'RIFAT AL-NAGHAMÂT AL-THAMÂN NOTATION.

REGARDING the notation of the "Ma'rifat al-Naghamât al-Thamân" treatise given by me,[1] Miss Schlesinger writes as follows:

"What is the date of the manuscript? (Rouanet mentions one in Vienna *with the same title* ascribed to the fifteenth century.) And what is Mr. Farmer's authority for the correspondence?"[2] [*Italics mine.*]

The date of the manuscript is a pertinent question, although it does not lead us very far. What we really require to know is the date of authorship and theory. The MS. itself, which is written in the Maghribî hand and carelessly performed, was probably executed in Morocco. It is undated, but it would appear to have been copied in the second half of the sixteenth century.[3] As to authorship, we have several "clues" that enable us to fix an earlier date. The Perso-Turkish musical modes are not mentioned in the treatise, and we may therefore assume

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[1] See *ante*, p. 88, 93.

[2] "Musical Standard," xxvii, 135.

[3] The date is not given either by Lafuente ("Catálago de los Codices árabigos adquiridos en Tetuan," p. 75) or Robles ("Catálago de los Manuscritos Arabes," p. 145).

that it dates from prior to 1504. The theory dealt with is the single octave *accordatura*, a very early system, which must have preceded the Old Arabian System built up by Ibn Misjaḥ (d. *c.* 715), and recast by Isḥāq al-Mauṣilī (d. 850).[4] This single octave system *accordatura* would appear to have obtained in Al-Andalus until the time of Ziryāb, who introduced the Old Arabian system about 822.[5] Whether the Arabs of North Africa adopted the latter system at this period or kept to the older system until later, we have no evidence. In the treatise of 'Abd al-Raḥmān al-Fāsī (*c.* 1650), we are introduced to the lute *accordatura* in fourths which belongs to the Old Arabian System. This author, however, is not dealing solely with the theory of his day, but is borrowing from older writers, including the Greek Scholiasts.[6] I hope to deal at length with the subject when I issue the text and translation of this "Ma'rifat al-Naghamāt al-Thamān" treatise.

My critic suggests that this treatise may be identical with one at Vienna "with the same title." The Vienna treatise to which she refers is entitled the "Mukhtaṣar fī Ma'rifat al-Naghām,"[7] and this is certainly not "the same title" as the treatise which I quoted.[8] Indeed, the former

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[4] See my "History of Arabian Music," 69, 70.

[5] *Ibid.*, 128 *et seq.*

[6] Berlin MS., 5521 (Ahlwardt).

[7] Flügel, "Die arab., pers., u. türkischen Handschriften der k. k. Hofbibl. zu Wien," No. 1516. Rouanet erroneously says *al-Naghmāt*, which he borrows from Collangettes ("Journal Asiatique," 1904, p. 385).

[8] To attempt to recognise an Arabic MS. by a title such as the above, would be something like trying to identify a mediæval Latin MS. by the title "De musica!"

treatise, which my critic (following Rouanet) ascribes to the fifteenth century, is actually the "Kitāb al-Adwār" of Ṣafī al-Dīn 'Abd al-Mu'mīn (d. 1294), although hitherto unrecognised.[9]

As for the treatise called "Ma'rifat al-Naghamāt al-Thamān" *(sic)*, it actually carries no title, but for the sake of convenience I gave it this title based on the opening lines of the manuscript.

My authority for the "correspondences" is the treatise itself, as we shall see presently. Miss Schlesinger, starting from the assumption that the *accordatura* was her erroneous Isḥāq al-Mauṣilī system, begins her objections to my view by saying that it "necessitates a correction." She then gives her interpretation, a "mere hypothesis," she admits, but with "at least a probable foundation."[10] Her interpretation is erroneous.

In her next contribution to the subject[11] my critic returns to the question of what she calls my "manifestly incorrect" interpretation. "Mr. Farmer," she says, "by equating both the first and last symbols, A and Ḥ with our note C, has made nonsense of it: *in a recurrent octave series the octave must have the symbol A.*" Here, my critic adopts a fresh hypothesis, which, as we shall see, is equally erroneous.

The lute *accordatura* of the "Ma'rifat al-Naghamāt al-Thamān" treatise is the old single octave one—C, D, G, a, so that there could not be a "recurrent octave series" as imagined, and therefore the Arabic symbols A and Ḥ

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[9] In Flügel it is anonymous.

[10] "Musical Standard," xxvii, 135.

[11] *Ibid.*, 164.

stood for our notes C and c respectively, as I have stated. Here is the fingerboard of the lute based on the details given in the treatise under discussion, and a very interesting scale is revealed.

	BAMM or DĪL.	MATHLATH or MĀYA.	MATHNĀ or RAMAL.	ZĪR or HUSAIN.
Open *(Muṭlaq)*	C (A).	D (B).	G (H).	a (W).
1st finger *(Sabbāba)*		E (J).		b (Z).
3rd finger *(Binṣir)*		F (D).		c (H).

This is what the author of the "Ma'rifat al-Naghamāt al-Thamān" treatise says:

"Then the nearest of them [the notes] is the note of the *bamm*, and it is the string named nowadays the *dīl*. And next to it in place (*lit.* 'distance') is the string of the *mathlath*, and it is the string of the *māya* without fingering. . . . . And next to it is another note by fingering with the first finger. Then there is next to it another note by fingering with the third finger. Then [follows] the note of the *mathnā*, and it is the *ramal*. Then [follows] the *zīr*, and it is the *ḥusain* without fingering. Then [follows] its note also by fingering with the first finger. Then [follows] its note by fingering with the third finger. Then with that the eight notes are complete. . . . .

"And they [the notes] are expressed by means of let-

ters, the A, B, J, D. So you make A the first note, which is the nearest of the notes, and the lowest of them, and it is the note of the *dîl*. And B, which is next to it in lowness, and it is a little higher than it, and a little lower than that which is above it, and it is the note of the *mâya* without fingering. And the J is that which is next to it, and it is the note of the *mâya* also by fingering with the first finger. And the D is that which is next to it, and it is the note of the *mâya* also, by fingering with the third finger.[12] And the H is that which is next to it, and it is the note of the *ramal* [without fingering]. And the W is that which is next to it, and it is the note of the *ḥusain* without fingering. And the Z is that which is next to it, and it is the note [of the *ḥusain*] also by fingering with the first finger. And the Ḥ is that which is next to it, and it is the note [of the *ḥusain*], also, by fingering with the third finger."

We know that the note of the second fret on the *mathlath* or *mâya* string gave F, because c was required on the same fret on the *zîr* or *ḥusain* string.

In the design of the lute in the MS. in question the strings are marked differently from the *accordatura* suggested by the text. Here we have an *accordatura*—G, D, a, C. Probably it was the system (if corrected) in vogue when the MS. was copied in the sixteenth century, because if we reverse this—C, a, D, G, we have the basis of the modern *accordatura* of the *'ûd* and *kuwîtra* in the Maghrib.

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[12] The middle finger (the *wusṭâ*) was not used. We see the same practice to this very day in the Maghrib.

39.

THE AL-KINDĪ NOTATION.

"THIS Al-Kindī scheme," says Miss Schlesinger, "proves to be an admirable one (Mr. Farmer has only given one of the three alternative schemes). As it is evident that Mr. Farmer has not understood its significance, it is worth while spending a little time and space in unravelling its subtleties."[1]

Whilst it is very courageous for my critic to thus enter this arena so readily and with a keen desire to combat error, may I say with every respect that I fear she is hardly assisting. First of all, this particular Al-Kindī MS. is quite a difficult one to interpret even by Arabists who have spent years at mastering the technique of the subject in question. The difficulties are due mainly to the copyist's errors. When therefore, my critic, who is unfamiliar with the language of the text, essays to "unravel the subtleties" of Al-Kindī's notation, we must be pardoned for not dealing too seriously with her "three alternative schemes" *which do not exist.*

There is *only one scheme* of notation used by Al-Kindī. He certainly gives two tables of notation, one in describing the *Jam' aladhī bi'l-kull* (= systema diapason),

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1. "Musical Standard," xxvii, p. 135. See also pp. 163-4.

and the other in giving "all the notes" used on the lute, but both schemes are identical. Here is the *Jam' aladhī bi'l-kull*:

	Notes.	Symbols.
Al-mafrūḍa (= *Proslambanomenos*)	A	A.
Muqaddamat al-muqaddamāt	B	J.
Al-qarība min muqaddamat al-muqaddamāt	C	D.
Ḥāddat al-muqaddamāt	D	W.
Ra'īsat al-awsāṭ	E	Ḥ.
Al-qarība min al-awsāṭ	F	Ṭ.
Ḥāddat al-awsāṭ	G	K.
Wusṭā (= *Mesē*)	a	A.

Here is the table giving "all the notes" on the lute:[1]

		BAMM.	MATHLATH.	MATHNĀ.	ZĪR AWWAL.	ZĪR THĀNĪ.	
Muṭlaq.	A	(A). D	(W). G	(K). c	(D). f	(Ṭ).	[2187/2048]
Mujannab.				c♯	(H). f♯	(Y).	[256/243]
Sabbāba.	B	(J). E	(Ḥ). a	(A). d	(W). g	(K).	[256/243]
Wusṭā.	C	(D). F	(Ṭ). b♭	(B). e♭	(Z). a♭	(L).	[2187/2048]
Binṣir.	C♯	(H). F♯	(Y). b	(J). e	(Ḥ). a	(A).	[256/243]
Khinṣir.	D	(W). G	(K). c	(D). f	(Ṭ). b♭	(B).	
		[9/8]	[9/8]	[9/8]	[9/8]		

It will be noticed that the *mujannab* notes on the *bamm*, *mathlath* and *mathnā* strings are omitted. Al-Kindī says

[1] Cf. Lachmann, "Musik des Orients," 32 *et seq.*

that they were "not used." This *mujannab* fret being a Pythagorean *apotomē* from the nut, gave A sharp, D sharp and G sharp respectively, which, naturally, did not comport with the b flat, e flat and a flat on the *wusṭā* fret.[5]

Miss Schlesinger throws doubt on the complete authenticity of the Al-Kindī MS. by suggesting that one of the tables of notation is a later interpolation by a copyist. The suggestion is not valid, since each table is specifically mentioned in the text. Further, the tables could actually be dispensed with because the principles contained therein are also explained in the text.

[5] This a flat is actually included in the table in the MS., although its use is forbidden elsewhere.

40.

THE AL-FARABI NOTATION.

IT was claimed by Miss Schlesinger that Al-Fārābī's use of the Arabic letters of the alphabet for the purpose of notation coincided with the series of the Greek letters of the alphabet used by Ptolemy.[1] I have denied this.[2] My critic now says that I have not given the table of Ptolemy to which she refers, and still maintains her claim, saying:

"The symbols of Ptolemy given by Mr. Farmer *are, of course, not those to which I referred*: anyone could have seen that, since Mr. Farmer's selection does not contain the letters N, X, O. Why then give them in that context?

"Anyone looking up Mr. Farmer's reference (Ptol. ii, 5) will find two tables only given in that chapter. *The first of these contains the alphabetical sequence I mentioned*, which is used by Ptolemy to indicate the intervals of the Perfect Immutable System in the Diatonic Syntonon. Mr. Farmer has passed that over and selected the other table showing Ptolemy's usual method of numbering the degrees of the scale, which has no relation to the matter at issue.

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[1] "Is European Musical Theory Indebted to the Arabs?," p. 8.

[2] See *ante*, p. 89 *et seq.*

Ptolemy has used the first fifteen letters[3] of the Greek alphabet for many different purposes, always diagrammatically in reference to the division of the monochord."[4]

In the first place, my difficulty was to be sure what table Miss Schlesinger did "refer" to. Ptolemy's "Harmonics," ii, 6, was given as her reference. But as the only table in this chapter did not give the Perfect Immutable System of *two octaves*, I ignored it, and gave, what was more to the point, *identical tables* from both Al-Fārābī and Ptolemy, the latter being taken from Book ii, Chapter 5.

My critic now says that "anyone looking up Ptolemy, Book ii, Chapter 5, will find *two* tables only given in that chapter," and that it is the *first* of these that contains the alphabetical sequence that she refers to. Unfortunately, there is only *one* table in Chapter V, and that is the one that I have given! There is, however, in Chapter 4, a *two-octave* table of fifteen different letters, including ν, ξ, ο, (N, X, O), but neither here nor in any other of the references to Ptolemy that either Miss Schlesinger or I have already given, can it be shown that Al-Fārābī followed the "same series" in the alphabet.[5]

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[3] Miss Schlesinger gives *four* references for this, and in *two* of them Ptolemy only uses *fourteen* letters.

[4] "Musical Standard," xxvii, 134, b.

[5] See *ante*, p. 91, footnote 6, for my references.

41.

THE NOTATION IN "DE HARMONICA INSTITUTIONE."

WHEREAS the *neumes* were born of the Church, the *alphabetic notation* that we are speaking about came from the instrumentalists. Notker Labeo (d. 1022) says that this alphabetic notation was used for the *lira* and *rota*.[1] Pseudo-Bernelinus also testifies that this notation was for instruments *(organa)* and that it was not derived from the theoreticians.[2]

The earliest example of this alphabetic notation in the West is to be found in the treatise, "De harmonica institutione," where the first seven letters of the Roman alphabet, A, B, C, D, E, F, G, are used as phonetic notation. They do not, however, represent the sounds conveyed by the letters, but actually express the sounds of our modern major scale, C, D, E, F, G, a, b. When I pointed this out (see p. 93), it aroused Miss Schlesinger, who wrote as follows:

"'*De harmonica institutione*' *contains no such identification* [*as that suggested by Mr. Farmer*], *as will be seen*

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[1] Gerbert, "Script.," i, 96.

[2] *Ibid.*, i, 318.

later on. Hucbald's [the author's] A to G scale possesses the same diastematic values as in our modern notation."[3]

The evidence given by her is this:

"Hucbald's A to G recurrent series refers to our modern sequence of the same letters, and not to a C major scale. (Hucbald gives A as *Proslambanomenos* and G as *Lichanos meson.* Gerbert, "Script.," i, 115.")[4]

Unfortunately for the contention, the reference (i, 115) does not cover the point at issue, since *it fails to give the Roman alphabetic notation to which I refer.* This is to be found elsewhere (i, 118), as follows:

Symbols:	F	G	A	B	C	D	E	F	G
	⊢	Γ	B	F	C	P	M	I	Θ
Notes:	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*a*	*b*
	Proslambanomenos.	Hypatē hypatōn.	Parhypatē hypatōn	Lichanos hypatōn.	Hypatē mesōn.	Parhypatē mesōn.	Lichanos mesōn.	Mesē.	Tritē synemmenōn.

The upper line of the symbols is the *alphabetic notation* to which I have referred. That the *symbol A* equates with the *note C*, is quite clear, since it is *Parhypatē hypatōn.*

The question that arises here is this. How did *Parhypatē hypatōn* come to have *alpha* attached to it? I have already demonstrated that this *alphabetic notation* had its origin with instrumentalists, and we know from

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[3] "Musical Standard," xxvii, 162, b.

[4] "Musical Standard," xxvii, 163, a.

various sources that *C* was the starting point with them.[5] This idea is acknowledged by the theorists themselves to be alien to the existing system, and one is naturally tempted to ask from whence the innovation came? I have hazarded the opinion that the Arabs of Spain were originally responsible for it, and I have attempted to link up the Western Arabian system as displayed in the "Ma'rifat al-Naghamāt al-Thamān" with that of "De harmonica institutione." Whether my suggestion is a feasible one or not is another matter. What I have been concerned with here is to refute the charge that my interpretation of the notation in "De harmonica institutione" was incorrect. This I have done.

Before leaving the subject, however, I would like to call attention to one other point in the question under discussion. My critic suggests that my evidence concerning the treatise, "De harmonica institutione," was based on "second or third hand references," and that my "erroneous and most mischievous statement" emanated "not from a perusal of the treatise itself, but from Abdy Williams's 'Story of Notation' (pp. 62-3)."

It so happens that I have been able to answer the accusation from "the treatise itself." Further, I have never consulted Dr. Abdy Williams's work.[6] There are, however, several "second or third hand" authorities to which

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[5] Gerbert, "Script.," i, 110, 303. Coussemaker, "Script.," ii, 79, 85.

[6] The late Dr. C. F. Abdy Williams's article on "Notation" in Grove's "Dictionary of Music" is so uncritical and misleading that I have no interest in his larger work. In Grove, he attributes the alphabetic notation to which I refer, to Odo of Cluny.

I could refer in confirmation of my views, including such notable authorities as Gevaert,[7] Christ,[8] Hugo Riemann,[9] David and Lussy,[10] and Gastoué.[11]

[7] "Histoire et Théorie de la Musique de L'Antiquité" (1875), i, 439.

[8] "Beiträge zur kirchlichen Literatur der Byzantiner" (1870), 47.

[9] "Studien zur Geschichte der Notenschrift" (1878), 28, 291. "Handbuch der Musikgeschichte" (1904-13), i, 2, 106. "Dictionary of Music" (fourth English edit.).

[10] "Histoire de la Notation Musicale" (1882), 73.

[11] "L'Orgue en France" (1921), p. 51.

42.

THE EARLY NOTATIONS OF WESTERN EUROPE.

"IT is not until the eleventh century," I said, "that we see in Western Europe any direct or indirect contact with Greek methods of notation, such as in the 'Musica Enchiriadis,' Adelboldus and Odo of Cluny." Miss Schlesinger points out that my three authorities belong to the tenth century. To the merest tyro it would be obvious from the names mentioned that the date given by me was a *lapsus scribendi*.[1]

I am told, however, of a Greek notation used by Bede in the eighth century, whose "knowledge of Greek theory is not a mere superficial book-knowledge."[2] I have already exposed the legend of Bede as a theorist of music.[3]

More apposite is my critic's reference to the treatise attributed to Hucbald entitled "De harmonica institutione," in which, she says, "*exceptionally direct contact with*

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[1] Indeed, on reference to my type-script, I find that I wrote "10th century." Strange to say, the *lapsus* has remained by an unfortunate oversight in the present work, although I made an alteration in the same paragraph, by deleting Adelboldus. See *ante*, p. 94, and *Errata*.

[2] "Musical Standard," xxvii, 109.

[3] See Appendix 20.

Greek methods of notation is displayed over and over again."[4] I deliberately refrained from mentioning this work because what is displayed "over and over again" is Hucbald's *exceptionally direct contact with Boëthius!*[5]

On the other hand, the so-called Dasian notation in the "Musica Enchiriadis" and Pseudo-Odo, although based on a Greek idea, was quite original in its way. I believe that both these treatises belong to the very late tenth century.

[4] "Musical Standard," xxvii, 162, b.

[5] Boëthius, iv, 3, 4.

43.

THE SHAMS AL-DĪN AL-ṢAIDĀWI NOTATION.

THE notation contained in the treatise[1] of Shams al-Dīn al-Ṣaidāwī[2] is of signal value in more ways than one. I have not been able to locate the precise date of this author,[3] but the treatise, of which there is a sixteenth century copy at Paris,[4] would appear to be not earlier than the thirteenth century. Of course, this system of notation may have been used earlier, but I have not come across an earlier example of it.

M. Viktor Uspensky, the eminent Russian writer on Turkomanian and Uzbekian music, discovered a manuscript with a similar kind of notation of Khwārizmian origin.[4a] M. Fitrat, the author of the authoritative "Uzbīk qilāssiq mūsiqāsī" (Tashkent, 1927, in Turkish), says that

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[1] The title differs in the various copies of the treatise. See my "Arabic Musical MSS. in the Bodleian Library," Nos. 13-15, and De Slane, "Cat. des MSS. arabes de la Bibl. Nat.," No. 2480.

[2] In the Paris MS. his additional surname is given as Al-Dimashqī, but in the Bodleian MS. he is called Al-Dhahabī.

[3] There is a Shams al-Dīn al-Dimashqī (d. 1327) and a Shams al-Dīn al-Dhahabī (d. 1348).

[4] De Slane, op. cit., p. 440.

[4a] Uspensky, "Sovietsky Uzbekistan" (Tashkent, 1927), p. 310. In Russian.

this notation was known in the time of 'Alā' al-Dīn Muḥammad, Shāh of Khwārizm (d. 1220).[4b]

The Shams al-Dīn system of notation consists of a stave of seven differently coloured horizontal lines, each line representing a note which is signified by the names of the Arabo-Persian numerals at the beginning of each line, thus:

Haft [= Z.] ———————
Shash [= W.] ———————
Banj [= H.] ———————
Jahār[5] [= D.] ———————
Sī [= J.] ———————
Dū [= B.] ———————
Yak [= A.] ———————

As I have already remarked, this stave system is little different from that given by Vincenzo Galilei (1581) and Kircher (1650). The former gives a seven-lined stave, each line representing a note, as follows:[6]

H ———————
Λ ———————
M ———————
Π ———————
T ———————
Φ ———————
Ω ———————

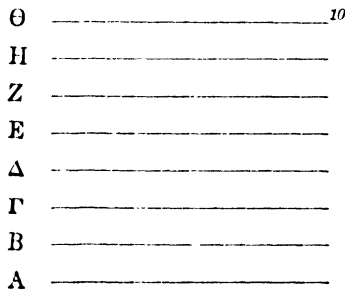
[4b] Page 70. See also "Promusica," March, 1927, p. 4. "The Sackbut," January, 1924, p. 171.

[5] Written Jār.

[6] "Dialogo della musica antica et della moderna" (1581), p. 36

The notes themselves are shown by means of dots on each line, but without indicating the duration.[7] Galilei says that this system was in use before the time of Guido of Arezzo (d. 1050).[8]

Kircher gives an eight-lined stave from a Greek MS. in a Maltese Library, which he considered to be seven hundred years old.[9] As in Galilei's system, the actual notes are represented by dots on the lines.



[10]

Kircher has been looked upon with suspicion, and the French savant, Ch.-Em. Ruelle, said that the above was "*une pure falsification.*"[11] Yet there appears to be no need to be unduly distrustful of Kircher in view of the testimony of Galilei, and the existence of the system of Shams al-Dīn al-Ṣaidāwī. Further, the stave system in the

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[7] The dots in the copies of the book consulted by me have been filled in by hand.

[8] This notation was copied by Martini ("Storia della Musica," i, 185), but he omits the eleventh note, in the same way as Hawkins does ("Hist. of Mus.," i, 428).

[9] "Musurgia Universalis," i, 213 (1650).

[10] In the original, capitals and lower case letters are given. See also Hawkins (i, 429), and Grove, iii, 397.

[11] "Revue des Études Grecques," v, 266.

"Musica Enchiriadis" treatise is on all fours with the systems described above.[12]

Which of these was the forerunner is difficult to decide. At any rate, the Greek examples given by Galilei and Kircher would be of Byzantine origin, and the stave was certainly not invented by Guido of Arezzo. In the Arabic document the coloured lines of the stave remind us that the early stave in Europe was also coloured. In the Arabic document, also, the duration of the notes is indicated, which does not appear in the other documents. Soriano-Fuertes says that the Arabs employed seven colours, to denote the seven kinds of note duration from the semibreve to the double-demisemiquaver.[13] I have not seen an example of this in any of the Arabic musical MSS. that I have consulted.

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[12] Gerbert, "Script.," i, 157.

[13] Soriano-Fuertes, "Hist. de la Música española," i, 77, and "Música Árabe-Española," 42-5. "Proceedings of the Musical Association," xxxiv, 26.

44.

THE MEANING OF ORGANUM.

MISS SCHLESINGER complains,[1] that my use of Riemann's definition of *organum* from his "Dictionary of Music" (fourth edition, English translation),[2] is "hardly fair" to this writer, and that I should have quoted from the latest edition of his "Geschichte der Musiktheorie" (1920), where he says: "The principal characteristic of *organum* is by no means the rigid parallel movement of voices in fifths or fourths, but rather the alternate separation and coming together again in unison."[3]

"One is almost ashamed to have to point out," says my critic, "that in all matters of archæology or historical research the latest available pronouncement by any author provides the only safe index to his theories." To supply this, she gives the above quotation from Riemann's "Geschichte der Musiktheorie" (1920), which, she says, contains the author's "latest and last definition, which was in the press before he died." It so happens that I am, similarly, "almost ashamed to have to point out" that this "latest

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[1] "Musical Standard," xxvii, 208, b.

[2] See *ante*, p. 110.

[3] Page 22.

and last definition" of Riemann's *appeared in the first edition* of his "Geschichte der Musiktheorie" (1898).[4]

I was quite aware that Riemann meant a far wider definition than the one given under the heading "Organum" in his "Dictionary of Music," which is apparent from that given under the heading "Diaphonia." When I said, "By *organum* I mean *the accepted definition of the term*, including that of Riemann," it ought to have been evident that Riemann was of secondary import. I used his definition from the "Dictionary" because of Miss Schlesinger's dependence on his "authority," and because it was terse. What I wanted was to make it quite clear that I was not going to recognise *magadizing* with the octave being claimed as *organum* on account of the term *vox organalis*, which is used with *symphonia ac diapason* or *symphonia ac disdiapason*, particularly since the authority in question, John Scotus, speaks of an *organicum melos*, which was said by my critic to refer to *organum*. (See Appendix 48.)

[4] Miss Schlesinger still confronts us with Riemann's "masterly exposition of the 'Rise of Organum.'" When one turns to Coussemaker's "Histoire de l'Harmonie au Moyen Age" (1852) it is easy to see that Riemann is actually *in statu pupillari*.

45.

AL-KINDĪ, IBN SINA, AND *ORGANIZING.*

IN my "Arabian Influence on Musical Theory" I gave an important *quotation* of six lines in Arabic text from the "Shifā'" of Ibn Sīnā. This concerned the practice of certain devices known to the Arabs as the *tarkīb* and *taḍ'īf*.[1] The former was the striking of any note *simultaneously* with its *fourth* or *fifth*, whilst the latter was the same procedure with the *octave*.[2] I also definitely mentioned this Arabic *quotation* in my rejoinder to my critic when I gave a *translation* of the Arabic into English.[3] But this fact seems to have been afterwards overlooked, as it is said that "it is of little use to give .... English readers *titles* of Arabic unpublished and *untranslated* manuscripts, *without quotation*, as was done by Mr. Farmer in his pamphlet."[4]

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[1] *Tarkīb* and *taḍ'īf* mean literally "compound" and "double" respectively. The former term was also used to cover both devices.

[2] Pages 6-7. Note 7.

[3] "Musical Standard," xxvii, 175, a, and p. 103 of the present work.

[4] "Musical Standard," xxvii, 209, b, lines 36-7. In two other places (p. 209, a, lines 39-40, and p. 209, b, lines 27-30) she repeats her complaint that I do not give a *quotation*.

There are certain other criticisms of my "clues" under this heading which I propose to deal with. Before doing so, I would like to submit another description of the *tarkīb* given by Ibn Sīnā in his "Kitāb al-Najāt," which is rather clearer than that contained in the "Shifā'." It runs as follows:

"And as for the *tarkīb*, it is the blending (*√¯ khalata*), *in one beat*, of the principal notes (*al-nagham al-aṣliyya*) with a note agreeing harmoniously (*naghma muwāfaqa*). And the most excellent of that blending is to be found in the large intervals, in the *octave* [and after that the *fifth*],[5] and then the *fourth*."[6]

Miss Schlesinger has objections to offer against the Ibn Sīnā "clue." The practicability of producing simultaneous *fourths* on the Arabian lute, which was tuned normally in fourths, is admitted by her, but in regard to the *fifths* it is argued that "the restrictions would be more numerous than the possibilities." As for the *octave*, my critic says that "it would be still more difficult . . . . for it would entail difficult double-stopping and the plucking simultaneously of three strings."[7]

In reply to this, let us consider, first of all, the "restrictions" that are said to exist in playing "a melody in *fifths* on the lute." Probably the earliest examples of *organum* are to be found in the "Musica Enchiriadis" and "Scholia

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[5] The passage in parentheses is omitted in this MS., probably owing to a copyist's slip. It occurs however, in Ibn Sīnā's "Dānish Nāma," which is in Persian. ("Brit. Mus., MS., 2361, fol. 161, v.) This work is practically identical with the "Kitāb al-Najāt."

[6] "Bodleian MS.," 1026, fol. 170.

[7] "Musical Standard," xxvii, pp. 197-8.

Enchiriadis," and if we take the specimen of *organum simplex* with the *diapente*, given in the latter work (Gerbert, "Script.," i, 185), it will be seen that if it is suitably transposed, *it could be performed* by the merest tyro in lute-playing.

As for the difficulty in playing *octaves* simultaneously, my critic would seem to be unaware of the devices introduced by Arab lutenists into the *accordatura*. Whilst the normal tuning (Arab, *taswiyya*) of the Arabian lute was in *fourths* (A—D—g—c), there were special tunings in use. The latter were particularly useful when "difficult" fingering arose. Here, for instance, is one of the special tunings given by Al-Kindī, G—D—g—c. The fourth string *(bamm)* was tuned an octave lower than the open note of the second string *(mathnā)*.[8] We also have the tuning of the Western Arabian lute as laid down in the "Ma'rifat al-naghamāt al-thamān" treatise, which was, C—D—g—a. Both of these tunings would have facilitated the *tarkīb* in *fifths*, whilst the former would have made the *taḍ'īf* in *octaves* possible.

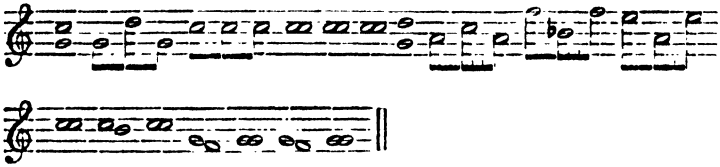
At the same time, it is extremely doubtful whether the Eastern Arabs ever practised *organum* as we know it in the European sense described in the "Musica Enchiriadis" and "Scholia Enchiriadis." With the Eastern Arabs certainly, the *tarkīb* and *taḍ'īf* would seem to have been, as I have already pointed out, merely part of the schemes of the *ta'līf* or "composition of melodies."[9] Ibn Sīnā actually refuses to admit them as part of the melody itself, but

[8] "Berlin MS.," 5530, fol. 25, v. 26.

[9] See *ante*, p. 107.

considers them as subsidiaries, and calls them *taḥāsīn* ("adornments")[10] or *zawā'id* ("glosses").[11]

We have seen that Ibn Sīnā allowed intervals "other than the *fourth* and *fifth*" to be used in the *tarkībāt*, and the *second* and *third* may have been thus admitted. On this question there is a curious "exercise" for lutenists given by Al-Kindī which ought not to be missed. It is as follows:[12]



This opens with a *tarkīb* in the *fourth*, played on the first *(zīr)* and second *(mathnā)* strings, open. It is called by Al-Kindī, "a *jass* of one movement."[13] Next comes a "*jass* of three movements (G, d, G). Then follows three repeated notes (c, c, c), which is another "*jass* of three movements," and so on.

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[10] "Bodleian MS.," 1026, fol. 169, v.
[11] "India Office MS.," 1811, fol. 172, v.
[12] "Berlin MS.," 5530, fol. 30, v.
[13] For the term *jass* see *ante*, 104.

46.

VIRGILIUS CORDUBENSIS.

"He who knows something ought to show it. Knowledge kept out of sight is of no value."—VIRGILIUS CORDUBENSIS.

IN my monograph[1] I referred to the Arabian schools in Al-Andalus teaching *organum*. This assertion was made on the authority of a certain Virgilius Cordubensis, and I quoted the passage in question in full. I again introduced this author into my reply to the pamphlet by Miss Schlesinger,[2] whereupon the latter criticised as follows.[3] First, she complained that I gave "neither date nor reference" for the Virgilius testimony. The objection was not altogether valid, since I distinctly stated that Virgilius was "contemporary" with Ibn Sīnā (eleventh century). It is true enough, however, that I gave no reference, but the omission has demonstrated the fact (which is openly admitted by my critic) that she has been unable to trace Virgilius Cordubensis!

Concerning my later contribution to the question,[4] Miss Schlesinger says that I here rectified my omission as to

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[1] Farmer, "Arabian Influence on Musical Theory," 7.

[2] See *ante*, p. 106, and "Musical Standard," xxvii, 196.

[3] See "Musical Standard," xxvii, p. 209.

[4] See ante, p. 106, and "Musical Standard," xxvii, 196.

"reference" by giving the "Historia de la Música Española" of M. Soriano-Fuertes as my authority.[5] Readers turning back to p. 106 of the present work will see that her statement is not strictly accurate. My reference here[6] was concerned with European students studying at Cordova, and had no direct connection with Virgilius Cordubensis. Proceeding, however, on this erroneous assumption, my critic turned to M. Soriano-Fuertes, and the result was the following:

"Mr. Farmer again introduces part of the quotation from Virgilius, and this time there is a reference, not to the original quotation given in the pamphlet, but to a shorter version from the 'Historia de la Música Española' (by Mariano Soriano-Fuertes, Madrid, 1855, p. 82), where we find the following destructive information which effectually tears Mr. Farmer's clue to shreds. On p. 81, Soriano-Fuertes says (to quote him *in extenso*): 'Among the Spanish Christians [*therefore not Arabs*, says Miss Schlesinger] there were schools of all the sciences, and especially of music, in the eighth century in Cordova, according to the statement of the philosopher, Virgilius Cordubensis. Those schools were under the protection of the Arabian rulers, not only in Cordova, but in Seville, etc. In the schools[7] of Cordova, according to Virgilius,

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[5] "Musical Standard," xxvii, 209.

[6] The reference should actually have been preceded by the contraction "cf." My original reference, as shown in my "Arabian Influence on Musical Theory" (p. 14) was to Dozy (iii, 107), but I wished readers to "compare" Soriano-Fuertes, as I did not accept his conclusion that the "celebrated musicians" mentioned by him had studied at Christian schools, for reasons which are given below.

[7] The word should be "school" and not "schools."

grammar, philosophy, botany, the mathematics, and music were taught. To each of these faculties two professors were appointed. Those who taught music there not only explained the scientific part of music and plain-song, but also simultaneous harmony or harmonic composition, as may be inferred from the writings of the same Virgilius, '*Et duo magistri legebant de musica, de ista arte quæ dicitur organum.*'

"Here Mr. Farmer stops: he reads no further. Yet the next paragraph on the same page, continues as follows: 'In the day of Virgilius, the philosopher already mentioned, the twelve professors who in this University gave instruction in the sciences, to which reference has been made above, WERE ALL SPANIARDS: TWO WERE NAVARRESE AND THE OTHER TEN CASTILIANS.'

"So with regard to the teaching of *organum* in Cordova, Virgilius was not referring to Arabian professors at all, nor to schools founded by Arabs, BUT TO SPANISH CHRISTIAN PROFESSORS appointed to the faculties of their own schools in Cordova."[8]

I have quoted at length so that there can be no misconception on the point in question.

At the outset let me say definitely that M. Soriano-Fuertes *was not my "reference."* That being so, most of my critic's advice as to how I should have conducted my investigations from this source is nugatory. Further, my "Arabian Influence on Musical Theory" shows that I was cognisant of the passages in question from M. Soriano-Fuertes. Yet after quoting the passage in Latin

[8] "Musical Standard," xxvii, 209.

given above, my critic says: "Here Mr. Farmer stops; he reads no further." If, however, I had read "no further" I could not have used the succeeding paragraph as my "reference" for a certain Jew, Elias, and a Christian, Pedro Canciotor, studying at these schools of Cordova.[9] In the face of this my critic's objections fail.

For many years I have ignored the authority of M. Soriano-Fuertes on the question of Arabian music. Most of his information under this heading in his "Historia de la Música Española" (1855-9) was gleaned from Laborde's "Essai sur la Musique ancienne et moderne" (1780), although it is not improbable, in view of the multitude of errors, that his list of musical instruments from the "Kitāb al-imtā' wa'l-intifā'," was taken direct from the Escorial MS., which he evidently could not properly decipher,[10] and not from Casiri's "Bibliotheca arabico-his-

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[9] "Arabian Influence on Musical Theory," 14, footnote 7. Soriano-Fuertes makes these two, together with a number of Muslims, *alumni* of Christian schools. He gives the names of a number of "celebrated Arabian musicians" who had also studied there. I rejected his "Christian schools" as highly improbable. The Arabs mentioned by him are, Farabio Mahomed, Alfarabi, Moheb (also written Mohed), Abil, Vadil and Ben Zaidan (also written Ben Zaydan). With the exception of Al-Fārābī and Ibn Zaidūn (= Ben Zaidan), none of these names can be traced. Al-Fārābī does not appear to have ever set foot in Al-Andalus, and he was certainly not educated there. Ibn Zaidūn was educated at the Muslim University of Cordova. Abil is a blunder, and is a truncated form of a name (e.g., Ibn abī' l- . . . .).

[10] Escorial MS., No. 1530, now in the National Library at Madrid, No. 603. The title in Robles's "Catálogo de los Manuscritos árabes" (1889) contains a printer's error. The correct title is given above. The copyist was a certain Muḥammad ibn Ibrāhīm al-Shalāhī, an Arab of Seville, and the work was copied in the year 1301. Robles gives Al-Shalājī as the reading of the name,

pana Escurialensis" (1760-70), whose list, by the way, is also incorrect.[11] His earlier "Música arabe-española" (1853) dealt with Al-Fārābī's "Kitāb al-musīqī," also in the Escorial, part of which he appears to have known from a translation made by Conde.[12]

My critic's inability to locate Virgilius Cordubensis reminds me of my own earliest experience of this writer. I first came across his name in Rowbotham's "History of Music" (iii, 533), where it was stated on his authority that the *harmony of Hucbald* was taught in the *Arabian music school* at Cordova. No reference was given, but following other "clues" in Rowbotham, I consulted Soriano-Fuertes, where I found Virgilius used to more advantage, but from a different point of view. Here he was considered to belong in one place (i, 81) to the eighth century, and in another (i, 88) to the eleventh century. Further, this writer referred the teaching of *organum* to *Christian schools*. Again there was no reference to an original or to sources.

I then chanced to fall on Virgilius in the works of Feijóo, in the "Biblioteca de Autores Españoles" (lvi, 379-81), where I also found a reference to Sarmiento ("Memorias para la Historia de la Poesia Castellana,"

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which is certainly less probable than the former. The author has been given all sorts of names, from the Al-Shalānī of Russell ("Natural History of Aleppo," 1794, i, 387) to the Al-Shalābī of Grove's "Dictionary of Music" (third edition, i, 74). I do not know the authority of the writer in Grove for the date 1415 for this treatise.

[11] Casiri, i, 527. Soriano-Fuertes has been followed by U. R. Burke ("History of Spain," 1895, ii, 329).

[12] Mitjana, in "Le Monde Orientale," 1906, p. 194.

i, 252). Both of these Spanish authors, writing in the eighteenth century, were dealing with codices which, at that time, were out of my reach. Later, whilst studying the Latin translators from the Arabic, I came across the helpful writings of Valentine Rose, and in an article of his in "Hermes" (viii, 327) on "Ptolemaeus und die Schule von Toledo," I learned that the "Philosophia" of Virgilius Cordubensis which contained the quotation that I was seeking, had been edited by Gotthold Heine in his "Bibliotheca Anecdotorum" (1848).[13]

Virgilius Cordubensis is the name of a philosopher and necromancer of Cordova, whose work, "Philosophia," was translated from Arabic into Latin at Toledo in the year 1290.[14] The earliest codex, in the library of the Cathedral at Toledo, dates from the second half of the fourteenth century.[15] Taking the work at its face value, I considered the date of the original composition to have been prior to the capture of Toledo by the Christians in 1085, seeing that students from Morocco were studying there at the time that the author was writing,[16] and also because half of the names of the "masters" in astrology,

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[13] This work not being available at the time that I was writing, the words actually quoted by me were taken from Mitjana's article on Spanish music in Lavignac's "Encyclopédie de la Musique" (iv, 1921).

[14] Heine, op cit., 211. The MSS. says: "Istum librum composuit Virgilius Philosophus Cordubensis in Arabico, et fuit translatus de Arabico in Latinum in civitate Toletana, A.D. 1290."

[15] Bonilla y San Martin, "Historia de la Filosofía Española" (1908), i, 310. Cf. Feijóo, op. cit., 380. Heine, op. cit., 211.

[16] The *Marochitani* were from Morocco, as they are usually mentioned with those from "beyond the seas" *(ultramarini)*. They were distinct from the *Saraceni*.

necromancy, and similar arts, are of Arabian origin. Further, the eleventh century was one of the dates assigned to Virgilius Cordubensis by Soriano-Fuertes,[17] and even Rafael Mitjana places him quite as early as this.[18]

Virgilius begins his treatise by trumpeting his fame as a philosopher. Although students from all parts, even from Cordova, went to Toledo to study the arts, they were compelled to journey to Cordova when difficult questions had to be discussed, so as to consult him. He was celebrated for his recondite knowledge, and his superiority was due, so he tells us, to his acquaintance with that science called "Refulgentia," which the ordinary folk called necromancy. Then follows a long philosophical discussion in which he states the opinions of the Andalusian, Saracen,[19] Moroccan, Toletan, Castillian, Leonese, Cantabrian and Cartaginian "masters."

The particular point under discussion, the teaching of *organum* at Cordova, occurs towards the end of the treatise. After reference to the period of the academic session, which began in October and ended in May, as it does, strange to say, in most British universities, Virgilius deals with the masters and philosophers of Spain, who were, in his day, engaged in Cordubensian study. Finally, he gives a list of the professors *(magistri)* and the subjects taught at Cordova. This is what he says:

"These were the philosophers and masters of Spain;

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[17] Soriano-Fuertes, i, 88.

[18] Lavignac's "Encyclopédie de la Musique," iv, 1921.

[19] The Saraceni appear to be the Arab philosophers from the East, as distinct from those of Al-Andalus proper *(Andalici)* and Morocco *(Marochitani)*.

and five of them were Portuguese, and seven were Leonese, and ten were Castillians, and three were Navarrese, and five were Aragonese, and twelve were of Toledo. Of Cartaginians there were seven, of Cordobans there were five, i.e., ourselves—Virgilius, Seneca, Avicena, Aben Royz, and Algacel. Of Sevillians there were seven. Of Moroccan and all others beyond the seas there were twelve.

"All these philosophers were, in our time, engaged in Cordubensian study, [although] some were teaching in their own sciences and others not. Of the scholars who were there, there were seven thousand and more in number. Of those twelve philosophers of Toledo, three were masters of astrology, whose names were, Calafataf, Gilibertus, Aladansac; and another three philosophers of those were masters of necromancy, whose disciples were at Toledo, and what we know we have heard from them, and know about them, and their names were, Philadelphus and Liribaldus and Floribundus; and some of those philosophers in pyromancy, in geomancy, and in many other sciences, whose names were, Beromandrac, Dubiatalfac, Aliafil, Quonaalfac, Mirrazanfel, Nolicaranus.[20]

"These twelve were in our time philosophers of Toledo, and were always unanimously opposed to all other philosophers and all their debates. Many a time they excelled over all others and triumphed. And these twelve philosophers of Toledo wrote and edited many books on philosophy in Arabic and on many other sciences, and they are approved and authenticated. Three of these philosophers were physicians who cured men wonderfully of their infirmities. . . . .

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[20] Feijóo, op. cit., gives other forms of these names.

" . . . . At that time there were seven masters of grammar who taught every day at Cordova; and five continually teaching logic; and three natural science, who likewise taught every day; and two were masters of astrology, who taught every day on astrology; and one master taught geometry; and three masters taught physics; and two masters taught music, of that art which is called *organum*; and three masters taught necromancy, and pyromancy, and geomancy. And one master taught *ars notoria*, which is a venerable art and science."[1]

I have given a translation of this long passage from the Latin of Virgilius, the only one that is material to the question at issue, because it is high time that it was placed clearly before students. Presently I propose to discuss the document itself, but meanwhile the assumptions of M. Soriano-Fuertes and Miss Schlesinger ought to be dealt with.

My quotation from the original source demonstrates the incorrectness of Soriano-Fuertes, in that (1) Virgilius does *not* refer the above schools to "Spanish Christians." (2) He does *not* refer to "twelve professors in this University" who were "all Spaniards," either Navarrese or Castilians. There were *twenty-seven*, and their nationality is *not* specified. (3) He does *not* refer to "two professors" in each faculty. (4) He does *not* mention "botany" as one of the "faculties."

As for my critic, I have shown (1) That I did *not* omit to give the date of Virgilius Cordubensis: (2) That I did

[1] Heine, op. cit., pp. 241-2.

not give Soriano-Fuertes as my reference:[2] (3) That it is *not* correct to say that Soriano-Fuertes states that there were "SPANISH CHRISTIAN PROFESSORS appointed to the faculties of their own schools in Cordova."[3]

On the other hand, I maintain that I was fully justified in the assertion that *organizing* was taught at the *Arabian schools* at Cordova, for the simple reason that the work of Virgilius Cordubensis claims to have been written originally in Arabic presumably by an Arab or *Muzárabe*.[4] If *Christian schools* were intended, the author would have mentioned the fact. Moreover, Cordova was in Arab hands at this time (? eleventh century), and it was not captured by the Christians until 1236. The testimony of Al-Ḥijārī (d. 1194) about foreign students in the Arabian schools at Cordova, agrees in part with the statement of Virgilius.

The treatise of Virgilius Cordubensis deserves examination. Its authenticity has been challenged by several writers, and notably by Comparetti and Bonilla. Comparetti urges that the translator could not have been a Moor, and that he certainly did not know much about Arabic or he would not have called his Arab author Virgilius and made him a contemporary of Seneca, Avicenna

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[2] My critic says that she is aware that M. Soriano-Fuertes is "notoriously inaccurate." *Verb. sap.*

[3] Even if Christian schools were referred to, it would be wrong to assume that its teachers were all Christians, seeing that both Muslim and Jewish savants were to be found there.

[4] Andrés (op. cit., edit. 1785, i, 256), speaks of the university at Cordova mentioned by Virgilius as though it were a Muslim institution. Mitjana (Lavignac's "Ency. de la Musique," iv, 1921) also assumes that Arabian *madāris* or schools are meant.

(= Avicena), Averroës (= Aben Royz), and Al-Ghazālī (= Algacel). He suggests that the author was a charlatan who took the name of Virgilius and simulated Arabian learning in order to be looked upon as an authority. Comparetti even takes Amador de los Rios to task for accepting the "fabulous notices" of Virgilius concerning the professors of the *ars notoria*, necromancy, etc.[5] Further, he gives the opinion of the Orientalist, Moritz Steinschneider, communicated to him privately, that he had doubts whether the work was earlier than Raimond de Pennaforte (fl. 1232).[6]

Bonilla, who gives extracts from Virgilius, suggests that the author was a Toletan ecclesiastic who was influenced by the writings of the famous Arabic translator, Michael Scot (d. *c.* 1232), and indicates a similar type of literature in such works as "Sendebar," "Flores de Filosofia," and "Libro de los Doze Sabios."[7]

These objections to the authenticity of the "Philosophia" of Virgilius Cordubensis cannot be passed over lightly, although care has to be exercised in not taking too much for granted. First of all, it must be remembered that Comparetti is dealing with the legendary material which became attached to the name of Publius Virgilius Maro, the poet (d. 19 B.C.), and he looks upon the "Philosophia" of the later Virgilius Cordubensis as an outcome of the legend. On the other hand, is it not equally probable that the "Philosophia," instead of being the

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[5] "Historia critica de la Lit. Esp.," ii, 159.

[6] Comparetti, "Virgilio nel medio evo" (1872), ii, 95-6.

[7] Bonilla y San Martin, "Historia de la Filosofía Española" (1908), i, 309.

production of a charlatan trading on the name of the legendary necromantic Virgilius Maro, and the obsession for "Arabian learning," is rather a work of independent origin which actually contributed to give further vitality to the legend? We probably see a similitude in the case of Bishop Virgilius of Salzburg (d. 784), whose somewhat extraordinary opinions may also have become attached to the name of Virgilius Maro, and contributed to the necromantic legend.

Comparetti's criticism that the translator was not a Moor, does not touch the question at all. Nearly all the translators from Arabic into Latin were Europeans racially.[8] That the translator called the author Virgilius does not, in itself, allow us to question his knowledge of Arabic. In that case, we would require to know what the original name in Arabic was, and how the original translator rendered it. Even as it stands, which may be a Latin copyist's reading only, there is no reason for supposing that an Arabic original is unlikely, seeing that we have the examples of Faraj (ibn Sālim) being Latinised as Franchinus, and Ḥunain (ibn Isḥāq) as Æneas.

The arguments based on the so-called "contemporaries" of Virgilius Cordubensis are more cogent. Only Seneca (d. 65) and Averroës (d. 1198) were Cordobans, whilst neither Avicenna (d. 1037) nor Al-Ghazālī (d. 1111) ever saw Al-Andalus. Needless to say, an Arab author could not have penned these lines about his "contemporaries," and if the author was a Toletan ecclesiastic, as Bonilla

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[8] One outstanding name to the contrary, that of the Jew, Faraj ibn Sālim, was Latinised as Farachi, Faragut, Fararius, Ferrarius, Franchinus.

suggests, what about the inclusion of Seneca? Is not the passage a mere gloss that has crept into the text?[9] If the author was a Toletan ecclesiastic, he certainly managed to keep his religion out of the "Philosophia" with an astuteness that does not comport with the inept inclusion of Seneca.

Certainly, no Arabic original of the "Philosophia" is known to us, but the same objection could be urged against dozens of Latin works translated from the Arabic. Toledo was long famous as the seat of Arabian science,[10] undoubtedly from the time of the Amīr Yaḥyā al-Ma'mūn (d. 1074), through the period of Archbishop Raymund (fl. 1125-51), to Alphonso X (1252-84), and even later. Would it have been possible to have palmed off a spurious work at this period, with learned Arabs and Jews on the spot only too eager to detect the fraud? At any rate, the philosophy of Virgilius Cordubensis comes from Arabic and Rabbinic sources, and the work certainly cannot be said to belong to the same type as the works indicated by Bonilla.

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[9] An ignorant Latin glossator, and a later scribe, might well have been jointly responsible for these "contemporaries." Batman ("Batman uppon Bartholome," London, 1582) says that Avicenna lived in Spain, and belonged to the twelfth century! Latin authors also considered Rhazes (Al-Rāzī) to be a Roman!

[10] See "Hist. Lit. de la France," vii, 143, 158.

47.

HARMONY IN ORIENTAL MUSIC.

I HAVE said that the Arabs have preserved in present-day practice scarcely a vestige of the primitive *tarkīb* of Al-Kindī, which, I have surmised, was probably the forerunner of *organum* in Europe.[1] What we do see is a far more advanced type of *organum* which appears to be peculiar to bowed instruments. An example of this is worthy of reproduction.[2]

[1] See *ante*, pp. 104, 108, 112.

[2] Loret, V., "Quelques documents relatifs à la littérature et la musique populaires de la Haute-Égypte." ("Mémoires . . . . de la Mission archéologique française au Caire," Paris, 1889, Tome i.)

I°
II°
etc.

48.

JOHN SCOTUS AND *ORGANUM.*

JOHN SCOTUS or Erigena (d. *c.* 877) deserves special attention because of the alleged reference to *organum* in his "De divisione naturæ," which has been conjured with by many writers since the days of the erudite Coussemaker.[1] Probably greater credence has been placed on the John Scotus reference by Hugo Riemann than by any other writer, and the latter has even referred to other passages in "De divisione naturæ" so as to increase the confidence of his readers that there are valid reasons for averring that John Scotus refers to *organum.*[2] Indeed, the language of John Scotus is actually said to refer to "free *organum.*" Professor Wooldridge thought that this "difficult" and "doubtful" passage of John Scotus would quite admit of this interpretation, as I have already pointed out.[3] Dr. Ernest Walker followed the Slade professor in this view, although he, too, said that the passage was "none too clear."[4] The latest to adhere

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[1] Coussemaker, "Histoire de l'Harmonie au Moyen Age" (1852), 11.

[2] Riemann, "Gesch. d. Musiktheorie" (1920), 18, 22. "Handbuch d. Musikgeschichte" (1904-13), i/2, 142.

[3] See *ante*, pp. 109-10.

[4] Walker, "History of Music in England" (1907), 4.

to the Riemann dictum is Miss Schlesinger,[5] whose further circumstantial defence of the passage as referring to "free *organum*"[6] prompts me to make a lengthy examination of the claim.

The Latin quotation given by my critic,[7] which is taken from Riemann,[8] who, it appears, depends on Schlüter,[9] does not seem to be quite correct, as we shall see presently. In the meantime, however, let us assume that the passage is correct, and that it refers, in the language of Professor Wooldridge, to "the alternate separation and coming together of the voices." What could this actually mean? Miss Schlesinger says that "a highly developed form of *organum* is lucidly described" by John Scotus in this passage.[10] On the other hand, I maintain that it could only refer to a type of *symphonia*.

If we turn to the chapter on *symphonia* in the "Scholia Enchiriadis" we find "Discipulus" asking: "*Quomodo canitur diapason?*" To this query "Magister" replies by showing that there could be *symphonia* with the *single diapason* as well as with both the *single* and *double diapason* together.[11] Here is a specimen of the *compound symphonia*:

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[5] See *ante*, pp. 109-10, and her pamphlet, p. 11.

[6] "Musical Standard," xxvii, pp. 208, b 209.

[7] Schlesinger, "Is European Musical Theory Indebted to the Arabs?," 11.

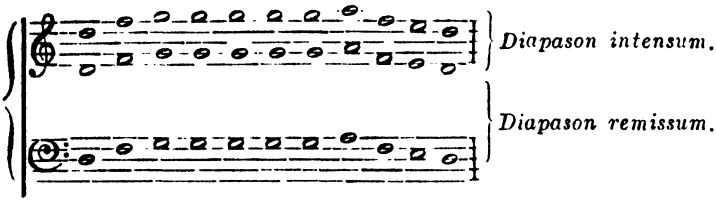
[8] Riemann, "Gesch. d. Musiktheorie" (second edit., 1920), 18.

[9] Schlüter, "Joannis Scoti Erigenae De divisione naturae" (1838).

[10] "Musical Standard," xxvii, 197, b.

[11] Examples are given in Gerbert's "Scriptores," i, 161, 163, 185.

De diapason ac disdiapason.



Here we have the *vox principalis* accompanied by a *vox organalis* at the octave below and the octave above, in strict parallel form, which was the older,[12] and more elementary system of *symphonia*,[13] practically identical with the Greek system of *magadizing*. Yet the lower *(remissus)* and upper *(intensus) vox organalis* did not always follow the *vox principalis* in strict parallel form separated by an octave, but occasionally met the *vox principalis in unison*. Thus we see that Professor Wooldridge's part translation of the Riemann (Schlüter) text could very well be a reference to this class of *symphonia*.

At the same time, as I have already pointed out, the text given above is scarcely to be trusted, although it is given by [Coussemaker],[14] Riemann[15] and Wooldridge.[16] A better text is that given by Migne, which is edited by H. J. Floss, who collated five codices with the *editio princeps*.[17] I give both text and translation as follows:

"The Omnipotent founder of the universe . . . . has

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[12] Gerbert, "Script.," i, 161.

[13] Gevaert, "Mél. Ant.," 422.

[14] Coussemaker, op. cit., 11.

[15] Riemann, loc. cit.

[16] Wooldridge, "Oxford Hist. of Music," i, 61.

[17] "Patr. Lat.," cxxi, 439 *et seq.*

been able to create what is similar and dissimilar to his own likeness. . . . . In a like manner the beauty of the whole universe of similar and dissimilar things has been built up in a wonderful harmony from diverse *genera* and various forms in different arrangements of substances and accidents, compacted into an ineffable unity. For an organised melody composed of diverse qualities and quantities of voices is discerned, note by note *(viritim)* individually, to be separated by different proportions of high and low, yet they are mutually co-adapted in accordance with established and rational rules of the art of music concerning each tropos,[18] rendering a natural sweetness, so the concord of the universe out of the subdivisions of one nature, mutually disagreeing when examined singly, has been made one equally with the uniform will of its founder."[19]

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[18] Miss Schlesinger says that this sentence translates—"*definite rules of composition regulating the inter-relationship and progression of the different voices in each tropos or mode.*" This is certainly more than the text tells us.

[19] "Patr. Lat.," cxxii, 637, d. "Proinde pulchritudo totius universitatis conditæ, similium et dissimilium, mirabili quadam harmonia constituta est, ex diversis generibus variisque formis, differentibus quoque substantiarum et accidentium ordinibus, in unitatem quandam ineffabilem compacta. Ut enim organicum melos ex diversis vocum qualitatibus et quantitatibus conficitur, dum viritim separatimque sentiuntur, longe a se discrepantibus intentionis et remissionis proportionibus segregates, dum vero sibi invicem coaptantur secundum certas rationabilesque artis musicæ regulas per singulos tropos, naturalem quamdam [quandam] dulcedinem reddentibus: ita universitatus concordia, ex diversis naturæ unius subdivisionibus a se invicem, dum singulariter inspiciuntur, dissonantibus, juxta conditoris uniformem voluntatem coadunata est." Coussemaker, Riemann and Wooldridge omit the word "vocum," but the last two put "voces" after "sentiuntur."

It will be observed that this translation does not allow for Professor Wooldridge's reading of "the alternate separation and coming together of the voices," which even Coussemaker does not admit. Indeed, the very context seems to demonstrate that we cannot allow this reading, and the objection is strengthened by other passages in "De divisione naturæ." At any rate, neither in my texts, not in the text of my critic, is there authority for stating that "a highly developed form of *organum* is lucidly described."

In Book V of "De divisione naturæ," John Scotus returns to this subject of the unity of universal nature being due to the uniting of diverse constituents. He is urged to this view, he says, on "musical grounds." He recognises that "rational intervals[20] of diverse voices, put together *one after another*, produce a sweetness in melody." Here the author is speaking of the different intervals which go to make up *melody*. The certitude of this is evident from the passage which follows. "It is not," he says, "the diverse sounds of organ pipes, lyre strings, or reed-pipe holes that produce a harmonious sweetness, ... but the relations and proportions of sounds which, put together *one after another*, the inmost soul alone perceives and determines the senses."[1]

The central idea appears to have been derived ultimately from Pseudo-Aristotle's "De mundo" (396, b), where we read that the harmony of the universe is based on diversities rather than on similarities as exemplified

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[20] "Rational intervals" = intervals determined by theory of music.

[1] "Patr. Lat.," cxxii, 965, c.

in music. "Music," says this author, "by a mixing of high and low, short and long sound of diverse voices, attains to a single harmony.[2] It is what we find also in Quintilian and Clement of Alexandria.[3]

John Scotus also took a hint from his great mentor, St. Augustine. In the latter's "De civitate Dei" (ii, 21) we read that dissimilar sounds actually go to make up perfect concord. Further, there is a passage in his "De trinitate" (iv, 2) which runs: "He [Christ] made us participators of his divinity. . . . . His *single* coincides with our *double*. . . . . Yet here is not the place to demonstrate the value of that consonance *single* to *double* [*diapason*]. . . . . By this indeed, high and low voices are [judged] in concord."

To strengthen her argument that this *organum* can be traced back to "early in the ninth century" or to "the beginning of the ninth century," Miss Schlesinger says: "In the earliest known authority, Erigena [John Scotus], ... the author is not describing anything essentially new in practice but is using as illustration well-known musical facts, as may be gathered from the longest passage quoted by Riemann (*op. cit.*, p. iv, Erigena, Bk. v, 13), in which the polyphonic use of *organum* is implied."[4] I give a translation of the passage to which my critic pins her faith:[5]

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[2] See also 399, a. We must remember that this is the Greek word ἁρμονία, i.e., "an ordered succession of intervals."

[3] Quintilian, "Inst. Orat.," i, x, 12. Tollington, "Clement of Alexandria" (1914), ii, 302.

[4] Schlesinger, "Is European Music Indebted to the Arabs?," 11-12.

[5] "Patr. Lat.," cxxii, 883.

"The voice of man, or of pipe, or lyre, taken singly, retains its own quality, yet these joined together make one harmony by their concordance. Even where a clear indication of the sounds is manifested, they are not mixed with each other, but merely united. For if any voice is silent, it alone will be silent, and no silence of the melody results from the sounds remaining, from which it is clear that when it [a voice] sounds among others, it still retains its own quality."

To say that the "polyphonic use of *organum* is implied" in this passage is an abuse of language. Not only do the context and the sources prove the intrinsic improbability of the assumption, but the very passage itself shows that the position is untenable.

The fifth book of "De divisione naturæ" deals with the return of nature to its primal unity, and the point in question concerns the immortality of the individual. Individual man has his own soul single and unique, although all human souls are united in the one universal soul. To prove this "Oneness above Unity,"[6] John Scotus uses the simile of the voices in concert. It is as old as the hills, as we know from Seneca.[7] His immediate source, however, was the Pseudo-Dionysios treatise, "De divinis nominibus," which he himself had translated into Latin. Here we have the simile of the several lamps and the undifferentiated light which, *mutatis mutandis*, is identical with the simile of the several voices and the undifferentiated sound.[8]

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[6] Porphyry says that prior to the *many* there is the *one*. "Select Works of Porphyry," by Thomas Taylor, p. 204.

[7] "Epistolæ," lxxxiv.

[8] "De divinis nominibus," ii, 4.

To read into the John Scotus passage, as my critic would do, a suggestion that the voices produced consonances other than the *diapason* and/or *disdiapason*, which were the characteristics of the strict *symphonia* that I have alluded to, destroys, in my opinion, the simile. If we admit, for instance, the consonance of the *diapente* or that of the *diatesseron*, we introduce *differentiated* sounds, which, when withdrawn, would obviously create an "appreciable silence" from the sounds remaining. To maintain the simile, the voices must produce one *undifferentiated* sound.

Another passage deserved attention on account of the reference made to it by Miss Schlesinger, who borrows it from Riemann. My critic says: "Mr. Farmer will find a reference to the subject of consonances in Erigena, *op. cit.*, Bk. v, 4." Turning to this passage we find the philosopher concerned with his fourth division of nature, i.e., *Natura non creans et non creata*—the return of nature to its primal cause. He uses the *quadrivium* as an illustration. *Arithmetic*, he says, starts with the monad, and all numbers resolve back again into this. *Geometry* and *astronomy* are dealt with similarly. Then comes *music*, and he says:

"What of music? Does it not itself start from its own primal cause (principle) which we call the *tone*? It commences *symphoniæ* both simple and compound, and resolving again, returns to this *tone*, i.e., its primal cause, since it subsists wholly by its power."[9]

There is certainly nothing here on the "subject of consonances," other than what might refer to the *diapason*

[9] "Patr. Lat.," cxxii, 869, b.

and *disdiapason* of *symphonia*. Of course, we see these points in the Aristotelian "Problemata" (xix, 39).

Finally, there are the references of John Scotus to the *senarius*, which Miss Schlesinger considers to be "those of an expert."[10] It was the philosopher's remarks on this and other topics of music that led me to say that his "passing references to music . . . . are little different in substance from what we find in contemporary writers."[11] Yet my critic still holds a brief for the "expertness" of the Irish Carolingian.[12] Let us see in what way this "expertness" is reflected in his mention of the *senarius*. John Scotus asks:[13] "How much of the *senarius* is understood with regard to its value? What [of its] foundation of the entire harmony [of things]? Who can recognise also its connections *(collationes)* with its *sesquialter*, *sesquitertius*, and *duplices* within the nature of things, while the universe of all things visible and invisible has been established in it [the *senarius*] as in an original model." He tells us elsewhere,[14] that the *senarius* is called the "perfect number." The creation of the world took *six* days. *Six* is the multiple of the first equal number (2) and the first unequal number (3). *Six* is also the sum of the first three numbers (1 + 2 + 3 = 6). The "expertness" of John Scotus is scarcely apparent here. The first-quoted passage, he took direct from his mentor, St. Augustine,[15] who himself was undoubtedly influenced by Philo

[10] "Is European Music Indebted to the Arabs?," 11.

[11] See *ante*, p. 109.

[12] "Musical Standard," xxvii, 209.

[13] "Patr. Lat.," cxxii, 966, a.

[14] *Ibid.*, 655, c, 656, b, 718, b, 723, a.

[15] "De civitate Dei," xi, 30. "De Trin.," iv, 7.

Judæus.[16] Another author well known to John Scotus was Martianus Capella, and he tells us that from the *senarius*, the "perfect number," came the *hemiolios (= sesquialter)*, the *diatessaron (= sesquitertius)*, and the *diapason (= duplex)*. We also see all this in Vitruvius,[17] and Isidore.[18]

It will be recalled that Miss Schlesinger averred that the description of John Scotus, in the special passage referred to, "considering the age in which he lived, may justly be regarded as that of an expert, who wrote from practical knowledge and understanding, and was not a mere compiler of the work of others." My critic says further that the other passages on music in "De divisione naturæ" shows that John Scotus was "speaking from first-hand practical knowledge of the music of his day," and that "all his utterances on music show an unusually deep knowledge and understanding of the subject."[19]

These premises have but scant confirmation, as we have seen. Although John Scotus, in his intellectual interests, was rather exceptional for the age in which he lived, it is equally certain that his writings reveal how greatly conditioned he was by the meagre culture of his time.[20] In-

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[16] "De opificio mundi," iii.

[17] "De arch.," iii, 1.

[18] "Etymol."

[19] "Is Musical Theory Indebted to the Arabs?" 11. "Musical Standard," xxvii, 197, b.

[20] Strange to say, John Scotus was once supposed to have derived some of his learning from the Arabs. The legend began with the sixteenth century Bale ("Script. III, Brit.," ii, 24), and it continued to be accepted until the nineteenth century, when R. L. Poole ("Illust. of the History of Mediæval Thought," 311) exploded it.

deed, one might go further still and say with his latest and best critic and biographer, Henry Bett, that "no philosopher was ever less original, in the narrower sense, than Erigena [John Scotus]."[21] To a considerable extent we can gauge the extent of his borrowings, and from this we can reasonably determine the measure of his originality. So far as his utterances on music are concerned, there is no evidence to be found for the claim made as to "originality," "expertness," or "first-hand practical knowledge," as I have clearly demonstrated.

[21] Bett, "Johannes Scotus Erigena" (1925), 164.

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ERRATA.

Page	5,	line 23.	For "1086" read "1085."
,,	11,	,, 8.	Delete "and in cards the term *nap*."
,,	11,	,, 31.	For "Maqrisī" read "Maqrīsī."
,,	12,	,, 28.	For "Fidā" read "Fidā'."
,,	14,	,, 8.	For "song" read "Andalusian song."
,,	15,	,, 23.	For "Evangelarium" read "Evangeliarium."
,,	21,	,, 28.	For "Casiri" read "Cf. Casiri."
,,	25,	,, 10.	For "al-Manṣūr" read "Manṣūr."
,,	28,	,, 12.	For "Muḥammad al-Ḥaddād" read "Muḥammad ibn al-Ḥaddād."
,,	28,	,, 13.	For "Maṭarān" read "al-Maṭrān."
,,	28,	,, 14.	For "Ibn Rushd (d. 1198)" read "Ibn Man'a (b. 1156)."
,,	28,	,, 28.	For "Muh. Dyn." read "Moh. Dyn."
,,	29,	,, 1.	After "Al-Kindī" add a *comma*.
,,	30,	,, 11.	For "Ṣafā" read "Ṣafā'."
,,	32,	,, 15.	For "Adhemar" read "Adhémar."
,,	46,	,, 26.	For "Fortunatus" read "Symphosius."
,,	48,	,, 22.	For "945 A.D." read "the XIIIth century."
,,	51,	,, 24.	For "Evliyā Chelebī, ii" read "Evliyā Chelebī, i, ii."
,,	54,	,, 11.	Transpose the *comma* after "Ghuzayyil" to after "Damascus."
,,	54,	,, 25.	For "rūh" read "rūḥ."
,,	58,	,, 9.	For "Khurasānī" read "Khurāsānī."
,,	62,	,, 22.	Delete "consonances."
,,	64,	,, 13.	For "'Αμεριστος" read "'Αμέριστος."
,,	79,	,, 19.	For "Ewliyā" read "Evliyā."
,,	89,	,, 8.	For "T" read "Ṭ."
,,	93,	,, 20.	For the second "H" read "Ḥ."
,,	94,	,, 3.	For "eleventh" read "tenth."

Page 96, line 1. For "eight" read "seven."
,, 100, ,, 31. For "Salvà." read "Salvá."
,, 104-5. Cancel the examples of *tarkībāt* from the Mūrisṭus MS., and the footnote on page 105.
,, 125, ,, 23. For "nahash" and "nahasa" read "naḥash" and "naḥasa."
,, 137, ,, of heading. For "ARIBIAN" read "ARABIAN."
,, 137, ,, 2. For "qitāra" read "qītāra."
,, 137, ,, 30. For "1928" read "1930."
,, 141, ,, 5. For "surnāī" read "surnāy."
,, 142, ,, 7. For "surnāī" read "surnāy."
,, 152, ,, 7. For "Menard" read "Médard."
,, 154, ,, 18. For "knowedge" read "knowledge."
,, 155, ,, 15. For "Shaqandī" read "Shaqundī."
,, 159, ,, 4. For "Maskhara" read "*Maskhara*."
,, 170, ,, 11. For "Shaqandī" read "Shaqundī."
,, 171, ,, 3. For "are" read "is."
,, 173, ,, 7. For "nay" read "nai."
,, 199, ,, 26. After "century" add "Cf. Thibaut, "Origine byzantine de la Notation pneumatique."
,, 212, ,, 18. For "Fortunatus" read "Symphosius."
,, 242, ,, 14. Delete "further."
,, 248, ,, 29. For "Barṣauma" read "Barṣaumā."
,, 248, ,, 2. For "Shudha" read "Shuhda."
,, 249, ,, 17. For "799" read "791."
,, 277, ,, 17. For "Byzantium" read "Byzantine."
,, 298, ,, 20. For "Sixteenth" read "Seventeenth."
,, 329, ,, of heading. For "SINA" read "SĪNĀ."
,, 331, ,, 22. After "practised" add "on the lute."
,, 336, ,, 34. For "Shalāhī" read "Shalāḥī."
,, 338, ,, 26. For "says" read "say."
,, 342, ,, 14. For "Al-Ḥijārī" read "Ibn al-Ḥijārī."
,, 25, ,, 24 & 28. For "Wüstenfelt" read "Wüstenfeld."
,, 48, ,, 12. For "prescribes" read "proscribes."
,, 49, ,, 16. For "Palmyræns" read "Palmyrenes."
,, 81, ,, 27. For "key" read "riddle."
,, 352, ,, 8. For "not" read "nor."

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