

# **Gunpowder and Firearms in the Mamluk Kingdom**

A Challenge to a Mediaeval Society

**David Ayalon**

GUNPOWDER AND FIREARMS  
IN THE MAMLUK KINGDOM

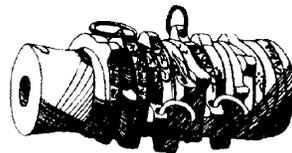
The drawing on the title page is of a cannon made by order of Sultan Qaytbay (1468-1495), which is in the military museum (*askeri müze*) in Istanbul. This is the only existing piece of artillery which can be identified beyond doubt, by the inscription it bears, as Mamluk. Its length is 1,200 mm., or about four feet.

*Gunpowder and Firearms*  
*in the*  
*Mamluk Kingdom*

*A Challenge to a Mediaeval Society*

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**Publisher's Note**

The publisher has gone to great lengths to ensure the quality of this reprint but points out that some imperfections in the original may be apparent

## Preface to the Second Edition

Since this book first appeared in 1956, the major addition to the study of Gunpowder and Firearms in the Muslim countries has been the article BĀRUD in the new edition of the Encyclopaedia of Islam, written by a group of authors, each dealing with a Muslim state or region. In 1975 the Program in Near Eastern Studies of Princeton University published three articles of mine in the form of a booklet in its series 'Princeton Near Eastern Papers' (no. 20 of the series). The third of these is called 'The Impact of Firearms on the Muslim World'. There I attempt to examine the effects of the new weapon on the balance of power inside the lands of Islam, as well as on those lands vis-à-vis the rest of the world, particularly Christian Europe.

The two main aims of my book were: a) to establish the terminology by which gunpowder and firearms were designated (without establishing that terminology one cannot even begin to write the history of the weapon); b) to see how firearms affected a military aristocracy of cavalymen. I have not found reason to change or modify the conclusions I reached in regard to these two subjects. To the best of my conviction additional data confirm them.

When I was preparing the present book for publication in the early fifties, one of the obvious things for me to do was to look for studies on the impact of firearms on non-Muslim—particularly European—societies, with the purpose of drawing parallels with Islam. To my great astonishment I found that there was no systematic study—to say nothing of a comprehensive one—on that aspect\*, and this in spite of the existence of an immense literature of superb quality on the technical and military aspects of European firearms. As far as I know no substantial progress has since been made in this field.

\*This statement is especially true for the period with which the present study deals.

PREFACE TO THE SECOND EDITION

Though a detailed and comprehensive study of the impact of firearms on European society is still lacking, one thing is clear: that society was certainly influenced by socio-psychological conceptions which retarded its adoption of modern technology to a greater or lesser extent, though, in all probability, not to the same degree as Muslim society. As far as infatuation with the horse and with horsemanship was a stumbling block in the way of the proper adoption of new weapons and new methods of warfare, in Europe this infatuation lingered on well into the twentieth century (see the instances given in my above-mentioned article). It seems to me that what is to be concluded from this fact is almost self-evident: if, in the twentieth century, amongst military circles in advanced and industrialised European countries, deep-seated notions of horsemanship and cavalry were responsible for incalculable calamity in two World Wars, how much more so amongst the Mamlūks of the Middle Ages! The Mamlūks' defeat and downfall as the outcome of socio-psychological factors seems, therefore, to be logical and understandable.

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## P R E F A C E

**T**HIS study is a revised chapter from a work on the Mamluk military society and army written in Hebrew, the greater part of which has not yet been published. The revision was made mainly in the summer and autumn of 1952 under a Rockefeller Foundation Fellowship, which enabled me to work in the British Museum, the Bodleian, the University Library, Cambridge, and the Bibliothèque Nationale.

The main subject of the study is not the technical military aspect of firearms—for I am no military expert—but the historical and social aspects of these weapons; and, above all, the description and analysis of the clash between the deeply rooted antagonism of a military ruling class of horsemen to firearms, on the one hand, and the steadily growing, nay, inescapable, necessity of employing them, on the other. The ultimate aim is to prove that superiority in firearms had been the main factor which enabled the Ottomans to incorporate Western Asia and Egypt in their dominions. Purely military problems are discussed here mainly when they have a bearing on the above-mentioned aspects or when they help in clarifying and establishing vital terminology.

In compiling the present study I was handicapped by two principal difficulties. The first of these was that it had originally been planned and written as only a chapter of a book dealing with a much wider subject which, in spite of its supreme importance for Muslim history, is largely unknown not only to the general reader but also to the Orientalist. I had thus to rely, in summing up the characteristics of Mamluk society and in many other cases, on conclusions reached in other parts of my work, most of which is still in manuscript. In the case of those parts already published in learned journals and elsewhere, I have referred the reader to them. Where I have drawn extensively upon the unpublished parts, I have

#### PREFACE

given a few selected source references. The second difficulty was the extremely inadequate conditions of scientific research in Jerusalem, especially since we had been cut off from our National Library on Mount Scopus. In the comparatively short period spent in England and France in 1952 it was impossible to make an exhaustive examination of all the available Arab sources, and only part of the main books dealing with the history of firearms in Europe could be consulted.

The work consists of three chapters and an Introduction. The length of the chapters, which may seem disproportionate, was entirely dictated by the material. The Introduction, though paged in Roman numerals, is an integral part of the study.

I take this opportunity to express my deepest feeling of gratitude to Professor L. A. Meyer, of the Hebrew University of Jerusalem, who initiated me into the world of Mamlukdom and helped me through it for many years as teacher and colleague, and to Professor P. Wittek, of the School of Oriental and African Studies, London, for his contribution of the Appendix on Ottoman Firearms and for his guidance in the study of Muslim history. I am also indebted, for scientific or other help, to Professor B. Lewis, of the School of Oriental and African Studies, to Professor S. D. Goitein, Professor H. J. Polotsky, Dr. U. Heyd, Dr. Y. Yadin, Mr. U. Ben Horin, M.A., of the Hebrew University of Jerusalem, to Professor J. C. Hurewitz, of Columbia University, New York, Dr. W. Zander, of the Friends of the Hebrew University, London, Mr. M. Michaelis, M.A., Jerusalem, and to Mr. H. R. Mallett, of the University Library, Cambridge, for his valuable assistance in the preparation of the Index. I can only record my debt to the Rockefeller Foundation, New York, by saying that without its assistance this study could not have been completed.

D. AYALON.

Jerusalem, December, 1955

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## INTRODUCTION

THE discovery of gunpowder and the use of firearms constitute one of the most important turning-points in human history. In both the Western and the Muslim worlds the military and social changes<sup>1</sup> caused by this discovery were far-reaching. Firearms also had a profound influence on the course of the struggle between these two worlds. By and large, especially in the long run, the introduction of the new weapon spelt disaster to Islam, for it was one of the main factors accelerating the domination of the Muslim East by Christian Europe.<sup>2</sup> There were, however, important exceptions to this general rule, the most outstanding of which was the tremendous success with which the Ottomans used firearms against their Christian neighbours in Europe.

True, in their early conquests in the Balkans the Ottomans had no great need of firearms; but they did need them badly in their later European acquisitions, and what is even more important: they succeeded in *maintaining* their hold on European Turkey for a much longer time to a great extent because of their excellent artillery—among the best in the world—and because the backbone of their army, the Janissary force, consisted of infantry “riflemen” (the arquebusiers of an earlier age). In other words: if the Ottomans had not used firearms on such a large scale and with such good effect, it is all but certain that they would have lost all their European possessions much earlier. The long and continuous Ottoman domination of the territories lying to the west of the Straits has stamped its imprint on the whole of modern European history. To mention only one example: the Eastern Question, which clouded relations between the Great Powers from the early nineteenth century until the end of the First World War, would have assumed an entirely different character if—as Napoleon and many other leading Frenchmen had believed and hoped—the Ottomans had with-

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drawn from European Turkey, say, at the end of the eighteenth century.

The changes wrought by the introduction of gunpowder and artillery within the bounds of Islam were hardly less remarkable. At the beginning of the sixteenth century the whole political and military pattern of Western Asia and Egypt was completely transformed within two or three years by two or three big blows. As a result, this whole area, the core and centre of Islam, was incorporated into the Ottoman Empire. There can be little doubt that this rapid transformation could never have been accomplished on so large a scale and with such lasting results without the extensive use of firearms *on the battlefield* by the Ottomans on the one hand and their almost total absence in the ranks of the Ottomans' opponents (Mamluks,<sup>3</sup> Safawis) on the other. One of the main aims of this study is to explain why the Mamluk kingdom, the only Muslim Power which in a technical and military sense had any reasonable chance of competing with the Ottoman Empire, did not—and as a matter of fact could not—adopt these weapons (*i.e.* field-guns and hand-guns) on any serious scale though they were the only possible means by which it could escape total destruction. To put it in another way: the aim will be to explain why the fate which befell this part of the Muslim world was all but inevitable. This problem will be discussed in the latter part of this study.

Firearms did, indeed, play a leading part in shaping the destiny of the Muslim peoples and states and in deciding the issue of the struggle between Islam and Christianity. Yet the history of the adoption of these arms in the Muslim countries is still shrouded in obscurity. This does not mean that Orientalists have totally neglected this important field of research. Some of the most eminent Orientalists have laboured on it, and their contributions are by no means negligible. The main credit for tackling the subject doubtless goes to French scholars. The study of gunpowder and firearms in the Muslim world is an exclusively French field while the study of incendiary war materials (known under the name of Greek fire, *naphtha*, *naft*, etc.), which is so intimately connected with the subject of gunpowder, is dominated by French scholarship.<sup>4</sup> The works of Reinaud and Favé<sup>5</sup> and

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Quatremère,<sup>6</sup> compiled more than a hundred years ago, and dealing both with inflammable substances and firearms, opened a new era in this field and, despite their defects and shortcomings,<sup>7</sup> some of which will be discussed on p. 41 below, are—after the publication of so many Arab sources, and the great advances made in our research on the technical development of firearms—indispensable to this day.

After the promising start made by the three French scholars at about the middle of last century there followed a long lull which has not yet come to an end, but which was interrupted from time to time. Amari<sup>8</sup> and de Goeje<sup>9</sup> dealt with incendiary materials alone in articles published in 1846 and 1904 respectively. In 1925 G. Wiet published an important note on artillery, based mainly on Mamluk sources.<sup>10</sup> In 1926 and 1946 M. Canard published two most valuable papers,<sup>11</sup> containing rich and illuminating data on the use of incendiary substances during the early centuries of Islam. In 1929 H. Ritter published a list of the most important *furūsīya* manuscripts found in the Istanbul libraries, together with a description of their contents.<sup>12</sup> Some of these deal with inflammable substances. In 1947 R. Brunschvig devoted some pages of his work on the Ḥafside to the use of firearms under that dynasty.<sup>13</sup> In 1947/8 C. Cahen published many extracts from an Arab military technical booklet of the twelfth century, containing ample data on incendiary materials (*nufūt*).<sup>14</sup> In 1952 appeared a book by M. Mercier,<sup>15</sup> dealing with both incendiary materials and firearms. In this work Mercier availed himself of the advances made in the technical aspect of the subject and corroborated his conclusions by laboratory tests.

The above list, though perhaps incomplete, shows how small is the number of scholars giving serious attention to the history of inflammable substances and firearms in Islam. Small wonder, therefore, that this field of research is far from being exhausted.

A few words are also necessary on the contemporary sources in general and on the Mamluk sources (which are our main concern) in particular. The sources may be divided into two different groups: first, the technical military literature (*furūsīya* treatises),<sup>15a</sup> and second, the historical literature in

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the broad sense of the term, *i.e.* chronicles, encyclopædias, topographical, geographical, and administrative works, etc.

No study of both inflammable war materials and gunpowder is possible without a thorough use of the literature of the first group. Some of the *furūsīya* treatises<sup>16</sup> serve indeed as foundation and cornerstone of our work on the subject. Moreover, they are of considerable importance for the history of firearms in general and are quoted by many prominent European military historians. However, the *furūsīya* literature is deficient in many respects. Apart from general deficiencies, such as vagueness and unintelligibility of many technical and other terms, there is the difficulty, in many cases, of distinguishing between contemporary and obsolete material and the inclination of *furūsīya* writers sometimes to attribute an exaggerated importance to weapons and tactics of which they are particularly fond. There are also deficiencies peculiar to those sections of the *furūsīya* literature which deal specifically with gunpowder and firearms.

Among these deficiencies two are specially important. First there is only an extremely small number of (partly undated) *furūsīya* treatises furnishing important information on firearms.<sup>17</sup> Practically all of these were already analysed by Reïnaud-Favé-Quatremère. Later scholars approached the subject from a different angle,<sup>18</sup> but based their conclusions on the selfsame sources and did not add any new material of consequence from *furūsīya* manuscripts. The second important deficiency is that the passages in the *furūsīya* literature devoted to gunpowder and firearms deal exclusively with the earliest stages in the development of this weapon and with the period preceding its adoption. True, this deficiency has its redeeming aspects for it is mainly to those passages that we owe such knowledge as we have of the transition period from incendiary substances to gunpowder, a period which is so decisive in the history of firearms. Still, the fact remains that the *furūsīya* literature known to the writer covers only a very small fraction of the history of that weapon.

Both these deficiencies spring from the same source: the *furūsīya* conceptions with their ingrained antagonism to firearms, an antagonism which was in no way mitigated under Mamluk rule. The wide gulf existing between *furūsīya* and

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firearms will be frequently referred to in this study. Here we shall only note that information on gunpowder and firearms could find place in this type of literature only so long as gunpowder was hardly separable from other kinds of inflammable materials and so long as firearms were in their embryonic phase before their real nature had been revealed.<sup>19</sup>

The more general body of historical writing cannot, of course, serve in any way as a substitute for the *furūsiya* literature. Yet it has the important merit of dealing with aspects which are beyond the scope of technical works. Besides, Mamluk historical literature, which is one of the richest of its kind in the whole Muslim world, dwells at great length on firearms and supplies abundant and varied data on their use.<sup>20</sup> Only a fraction of these data has so far been compiled by Orientalists,<sup>21</sup> and even that fraction was mainly utilised for preliminary purposes, such as elucidating terminology and technical terms, investigating the earliest date of the appearance of the weapon in the sources, and discussing certain historical aspects. Furthermore, most of the material so far collected by Orientalists belongs to the early period of the use of firearms, while far less attention has been paid to the later period. The hand-gun, for example, has been almost totally neglected. Certainly there has been no recent attempt at a systematic history of the weapon.

The fact that Mamluk sources furnish sufficient material for the writing of a reliable and quite detailed account of firearms in the kingdom is not, however, their only or even their chief merit. Their greatest merit, in the writer's view, is in the fact that they enable us to draw a vivid, forceful, and convincing picture of the *human* aspect of the weapon, the relationship between man and firearms, the antagonism of a military society, with its deeply rooted conventions and criteria of chivalry and honour, to the new, revolutionary weapon, an antagonism which had far-reaching effects on the fate of the Mamluk kingdom in particular and on the western parts of the Muslim world in general. A collision on such a scale between a military society and a new weapon is a unique phenomenon in Muslim history, for earlier weapons did not arouse similar aversion and consequently did not create problems of such intricacy and delicacy.

#### INTRODUCTION

In this work an attempt is made to fix the earliest reliable date of the appearance of firearms in the Mamluk kingdom, to give a general outline of its history, to establish the meaning of technical terms and—most important of all—to discuss the conflict between Mamluk military society and the new weapon.<sup>22</sup>

#### TEXT REFERENCES

<sup>1</sup> The social changes were considerable within the bounds of the military society. Outside this society they were less significant.

<sup>2</sup> The steadily increasing technical superiority in modern times of the Christian world was undoubtedly the prime factor in enabling the European Powers to establish their overseas empires. One of the main aspects of this superiority was their lead in firearms. The rest of the world could not compete with Europe in developing the new weapon. As a result the non-European countries were forced either to import from Europe obsolete firearms or to produce themselves firearms of inferior quality. Before the invention and development of firearms never such a wide gulf existed between the weapons of Europe and those of other parts of the world and never had the latter been so dependent on Europe in this field.

<sup>3</sup> The Mamluk artillery was almost exclusively siege artillery. For the great difference between the use of firearms in sieges and on the battlefield see pp. 46-47.

<sup>4</sup> Cf. Mercier, *Le feu grégeois; les feux de guerre depuis l'antiquité; la poudre à Canon*. Paul Geuthner, Paris, 1952, p. v. where he writes: *L'histoire de la poudre à canon se relevait solidaire de l'histoire du feu grégeois*. The connection between incendiary substances and gunpowder becomes even more pronounced in the Arab sources which refer to both of them by the term *naft*. (See Chapter II).

<sup>5</sup> Reinaud et Favé: *Histoire de l'Artillerie, du feu grégeois, des feux de guerre et des origines de la poudre à Canon*. J. Dumaine, Paris, 1845, I vol. et I atlas; Reinaud: "De l'art militaire chez les Arabes au moyen âge." *Journal Asiatique*, VIe série, 12, 1848, pp. 193-237; Reinaud et Favé: "Du feu grégeois, des feux de guerre et des Origines de la poudre à Canon chez les Arabes, les Persans et les Chinois," *JA*, 1849, VIe série, 14, pp. 257-327; Reinaud: "Nouvelles observations sur le feu grégeois et les origines de la poudre à Canon" *JA*, 1850, VIe série, 15, pp. 371-376.

<sup>6</sup> Raschid el-Din: *Histoire des Mongols de la Perse*, ed. Quatremère, Paris, 1836, pp. 132-137, 285-290. Quatremère: *Histoire des Sultans Mamelouks* (trad. de Maqrīzī), 1837-1845, 112, p. 148. Quatremère: "Observations sur le feu grégeois," *JA*, VIe série, 15, 1850, pp. 214-274.

<sup>7</sup> The researches of those French scholars were accompanied by a most acrimonious controversy. From the philological point of view, Quatremère's handling of the Arab source-material was far superior to that of Reinaud, and some of his corrections of corrupt texts are admirable. Moreover, he based his researches, besides *furūsīya* literature, on historical sources (both Mamluk and others). On the other hand, he lacked adequate technical knowledge and sometimes changed his mind on vital issues without backing his new standpoint with convincing evidence. The result is that it is not always easy to follow his line of argument. Reinaud, in collaboration with Favé, the famous French military expert, was technically better equipped. But apart from his less adequate mastery of Arabic, he based his research almost exclusively on the *furūsīya* literature, which even today is a dangerous pitfall.

<sup>8</sup> Amari: "Su i fuochi da guerra usati nel Mediterraneo nell' XI

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& XII secoli," *Atti della Reale Accademia dei Lincei*, Roma, 1876, pp. 3-17.

<sup>9</sup> M. J. de Goeje: "Quelques Observations sur le feu grégeois," *Estudios de Erudicion Oriental*, Saragossa, 1904, pp. 93-98.

<sup>10</sup> G. Wiet: "Notes d'Epigraphie Syro-musulmane," *Syria*, 1924-1926, pp. 62-66, Paris, Paul Geuthner.

<sup>11</sup> Marius Canard: "Les expéditions des Arabes contre Constantinople," *JA*, 1926, t. ccviii, pp. 61-121. Canard: "Textes relatifs à l'emploi du feu grégeois chez les Arabes," *Bulletin des Études Arabes*, No. 26, Jan.-Feb., 1946, pp. 3-7; cf. the bibliography on p. 7. Canard's two articles are quoted here mainly through Mercier's book, for they had not been accessible to me until very recently. In some cases I use their data in order to clarify points vital to my line of argument, though less important to Canard and Mercier whose main field of research is an earlier period. Canard's collection of data from historical sources on the employment of naphtha by the Muslims represents by far the best work to have been done in this field.

<sup>12</sup> H. Ritter: "La parure des Cavaliers und die Literatur über die ritterlichen Künste," *Der Islam*, 1929, pp. 116-154. Huuri's important study, "Zur Geschichte des mittelalterlichen Geschützwesens aus Orientalischen Quellen," in *Studia Orientalia*, Helsinki, 1941, does not deal with firearms at all, and mentions naphtha only in passing. The present writer came across I. S. Allouche's interesting note ("Un Texte relatif aux premiers Canons," *Hespéris*, 1945, pp. 81-84) only after this study had already gone to the press.

<sup>13</sup> R. Brunschvig, *La Berberie Orientale sous les Haŕšides des Origines à la fin du XVe siècle*, Adrien-Maisonneuve, Paris, 1947, vol. II, pp. 85-87.

<sup>14</sup> C. Cahen, "Un traité d'armurerie composé pour Saladin," *Bulletin d'Études Orientales*, t. xii, Beyrouth, 1947/8. See especially pp. 20-23. The text is analysed and translated into French.

<sup>15</sup> Cf. note 4, above. A detailed bibliography is to be found at the end of the book (pp. 151-158).

<sup>15a</sup> The term "*furūsiya* treatises" is employed here in the widest sense. These treatises very frequently dealt with not only exercises in horsemanship but also many other forms of military training.

<sup>16</sup> These *furūsiya* treatises had already been thoroughly studied by Renaud, Favé, and Quatremère in the works mentioned above.

<sup>17</sup> Cf. the preceding note. These two works deal mainly with the ingredients of gunpowder in the period when those ingredients had been employed as incendiary material. The information on gunpowder as an explosive substance and on firearms is very meagre.

<sup>18</sup> Cf. Mercier, *op. cit.*

<sup>19</sup> The present writer has examined the *furūsiya* manuscripts in England and France but could not find in them any important data on firearms, apart from those utilised by the French scholars already referred to. The list of the Istanbul *furūsiya* manuscripts published by Ritter would appear to show similar results. This list mentions many manuscripts written or copied during the early and late Circassian period, when firearms had already taken firm root in the kingdom. It seems, however, that there are few traces of this in the

#### TEXT REFERENCES

manuscripts, for firearms drill formed no part of Mamluk military training. Thus the *furūsiya* literature is a much more important source for the study of inflammable substances than for the study of firearms in Islam.

<sup>20</sup> This does not mean that the above data are evenly distributed or that they can always give a reliable answer to the various questions which emerge. Yet on the whole they offer a sound basis for the study of many aspects of the weapon.

<sup>21</sup> Cf. notes 5-7 and 10.

<sup>22</sup> The work is mainly based on printed Mamluk sources. Some manuscripts were also consulted.



## CHAPTER ONE

# The Early Use of Firearms in the Mamluk Kingdom

WHICH country was the first to invent gunpowder and introduce firearms is one of the most controversial issues in the history of modern times and one which still remains to be settled. Was it a Muslim country? In the present state of our knowledge this question should be answered in the negative without hesitation—a fact which makes it unnecessary at this stage to deal with the very difficult and intricate general problems relating to the introduction of firearms. It is possible to concentrate instead on trying to establish the first reliable data concerning the use of firearms in the Mamluk kingdom. We shall examine at some length the available evidence on the early use of firearms, for though any claim that the Muslim world was first in the field may be discarded for the time being, there still remains another important question: which among the Muslim countries was the first to introduce firearms?

Mamluk sources are quite a fruitful field for information about innovations, even minor ones, introduced into the military and administrative structure of the kingdom. They also make quite frequent mention of changes in the uniforms and weapons used by the armed forces, in the *furūsīya* exercises, etc. Yet these sources maintain complete silence on the subject of firearms. Just as in Europe this weapon all of a sudden appears in battle and the sources make no attempt to comment or offer any explanation. This peculiarity of the sources precludes us from following the history of the weapon in its experimental stages. However, some sidelights on this important stage emerge from the *furūsīya* literature. The reason for the silence of Mamluk and other sources is clear: in their early stages firearms were a weak weapon, being used for many years in an auxiliary rôle to the more traditional arms. Thus contemporary observers, even those with a

#### GUNPOWDER AND FIREARMS IN THE MAMLUK KINGDOM

thorough technical military knowledge, could not foresee the revolution which the new weapon would ultimately bring about in the whole art of war.<sup>1</sup>

When were firearms first mentioned as taking part in battle? Quatremère believed that this happened in 792/1390.<sup>2</sup> In point of fact the sources supply evidence of much earlier use, and though the earliest may perhaps be anachronisms, the date suggested by Quatremère may safely be pushed back by some twenty years or more.

The two earliest testimonies encountered by the present writer are dated in 743/1342 and 753/1352 respectively. In the first it is stated (by Šāliḥ Ibn Yāḥyā who died after 840/1436) that when Sultan Shihāb ad-Dīn Aḥmad was besieged by his rivals in the fortress of Kerak, the garrison of the fortress mounted on its walls five mangons (*manjanīqs*) and many cannon (*wa-madāfi' kathīra*).<sup>3</sup> In the second it is told (by Ibn Iyās who died about 1534) that the governor of Damascus fortified the town's citadel very strongly and mounted cannon on its walls (*wa-rakkaba 'alayhā al-makāhil bil-madāfi'*).<sup>4</sup>

If these testimonies are taken at their face value, it would follow that firearms came to the Mamluk kingdom less than twenty years after their introduction in Europe where the earliest authentic information on the use of the weapon is from about the year 1325.<sup>5</sup> But only further investigation will show whether these two testimonies, given by late historians, are anachronisms or not. The difficulty is that most of the detailed contemporary chronicles for the period in question have not yet been published. Published sources do not furnish any corroborating evidence. Ibn Kathīr (died 1373), who describes the siege of Kerak at great length, does not mention the *midfa'* at all though he gives us one of the most detailed accounts of the use of the *manjanīq* (both by defenders and attackers) ever presented by a Mamluk historian.<sup>6</sup> Ibn Taghrībirdī, in his chronicle for the year 753, makes no reference to artillery throughout that year.

The first indisputably authentic evidence on the use of artillery in the Mamluk kingdom appears between the sixties and the early seventies of the fourteenth century.<sup>7</sup> An eye-witness, the famous encyclopædist al-Qalqashandī, says:

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“I saw in Alexandria, during the sultanate of al-Ashraf Sha‘bān b. Ḥusayn, at the time of the governorship of the late amir Ṣalāḥ ad-Dīn b. ‘Arrām, a cannon (*midfa*) made of copper and lead and fastened by iron chains. A great ball (*bunduq*) was fired from it from the hippodrome (*maydān*). The ball fell in baḥr as-silsila outside bāb al-baḥr which is a great distance.<sup>8</sup>” Now Ibn ‘Arrām was governor of Alexandria under Sultan Sha‘bān in 767/1365<sup>9</sup> and from Shawwāl 768 to jumādā 769 (May, 1366-January, 1368).<sup>10</sup> From that date onward he was in disfavour for a long period, even to the point of being exiled, but it is not certain whether he again became governor of Alexandria.<sup>11</sup> Hence, although it is more probable that al-Qalqashandī refers to either 1365 or 1366-1368, the year of 778/1376 (Sha‘bān’s death) should be considered the latest possible date for al-Qalqashandī’s *midfa*.

While the date of the Alexandria cannon can be fixed only within somewhat wide limits, the date of the first use of artillery in Cairo can be established with great accuracy. In Rabī‘ II, 768/December, 1366, amir Yalbughā an-Nāṣirī, in the neighbourhood of Cairo citadel, fired at his opponents with *makāḥil an-naft*.<sup>12</sup> The earliest historian to furnish the above account was Ibn Khaldūn, a contemporary of the event. It is also mentioned by al-‘Aynī and al-Maqrīzī, who were alive when the above incident occurred (al-‘Aynī’s birthdate is 1360 and al-Maqrīzī’s is 1364). Ibn Taghribirdī, who generally copied carefully from the works of his predecessors, alludes to it twice: in his chronicle and in his biographical dictionary. Ibn Iyās, the historian, also alludes to it.<sup>13</sup>

It would appear that in the sixties and early seventies of the fourteenth century the use of artillery was still very limited, since almost no mention is made of it in the sources for some 15 to 20 years.<sup>14</sup> Only in the years 791-792/1389-1390, during the fierce battles fought between Barqūq, Yalbughā and Mīnṭāsh for the accession to the throne, artillery figures prominently in the sieges of the Cairo citadel and of Damascus.<sup>15</sup> After that date the employment of artillery increases steadily until it becomes one of the most common weapons of the realm.<sup>16</sup>

That the introduction and firm establishment of artillery in the Mamluk kingdom took place mainly between the sixties

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and the eighties of the fourteenth century may be inferred from the following fact: during this period we witness a groping for technical terms, a common phenomenon on the appearance of an innovation: words appear and disappear until at last the term destined to remain takes root and firmly establishes itself. In the above period one meets, in addition to the well-known terms *midfa' an-naft* and *mukḥulat an-naft* (abbreviated: *midfa'* and *mukḥula*),<sup>17</sup> other, very short-lived terms for cannon, such as *ṣawā'iq an-naft*,<sup>18</sup> *ṣawārikk an-naft*,<sup>19</sup> *ālāt an-naft*,<sup>20</sup> *hindām an-naft*.<sup>21</sup> These are without doubt words used to describe firearms, as will be shown in Chapter II, pp. 9ff.

Thus the earliest certain date of the use of firearms in the Mamluk kingdom can be fixed at the close of the sixties of the fourteenth century. This is over 40 years later than the corresponding date for Europe, but it is about sixty years earlier than the first authentic report on the use of firearms in the Ottoman Empire.<sup>22</sup> These reports on firearms in the Mamluk state are, in fact, the earliest reliable ones known to the present writer in the whole Muslim world.<sup>23</sup> This is not to say that the Mamluks were the pioneers of firearms in Islam. New material may come to light which might change the picture. This much is clear, however: even if the Mamluks could be shown to have a just claim to priority in the use of firearms, this would not alter the plain fact that they did not know how to take advantage of this priority and to transform them into weapons with a decisive rôle in battle, let alone weapons respected by their army.

#### TEXT REFERENCES

<sup>1</sup> This does not mean that the Mamluks were unable until the end of their rule (1517) to appreciate the importance of firearms. From about the middle of the fifteenth century they were able to perceive quite clearly the new weapon's revolutionary nature.

<sup>2</sup> "Observations sur le feu grégeois," *JA*, 1850, i, p. 237. Quatremère does not support this statement with any reference; the date given—1383—should have been 1390. See also Wiet: "Notes d'Épigraphie Syro-Musulmane," *op. cit.*, p. 62 and note 2. Mercier: p. 116. Dozy: "Midfa'" in *Supplément aux Dictionnaires Arabes*.

<sup>3</sup> Šāliḥ b. Yaḥyā, *Ta'rikh Bayrūt*. Beirut, 1927, p. 105, ll. 10-14.

<sup>4</sup> Ibn Iyās: *Badā'i' az-Zuhūr*, ed. Cairo, 1311-1312H, vol. i, p. 196, ll. 2-3. The exact meaning of *rakkaba al-makāḥil bil-madāfi'* is not clear.

<sup>5</sup> The cannon was most probably introduced in Europe between 1325 and 1350. For the dates of its introduction in various individual European countries, cf. C. Oman: *A History of the Art of War in the Middle Ages*, vol. ii, p. 210; pp. 212-213. H. W. L. Hime: *The Origins of Artillery*, London, 1915, pp. 120-133. *Encyclopædia Britannica*, art. "Gunpowder" and "Artillery." Hime identifies pieces of artillery (*bussen*) in Ghent as early as 1313-1314 (*ibid.*, pp. 120-122; p. 127). Regarding the date of the introduction of firearms in Europe, Sarton writes: "We are tolerably certain that firearms, that is, small cannon, were used in the second quarter of the [fourteenth] century, but we cannot completely prove it in any one of almost innumerable cases." (*Introduction to the History of Science* iii, pp. 725-736). Reinaud et Favé and Quatremère offer contradictory hypotheses on the countries of origin of gunpowder and artillery (*JA*, 1849, pp. 257-258; pp. 309-310; 313-314; 327. *JA*, 1850, p. 218, 235. Raschid el-Din: *Mongols*, p. 135. Mercier, p. 79). but they do not offer factual evidence. For the various hypotheses on the origin of gunpowder, etc., cf. Sarton: *Introduction to the History of Science* ii, pp. 1034-1040; iii, p. 1549.

<sup>6</sup> Ibn Kathīr: *al-Bidāya wan-Nihāya*, Cairo, 1351-1358H, vol. xiv, pp. 201-213; p. 209, ll. 10-14; p. 213; p. 281, ll. 14-21; p. 282, ll. 14-15; p. 305, ll. 15-17. Cf. also Ibn Ḥajar al-ʿAsqalānī: *ad-Durar al-Kāmina*, Hyderabad, 1348-1350H, vol. ii, p. 171, ll. 15-16.

<sup>7</sup> A most important passage describing a weapon called *makāḥil al-bārūd*, which either fired cannon-balls (*bunduq*) or projected flames (*nār*), is found in Ibn Faḍl Allāh al-ʿUmari's *at-Ta'rif fi al-Muṣṭalah ash-Sharif*, Cairo, 1312H, p. 208, ll. 17-22. This passage will be discussed more fully later. If it refers to firearms, then this weapon was introduced some 25 to 30 years earlier than the earliest reliable date suggested in the present study, for al-ʿUmari died in 749/1348-1349 and compiled his work in 740/1340.

<sup>8</sup> Al-Qalqashandī: *Ṣubḥ al-A'shā*, Cairo, 1913/19, vol. ii, p. 144, l. 17; p. 145, l. 2 (in another edition the page is 137). The whole passage is quoted below, on p. 21.

<sup>9</sup> A. S. Atiya: *The Crusade in the Later Middle Ages*, London, 1938, p. 351.

<sup>10</sup> Ibn Taghrībirdī: *an-Nujūm az-Zāhira*, ed. Popper, Leiden, 1909ff., vol. v, p. 207, l. 13; p. 212, ll. 5-6. Cf. also G. Wiet, *Notes d'Épigraphie Syro-Musulmane*, p. 63 and n. 2.

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<sup>11</sup> *Nujūm*(P) v, p. 212, l. 6 ; p. 220, ll. 20-21 ; p. 297, ll. 2-4. His later appointments took place after Sha'bān's death (ibid., p. 308, l. 2 ; p. 324, ll. 15-16).

<sup>12</sup> For the identity in meaning of *madāfi' an-naft* and *makāhīl an-naft* with *madāfi'* and *makāhīl*, see pp. 17ff.

<sup>13</sup> Ibn Khaldūn: *Kitāb al-'Ibar*, Cairo, 1284H, vol. v, p. 456, ll. 25-26. The word used by Ibn Khaldūn is *ṣawā'iq an-naft*: see below. As the testimonies of al-'Aynī and al-Maqrīzī concerning the employment of firearms in 1366 are still in manuscript, a translation is of interest. Al-'Aynī says: "Yalbughā fired at them with *makāhīl an-naft* while they [the Mamluks who revolted against him] shot arrows at Yalbughā and his men, and made them retreat. Yalbughā and his men shot at them with arrows and *naft*, but this shooting did not affect them at all" (*Ta'rikh al-Badr fī Awsāf Ahl al-'Asr*, B.M. MS., Add. 22,360, fol. 75a, ll. 1-4). Al-Maqrīzī, describing the situation immediately before the revolt of the Mamluks against Yalbughā, says: "The warriors on board the warships (*ash-Shawānī al-Ḥarbīya*) performed exercises with their weapons which were identical with those used in real battle. The drums had been beaten and the trumpets had been blown, and the *nufūt* had been fired (*uflitat*) (*Sulūk*, Oxford MS., Marsh 260, vol. iii, fol. 14b, l. 4). When the same historian describes the revolt itself he says: "And on Thursday Yalbughā rode with a numerous army to the Jazīra [Gezira] island [on the Nile]. The warships set out against him from the shore of the Jazīra, and when they reached the middle of the Nile the Royal Mamluks pounded (*daqqū*) Yalbughā with arrows and *naft* from the warships" (ibid., fol. 15a, l. 17). In these two quotations al-'Aynī mentions *makāhīl an-naft*, while al-Maqrīzī mentions only *naft*. For the identity of meaning between these two terms and firearms, see below, pp. 17ff. Al-Maqrīzī's testimony is of particular importance because it proves that the introduction of artillery into the Mamluk navy had been more or less simultaneous with its introduction into siege warfare on land. We learn from the same testimony that in these skirmishes of 1366 both Yalbughā and his opponents employed firearms. In al-'Aynī's quotation the ineffectiveness of firearms in their early stages is clearly demonstrated. Other references on the use of firearms by Yalbughā on this date are: Ibn Iyās: i, p. 218. *Nujūm* (P): v, p. 202, ll. 5-7. Ibn Taghribirdī: *al-Manhal aṣ-Ṣāfī*, Paris, MS. (de Slane No. 2068-2072), and Cairo MS., vol. viii, fol. 434a, ll. 7-9. The quotations from this biographical dictionary refer to the photographic reproduction of its MSS. in the library of the Hebrew University of Jerusalem. This reproduction includes the Paris MS. in its entirety as well as those portions of the Egyptian National Library which complete it. The quotations given here refer to Hebrew University Library volume numbers.

<sup>14</sup> Between the years 768 and 791 only one case of the use of artillery is known to the writer: in 784/1382 (*Ta'rikh Bayrūt*, p. 36 ; p. 181).

<sup>15</sup> See especially the chronicles of Ibn Taghribirdī, Ibn al-Furāt, and Ibn Ṣaṣrā for the years 791-792, and the references in notes 17-21 below. It would appear that the Mamluks did not lag far behind Europe in introducing the use of cannon. Sarton says: "What is certain is that cannon became relatively common in the last quarter

#### TEXT REFERENCES

of the [fourteenth] century. Their fabrication was simple, and hence they were of local manufacture and could be multiplied almost indefinitely." (*Introduction to the History of Science* iii, p. 1548.)

<sup>16</sup> Cf. references throughout this study, and especially pp. 47-52. The fact that firearms became so common a weapon in the Mamluk kingdom does not imply that they were put to the best use. In fact, as will be shown below, their employment was confined to very narrow limits.

<sup>17</sup> Cf. pp. 16ff. for the identity in the meaning of *naft*, firearms and *bārūd*.

<sup>18</sup> Ibn al-Furāt: *Tārīkh ad-Duwal wal-Mulūk*, Beirut, 1936-1942, vol. ix, p. 88, l. 17. Ibn Khaldūn: v, p. 456, ll. 25-26. Cf. Ibn Khaldūn's passage with that of *Nujūm*(P): v, p. 202, ll. 5-7.

<sup>19</sup> Ibn al-Furāt: ix, p. 83, ll. 1-2; p. 84, ll. 14-15. *Ḥawādith*, p. 228, ll. 2-3. Ibn Iyās: ii, p. 161, ll. 8-9; iii (KM), p. 108, l. 8.

<sup>20</sup> Ibn al-Furāt: ix, p. 122, l. 5. *Nujūm*(P): v, p. 465, l. 13.

<sup>21</sup> Ibn Khaldūn: iv, pp. 69-70. Quatremère: *JA*, 1850, p. 236. Dozy: *Supplement*, s.v. For the meaning of all these terms cf. p. 17.

<sup>22</sup> P. Wittek has informed the writer that the first reliable report known to him on the use of artillery by the Ottomans is from the siege of Antalia at about 1425 (see his note on pp. 141-144). According to Quatremère the Ottomans had already employed firearms in the Battle of Nicopolis, *JA*, 1850, p. 234. His source is Schildtberger's *Reise in den Orient*, p. 10 (the edition of 1813?); but the present writer has failed to discover any such testimony in this work. Ismail Hakki Uzuncarsili states that the Ottomans used artillery for the first time in the battle of Kossovo, 1389 (*Osmanli Tarihi*, vol. i, Ankara, 1947, p. 258), but he quotes no references. Cf. also Gibb and Bowen, *Islamic Society and the West*, Oxford University Press, 1950, pp. 66-67, and the references in p. 67, note 1. If the Ottomans began to use artillery only as late as 1425, it would mean that in little more than a quarter of a century they made a tremendous advance in this field because artillery played a very important part in the capture of Constantinople (1453).

<sup>23</sup> For the possible employment of artillery at an earlier date in other parts of the Muslim world cf. references in note 111, p. 41. It has yet to be proved beyond doubt that the Moors employed firearms in Andalusia, at Baza (1325), Martos (1326), and Alicante (1331) (cf. Sarton in *Introduction to the History of Science*, The Williams and Wilkins Company, Baltimore, 1947-1948, vol. iii, p. 725).



## CHAPTER TWO

### Terms Used for Firearms and Gunpowder in Contemporary Sources

THE clarification of the terms by which firearms and gunpowder were designated in contemporary Mamluk sources is of supreme importance, since the whole study of the history of firearms largely turns on this single point.

The problem may be briefly summed up as follows: from the second half of the fourteenth century there appear in the Mamluk sources, with ever-increasing frequency, weapons called *midfa' an-naft*, *mukhulat an-naft*, and often simply *midfa'* and *mukhula* without the addition of *naft*. During a short transition period we also encounter, along with the above designations, a series of other names, to each of which the word *naft* is attached.<sup>1</sup> Very frequently the word *naft* appears independently in the sources. The question, therefore, arises: is the reference here to *firearms*, as may be inferred from the names *midfa'* and *mukhula* which we know from a later period as kinds of firearms; or does it mean weapons for throwing *naphtha* ("Greek fire"<sup>2</sup> and other incendiary substances), as might be surmised in view of the word *naft* which is added to them? It is suggested that all these weapons are firearms,<sup>3</sup> the implicit conclusion being that *naft* and *bārūd*, the more modern name for gunpowder, are here synonymous.

The possibility that *naft* and *bārūd* might be identical is not a new idea.<sup>4</sup> But it has not yet been systematically investigated. For instance, the whole body of evidence which may be adduced from the development of the art of war and from the changes which took place in the use of weapons from the beginning of the Crusades onwards has been almost entirely neglected; and there are other gaps. The identity of the two terms, moreover, has been largely considered to be accidental, and it was even assumed that contemporary sources used them interchangeably through confusion. Typical is the

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point of view of Mercier when he writes: *On ne doit pas oublier que le mot naft̄ était confondu parfois avec le mot baroud par les auteurs arabes et pris dans le sens de poudre*<sup>5</sup>; and elsewhere: *Les Arabes confondent naft̄ et baroud . . . Ibn Khaldoun notamment emploie naft̄ pour baroud*.<sup>6</sup> (All the italics are mine.—D.A.)

It will be shown that since about the sixties of the fourteenth century *naft̄* is the common name for firearms or gunpowder not only in any particular Mamluk source, but in most of them, and that this meaning persisted throughout the centuries until the end of the Mamluk kingdom. An attempt will be made, moreover, to show that with an insignificant number of exceptions from the above date onwards references to *naft̄* as a weapon<sup>7</sup> are almost invariably to firearms and not to naphtha.<sup>8</sup> The word *bārūd* in the sense of gunpowder established itself gradually during the Mamluk period and became quite common towards its end, but not till the Ottoman conquest<sup>9</sup> did it succeed in displacing *naft̄*.

Since so much depends on proving the identity of *naft̄* with *bārūd* or firearms from the late fourteenth century onwards, we shall have to approach the problem from various angles and devote considerable attention both to direct and indirect evidence.<sup>10</sup>

The crux of the matter lies in the hypothesis that two completely different weapons are called by the identical term *naft̄* (mainly in different periods). One is an incendiary substance,<sup>11</sup> while the other is used for firearms. In order to prove our case it is indispensable that we should follow the history and characteristics of each of these weapons and compare them with each other. We shall, of course, limit ourselves to the Muslim world and begin with the earlier of the two weapons.

Naphtha or "Greek fire" (*naft̄* in Arabic) has throughout its history had only one function: to burn inflammable targets in the enemy's camp. The use of naphtha by the Muslims reached its peak during the period of the Crusades,<sup>12</sup> especially during its earlier part when the Muslims were usually on the defensive. When the tide began to turn definitely in their favour, they continued for a time to use naphtha on an extensive scale but mainly in defensive actions such as the siege of Damietta (1218) and the Battle of

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al-Manṣūra (1249).<sup>13</sup> The reason for this is obvious: naphtha, being first and foremost a siege weapon,<sup>14</sup> is more useful to the besieged than to the besiegers.<sup>15</sup> Its defensive character was accentuated during the Crusades as a result of the siege tactics and weapons employed by the Franks against the Muslim towns. The Crusaders approached the walls with siege machines with demoralising effect.<sup>16</sup> The most important of these siege engines included the *dabbāba* ("rat"), a structure designed to protect the troops manning the *kabsh* (ram) used to make a breach in the wall. Another was the *burj* or *burj mutaharrik* (mobile siege tower), a very tall structure, usually higher than the wall of the beleaguered city. From it soldiers were enabled to drop on to the wall and thus break into the city.<sup>17</sup>

The *burj* and the *dabbāba*, which were largely made of wood, could not perform their task at all without moving right up to the wall and being heavy and unwieldy, could be moved only very slowly. Hence they offered ideal targets to the naphtha throwers. According to the unanimous testimony of Muslim and Christian sources<sup>18</sup> naphtha proved most effective against these siege engines of the Crusaders, frequently putting them out of action. In Europe such siege engines never again played a part as important as in the days of the Crusades.<sup>19</sup> As the Muslims gradually passed to the offensive they quite logically dispensed with the use of equipment which they themselves had succeeded in destroying by the use of *naft*. The *burj* and the *dabbāba* played almost no part in the whole Muslim counter-offensive which ended in the total expulsion of the Crusaders from the Holy Land and the Syro-Palestinian littoral. The only important exception is the use of *dabbābas* by Baybars I during the siege of Cæsarea.<sup>20</sup> After that siege, however, these siege engines disappear for a long period and when they reappear, they again prove a complete failure.

Timūrlank used a "wooden fortress" (*qal'a min khashab*) in his siege of Damascus in 803/1400 which was burnt down by the defenders. He built another.<sup>21</sup> Sultan Barsbāy erected a "wooden fortress" when he laid siege to Amid in 836/1433, but it was ineffective.<sup>22</sup> Neither Qalqashandī nor al-'Umarī mentioned the *burj* or the

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*dabbāba* in their chapters on siege engines,<sup>23</sup> though they do describe a number of obsolete weapons.

Thus it may safely be inferred that the *burj* and the *dabbāba* of the Crusaders never found favour with the Muslims, largely because they themselves had been so successful in their use of naphtha to neutralise them. However, this very efficiency and thoroughness had an additional and extremely important result: it was one of the main reasons leading to the disappearance of the naphtha itself in land warfare, for in making obsolete its main objective naphtha accelerated its own extinction. One of the main features of the final Muslim offensive against the Franks, which is in striking contrast to the early period of the Crusades, is the insignificant part played by naphtha in this vital phase of the struggle. The defending Franks did not use it partly because the Muslims did not employ the *burj* and the *dabbāba*,<sup>24</sup> and partly because that weapon was not developed in Europe on a large scale, in spite of its successful employment against the Crusaders.<sup>25</sup> The attacking Muslims used it only rarely,<sup>26</sup> its value as an offensive weapon being limited. The might of the Crusaders had been based mainly on their formidable fortresses, the stony masses of which would be little affected by incendiary materials hurled at them. It should be remembered that a considerable part of these fortresses stood in isolation with only a few, if any, dwelling houses attached to them; others formed part of small towns, and only a few stood in the midst of big cities—even these being much smaller than the main Muslim cities of Egypt and the Fertile Crescent. Hence the Muslims could never achieve spectacular results<sup>27</sup> from using naphtha against the castles of the Crusaders. The insignificant part played by naphtha in the Mamluks' final offensive against the Crusaders' fortresses is underlined by the fact that even in those few cases where the Mamluks did use it,<sup>28</sup> chroniclers mention the fact only casually. In contrast to its past triumphs naphtha failed to achieve anything spectacular.<sup>29</sup>

After the expulsion of the Crusaders, naphtha sinks more and more into oblivion. Throughout the rest of the Mamluk period it receives no mention, save on a few isolated occasions. The defenders of the Damascus fortress threw naphtha on

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the Mongol soldiers of Ilkhān Ghāzān in 699/1300.<sup>30</sup> Naphtha was employed by the Mamluks during the conquest of the island of Arwād in 702/1302.<sup>31</sup> In 767/1365 the Franks, during their short occupation of Alexandria, found naphtha in its arsenals,<sup>32</sup> but Alexandria was garrisoned, especially until the sudden Frankish attack from Cyprus, by inferior troops<sup>33</sup>: hence obsolete weapons had a longer lease of life there than in the heart of the realm.<sup>34</sup> The last man to be called “ naphtha-thrower ” (*zarrāq*) in the Mamluk sources accessible to the writer was Amīr Bīlīk *az-Zarrāq*, who died in 769/1367.<sup>35</sup> Later, naphtha was used by the Mamluks in 803/1400 against Tīmūrlank who built a siege machine particularly vulnerable to attack by inflammable materials.<sup>36</sup>

If naphtha had slowly fallen into disuse in siege warfare, it did so even more in open battle, since it rarely performed outstanding feats in the open field.<sup>37</sup> The reasons are not far to seek: there were no big and fixed targets; the positions of the two warring parties were constantly shifting; soldiers from both sides became intermingled in the fighting; frequently the naphtha-throwers were forced to work against the wind; they were protected only by special clothing, without any help from stone walls or ramparts, and were thus very exposed to their own fire. Under such circumstances they rarely had a good chance of employing their weapon effectively even if they were not caught up in the *mêlée*.

Hence we cannot follow Reinaud and Quatremère<sup>38</sup> in accepting the evidence of Ḥasan ar-Rammāḥ in his famous *furūsiya* treatise to the effect that it was naphtha which decided the Battle of ‘Ayn Jālūt. Ḥasan ar-Rammāḥ says: “Hulāgū was defeated only by this art; therefore the kings should store this preparation in their magazines for the expeditions against the infidels. The kings neglected it only because they were ignorant of it” (*wa-mā kusira Hulāūn illā bi-hādhihi aṣ-ṣan’a fa-yanbaghī lil-mulūk an yaddakhirū dhālika fī khazā’inihim li-ajl al-ghazāt wa-mā ahmalūhu al-mulūk illā li-ajl qillat al-‘ilm bihi*).<sup>39</sup>

This testimony is not hard to refute. First, numerous Mamluk sources give the account of the battle,<sup>40</sup> some of them in great detail; yet none of them so much as mentions the use of naphtha. Decisive weapons are by no means over-

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looked in those sources, and where naphtha did play a leading part they neither ignored it nor minimised its importance. Why, then, the unanimous conspiracy of silence in this particular case? Second, if naphtha really proved itself so effective at 'Ayn Jālūt why was it not employed again in the next trial of strength between the Mongols and Mamluks, the Battle of Ḥimṣ, 680/1281?

In reality throughout their history the Mamluks employed naphtha on the battlefield only once, and even that single experiment ended in total failure. This was at the Battle of Wādī al-Khāzindār between Sultan an-Nāṣir Muḥammad b. Qalāūn and Ilkhān Ghāzān (699/1299). The relevant passage runs as follows:

“They placed at the head of the army 500 Mamluk naphtha-throwers (*khamṣmi'at mamlūk min az-zarrāqīn*). . . . While all this was going on, Ghāzān remained in his place and did not move. He ordered all his troops not to move until he himself would attack; only then should all of them move as one man. Then the Muslim (*i.e.* Mamluk) army started into motion and the *Zarrāqūn* kindled the naphtha (*naḥṭ*) and attacked Ghāzān; but he still did not move. They believed that the moment they moved Ghāzān, too, would move in order to meet them. Thus the horses of the Mamluks by-passed the enemy by the force of their gallop; after having covered a long distance they slowed down their pace, and the fire of the naphtha was extinguished (*khamada nār an-naḥṭ*). At that moment Ghāzān attacked with all his men as one body.”<sup>41</sup>

Al-Maqrīzī's vivid narrative speaks for itself; it needs no further comment. The Mamluks learnt their lesson, and naphtha as a weapon in the open field was abandoned for ever. Ḥasan ar-Rammāh's testimony, therefore, cannot be accepted. The only credible part of his statement is that in his own days (*i.e.*, the second half of the thirteenth century) naphtha was never in the open field.<sup>42</sup>

In the above brief examination of the history of naphtha during the twelfth, thirteenth, and fourteenth centuries, the writer may conceivably have overlooked this or that instance of its use under Mamluk rule, and he may likewise have failed to notice some of the causes hastening its decline; such

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neglect, however, cannot substantially change the conclusion that naphtha had, since the latter part of the Crusades, all but disappeared for a long time, both in siege warfare and on the battlefield.

Thus *naft* fell into oblivion and remained shrouded in obscurity for about a hundred to a hundred and fifty years. But all of a sudden it reappears as a weapon in military encounters and on occasion is used with even greater intensity than in its heyday during the Crusades. Nor is this all: from the sixties of the fourteenth century and right up to the very end of the Mamluk kingdom in 1517, it persists without a break. This strange and unexpected revival of *naft* raises two very thorny questions.

Why did *naft* reappear? The reason for the extensive use of *naft* during the early and middle crusades is very clear and can be traced without any difficulty: the Muslims employed it in order to annihilate the monstrous siege weapons of their enemies. It is, however, hard to detect any particular reason for the reappearance of *naft*. Nothing special happened; there were only the regular skirmishes between the Mamluks around the citadel of Cairo.

Did the factors causing the decline of *naft* in the thirteenth and early fourteenth centuries cease to function, or were they at any rate weakened to the extent of rendering the revival of that weapon possible in the latter part of the fourteenth century? This question may unhesitatingly be answered in the negative.

The above two considerations are sufficient in themselves to shed the gravest suspicion on any possible identification between the *naft* of the Crusades and the *naft* of the later Mamluk period. But there are also more specific arguments which prove beyond any shadow of doubt that the term refers to two totally different weapons. It should be added in parentheses that the long lull between the two appearances of *naft* enormously facilitates the task of proving that the term is used for different weapons in each case.

Whenever the use of *naft* is mentioned before or during the days of the Crusades, it is immediately clear from the context that it is directed against some inflammable object for the purpose of burning it. Words like *aḥraqa* and *iḥtaraqa*,<sup>43</sup>

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*aḍrama*,<sup>44</sup> *ash'ala*,<sup>45</sup> *awqada*,<sup>46</sup> *ṣabba*,<sup>47</sup> *nār* and *nīrān*<sup>48</sup> are of the commonest occurrence. A mere glance at Canard's short five-page article, where are collected data on the employment of naphtha by the Arabs during the early centuries of Islam, is sufficient to show how frequently these and similar words are repeated, even in the shortest passages. The position is wholly different in the later period. During the hundred and fifty years of its renewed appearance *naft* is not used as a combustible agent. No fire is ever attributed to it, despite the fact that its use in war is mentioned repeatedly.

The containers (pots, hand-grenades) of clay, etc., which were hurled at the enemy and which contained the naphtha, are usually called in Arabic *qawārīr an-naft* or *quḍūr an-naft*.<sup>49</sup> These implements are mentioned quite frequently during and before the Crusades; but in the period under consideration they are never once referred to in connection with *midfa' an-naft* and *mukḥulat an-naft*.<sup>50</sup>

The troops of the naphtha-throwing units are referred to in the sources by one of two names: *zarrāqūn*<sup>51</sup> or *naḥḥātūn*.<sup>52</sup> The first of these terms and indeed the whole root *zaraqā* does not occur at all in connection with *mukḥulat an-naft* and *midfa' an-naft*. The personnel manning these two items of equipment and those issued with the arquebus (see below) are always called *naḥḥīya*<sup>53</sup> and not *naḥḥātūn*.<sup>54</sup> Such a definite distinction between two words of the same root may indeed look too pedantic and therefore raise some doubt. Nonetheless, the sources consistently maintain this distinction, and the best proof of its existence lies in the fact that when *zarrāqūn* and *naḥḥātūn* take part in a battle, there is usually a fire or an attempt to cause fire (see references in notes 51 and 52) while there is no mention of fire in connection with the *naḥḥīya* in the sources during the late Mamluk period (see the twenty-one references in note 53, and many more references in other parts of the study). Here again the task of distinguishing between the two terms is facilitated to a great extent by the fact that *naḥḥātūn* belongs wholly to an earlier period, while *naḥḥīya* occurs almost exclusively in a much later one.<sup>55</sup>

For the purpose of protecting wooden and other inflammable targets, well-tried and time-honoured measures were taken. They were protected by hides of various animals

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(*juḷūd*, *juḷūd al-jawāmīs*),<sup>56</sup> felt covers (*lubūd*),<sup>57</sup> vinegar (*khal*),<sup>58</sup> talcum (*ṭalq*),<sup>59</sup> and a host of "drugs" (*ʿaqāqīr*, *adwiya*).<sup>60</sup> Fires were extinguished by sand (*raml*),<sup>61</sup> earth,<sup>62</sup> etc. Moreover, the naphtha-throwers themselves and their equipment—which might easily be set alight by their own fire<sup>63</sup>—required protection. Such or similar measures, however, were never taken against *mukḥulat an-naft* and *midfaʿ an-naft*, and none of the above technical terms ever appears in connection with them.<sup>64</sup> The only possible explanation for the total absence in connection with the latter of any protective measure against fire is that these weapons were never intended to cause fire.

There exists, moreover, evidence of a more positive nature to show that the weapons under consideration are in fact, not naphtha, but firearms. The *midfaʿ* and *mukḥula* mentioned so often together with *naft* from the second half of the fourteenth century onwards, are never once alluded to in connection with *naft* throughout the Crusades. Indeed, the present writer does not know of any specific case before the fourteenth century in which *midfaʿ* and *mukḥula* appear together with *naft* in Arab historical works, and especially in the chronicles (they do appear sometimes together in technical works—cf. p. 25, and note 111, p. 41).

In post-Mamluk times *midfaʿ* and *mukḥula* are well-known terms for two different types of firearms.<sup>65</sup> That *midfaʿ an-naft*<sup>66</sup> and *mukḥulat an-naft*<sup>67</sup> which appear alternately in the sources,<sup>68</sup> frequently shortened into *midfaʿ* and *mukḥula*,<sup>69</sup> or into *naft*,<sup>70</sup> are likewise firearms is easily demonstrable. Not only have they nothing in common with naphtha but they are made of copper, iron, or stone<sup>71</sup> (while naphtha was hurled from small sling-engines or *manjanīqs*,<sup>72</sup> mainly made of wood); their projectiles were stone and metal balls (*ḥajar*, *bunduq*)<sup>73</sup> or iron bolts (*siḥām*)<sup>74</sup>; during tests some of them would burst into pieces (*tafarqaʿa*)<sup>75</sup>; sometimes they would be fastened by chains<sup>76</sup> (obviously in order to absorb their recoil); firing was accompanied by a tremendous report, resembling thunder. This is already evident from some of their ephemeral names, like *ṣawāʿiq an-naft* (*ṣāʿiqā*=fire descending from heaven with a terrible thunderclap) and *ṣawāriḫ an-naft* (*ṣāriḫa* or "bellower").<sup>77</sup> The most vivid

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and colourful account of the roars and noises accompanying the action of *makāhil* and *madāfi'* is given by Ibn Ṣaṣrā in the year 792/1390. Expressions like *rawā'id*, *ṣawā'iq*, *ṣarakhāt*, *rajjāt*, *rajjat al-ard* are encountered almost in every line.<sup>78</sup>

In order to demonstrate the real character of *madāfi'* *an-naft* and *makāhil an-naft* some typical examples of their action during battle will be of great help:

“While all this was going on, firing from the Cairo Citadel with arrows and *madāfi'* *an-naft* continued without interruption until one of the stones of the *midfa'* hit the dome of al-Ḥusaynīya and pierced it. . . . The master Nāṣir ad-Dīn Muhammad b. aṭ-Ṭarābulusī who was an expert in shooting with *madāfi'* *an-naft* brought *ālāt an-naft* and put them into action until he pierced one side of Yalbughā an-Nāṣiri's tent” (*kullu dhālika war-ramyu min al-qal'a bin-nushshāb wa-madāfi' an-naft mutawaṣṣil [=mutawāṣil] ḥattā aṣāba ḥajar min hijārat al-midfa' al-qubba al-Ḥusaynīya fa-kharaqahā . . . aḥḍara al-mu'allim Nāṣir ad-Dīn Muhammad Ibn aṭ-Ṭarābulusī wa-kāna ustādhan fī ar-ramyi bi-madāfi' an-naft . . . wa-aḥḍara ālāt an-naft ḥattā akhraqa jāniban min khaymat an-Nāṣiri*).<sup>79</sup>

Ibn al-Furāt, speaking of the same event, says: “The *naftīya* fired a stone which pierced the dome of al-Ḥusaynīya (*armā an-naftīya ḥajaran kharaqā al-qubba al-Ḥusaynīya*).<sup>80</sup>

Ibn al-Furāt says elsewhere: “Nāṣir ad-Dīn b. aṭ-Ṭarābulusī fired at them with *naft*, and he destroyed with *makāhil* the battlements of Sultan Ḥasan's madrasa (*armā 'alayhim Nāṣir ad-Dīn Ibn aṭ-Ṭarābulusī bin-naft wa-akhraba bil-makāhil sharārīf madrasat as-sultān Ḥasan*).<sup>81</sup>

When Sultan an-Nāṣir Faraj besieged amir (later Sultan al-Mu'ayyad) Shaykh in the fortress of Ṣarkhad he ordered *makāhil an-naft* and *madāfi'* from the forts of aṣ-Ṣubayba, Safed and Damascus and posted them around the (Ṣarkhad) fortress. Some of these *makāhil an-naft* and *madāfi'* shot stones weighing sixty Damascene raṭls (*thumma ṭalaba as-sultān makāhil an-naft wal-madāfi' min qal'at as-Ṣubayba wa-Ṣafad wa-Dimashq wa-naṣabahā ḥawla al-qal'a wa-kāna fihā mā yarmī bi-ḥajarin zinatuhu sittūna raṭlan Dimashqīyan*).<sup>82</sup>

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Ibn Khaldūn says: "They send against them stones from the *manjanīqs* and *ṣawā'iq an-naḥṭ*" (*mursilīna 'alayhim al-ḥijāra min al-majānīq wa-ṣawā'iq an-naḥṭ*).<sup>83</sup>

From the above examples some obvious conclusions may be drawn: none of the items of this *naḥṭ* equipment causes fire; all of them, including *ṣawā'iq an-naḥṭ* and the troops manning them (*naḥṭīya*) shoot solid projectiles; the *ālāt an-naḥṭ* and *madāfi' an-naḥṭ* are synonymous; the *madāfi'* and *makāḥil* are only abbreviated forms of *madāfi' an-naḥṭ* and *makāḥil an-naḥṭ*; *makāḥil* and *naḥṭ* are mentioned alternately and therefore may be regarded as synonymous.

From this it would appear possible that even when the term *naḥṭ* appears in the sources independently (without *mukḥula* and *midfa'*),<sup>84</sup> it means "firearms"; and this possibility becomes a certainty in the light of additional source-material. The two following examples are of interest:

In one of the many skirmishes which were fought between the various Mamluk factions around the Cairo citadel it is said that the Royal Mamluks shot at their opponents with arrows and *nufūt* from the roof. After a short cease-fire, during which peace negotiations were conducted, fighting was resumed and with it the shooting of arrows and *madāfi'* from the citadel roof. (*ḥādhā was-sulṭāniya tarmī 'alayhim min a'lā al-qal'a bil-ashum wan-nufūt . . . fa-'āda ar-ramyu min a'lā al-qal'a bil-madāfi' wal-ashum*).<sup>85</sup> The identity of *nufūt* and *madāfi'* in the above quotation is beyond doubt.

In another skirmish of the same kind the defenders mounted *makāḥil an-naḥṭ* on the walls of the citadel and prepared for the fight. . . . As soon as the skirmish started, the two parties exchanged shots with arrows and *nufūt* (*wa-anṣabū makāḥil an-naḥṭ 'alā sūr al-qal'a wa-akhadhū fī uhbat al-qitāl . . . fa-waqa'a bayna aṭ-ṭā'ifatayn qitāl bin-nushshāb wan-nufūt*).<sup>86</sup> Here *makāḥil an-naḥṭ* and *nufūt* are interchangeable.

But the main and decisive proof that *naḥṭ* and firearms are synonymous is furnished by the Ottoman *corps d'élite*, the Janissaries, in the years immediately following the conquest of the Mamluk kingdom by Sultan Selim I. The Janissaries formed the core of the Ottoman army which was then one of the most modern and best equipped in the world. To equip

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the finest troops of such an army with an obsolete weapon like naphtha would have been absurd; but this is precisely what we would have to believe if, at this stage, we continue to identify *nafṭ* with naphtha: for in the parades on State occasions, so frequently mentioned by Ibn Iyās, both the Janissaries and other Ottoman units taking part are described as marching at the head of the column equipped with *nufūṭ* and firing with them. Very frequently we come across such remarks as: *wa-istamarrat al-inkishārīya yarmūna quddāmahum bin-nufūṭ wa-hum mushāt ḥattā ṭala'ū ilā al-qa'ā wa-kānū naḥwa arba'mi'at insān*<sup>87</sup>; *wa-shaqqa malik al-umarā' al-Qāhira fī mawkib ḥafl . . . wa-quddāmahu jamā'a min al-inkishārīya yarmūna bin-nufūṭ fa-kānū naḥwa mi'atay insān*,<sup>88</sup> and so on.<sup>89</sup>

As there is no reference whatever to fires being lit or anything being burnt in connection with these parades, and as the weapons of the Janissaries are well known, it is not difficult to guess what *nufūṭ* means; but the Mamluk historian saves us the trouble of guessing, for in a similar parade the Janissaries are described as marching with *makāḥil* (*fa-nazala min al-qa'ā wa-quddāmahu min al-inkishārīya naḥwa thalāth mi'at insān wa-hum mushāt wabi-aydihim al-makāḥil*).<sup>90</sup> It is thus clear that *nufūṭ* and *makāḥil* are synonymous for it is inconceivable that the Janissary would discard his personal weapon on parade and engage instead, in naphtha-throwing. That the *mukḥula* was normal issue to Janissaries stationed in Egypt may be clearly inferred from the following incident.

As a punishment for their persecution of the Sipahis Khāyrbak, the Governor of Egypt, disarmed the Janissaries, depriving them of all their *makāḥil* and cartridges (*bunduq raṣāṣ*)<sup>91</sup> and stacking these weapons in the arsenal. He then quartered the Janissaries in the barracks at the Citadel and put the city out of bounds (*wa-mīn al-ḥawādith fī dhālika al-yawm anna malik al-umarā' aḥḍara ṭā'ifat al-inkishārīya wa-rasama lahum an yaḥḍurū bi-makāḥilihim wal-bunduq ar-raṣāṣ alladhī 'indahum fa-lammā an aḥḍarūhum rasama malik al-umarā' bi-idkhāl tilka al-makāḥil wal-bunduq fī az-zard-khāna wa-rasama lil-inkishārīya bi-an yuqīmūn bi-aṭbāq al-mamālik alladhī bil-qa'ā wa-lā yanzilūn ilā al-madīna*

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*abadan fa-shaqqa dhālika 'alayhim ilā al-ghāya wa-intaşafat 'alayhim ṭā'ifat al-işbahānīya*).<sup>92</sup> Depriving the Janissaries of their *makāhil* thus turned them into a quite powerless body, against which the authorities could take disciplinary measures without fear of insubordination.<sup>93</sup>

There can therefore be no doubt that firearms are referred to in such frequent expressions as *an-nufūt 'am-māla*,<sup>94</sup> *al-qitāl bil-ashum wan-nufūt*, *ar-ramyu bil-ashum wal-madāfi' wan-nufūt*, and the like.<sup>95</sup>

Let us now turn to definitions made by contemporary historians. To the best of the writer's knowledge there are only two such definitions in Mamluk literature, both of them highly significant. One, by Ibn Khaldūn, is well known and has already been subjected to thorough analysis by Orientalists (see below). The other, by al-Qalqashandī, is much less familiar<sup>96</sup> and has not yet been utilised in this connection. In view of their importance, the full text with translation will be given below.

#### IBN KHALDUN'S DEFINITION

*Hindām an-naft al-qādhif bi-ḥiṣī al-ḥadīd yanba'ith min khizāna*<sup>97</sup> *amām an-nār al-mūqada fī al-bārūd bi-ṭarīqa gharība taruddu al-af'āla ilā qudrat bārīhā*.<sup>98</sup>

*Hindām an-naft* which throws pebbles [pellets] of iron; [these pebbles] go off from a magazine in front of a fire kindled by means of the *bārūd* in a strange way which cannot be explained save by the might of God (literally: which brings the deeds back to their creator).

#### AL-QALQASHANDI'S DEFINITION

*Alāt al-Ḥiṣār wa-hiya 'iddat Alāt wa-minhā makāhil al-bārūd wa-hiya al-madāfi' allatī yurmā 'anhā bin-naft fa-ba'duhā yurmā 'anhu bi-ashum 'izām takādu takhriqu al-ḥajara wa-ba'duhā yurmā 'anhu bi-bunduq min ḥadīd min zinat 'asharat arṭāl bil-miṣrī ilā mā yazīdu 'alā mi'at raṭl [wa-qad ra'aytu bil-Iskandarīya fī ad-dawla al-Ashrafīya Sha'bān b. Ḥusayn fī niyābat al-amīr Ṣalāḥ ad-Dīn b. 'Arrām raḥimahu Allāh bihā midfa'an qad ṣuni'a min nuḥās wa-raṣās wa-quyyida bi-atrāf al-ḥadīd*

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*rumiya 'anhu bi-bunduqa min ḥadīd 'aẓīma ʃa-waqa'at ʃi bāb as-silsila khārija bāb al-baḥr wa-hiya masāfa ba'ida].*

*wa-minhā qawārīr an-naḥḥ wa-hiya quḍūr wa-naḥwahā yu'jal ʃihā an-naḥḥ wa-yurmā bihā 'alā al-ḥuṣūn lil-iḥrāq.<sup>99</sup>*

The Instruments of Siege, of which there are various Instruments

And [one kind] of those [instruments] is *makāḥil al-bārūd* and these are *al-madāfi'* from which one shoots by means of *naḥḥ*. In part they shoot big arrows which almost pierce a stone and in part they shoot balls of iron weighing from ten to over a hundred Egyptian *ratls* [I saw in Alexandria during the sultanate of al-Ashraf Sha'bān . . . at the time of . . . Ibn 'Arrām a *midfa'* . . .].<sup>100</sup>

And [one kind] of those [instruments] is *qawārīr an-naḥḥ* and these are *quḍūr* and the like into which *naḥḥ* is put and they are thrown at fortresses for the purpose of burning.

Ibn Khaldūn's definition is indeed a hard nut to crack for the translator, but its purport is clear: it informs us that *hindām an-naḥḥ* shoots nothing but iron pebbles which are blown from its "magazine" by means of igniting *bārūd*: and *bārūd*, as is well known, means gunpowder.<sup>101</sup>

Al-Qalqashandī's definition teaches us that *madāfi'* shooting by means of *naḥḥ* are nothing but *makāḥil bārūd*, and that their projectiles are exclusively solid projectiles. The description of *midfa'* following closely after this definition leaves no shadow of doubt that the reference is to artillery. Nor is this all: immediately after *midfa'* and *mukḥula*, al-Qalqashandī defines *quḍūr* and *qawārīr an-naḥḥ* as an entirely different weapon. In other words: here it is stated in unequivocal terms that there are two wholly different kinds of *naḥḥ*: the one associated with *midfa'* and *mukḥula* which does not cause fire, the other associated with *quḍūr* and *qawārīr* which does.<sup>102</sup>

It will now be shown that *naḥḥ* is sometimes used in a narrower sense, *i.e.*, as a synonym of *bārūd*. The intimate connection has already been clearly demonstrated in each of the two passages quoted from the works of Ibn Khaldūn and al-Qalqashandī. Additional source material will establish their identity.

The black slaves who were equipped with firearms and

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the arquebus under Sultan an-Nāṣir Abū as-Sa‘ādāt Muḥammad (1495-1498) were called ‘*abīd naḥḥīya*’ by Ibn Iyās and ‘*abīd bārūdīya*’ by al-Anṣārī.<sup>103</sup>

A few days after his victory over the Mamluks at Raydānīya near Cairo Sultan Selim wrote several decrees (*marsūms*) to the Ottoman authorities in Damascus, announcing the victory and ordering them to celebrate this great event. The full text of one of these *marsūms*,<sup>104</sup> which were read in public on the 7th of Ṣafar 923/1517, is given by the historian Ibn Ṭūlūn,<sup>105</sup> a native of Damascus. At the end of his *marsūm* Sultan Selim gave the order to celebrate the good tidings by beating drums and by firing *bārūd* in the Damascus citadel (*wa-yaduqqū al-bashā’ira wa-yu’linū at-tahāniya wa-yarmū bil-bārūd fī al-qa’ā al-mansūra*)<sup>106</sup>; and this is how the sultan’s order was executed on the same day: *qur’at hādhihi al-marāsīm wa-dārat mubashshirī al-Arwām ‘alā buyūt al-akābir wal-ḥārāt biṭ-ṭubūl wan-nāyāt wa-aṭlaqū naḥḥan kathīran fī qa’at Dimashq*.<sup>107</sup>

Here it is made clear beyond any reasonable doubt that *ramā al-bārūd* and *aṭlaqa an-naḥḥ* are identical.

‘Abd ar-Raḥmān al-Jabartī, the historian of Egypt in the eighteenth and early nineteenth centuries, alternately uses *ḥarrāqat naḥḥ* and *ḥarrāqat bārūd*<sup>108</sup> for the display of fireworks. This point has already been noticed by Quatremère.<sup>109</sup>

In some dictionaries of Oriental languages we find *naḥḥ* rendered by “gunpowder.” This is so in the case of the Persian-English dictionaries of Johnson and Steingass, the Arab-English dictionary of Steingass and the Arab-German dictionary of Wahrmund.<sup>110</sup> The simple question now arises: how could this meaning infiltrate into the dictionaries when there was apparently no connection between *naḥḥ* and *bārūd*? Such a rendering can hardly be attributed to mere chance or error: it should be considered as independent additional evidence in favour of the argument.

Professor H. J. Polotsky has informed the writer that in Amharic and other modern Ethiopian languages *nāḥḥ* is a common, though possibly somewhat obsolete, word for gun. Most dictionaries give the meaning simply as the Italian *fucile* (Guidi), the French *fusil* (Baeteman), or gun (Armbruster).

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But it is worth mentioning that the Ethiopian scholar Afevork renders its meaning by the Italian word *archibugio* (arquebus) reserving *fucile* for *ṭabänja* (*Grammatica della Lingua Amarica*, Roma 1905, p. 37). The word had already been used in this sense in chronicles written in Old Ethiopic mixed with Amharic. Dillmann (*Lexicon Linguae Aethiopicæ*, Leipzig 1865, col. 713) renders *näṭṭ* by *bombarda*, *sclopetum* (i.e. modern Latin for gun), compares Arabic *naffāt*<sup>110a</sup> and quotes an example from the *Chronicum Axumiticum* which says that the Portuguese shot at [Muḥammad] Gran [the Muslim conqueror of Ethiopia in the sixteenth century] with *näṭṭ*. (Conti Rossini's edition of this text has not been available to the present writer). It seems obvious that the word *naṭṭ* in the sense of firearms came to Ethiopia from Egypt and persisted in Ethiopia for a much longer time than in its country of origin.

Prof. L. A. Mayer has called the writer's attention to a cannon cast for the Maghribi ruler 'Abdallāh al-Ghālib bil-lāh (of the Ḥasanī Sharīfs dynasty), who ruled in the years 964-982/1557-1574. This cannon was on view up to the year 1940 in the town of Larache, on the Atlantic Coast of Spanish Morocco, and is believed to be still there. It bears an inscription stating, *inter alia*, that the above-mentioned ruler "had ordered the making of this *naṭṭ*," etc. (*amara bi-'amal hādihā an-naṭṭ as-sa'id.*) The evidence that the word *naṭṭ* was used in that period for firearms could hardly be more conclusive. An illustration of the cannon and its inscription has been published in a work by Tomás García Figueras, *Santos de Larache*, 1940.

#### WHY FIREARMS WERE CALLED NAṬṬ

It is now necessary to show why the term *naṭṭ* is identical with firearms and *bārūd*.

It was a general phenomenon that names of various kinds of weapons of the period preceding the discovery of firearms were applied in due course to firearms themselves. To mention only a few cases: the *Zanbūrak*, originally a crossbow and subsequently a small gun usually carried on the back of a camel; *bunduq* (or *qaws al-bunduq*) and *zabṭāna*, originally

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instruments shooting small pellets (*bunduq*), then hand-guns (see below). The terms *qawwās* (archer) and *qawwasa* (shoot with a bow) changed their original meaning into “fusilier” (or “musketeer”) and “fire” (firearms). Even *midja'* and *mukhula* were not entirely new names, though in the pre-firearms period they were far less known than the other weapons mentioned above. In that early period they were mainly mentioned in technical and specialised literature, while in historical works, especially chronicles, there was hardly a trace of them.<sup>111</sup> Thus the very fact of calling various types of the new weapon by time-honoured names was part of a common practice and quite natural. But whereas in general it is not always easy to explain the connection between the two different weapons bearing the same name, such an explanation seems quite simple in the case of *naft*: *bārūd* emerged from *naft*, gunpowder came out of incendiary materials.

Gunpowder was very probably discovered by chance, in the course of unceasing endeavours and experiments to find more effective incendiary mixtures and compounds. It should be noted in passing that *naft* was not the name of any single material or group of materials; it was indiscriminately applied to scores of incendiary substances.

Gunpowder, as is well known, is a mixture of three component elements: charcoal, sulphur, and saltpetre (in Arabic: *faḥm*, *kibrīt*, *bārūd*). The original meaning of *bārūd* is saltpetre and *not* gunpowder. Charcoal and sulphur (*faḥm* and *kibrīt*) were two of the most common components of incendiary materials throughout the ages. Besides—and this is the crucial point—gunpowder was at first employed as an incendiary material which was hurled at targets in order to set them on fire. Only later was it discovered that its explosive and propulsive power could be used in order to hurl a projectile through a tube.

As gunpowder was first used for incendiary purposes, it was quite naturally called *naft*, like other incendiary materials.<sup>112</sup> By the time gunpowder changed its function, its designation by the name of *naft* was already so well established that there was no need to alter it along with that change. True, in the long run the name was changed from *naft* into *bārūd* because *bārūd* (saltpetre) was the most important component

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of the gunpowder mixture, both qualitatively and quantitatively, its importance growing with the advance of the manufacture of gunpowder. It was *bārūd* and *bārūd* only which caused the explosion, and its percentage in the gunpowder mixture gradually rose from a minimum of about 50 per cent to over 80 per cent.<sup>113</sup>

In Mamluk historical sources the term *bārūd* as designating the whole mixture of gunpowder is extremely rare during the major part of the Circassian period (1382-1517)<sup>114</sup>; only during the last decades of Mamluk rule do references to it become quite frequent.<sup>115</sup> The term *naft* remains, however, dominant until the very end of the Mamluk kingdom.<sup>116</sup> It would appear that the final victory of *bārūd* over *naft* took place after the Ottoman conquest.

At this juncture two points should be stressed. First, it is perfectly possible that either new data or facts which have escaped the writer's attention may affect one or more of the arguments here presented; yet the cumulative effect of the evidence presented above is such that there is little likelihood of any fundamental change in the general conclusions. Second, the somewhat lengthy argument used to elucidate the exact meaning of one single term was unavoidable, for without such elucidation we cannot even begin to deal with the subject of this work. If we can prove, as the writer thinks he has done, that in the period under review wherever *naft* is mentioned in the sources as a weapon the reference is almost invariably to firearms or gunpowder, then the material at our disposal becomes incomparably richer and more diversified. More than that, we would then face problems the very existence of which would otherwise escape our notice. To put it in another way: the identity of *naft* and firearms is the key to our conception of the history and development of the Mamluk power of arms.<sup>117</sup>

#### THE MUKHULA AND THE MIDFA'

It has already been stressed that the terms *midfa'* and *mukhula* survived out of a series of names designating cannon. The question now arises: did they signify two different types of cannon, or were they synonymous?<sup>118</sup> No definite answer

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can be given.<sup>119</sup> The only certain fact is that the sources usually mention them as two distinct weapons in phrases like the following: *wa-'amila thalāthīna midfa'an wa-'iddat makāhil wa-manjanīqayn*<sup>120</sup>; but they do not offer any definitions or any further details by means of which the nature of the difference might be established. On the other hand, the sources at times use the two terms interchangeably, as may be seen from the following example: *wa-ramā 'alā Baṭṭā wa-aṣḥābihi bin-nushshāb wa-madāfi' an-naft*, and immediately afterwards: *wa-sa'alū al-amāna li-shiddat ar-ramyi 'alayhim bi-makāhil an-naft*.<sup>121</sup>

This, of course, does not prove that the two terms were synonymous, since contemporary writers might have confused them for lack of technical knowledge.<sup>122</sup> Towards the close of Mamluk rule we come across phrases like the following: *makāhil an-nuhās wa-madāfi' aṣ-ṣawwān*,<sup>123</sup> or *makāhil an-nuhās wa-madāfi' al-ḥajar*.<sup>124</sup> This tends to create the impression that at the close of the Mamluk period *makāhil* were made of metal while *madāfi'* were made of stone. It should be noted in this connection that whenever Ibn Iyās speaks of casting cannon in Sultan al-Ghawrī's foundry, which he does quite frequently, he always refers to this cannon as *makāhil*,<sup>125</sup> never as *madāfi'*. This can only be a surmise, since no definite conclusions can be drawn from the existing data. In any case we know that during an earlier period *madāfi'* were cast of metal.<sup>126</sup>

#### THE CANNON AND THE MANJANIQ

It has already been pointed out in this study that firearms were extensively employed in the years 791-792/1389-1390 during the struggle for the throne which was fought out between Barqūq, Mintāsh, and Yalbughā, and which was intimately linked with the greatest racial transformation in the history of the Mamluk kingdom.<sup>127</sup> And indeed, perhaps the most vivid picture of artillery in action throughout Mamluk history is given by Ibn Ṣaṣrā, in his description of the battles between Yalbughā and Mintāsh which raged around the town of Damascus and its fortress. In view of the uniqueness of the picture we shall quote some passages: "Nobody could sleep

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because of the bellowing of the *madāfi'*. People never slept a wink because the *makāhil* were bellowing night and day to such an extent that the country was shaken as if by an earthquake, and people were bewildered and in [deep] thoughts" (*wa-lā aḥadan yaqdir yanām min šarakhāt al-madāfi'*<sup>128</sup> *wan-nās 'alā hādhihi al-ḥāl lā yanāmū laylan wa-lā nahār wa-lā yastalidhdhū bi-manām illā makāhil tašrakh laylan wa-nahār ḥattā tarujja al-aqtār wan-nās ḥā'irīn fī iftikār.*<sup>129</sup> Some other passages are not less impressive: *wa-šārat al-makāhil tašrakh laylan wa-nahār wal-manājiq tarmī ḥijāra kibār wa-qāla ash-shā'ir fī al-ma'nā wa-ajāda ḥaythu yaqūl: wal-ardu qad rajafat bi-šarakhāt al-makāhil ayya rajja wal-khalqu bit-takbiri qad rafa'ū lahum fī al-layli ḍajja*<sup>130</sup>; *wa-makāhil šarakhātuhā ka-rawā'id tarmī šawā'iqahā min al-aḥjāri*<sup>131</sup>; *wa-madāfi' ka-rawā'id bi-šawā'iq tanqaḍdu min suḥubīn 'alayhi ghawādin rajamūhu bil-aḥjāri.*<sup>132</sup>

Both besiegers and besieged had artillery at their disposal which they used with great intensity. It would appear that the number of guns engaged in the battle was great, since every now and then new *makāhil* and *madāfi'* were hurled into action by the opposing sides,<sup>133</sup> but not even an approximate estimate is possible.

Thus the final overthrow of the Qipchaqi Turks and the establishment in their stead of the Circassians as rulers of the Mamluk kingdom was accompanied by the thunderous roar of the new weapon. The stupefying psychological effect of such a noise would prevent the besieged from correctly assessing the real achievements of the weapon; after the noise had ceased, however, a more sober judgment could be passed: neither in this siege nor in many future ones did cannon play a decisive part. They were only an auxiliary to the veteran siege engine, the mangon (*manjanīq*), fulfilling but minor tasks; a long time was to pass before they could entirely supplant it.<sup>134</sup> A good illustration of how small was the damage caused by artillery during the early stages of its career is furnished by the insignificant effect it produced on the Madrasa of Sultan Ḥasan which faced the citadel and hence was one of the focal points round which the internal struggles of the Mamluks took place. In the year 858/1457 (*i.e.* about

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ninety years after the introduction of artillery in the Mamluk kingdom) the historian, Ibn Taghribirdī, said: “Some of the lead covering the dome of Sultan Ḥasan’s Madrasa was cracked and its crescent twisted by the many cannon shots fired at it during the wars” (*bal min kathrat ar-ramyi ‘alayhā ayyām al-ḥurūb takharrāqa ba’d raṣāṣ al-qubba wa-i’wajja hilāluhā*).<sup>135</sup> Small wonder, therefore, that the *manjanīq* had a long lease of life after the invention of artillery and that it took a very active and at times decisive part in many sieges of the later Mamluk period.<sup>136</sup> The following incident illustrates the superiority *manjanīqs* sometimes enjoyed over artillery.

In 812/1409 Sultan an-Nāṣir Faraj laid siege to the fortress of Ṣarkhad in Ḥawrān where al-Mu’ayyad Shaykh, who was then amīr, took refuge. The Sultan put into action cannon and *manjanīqs*. Among the cannon (*madāfi’*) there were some which fired projectiles weighing 60 Damascene *raṭls*. But the Sultan’s repeated attempts to storm the fortress were in vain. Then an-Nāṣir Faraj brought from Damascus the Big *Manjanīq* (*al-manjanīq al-kabīr*), the projectiles of which weighed 90 Damascene *raṭls*. Its separate parts were carried by two hundred camels. These parts were pieced together in front of the beleaguered fortress. As soon as the work was finished and the *manjanīq* was ready for action, Amir Shaykh lost heart and sued for peace, without even waiting for the first projectile to be discharged from the apparatus.<sup>137</sup> Thus the mute presence of a single giant *manjanīq* was more effective than the noisy intervention of the numerous cannon.

Artillery, however, gradually supplanted the *manjanīqs*. It would appear that this transformation took place in the first half of the fifteenth century, for in the second half of that century the mention of *manjanīqs* becomes more than rare. All the same, the *manjanīq* did not entirely disappear until the very end of Mamluk rule: as late as 920/1514 Sultan Qānṣūh al-Ghawrī reviewed *manjanīqs* and cannon on his visit to Alexandria.<sup>138</sup> In the same year *manjanīqs* were still being built in Cairo.<sup>139</sup>

What was the proportion between cannon and *manjanīqs* in sieges? Unfortunately the present writer has discovered only one single piece of evidence in the whole of Mamluk

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literature: in 807/1404, when Shaykh besieged Safed, thirty *madāfi'*, many *makāhil*, and two *manjanīqs* took part in the siege.<sup>140</sup> One cannot, of course, draw any general conclusions from this isolated instance, and hence the question must be left in abeyance, pending further evidence. This is the only instance known to the writer of a Mamluk source mentioning the number of cannon participating in battle—a remarkable contrast to the attitude of Mamluk and earlier sources towards the use of the *manjanīqs* during the late Crusaders' period, for during that period they meticulously mentioned the number of the *manjanīqs* in practically every important siege. The absence of corresponding information concerning artillery is undoubtedly one of the greatest drawbacks of Mamluk source material dealing with firearms.

#### TEXT REFERENCES

<sup>1</sup> For the names cf. page 4.

<sup>2</sup> We shall not here dwell on the various possible meanings of the term "Greek fire," since for the purposes of the present work we may rest content with the fact that it is an incendiary material, a fact which none has questioned (cf. Mercier, pp. 3-4, and elsewhere).

<sup>3</sup> From the point of view of methodology the question of the earliest reliable data on the use of firearms should have been dealt with after clarifying the terms by which this weapon was designated. The writer decided, however, to discuss that vital question first and separately, lest it be totally submerged by the close argument contained in the present section.

<sup>4</sup> See, e.g., Reinaud and Favé: *Du feu grégeois, des feux de guerre*, etc., pp. 73-77. Quatremère: *JA*, 1850, p. 236; p. 238; pp. 255-258; p. 259. Quatremère's hesitant and vacillating attitude towards the term *naft* will be discussed in greater detail below (see p. 41).

<sup>5</sup> Mercier: p. 82.

<sup>6</sup> Mercier: p. 125, and n. 1. See also p. 42 and pp. 79-81; p. 122.

<sup>7</sup> The reference is to the appearance of the word *naft*, either separately or linked to one of the various terms mentioned above.

<sup>8</sup> Some of the conspicuous exceptions are referred to on pp. 12-13.

<sup>9</sup> The word *bārūd* in its two meanings (gunpowder and saltpetre, which is one of the former's ingredients) is discussed on pp. 25-26.

<sup>10</sup> In the discussion of the present writer's view that *naft* and firearms are synonymous only selected references are cited. The rest are scattered all over the study.

<sup>11</sup> Or more precisely, a large number of incendiary mixtures and compounds. The *furūsīya* literature contains scores of recipes for the preparation of inflammable substances which are listed under the same title: *naft* or *nufūt*.

<sup>12</sup> Quatremère, writing on the use of naphtha during the centuries preceding the Crusades, says: *Il paraît que l'emploi de naphthe, comme projectile, avait presque cessé en Orient durant plusieurs siècles* (*JA*, 1850, p. 219). In the light of Canard's researches, based on a collection of very rich source-material (see Mercier, pp. 41-68, and his remark on p. 69), this statement turns out to be greatly exaggerated. Still there is no doubt that at no time in Muslim history was naphtha employed on such a very large scale and with such decisive results as during the Crusades, and especially during the earlier part.

<sup>13</sup> Quatremère: *JA*, 1850, p. 241. Oman: ii, pp. 48-49. Mercier: pp. 76-78. The canals of the Nile Delta gave the Battle of al-Manṣūra a very different character from that of ordinary battles fought in the open country. Naphtha was used at al-Manṣūra to set fire to wooden bridges erected over these canals. It was also used in fighting involving armed boats on the canals. Such targets are rare in most battlefields.

<sup>14</sup> This, of course, is only true of land warfare. At sea the rôle of naphtha was very different. Here it was used both in an offensive and defensive rôle with equal effectiveness, since the targets were more or less alike for both attackers and attacked.

<sup>15</sup> Though Canard and Mercier (pp. 78-79) are right in opposing the view that naphtha was a purely defensive weapon, yet in land warfare its use by the defenders was much more successful than

#### TEXT REFERENCES

by the attackers. This is especially true of the wars of the Crusades (see pp. 11-13, also Quatremère in *JA*, 1950, p. 258). A famous example of the use of naphtha by the besiegers is the siege of Heraclea by Hārūn ar-Rashīd in 187/806 (Aghānī xii, p. 82. Mercier [Canard], p. 43). There are, of course, other examples (cf. *JA*, 1849, p. 308. *JA*, 1850, p. 218. Mercier [Canard], pp. 41-42). For the employment of naphtha by the Mamluks in their final offensive against the Crusaders cf. p. 33, note 26 below.

<sup>16</sup> *JA*, 1849, p. 224. See also the references in note 17 below. For additional data on the use of naphtha in Muslim countries cf. B. Spuler: *Iran in früh-islamischer Zeit*, Wiesbaden, 1952, pp. 493-494.

<sup>17</sup> Muslim contemporary sources give some detailed descriptions of these two types of siege machines. The best descriptions of the *dabbāba* are from the sieges of Alexandria in 570/1174 and Acre in 586/1190 (Abū Shāma: *Kitāb ar-Rawḍatayn*, Cairo, 1287-1288, vol. i, p. 235. Al-Maqrīzī: *Kitāb as-Sulūk fī Maʿrifat ad-Duwal wal-Mulūk*, ed. Ziada, Cairo, 1934-1942, vol. i, p. 56, l. 13-p. 57, l. 1. Abū Shāma: pp. 162, 164, 166, 185. Additional data on the *dabbāba* may also be found in Abū Shāma: i, p. 180. Ibn Athīr: *al-Kāmil fī al-Taʾrīkh*, ed. Torenberg, Leiden, 1851-1876, vol. xi, p. 272; xii, p. 33. *JA*, 1849, p. 225. *Extraits des Historiens arabes des croisades*, p. 291. See also notes below). The best descriptions of the *burj* are from the sieges of Acre (August, 1189-July, 1191) and Damietta (615/1218 and 647/1249) (*Sulūk* i, p. 103, l. 12-p. 104, l. 1; p. 189, ll. 1-8; p. 207, ll. 13-16; p. 339, l. 1; p. 348 and n. 6. Abū Shāma: i, p. 98; ii, p. 153f.; p. 162. Ibn al-Athīr: xii, p. 28. Al-Maqrīzī: *al-Mawāʾiz wal-Iʿtibār fī Dhikr al-Khiṭaṭ wal-Athār*, Cairo, 1270H, vol. i, p. 215, l. 19-p. 216, l. 3). A siege machine called the *zahhāfa* appears to have been similar to the *dabbāba*. It is mentioned during Baybars' siege of Caesarea (*Sulūk* i, p. 526, l. 12-p. 527, l. 5) and on a few other occasions under Mamluk rule (*Sulūk* ii, p. 428; p. 429, l. 7. *Taʾrīkh Bayrūt*, p. 38, ll. 11-12). Cf. Dozy: Supplement, *ālat az-zahf*.

<sup>18</sup> See references in n. 17 above and the account of the destruction of the Franks' siege machines by naphtha prepared by the Damascene specialist (Ibn al-Athīr: xii, p. 29. Abū Shāma: ii, p. 153. Ibn Shaddād, *an-Nawādir as-Sulṭāniya*, p. 102). For the testimony of Christian (mainly European) contemporary sources on the destructive power of the Muslim naphtha see *JA*, 1850, p. 241. Oman: *History of the Art of War in the Middle Ages*, London, 1924, vol. ii, p. 46; pp. 48-49. Mercier: pp. 69-91. For the employment of naphtha by the Muslims cf. also Runciman: *A History of the Crusades* i, p. 285; iii, pp. 27, 28, 286, etc.

<sup>19</sup> Oman: ii, pp. 49-50.

<sup>20</sup> *Sulūk* i, p. 526, l. 12-p. 527, l. 5. In their struggle against the Crusaders in an earlier period the Muslims used these siege machines only on very rare occasions. Ṣalāḥ ad-Dīn employed a *dabbāba* during his siege of Tyre in 583/1187 (Ibn al-Athīr ix, p. 366).

<sup>21</sup> *Nujūm*(P) vi, p. 65, ll. 10-12. As-Sakhāwī: *aḍ-Ḍawʿ al-Lāmiʿ*, Cairo, 1353-1355H, vol. iii, p. 48, ll. 11-13. The employment of *zahhāfāt* is mentioned during the struggle for the throne at the close of the eighth/fourteenth century: *waʾamila nāʾib ash-Shām zahhāfāt tajrī ʾalā al-arḍ mithla al-ʾajal waʾalayhā julūd* (Ibn Ṣaṣrā: *ad-Durra al-Muḍīya*, Oxford MS., Laud, 112, fol. 82a. ll. 4-5).

#### TEXT REFERENCES

- <sup>22</sup> *Nujūm*(P) vii, p. 705, ll. 3-5.
- <sup>23</sup> *Ṣubḥ* ii, pp. 136-138. *Ta'rif*: pp. 207-209.
- <sup>24</sup> Other siege machines, such as the *manjaniqs* (mangons), offered a less convenient target to the naphtha-throwers, being placed at a considerable distance from the walls of the beleaguered city, being scattered over a wide area and, in many cases, being concealed or under cover.
- <sup>25</sup> Oman: ii, p. 46. Why the Europeans did not develop incendiary materials on a large scale is a question which the writer is not competent to deal with.
- <sup>26</sup> For instance, the siege of al-Marqab by Sultan Baybars I, cf. Mercier (Canard): pp. 78-79. See also Ibn al-Furāt: vii, p. 46, ll. 3-4; viii, p. 80, ll. 13-15. *Sulūk* i, p. 546, l. 12; p. 747, l. 6.
- <sup>27</sup> The Muslims employed naphtha rarely in their sieges of the Crusaders' castles, not only during their final offensive but also in the earlier years of the fighting. The spectacular successes which naphtha achieved as a defensive weapon against the Crusaders' siege-engines never tempted the Muslims to use it on a considerable scale in their own sieges. This would appear to prove conclusively naphtha's greater effectiveness in defence than in attack. No attempt is made here to give an exhaustive explanation for the gradual disappearance of naphtha from the time of the later Crusades onwards. Other factors besides those mentioned in this study might have escaped the present writer's attention.
- <sup>28</sup> Cf. references in n. 26.
- <sup>29</sup> While naphtha was so poorly represented during the whole Mamluk final offensive, two other weapons had the lion's share in total expulsion of the Crusaders from Muslim soil: the *manjaniqs* and the mines (*nuqūb*). The number of the *manjaniqs* used by the Muslims during the early Crusades was small: it usually ranged between 3 and 7 and rarely exceeded 10. In the second half of the thirteenth century it ranged between 20 and 30 and at times even exceeded 70 (the siege of Acre in 1292). Moreover, a new type of big *manjaniqs* (the trebuchets) throwing very heavy stones and based on the principle of a counterweight, supplanted the old type based on the principle of torsion. The digging of mines (*nuqūb*) under the Crusaders' castles was also employed by the Muslims on an unprecedented scale (the mine was filled with inflammable material which was kindled, causing the castle walls, or parts of them, to crumble). These weapons are discussed by the writer in a chapter devoted to siege machines other than artillery in his work on the Mamluk Army.
- <sup>30</sup> Ibn Hajar al-'Asqalānī: *ad-Durar al-Kāmina*. Hyderabad, 1348-1350H, vol. ii, p. 170, l. 4. *Manḥal* i, fol. 154a, l. 4.
- <sup>31</sup> *Khīṭaṭ* ii, p. 195, ll. 16-19.
- <sup>32</sup> A. S. Atiya: *The Crusade in the Later Middle Ages*, pp. 366-367.
- <sup>33</sup> Atiya: pp. 345-378. Apart from European sources Atiya uses *al-Ilmām*, the invaluable work by an-Nuwayrī, who was an eye-witness of the occupation of Alexandria by the Franks. After the Frankish attack Alexandria's garrison was somewhat reinforced (see the writer's remarks on the subject in *BSOAS*, 1953, vol. xv, p. 459).
- <sup>34</sup> Cf. Qalqashandī's interesting testimony on the survival in Alexandria of weapons which had already disappeared in other parts of Egypt (*Ṣubḥ* iv, p. 12).

TEXT REFERENCES

<sup>35</sup> *Nujūm*(P): v, p. 257, ll. 3-5.

<sup>36</sup> See above, n. 21.

<sup>37</sup> The following references for the use of naphtha in the field during the first centuries of Islam may be given here: Ibn al-Athīr: vii, p. 95. Ibn Miskawayhi: i, p. 282 (Mercier quoting Canard: pp. 51-52). Drawing the enemy on to ground previously soaked with naphtha (Ṭabarī: ii, pp. 1693-4 in Mercier quoting Canard: pp. 48-49) seems to have been a most unusual tactic. Naphtha's chances of success were improved somewhat when the enemy brought elephants into the field. These animals, bearing heavily loaded war cradles on their backs, offered a comparatively good target (Raschid ed-Dīn: *Historie des Mongols*, p. 132b. *JA*, 1850, p. 218. Pratt: *World Geography of Petroleum*, Princeton, 1950, picture facing p. 198, showing Nādir Shāh attacking the elephants of the Indian army with naphtha).

<sup>38</sup> *JA*, 1849, pp. 323-324 (cf. also p. 270, n. 1; p. 271; pp. 317-318, p. 319, n. 1; p. 321, n. 1). *JA*, 1850, p. 241; p. 274. For further data cf. C. Cahen: *Un Traité d'Armurerie*, p. 22; p. 57. Mercier: pp. 60-61.

<sup>39</sup> *JA*, 1849, pp. 323-324.

<sup>40</sup> Abū Shāma: *Dhayl ar-Rawḍatayn*, Cairo, 1287-1288H, p. 207, l. 21-p. 208, l. 10. Muḥī ad-Dīn Ibn 'Abd az-Zāhir: *Sīrat az-Zāhir Baybars*, B.M. MS., Add. 23,331, fol. 11b. l. 5-fol. 13a, l. 7. Baybars al-Manṣūrī: *Zubdat al-Fikra*, B.M. MS., Add. 23,325, fol. 38b, l. 1-fol. 39a, l. 14. Al-Kutubī: *Fawāt al-Wafayāt* i, p. 110, ll. 9-12; ii, p. 165, l. 24-p. 166, l. 1. Ibn Kathīr: xiii, p. 220, l. 8-p. 221, l. 15. Levi della Vida: "L'invasione dei Tartari in Siria nel 1260 nei ricordi di un testimone oculare," *Orientalia*, 1935, pp. 358-366 (the chronicle of Ibn al-Furāt). *Nujūm*(C), vii, p. 77, l. 9-p. 80, l. 2. *Manhal*, fol. 40b, ll. 13-23. *Sulūk* i, p. 430, l. 14-p. 431, l. 6. *Ta'rikh Bayrūt*, p. 65, ll. 9-11 Cf. also B. Spuler: *Die Mongolen in Iran*, Leipzig, 1939, p. 57.

<sup>41</sup> *Sulūk* i, p. 886, l. 17-p. 887, l. 7.

<sup>42</sup> The present writer knows of no field-battle throughout the Crusades in which naphtha was employed by the Muslims. Sweeping though such a statement might appear, there is no doubt that even during the Crusades, when the use of naphtha in siege warfare reached its peak, its effects in the open field were negligible. This can hardly be explained as pure chance. For the special circumstances of the battle of al-Manṣūra, cf. p. 31, note 13 above. Another interesting example of the uselessness of naphtha in field-battle is the following: in the battle between Yāqūt, the Caliph's governor of Shīrāz, and the Buwayhid 'Imād ad-Dawla (year 322H), Yāqūt laid a screen of infantrymen throwing naphtha in front of the main body of his army. The wind, however, suddenly blew in the opposite direction with increasing strength. As a result, the flames blew back upon the naphtha throwers, setting their clothes alight and causing confusion (Ibn al-Athīr: viii, p. 95. Ibn Miskawayhi: *Tajārib al-Umam* i, p. 282—Canard, p. 5).

<sup>43</sup> For instance, Ṭabarī: iii, p. 476; p. 1618; pp. 1693-1694; p. 2219. Tanūkhī: *Nishwār al-Muḥāḍara*. Damascus, 1930, vol. viii, p. 94; Ibn al-Athīr: vii, p. 172 (Mercier [Canard], pp. 43-47). *JA*, 1849 p. 269, n.; p. 270, n. 1; p. 278, n. 1; p. 280, notes. *Ṣubḥ* ii, p. 138, ll. 1-3. Mercier: p. 89. For references from the period of the Crusades for

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the use of *naft* against the *burj* and the *dabbāba*, see p. 32, n.17. These contain many data confirming the present argument. See also C. Cahen: *Un Traité d'Armurerie*, pp. 20-23, for *aḥraqa* and other synonyms.

<sup>44</sup> *Kitāb al-Aghānī* xvii, p. 47 (Canard: p. 3). Ṭabarī: iii, p. 696 (Canard: p. 4).

<sup>45</sup> *JA*, 1849, p. 272. Ṭabarī: iii, p. 476 (Canard: p. 3); p. 696; pp. 1693-4 (Canard: pp. 4-5).

<sup>46</sup> Mercier (Grégoire et Canard): p. 45.

<sup>47</sup> Ṭabarī: iii, p. 1218 (Mercier quoting Canard, p. 45); pp. 1693-4 (Canard: p. 5).

<sup>48</sup> Ṭabarī: iii, p. 476; p. 869; p. 1218; p. 1415; pp. 1511-1512; p. 1578; pp. 1582-1583; p. 1636; pp. 1693-1694. Ibn al-Athīr: viii, p. 95. *Kitāb al-Aghānī* xii, p. 82; xvii, p. 47. At-Tanūkhī: *Nishwār al-Muḥādāra*, p. 94; *Murūj* ii, p. 350; Ibn al-Athīr: viii, p. 95; Ibn Miskawayhi: i, p. 282 (all the above references are taken from Mercier [Canard: pp. 3-6]: pp. 45-48, 52-53). *JA*, 1849, p. 263, n. 1; p. 272; pp. 278-280, notes. The expression *an-nār wan-naft* is quite common (*Sulūk* i, p. 887, l. 7. Ṭabarī: iii, p. 869; p. 1218. *JA*, 1848, p. 196 and n. 3); Canard and Mercier are undoubtedly right in concluding that *nār* and *naft* are in many cases synonymous (Mercier: pp. 41-51, 53, 65, 85). The word *nār* as synonymous with firearms belongs to the very last years of the Mamluk kingdom and even then it is encountered almost exclusively in the work of one particular author (cf. Ibn Zunbul: *Faṭḥ Miṣr*, Cairo, 1278H [litho], p. 9, ll. 10-12; p. 71, ll. 13-21; p. 73, ll. 2-3; p. 77, ll. 19-22). Words like *shabba* and *uwār* are also mentioned only in connection with the employment of naphtha (Ibn Hānī: ed. Zāhid 'Alī, Cairo, 1352H, p. 59—Canard: p.6).

<sup>49</sup> Ibn al-Athīr: viii, p. 95 (Mercier [Canard, p. 5]: p. 51; pp. 32, 61, 86-88, 98, 120). Reinaud and Favé: *Du feu grégeois*, pp. 42-43. Raschid ed-Din: *Histoire des Mongols*, p. 133a. *JA*, 1849, p. 274. *Manhal* i, fol. 154a, ll. 5-7. *Ṣubḥ* ii, p. 145, ll. 3-5. Ibn Faḍl Allāh al-'Umarī: *at-Ta'rīf fī al-Muṣṭalah ash-Sharīf*. Cairo, 1312H, p. 208. C. Cahen: *Un Traité d'Armurerie*, p. 23. In addition to the above two common names we find *al-karrāz ash-Shāmī* and *khawābī an-naft* (Mercier: pp. 85, 94). *Zarrāqāt an-naft* and *qirābāt an-naft* (*Khīṭaṭ* i, p. 424, ll. 7-8) are encountered in the days of the Fatimids. For the former term see note 51 below; cf. also Oman: ii, pp. 45, 47, 48. Hime: pp. 140-143.

<sup>50</sup> For the projectiles shot by means of these two weapons see p. 18.

<sup>51</sup> Sibṭ b. al-Jawzī: *Mir'āt az-Zamān*, Chicago, 1907, p. 474, ll. 18-24; p. 498, ll. 19-22. Adh-Dhahabī: *Duwal al-Islām*, Hyderabad, 1337H, vol. ii, p. 117, ll. 10-11. *Sulūk* i, p. 498, ll. 2-3; p. 546, ll. 12-16; p. 621, l. 12; p. 747, l. 6; p. 752, l. 6; p. 886, l. 17; ii, p. 57, l. 17; p. 312, l. 12. *Sulūk* (Quatremère's translation) ii, pt. 2, p. 147. *Nujūm*(C) ix, p. 228, l. 14. *Nujūm*(P) v, p. 125, l. 19; p. 257, l. 3. Ibn al-Furāt: vii, p. 46, ll. 3-4; viii, p. 80, ll. 13-15. *Manhal* ii, fol. 40a, l. 3; v, fol. 50a, ll. 3-6. *Durar* i, p. 494, ll. 12-13; ii, p. 173, l. 15; iii, p. 369, ll. 14-17. *Khīṭaṭ* i, p. 202, l. 6; ii, p. 44, ll. 18-19; p. 64, ll. 8-9; p. 195, ll. 16-19. Raschid ed-Din: *Mongols*, p. 134b. *JA*, 1849, p. 200. Cf. also Mercier: pp. 85, 87. One of the meanings

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of the verb *zaraqā* is “to throw naphtha” (*JA*, 1849, pp. 278-280, notes). *Zarrāqāt* (*JA*, 1848, p. 196 and n. 3), *zarārīq* (*JA*, 1850, p. 259) and, perhaps, *mazārīq* (*JA*, 1849, p. 271. Ibn Miskawayhi: i, p. 282. Mercier [Canard: p. 5]: p. 52). The latter are devices used for throwing naphtha. Cf. Dozy: *Supplement*, under *zaraqā*.

<sup>52</sup> Ṭabarī: iii, pp. 1211, 1218, 1415, 1511-1512, 1582-1583, 1636, 1731, 1869, 2042, 2043, 2061, 2219. Ibn al-Athīr: vii, pp. 99, 172. Al-Jāhīz: *Majmūʿat Rasāʾil*, p. 70 (three times). *Nishwār al-Muhādāra* viii, p. 94 (Mercier quoting Canard: pp. 45-48, 50-53). *Sibt*, p. 445, ll. 7-9. *Nujūm*(P) v, p. 195, ll. 13-19. Raschid ed-Din: *Mongols*, p. 134a. *JA*, 1849, pp. 278-280, notes (three times). *JA*, 1850, p. 218. *Naffāta* (Raschid ed-Din: p. 134b. *JA*, 1850, pp. 218-219. Mercier: p. 43) is a naphtha-throwing device. Of the two terms *zarrāqūn* and *naffātūn*, the second is more frequent in an earlier period, but later the position is gradually reversed.

<sup>53</sup> *Nujūm*(P) v, p. 412, ll. 3-4; p. 462, l. 17; vii, p. 483, l. 5. Ibn al-Furāt: ix, p. 80, ll. 18-19; p. 82, l. 4-p. 83, l. 25; p. 84, ll. 14-15; p. 122, ll. 21-26; p. 194, ll. 18-22. Ibn Iyās: ii, p. 161; iii (KM), p. 335, ll. 18-19; p. 336, ll. 1-2; p. 376, ll. 19-23; p. 377, l. 12; iv, p. 308, ll. 9-14; v, p. 33, l. 7; p. 79, ll. 18-19; p. 101, l. 11; p. 116, l. 2; p. 131, ll. 12-23; p. 152, l. 15; p. 174, ll. 17-18. Additional references to *naffīya* will be found on p. 67. Quatremère (Raschid ed-Din: *Histoire des Mongols*, p. 134a) has collected a mass of data on *naffīya* which he wrongly identified with *naffātūn*. Dozy translates *naffī* with *celui qui prépare et qui lance le naphthe*, but his sole authority is Quatremère. All the data collected by Quatremère on the term *naffīya* confirm the correctness of translation given in the present study. In Arab and other dictionaries of Oriental languages the term *naffīya* is rendered by “naphtha-throwers,” but this only goes to show how wide the gap is sometimes between Arab lexicography and the living language of the time. Only twice in the Mamluk sources has the present writer come across *naffīya* in the sense of naphtha-throwers (*Khiṭaṭ* ii, p. 195, ll. 16-19. Raschid ed-Din: *Mongols*, p. 285a). The present writer’s reading of the word *naffīya* to mean troops equipped with firearms should not, of course, be looked upon in isolation but as one link in the chain of evidence proving that *naffī* means firearms.

<sup>54</sup> Pedro de Alcalá in his Arab dictionary (published 1505) translates *naffāt* by *artillerio*, which Dozy (s.v.) in his turn translates *Artilleur*, *Cannonier*. It would appear that in the Western parts of the Muslim world the above term acquired a meaning entirely unknown in Egypt and Syria.

<sup>55</sup> See the two exceptions mentioned in n. 53.

<sup>56</sup> Ṭabarī: iii, p. 2042 (Mercier quoting Canard: pp. 50, 56-61, 75). Abū al-Fidā’: iv, p. 25, l. 1. Raschid ed-Din: p. 134a. Ibn Ṣaṣrā’: fol. 82a, ll. 4-5. Hime: pp. 25-27. Important data from Arab sources on protective measures against naphtha may be found in the accounts given by the sources of the *burj* and the *dabbāba* (cf. above p. 32, notes 17 and 18).

<sup>57</sup> *JA*, 1849, p. 269, n. 1.

<sup>58</sup> Mercier: pp. 24, 58.

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<sup>59</sup> *JA*, 1849, p. 321, n. 1. *JA*, 1850, pp. 249-250. Jāḥiẓ: *Majmū'at Rasā'il*, p. 70. Hilāl aṣ-Ṣābī: *Tārīkh al-Wuzarā'* p. 293, l. 7-p. 294, l. 4. Yāqūt: *Irshād al-Arīb*, 2nd ed., pp. 144-145. *Lisān al-'Arab* xii, p. 101 (Mercier quoting Canard: pp. 57-59).

<sup>60</sup> Ṭabari: iii, pp. 2042-2043 (Mercier quoting Canard: pp. 56-58).

<sup>61</sup> Mercier: p. 10.

<sup>62</sup> Mercier: p. 75.

<sup>63</sup> The special dress worn by the naphtha-throwers was called *libās an-naḥfā'in* (Raschid ed-Din: p. 134a. *JA*, 1850, p. 218; cf. also *ibid.* p. 240). For the protection of the naphtha-throwing devices by means of hides of oxen and horses see Huuri: "Zur Geschichte des mittelalterlichen Geschützwesens aus Orientalischen Quellen," *Studia Orientalia*, Helsinki, 1941, p. 181.

<sup>64</sup> The sources mention the peculiar stench of naphtha (*JA*, 1849, pp. 278-280, notes; cf. also Joinville's description of the Battle of al-Manṣūra) and the importance of a favourable wind (*JA*, 1849, p. 279; cf. also Ibn al-Athīr: vii, p. 95; Canard: p. 5). Neither of these points is referred to in connection with the weapons under review.

<sup>65</sup> After the Mamluk period *midfa'* retained its original meaning of "cannon," while the *mukḥula*, which originally was also a cannon (see p. 27), later came to mean small arms (cf. al-Jabartī: ii, p. 113, ll. 15-16: *wa-bi-yadīhim makāhīl al-bunduq wal-qarābināt*. Dozy, s.v., translates this word by *fusil, mousquet*). *Mukḥula* as a term for small arms is already mentioned at the end of Mamluk rule (cf. p. 20).

<sup>66</sup> *Nujūm(P)* v, p. 500, ll. 12-16; vi, p. 112, l. 10, l. 14; p. 256, ll. 11-13; vii, p. 106, ll. 19-21. Ibn al-Furāt: ix, p. 84, ll. 14-15; p. 118, l. 8, l. 9; p. 119, l. 5, l. 21; p. 122, ll. 1-2, l. 6. *Ṣubḥ* ii, p. 137, ll. 13-15; iv, p. 84, ll. 2-4. Raschid ed-Din (ed. Quatremère): *Mongols*, p. 290a-b.

<sup>67</sup> *Nujūm(P)* v, p. 202, ll. 5-7; p. 417, ll. 1-2; p. 500, l. 22; vi, p. 207, ll. 5-6; pp. 210-211; p. 256, ll. 11-13; p. 338, l. 3; p. 705, ll. 3-5; vii, p. 96, ll. 9-10; p. 16, l. 15. *Manḥal* viii, fol. 434a. Ibn al-Furāt: ix, p. 121, l. 15, l. 23; p. 122, ll. 21-26. Ibn Iyās: iii (KM), p. 377, l. 12; iv, p. 467, l. 1; v, p. 101, l. 1. Raschid ed-Din: p. 133b. For the ephemeral terms containing the word *naḥf*, cf. above p. 4.

<sup>68</sup> For the difficulty of distinguishing between *midfa'* (*an-naḥf*) and *mukḥulat* (*an-naḥf*) in the Mamluk sources, see pp. 26-27.

<sup>69</sup> *Nujūm(P)* v, p. 407, l. 15; p. 526, l. 15; p. 791, l. 10; vi, p. 50, l. 7; p. 54, ll. 9-10; p. 65, l. 8; p. 112, l. 10, l. 14; p. 117, ll. 13-15, ll. 20-21; p. 207, ll. 5-6; pp. 210-211; p. 235, l. 8; p. 265, ll. 13-18; p. 370, l. 3; p. 646, l. 19; vii, p. 63, l. 9; p. 66, ll. 18-19; p. 134, ll. 3-4; p. 192, l. 18; p. 401, l. 15; p. 402, l. 19; p. 405, ll. 2-8. *Manḥal* viii, fol. 496b, l. 11. *Ḥawādith*, p. 171, ll. 20-21; p. 219, ll. 1-5. Ibn al-Furāt: ix, p. 122, l. 13; p. 215, l. 9. Ibn Qāḍī Shuhba: fol. 66b, l. 20. As-Sakhāwī: *at-Tibr al-Masbūk fī Dhayl as-Sulūk*. Cairo, 1896, p. 42, l. 14. Ibn Iyās: ii, p. 4, ll. 15-17; p. 72, ll. 25-27; p. 131, ll. 17-18; iii (KM), p. 63, ll. 11-15; p. 70, ll. 12-13; p. 335, ll. 18-19; p. 358, ll. 18-24; p. 372, ll. 14-18; p. 446, ll. 4-20; p. 449, ll. 19-21; iv, p. 123, ll. 8-10; p. 154, ll. 7-9; p. 191, ll. 17-21; p. 215,

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ll. 21-22 ; p. 229, ll. 16-17 ; p. 229, l. 23-p. 230, l. 1 ; p. 243, ll. 13-15 ; p. 260, l. 17-p. 261, l. 7 ; p. 261, ll. 19-21 ; p. 264, l. 2 ; p. 265, l. 18 ; p. 266, l. 22-p. 267, l. 1 ; p. 280, ll. 10-12 ; p. 285, ll. 2-5 ; p. 288, ll. 20-22 ; p. 340, ll. 1-4 ; p. 365, l. 16-p. 366, l. 2 ; p. 374, ll. 20-22 ; p. 425, ll. 7-10 ; p. 458, ll. 5-6 ; v, p. 12, ll. 20-22 ; p. 137, ll. 9-13 ; p. 138, ll. 6-10 ; p. 143, ll. 14-17 ; p. 402, ll. 5-7. Al-'Aynī: *'Iqd al-Jumān*. MS. Istanbul. Jārullāh 1591, fol. 68b, l. 13 ; fol. 716b, l. 10 ; fol. 784a, l. 12 from bottom.

<sup>70</sup> See pp. 19-21.

<sup>71</sup> *Nujūm*(P) vii, p. 66, ll. 18-19. *Ṣubḥ* ii, p. 137, ll. 13-19. Ibn Iyās: iv, p. 218, ll. 9-14 ; p. 260, l. 20 ; v, p. 12, ll. 20-22 ; p. 135, ll. 18-20 ; p. 322, ll. 19-21 ; p. 402, ll. 5-7. Cf. also Ibn Iyās: iii (KM), p. 356, n., and ll. 12-14 ; p. 358, ll. 18-21 ; iv, p. 123, ll. 8-10 ; p. 191, ll. 17-21 ; p. 260, l. 17-p. 261, l. 7 ; p. 264, l. 2-p. 265, l. 18 ; p. 285, ll. 2-5 ; p. 365, l. 16-p. 366, l. 2 ; p. 374, ll. 20-22.

<sup>72</sup> See references note 17 above, and C. Cahen: *Un Traité d'Armurerie*, p. 21. *Kitāb al-Aghānī* xii, p. 82 (Mercier quoting Canard: p. 43), *JA*, 1850, p. 219. *Ṣubḥ* ii, p. 138, ll. 1-3. Illustrations facing p. 70 in Mercier and p. 46 in vol. ii of *Oman*.

<sup>73</sup> *Ṣubḥ* ii, p. 137, ll. 13-19. *Nujūm* vi, pp. 210-211. *Ḥawādīth*, pp. 474-476. Ibn Iyās: iv, p. 280, ll. 20-22 ; p. 340, ll. 1-4. See also references in notes 79-84 below.

<sup>74</sup> *Nujūm*(P) v, p. 415, l. 2 ; vi, p. 112, l. 10, l. 14 ; p. 310, ll. 3-13 ; vii, p. 47, l. 14 ; p. 402, l. 19. *Manḥal* v, fol. 20a, ll. 4-5. *Ṣubḥ* ii, p. 137, ll. 13-19.

<sup>75</sup> See for example Ibn Iyās: iv, p. 192, ll. 10-13.

<sup>76</sup> *Ṣubḥ* ii, p. 137, ll. 15-19.

<sup>77</sup> Cf. above, p. 4. It should be noted, however, that the thunderous noise produced by these weapons cannot be regarded as a conclusive proof of their being firearms. In some cases incendiary materials produced a similar noise (cf. Ibn Hānī: p. 59—Canard: p. 6), perhaps because they contained the ingredients of gunpowder.

<sup>78</sup> Quotations from Ibn Ṣaṣrā's account are cited on pp. 26-27.

<sup>79</sup> *Nujūm*(P) v, p. 465, ll. 7-15.

<sup>80</sup> Ibn al-Furāt: ix, p. 122, ll. 21-26. Later on the same source says *aḥraqa khaymat an-Nāṣirī*, but Ibn Taghrībirdī's version of *akhraqa* is undoubtedly the correct one.

<sup>81</sup> Ibn al-Furāt: ix, p. 191, ll. 19-21.

<sup>82</sup> *Nujūm*(P): vi, p. 210, ll. 17-20.

<sup>83</sup> Ibn Khaldūn: v, p. 456, ll. 25-26.

<sup>84</sup> Cf. also *madāfi' an-naft wal-makāhil* (Raschid ed-Din: p. 290b ; a quotation from the MS. of *Sulūk*, vol. iii). It is obvious from this quotation as well as from examples given on p. 18 above that the word *naft* was omitted for reasons of style in order to avoid frequent repetitions.

<sup>85</sup> *Nujūm*(P) vi, p. 310, ll. 3-13.

<sup>86</sup> *Nujūm*(P) vii, p. 16, ll. 15-18.

<sup>87</sup> Ibn Iyās: v, p. 238, ll. 6-8.

<sup>88</sup> Ibn Iyās: v, p. 284, ll. 23-24.

<sup>89</sup> The references in this note mention other Ottoman units besides the Janissaries using *nufūt*: Ibn Iyās: v, p. 172, ll. 16-17 ; p. 202,

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ll. 12-13 ; p. 204, l. 23-p. 205, l. 1 ; p. 208, ll. 20-21 ; p. 210, ll. 22-23 ; p. 237, ll. 15-16 ; p. 268, ll. 15-16 ; p. 271, l. 14 ; p. 275, ll. 14-15 ; p. 295, ll. 7-12 ; p. 312, l. 6 ; p. 321, l. 2 ; p. 336, ll. 11-12 ; p. 347, l. 6 ; p. 379, l. 8 ; p. 388, ll. 6-7 ; p. 396, ll. 9-10 ; p. 485, l. 2. Ibn Abī as-Surūr: Oxford MS. (Pocock, 80), fol. 29b, l. 3. In some of the above references the *qawwāsa* are mentioned as parading in company with the *rumāt bin-nufūt*. This is, perhaps, because at this time the Ottomans still used archers in conjunction with arquebusiers. It should be noted, however, that the word *qawwās* itself has also the meaning of arquebusier (Dozy: *Supplement*, s.v).

<sup>90</sup> Ibn Iyās: v, p. 235, ll. 22-23. Cf. the almost identical expression used by al-Jabartī (ii, p. 113, ll. 15-16) quoted in n. 65, p. 37 above. It has already been noted that at the close of Mamluk rule *mukhūla* sometimes refers to small arms. See also the first reference in n. 92. For references to arquebusiers (*bunduqātīya*) marching at the head of a ceremonial parade held in other parts of the Ottoman Empire (e.g., Yemen), cf. Raschid ed-Din: *Mongols*, pp. 291-292.

<sup>91</sup> The word *al-bunduq ar-raṣāṣ*, used in the sense of both arquebuses and cartridges, is discussed in detail on p. 59, below.

<sup>92</sup> Ibn Iyās: v, p. 295, ll. 8-12. Quatremère was right in translating *jamā'a min al-inkishāriya al-mushāt yarmūna bin-nufūt* by *des janissaires marchaient à pied, tirant leurs fusils* (*Mongols*, p. 133b); later he retracted, however, and wrote (in the opinion of the present writer, erroneously): *Mais je crois m'être trompé, et dans mon opinion les janissaires s'amusaient, non pas à décharger leurs fusils, mais à tirer des pièces d'artifice dont le naphte fournit le principal ingrédient* (ibid., p. 293b, n. 98). Cf. also Dozy: *Supplement*, under *naft*. Apart from the above evidence, there is an additional reason for not accepting this revised opinion of Quatremère's: the verb *ramā* is not used in connection with the display of fireworks. Sometimes *la'iba bin-naft* is used. Ibn Iyās generally says *ahraqa harrāqat naft* and more rarely *ṣana'a* (see Quatremère's own examples in *JA*, 1850, pp. 256-267, and Ibn Iyās: iv, p. 46, l. 9 ; p. 72, ll. 15-16 ; p. 124, l. 12 ; p. 145, l. 19 ; p. 160, l. 22 ; and *Ṣafaḥāt lam tunshar min Badā'i' az-Zuhūr* [Ibn Iyās], ed. M. Mostafa, Cairo, 1951, p. 26, l. 7 ; p. 173, l. 18 ; p. 183, l. 4). Al-Jabartī throughout his book mainly used the stereotyped expression *'amila harrāqat naft* (see, for instance, i, p. 413, l. 29 ; ii, p. 138, l. 8 ; p. 144, ll. 27-28 ; p. 177, l. 14, l. 15 ; iii, p. 15, l. 26 ; p. 17, l. 22 ; p. 42, ll. 32-33 ; p. 51, l. 26 ; p. 70, l. 4 ; p. 77, l. 12).

<sup>93</sup> On his departure from Egypt, Sultan Selim left behind a strong unit equipped with firearms personnel: 500 arquebusiers (*rumāt bil-bunduq ar-raṣāṣ*) besides 5,000 horsemen (Ibn Iyās: v, p. 202, ll. 20-22. Ibn Abī as-Surūr: Oxford MS., Pocock 80, fol. 29b, ll. 11-12. D. Ayalon, Gotthold Weil Jubilee Volume, p. 87).

<sup>94</sup> *Nujūm*(P) v, p. 415, l. 3. Ibn Iyās: ii, p. 63, l. 23 ; iv, p. 142, l. 22.

<sup>95</sup> *Nujūm*(P) v, p. 202, ll. 5-7 ; p. 415, l. 9 ; p. 464, ll. 13-15 ; vi, p. 50, l. 7 ; p. 310, l. 3 ; vii, p. 47, l. 14 ; p. 402, l. 19. *Ḥawādith*, p. 171, ll. 20-21. *Manhal* v, fol. 20a, ll. 4-5. Ibn al-Furāt: ix, p. 122, ll. 21-26 ; p. 191, ll. 19-21 ; p. 192, l. 16. Cf. also al-'Aynī: fol. 717b, l. 14: *tarāmū bin-nushshāb wan-naft* ; and ibid., l. 16: *amūrān . . . yudabbirān amr al-madāfi' wan-naft*. Pedro Alcalá in his Arab

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dictionary (published in 1505) translates *naft*, pl. *anfāt*, as *bombarda*, a kind of cannon (Dozy: *Supplement*, s.v.).

<sup>96</sup> G. Wiet (*Notes d'Épigraphie Syro-Musulmane*, *op. cit.*, p. 63 and notes 1 and 2) gives the contents of the passage immediately following al-Qalqashandī's definition.

<sup>97</sup> The Leiden MS. of Ibn Khaldūn's work reads *khazna* (Mercier: p. 79, n. 1).

<sup>98</sup> Ibn Khaldūn: *Kitāb al-'Ibar* iv, pp. 69-70. Cf. also Reinaud and Favé: *Du feu grégeois*, etc., pp. 73-77. Dozy: *Supplement*, art. "*Hindām*." Mercier: pp. 79-80. Brunschvig: *Hafsides* ii, pp. 85-86. This piece of evidence is by far the most important advanced by any of the Orientalists mentioned on pp. x-xi in support of the identity of meaning between *naft* and firearms. It was de Slane who called Reinaud's attention to it.

<sup>99</sup> *Ṣubḥ* ii, p. 137, l. 13-p. 138, l. 2.

<sup>100</sup> For the translation of the passage dealing with the *midfa'* which al-Qalqashandī saw in Alexandria at the time of Ibn 'Arrām's governorship, see above, pp. 2-3.

<sup>101</sup> The different meanings of the term *bārūd* and its development in the Mamluk kingdom are discussed on p. 25 and p. 42, n. 113.

<sup>102</sup> We may note in passing that in the above passages both Ibn Khaldūn and al-Qalqashandī are obviously—since the projectiles are still made of iron—describing early artillery. The more artillery grew, both in numbers of guns and in their calibre, the more it became necessary to adopt projectiles made of stone "because it was found that not only the use of metal balls was considerably more costly than that of stone, but that the heavier charge of powder necessitated by metal shot exerted a destructive effect upon the feeble cannon" (Hime: p. 174, cf. pp. 155, 170-171, 178. Oman: ii, pp. 216, 225-226, and *JA*, 1850, p. 230). The definition of *hindām an-naft* is given by Ibn Khaldūn in connection with the siege of Sijilmāsa in 1274 (cf. also Brunschvig: *Hafsides* ii, pp. 85-86). While this is undoubtedly an anachronism, it does not affect the authenticity of the historian's evidence for his own times (late fourteenth century).

<sup>103</sup> These black slaves are discussed on p. 66f., below, in connection with small arms.

<sup>104</sup> The official Arab translation of the Turkish original.

<sup>105</sup> Richard Hartmann: *Das Tübinger Fragment der Chronik des Ibn Ṭūlūn*. Berlin, 1926, p. 40, l. 7-p. 38, l. 27.

<sup>106</sup> *Ibid.*, p. 38, ll. 25-26.

<sup>107</sup> *Ibid.*, p. 40, ll. 21-23.

<sup>108</sup> '*Ajā'ib al-Athār fī at-Tarājim wal-Akhhār*, vol. ii, compare p. 138, l. 8, with p. 144, ll. 27-28.

<sup>109</sup> *JA*, 1850, p. 257.

<sup>110</sup> The present writer has not been able to trace the rendering of *naft* by gunpowder in any dictionary earlier than that of Johnson (1853). It is not to be found in the dictionaries of Richardson (1777), Meninski (1680), or Golius (1653). Steingass might have been influenced by the Persian in his Arab dictionary. Whether Wahrmond borrowed his translation from a Persian dictionary is an open question. In any case, neither in any other Arab nor in any Turkish dictionary known to the writer is that rendering given.

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<sup>110a</sup> It has already been stated that *naffīya* and not *naffātūn* is the designation used for Mamluk troops equipped with firearms. In the western parts of the Muslim world, on the other hand, *naffāt* is sometimes encountered in the sense of the Italian word *artillerio* (cf. Dozy: Supplement, s.v.). In the absence of any reference it is impossible either to accept or reject Dillmann's statement.

<sup>111</sup> For the use of the term *midfa'* in a sense other than that of firearms cf. *JA*, 1849, p. 312; p. 321, n. 1; pp. 323-324. Dozy: Supplement, s.v. *Mafāih al-'Ulūm*, p. 254, ll. 2-3 (mentioned together with *naffātāt* and *zarrāqāt*). As for the *mukhula*, it is described in some *furūsiya* treatises as a device used for throwing naphtha (cf. the clear examples given by Quatremère in *JA*, 1850, pp. 248-249). But when *midfa'* and *mukhula* appear in Mamluk historical sources, they have no connection with naphtha-throwing. As during the whole of the Crusades and up to the second half of the fourteenth century these weapons are not mentioned at all in Arab historical sources, it is impossible to detect the connecting link between the *mukhula* and the *midfa'* sometimes mentioned in the *furūsiya* literature, on the one hand, and their namesakes of the later Mamluk period, on the other. The few lines which al-'Umarī dedicates to *makāhil al-bārūd* (*Tarīf*, p. 208, ll. 17-22) are not sufficient to fill the gap. This passage of al-'Umarī is extremely important, but its poetic style defies exact translation. It is clear, however, that *makāhil al-bārūd* is used both in the sense of throwing fire (*nār*) and that of shooting solid projectiles (*banādiq*). The passage runs as follows: *fī makāhil al-bārūd wa-min makāhil kam a'mā 'ayna balad kuhluhā wa-kam laqqaha badana mubaddana fahluhā wa-kam rumiya fihā nuffat nār wa-ishtamalat aḥshā'uhā minhu 'alā janīn kānat an-nār 'alayhā bihi ahwan min al-'ār lā tubālī bil-a'dā' idhā akhrajat lahum khafāyā sirrihā wa-lā takshā idhā abdat lil-qawm khabāyā sharrihā tūrid al-qilā' minhā an-nār dhāt al-waqīd wa-tarudju bi-banādiqihā ru'ūs ash-shurufāt wa-tukassir aqlā' al-'uqūd fa-kam dakhala bunduquhā al-madīna ḥajman wa-qadhafa shayṭānuhā al-murīd bi-shihāb ka-anna lahu rajman. Quatremère's changing views on the meaning of *naff* may be briefly summed up as follows: when he discussed the matter for the first time (in Raschid ed-Din's *Histoire des Mongols*, Paris, 1836, p. 132, n. 14, until p. 137), he regarded the *naff* of the early centuries of Islam as identical with the *naff* of the later Mamluk period, assuming that both of them meant naphtha. When he returned to the subject for the second time (*ibid.*, p. 290, n. 95, up to p. 292), he drew his examples, all of which refer to firearms, exclusively from the later Mamluk period. Here, whenever he encountered *midfa' an-naff* and *mukhulat an-naff*, he rendered these terms by *machines destinées à lancer le naphte*, or by other similar expressions; but whenever he came across *midfa'* and *mukhula* (without the word *naff*), he translated the first by cannon and the second by *coulevrine*. Some fifteen years later his opinions underwent a radical change and he identified the word *naff* with firearms even in cases where further proof was needed (cf. *JA*, 1850, pp. 255-259.). His discussion of the connection between *naff* and *bārūd* (pp. 217-218; p. 238) is extremely vague. In any case, he has never stated that his translation of *midfa' an-naff* and *mukhulat an-naff* in his notes to Raschid ed-Din (pp. 132-*

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137, 290-292) had been wrong. While this study was being printed an important work on firearms appeared in English. It is by W. Y. Carman: *A History of Firearms From Earliest Times to 1914*, Routledge & Kegan Paul, London, 1955. It contains a selected bibliography on pp. 198-199.

<sup>112</sup> The mixture of saltpetre, charcoal, and sulphur did not necessarily explode when it had been kindled and used as an incendiary material (Hime, pp. 28, 61-62, 69, 72, 116). Sarton (*Introduction to the History of Science*, p. 1036) doubts whether *bārūd* mentioned by Ibn al-Bayṭār (*d.* 646/1248) is saltpetre. On the other hand, he agrees (*ibid.*, pp. 29, 1037, 1040) that the *bārūd* mentioned in Ḥasan ar-Rammāḥ's military treatise undoubtedly is. From the days of Ḥasan ar-Rammāḥ (closing decades of the thirteenth century) onwards the identity of *bārūd* with saltpetre in Arab sources cannot be contested.

<sup>113</sup> For the steady rise of the percentage of saltpetre in gunpowder cf. Hime: pp. 168-169 and *Encyclopædia Britannica*, art. "Gunpowder." That saltpetre (*bārūd*) had first been used as an incendiary material is a matter on which practically all students of firearms are in agreement (for a good exposition of this view see *e.g.*, Oman: ii, pp. 205-206). We shall not here offer an opinion on such controversial questions as whether saltpetre had formed an ingredient in wet as well as dry incendiary materials, or whether it had made its first appearance sometime during the thirteenth century or earlier—for these problems, important though they are in themselves, have no bearing on the particular question under discussion. (The selected bibliographies attached to Hime's [p. 221] and Mercier's [pp. 151-158] works may serve as a guide for the study of these controversial points. Much more important are the bibliographies of Sarton: *Introduction to the History of Science* ii, p. 1038 [on saltpetre and gunpowder], iii, p. 726 [on firearms]. Berthelot's works deserve special notice; cf. also the bibliographical notes in H. Diels' *Antike Technik*, Leipzig and Berlin, 1914, pp. 96-107). *Furūsiya* treatises bring many recipes for incendiary materials containing saltpetre (*bārūd*) and sometimes also charcoal (*faḥm*) and sulphur (*kibrūt*) (cf., *e.g.*, Reinaud and Favé: *Histoire de l'Artillerie*, pp. 21, 23-32, 33, 39, n. 2; pp. 49-50, 211, 237. Reinaud and Favé: *JA*, 1849, p. 321, n. 1. Quatremère: *JA*, 1850, pp. 220, 224, 243, 250-251. Mercier: pp. 116-117, 119, 122. Cf. also the many references culled from Reinaud, Favé, and Quatremère throughout the present study). All these recipes have nothing to do with gunpowder or firearms (one of the infrequent cases where *furūsiya* literature unmistakably refers to *bārūd*, *faḥm*, and *kibrūt* employed as gunpowder is in connection with the *midfa'* described in the famous Petersburg MS., cf. *JA*, 1849, p. 310). An interesting example of naphtha clay pots (*qawārīr*) throwing saltpetre (*bārūd*) as an incendiary material is to be found in al-'Umārī's *Ta'rīf* (p. 208, ll. 20-22): *fi qawārīr an-naft: wa-qad ṣadamahum min an-naft tilka al-qawārīr . . . wa-dabbat bi-'aqārib al-bārūd al-muṣarrara aq-ḍarrā' wa-imtaddat aghṣān shajaratihā wa-qad tawaqqadat nāran taṭ'ajaj*. On the origins of *bārūd*, according to *furūsiya* treatises, cf. *Histoire de l'Artillerie*, *op. cit.*, pp. 14, 197. *JA*, 1850, p. 221. Mercier: pp. 68, 83, 113-114. On Cassiri's and Conde's handling of Arab sources in connection with firearms, cf. *Histoire de l'Artillerie*, pp. 8-14. *JA*, 1850, pp. 258-259. Hime: pp. 68-71. Mercier: pp. 81-83, 123.

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<sup>114</sup> *Tārīf*, p. 208, ll. 17-22. *Ṣubḥ* ii, p. 137, ll. 13-16. *Ḥawādith*, pp. 474-476. Ibn Ṣaṣrā: fol. 89a, ll. 9-10.

<sup>115</sup> Ibn Iyās: iii (KM), p. 366, n. 1; iv, p. 314, ll. 4-9; p. 366, ll. 6-7; p. 467, ll. 9-10; v, p. 131, ll. 12-23; p. 136, ll. 16-22; p. 143 ll. 14-17; p. 159, l. 25-p. 160, l. 1. Ibn Ṭūlūn: p. 26. Al-Anṣārī: *Ḥawādith az-Zamān*, Cambridge MS., Dd., 11, 2, fol. 19b, l. 3-fol. 20a, l. 3. Ibn Ṭūlūn: p. 124, l. 26. Van Berchem: *Corpus Inscriptionum Arabicarum, L'Egypte*, p. 490.

<sup>116</sup> Cf. references from the sources describing the last years of the Mamluk kingdom.

<sup>117</sup> It seems that in Europe it is impossible to identify with complete certainty many of the terms by which firearms had been called during the early stages of their history. (G. Sarton, *Introduction to the History of Science*, vol. iii, p. 725: "We cannot completely prove [the use of firearms in the second quarter of the fourteenth century] in anyone of almost innumerable cases"). In the Mamluk kingdom, however, the task of identifying the names of firearms during the early stages of their employment is facilitated to an immeasurable degree in comparison with Europe by the fact that the word *naḥḥ* appears as a more or less *constant* element in the various names of firearms. The task of identification is facilitated still further by two additional facts connected with the word *naḥḥ* which had already been mentioned in previous pages: (1) that *naḥḥ* does not burn neither does it cause fire; (2) it reappears suddenly after a long period of oblivion, without any explicable reason. Thus it is made possible to establish beyond doubt the firearms terminology of the Mamluk kingdom by relying solely on historical sources. Such a guiding thread does not exist in European terminology. Hence the difficulty in the case of Europe of offering proofs which cannot be contested.

<sup>118</sup> For the meaning of *mukḥūla* in post-Mamluk times see above, p. 37, n. 65. Cf. also Dozy: *Supplement*, s.v., *Fusil, Mousquet*.

<sup>119</sup> Quatremère's identification of the word *mukḥūla* with "coulevrine" (*Mongols*, pp. 290-291) is not substantiated by any evidence.

<sup>120</sup> *Nujūm*(P) vi, p. 117, ll. 13-14. Cf. also *ibid.*, v, p. 812; vi, pp. 65, 207. Ibn Iyās: v, p. 142, and many other references scattered in previous notes.

<sup>121</sup> *Nujūm* v, p. 500, ll. 16-22. Cf. also *Ṣubḥ* ii, pp. 137, ll. 13-15.

<sup>122</sup> For a parallel phenomenon in Europe, cf. Oman: ii, p. 140.

<sup>123</sup> Ibn Iyās: v, p. 12, ll. 20-22.

<sup>124</sup> Ibn Iyās: v, p. 402, ll. 5-7.

<sup>125</sup> Ibn Iyās: iv, p. 123, ll. 8-10; p. 191, ll. 17-21; p. 229, ll. 16-17; p. 229, l. 23-p. 230, l. 1; p. 243, ll. 13-15; p. 260, l. 7-p. 261, l. 17; p. 261, ll. 19-21; p. 264, l. 2-p. 265, l. 18; p. 266, l. 22-p. 267, l. 1; p. 285, ll. 5-12; p. 288, ll. 10-12, ll. 20-22; p. 340, ll. 1-4; p. 365, l. 16-p. 366, l. 2; p. 370, ll. 20-22.

<sup>126</sup> Cf. *Ḥawādith*, pp. 474-476. *Ṣubḥ* ii, 137, ll. 13-19.

<sup>127</sup> Cf. the present writer's "The Circassians in the Mamluk Kingdom," *JAOS*, 1949, pp. 135ff.

<sup>128</sup> Ibn Ṣaṣrā: *Ad-Durra al-Muḍīya*, Oxford MS., Laud 112, fol. 85b, ll. 1-2.

<sup>129</sup> *Ibid.*, fol. 89a, ll. 11-13.

<sup>130</sup> *Ibid.*, fol. 80b, ll. 2-10.

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<sup>131</sup> See note 128, fol. 54b, l. 4.

<sup>132</sup> Ibid., fol. 86a, ll. 5-7.

<sup>133</sup> Cf. *ibid.*, fol. 40b, ll. 1-2; fol. 41b, ll. 1-3; fol. 79b, ll. 3-5; fol. 79b, l. 5-fol. 80b, l. 1; fol. 82a, ll. 1-2, ll. 10-12; fol. 82a, l. 13-fol. 82b, l. 6; fol. 83b, ll. 8-12; fol. 84b, l. 5-fol. 85a, l. 8; fol. 86b, ll. 7-10; fol. 89a, ll. 9-10, ll. 11-13.

<sup>134</sup> Oman: ii, pp. 225-226. Sarton: *Introduction to the History of Science* ii, p. 29; pp. 266-7.

<sup>135</sup> *Ḥawādith*, p. 219, ll. 1-5. For the small size of some of these pieces of artillery, cf. Ibn al-Furāt: ix, p. 122, ll. 1-2.

<sup>136</sup> There are some instances of the participation of *manjanīqs* in sieges during a period when the use of artillery was already widespread (in most of these instances the *manjanīq* is mentioned together with the *midfa'* and *mukhūla*): in 791/1389, *manjanīqs* and *makāhil* were transferred to the Cairo Citadel (*Nujūm*[P] v, p. 407, l. 15); in 803/1400, during Timurlane's siege of Damascus (*Nujūm*[P] vi, p. 54, ll. 9-10); in 807/1404 (*Nujūm*[P] vi, p. 117, ll. 13-15); in 812/1409, when Sultan Faraj besieged Amir Shaykh in Ṣarkhad (*Nujūm*[P] vi, pp. 210-211); in 814/1411, when Sultan Faraj set out against his rival amirs (*Nujūm*[P] vi, p. 256, ll. 11-13); in 815/1412 Sultan Faraj fortified the Damascus citadel, *inter alia*, with *manjanīqs* (*Nujūm*[P] vi, p. 265, ll. 13-16. Ibn Iyās: ii, p. 4, ll. 15-17); in 818/1415, during Qānībāy's siege of the Damascus citadel (*Nujūm*[P] vi, p. 349, ll. 17-20); in 836/1433, during Sultan Barsbāy's siege of Amid (*Nujūm*[P] vi, p. 705, ll. 3-5); in 838/1434, when the Mamluks attacked the island of Rhodes (*Nujūm*[P] vii, p. 134, ll. 3-4); in 846/1442, against the town of Cæsarea (*Tibr*, p. 42, l. 13. *Ḥawādith*, p. 6). Cf. also Ibn Khaldūn: v, p. 491, l. 8. Ibn al-Furāt: ix, p. 73, ll. 12-13. *Tibr*: p. 88, l. 16. Ibn Iyās: ii, p. 20, ll. 11-12; iii (KM), p. 449, l. 17. *Nujūm*(P) vii, p. 67, l. 3.

<sup>137</sup> *Nujūm*(P) vi, pp. 210-211.

<sup>138</sup> Ibn Iyās: iv, p. 425, ll. 7-10.

<sup>139</sup> Ibn Iyās: iv, p. 347, ll. 16-17. The reappearance of *manjanīqs* under al-Ghawrī may be explained, perhaps, by that Sultan's tendency in the face of the impending danger to employ all kinds of weapons, modern or obsolete. If this is the correct explanation, then it will considerably strengthen our suggestion that it was round the middle of the fifteenth century that the *manjanīqs* were almost entirely ousted by firearms.

<sup>140</sup> *Nujūm*(P) vi, p. 117, ll. 13-15.



## CHAPTER THREE

# The Attitude of Mamluk Military Society Towards the Use of Firearms

### CANNON IN SIEGE WARFARE AND ON THE FIELD OF BATTLE

ONE of the main features of the history of firearms in the Mamluk kingdom was the employment of artillery in siege warfare only (both as a defensive and offensive weapon), and until the very end of Mamluk rule the consistent refusal to use it on the battlefield. This is in striking contrast to the history of cannon in Europe. True, until the end of the fifteenth century the achievements of artillery on the battlefield in Europe were far inferior to its feats in siege warfare ; yet the fact remains that since Crécy (1346)<sup>1</sup> it was used in battle over and over again ; nor is there any doubt that the trials and errors involved in this participation greatly assisted artillery in ultimately becoming the decisive weapon which completely transformed the art of war of the Middle Ages.

The ever-increasing participation of artillery in sieges in the Mamluk kingdom<sup>2</sup> on the one hand, and its total absence on the battlefield on the other,<sup>3</sup> cannot be ascribed to accident alone. The reason for its smooth adoption in siege warfare is, in the writer's opinion, to be found in the fact that it did not, especially during its early history, bring about any sweeping changes in the traditional methods of siege. Cannon was preceded by a siege engine (*manjanīq*) which performed precisely the same function, and which for a long period was superior to firearms. In the open, however, conditions were entirely different. Here artillery constituted a complete innovation, no similar weapon having preceded it ; here it was bound to effect changes in tactics and methods of warfare, thus

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causing the Mamluk military hierarchy to adopt a course in sharp contrast to its very spirit.

#### FIREARMS IN THE LAST DECADES OF MAMLUK RULE

The Mamluks' aversion from the employment of the new weapon on the field of battle gives us only a faint glimpse of the unbridgeable gulf which existed between the Mamluk way of life and the use of firearms. In order to appreciate fully the extent of that gulf it is necessary to examine the history of the Mamluk kingdom during its last decades, for as long as no imminent danger threatened that kingdom, the antagonism, though visible, was half dormant. Besides, it could always be argued, with considerable justification, that the Mamluks did not adopt firearms on a large scale because they could carry on quite comfortably without them. But when the kingdom had to prepare for a life-and-death struggle against the Ottomans in the North and North-West, and against the Portuguese in the South-East, there was no time for procrastination. The Mamluks had their backs to the wall and had to make a decision. Under such conditions all the half-dormant factors of antagonism came to the fore, and for the first time their full extent became manifest.

The course adopted by Sultan al-Ghawri (906/1500-922/1516), on whose shoulders the momentous decision fell, constituted, on the whole, a great triumph for the old and "respectable" system over the new. True, Sultan al-Ghawri did make some concessions to the use of firearms which though on the face of it considerable, were in reality not very significant. For in all these concessions one condition was implied: the existing structure of Mamluk military society should not be subjected to any important change. Such an attitude amounted, in fact, to a death sentence on the scheme of reorganising the Mamluk army and on preparing it for the final test; for without transforming Mamluk society along with all the conceptions it stood for there was no hope of making effective use of firearms. Nor was this all: al-Ghawri made up his mind, side by side with his decision to extend the employment of firearms, to revive traditional methods of warfare.

His plan had three main points: first, to increase

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considerably the number of cannon cast; second, to renew *furūsīya* exercises and the traditional art of war; and third, to raise a unit of arquebusiers.

#### THE CASTING OF CANNON UNDER AL-GHAWRI

Al-Ghawri's great project of cannon production is thrown into relief by the fact that during the period immediately preceding his reign there was a certain lull in the employment of artillery. In the last decades of the ninth/fifteenth century the amount of information on the use of cannon to be gleaned from the sources is, despite Ibn Iyās's detailed description of Qāytbāy's reign (873/1468-901/1495), scanty. This cannot be ascribed solely to Ibn Iyās's quite limited interest in military affairs (limited especially in comparison with his predecessor Ibn Taghrībirdī), for during al-Ghawri's time the same historian is so lavish with his information about artillery and other firearms that he is hardly surpassed by any other Mamluk historian. We cannot go far wrong in assuming, therefore, that Qāytbāy did not pay particular attention to the strengthening of his artillery.<sup>4</sup> His indifference is of special interest in the light of the costly and protracted battles which Qāytbāy waged against the Ottomans and their satellite Shāh Siwār. In the case of none of these battles is there any mention of the Mamluk army using artillery, whereas we may deduce from a casual remark that the Ottomans and Shāh Siwār did.<sup>5</sup>

The veil is suddenly lifted a few years after Qānṣūh al-Ghawri's accession to the throne.<sup>6</sup> He started casting cannon at a rate and on a scale never known before in the history of the Mamluk kingdom. Near his newly-built hippodrome (*maydān*)<sup>7</sup> he established a foundry for cannon (*masbak*)<sup>8</sup> which turned out great quantities of artillery in a short time. Whenever a new quota of cannon had been poured forth from the foundry, it would at once be dispatched to Turbat al-'Adil (or Qubbat al-Hawā') in Raydāniya for testing range and solidity.<sup>9</sup> Sultan al-Ghawri was present at all these tests.<sup>10</sup> Unfortunately our source (Ibn Iyās) does not as a rule indicate the number of guns involved on each occasion; in four cases, however, he does.

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In one there were fifteen guns<sup>11</sup> ; in another seventy<sup>12</sup> ; in a third seventy-four<sup>13</sup> ; in a fourth seventy-five.<sup>14</sup>

In the face of so great an output of ordnance the question of what happened to all these guns invites investigation. Why did not one of them reach Marj Dābiq, where they were so badly needed ? The answer is that they were not intended to reach that battlefield ; for it would clearly have been absurd to produce large numbers of field-guns and then not to use them in the battle which decided the fate of the kingdom. The argument that the Mamluks could not get these guns in time to the remote plain of Dābiq cannot be sustained for two reasons : first, the advance of the Mamluk expeditionary force which left Egypt to fight Selim I was safe and orderly, no danger whatsoever threatening its lines of communication ; second, the danger of an Ottoman attack in grand style hovered over the Mamluk kingdom for a long period, and al-Ghawrī started casting his cannon many years before the Battle of Marj Dābiq. He had ample time, therefore, to concentrate any available artillery at Damascus, Aleppo, and other Syrian fortresses without being forced to transport it from Egypt at the last moment. Hence the total, or almost total, absence of Mamluk artillery at Marj Dābiq suggests that the Mamluk sultan built his guns for entirely different purposes.

But the question still remains : what task *did* al-Ghawrī assign to his great mass of new artillery ? An important key to this problem is to be found in the following : in Muḥarram 922/February 1516 al-Ghawrī dispatched to Alexandria about two hundred guns to defend the Egyptian coast from a threatened Ottoman attack (*wa-fīhi arsala as-sultān makāhil ḥadīd wa-madāfi' ṣawwān ilā thaghr al-Iskandariya wa-tamḍī fī marākib ilā hunāka fa-kānū naḥwa mi'atayn mukḥula wa-qad balaghahu bi-anna Ibn 'Uthmān jahhaza 'iddat marākib tajī 'alā as-sawāhil lid-Diyār al-Miṣriya*).<sup>15</sup>

Thus it is in the direction of the coast and the sea that we have to turn our eyes in order to find out where a considerable part of al-Ghawrī's cannon went : nor is it the Mediterranean coast alone<sup>16</sup> which we have to scrutinise. Far more important at the time were the Red Sea and the Indian Ocean. The struggle against the Portuguese was fought at sea in

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men-of-war heavily equipped with cannon, and likewise the Mamluk fleet absorbed nearly all the kingdom's arquebusiers. In the battles against the Portuguese the drain on artillery was so great that the entire production of the Mamluk kingdom was not sufficient to meet the need: the Mamluks had to get reinforcements from the Ottomans.<sup>17</sup>

Naval battles were not the Mamluks' only means of defence against Portuguese threats. They also built a series of fortifications on the shores of the Red Sea and in its immediate vicinity, on a scale never known before in that region<sup>18</sup> (not even during the time of the Crusades<sup>19</sup>). In all probability al-Ghawrī was bound to do what Qāyṭbāy had done a few decades earlier when he erected the tower of Alexandria against the Franks<sup>20</sup>: equip his Red Sea fortifications with artillery, since otherwise they would be of little use against a heavily gunned enemy. Besides, it should be remembered that during the last decades of Mamluk rule the *manjaniq* had already become an entirely obsolete weapon. Hence, if we assume that the coastal fortresses of the kingdom were not equipped with artillery, it would mean that they were left without any defence whatsoever.

The dispatch of so much artillery to the coast and to naval units by no means excludes the possibility that considerable quantities of these guns were concentrated at strategic centres inland; but there is no proof to back up any such assumption. The main obstacle to any well considered opinion is our scanty knowledge of the fortunes of artillery in Syria throughout the period of Mamluk rule, both on the coast and in the interior. From Ibn Ṭūlūn we learn that there were great quantities of firearms in Damascus.<sup>21</sup> This leads us to suppose that more detailed histories of Syria might reveal a substantially different picture from the one available.

As to the interior of Egypt, there is little doubt that both in al-Ghawrī's time and in the preceding generations a very great portion of the total output of cannon was allotted to the capital, including the citadel. This is first of all borne out by the fact that most of our information about the weapon comes from Cairo; it is further confirmed by the concentration

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of Mamluk artillery in the Battle of ar-Raydāniya (January, 1517).

Sultan Ṭūmānbāy was not slow in learning the lesson of Marj Dābiq and he promptly started feverish preparations in order to beat the Ottomans at their own game, copying their weapons and tactics. He paid special attention to the production of arquebuses and field-guns.<sup>22</sup> There is little doubt that after Dābiq the Mamluks would have lost the battle of Egypt even under the most favourable conditions, but the Ottomans saw to it that such conditions would never arise. They left the Mamluks no time for even a partial recovery from the blow: the breathing-space between Dābiq and Raydāniya was barely five months long. In these circumstances Ṭūmānbāy had no choice but to base the defence of Cairo mainly on the artillery left by his predecessors (which was unsuited for field battles); and indeed the guns he concentrated at Raydāniya were taken from Cairo and from other parts of Egypt.

Ibn Zunbul says that Ṭūmānbāy brought to Raydāniya the big guns which were deposited on the mountain (*akhrāja al-madāfi' al-kibār allatī awda'ūhā 'alā al-jabal*).<sup>23</sup> This may refer either to the citadel (*qal'at al-jabal*) or to Jabal Muqattam. Sultan Selim, announcing his victory over the Mamluks, stated in a special decree that the latter had collected all the cannon from the Cairo citadel, the houses of the amirs, the port of Alexandria, and other towns and fortresses (*wa-jama'ū mā fī al-qal'a al-miṣriya wa-buyūt al-umarā' wa-thaḡhr Iskandariya wa-sā'ir al-bilād wal-qilā min al-makāhil*).<sup>24</sup>

As for the battle of Raydāniya itself, though it was fought in the open, the part assigned to cannon by the Mamluks was not, strictly speaking, that of field artillery. Ṭūmānbāy dug a long and deep trench (*khandaq*) and had other earthworks thrown up behind which he placed his guns.<sup>25</sup> His real intention was to use the guns to support these fortifications and not in a mobile rôle. This intention is manifest in the remark made by Ibn Iyās where he speaks of the completion of the trench, mentioning the large quantities of food and fodder stored in its immediate neighbourhood: "And he [*i.e.* Ṭūmānbāy] thought that there would be a protracted

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fight between him and the Ottoman sultan and that the *siege* would continue for a long time, but events took a different course" (*wa-ẓanna anna al-qitāla yaʿūlu baynahu wa-bayna Ibn 'Uthmān wa-anna al-ḥiṣāra yuqīm mudda ʿawila fa-jā'a al-amru bi-khilāfi dhālika*).<sup>26</sup> When the Ottomans attacked, Ṭūmānbāy's guns proved of little use, being outflanked and captured from the rear, most of them without firing a shot.<sup>27</sup> Thus, although Ṭūmānbāy tried hard to introduce a new approach to firearms,<sup>28</sup> circumstances were against him; he had to use his artillery in a way not fundamentally different from that of his predecessors.

#### THE RENEWAL OF TRADITIONAL MILITARY TRAINING AND OF FURUSIYA EXERCISES

The traditional military training of the Mamluk army and the *furūsiya* exercises, which were based on sword, lance and bow, and which centred on horsemanship and all the conceptions emanating from it, were among the mainstays of Mamluk military society on the one hand and among the main obstacles to the introduction of firearms on the other. A bird's-eye view of this aspect of Mamluk military society is therefore essential in itself, quite apart from Qānṣūh al-Ghawrī's attempt to revive the traditional art of war side by side with his new emphasis on firearms.

During the Circassian period (1382-1517) the level of this kind of training was steadily declining, and this decline was not, to any important degree, attributable to the introduction of firearms even though the latter was, roughly speaking, contemporaneous with it. The new weapon was hardly ever adopted by the pure Mamluk regiments, being issued only to some of the non-Mamluk units.<sup>29</sup> The decline was due to internal factors which brought about a general deterioration of Mamluk military society, of the army, and indeed of the whole kingdom.<sup>30</sup>

In any outline<sup>31</sup> of the progressive decay of traditional methods of training, special attention must be paid to the state of the hippodromes (*mayādīn*, sing. *maydān*). No intensive cavalry training is possible for any length of time in dilapidated hippodromes. Their number and state of repair are,

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therefore, a useful pointer to the level of training reached. During the Bahrī period (1250-1382) there were many important hippodromes in Cairo and its immediate vicinity.<sup>32</sup> There was the hippodrome of aṣ-Ṣāliḥ Najm ad-Dīn Ayyūb, built in 643/1245 on the banks of the Nile on the grounds of al-Lūq, which served the Mamluks during the early years of their rule. This hippodrome had to be abandoned under Baybars I, owing to a change of course taking place in the flow of the Nile.<sup>33</sup> Baybars had to build in its stead a new hippodrome on the edge of al-Lūq, called al-Maydān az-Zāhirī. In 666/1267 he built another between the citadel and al-Jabal al-Aḥmar which was called Maydān al-Qabaq. Both these hippodromes were used by the Mamluk army at the height of its glory and were only abandoned under Sultan an-Nāṣir Muḥammad b. Qalāūn. The first was destroyed in 714/1314 because the Nile changed its course again.<sup>34</sup> The second had a precarious existence until nearly the end of the reign of Sultan an-Nāṣir Muḥammad b. Qalāūn (741/1340).<sup>35</sup> In 695/1295 Sultan al-ʿAdil Kitbughā built a hippodrome called Maydān Birkat al-Fīl which was likewise destroyed by an-Nāṣir.<sup>36</sup>

The last great hippodrome builder before the days of Qānṣūh al-Ghawrī was an-Nāṣir Muḥammad b. Qalāūn during his third reign (709/1309-741/1340). In 712-713/1312-1313 he built between Cairo and Fustāṭ the famous hippodrome called after him al-Maydān an-Nāṣirī or al-Maydān al-Kabīr an-Nāṣirī.<sup>37</sup> It served the Mamluks until the days of Sultan Barqūq (784/1382-801/1398). After the latter ceased visiting it, it gradually fell into disuse and became a camping ground for Maghribi *Ḥajj* pilgrims. Sultan al-Muʿayyad Shaykh (815/1412-824/1421) repaired it and reintroduced polo (*laʿb al-kura*).<sup>38</sup> In 725/1325 an-Nāṣir Muḥammad completed the construction of another hippodrome in Siryāqus—the Maydān Siryāqus. This hippodrome served the Mamluks without interruption until the year 799/1396 when Barqūq had to stop his visits because of tense relations which developed from that date to his death between him and his Mamluks. Under his son, Faraj, the Mamluk kingdom suffered many disturbances and great unrest; hence the Maydān Siryāqus was neglected and fell into ruin.<sup>39</sup> In 822/1419

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Sultan al-Mu'ayyad Shaykh made an unsuccessful attempt to revive at Kawm ar-Rīsh the parades and festivities which had earlier taken place at Siryāqus.<sup>40</sup>

Thus, all the early Mamluk hippodromes fell into disuse not later than the time of an-Nāṣir Muḥammad b. Qalāūn while the hippodromes built by the latter were already being neglected under Barqūq, the first of the Circassian Sultans ; al-Mu'ayyad's half-measures for their revival bore no fruit. The hippodromes surviving from the Bahri period had by the beginning of the Circassian period been already allowed to fall into disrepair.

During the greater part of their rule the Circassians made no attempt to build new hippodromes. Neither al-Qalqashandī nor al-Maqrīzī (who devotes a whole chapter to the Mamluk hippodromes) make any mention of a hippodrome being built by a Circassian sultan.<sup>41</sup> Moreover, we have the instructive evidence of the later Khalīl b. Shāhīn az-Zāhīrī who speaks of the ruin of the hippodromes in his time (see below).

This inevitably undermined the very foundation of military training and consequently sapped the Mamluk army's strength. The Mamluk sources do indeed supply abundant evidence of the decline of that training, a decline which appears all the more striking when contrasted with the vigorous energy and virility which characterised the *furūsiya* exercises during the earlier Bahri period and particularly during the reign of Baybars al-Bunduqdārī.

After building Maydān al-Qabaq, Baybars visited it daily at noon, remaining until the evening prayer (*al-'ashā' al-ākhirā*). He inspired his troops with great enthusiasm for the *furūsiya* exercises, so much so that there was hardly an amir or a Mamluk who did not devote himself wholeheartedly to improving his proficiency with lance and bow, till eventually there was insufficient room at the hippodrome to accommodate men undergoing training.<sup>42</sup> These exercises were accompanied by magnificent festivities. In order to prevent the hippodrome from being overcrowded the sultan had to select two out of every ten amirs or Mamluks to take part in the exercises.<sup>43</sup> Such fervour and enthusiasm were, indeed, peculiar to Baybars' reign and were not present under his successors, even

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though Sultan Qalāūn and his sons Khalil and Muḥammad sought to uphold Baybars' tradition.<sup>44</sup> After an-Nāṣir Muḥammad's death the disintegration of the Qalāūn dynasty set in; and it seems that the disturbances accompanying it also had an adverse effect on Mamluk training. The first signs of decline became evident at the close of the Baḥrī period. Sultan al-Ashraf Sha'bān (764/1363-778/1381) showed particular favour to the *furūsīya* experts and sought in every way to encourage them. When asked to explain his attitude, he answered: "I do this lest the arts (or 'branches') of the *furūsīya* (*al-funūn*)<sup>45</sup> die during my reign and in my days." Ibn Taghrībirdī's comment on this is as follows: "By my life! He feared the death of the arts" (*af'alu hādhā li-allā tamūt al-funūn fī dawlatī wa-ayyāmī; qultu: la'amrī innahu kāna yakhshā mawt al-funūn*).<sup>46</sup>

However, Sha'bān's attempt at arresting the process of deterioration was fruitless. Barqūq, the founder of the Circassian line (1382-1517), who was accused of doing away with many of the good usages (*maḥāsīn*) of the Baḥrī period, was also blamed for being the first to abolish the practice of riding to the hippodromes (*rukūb al-mayādīn*). This appears to have happened a long time after his accession to the throne (*wa-awwalu man akhadha fī ibtāl al-maḥāsīn az-Zāhir Barqūq abtala rukūb al-mayādīn ba'da salṭanatīhi bi-mudda ṭawīla*).<sup>47</sup> Khalil b. Shāhīn az-Zāhirī, who died in 873/1468, writes: "As for riding to the hippodromes, this is a grand thing. Now it has been abolished because of the terrible ruin of the hippodromes" (*wa-ammā rukūb al-mayādīn fa-huwa 'aẓīm wa-qad baṭala al-āna li-kharāb al-mayādīn al-mu'azzam*).<sup>48</sup>

The exercises on a limited scale which did take place in the late Mamluk period were apparently performed in the Royal courtyard (*al-Ḥawsh as-Sulṭānī*) of the citadel<sup>49</sup> or near Birkat al-Ḥabash<sup>50</sup>; but this was of little avail. Until al-Ghawrī's time the Mamluks were not even able to present regularly the lance-plays annually performed by forty lancers (*rammāḥa*) during the Maḥmil processions.<sup>51</sup> When Sultan Jaqmaq renewed these games in 857/1453, none of the Amirs of a Thousand would accept the appointment of Leader of the Games (*mu'allim ar-rammāḥa*) because of their ignorance

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of this art (*wa-qad i'tarafū bil-'ajz li-'adam ma'rifat hādihā al-fann*). When at long last an amir was appointed, it was not because of his fitness for this duty but because he was the only one to have volunteered.<sup>52</sup> When al-Ghawrī's Mamluks performed lance exercises at the beginning of his reign, veteran Mamluks (*qarānīs*) passed ribald comments at their clumsiness and, in comparison with the preceding generation, their low standard of training.<sup>53</sup>

It is thus not surprising that Ibn Taghrībirdī, who was a great expert in this field,<sup>54</sup> made the following two remarks. First he tells us that he invented certain new methods in lance exercises which he kept secret, however, because of the deterioration of this and other arts in his time, and because these arts became a prey to ignorant people who, with no justification, made a pretence of knowing them with great emphasis and fanaticism.

*Wa-qad šannaftu anā thamāniyat mayādīn kullū wāhid yukhālif al-ākharā fī naw'ihī lam usbaq ilā mithlihā qadīman wa-lā ḥadīthan lākinnanī lam uzhirhā li-kasād hādihā al-fann wa-ghayrihī fī zamāninā hādihā wa-li-'adam al-inšāf fihī wa-kathrat ḥussādihī mimman yadda'ī fihī al-ma'rifā wa-huwa ajnabī 'anhā lā ya'rifu isma naw'in min andābihī 'alā jalīyatihī bal yadda'ihī jahlan wa-yuqawwī 'alā da'wāhu bish-shawka wal-'aṣabīya.<sup>55</sup>*

In his second remark the same author states that after Sultan Sha'bān the *furūsīya* was deliberately done away with before its natural demise was due. It was buried and all trace of it effaced (*wa-la-qad jā'a min ba'dihī man qatalahā ṣabran qabla awānī mawtihā wa-dafanahā fī al-qubūr wa-'afā atharahā*).<sup>56</sup>

The great decline of *furūsīya* training which took place under the Circassians is thus clear. True, it is difficult to determine whether the ruin of the hippodromes caused the deterioration of the *furūsīya* exercises or *vice versa*; but one thing is certain: without good hippodromes those *furūsīya* branches which were devoted to the preparation of the Mamluk soldier for battle were bound to suffer severely,<sup>57</sup> since this kind of training was intended for the mass of the Mamluk army and not for the chosen few who might with difficulty perhaps be able to train, in a comparatively small

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space. Moreover, we have seen that even those exercises which, like the lance games in the Maḥmil procession, were performed by a few men solely on parade and for show—were in a state of total decay. Without a high general standard of training even parade exercises of that kind could not be expected to flourish for any length of time.

Such was the state of affairs when Sultan Qānṣūh al-Ghawrī came to the rescue, and, within the framework of his great scheme for strengthening the military power of the kingdom, sought to revive *furūsiya* training. It is worthy of note that he gave to this part of his scheme precedence over others such as cannon and arquebus training, perhaps because of his tendency to follow the line of least resistance.

In Ṣafar, 909/July, 1503 al-Ghawrī began the construction on a grand *maydān*,<sup>58</sup> and from that date onwards the hippodrome became once more one of the main centres of Mamluk life.<sup>59</sup> A period of intensive *furūsiya* exercises was initiated, marked by great enthusiasm, which only just fell short of the glorious days of the early Baḥrī sultans. By means of the *furūsiya* exercises al-Ghawrī made every effort to demonstrate to the world the military might of the Mamluk kingdom; he had a good opportunity for doing so, for during his reign an unusually large number of diplomatic envoys from most Middle Eastern and some European countries visited the Mamluk capital. These envoys were almost invariably invited to attend the exercises at the hippodrome<sup>60</sup> “in order that he might show them the *furūsiya* of the Egyptian army” (*ḥattā yuriyahum furūsiyat ‘askar Miṣr*).<sup>61</sup> According to a contemporary historian, the exercises made a great impression (*ḥattā ta’ajjabū al-quṣṣād min dhālika*)<sup>62</sup>; one of the envoys being that of the newly founded Ṣafawid dynasty<sup>63</sup> who was particularly impressed (*ḥattā adhashahu mimmā ra’ā fī dhālika al-yawm min ḥusn an-niẓām wa-tazāyud al-‘azama*).<sup>64</sup> But of much greater significance was the fact that the envoy of the Ottoman sultan (Ibn ‘Uthmān) also attended.<sup>65</sup> He was regularly present, and according to Ibn Iyās he was filled not only with admiration, but was also embarrassed and perplexed (*ḥattā taḥayyara al-qāṣid min dhālika wa-ta’ajjaba ghāyat al-‘ajab*).<sup>66</sup>

In this manner al-Ghawrī tried to inspire awe and respect

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in the hearts of his neighbours and, above all, in the heart of the Ottoman ruler. The extraordinary character of these measures is thrown into bold relief by al-Ghawrī's total failure to show the envoys anything of his efforts in the field of firearms. While *furūsīya* exercises during state ceremonies (*mawākib*) were most frequent, never once did he have performed any exercises with firearms.<sup>67</sup> On one occasion only did the envoys catch a glimpse of Mamluk firearms: on certain official occasions the Mamluks used to decorate the gate of the Royal Arsenal (*Zardkhāna*) with flags and arms, and from time to time cannon were included in the display.<sup>68</sup> That, however, was all. It stands to reason, therefore, that the Ottoman envoy, who saw with his own eyes how much money and energy were expended by the Mamluks on obsolete weapons, could furnish his master with an accurate account of the military unpreparedness of the Mamluk kingdom. Such first-hand information could not well be ignored by the Ottoman ruler, then in process of weighing the pros and cons of an attack on a kingdom whose army had been considered almost invincible for many generations. In a sense, therefore, the only result of the great publicity al-Ghawrī gave to his revival of the *furūsīya* was to cause him considerable harm.

The revival of the *furūsīya* exercises affected the development of firearms under Qānṣūh al-Ghawrī in two ways: first, a substantial part of the kingdom's war effort was diverted from firearms into useless channels; and, second, the importance which the Mamluk government attached to *furūsīya* training was bound to increase greatly the army's respect for the exercise and all it stood for, and consequently to intensify its traditional contempt for both artillery and the hand-gun. It should, however, be emphasised that the above does not at all imply that if al-Ghawrī had not embarked on his project of reviving *furūsīya* training, he would have been able to proceed unhampered with his plans regarding firearms. Mamluk military society and its psychology were such that even under the most favourable conditions, and even if *furūsīya* exercises had not intervened, the use of firearms could have been expanded only within very narrow limits, and certainly could not have been expected to become the

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main Mamluk weapon. This is clearly shown in the history and vicissitudes of the hand-gun in Mamluk society (to which we shall now turn) as well as in Ibn Zunbul's narrative of the Ottoman conquest of the Mamluk kingdom.

#### THE CREATION OF A UNIT OF ARQUEBUSIERS

Whereas only one important proof—and a negative one—has so far been cited of the Mamluk's repugnance to firearms, in the total absence of artillery from the battle-field,<sup>69</sup> on turning to the history of the arquebus we come across a great deal of important evidence, both positive and negative, pointing to the same conclusion. The adoption of the arquebus took place some ten years before al-Ghawrī's accession to the throne and a few words on its early history are therefore necessary, particularly as they help to explain al-Ghawrī's policy in relation to it.

The arquebus (or hand gun or portable firearm) was apparently first used under al-Ashraf Qāyrbāy's rule, in Ṣafar, 895 (late December, 1489 or early January, 1490)<sup>70</sup>: at any rate this is the first reference the present writer has come across. After an interval of seven years the arquebus is again mentioned by the same source in Jumādā I 902/January, 1497.<sup>71</sup> From that date onward it occurs frequently.<sup>72</sup>

Arquebuses and their ammunition are referred to in the Mamluk sources by the term *al-bunduq ar-raṣāṣ*.<sup>73</sup> The identity of this term is clear,<sup>74</sup> especially if the following points are taken into account.

In the time preceding the period under review the *bunduq* (a pellet discharged from a crossbow or blowpipe) was mainly used for hunting (especially wild fowl) and, being not a very effective weapon in battle, only rarely against troops. Moreover, it was usually made of clay, few metal *bunduq* being produced.<sup>75</sup> The *bunduq raṣāṣ* ("pellet of lead") of the last decades of the Mamluk period, on the other hand, was employed in battle only—and with decisive results.

In the fighting between amirs Qānṣūh Khamsmī'a and Aqbirdī, a weapon used by the rival parties was referred to

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alternately as *al-bunduq ar-raṣāṣ* and *bunduqīyāt ar-raṣāṣ*<sup>76</sup>; *bunduqīya* (pl. *bunduqīyāt*, *banādiq*), as is well known, is the most common name for the arquebus and the hand-gun in general.

During the preparations for the despatch of an expeditionary force against the Portuguese, it was said that the unit of arquebusiers *aṭ-ṭabaqa al-khāmisa* (see below) was training with *al-bunduq ar-raṣāṣ*<sup>77</sup>; when this and other units were embarked on board ships, they took with them *makāhil* and *bunduqīyāt*.<sup>78</sup>

Ibn Iyās states that in the Battle of Marj Dābiq the Ottomans had artillery and *bunduq raṣāṣ*,<sup>79</sup> while a later historian al-Ishāqī says that they had artillery and *banādiq*.<sup>80</sup>

*Al-bunduq ar-raṣāṣ* was a very small projectile, and yet it caused very heavy losses to the enemy. Ibn Iyās says in one place that the Ottomans killed “innumerable numbers” of Egyptian soldiers by means of *al-bunduq ar-raṣāṣ*, (*ṭarrashūhum bil-bunduq ar-raṣāṣ fa-qutila min ‘askar miṣr mā lā yuḥṣā ‘adaduhum*). In another place, after mentioning the heavy losses Ottoman arms caused to the Mamluks, the same historian says that those Mamluks had been killed by the smallest *bunduq*, which he compares to poison flowing in the blood and yet remaining invisible (*qutilū bi-aṣghar bunduq min sha’nihā* [sic! = *sha’nuhā*] *kas-summ tasrī fī al-jusūm wa-lā turā*).<sup>81</sup>

The firing of *al-bunduq ar-raṣāṣ* was accompanied by a deafening noise (*ṭarrashūhum bil-bunduq ar-raṣāṣ*).<sup>82</sup>

In the Battle of Chaldirān (August, 1514) there were in the Ottoman ranks, according to the Mamluk historian, 12,000 soldiers who were equipped with *al-bunduq ar-raṣāṣ*. They dumbfounded the Ṣafawid army and caused its complete rout. The number of its dead was many times larger than that of the Ottoman army (*wa-qīla inna Ibn ‘Uthmān kāna fī jālīsh ‘askarihi ithnay ‘ashar alf rāmī bil-bunduq ar-raṣāṣ fa-lammā zahāfa ‘alā ‘askar aṣ-Ṣūfī ‘ammathum ad-dahwa wa-lam yaḥmilū ma’ahum ghulūwa(?) fa-inkasara aṣ-Ṣūfī wa-wallā mahzūm wa-qutila min ‘askarihi aḍ’āf mā qutila min ‘askar ar-Rūm*).<sup>83</sup> The accuracy of so high a figure of arquebusiers may be questioned, but the efficacy of *al-bunduq ar-raṣāṣ* in the battle need not be doubted.<sup>84</sup>

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*Al-bunduq ar-raşāş* was the weapon of the Janissaries.<sup>85</sup>

A development parallel to that of *al-bunduq ar-raşāş* took place in the case of *Zabṭānīya* or *Zabṭāna*. At first the name was applied to a weapon shooting *bunduq* and used in hunting,<sup>86</sup> later it became quite a common term for the arquebus.<sup>87</sup>

On the basis of all the above it may safely be concluded that the word *bunduqīya* is derived, not from Venice (al-Bunduqīya), despite the identity of the two names and the great traffic in arms conducted by that city in the period under review, but from *bunduq*.<sup>88</sup> Thus *bunduqīya* stems from *bunduq*, while *raşāşa*, the bullet or cartridge, is derived from *raşāş*. It would appear that the process of transformation from *bunduq raşāş* to *bunduqīya* did not take long. Ibn Iyās himself mentions *bunduqīya* three times,<sup>89</sup> while in the works of his contemporaries Ibn Zunbul and Ibn Ṭūlūn, who died only a few decades after him, *bunduqīya*, *bunduqīyāt*, and *banādiq* are already of most common occurrence.<sup>90</sup> They also mention *bunduq*,<sup>91</sup> but the combination *bunduq raşāş* is almost extinct in their works.<sup>92</sup>

The Mamluks' failure to use artillery in the open field has already been discussed; as for portable firearms their reluctance to adopt them was even more pronounced. For artillery is the province of specialised technicians, whose numbers form only a small part of the fighting unit, requiring little fundamental change in the structure of the army. The arquebus, on the other hand, is a personal and mass weapon, and its introduction affects a large number of troops. Hence its large scale adoption was bound to involve far-reaching changes in organisation and methods of warfare. To equip a soldier with an arquebus meant taking away his bow and, what was to the Mamluk more distasteful, depriving him of his horse, thereby reducing him to the humiliating status of a foot soldier, compelled either to march or to allow himself to be carried in an ox-cart.

Horsemanship and all it stood for were the pivot round which the whole way of life of the Mamluk upper class revolved and from which it derived its courtly pride and feeling of superiority. *Faras*, *fāris* and *furūsīya*—these are the

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terms one encounters on almost every page of Mamluk historiography, and these were the things that really mattered and without which life was dull and meaningless. For the Mamluk's close ties with horse and bow were not only forged in the military schools of the capital. They had deeper roots. They began in early childhood while he was still amid the steppes or wild mountains of his country of origin, where, both in peace and war, the horseman was the backbone of society.

Such being the psychological background, even the deterioration of *furūsiya* did not fundamentally affect the Mamluk's approach and outlook. He might well become a lazy, turbulent, undisciplined and badly trained horseman, but he remained a horseman all the same, with a deeply rooted feeling of superiority over all horseless other classes.

There is no indication, either direct or indirect, that the wide gulf separating the Mamluk ruling class from the rest of the people, both soldiers and civilians, was in any way narrowed during the years of the army's decline. On the contrary, the gulf appears to have widened even further, for in the Bahri period (1250-1382) there still existed, side by side with the pure Mamluk horsemen, strong elements of non-Mamluk horsemen, to wit the *ḥalqa* (and within it the *awlād an-nās* and the *wāfidīya*) and a considerable body of other non-Mamluk soldiers in the service of the Mamluk amirs. These elements either totally disappeared or were much weakened during the Circassian period (1382-1517); the remainder were to all intents and purposes deprived of their mounts.<sup>93</sup> Thus the Mamluks were left as practically the only class of horsemen in the Egyptian capital.<sup>94</sup> The fact that under the Circassians the word *fāris* became more or less synonymous with *mamlūk* among the urban population of Cairo could only strengthen the Mamluk's feeling of superiority, and particularly over the dismounted ex-cavalrymen. This was of special significance, for these ex-cavalrymen were destined to become the main body from which later arquebusiers were to be recruited.

So long, therefore, as the Mamluks retained their mounts, they could not possibly be turned into arquebusiers<sup>95</sup>; and

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any attempt to extend the use of the arquebus had to be based on non-Mamluk and thus socially inferior elements of the army. This is what the Mamluk sultans were forced to do from the very outset. As a result, a clash between the interests of the kingdom and those of the military hierarchy ensued. The growing danger from without did, to be sure, enable the Sultan to widen somewhat the very narrow limits imposed on the use of the arquebus by Mamluk resistance to it and to incorporate into the arquebus regiment men from other units whose social position had been somewhat higher than that of the earlier arquebusiers. But his success did not go further than this, and hence the doom of the arquebus was inevitable.

The attitude of the Mamluks towards the arquebus is worth examining in greater detail in the light of information supplied by the sources. Even the date on which the weapon was adopted is significant. As pointed out above, the arquebus was referred to for the first time in 895/1490, *i.e.*, only twenty-seven years before the destruction of the Mamluk kingdom and one hundred and twenty-five years later than in Europe (the hand-gun began to be used in Europe in about 1365).<sup>96</sup> Artillery, on the other hand, was introduced into the Mamluk kingdom only about forty years later than in Europe. Hence the time-lag in the case of the hand-gun was very much greater, nor is it reasonable to suppose that this time-lag was merely accidental; and a close examination of the history of the arquebus will help us to unearth the real reason for the difference.

The first account of the use of the arquebus in the kingdom is most instructive. In 895/1490, when Sultan Qāyrbāy was preparing his last expedition against the Ottomans, he inspected those of the *awlād an-nās* whose monthly pay was 1,000 *dirhams* or less. Earlier he had ordered them to learn the proper handling of *al-bunduq ar-raṣāṣ*, and they now drilled with the new weapon in the Sultan's presence. Then the Sultan prepared a nominal roll of those taking part in the expedition, gave each of them a sum of 30 *dīnārs* to cover their expenses (*nafaqa*), and allotted one camel to every two men. Those selected thereupon joined the expeditionary force.

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*Wa-fīhi 'araḍa as-sulṭān awlād an-nās [arbāb] al-jawāmik min alf dirham ilā dūnihi wa-kāna amarahum an yata'allamū ramya al-bunduq ar-raṣāṣ qabla dhālika fa-lammā 'araḍahum wa-armū quddāmahu katabahum ilā at-tajrīda wa-nafaqa 'alayhim kulla wāḥidin thalāthīna dīnāran wa-kulla ithnayni ashrahahum fī jamalin a'īāhu ilayhim wa-kharajū ṣuḥbata at-tajrīda.<sup>97</sup>*

Since the above passage has a bearing not only on the social inferiority of the arquebusier, but also on the understanding of the circumstances under which *al-bunduq ar-raṣāṣ* appeared in the Mamluk sources for the first time, it is worth examining the circumstances in which the event took place.

It would appear that one of the main reasons for the introduction of the arquebus was the hard lesson which, in a long series of bloody battles, the Ottomans and their satellites taught the Mamluk army. It was against the Ottomans that the Mamluks intended to employ the new weapon for the first time. It is extremely doubtful, however, whether the Mamluk arquebusiers had any opportunity to use their weapons upon the enemy, for after some desultory fighting the Mamluk expeditionary force, which is described as extremely strong, returned to Egypt against the explicit orders of the Sultan, without having entered into a major engagement.<sup>98</sup> Apart from a few shots fired in the Battle of Raydāniya that is all the evidence we have on the use of the arquebus against the Ottomans.

A few words are now necessary on the *awlād an-nās* in the Mamluk army, since this term recurs repeatedly in connection with firearms. The *awlād an-nās* were sons of Mamluk amirs, born as free men and as Muslims in the Mamluk kingdom, and therefore bearing Arab names. As such they could not be accepted into the Mamluk upper class which, with few exceptions, was composed of men born as infidels and brought to the Mamluk kingdom as slaves from their countries of origin; almost all of them bore Turkish or other non-Arab names. All these Mamluks embraced Islam and, on finishing their training at the military school, were set free. The *awlād an-nās*, being Muslims and free men by birth, had to join a special regiment known as the *ḥalqa*.<sup>99</sup> In this regiment.

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which was important at the commencement of Mamluk rule, they formed the elite. But the *ḥalqa* gradually underwent a decline and, together with the *awlād an-nās* serving with it, became chronically underpaid,<sup>100</sup> usually without horses, badly trained—if at all—and many years before the termination of Mamluk rule its members ceased virtually to be sent into action. Gradually the dividing-line between the *ḥalqa* rank and file and the *awlād an-nās* was obliterated. Eventually the term *ḥalqa* ceased to be used and one could find under the name of *awlād an-nās*, side by side with the sons of Mamluk amirs, Cairo merchants, artisans, and all sorts of *nouveau-riche* elements who paid their way into the regiment in order to improve their social standing. Though they were still called soldiers (*ajnād*), they were very poor ones.<sup>101</sup>

The above passage of Ibn Iyās, despite its brevity, brings out vividly in several ways the status of the *awlād an-nās* arquebusiers as a second-rate regiment: the sum they received as expenses in connection with the expedition (*nafaqa*) was less than one-third of the standard pay of a Mamluk (a hundred dinars)<sup>102</sup>; horses for the march were denied to them altogether, two men being loaded on one beast of burden—a truly degrading spectacle, considering that the Mamluk, in addition to his charger, was issued with at least one camel to carry his baggage.<sup>103</sup> Not least, it is more than probable that only the lower members of the *awlād an-nās* regiment were selected by Qāyṭbāy as arquebusiers since the monthly pay of the ordinary soldier ranged between 1,000 and 2,000 *dirhams*,<sup>104</sup> while those assigned to the arquebus companies received only 1,000 *dirhams*, or even less.<sup>105</sup>

The inferior status of the *awlād an-nās*, and especially of the arquebusiers among them, is thus evident. Even then, it seems that the Mamluks regarded firearms as something degrading for the regiment and the equipping of some of its companies with the arquebus was an isolated episode.<sup>106</sup> For the next fifteen or twenty years (1490-1510 roughly), the new weapon was issued to black slaves. Only in the last few years of the Mamluk kingdom's existence (1510-1516), and under the stress of critical circumstances, was the weapon issued again to the *awlād an-nās* and similar units, on one occasion even to a few pure Mamluks. After that the arquebus was

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withdrawn and returned to black slave soldiers for the few months (September, 1516-January, 1517) that remained before the Ottomans entered Cairo.

#### THE BLACK SLAVES AS ARQUEBUSIERS

At this juncture something should be said about the position of the black slaves (*'abīd*, sing. *'abd*) in the Mamluk kingdom.

These were, perhaps, the most despised human element in the kingdom. Anonymous and downtrodden, they lived in complete obscurity, and in the whole of Mamluk history hardly ever is there mention of a black slave's first name, except in the case of the occasional eunuch.

Within the framework of the army, the slaves were allowed only one function: that of servants to the Mamluk knights,<sup>107</sup> a vocation from which they could never hope to rise. Their only chance of military advancement was by being castrated and incorporated into the corps of eunuchs, whose main function was that of keeping Mamluk adults away from Mamluk boys at the military schools. Even then, only a few could aspire to such honour, since the corps of eunuchs attached to the army was quite small and included other races such as Rūmīs, Hindīs, etc.<sup>108</sup>

The sorry lot of the black slave was rendered even worse by the fact that the Mamluk knight was in addition tended by an orderly, the *ghulām* (pl. *ghilmān*)<sup>109</sup> who, since he was white and a free man, was in all probability better off. Though no source makes any mention of how duties were apportioned between the *ghulām* and the *'abd*, it is reasonable to suppose that to the first were assigned the more respectable tasks, especially the treatment and care of his master's horse (see below) and to the second the more menial ones. Yet even the *ghulām* had small reason to rejoice, as may be seen from Qalqashandī's definition: "The *ghulām* is the one who applies himself to the service of the horses. . . . Originally this name was exclusively used to designate young boys and Mamluks; afterwards it mainly became a name for this kind of servant. It seems that this servant was so called because he was humble in the eyes of the public" (*li-ṣigharihi fi*

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*an-nufūs*).<sup>110</sup> So that if the free-born white *ghulām* was humble, the *‘abd* must have been even more so. When a Mamluk historian wanted to give a striking indication of the low level to which the Mamluks of the ruling Sultan (*Julbān*) had sunk, he said that even the lowest black slaves could have routed them (*wa-lawlā ḥurmat as-sulṭān la-kāna ṣiḡhār ‘abīd al-Qāhira kaḡaw lahum*).<sup>111</sup>

As regards the black slaves equipped with firearms, they were most commonly known as *‘abīd naḡḡiya*.<sup>112</sup> This does not necessarily mean that they were all arquebusiers; it is quite possible that some were artillerymen and that others were employed on maintenance of firearms, etc. Yet though there is no decisive proof there are good grounds for believing that most of them were in fact arquebusiers. In those cases where it is possible definitely to identify them they are called *‘abīd rumāt bil-bunduḡ ar-raṣāṣ*<sup>113</sup> or *‘abīd rumāt*<sup>114</sup> (see below). Al-Anṣārī calls them in one instance *‘abīd bārūdīya*<sup>115</sup> in another *‘abīd rumāt*, and a few lines later *bārūdīya*<sup>116</sup> (see below). Exactly like the Janissaries they took part in official parades marching in front of the sovereign, (*wa-quddāmahu ‘abīd naḡḡiya*),<sup>112</sup> and letting off their firearms during the parade (*tarmū bin-nuḡūṭ; ma‘ahum makāḡḡil naḡṭ; yarmūna bin-naḡṭ min al-makāḡḡil; yarmūna bin-nuḡūṭ*).<sup>118</sup> The fact that they fired *makāḡḡil* does not prove that they were artillerymen since the Janissaries are also mentioned as having *makāḡḡil*, both on parade and on other occasions (see p. 20 above). As already pointed out, the name *mukḡhula*, designating a hand-gun, had already taken root at the close of Mamluk rule. There is no reference to the *‘abīd naḡḡiya* before 895/1490—*i.e.* the earliest known date for the use of the hand-gun in the Mamluk kingdom—whereas after that date they are mentioned frequently. The same applies to *‘abīd rumāt* and *‘abīd bārūdīya*; during the period when only artillery was used by the Mamluks there is no mention of them whatever.

A good illustration of the attitude of Mamluk military society towards firearms in general and the arquebus in particular is provided by the account given of the *‘abīd naḡḡiya* under the ruler who sponsored them.

Sultan Qāyṭbāy was succeeded by his son, an-Nāṣir Abū

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as-Sa'ādāt Muḥammad, a young boy of fourteen who ruled for little more than three years (901/1495-904/1498) before he was assassinated. He was described after his death as blood-thirsty, frivolous, and almost illiterate, though a generous and brave boy, who befriended all kinds of low people (*kathīr al-'ishra lil-awbāsh min aṭrāf an-nās*). It is also said that some of his deeds were so ugly and his mistakes were so bad that the like had never been perpetrated before by sons of Sultans until in the end they exceeded all bounds (*wa-waqa'a minhu umūr shanī'a fī muddat salṭanatihi lā yanbaghī sharḥuhā wa-sāra fī al-mamlaka aqbaḥ sīra wa-lam yaqa' min abnā' al-mulūk min as-sawāqīṭ mā waqa'a minhu fī sā'ir af'ālihi ḥattā jāwaza fī dhālika al-ḥadda*).<sup>119</sup> There is no doubt that one of the main reasons for this low opinion of Sultan an-Nāṣir was his enthusiasm for firearms. He was very earnest in his desire to build up a body of black arquebusiers and equipped a large number of slaves with firearms: *wa-kāna 'inda al-Malik an-Nāṣir 'idda wāfira min al-'abid mā bayna naḥḥiya wa-rumāt bil-bunduq ar-raṣāṣ*.<sup>120</sup> In 903 he had 500 men thus equipped.<sup>121</sup> He used them successfully against his rival Qānṣūh Khamsmi'a and on other occasions,<sup>122</sup> and he tried to establish law and order and to enhance his prestige by organising parades in the capital in which they marched in front of him.<sup>123</sup> He was the first Mamluk sultan ever to do such a thing, as is explicitly stated by the contemporary source: *wa-kāna yarkab bi-ṭabl wa-zamr wa-makāhil wa-kaffīyāt(?) wa-lam yu'had annahu taqaddama dhālika li-ghayrihi*.<sup>124</sup>

In two instances we have on record the contemptuous reaction of Ibn Iyās to these parades. In the first he writes: "The black slaves were firing in front of him with *nufūt* [and the whole parade looked] like that of a governor of a sub-district (*kāshif*, pl. *kushshāf*).<sup>125</sup> He has disgraced the honour of the kingdom and never did any of the sons of the sultans commit such crimes and follies as those committed by this an-Nāṣir, and we shall allude to the subject in due course" (*wa-'abid sūd tarmī bin-nufūt quddāmahu 'alā hay'at al-kushshāf wa-qaḍ baḥdala ḥurmat al-mamlaka wa-lam yaqa' min abnā' al-mulūk min as-sawāqīṭ mā waqa'a min an-Nāṣir ḥādhā ka-mā ya'tī al-kalām 'alayhā fī mawḍi'ihī*).<sup>126</sup> In the second instance he says: "And in front of him many

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black slaves with *makāhīl naft* . . . and all this is frivolity and foolishness. He disgraced the honour of the kingdom in his days, and he did not follow the path of the previous Sultans<sup>127</sup> in upholding the respect for the Sultanate and he [organised processions] like that of the Commissioner of Police” (*wa-quddāmahu ‘iddat ‘abīd sūd wa-ma’ahum makāhīl naft . . . wa-kullu hādihā khiffa wa-ṭaysh wa-qad bahdala ḥurmat al-mamlaka fī ayyāmihi wa-lam yattabi’ tarīqat al-mulūk as-sālifa fī iqāmat ḥurmat as-salṭana wa-ṣāra [sic!] ‘alā tarīqat wālī ash-shurṭa*).<sup>128</sup>

The disgust aroused by the young Sultan’s fondness for firearms and by the prominent place he gave to his black arquebusiers in his parades through the capital is thus expressed in language rarely used even against the most hated of Mamluk rulers. None indeed of the later Mamluk Sultans was accused of so severe a break with the past as was Sultan an-Nāṣir Abū as-Sa’ādāt Muḥammad. The Mamluks themselves fully shared Ibn Iyās’ view of him, and the extent to which they were scandalised by the special attention he paid to the black slaves and their weapons may be gauged from the following incident which has been handed down in two versions.

According to the first version, recounted by Ibn Iyās, in Jumādā II 903/1498 some of the Sultan’s bodyguard and personal retinue (*khāṣṣakīya*) seized and executed one of the Sultan’s favourite black slaves, Farajallāh by name. The slave’s death was a severe blow to the Sultan and caused him much grief ; yet he was not able to protect him from the Mamluks who were at that time “ seeking evil with the Sultan because of these [bad] deeds which come out of him ” (*wa-fīhi qabaḍa ba’d al-khāṣṣakīya ‘alā ‘abd min ‘abīd as-sulṭān yuqālu lahu Farajallāh wa-kāna muqarraban ‘indahū ilā al-ghāya fa-lammā qabaḍū ‘alayhi qatalūhu bir-Ramla fa-shaqqa dhālika ‘alā as-sulṭān wa-ta’assafa wa-lam yaqdir an yaḥmiyahu min al-mamālik fa-innahum kānū yawma’idhin ṭalibīna ash-sharra ma’a as-sulṭān bi-sabab hādhihi al-af’āl allafī b-taṣḍur [sic!] minhu*).<sup>129</sup>

This version clearly illustrates the tension then prevailing between the Sultan and his Mamluks as a result of the favouritism he showed to the black slaves. The second version,

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told by al-Anṣārī, furnishes us with clear evidence of the extent to which this tension was connected with the Mamluk attitude towards firearms. It runs as follows<sup>130</sup>:

“ On Monday the twenty-seventh [of Jumādā II, 903] a great disturbance occurred in Cairo which was caused: first, by the Sultan’s marrying one of his black slaves called Farajallāh, who was the chief of the black firearms personnel (*kabīr al-‘abīd al-bārūdīya*) in the citadel, to a Circassian slave girl who belonged to Sultan Qāyrbāy’s mother; and secondly, by the Sultan’s bestowing on this Farajallāh a tunic (*sallārī*)<sup>131</sup> with short sleeves. On beholding this spectacle, the Royal Mamluks expressed their disapproval to the Sultan, and then they put on their steel (*i.e.* armour) and armed themselves with their full equipment. A battle broke out between them and the black slaves who numbered about five hundred. The black slaves ran away and gathered again in the towers of the citadel and fired at the Royal Mamluks. The Royal Mamluks marched on them, killing Farajallāh and about fifty of the black slaves; the rest fled; two Royal Mamluks were killed. Then the amirs and the Sultan’s maternal uncle, the Great Dawādār<sup>132</sup> met the Sultan and told him: ‘We disapprove of these acts of yours [and if you persist in them, it would be better for you to] ride by night in the narrow by-streets and go away together with those black slaves to far-off places!’ The Sultan answered: ‘I shall desist from this, and these black slaves will be sold to the Turkmans,<sup>133</sup> and whatever you order will be done.’ These promises satisfied the amirs, and it was announced to the public that safety had been restored.”

*Wa-ḥi yawm al-ithnayn sābi‘ ishrīnihi waqa‘a khabṭa kabīra fī al-Qāhira wa-aṣluḥā anna ‘abdan min ‘abīd as-sultān yusammā Farajallāh huwa kabīr al-‘abīd al-bārūdīya fī al-qal‘a zawwajahu as-sultān surriyatan min sarārī wālidat Qāyrbāy Jarkasīya wa-khala‘a ‘alayhi sallārī qaṣīr kumm ḥa-lammā naẓarū mamālīk as-sultān ‘alā ḥādhihi al-kayfiya ankarū dhālika ‘alā as-sultān thumma labisa al-mamālīk [?] fūlādh bis-silāḥ al-kāmil wa-waqa‘a al-qitāl baynahum wa-bayna ‘abīd as-sultān wa-hum naḥwa al-khamsmī‘a ḥa-haraba al-‘abīd wa-ijtama‘ū fī abrāj al-qal‘a wa-ramaw ‘alā mamālīk as-sultān ḥa-zaḥafa ‘alayhim*

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*al-mamālik as-sultāniya fa-qatalū Farajallāh wa-min al-'abīd nahwa al-khamsin wa-haraba al-bāqī wa-qutila ithnān min al-mamālik as-sultāniya thumma ijtama'a al-umarā' wa-khāl as-sultān ad-Dawādār al-Kabīr bis-sultān wa-qālū lahu hādhihi al-umūr mā nardāhā laka [?] rukūbuka fī al-layl fī al-aziqqa wa-rawāḥuka ma'a hādhihi al-'abīd ilā al-amākin al-ba'ida fa-qāla lahum: raja'tu 'an dhālika wa-hādhihi al-'abīd tubā' lit-Turkmān wa-mahmā amartum yu'mal bihi fa-raḍaw minhu bi-dhālika thumma nūdiya lin-nās bil-amān wa-billāh al-musta'an.<sup>134</sup>*

Thus the attempt to bestow a higher status on the black slaves equipped with firearms was nipped in the bud. The Mamluks could hardly imagine a greater outrage than a *bārūdī* black slave wearing Mamluk costume and being married to a Circassian bride. The incident sealed the fate of all an-Nāṣir's experiments with firearms. From that date to the very end of an-Nāṣir Muḥammad's rule (some nine months or so) there is no mention of *'abīd naṣīriya*, *bārūdīya*, *rumāt bil-bunduq ar-raṣāṣ*, etc. The Mamluks saw to it that the frivolous king kept his promise.

True, the tender age of the Sultan, his unstable character, his being the son of a Mamluk and not himself a Mamluk, the great contrast between him and his illustrious father (one of the greatest Mamluk rulers of Egypt)—all these were considerable obstacles in the way of his project regarding firearms; but they were by no means the chief causes of his downfall. A similar fate befell the attempt to do the same made by a sultan with incomparably greater prestige and in whose time the need for the arquebus was far more pressing. We now propose to turn to Qānṣūh al-Ghawrī's experiment with his arquebusiers.

THE FIFTH ṬABAQA<sup>135</sup>

During the greater part of the twenty-seven years in which the arquebus was in use in the Mamluk kingdom, the Mamluks had no special unit with a distinctive name for this weapon. It was only as late as 916/1510<sup>136</sup>—*i.e.* some twenty years after the introduction of the weapon—that such a unit was raised, and even then its existence was very precarious. On one occasion it was completely disbanded, being

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apparently later re-established ; in any case, it was absent from the battle of Marj Dābiq for reasons we shall discuss below.

This unit was called *aṭ-ṭabaqa al-khāmisa*, and its very name is an accurate indicator of its real place in the Mamluk military hierarchy, a point which calls for a brief explanation.

Every Royal Mamluk continued officially to belong, after having become a fully trained and seasoned soldier, to the school or barracks (*ṭabaqa* pl. *ṭibāq* or *aṭbāq*) in which he had received his recruit training. This connection with the old barracks was expressed in many ways, one of them being the order of the pay parade. The Mamluks received their pay according to their *ṭibāq*, the total number of which was about twelve.<sup>137</sup> Pay (*jāmakīya*) was drawn around the middle of the month,<sup>138</sup> during four pay-days,<sup>139</sup> each group of *ṭibāq* being dealt with on one day. A fifth, and special, pay-day was fixed for the unit of arquebusiers who were not paid along with the other units, but by themselves<sup>140</sup> at the end of the month (or the beginning of the next month). Indeed, in the period immediately following the formation of *aṭ-ṭabaqa al-khāmisa* the unit is not referred to by that name at all: the historian merely speaks of the soldiers who were organised as a *ṭabaqa* and who received a fifth *jāmakīya*. In Shawwāl, 916/January, 1511, when this *ṭabaqa* is mentioned for the first time, the source remarks: "In this month the Sultan paid the *jāmakīya* to the army and fixed for the Mamluks whom he formed into a *ṭabaqa* a fifth *jāmakīya* which would be paid to them separately at the end of the *jāmakīyas*" (*wa-fīhi naḥaqa as-sultān al-jāmakīya 'alā al-'askar wa-ja'ala lil-mamātik alladhī istajaddahum ṭabaqatan jāmakīyatan khāmīsatan fī awākhir al-jawāmik tuṣraf lahum 'alā infirādhim*).<sup>141</sup>

After this date the payment of *al-jāmakīya al-khāmisa* is mentioned on four consecutive occasions, the last of which is as late as Sha'bān, 918/November, 1512.<sup>142</sup> Only on Rabī' I, 919/August, 1513—*i.e.* some two and a half years after its foundation—the unit is for the first time called *aṭ-ṭabaqa al-khāmisa*.<sup>143</sup>

From that date onward this remains its only name, and

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is frequently mentioned by Ibn Iyās.<sup>144</sup> That the origin of the name *aṭ-ṭabaqa al-khāmisa* is to be found in the fifth and separate monthly pay-day of the unit may also be inferred from the account of its liquidation. The source says: "And on the sixteenth of the month the Sultan paid the *jāmakīya* to the army, and in this month the Sultan thought fit to join *aṭ-ṭabaqa al-khāmisa* which he had formed [to the other units] . . . and he distributed this army between the four *ṭibāq* as they were of old and abolished *aṭ-ṭabaqa al-khāmisa* and thus the army became uniform in the matter of payment of the *jāmakīya*"—(*wa-fī . . . sādis 'asharihi nafaqa as-sulṭān al-jāmakīya 'alā al-'askar wa-fī hādihā ash-shahr ḥasuna bi-bāl as-sulṭān an yuḍīfa aṭ-ṭabaqa al-khāmisa allatī jaddadahā . . . fa-wazza'a dhālika al-'askar 'alā aṭ-ṭibāq al-arba' ka-mā kānū fī al-awwal wa-abṭala amr aṭ-ṭabaqa al-khāmisa wa-ṣāra al-'askar shay'an wāḥidan fī tafriqat al-jāmakīya*).<sup>145</sup>

From the above it is clear that *aṭ-ṭabaqa al-khāmisa* was a kind of an inferior unit, not allowed to draw its pay in company with the pure Mamluk units. Nor is this by any means the only sign of its inferiority. The human material, of which the unit was composed, points to the same conclusion. Both on the day of its formation and on other occasions it was stated that *aṭ-ṭabaqa al-khāmisa* included *awlād nās*, Turkomans, Persians "and other groups" (*wa-ghayr dhālika min aṭ-ṭaw'if*).<sup>146</sup> Somewhat later the same source speaks of a similar composition of *aṭ-ṭabaqa al-khāmisa*, adding that it included various kinds of artisans, such as shoe-makers, tailors, and the like.<sup>147</sup> Only when Sultan al-Ghawrī, in Jumādā I, 921 / June, 1515, launched his big expedition against the Portuguese, it included, besides *awlād an-nās*, Royal Mamluks belonging both to the ruling Sultan and to the previous Sultans (*julbān* and *qarānis*).<sup>148</sup>

It is significant that each of the above statements regarding the composition of *aṭ-ṭabaqa al-khāmisa* refers to *awlād an-nās* while none of them makes any mention of black slaves. Because of the varied and socially inferior elements of which it was composed, *aṭ-ṭabaqa al-khāmisa* was called *al-'askar al-mulaffaq*,<sup>149</sup> i.e. "the false army," "the patched-up army," or "the motley army." The same name of *al-'askar*

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*al-mulaffaq* was bestowed on an expeditionary force dispatched by al-Ghawrī to the Indian Ocean against the Portuguese in 911/1505, five years before the founding of *aṭ-ṭabaqa al-khāmisa*. Its composition resembled that of *aṭ-ṭabaqa al-khāmisa*, but it included also black arquebusiers (*‘abīd rumāt*) and Maghribis.<sup>150</sup> This is the last reference to black slaves using firearms until the sultanate of al-Ashraf Ṭūmānbāy.

The humble position of *aṭ-ṭabaqa al-khāmisa* is likewise reflected in the low pay it received. Like other inferior units it had its pay reduced.<sup>151</sup> On one occasion the Sultan paid out to each member of the unit ten or eight dinars. This sum covered both the *naḥaqa* and the *jāmakīya*,<sup>152</sup> while the full amount of these two kinds of pay should have been about 107 dinars.<sup>153</sup> But even this meagre remuneration was begrudged them by the Mamluks, as may be seen from the following incident.

“On that day [28 Rabī‘I, 920/May, 1514] the Sultan paid the *jāmakīya* to the army of *aṭ-ṭabaqa al-khāmisa* and on that day a strange incident occurred. The Mamluks of the ruling Sultan (*al-mamālīk al-ajlāb, julbān*) stood in the courtyard of the citadel<sup>154</sup> and took one dinar from each member of *aṭ-ṭabaqa al-khāmisa* who received his pay, telling him on this occasion that they would have a drink of oxymel on it. They would take the dinar from him forcibly if he refused to give it willingly. The army of *aṭ-ṭabaqa al-khāmisa* was subjected to extreme maltreatment by the *julbān* on that day, nor could the sultan do anything about it. Then the *julbān* started snatching the whole *jāmakīya* from the hands of its recipients; some would select from it one dinar and return the rest to its owners while others would take the whole *jāmakīya* and make off with it. The army chiefs were incapable [of restraining them] and extremely great damage was caused on that day to the army of *aṭ-ṭabaqa al-khāmisa*.”

*Wa-fī dhālika al-yawm naḥaqa as-sulṭān al-jāmakīya ‘alā ‘askar aṭ-ṭabaqa al-khāmisa wa-ḥadatha fī dhālika al-yawm nādīra gharība wa-huwa anna al-mamālīk al-ajlāb waqafū fī al-ḥawsh wa-ṣārū kulla man qabaḍa al-jāmakīya min ‘askar aṭ-ṭabaqa al-khāmisa ya’khudhūna minhu Ashrafi min al-jāmakīya wa-yaqūlūna lahum nashrab bihi uqsima*

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*fa-ya'khudhūna minhu al-Ashrafī ṭaw'an aw kurhan fa-ḥaṣala li-'askar aṭ-ṭabaqa al-khāmisa fī dhālika al-yawm min al-mamālik al-julbān ghāyat al-bahdala wa-mā qadara as-sultān 'alā man'ihim min dhālika wa-ṣārū yakhtafū al-jāmakīya min yaday man yaqbiḍuhā fa-minhum man ya'khudh minhā Ashrafī wa-yu'id al-bāqī ilā aṣḥābihi wa-minhum man ya'khudh al-jāmakīya kullahā wa-yahrub fa-a'yā amruhum ar-ru'ūs an-nuwab wa-ḥaṣala fī dhālika al-yawm ghāyat aḍ-ḍarar li-'askar aṭ-ṭabaqa al-khāmisa.<sup>155</sup>*

In spite of the poor pay of *aṭ-ṭabaqa al-khāmisa* it has been repeatedly claimed, rightly or wrongly, that the creation of this unit was one of the main reasons for the emptiness of the treasury and the scarcity of various supplies for the army: "The *Diwān* was exceedingly drained . . . the army was numerous and especially *aṭ-ṭabaqa al-khāmisa* which had recently been formed by the Sultan. Because of this, the *Diwāns* were drained of the *jāmakīyas*, the meat, and the fodder" (*fa-inshahata ad-Diwān ilā al-ghāya . . . wa-kāna al-'askar kathīran wa-lā siyamā mā jaddadahu as-sultān min al-'askar fī aṭ-ṭabaqa al-khāmisa fa-inshahatat ad-Dawāwīn min al-jawāmik wal-luhūm wal-'alīq bi-sabab dhālika*).<sup>156</sup>

The extent of the Royal Mamluks' dissatisfaction at the creation of *aṭ-ṭabaqa al-khāmisa* is thrown into bold relief by the following episode: pay was chronically in arrears, as a result of which relations between the Sultan and his Mamluks became very strained, and rumours were afoot to the effect that the latter intended to rebel.

"In the evening the Sultan called a group of his body-guard and select retinue (*khāṣṣakīya*) and reproached them with their foul deeds. One of the *khāṣṣakīya* answered him in harsh language and said: 'You are the man who drained the *Diwān* with this numerous army which you have gathered and for which you have created *aṭ-ṭabaqa al-khāmisa*, and because of these [soldiers] you have curtailed the *jāmakīyas* of the orphans and women [widows?] [And who are these soldiers after all?] They are Turcomans and Persians and food vendors<sup>157</sup> and cobblers and false *awlād an-nās*, some of whom are tailors and some makers of veils!' The sultan answered them: 'I have created this new army only in order to relieve you of the marches and expeditions!' The Mamluks

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answered him: 'This was not the way of Sultan al-Ashraf Qāyṭbāy. It was *you* who drained the Dīwāns, etc.'" After the sultan had promised to accelerate payment and provide them with better fodder, their anger subsided a little.

*Aḥḍara as-sultān ba'da al-'aṣr jamā'a min a'yān khāṣṣakīyatihi wa-'atabahum 'alā hādhihi al-af'āl ash-shanī'a fa-aḡhlaḡa 'alayhi ba'd al-khāṣṣakīya wa-qāla lahu anta alladhī ashḡatta ad-Dawāwīn bi-hādihā al-'askar al-kathīr alladhī jama'tahu wa-ja'alta lahu ṭabaqatan khāmisatan wa-qaṭa'ta jawāmik al-aytām wan-nisā' bi-sababihim wa-hum mā bayna Tarākima wa-A'jām wa-suwaykhāta(?) wa-asākifa wa-awlād nās mulaṣṣaqīn shī khayyāṭ wa-shī bakhānqī fa-qāla lahum anā mā ja'altu dhālika al-'askara al-mustajadda illā an yakūna fidā'an lakum fī al-asfār wat-tajārīd fa-qālū lahu al-mamālik hādihā mā kānat ṭarīqat al-Ashraf Qāyṭbāy wa-anta alladhī ashḡatta ad-Dawāwīn.<sup>158</sup>*

One of the arguments urged against *aṭ-ṭabaqa al-khāmisa* throws a clear light on the psychology of the Mamluks in relation to *furūsiya* and horsemen on the one hand and firearms on the other. After giving a brief account of the payment of the *jāmakīya* to *aṭ-ṭabaqa al-khāmisa* Ibn Iyās remarks: "The position of these despicable 'Mamluks,'<sup>159</sup> whom the Sultan recruits in the *Dīwān* in increasing numbers, is being strengthened though there are among them such as do not know how to draw the bow or hold the lance; and this is a strange thing: he begrudges the *jāmakīya* to those who are worthy of it and gives it to the unworthy" (*wa-qad tazāyada amru hādhihi al-mamālik al-arādhil alladhī ṣāra as-sultān yastakthīru minhum fī ad-Dīwān fa-fihim man lā ya'rif yajdhib al-qaws wa-lā yumsik ar-rumḡ wa-hādihā amr 'ajīb yashuḡḡu fī-man yastahiqq al-jāmakīya wa-yu'tihā li-ghayri mustahiqqihā*).<sup>160</sup>

Thus the superiority of the horseman armed with bow and lance over the arquebusier—who has to walk even on the battlefield—was axiomatic both to the Mamluks and to the Mamluk historians. That an arquebusier could perform his duty quite satisfactorily without knowing how to use the traditional weapons was entirely beyond their understanding. In their view, the very creation of *aṭ-ṭabaqa al-khāmisa* was a sheer waste of money on a contemptible rabble.

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The utter blindness towards the new developments in the art of war prevailing in the Mamluk kingdom finds an even more striking expression on the eve of the Battle of Marj Dābiq. When the Mamluks were marching to their doom, Ibn Iyās described the scene as follows: "The Sultan called on the army to march out of Aleppo, and the whole army went forth, and they were like shining stars with their arms and prancing[?] horses: *and every horseman was a match to a thousand infantrymen of the army of the Ottoman Sultan.* Then they went towards Marj Dābiq and camped in it" (*fa-nādā lil-'askar bir-rahūl wal-khurūj min Ḥalab fa-kharaja al-'askar qāḥibatan wa-hum kan-nujūm az-zāhira min ālāt as-silāh wal-khuyūl al-ghā'ira [al-fā'ira?] wa-kullu fāris muqawwam bi-alf rājil min 'askar Ibn 'Uthmān fa-tawajjahū ilā Marj Dābiq wa-nazalū bihi*).<sup>161</sup>

The attitude of Ibn Iyās, himself the son of a Mamluk amir, towards the new unit and its weapons is identical to that of the Royal Mamluks and, indeed, of other Mamluk historians. None of them, not even Ibn Taghrībirdī, has so much as hinted that bow and lance were obsolete weapons, or accepted with good grace the possible adoption of firearms on a large scale, let alone the supersession by them of the traditional weapons.<sup>162</sup> Ibn Taghrībirdī, for instance, comments, during the Circassian period, on the low standard of the *furūsiya* exercises, but for him the moral was merely to revive this kind of training.<sup>163</sup>

In such an atmosphere of hostility the Sultan not unnaturally gave way, dissolving *aṭ-ṭabaqa al-khāmisa* on Muḥarram, 920/March, 1514<sup>164</sup> after little more than three years. Ibn Iyās's account of that event gives the reader the impression that it was final.<sup>165</sup> In reality, however, the fifth *ṭabaqa* did not come to an end on that date. It continued to exist because it was urgently needed on a very vital front.

A close study of the history and military duties and operations of *aṭ-ṭabaqa al-khāmisa* leaves no room for doubt that it was mainly, if not exclusively, formed in order to fight the Portuguese; according to the sources at present available, it has no connection, either direct or indirect, with preparations against the Ottomans. In the present writer's opinion, the Mamluks directed *aṭ-ṭabaqa al-khāmisa* to the South

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East because there they fought with entirely different weapons from those used on their northern front. An attempt to explain the reasons for the Mamluks' different attitude towards their two fronts will be made later ; first of all, we shall try to show up the prominent part played by firearms in the struggle against the Portuguese. We propose to begin our examination with data dealing solely with firearms ; then we shall proceed to an investigation of source-material dealing both with firearms and with other aspects of the Mamluk South-Eastern front.

The bulk of a consignment of military supplies and equipment which the Ottomans sent to the Mamluks for use against the Portuguese, and which reached Cairo on Shawwāl, 916/January, 1511, was made up of firearms, to wit: 300 *makāhil*,<sup>166</sup> 40 *qanṭārs* of gunpowder, and unspecified quantities of copper and iron.<sup>167</sup>

In his account of the Sultan's visit of inspection to the men-of-war which were being built at Suez, Ibn Iyās makes a special reference to their guns and writes: "The expenses on these twenty battleships, including the *makāhil* of copper and iron and other kinds of weapons, exceeded four hundred thousand dinars."<sup>168</sup> A considerable quantity of gunpowder seems to have been produced at Suez. On one occasion, twenty workers, who were engaged in the production of gunpowder, (*aṣ-ṣunnā' alladhīna yaṣḥanūna al-bārūd*) were burnt to death.<sup>169</sup> When the construction of the war vessels reached an advanced stage, it was twice stated that they were loaded with guns and gunpowder (*awsaqūhum bi-makāhil wa-bi-madāfi*<sup>170</sup>; *ashḥanahā bil-makāhil wal-mādāfi wal-bārūd*).<sup>171</sup> When the expeditionary force marched through the streets of Cairo on the eve of its move to Suez, the parade was headed by artillery and arquebuses (*wa-quddāmahum aṭ-ṭubūl waz-zumūr wa-makāhil an-naḥṭ wal-bunduqīyāt*).<sup>172</sup> When the Portuguese defeated and sank the combined (Mamluk-Ottoman) navy, Ibn Iyās records that it was sunk together with its ordnance (*al-marākib alladhī kāna arsalahā as-sulṭān al-Ghawrī qad gharaqat bi-mā fihā min makāhil wa-madāfi wa-ālāt as-silāh*).<sup>173</sup>

Let us now turn to the data dealing with firearms and other aspects of the struggle against the Portuguese.

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In Jumādā II, 911/November, 1505, al-Ghawrī launched an expedition against the Portuguese in the Indian Ocean. It consisted of *awlād an-nās* and a few Royal Mamluks (*ba'd mamālik sultāniya*) but mainly of Maghribis, black arquebusiers, Turcomans and the like (*wal-ghālib fihim maghāriba wa-'abīd sūd rumāt wa-Tarākima wa-ghayr dhālika*). Their *nafaqa* was only 20 dinars each, but together with an advance payment of a *jāmakīya* of four months and other payments the total sum received by each member of the expedition reached a figure of 50 dinars.<sup>174</sup> In Rabī' I, 919/May, 1513, about three hundred arquebusiers (*rumāt bil-bunduq ar-raṣāṣ*) of *aṭ-ṭabaqa al-khāmisa*, together with a group of Royal Mamluks, went to Suez to guard against a possible Portuguese attack on the warships which were being built there.<sup>175</sup> A few days later, another group consisting of armourers (*zardkāshīya*), arquebusiers (*rumāt bil-bunduq ar-raṣāṣ*) and gunners (*naḥḥīya*) arrived.<sup>176</sup> In Rabī' II, 919/June, 1513, the Sultan ordered three hundred of the *sayfiya* Mamluks and of the *awlād an-nās* to Suez along with a group of arquebusiers (*rumāt bil-bunduq ar-raṣāṣ*) and gunners (*naḥḥīya*).<sup>177</sup> In the same month a batch of *makāhil* was sent to Suez in the company of the chief armourer and thirty other armourers (*zardkāshīya*).<sup>178</sup> In Rajab, 919/September, 1513, the Sultan ordered a group of *aṭ-ṭabaqa al-khāmisa* to Suez.<sup>179</sup> In these two cases the soldiers refused to march until they had had the *nafaqa*. In Sha'bān, 919/October, 1513, another group of *aṭ-ṭabaqa al-khāmisa* was ordered to Suez.<sup>180</sup> In Muḥarram, 920/March, 1514, the Sultan went to Suez with three hundred of his *khāṣṣakīya* and a number of amirs of a thousand and amirs of lower rank.<sup>181</sup> In Rabī' II, 921/May, 1515, a group of *qarāniṣa* Mamluks was ordered to 'Aqaba, Aznam, and other places on the coast. Some refused to go and therefore did not get their *nafaqa*.<sup>182</sup> In Jumādā I, 921/June, 1515, the Sultan appointed six hundred or more soldiers of *aṭ-ṭabaqa al-khāmisa* to take part in his big expedition against the Portuguese. This contingent included, besides *awlād nās*, also Royal Mamluks (*julbān, qarāniṣ*).<sup>183</sup>

The composition of the whole expeditionary force which left Cairo in Rajab, 921/August, 1515, is of special interest :

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it numbered 6,000 men divided up as follows: *khāṣṣakīya*, 50; *jamdārīya*, 150; *ṭabaqa khāmisa* (*awlād nās*, Mamluks and others), 450<sup>184</sup>; sailors, [volunteer?] soldiers (*muqātilin*), Turkomans, Maghribis, and others, 5,344.<sup>185</sup> It is most significant that no Mamluk Amir of a Thousand took part in this big expedition though Amirs of the same rank used to participate in much less important expeditions sent to Syria and beyond. Its commander was an Ottoman captain (*rayyis*) called Salmān.<sup>186</sup>

If we have made a point here of giving this long list of expeditions, some of which were small and unimportant, it is because nothing can afford us a more perfect illustration of the great difference between the Mamluks' attitude towards the Portuguese front on the one hand and the Ottoman front on the other.

The presence of firearms is most conspicuous in every phase of the historian's narrative. Artillery and arquebusiers are mentioned in practically every passage dealing with the Portuguese front. This is in glaring contrast to the same historian's account of the expedition to Marj Dābiq, where the mention of firearms on the Mamluk side is next to nil.<sup>187</sup> Nor was this the sole difference between the two fronts; for against the Portuguese, apart from a small Mamluk element, mainly inferior and underpaid non-Mamluk units were sent.<sup>188</sup> Only when the Sultan himself went to the Suez, was he accompanied by a contingent of picked Mamluks; but these, who constituted the Sultan's bodyguard and personal retinue, returned with him to Cairo.

There was undoubtedly an intimate connection between the social inferiority of the units sent against the Portuguese and the employment of firearms on that front. This connection was due to at least two factors. First, the numerical strength of the Mamluk army was quite small and the Mamluk kingdom was threatened almost simultaneously by two formidable enemies. In such critical circumstances the Mamluks had to concentrate their main forces against the more dangerous of the two enemies.<sup>189</sup> According to Mamluk conceptions the Royal Mamluks and the Amirs' Mamluks were far superior to the units equipped with firearms—not only socially but also in a military sense. Hence, almost all

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the pure Mamluk units were concentrated against the Ottomans.<sup>190</sup> Their acquaintance with firearms was practically nil. They were equipped solely with their traditional and obsolete weapons of which they apparently had a thorough mastery as a result of the training received under al-Ghawri's scheme for the revival of the *furūsiya*.

Second, the war against the Portuguese, being mainly a naval war, was entirely alien to the Mamluk and little to his taste. The navy and everything connected with it was despised by the land-minded Mamluk horseman.<sup>191</sup> Throughout their history the Mamluks fought very few naval battles, and only where unavoidable did they transport soldiers to the battlefield by sea.

Such was the case in the attacks which they launched against Cyprus and Rhodes.<sup>192</sup> But there was a fundamental difference between these two attacks and the war against the Portuguese, for an expedition against the Mediterranean islands involved a comparatively short sea voyage, the main battles being fought on land, while a war in the Red Sea and the Indian Ocean involved immense distances being covered on board ship, and it was impossible to predict whether the main battles would be fought on land or at sea. Besides, it was all but impossible to find in the small number of ships the Mamluks could afford to build sufficient room for a large number of horses and their fodder, while sending Mamluks to battle without their horses was out of the question. Nor were garrison duties in the Red Sea ports a task congenial to the Mamluks. Outside the capital garrison duties were disliked everywhere in Egypt, and the Red Sea region ranked among the worst stations. Even inferior units tried to evade being sent there and it was even more so in the case of the Mamluks. Usually, if Mamluks were dispatched to the Red Sea, they were drawn from the more underprivileged among them.<sup>193</sup>

Such were the two main reasons for so sharp a difference in the composition and equipment of the units fighting the Portuguese on the one hand and the Ottomans on the other. This does not mean that if the Mamluks had been allowed to concentrate all the firearms at their disposal against the Ottomans they could have influenced the course of events to

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any considerable extent ; but the fact that they were forced to divert the bulk of their units equipped with firearms against the Portuguese accentuated the already enormous discrepancy between the Mamluk and the Ottoman armies.

The fate of *aṭ-ṭabaqa al-khāmisa* is a striking example of the extent to which the Portuguese front absorbed the available firearms potential. It seems that the bulk of that regiment was sent against the Portuguese together with al-Ghawrī's big expedition, for after its embarkation its name does not recur even once, neither in connection with the decisive battles of Dābiq and Raydānīya nor on any other occasion. Only in Sha'bān, 923/August-September, 1517—*i.e.* some eight months after the Ottoman conquest of Egypt—when Salmān, the commander of al-Ghawrī's naval expedition, returned to Cairo, the source records that he and Ḥusayn, the governor of Jidda, together with the army of *aṭ-ṭabaqa al-khāmisa*, conquered many towns and accumulated vast booty.<sup>194</sup> The fact that only *aṭ-ṭabaqa al-khāmisa* was singled out for mention among the various contingents making up the big expedition points to the prominent part it played and which far exceeded its numerical strength (less than one-tenth of the whole expedition). Whether or not part of it returned to Egypt with Salmān is an open question.

In conclusion it should be noted that the Mamluk's refusal to become himself an arquebusier foredoomed al-Ghawrī's attempts for yet another reason. The creation of a really strong unit of non-Mamluk arquebusiers could have had only one result: the destruction of the Mamluk army and the annihilation of Mamlukdom ; for such a unit would have been incomparably stronger than the whole Mamluk army with its horses, bows, swords, and lances. Sooner or later the unit would inevitably have turned its superior weapons against its masters and creators. Hence the existence of a body of arquebusiers of considerable size outside Mamluk military society was out of the question.

It should be emphasised, however, that even if social antagonism to the employment of firearms had been greatly mitigated by some miracle under al-Ghawrī, the chances of that Sultan against the Ottomans could not have been very

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bright. First, because the time at his disposal was too short, and second, because there were other factors besides the Mamluks' antagonism to firearms which restricted their employment in the Mamluk kingdom. (See p. 97f.).

#### ṬUMANBĀY'S DESPERATE EFFORT

As already stated, Ṭumānbāy, owing to the extremely short time at his disposal, had largely to rely on siege-guns in the Battle of Raydāniya—guns cast during the reign of the Sultans preceding him ; and as a result the Mamluks prepared for a long drawn-out battle at the approaches of Cairo—almost a siege—rather than a decisive battle of short duration. Yet Ṭumānbāy's reign of a few months is worthy of special note in this context, for his approach to firearms was essentially different from that of his predecessors.

Ṭumānbāy had been the Mamluk and freedman of Sultan an-Nāṣir Muḥammad Abū as-Sa'ādāt<sup>195</sup> (901/1495-904/1498), the ill-fated boy king, whose preoccupation with firearms was a main cause of his premature death. Whether or not Ṭumānbāy was influenced by his master we have no means of knowing for sure, though it is very probable that he was. In any case, he had two great advantages over him : first, by his time the superiority of firearms had been demonstrated by the Ottomans in the most forcible manner, and Mamluk rule was in mortal danger ; second, Ṭumānbāy was a great personality. Thus he had a free hand in his attempt to save the kingdom, and he received every encouragement in his projects relating to firearms. He fully deserves the praise of Ibn Iyās who remarked on one occasion that " this Sultan showed a firm resolution in the making of those firearms wagons (see below) and the casting of cannon and the manufacture of hand-gun. He collected innumerable arquebusiers, his energy was ardent and his intention good " (*wa-kāna hādihā as-sultān lahu 'azm shadīd fī 'amal hādhihi al-'ajalāt wa-sabk hādhihi al-makāhil wa-'amal al-bunduq ar-raṣāṣ wa-jama'a min ar-rumāt mā lā yuḥṣā wa-kānat lahu himma 'āliya wa-maqṣiduhu jamīl*).<sup>196</sup> On another occasion the same historian says that had Sultan

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al-Ghawrī been alive, he would not have accomplished even a fraction of Sultan Ṭūmānbāy's deeds (*wa-law kāna as-sulṭān al-Ghawrī hayyan mā kāna yathūr bi-ba'd mā thāra bihi as-sulṭān Ṭūmānbāy*).<sup>197</sup> These two passages furnish unequivocal proof of the fact that Ṭūmānbāy's accession to the throne marked a new phase in the history of the weapon: and a systematic examination of the source-material fully confirms this conclusion.

The zeal and energy with which Ṭūmānbāy handled firearms is evident almost on every page of Ibn Iyās's chronicle where firearms occupy by far the most prominent place during his short reign. The custom established by his master, Sultan Muḥammad Abū as-Sa'ādāt, but never adopted by al-Ghawrī, of marching with arquebusiers in front of him through the Cairo streets, was renewed by Ṭūmānbāy. A most illuminating example of his attitude towards firearms is the fact that he started regular parades of this kind immediately after his appointment as Sultan al-Ghawrī's deputy (*nā'ib al-ghayba*) in Egypt. This was before the Battle of Marj Dābiq and before the *furūsiya* was crushed by firearms.<sup>198</sup> From then onwards he would march with his army and black arquebusiers every Monday and Thursday (*wa-quddāmahu su'āt wa-'abīd naṣṣiya yarmūna bin-naṣṣ min al-makāhil*).<sup>199</sup> These parades of the sultan who "was beloved of his subjects" (*muḥabbab lir-ra'iya*)<sup>200</sup> were received by the population with great enthusiasm, and his prestige was very much enhanced: *fa-taruju lahu al-Qāhira kulla mā shaqqa minhā*<sup>201</sup>; *taruju lahu al-Qāhira wa-tartaftu lahu al-aṣwāt bid-du'ā min an-nās . . . wa-qad 'aẓuma amruhu jiddan*.<sup>202</sup> The enthusiasm reached its peak when Ṭūmānbāy marched through the streets of Cairo the various firearms he had prepared for the impending Battle of Raydāniya. The streets were crowded, and voices were raised to wish the army victory over the perfidious Ottoman Sultan; the people wept on beholding guns and ox-wagons bearing light guns, testimonies of the ardent energy the Sultan displayed in whatever he did (*wa-irtafa'at al-aṣwāt bin-naṣr 'alā Ibn 'Uthmān al-bāghī wa-tabākat an-nās lammā 'āyanū tilka al-'ajalāt wal-makāhil wal-himma al-'āliya allafī min as-sulṭān fimā ṣana'ahu*).<sup>203</sup> This is a very different reaction

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indeed from that with which an-Nāṣir Muḥammad's experiment had been received only some two decades earlier.<sup>204</sup>

Perhaps the most important contribution made by Ṭūmānbāy was his adoption of carts drawn by oxen to carry both arquebusiers and light artillery. These wagons are nowhere referred to before his time, neither in connection with artillery nor in connection with the arquebus. These wooden vehicles—called in Arabic *'ajalāt* or *'ajalāt min khashab*<sup>205</sup>—were most probably introduced as a direct result of the fighting with the Ottomans who employed them on a large scale.<sup>206</sup> Even the word *'araba*, designating the same cart, appeared together with the Ottoman occupation (*'ajala tusammā 'inda al-'Uthmāniya 'araba*).<sup>207</sup>

When Ṭūmānbāy dispatched to Raydāniya the firearms he had prepared, the parade included a hundred carts, each drawn by a pair of oxen, and carrying one copper *mukḥula* apiece.<sup>208</sup> Behind these carts went two hundred camels loaded with gunpowder, lead, iron, etc. Before the carts marched about two hundred Turkoman and Maghribi arquebusiers and a group of *'abid naḥḥiya*.<sup>209</sup> There is no doubt that the adoption of the firearms cart constituted a decisive step towards the employment of the cannon and the arquebus in the open field.<sup>210</sup> On one occasion Ṭūmānbāy employed camels carrying light guns or arquebuses which were fired from above their humps (*rijāl yarmūna bil-bunduq ar-raṣāṣ min al-makāḥil fawqa zuḥūr al-jimāl*).<sup>211</sup> Such a practice had never been mentioned before in the Mamluk kingdom, and it also indicates an intention to introduce the weapon into field-battles. However, all these experiments were in an embryonic stage; Ṭūmānbāy was not given sufficient time to develop new methods and better types of firearms. He had to fight largely with artillery wholly unsuited to the conditions of warfare imposed on the Mamluks by the Ottomans.<sup>212</sup>

In concluding it should be emphasised that even Ṭūmānbāy did not dare to break the main barrier in the way of the effective use of firearms; for he did not recruit Mamluks to his artillery or arquebus units. As far as we can see from the single chronicle available to us, these units were composed of black slaves, Turkomans and Maghribis<sup>213</sup>—

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*i.e.* socially inferior elements, more inferior even than those of the *aṭ-ṭabaqa al-khāmisa*—for Ṭūmānbāy brought back the black slaves who had been employed by Sultan an-Nāṣir Abū as-Sa‘ādāt Muḥammad but discarded by Qānṣūh al-Ghawrī.

Further evidence for the absence of Mamluks from firearms units and for their almost total isolation from these weapons throughout the history of the kingdom is furnished by the fact that neither in Mamluk biographies and obituaries, nor in any other kind of Mamluk source, has the present writer been able to find one single specific instance of a Mamluk employing firearms, showing interest in them, or advocating their use.<sup>214</sup> This is in glaring contrast to the ample information furnished by the selfsame sources about many scores of individual Mamluks showing great enthusiasm for and excelling in the practice of the various branches of *furūsīya*. It should be noted that the Mamluks were not as hostile to the use of naphtha: in the battle against Ghāzān there were five hundred Mamluk naphtha-throwers; in addition, a number of individual Mamluk amirs were called *az-Zarrāq*.<sup>215</sup>

#### IBN ZUNBUL ON THE MAMLUK ATTITUDE TOWARDS FIREARMS

In the preceding pages we have tried to explain the reasons and factors preventing Mamluk military society from adopting firearms in general and the hand-gun in particular. This explanation, however, would be very incomplete without a study of the invaluable information furnished by the contemporary historian Ibn Zunbul.

In his book on the occupation of Egypt by the Ottomans (*Faṭḥ Miṣr*), Ibn Zunbul opens the first page with a submissive eulogy to Sultan Selim I, the conqueror of the Mamluk kingdom. However, this is only to camouflage his real attitude. In reality the book reflects the agonised protest against a hated and despised conqueror of a humiliated military caste, which for generations has been used to rule and to dominate others. One of the main themes is the rôle of firearms in enabling the Ottomans to achieve their spectacular victories.

In his attempt to explain the defeat of the Mamluks we

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encounter two conflicting tendencies. First, there is a tendency to minimise the importance of firearms and to point to other causes which weakened the Mamluks and facilitated the Ottoman victory. Second, there is a tendency, far stronger, to admit without reservation the decisive part played by firearms and to stress the fact that it was firearms and not the prowess of the Ottomans which determined the outcome of the struggle.

Within the scope of this study we are naturally more concerned with the second tendency ; hence we shall deal with the first as briefly as possible.

The principal reasons for the Mamluk defeat, argues Ibn Zunbul, were as follows. First, there was disunity in the ranks of the Mamluk army, in part due to the favouritism which the reigning Sultan showed to his own Mamluks (*julbān*) at the expense of those of the preceding Sultans (*qarānīs*). This favouritism was so pronounced that the brunt of the fighting fell on the shoulders of the *qarānīs* whose numbers the Sultan was intent on reducing while the *julbān* saw hardly any action and thus suffered few casualties.<sup>216</sup> The same accusation had already been voiced by Ibn Iyās,<sup>217</sup> but Ibn Zunbul attributes much greater significance to it. The second reason was the overwhelming numerical superiority which the Ottomans enjoyed over the Mamluks.<sup>218</sup> Third, the treasonable behaviour of some of the greatest amirs, especially Khāyrbak and Jānbirdī al-Ghazālī, who went over to the enemy along with their armies,<sup>219</sup> contributed to the demoralisation of the Mamluks.

These factors are well known and their contribution to Mamluk defeat was by no means a negligible one. It is, however, noticeable how, whenever Ibn Zunbul discusses them, he plays down the rôle of the main factor, firearms, responsible for the disaster ; and this is so, in spite of the fact that the dominant tendency in Ibn Zunbul's work is to admit the overwhelming superiority of Ottoman firearms and to seize on this superiority, both to defend the honour and reputation of the Mamluk army and to belittle the victory gained by the Ottomans.

Ibn Zunbul's main line of argument may be summed up as follows : to win a battle by means of so deadly a weapon

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is no proof of the efficiency of the army which uses it. On the contrary, such an army tends to degenerate and to lose those warlike qualities which emanate exclusively from proficiency in horsemanship. Only a war fought with traditional weapons and by traditional methods would have proved which of the two armies was superior. Ibn Zunbul, for his part, has not the slightest doubt as to the superiority of the Mamluks, both as individual soldiers and as an army. Throughout his narrative the skill at *furūsīya* and the bravery (*shajā'a*) of the Mamluks is contrasted with the poor horsemanship and the lack of daring displayed by the Ottomans.

Firearms, according to Ibn Zunbul, are the cause not only of the degeneration of the warlike qualities of an army, but also of a debasement of its moral standard: such an army tends to become cowardly and treacherous, its treachery and lack of moral scruple being especially demonstrated by the fact that it dares direct this weapon against its Muslim brethren. Nor is this all: the employment of firearms is contrary to Muslim traditions in general, and to the time-honoured usages of the great fighters of early Islam in particular. Had the Mamluks wanted to adopt firearms, they might have done so with perfect ease; but they abstained from such a course because of the unchivalrous and immoral character of the weapon.

Before quoting Ibn Zunbul's passages containing the above arguments, we propose to cite some of his testimonies regarding the overwhelming power and deadly effect of Ottoman firearms. As a matter of fact, the decisive rôle played by Ottoman firearms in crushing the Mamluk military machine is nowhere so clearly demonstrated as in Ibn Zunbul's work.<sup>220</sup>

In those engagements where the Ottomans defeated their adversaries with little effort, expressions like the following are common: "Nobody can stand up to firearms" (*inna an-nāra lā yuḥāqihā aḥad*)<sup>221</sup>; "nobody can stand up to it" (*wa-lam yastati' aḥad an yaqif amāma dhālika*)<sup>222</sup>; "who can face these devastating firearms?" (*man yuqābil hādhihi an-nār al-muhlika*)<sup>223</sup>; "we cannot resist the Ottoman army and its great numbers and its firearms" (*lā qudrata lanā 'alā 'askar ar-Rūm wa-kathratihim wa-nirānihim*)<sup>224</sup>; nothing has been

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able to disperse them [*i.e.* the Mamluks] but these firearms they [*i.e.* the Ottomans] shoot with. A man does not notice anything until he is suddenly hit by it, without knowing from what direction it has come upon him” (*wa-lākin mā shattatahum illā hādhihi an-nār allatī yarmūna bihā fa-mā yash’ur al-insān illā wa-huwa maḍrūb bihā wa-mā ya’rif min ayyi jānib jā’athu*).<sup>225</sup>

As for the casualties inflicted on the Mamluks by Ottoman firearms, the following instances are instructive. In Marj Dābiq “every cannon killed some fifty or sixty or a hundred people until that steppe resembled a slaughter-house from the blood” (*wa-kāna yaǰī’u kullu midfa’ ‘alā nahwi khamsīn aw sittīn aw mi’at naḥs fa-ṣārat tilka aṣ-ṣahrā’ kal-majzara min ad-dimā*)<sup>226</sup>; “they found that the number of dead Circassians was a thousand, and most of them were killed by cannon and arquebus” (*fa-wajadū alladhī qutila min al-jarākisa alf naḥs wa-aktharuhum min al-madāfi’ wal-bunduqīyāt*).<sup>227</sup> Near Khān Yūnus the Janissaries met the Mamluks with a “shower of bullets which left more men prostrate on the ground than standing” (*fa-lāqathum al-inkishārīya bi-rashsh bunduq khallat ar-rāqid akthar min al-wāqif*).<sup>228</sup> As to the Battle of Raydāniya, it is repeatedly stressed that most of the Mamluk killed were struck down by firearms and not by traditional weapons: “None of the Circassians was killed by sword and lance.<sup>229</sup> They were killed by bullets only. . . . Most of the killing was by means of hand-guns, *ḍarbzanāt*, and other kinds of firearms” (*wa-mā qutila min al-jarkas aḥad bis-sayf wal-’ūd wa-innamā kāna al-qatīl fihim bil-bunduq . . . wa-ghālib al-qatīl mā kāna illā bil-bunduq waḍ-ḍarbzanāt wa-ālāt an-nīrān ‘alā sā’ir aṣ-ṣunūf*)<sup>230</sup>; “most of our army was not killed by the sword, only a very few were” (*fa-inna ghālib ‘askarinā lam yuqtal minhum aḥad bis-sayf illā al-qatīl*)<sup>231</sup>; “only a very few were killed by the sword; they were killed by bullets and firearms only” (*lam yuqtal minhum aḥad bis-sayf illā al-qatīl jiddan wa-innamā qutilū bil-bunduq wan-nār*).<sup>232</sup>

Let us now quote some passages from Ibn Zunbul illustrating his hostile attitude towards firearms and his various arguments against its use. The fundamental antagonism between *furūsīya* and firearms is displayed on

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almost every page of that author's chronicle. One of the principal subjects of the present study being the exploration of this antagonism, we propose to select a wider range of examples, each offering its particular contribution to the clarification of our problem.

"They [*i.e.* the Mamluks] were left a much diminished group, but each of them was a match for thousands,<sup>233</sup> and but for the firearms which the Ottomans possess, they would have annihilated them to the last man" (*wa-qad baqaw fi'a qalila wa-lākinna kulla wāhidin minhum muqawwam bi-ulūf wa-lawlā an-nār allafī ma'a ar-Rūm la-kānū afnawhum 'an ākhirihim*).<sup>234</sup>

"Amir Sharīk and the rest of the amirs and their carap-followers rode and launched against their enemies a violent charge with hearts like iron; but the enemy was numerous while they were few. However, they were horsemen who knew the art of riding horses while those [*i.e.* the Ottomans] were numerous and did not know this art and relied mainly on firing with arquebus and *ḍarbzanāt*" (*wa-rakiba al-amīr Sharīk wa-baqiyat al-umarā' wa-atbā'ihim wa-ḥaṭṭamū 'alā 'adūwihim bi-qulūb kal-ḥadīd lākinna al-'adūw kathīr wa-hum ṭā'ifa qalila lākinnahum fursān 'arifūn bi-rukūb al-khayl wa-ūlā'ika kathīr ghayr 'arifūn [sic!] bi-dhālika lākinna i'timādahum al-aqwā 'alā ar-rimāya bil-bunduq waḍ-ḍarbzanāt*).<sup>235</sup>

One of the amirs said: "By Allah! If he [*i.e.* Ṭūmānbāy] had come to us during the fight and had helped us in lance-piercing and sword-beating we should have taken (finished?) them to the last man, for the Ottomans have no determination and no power except that of being able to shoot with firearms, and when the shooting stops and nothing is left but sword and lance they are incapable of doing anything" (*wal-lāhi law jā'anā waqt al-ḥarb wa-as'afanā biṭ-ṭa'n waḍ-ḍarb la-akhadhnāhum 'an ākhirihim fa-inna ar-Rūm laysa lahum 'azm wa-lā qūwa illā ramy an-nār wa-lammā baṭala ramy an-nār wa-lam yabqa illā as-sayf wal-'ūd mā 'āda lahum qudra 'alā dhālika*).<sup>236</sup>

When Selim I met the captive Sultan Ṭūmānbāy, the ex-Mamluk ruler said to him: "You are not better horsemen than we are, and you are not braver than we are; and there

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is none in your army who can vie with me in the field of battle. *We are the people who were singled out by God in this [i.e. in horsemanship and bravery]*” (*lā antum afras minnā wa-lā ashja’ minnā wa-laysa fī ‘askarika man yuqāyisunī fī ḥawmat al-maydān wa-naḥnu qawm qad khaṣṣanā Allāh subḥānahu wa-ta’ālā bi-dhālika*).<sup>237</sup>

A Mamluk Amir is recorded as having said: “Sultan Selim had with him 10,000 soldiers who formed the best part of his army, and they had about 20,000 camp-followers, but on the battle-field I saw them behave just like animals. None of them knows how to manage his horse in the field, and when there is such a one, it is always one of us Circassians who betrayed the people of his own race and went over to Selim” (*fa-inna as-sultān Salīman kāna ma’ahu naḥwa ‘asharat ālāf wa-kānū naqāwat ‘askarihi wa-atbā’uhum naḥwa al-‘ishrīna alfan wa-lākin mā kuntu anzuruhum fī al-maydān illā kal-bahā’im laysa fihim man yasūq ḥisānahu fī ḥawmat al-maydān illā an yakūn Jarkasīyan minnā min alladhīna khānū abnā’a jinsihim wa-dhāhabū ilayhī*).<sup>238</sup>

While the fighting was in progress a description is given of how a Mamluk Amir urged his fellow Amirs not to give way to the Ottomans. Their reply, records Ibn Zunbul, was: “By Allah, oh Amir! None of us would have run away from attacks with the lance or from sword blows, for we know these people [= the Ottomans]. They are not better horsemen than we are, and they are not braver than we are, that we should fear them. The only thing which does harm to us is these firearms and these bullets and these cannon which, if you fired at mountains with them, would wipe out the mountains” (*wallāhi yā amīr laysa minnā aḥad yahrub lā min ṭa’n wa-lā min ḍarb fa-inna ḥā’ulā’ al-qawm qad ‘arafnāhum laysū bi-afras minnā wa-lā ashja’ minnā ḥattā nahābahum wa-innamā ḍarūratunā min hādhihi an-nār wa-hādhā al-bunduq war-raṣāṣ wa-min hādhihi aḍ-ḍarbzānāt allatī law ramawhā ‘alā al-jibāl la-azālūha*).<sup>239</sup>

The claim that the Mamluks did not run away from and were not defeated by Ottoman swords, lances and other similar “legal” and time-honoured weapons is also voiced on other occasions.<sup>240</sup> The Mamluks perceived time and again that they were far superior in the traditional art of war,<sup>241</sup> and

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this made their defeat by such an "inferior" enemy all the more puzzling for them.

The Mamluks did indeed admit that they were powerless against firearms, but it would appear that some of their die-hards were blinded by prejudice to such an extent that they believed that with good fortune it would be possible to defeat the Ottomans in one successful massed cavalry charge. Amir 'Allān, the right-hand man of Sultan Ṭūmānbāy, who was one of the chief advocates of resistance to the last, is recorded as having said: "This [*i.e.* fighting the Ottomans] is the easiest of things. I have fought them at Marj Dābiq and I have learnt their conditions. They have no knowledge of *furūsīya* and of horsemanship. All they have is arquebusiers and infantrymen. So when we clash with them, we shall give them one push and put them under the hoofs of our horses, and it may well be that God will give us victory over them and their sultan. We shall take him prisoner and make an example of him to the Day of Resurrection."

*Hādhā aṣhal mā yakūn fa-innī qātaltuhum fī Marj Dābiq wa-'araftu ḥālahum fa-innahu laysa 'indahum ma'rifa bil-furūsīya wa-lā bi-rukūb al-khayl wa-innamā ghāyat mā 'indahum ar-rumāt bil-bunduq wal-mushāt fa-naḥnu idhā ṣādamnāhum nadkus 'alayhim daksa wāhida naḍa'uhum taḥta arjul al-khayl wa-la'alla Allāh yumakkinnunā minhum wa-min sulṭānihim na'khudhuhu asīran wa-naḥ'aluhu mathalan ilā yawm al-qiyāma.<sup>242</sup>*

The following legendary, but instructive episode is recounted by Ibn Zunbul in connection with the Battle of Chaldirān between the Ottomans and the Ṣafawīs (August, 1514): "Then Sultan Selim went to meet Shāh Ismā'īl on the field of battle. They agreed to stop fighting with firearms and to fight with sword and lance only. Sultan Selim could stand his ground but for a short time, and then his army was defeated and started fleeing because Ottomans are unable to meet the Persians without firearms. Then the Aghā of the Janissaries gave an order to employ firearms. Only a short time passed and Shāh Ismā'īl was defeated, because none can resist firearms."

*Thumma sāfara as-sulṭān Salīm ilā mulāqāt Shāh Ismā'īl wa-waqa'a al-ittifāq baynahumā bi-an yubṭal*

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*an-nār wa-yuqātāl bis-sayf wal-ūd fa-lam yathbut as-sultān Salīm ghayra sā'a wa-wallā 'askaruhu munhaziman li-anna ar-Rūm lā qudrata lahum 'alā mulāqāt al-Furs min ghayri nār fa-'inda dhālika amara Aghāt al-Inkishārīya an yarmū bin-nār fa-mā kāna illā sā'a wa-inhazama Shāh Ismā'il fa-inna an-nār lā yuḥiqhā aḥad.*<sup>243</sup>

The great blame attaching to people employing firearms against Muslims, the unlawful character of such weapons and other aspects are illustrated in the following passages.

“Nothing but firearms caused harm to the Circassians. . . . God curse the man who invented them, and God curse the man who fires on Muslims with them” (*al-Jarākisa . . . wa-lā ḍarrahum illā al-bunduq . . . fa-qātala Allāh man iṣṭana'ahā wa-qātala man yarmī bihā man yashhad lillāh bil-waḥdānīya wa-li-rasūlihi ṣallā Allāh 'alayhi wa-sallama bir-risāla*).<sup>244</sup>

At a meeting between Sultan Selim and Sultan Ṭümānbāy (who was his captive), the latter is recorded as having said: “We are Muslims and how is it that you allow (literally: consider lawful) the killing of Muslims, and how can you fire on them with these cannon and firearms? What would you do if you stood in the presence of God and what would be your answer? Every king, however great, is but a humble slave of God. You and I are no more than slaves.”

*Wa-naḥnu Muslimūn wa-kayfa tastahill qatl al-Muslimīn wa-tarmū 'alayhim bi-hādhīhi al-madāfi' wan-nīrān kayfa bika idhā waqafta bayna yadayy Rabb al-'Alamīn fa-mā jawābuka wa-kullu malik wa-in ta'āzama mulkuhu fa-huwa li-llāh 'abd aṣghar fa-mā anta wa-anā illā bi-jumlat al-'abid.*<sup>245</sup>

The strongest protest against the employment of firearms by the Ottomans is contained in the following passage from Ibn Zunbul which not only touches on most of the preceding points but adds new ones. When Amir Kurtbāy was captured by the Ottomans, he was brought before Selim. “Selim asked him: ‘Are you Kurtbāy?’ He answered: ‘I am.’ The Sultan said: ‘Where is your *furūsīya* and where is your bravery? (*shajā'a*).’ He answered: ‘They are the same as before’ (*bāqiya 'alā ḥālihā*). The Sultan asked: ‘Do you remember what you have done to my army?’ He answered: ‘I know and I have not forgotten anything of it.’ The Sultan asked:

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‘What have you done to ‘Alī, the son of Shāhswār?’ He answered: ‘I killed him along with the others of your army whom I killed.’ Then, when Kurtbāy saw treachery in the eyes of Sultan Selim and realised that the latter would kill him anyway, he threw politeness and good manners to the wind and spoke the words of a man who despaired of life. He fixed his eyes on the Sultan’s eye and raised his right hand in the Sultan’s face and said to him: ‘Hear my words and listen to them, so that you and others will know that amongst us are the horsemen of destiny and red death (*fursān al-manāyā wal-mawt al-aḥmar*). A single one of us can defeat your whole army. If you do not believe it, you may try, *only please order your army to stop shooting with firearms (fa’mur ‘askaraka an yatrūkū ḍarb al-bunduq faqaṭ)*. You have here with you two hundred thousand soldiers of all races. Remain in your place and array your army in battle-order. Only three of us will come out against you: I, the servant of God; the charging horseman (*al-fāris al-karrār*), Sultan Ṭümānbāy and Amir ‘Allān, and you will see with your own eyes the feats performed by these three. Moreover, you will then know your own self and you will learn whether you are a king or deserve to be a king because kingship befits only him who is an experienced, gallant man (*min al-abṭāl al-makhbūra*), for such were our upright predecessors (*as-salaṭ aṣ-ṣāliḥ*). Study the books of history, and there you will learn of the bravery (*shajā’a*) of Caliphs ‘Umar b. al-Khaṭṭāb and ‘Alī b. Abī Ṭālib. As for you [you are totally different from them]; you have patched up an army (*laḥḥaḥḥa laka ‘asākir*) from all parts of the world: Christians, Greeks and others, and you have brought with you this contrivance artfully devised by the Christians of Europe when they were incapable of meeting the Muslim armies on the battle-field. The contrivance is that *bunduq* which, even if a woman were to fire it, would hold up such and such a number of men (*wa-jī’ ta bi-hādhihi al-ḥīla allatī tahayyalat bihā al-Ifranj lammā an ‘ajizū ‘an mulāqāt al-‘asākir al-Islāmīya wa-hiya hādhihi al-bunduq allatī law ramat bihā imra’atun la-maḥa’at bihā kadhā wa-kadhā insānan*). Had we chosen to employ this weapon, you would not have preceded us in its use. But we are the people who do not discard the *sunna* of our prophet Muḥammad which is

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the *jihād* for the sake of Allah, with sword and lance. And woe to thee! how darest thou shoot with firearms at Muslims! (*wa-naḥnu law ikhtarnā ar-ramya bihā mā sabaqtanā ilayhi wa-lākin naḥnu qaḥm lā natruk sunnat nabīyinā Muḥammad ṣallā Allāh ‘alayhi wa-sallama wa-hiya al-jihād fī sabil Allāh bis-sayf wal-‘ūd wallāhu yu‘ayyid bi-naṣrihi man yashā’ wa-yā waylaka kayfa tarmī bin-nār ‘alā man yashhad lillāh bil-waḥdāniya wa-li-Muḥammad ṣallā Allāh ‘alayhi wa-sallama bir-risāla*). A Maghribi brought this arquebus (*bunduqīya*) to Sultan al-Malik al-Ashraf Qānṣūh al-Ghawrī and informed him that this arquebus had emanated from Venice (*Bilād al-Bunduq*) and that all the armies of the Ottomans (*Rūm*) and the West (*‘Arab = Gharb ?*) have already made use of it. The Mamluk Sultan ordered the Maghribi to train some of his Mamluks in the use of the arquebus, and that is what he did. Then these Mamluks were brought before the Sultan, and they fired their arquebuses in his presence. The Sultan was displeased with their firing and said to the Maghribi: ‘We shall not abandon the *sunna* of our Prophet and follow the *sunna* of the Christians, for Allah has already said that if Allah helps you nobody will defeat you.’ So the Maghribi went back to his country saying, ‘Those now living will live to see the conquest of this kingdom by this arquebus’ (*man ‘āsha yanṣur hādihā al-mulk kayfa yu’khadh bi-hādhihi al-bunduqīya*), and that is what really happened (*wa-qad kāna ka-dhālika*). Then Sultan Selim asked Kurtbāy: ‘If bravery and brave men and horsemen had been amongst you and you had followed the Koran and the *sunna* then why have we defeated you and expelled you from your country and enslaved your children and annihilated most of you, and why are you yourself my prisoner?’ Kurtbāy answered: ‘By Allah, you have not conquered my country by your power and by your *furūsiya*. This was ordained and predestined by Allah from eternity, for God has made a beginning and an end to everything, and he has allotted a fixed period of existence to every kingdom. . . . You yourself will die, and your kingdom will come to an end.’<sup>246</sup>

Any appraisal of the historical value of the above passages should take due account of the fact that Ibn

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Zunbul's work was compiled under the shadow of Mamluk defeat, and that its main purpose was to explain away the defeat. Hence its attitude towards firearms was bound to have been extremely hostile.<sup>247</sup> Moreover, many of the episodes and incidents recorded by Ibn Zunbul are legendary, or at least much exaggerated and tendentious. But despite all these grave shortcomings, there is no doubt that the spirit underlying these episodes cannot lightly be dismissed, for the Mamluks' feeling of hatred and contempt for firearms and those who used them, which is evident on every page of Ibn Zunbul's work, is by no means a product of Mamluk defeat by Ottoman firearms. It has already been amply demonstrated in the present work that this feeling was already very strong before the Ottoman attack and that it had been one of the main obstacles to the adoption of the new weapon by the pure Mamluk units.

The latter thus avoided firearms throughout Mamluk independent rule. Under the Ottomans, however, they did adopt them. Owing to the paucity of contemporary sources dealing with Egypt during the early Ottoman period, there is but little hope of our ever being able to trace in detail the process of the Mamluks' transformation from bowmen and lancers to soldiers equipped with firearms.<sup>247a</sup>

The reasons for the change which took place under the Ottomans seem to be fairly obvious. Egypt had become a province of an empire where firearms were issued to the élite of the army. The central government at Istanbul might have brought pressure to bear on the Mamluks and forced them to adopt firearms. But in the writer's view this reason alone, however important, was not in itself sufficient to induce the Mamluks to discard their traditional weapons. There was another in the progress made in the technical development of the arquebus.

During the early stages of its history the arquebus could be used from horseback only with extreme difficulty. Hence its use was confined mainly to infantrymen. Later, however, new types of weapon—the ancestors of the cavalry carbine and pistol of the future—were invented, firearms which horsemen could handle without difficulty. This technical development eliminated the main, though not the only, cause of the

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Mamluks' antagonism to firearms. In the present state of our knowledge of Mamluk history under the Ottomans, there is no evidence that the Mamluk was ever forced to dismount from his horse in order to employ firearms. To the best of the present writer's knowledge, the Mamluk remained a horseman from the creation of the *Bahriya* regiment in the middle of the thirteenth century up to the extermination of the Mamluks by Muḥammad 'Alī in the early part of the nineteenth century.

As for Mamluk tactics, it would appear that these did not undergo any fundamental change as a result of the adoption of the new weapon. True, in comparison with losses in the past, the number of killed and wounded rose considerably, but the backbone of Mamluk tactics still remained the charge and rapid withdrawal (*al-karr wal-farr*). Both al-Jabartī and Volney furnish ample evidence of how little Mamluk psychology and Mamluk military tactics changed as a result of the employment of firearms—a matter which, however, calls for a separate study.

It is worth noting that Beduin all over the Middle East were subjected to a similar process. The gun became their standard weapon only when it could be used from horseback or from a camel. As with the Mamluks, the employment of firearms did not bring about any fundamental change in Beduin methods of warfare.

#### OTHER OBSTACLES TO THE ADOPTION OF FIREARMS

It has been shown how the concepts of a ruling military caste firmly wedded to the idea that its superiority was derived from skill in horsemanship was a formidable barrier in the way of the adoption of firearms by the pure Mamluk units. There were, however, other weighty factors which tended to exercise an influence in the same direction. The examination of these causes will be facilitated by a comparison with the conditions prevailing in the Ottoman Empire.

Up to the closing decades of the Mamluk kingdom, it was never threatened by an enemy using firearms on a large scale. Moreover, during the period between Timurlane's invasion<sup>248</sup> and the attacks made by the Portuguese and Ottomans—precisely the period in which the use of firearms took

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root—there was indeed no serious external threat worth speaking of. Thus the adoption of the new weapon took place at a time when there was no opportunity of putting it to a large-scale test in battle. The Mamluks did, indeed, maintain a close and constant intercourse with Europe and it might be thought that they would have thereby learnt of the latest developments in the field of firearms. What, however, they lacked was any incentive to do so. As for the growing menace to their shipping and seaports from European pirate vessels equipped with guns, it should be noted that attacks from this quarter on the coasts of Egypt and Syria assumed really dangerous proportions only in the closing years of Mamluk rule, when the threat from the Ottomans and the Portuguese was near.

The Ottomans, on the other hand, had to fight incessantly on their main front in Europe against enemies who employed firearms with an ever-increasing intensity. Hence the Ottomans, whether they aimed at extending their dominions at the expense of the *Dār al-Harb*, or in simple self-defence had no alternative but to employ firearms on the largest possible scale.

Firearms were introduced into the Mamluk kingdom in the sixties of the fourteenth century, *i.e.*, after the kingdom, though still very strong, had already passed the zenith of its power. Early experience with firearms, moreover, had been most disappointing. This means that by the time firearms had become really efficient, the kingdom was already far advanced on the path of decline, and the more the power of firearms increased, the more degenerate did the Mamluk kingdom become. Had firearms been introduced in the days of Baybars and Qalāūn when it was still full of vigour and destined to face grave danger from Crusaders and Mongols, the attitude of Mamluk military society might have been otherwise.

In the Ottoman Empire the adoption of firearms took place under entirely different circumstances. To begin with, they were first used around the year 1425, *i.e.* about a century after their first appearance in Europe. By that time the new weapon had already passed its experimental stage, and its revolutionary character had become quite evident.

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The introduction of firearms by the Ottomans at so late a date was by no means a disadvantage: less than thirty years later Ottoman artillery played a leading part in the capture of Constantinople. Second, firearms were adopted in the Ottoman Empire at a time when it was on the upgrade and in process of steady consolidation and expansion. A long series of brilliant victories were still to be fought by its troops, and it was not to reach the zenith of its power for many years to come. Such conditions were most favourable for the employment, on an ever-increasing scale, of a weapon, the crushing superiority of which had become more and more manifest. It was, therefore, natural that within a comparatively short time firearms became the main weapon of elite units.

The very structure of the Mamluk military society (or slave family) was much less favourable to a revolutionary innovation than the structure of Ottoman military society. Although an exhaustive comparison between the two structures would be beyond the scope of this book certain characteristics which have a bearing on the problem of firearms are worth examination.

One of the fundamental differences between the Ottoman and Mamluk military societies was that the Ottoman Sultan was a free and hereditary ruler who stood above the slave family, no member of the slave family having the slightest chance of becoming a Sultan himself. In the Mamluk kingdom, on the other hand, the Sultan was himself a Mamluk (or the son or descendant of a Mamluk).<sup>249</sup> Technically he was not different from any other Royal Mamluk, for every Royal Mamluk, on finishing his early training at his military school and becoming a fully trained soldier, legally had the same right to become Sultan as any other Royal Mamluk.<sup>250</sup>

Another fundamental difference between the two military societies lay in the fact that while the Ottoman slave (*kul*, pl. *kullar*) was never manumitted until his very death, the Mamluk slave was always freed on completing his recruit training and on reaching maturity. (The Mamluk received his liberation certificate, *'itāqa*, together with his horse and equipment, at the passing-out parade, *kharj*.)<sup>251</sup> Thus there

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existed in the Ottoman Empire a society of life-long slaves while in the Mamluk kingdom there was a society of freedmen who had all been liberated from slavery on the threshold of manhood.

Because of these two fundamental differences, relationships between the two Sultans and their respective military societies likewise differed widely. Among other things these relationships have a bearing on the different attitudes of the two kingdoms towards the use of firearms.

The Ottoman slave family, composed as it was of life-long slaves, was a mere tool in the hands of a ruler who was its supreme and indisputable master. Moreover, his death or deposition would not substantially affect the relations between the slave family and the new Sultan. For this there were two reasons: first, the family would still as slaves be transferred to their new master; second, the new Sultan belonged to the same ruling house as his predecessor. Under such circumstances the Sultan could usually impose his will on the army. If he found, therefore, that the interests of the Empire required the discarding of the traditional weapons and the adoption of firearms, he had sufficient power to carry out such a transformation without fear of insubordination.<sup>251a</sup>

The hold of the Mamluk Sultan on the Mamluk slave family, on the other hand, was considerably more precarious than that of the Ottoman ruler, and for obvious reasons. First of all, in a society composed, not of slaves, but of ex-slaves who had the same legal right to the Sultanate as himself, the Mamluk ruler's chances of imposing his will on the army were infinitely smaller. Second, while in the Ottoman Empire there was one single slave family owing allegiance to one single master and one single dynasty, Mamluk military society, in the absence of any hereditary principle,<sup>252</sup> was split up into a series of slave families, each owing allegiance to a different master (*ustādh*). The freedmen of each Sultan were bound by ties of loyalty only to that particular ruler and to their comrades in servitude and liberation (*khushdāshīya*), while they owed no allegiance to any other Sultan, nor to his freedmen whom they considered "foreigners" and "strangers" (*ajānib, ghurabā*).<sup>253</sup>

The division of the Royal Mamluks (*mamālik sulṭānīya*),

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who constituted the backbone of the military society, into different bodies was based solely on the principle of the allegiance of these bodies to different Sultans. The freedmen of each Sultan constituted a closed and exclusive group which could not be merged with any other group. Even after the death of its master each such group continued to live its own closed life, guarding its interests against the other groups. With the lapse of time the group would diminish in numbers, owing to the ageing and death of its members. It would, however, still continue to exist as a separate body until it came to a natural end with the death of its last member. The bitterest hostility naturally prevailed between the freedmen of the ruling Sultan (*mushtarawāt, ajlāb, julbān*) and the freedmen of the immediately preceding Sultan who were supplanted by them. Each new Sultan, on his accession to the throne, inevitably had to break the power of the Mamluks of his immediate predecessor, especially in the Circassian period; simultaneously he had to increase the number and strengthen the power of his own Mamluks. Indeed, the struggle between these two groups was most severe in the early part of the Sultan's reign but it continued, though with less bitterness, to the very end of his rule. Each of the two competing groups would try to enlist allies from among the groups of the freedmen of earlier Sultans, the number of these groups sometimes exceeding five. Thus coalitions were formed or broken, with groups frequently changing sides according to their own interests. In the Circassian period the quarrels and clashes between the various groups of the Royal Mamluks are mentioned by contemporary sources on almost every page.<sup>254</sup>

The existence of such kaleidoscopic relations between the various élite groups of Mamluk society compelled the Sultan to rule as best he could on shifting sands. The most he could hope for was to maintain as long as possible a precarious balance of power between all these conflicting elements, owing allegiance to different masters, most of them dead or deposed. In such circumstances the Sultan had but little energy left for such matters as army reform, and even less for the introduction of such revolutionary innovations as firearms which constituted the very negation of everything for which

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the spirit of Mamlukdom stood. It is only against the background of such an inwardly torn military society, composed of antagonistic groups, that we can truly appreciate the immense, nay, insurmountable difficulties facing a Sultan intent on imposing the adoption of detested and degrading weapons like firearms. The internal dissensions of Mamluk society became more and more pronounced with the progressive decay of the kingdom and with the absence of any great external danger. Thus, the more decisive the military value of firearms became, the dimmer grew the chances of their being adopted.

The already extremely poor chances of the sultan imposing the use of firearms, and especially of the hand-gun, on the inwardly torn and intractable Mamluk ruling class had become even poorer by the fact that the Mamluks did not have, prior to the introduction of the new weapon, any important element of infantrymen either inside or outside that ruling class. In this respect the Ottomans had also been much luckier, for one of their most important corps, the Janissaries, had been mainly composed of infantry archers many generations before the introduction of the hand-gun. The problem facing the Ottomans had thus been very much simplified: with the advent of the hand-gun they did not have to *create* a unit of infantrymen for its employment. What they had to do was just to transform their Janissaries from infantry archers into infantry arquebusiers. This is not to say that that transformation had been accomplished overnight. The total replacement of the bow by the arquebus in the Janissary corps took indeed a very long time. Still, without the existence of such a corps of infantrymen the Ottomans' difficulties in introducing the hand-gun into the ranks of their army would have been much greater. The Mamluks, on the other hand, not having at their disposal a similar infantry unit, had been far more handicapped in their programme of employing the hand-gun.

The Ottoman Empire had within its boundaries plentiful deposits of the ores (especially copper) for the metals from which cannon were cast.<sup>255</sup> The Mamluk kingdom, on the other hand, had to import at least the bulk of its metals from abroad. The only source of metals in the whole area of Egypt, Palestine, the Lebanon, and Syria, was an iron mine

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near Beirut, the output of which was limited.<sup>256</sup> The scarcity of metals had already been acute during the wars against the Crusaders<sup>257</sup> and was rendered much more so by the appearance of firearms which consumed metals in quantities far greater than those required for the manufacture of earlier weapons.<sup>258</sup> Firearms, therefore, greatly increased the already considerable dependence of the Mamluk kingdom on supplies of raw materials from outside sources.

There is no doubt that the economic and financial situation of the Mamluk kingdom largely determined various aspects of the Mamluk military organisation and also affected the extent of the employment of firearms.<sup>259</sup> Contemporary sources furnish rich and well-substantiated evidence of the fact that the Mamluk kingdom underwent a process of steady economic decline since the beginning of the fifteenth century (*i.e.* the beginning of the ninth century A.H.) and that this process had been greatly accelerated since the second half of the century. Thus the age of economic decline coincided with the major part of the period in which firearms were employed.

Contemporary sources frequently refer to the great deterioration of the Mamluk armed forces as a result of the kingdom's economic decay.<sup>260</sup> The chronic emptiness of the treasury, according to these historians, was one of the main causes which roused the Royal Mamluks against the formation of the unit of arquebusiers (*aṭ-ṭabaqa al-khāmisa*) (See pp. 75-76). A far-reaching change such as the switch-over from traditional weapons to firearms is rendered much more difficult by economic difficulties. Some account of the kingdom's economic situation during the period is therefore relevant.

Below we shall submit a selection of testimonies by various Mamluk writers dealing with the economic decay of the kingdom. These writers offer several explanations for that phenomenon. Some of the explanations may be accepted without reservation; others are less convincing, but these writers' accounts of the terrible impoverishment of Egypt and Syria in the period under discussion are doubtless substantially correct, even if somewhat exaggerated. This is also borne out by the fact that no similar testimonies exist for the period preceding the early fifteenth century.

According to al-Maqrīzī the turning-point occurred

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between the years 803/1400-1401 and 806/1403-1404.<sup>261</sup> True, heavy blows were inflicted on the country even prior to that date, the most important being the great plagues of 749/1348 and 760/1359 and the great drought of 776/1375<sup>262</sup>; but the real decline, according to al-Maqrīzī, began with the invasion of Syria by Timurlane in 803/1400 which left destruction and desolation in its trail,<sup>263</sup> and with the accession of Sultan Faraj (801/1398-815/1412) which was followed by great convulsions and bloody battles between the Sultan and the Circassian Mamluks.<sup>264</sup> To the disasters caused by man was added a calamity caused by nature: a low Nile over a prolonged period.<sup>265</sup>

Elsewhere—in a passage quoted by Ibn Taghrībirdi—the same author remarks that Sultan an-Nāṣir Faraj was the most unfortunate among the rulers of Islam. By his mismanagement he destroyed the whole of Egypt and Syria (*al-Bilād ash-Shāmīya*) from the source of the Nile to the bed of the Euphrates. In 803/1400 Timur attacked Syria and destroyed Aleppo, Ḥamā, Ba'albak, and Damascus. Of these towns Damascus suffered the greatest damage, not a house being left intact. Syria's inhabitants were killed off in countless numbers. Since 806/1403-4, Egypt was afflicted by drought, followed by famine prices. The Mamluk amirs for their part did their level best to raise prices even more by hoarding grain and cereals. They also raised the land-taxes and despoiled the currency by substituting for the Muslim coins Frankish coins with images (*danānīr mushakhkhaṣā*). They further raised the price of gold until the value of one dinar sprang up from 24 to 240 dirhams.<sup>266</sup> They seized whatever they could lay hands on. On the other hand, they neglected the construction of dams<sup>267</sup> and forced the public to cover with its own money the losses incurred by their absence. The *wazīrs*<sup>268</sup> of Sultan an-Nāṣir Faraj compelled the merchants and other people to buy goods from the state at grossly inflated prices. To keep their appointments they were driven to extorting whatever they could from the people and bringing their spoils to the ruler. When a *wazīr* died and a new one took his place, Sultan Faraj would press the new official for money, and further extortions inevitably followed. Syria (*al-Bilād ash-Shāmīya*) was ruined because of this. In addition to these

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extortions Egypt and Syria suffered heavily from political unrest and revolts were frequent, while the numerous campaigns undertaken by an-Nāṣir Faraj to al-Bilād ash-Shāmiya made further inroads into the country's economic resources.

The Sultan used to spend on each such campaign at least a million dinars ; and the necessary funds were raised by means of the cruellest extortion. Then the Sultan would go to Syria, destroy its towns, squeeze the population dry, and return to Egypt. The only result of such deeds was to foment further revolts and insubordination. In this manner ruin came to Alexandria, to the provinces of al-Buḥayra and most of ash-Sharqīya, the main part of al-Gharbiya and the district of al-Fayyūm. Ruin engulfed all Upper Egypt and its people deserted it, more than forty *khuṭbas* being abolished. Aswan, which had been one of the greatest border towns of Islam, fell into ruin. More than half of Cairo and its suburbs suffered the same fate, and two-thirds of the population perished. In the course of Sultan Faraj's troubled reign, people died in Egypt in countless numbers.

*Fa-kharibat al-Iskandariya wa-bilād al-Buḥayra wa-akthar ash-Sharqīya wa-mu'zam al-Gharbiya wa-tadammarat bilād al-Fayyūm wa-'amma al-kharāb bilād as-Ṣa'īd bi-ḥaythu baṭala minhā ziyādatan 'alā arba'in khuṭba wa-dathara thaghr Uswān [sic!] wa-kāna min a'zam thughūr al-muslimīn wa-khariba min al-Qāhira wa-amlākihā wa-zawāhirihā ziyādatan 'an niṣfihā wa-māta min ahl Miṣr fī al-ghalā' wal-wabā' naḥwa thulthay an-nās wa-qūtila bil-fitan bi-Miṣr muddata ayyāmihi khalā'iq lā tadhul taḥta ḥaṣr.<sup>269</sup>*

The above description by al-Maqrīzī is fully corroborated by Ibn Taghrībirdī who says : " And in that year (*i.e.*, 806/1403-4) there was the great drought (*sharāqī*) in Egypt which was followed by terrible famine-prices and then by the plague. This was the first of the years of trouble and affliction in which most of Egypt and its dependencies were ruined by the drought and dissensions and the frequent change of governorships."<sup>270</sup> (*Wa-hādhihi as-sana hiya awwal sinīn [sic!] al-ḥawādith wal-miḥan allatī khariba fihā mu'zam ad-diyār al-Miṣriya wa-a'mālihā min ash-sharāqī wa-ikhtilāf al-kalima wa-taghyīr al-wulāt bil-a'māl wa-ghayrihā.*)

Under al-Mu'ayyad Shaykh (815/1412-824/1421) the

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ruin of the country became even greater.<sup>271</sup> The rural districts (*aryāf*) in the north and south suffered a great decline because of the “protections” (*himāyāt*)<sup>272</sup> which were imposed by Sultans Faraj, al-Mu’ayyad Shaykh, and Aynāl (857/1453-865/1460) and “this was one of the chief causes of ruin.”<sup>273</sup> In 855/1451 Egypt suffered from a great drought. The country was impoverished. Cairo was ruined. Huge numbers of its population left and went to al-Bilād ash-Shāmīya, their places being taken by poverty-stricken fellahin and beduin flooding into the city.<sup>274</sup> In the same year Egypt suffered both from drought and famine prices. People were reduced to beggary and most of the villages were emptied of their inhabitants.<sup>275</sup>

The misdeeds of the Mamluks of the ruling Sultan (*julbān*) in the days of Aynāl are also mentioned among the causes of Egypt’s economic decline. Many of its people wanted to leave and emigrate to other countries because of them.<sup>276</sup> In 868/1463-4 many of the inhabitants of al-Buḥayra left and moved to ash-Sharqīya and al-Gharbiya from fear of Beduin depredations (*Urbān*).<sup>277</sup> The total inability of the Sultan to check the ever-growing tide of Beduin raids was demonstrated by the fact that he opened negotiations with the rebellious tribe of ‘Arab Muḥārib. Their envoy came to Cairo, was received with full honours and the Sultan signed an agreement with him. Such a thing had never happened before.<sup>278</sup>

In the same year Egypt was described as being in course of ruin by reason of the *himāyāt*. Most of the country was subjected to the practice of *himāya*, and, according to the historian, this was why it was impossible for her to recover economically.<sup>279</sup> In the year 872/1467-8 Ibn Taghribirdī drew a most sombre picture. The defeats which the Mamluk Sultan had suffered at the hands of the Turcoman chieftain Shāh Siwār had completely undermined the country’s internal security. Insurrections by Beduin (*Urbān*) had ruined most of the villages. Al-Buḥayra was completely destroyed; nor, remarks the chronicler, is this surprising: for if in al-Gharbiya and al-Manūfiya, one of the most fertile parts of Egypt (because of its being situated between the two arms of the Nile-delta), most of the villages are ruined, how much worse was the situation in al-Buḥayra and other districts.

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*Wa-ṭāla hādihā al-amr bi-aryāf Miṣr ḥattā khariba akthar qurāhā fa-hādihā mā kāna bi-Ṣa'īd Miṣr wa-asfalihā wa-ammā iqlīm al-Buḥayra fa-sha'nuhum al-ḥarb wal-qitāl ma'a al-'Arab dawāman ḥattā shamala akthar qurāhā al-kharāb wa-yāhiqqu lahā an takhrab fa-inna iqlīm al-Gharbīya wal-Manūfiya jazīra bayna baḥrayn wa-humā a'mar bilād Miṣr qad khariba al-āna akthar qurāhā fa-kayfa anta bi-iqlīm al-Buḥayra wa-ghayrihā.*<sup>280</sup>

According to Ibn Taghrībirdī, the hardest years were the last years of his life 872-874/1467-1470. (*innanī lam ara fimā ra'aytu mundhu 'umrī awḥash ḥālan min hādhihi as-sinūn ath-thalāth sanat ithnatayn wa-sab'in wal-latayni ba'dahā.*)<sup>281</sup>

Ibn Iyās states that from the year 901/1495-6, the downward trend was accelerated, the income of the feudal fiefs diminished, and disorder increased until it passed all bounds.<sup>282</sup> Things went from bad to worse<sup>283</sup> until in 908/1502-3 it was stated that the main harbours of Egypt, including Alexandria, Damietta, and Djedda (which was vitally important during the Circassian period) were completely ruined by crushing taxation and extortion.<sup>284</sup>

In the year 918/1512-13 Ibn Iyās gives a very depressing picture.<sup>285</sup> In 920/1514-15 the treasuries of all the *Dīwāns* (i.e., *Dīwān al-Mufrad*, *Dīwān ad-Dawla*, and *Dīwān al-Khāṣṣ*) were completely empty. The harbour of Alexandria was in ruins. The harbour of Djedda was desolate because of the Franks (Portuguese), and no ships had called there for about six years. A similar situation prevailed at Damietta, while al-Buḥayra was ruined because of Beduin raids.<sup>286</sup>

Thus Mamluk sources enable us to trace, through an unbroken narrative, the ever-increasing economic depression of Egypt from the beginning of the fifteenth century.<sup>287</sup> As for firearms, it stands to reason that such continuous decline militated against their development.

#### SOCIO-PSYCHOLOGICAL ANTAGONISM TO FIREARMS WEIGHED AGAINST OTHER FACTORS

In the preceding section we have dealt with a variety of factors likely to have interfered with the use of firearms by the Mamluks. Each of these factors has its bearing on the

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problem, and their cumulative effect on the destiny and development of firearms under Mamluk rule is far-reaching indeed. Yet all these factors put together were not, in the present writer's opinion, as telling as the aversion to firearms shown by Mamluk military society. For despite the absence of any powerful foes equipped with firearms, despite the fact that the new weapons were introduced into the kingdom after it had passed its zenith, despite the lack of the necessary metals for casting cannon, and despite the deterioration of the economic situation, firearms had been employed by the Mamluks on a large scale from the very outset, and the use of the weapon grew until it reached very great proportions during the reign of Qānṣūh al-Ghawrī. No doubt, without the restraining effect of these various factors, the use of firearms would have assumed even larger proportions; yet all this would not have fundamentally improved the Mamluk kingdom's position in relation to firearms, for its main weakness was not one of quantity but in the manner of their employment. Their abundant use in siege warfare and against the Portuguese on the one hand, and their total absence from battles fought in the open field, including Marj Dābiq, on the other; the recruitment of socially inferior units for their use, while the whole body of pure Mamluks kept rigidly aloof. This, then, was the crux of the firearms problem in the kingdom: and it was mainly the fruit of that extremely negative attitude towards their use, though the other factors referred to exerted a by no means negligible influence in the same direction. The negative attitude to firearms was enormously reinforced by lack of discipline and internal dissensions, factors resulting from the peculiar structure of Mamluk society (*cf.* p. 99f. above). The combined power of these two tendencies (*i.e.*, antagonism to the weapon and internal dissensions), each of them formidable in itself, made stillborn any attempt to impose firearms on the pure Mamluk units.

#### FIREARMS AS A DECISIVE FACTOR IN SHAPING THE DESTINY OF WESTERN ASIA AND EGYPT

We have shown above that firearms, used though they were in the Mamluk kingdom on a very large scale, yet met

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with total repudiation on the part of the units forming the social and military élite of the army. This fact not only determined the fate of the Mamluk kingdom itself, but also had far-reaching effects on the future of Western Asia and Egypt for many generations to come. For it is inconceivable that the Ottomans, but for their total superiority in firearms, could ever have inflicted such crushing defeats on their two Muslim enemies, the Safawis and the Mamluks, or that they could have annexed and held until the very dismemberment of the Ottoman Empire such vast territories. This conclusion is based on the following arguments:

In 1502, only a few years before the Battles of Chaldiran and Marj Dābiq, a new and vigorous state was set up in Persia, headed by a great leader (Ismā'īl aṣ-Ṣafawī) and imbued with the ideal of promoting the cause of the Shī'a and fighting the Sunna both within and without its borders. Such a state in itself constituted a grave challenge to the Sunni Ottoman Empire; and the menace was greatly increased by the fact that Eastern Anatolia was infested with Shī'a adherents. More than that: Ismā'īl aṣ-Ṣafawī was himself not a Persian but a Turcoman, and he was very greatly venerated and even idolised amongst many Turcoman tribesmen who flocked in their thousands to his standard. Had the Ottomans not put an abrupt and decisive end to this process their hold on vast areas in the Eastern parts of their realm would have been greatly jeopardised, and the Shī'a doctrine would have registered one of its most resounding successes.

It was perfectly natural, therefore, that the Ottomans, in tackling their Muslim adversaries, directed their attention first to the East. At Chaldiran (August, 1514) Ottoman artillery and arquebuses wrought havoc among the ranks of the Safawis who had no similar arms with which to reply<sup>288</sup> and consequently had forced them to retreat into the interior of the Persian kingdom. The Ottomans conquered vast territories; but they did not succeed in annihilating the Safawis.<sup>289</sup> Had the Ottomans not employed firearms on such a large scale in the Battle of Chaldiran and in the battles that followed it, it is reasonably certain that their victory—even if they had been able to win—would have been so far less decisive. In other words, the Ottomans would have acquired

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far less Safawid territory in that event and a much stronger Safawid army would have been left intact to prepare for a war of revenge.<sup>290</sup> Such a threat on the left flank of the Ottomans, combined with the danger of insurrection among the oppressed Shī'a in Eastern Anatolia, would have greatly diminished the chances of an Ottoman offensive against the Mamluks. The Ottomans could proceed to deal with the Mamluks only after they had succeeded, by the liberal use of firearms, in rendering the Safawis powerless for many years to come.

The Mamluk army, despite its internal dissensions and despite the process of deterioration it underwent, was still a formidable opponent for any army equipped with weapons similar to its own. Moreover, under the leadership and inspiration of a great personality like Qānṣūh al-Ghawrī, and thanks to the revival of *furūsiya* exercises the Mamluks received a thorough training in the traditional methods of warfare. Their military efficiency, therefore, was by traditional standards on a high level. Had the Ottomans fought them with bow, lance, and sword, it is indeed doubtful whether they could ever have beaten them at all. The evidence gathered from Ibn Zunbul's work (see pp. 88-95) proves beyond any shadow of doubt that by far the most important cause of Mamluk defeat was the Ottoman use of firearms.

In planning the conquest of the territories lying to the East and South of their Empire, the Ottomans had to reckon not only with the power of their two Muslim rivals, but also, and to an even greater extent, with the situation on their main front in Europe. The Ottomans could embark on great campaigns, absorbing the bulk of their armed strength, in the East and South when there was a long lull on their North-Western front—but not otherwise. Such a lull did, indeed, occur when Sultan Selim launched his offensives against the Safawis and the Mamluks. But Selim, owing to his superiority in firearms, could count on a *blitzkrieg*—and hence on the early return of his main forces to his main front.

Even according to the most reserved and conservative estimates, the wars against the Safawis and the Mamluks would have been much more protracted if the Ottomans had employed the traditional weapons. Under such circumstances,

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would an Ottoman Sultan have dared to expose his North-Western frontier through wars in Asia and Egypt which perforce would have lasted very long? Even if at the outset there had been good prospects of a long period of peace on the European front, would not an Ottoman Sultan have shrunk from the possibility of a Christian attack while his main armies got bogged down in a series of indecisive battles on the Muslim front? For the Christians would not have allowed such a golden opportunity for attack to slip by. Moreover, communications and means of transport within the Ottoman Empire were notoriously bad, and a determined enemy could achieve great successes before the Sultan found time to rush adequate reinforcements from an area lying perhaps many hundreds of miles away.

Thus the combined effect of the Safawis, Mamluks, the European front and bad communications, but for the effective use of firearms, would have rendered the Ottoman conquests of the early sixteenth century most unlikely.<sup>291</sup> It follows that firearms were a most decisive factor in shaping the destinies of Western Asia and Egypt for four centuries (1514-1918), for had this area not been incorporated in the Ottoman Empire, its history would have been entirely different.

#### TEXT REFERENCES

- <sup>1</sup> Oman: ii, pp. 218-220, 227-228.
- <sup>2</sup> The rapidly increasing use of artillery in sieges is evident from hundreds of instances. Many of these, especially in Egypt, have already been cited in preceding notes, and others will be quoted in the following pages. References to the use of artillery during sieges in Syria include the following: *Nujūm*(P) v, p. 526; vi, p. 50, l. 7; p. 65, l. 8; p. 117, ll. 20-21; pp. 210-211; p. 370, l. 3; vii, p. 63, l. 9; p. 66, ll. 18-19; p. 96, ll. 9-10. Ibn al-Furāt: ix, p. 215, l. 19. Ibn Iyās: ii, p. 72, ll. 25-27; p. 131, ll. 17-18; iii (KM), p. 63, ll. 11-15; p. 70, ll. 12-13; p. 372, ll. 14-18.
- <sup>3</sup> An exception is the last big battle which the Mamluks fought against the Ottomans at Raydāniya, near Cairo. The peculiar character of this battle is discussed on pp. 51-52, 83-86.
- <sup>3a</sup> It would appear that there had been practically no constructional difference between siege-artillery and field-artillery during the early history of the weapon. Light pieces of siege-artillery would be carried in wheeled carts to the field of battle, and there dismounted and operated from the ground (F. Lot, *L'Art militaire et les Armées au moyen Age en Europe et dans le proche Orient*, Paris, 1946, Vol. I, p. 421, n. 3; Vol. II, pp. 465-9). This only emphasised the Mamluks' aversion to employing artillery in the battlefield, for had they wanted to do so they could have shifted part of their light artillery from siege into field operations with perfect ease.
- <sup>4</sup> The most conspicuous measure taken by Qāyṭbāy in connection with artillery was the building of his famous tower (*burj*) in Alexandria in 884/1479. The tower, which was intended to protect the town from the incursions of the Frankish corsairs and was strongly fortified, was surrounded by a large number of guns (*wa-ja'ala ḥawla al-burj makāhīlan* [sic!] *mu'ammara bil-madāfi' laylan wa-nahāran bi-sabab an lā taṭruqa al-Faranj lith-thaghr 'alā ḥini ghafla*—Ibn Iyās: iii [KM], p. 151, ll. 18-19). Al-Ghawrī paid special attention to Qāyṭbāy's tower, which formed the key of Alexandria's defence against an attack from the sea. In Rabī I 907/1501, a short time after his accession to the throne, he fixed on the tower's southern entrance a marble tablet, on which was inscribed an order forbidding the garrison to take any weapons out, special mention being made of *makāhīl* and *bārūd*. The inscription threatens that transgressors, if caught, will be hanged over the gate (Van Berchem: *Corpus Inscriptionum Arabicarum, L'Egypte*, p. 490).
- <sup>5</sup> Ibn Iyās: iii (KM), pp. 250-251. Qāyṭbāy's experiment with arquebusiers is discussed on pp. 63-64.
- <sup>6</sup> Qāyṭbāy's son, Sultan an-Nāsir Abū as-Sa'ādāt Muḥammad, who preceded Qānṣūh al-Ghawrī, concerned himself mainly with small arms rather than artillery.
- <sup>7</sup> For the rôle of this hippodrome in the Mamluk war effort see pp. 57-58.
- <sup>8</sup> Ibn Iyās: iv, p. 260, l. 20; p. 264, l. 21.
- <sup>9</sup> Ibn Iyās: iv, p. 123, ll. 8-10; p. 191, ll. 17-21; p. 229, ll. 16-17; p. 229, l. 23-p. 230, l. 1; p. 243, ll. 13-15; p. 260, l. 17-p. 261, l. 7; p. 261, ll. 19-21; p. 264, l. 2-p. 265, l. 18; p. 266, l. 22-p. 267, l. 1; p. 288, ll. 8-10, ll. 20-22; p. 314, ll. 4-9; p. 340, ll. 1-4; p. 366, ll. 6-7; p. 374, ll. 20-22.

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- <sup>10</sup> Of. the references in the preceding note.
- <sup>11</sup> Ibn Iyās: iv, p. 191, ll. 17-21; p. 192, ll. 10-15.
- <sup>12</sup> Ibn Iyās: iv, p. 260, l. 17-p. 261, l. 7.
- <sup>13</sup> Ibn Iyās: iv, p. 374, ll. 20-22.
- <sup>14</sup> Ibn Iyās: iv, p. 264, l. 18-p. 265, l. 2.
- <sup>15</sup> Ibn Iyās: v, p. 12, ll. 20-22.
- <sup>16</sup> Besides dispatching to Alexandria a great number of cannon and rebuilding its fortified towers (Ibn Iyās: v, p. 93, l. 1), al-Ghawrī strengthened the Mediterranean coast of Egypt generally by building other towers and a wall at Rosetta (see note 24, p. 113, below) and a fortress (*qal'a*), together with further towers, in at-Tīna (Ibn Iyās: v, p. 92, l. 23-p. 93, l. 1). As in the case of Qāyṭbāy's tower of Alexandria, these fortifications, constructed with the object of defending the coast against the incursions of Frankish pirates, could only do so effectively if they were equipped with artillery.
- <sup>17</sup> All the source-material on which the above lines are based is presented on pp. 77-82.
- <sup>18</sup> The two expeditionary forces sent by the Mamluks against the Portuguese had an additional assignment: each was accompanied by a large group of masons, carpenters, and other workers. The first expedition built towers (*abrāj*) surrounded by walls in the harbour of Jidda. The contemporary source says that the structure was excellent (*jā'at min aḥsan al-mabānī*) (Ibn Iyās: iv, p. 84, ll. 16-18; p. 95, l. 21-p. 96, l. 1; p. 286, l. 20-p. 287, l. 8). Approximately at the same time the Sultan built caravanserais (*khāns*), warehouses (*hawāṣil*), and towers at 'Aqaba and paved the road leading to the harbour. He also established there a Mamluk garrison, which was relieved every year. In addition he built a tower at Nakhl, another at 'Ajrūd, and a third at Aznam (*ibid.*, p. 151, l. 19-p. 152, l. 4). A further tower and a wall were built at Yanbu', whose fortifications had been demolished by Sultan al-Ashraf Barsbāy (825/1422-842/1438) (*Zubda*, p. 16, ll. 9-11), nothing being done to restore them until al-Ghawrī's time. The second and bigger expeditionary force built a fortress (*qal'a*) with towers on Kamaran island (*ibid.*, v, p. 81, ll. 3-6). For the fortifications which al-Ghawrī built at Rosetta cf. note 24.
- <sup>19</sup> Cf. *Sulūk* i, p. 75, ll. 8-9; p. 83, ll. 4-6; p. 87, ll. 4-5. Abū al-Fidā': *Taqwīm al-Buldān*, p. 87. *Nujūm*(C), vii, p. 192, l. 5, and n. 9. *Fawāt al-Wafayāt* i, p. 114, l. 1.
- <sup>20</sup> Cf. n. 4, p. 112, above, where the special attention paid by al-Ghawrī to Qāyṭbāy's tower is also discussed.
- <sup>21</sup> Ibn Ṭūlūn: p. 75, ll. 21-24; p. 73, l. 16, l. 22; p. 72, l. 11; p. 69, ll. 17-28; p. 68, ll. 12-14; p. 67, ll. 2-4, ll. 11-12, ll. 32-33; p. 66, ll. 12-13, ll. 30-11.
- <sup>22</sup> A detailed account of this aspect of Ṭūmānbāy's preparations to meet the Ottomans and of his new approach to firearms is given on pp. 83-86.
- <sup>23</sup> Ibn Zunbul: *Fatḥ Miṣr*. Cairo, 1278H, p. 31, l. 11.
- <sup>24</sup> Ibn Ṭūlūn: p. 39, ll. 10-11. Oman gives the following account of Ṭūmānbāy's concentration of artillery: "He had scraped together all the artillery he could collect, ship guns hastily purchased from the Venetians at Alexandria, and others brought from Rosetta,

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Damietta, and other fortified places" (*A History of the Art of War in the XVI Century*. London, 1937, p. 623). This account, which is presumably based on European sources, generally tallies with the conclusions derived from Mamluk sources. There is every reason to believe that Rosetta was defended by artillery, for Sultan Qānūh al-Ghawrī built towers and a wall there which were alluded to by Ibn Iyās (iv, p. 474, ll. 20-23; p. 476, ll. 11-15; v, p. 37, ll. 16-17; p. 93, l. 1; p. 110, ll. 11-13). For contemporary and near-contemporary European works describing the Battle of Raydāniya cf. G. W. Stripling: *The Ottoman Turks and the Arabs*, Illinois, 1942, p. 53 and n. 68. See also v. Hammer's and Jorga's description of the Battle of Raydāniya.

<sup>25</sup> Ibn Iyās: v, p. 80, ll. 18-20; p. 137, ll. 10-13; p. 138, ll. 6-10; p. 142, ll. 3-11; p. 142, l. 12-p. 143, l. 19. Ibn Zunbul: p. 31, l. 4-p. 33, l. 16. Ibn Ṭūlūn: p. 39, ll. 6-35. Oman: *op. cit.*, pp. 622-625. Stripling: *op. cit.*, pp. 52f.

<sup>26</sup> Ibn Iyās: v, p. 142, ll. 10-11.

<sup>27</sup> Cf. references in n. 25.

<sup>28</sup> Cf. pp. 83-86.

<sup>29</sup> Cf. pp. 61-86.

<sup>30</sup> Cf. the present writer's "*L'Esclavage du Mamelouk*," Jerusalem, 1951, and his "Studies on the Structure of the Mamluk Army" in *BSOAS*, vol. xv (issues of June and October, 1953) and vol. xvi (issue of February, 1954). Cf. also pp. 103-107.

<sup>31</sup> This description is based on the chapter dealing with the history of *furūsiya* in the writer's hitherto unpublished work on the Mamluk army. The various *furūsiya* exercises and games discussed therein will not be described here.

<sup>32</sup> As the most important regiments of the Mamluk army were stationed in Cairo, it was mainly in the hippodromes of the capital that most of the training took place. The state of repair of these hippodromes was therefore an important factor in determining the level of proficiency reached (cf. "Studies on the Structure of the Mamluk Army," *BSOAS*, 1953, pp. 203-206, and n. 1 on p. 203).

<sup>33</sup> *Khiṭaṭ* ii, p. 198, ll. 7-15. *Ṣubḥ* iii, p. 378, ll. 4-13.

<sup>34</sup> *Khiṭaṭ* ii, p. 198, ll. 22-26. *Nujūm*(C) vii, p. 191, n. 6; viii, p. 88 and note.

<sup>35</sup> *Khiṭaṭ* ii, p. 111, ll. 6-17; p. 113, ll. 13-20. Cf. also *ibid.*, i, p. 365, ll. 3-4; ii, p. 109, ll. 6-7; p. 145, ll. 15f.

<sup>36</sup> *Khiṭaṭ* ii, p. 198, l. 36-p. 199, l. 12. *Sulūk* ii, p. 5, l. 16-p. 6, l. 1.

<sup>37</sup> *Sulūk* ii, p. 123, ll. 15-19. Al-Mufaḍḍal b. Abī al-Faḍā'il: *An-Nahj as-Saʿīd* (in *Patrologia Orientalis*), vol. xx, p. 221, ll. 4-5. Zetterstéen (ed.): *Beiträge zur Geschichte der Mamlukensultane*. Leiden, 1919, p. 159, ll. 2-3. *Khiṭaṭ* ii, p. 200, l. 30-p. 202, l. 17. Cf. also *Ṣubḥ* iii, p. 377, l. 10-p. 378, l. 8.

<sup>38</sup> *Nujūm*(P) vi, p. 411, ll. 15-20. Barqūq is said to renew the *maydān* situated below the Citadel (*Nujūm*[P] v, p. 600, ll. 18-19). It is not clear which hippodrome is referred to here.

<sup>39</sup> *Khiṭaṭ* ii, p. 199, l. 26-p. 200, l. 3. For the hippodromes built by an-Nāṣir Muḥammad cf. Zetterstéen: *op. cit.*, p. 184, ll. 3-5. *Nujūm*(P) ix, p. 97, l. 5-p. 98, l. 4; p. 179, ll. 3-6; p. 193; ll. 6-7, and the notes. *Sulūk* ii, p. 210, ll. 8-10. For the state of the kingdom

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under Faraj cf. the present writer's "The Circassians in the Mamluk Kingdom," *JAOS*, 1949, pp. 135-147.

<sup>40</sup> *Nujūm*(P) vi, p. 410, ll. 12-16.

<sup>41</sup> Cf. the references from these two authors in notes 33-39 on p. 114.

<sup>42</sup> *Khiṭaṭ* ii, p. 111, ll. 11-13, ll. 19-23.

<sup>43</sup> On Baybars' addiction to the *furūsīya* exercises, which he insisted should be carried on even when the army was on the march, cf. Sulūk i, p. 573, ll. 1-7; p. 595, l. 16-p. 596, l. 1; p. 601, l. 18; p. 605, l. 3; p. 611, l. 12-p. 612, l. 14; p. 637, l. 10; p. 669, ll. 1-2. These sources also bear witness to the enthusiasm for the exercises which he aroused among the troops.

<sup>44</sup> *Khiṭaṭ* ii, p. 111, ll. 13-18; p. 112, l. 16f. Cf. also the whole chapter on *Maydān al-Qabaq* (ibid., p. 111, l. 7-p. 113, l. 22).

<sup>45</sup> A. N. Poliak offers a very good definition of the *furūsīya*: "The qualities which the accomplished knight had to possess, *furūsīya*, are to be defined as 'physical culture' rather than as 'chivalry': among their 'branches' (*anwā'* or *funūn al-furūsīya*) we find the correct use of bridle and spurs, the knowledge of pedigrees of horses, wrestling, lance exercise, the preparation of bows and arrows and their use, etc." (*Feudalism in Egypt, Palestine, Syria and the Lebanon*. London, 1939, p. 15 and n. 6.) The best single definition of the *furūsīya* given by a Mamluk historian is that of Ibn Taghrībirdī who points out with considerable, though not with complete, justification, that it is entirely different from courage and valour. He writes: "The *furūsīya* is something different from bravery and intrepidity, for the brave man would throw down his adversary by force of courage, while the horseman is the one who handles his horse well in his charge and in his retreat and who knows what he needs in matters pertaining to his horse and his arms and the arrangement of all this in a manner that he may follow the rules known and established among the people of this art" (*Al-furūsīya hiya naw' ākhar ghayr ash-shajā'a wal-iqdām fash-shujā' huwa alladhī yulqī gharīmahu bi-quwwat janān wa-fāris al-khayl huwa alladhī yuḥsin tasrīḥ al-faras fī karrihi wa-farrihi wa-yadrī mā yalzamuhu min umūr farasīhi wa-silāḥīhi wa-tadbīr dhālika kullīhi bi-ḥaythu annahu yasīru fī dhālika 'alā al-qawānīn al-muqarrara al-mā'rūfa bayna arbāb hādihā ash-shā'n—Nujūm*[P] vi, p. 445, ll. 4-11). The difference between *furūsīya* and courage may also be deduced from Ibn Taghrībirdī's remark on Aqbughā at-Timrāzī: "His bravery in battle was not as high as his knowledge of the various exercises and the *furūsīya*" (*wa-lam takun shajā'atuhu fī al-ḥurūb bi-qadri ma'rīfatihi li-anwā' al-malā'ib wal-furūsīya—Nujūm*[P] vii, p. 265, ll. 7-9). In practice, however, the word *furūsīya* had acquired a much wider sense. The very fact that Ibn Taghrībirdī deems it necessary to explain that *furūsīya* and courage are not the same thing and to give a definition clarifying the meaning of the term, tends to show that in everyday life the distinction had become blurred; and indeed, many excelling in *furūsīya* are described as brave men. Expressions like *kāna mawṣūfan bish-shajā'a wal-furūsīya*, *bish-shajā'a wal-furūsīya wal-iqdām*, etc., are most common (to quote a few examples: *Duwal al-Islām* ii, p. 126, ll. 19-20. Ibn al-Furāt: ix, p. 418, l. 8. *Durar* i, p. 390, l. 21. *Ḍaw'* iii, p. 17, ll. 21-22; p. 40, ll. 8-9; p. 297, l. 1;

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x, p. 345, l. 26. Ibn Iyās: ii, p. 55, l. 26; p. 62, ll. 10-11; p. 102, l. 3; p. 142, ll. 18-19; p. 144; p. 156, ll. 26-27; iii [KM] p. 69, l. 18; p. 83, l. 3; p. 145, ll. 18-19; p. 225, l. 13; p. 421, l. 4; iv, p. 119, l. 23; v, p. 70, ll. 9-10; p. 77, ll. 14-15). Cf. also the identification of *shajā'a* and *furūsiya* in the passages quoted from Ibn Zunbul on pp. 90-95. Conceptions of chivalry were not alien to the Mamluks either, as we shall see later, and this fact did not by any means facilitate the introduction of firearms. The different branches of the *furūsiya* were called *funūn al-furūsiya* (*Nujūm*[P] vi, p. 804, l. 10; vii, p. 301, ll. 7-8; p. 810, l. 5) or simply *funūn* (*Nujūm*[C] vii, p. 311, ll. 9-10, l. 12. *Nujūm*[P] v, p. 236, ll. 13-17; p. 417, ll. 3-4); *anwā' al-furūsiya* (Ibn Iyās: iii [KM], p. 11, l. 3. *Nujūm*[P] vii, p. 344, l. 1); *funūn al-atrāk* (*Nujūm*[P] vii, p. 324, l. 14); *anwā' al-malā'ib* or *al-malā'ib* (*Nujūm*[P] vii, p. 810, l. 5. *Daw'* ii, p. 329, ll. 14-15). Cf. also *'ilm al-furūsiya* (Ibn Iyās: ii, p. 87, l. 23) or in a shortened form: *'ilm*, *'ulūm* (*Nujūm*[C] vii, p. 311, ll. 9-10, l. 12. *Nujūm*[P] v, p. 236, ll. 11-12; vii, p. 300, ll. 3-4).

<sup>46</sup> *Nujūm*(P) v, p. 236, ll. 14-16.

<sup>47</sup> *Hawādith*, p. 118, ll. 13-14.

<sup>48</sup> *Zubda*, p. 86, ll. 15-17.

<sup>49</sup> *Zubda*, p. 87, ll. 11-14. Cf. also Ibn Iyās: iii (KM), p. 387, ll. 19-20. *Ṣafahāt lam tunshar min Badā'i' az-Zuhūr*, ed. M. Mostafa, Cairo, 1951, p. 29, ll. 5-6.

<sup>50</sup> Ibn Iyās: iii (KM), p. 10, l. 6. The existence of a *maydān* in Cairo in the Circassian period is indeed mentioned from time to time, but not as a rule in connection with military training or lance-plays (*Nujūm*[P] vii, p. 16, ll. 7-12. *Hawādith*, p. 304, l. 3. Ibn Iyās: ii, p. 158, ll. 28-29; iii [KM], p. 226, ll. 6-7, and some other instances).

<sup>51</sup> For the precarious existence of the lance-plays during the *maḥmil* procession in the Circassian period, cf. *Tibr*, p. 95, l. 20-p. 96, l. 4. *Nujūm*(P) vii, p. 140, ll. 12-13. *Hawādith*, p. 15, ll. 13-14; p. 180, ll. 1-9. Ibn Iyās: ii, p. 43, ll. 11-13; iii (KM), p. 322; iv, p. 59, l. 20-p. 60, l. 5. Qānshūh al-Ghawri revived these plays (Ibn Iyās: iv, p. 59, l. 20-p. 60, l. 5; p. 60, l. 22-p. 61, l. 16; p. 182, ll. 5-9; p. 392, ll. 3-7) together with his construction of a new *maydān* and his general renewal of the *furūsiya* exercises.

<sup>52</sup> *Hawādith*, p. 180, ll. 1-9.

<sup>53</sup> Ibn Iyās: iv, p. 60, ll. 9-13.

<sup>54</sup> Ibn Taghrībirdī is a greater authority than the rest of the Mamluk historians on military and related subjects. In the field of *furūsiya* his superiority is even more marked. For his unusual experience cf. *Manhal* i, under Aqbughā at-Timrāzi; v. fol. 43b, l. 19-fol. 44a, l. 14; viii, fol. 444a, ll. 12-13; fol. 516a, ll. 5-8. *Nujūm*(C) vii, p. 312, ll. 5-9. *Nujūm*(P) vii, p. 265, ll. 2-6. *Hawādith*, p. 457, ll. 1-11.

<sup>55</sup> *Nujūm*(P) vii, p. 312, ll. 5-9.

<sup>56</sup> *Nujūm*(P) v, p. 236, ll. 15-17.

<sup>57</sup> The strength of the Mamluk army was sapped by various factors of which the ruin of the *mayādīn*, though among the most important, was only one. Some of the reasons for the decline of the Mamluk army and kingdom are discussed on pp. 99-107. The deterioration of the Mamluk army's military fitness, discipline, and fighting

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spirit under the Circassians is described in detail by the author in chapter called "The Army on the March" of his hitherto unpublished work on the Mamluk army.

<sup>58</sup> Ibn Iyās: iv, p. 56, ll. 3-19, gives a detailed description of al-Ghawrī's hippodrome.

<sup>59</sup> Besides training and military parades, al-Ghawrī's hippodrome also served for various kinds of state ceremonies.

<sup>60</sup> Ibn Iyās: iv, p. 46, ll. 5-11; p. 72, ll. 10-21; p. 124, ll. 10-12; p. 143, ll. 15-16; p. 145, ll. 12-20; p. 154, ll. 7-9; p. 160, ll. 20-22; p. 164, ll. 1-4; p. 201, ll. 17-23; p. 218, l. 23-p. 219, l. 10; p. 219, ll. 13-15; p. 220, ll. 17-21; p. 229, ll. 7-12; p. 230, ll. 3-7; p. 255, ll. 8-16; p. 259, ll. 3-14; p. 265, l. 20-p. 266, l. 16; p. 268, ll. 14-18; p. 269, ll. 5-11. The invitation of envoys to attend *furūsīya* exercises did occur in earlier times (cf. for example *Ḥawādith*, p. 273, ll. 1-2. Ibn Iyās: ii, p. 55, ll. 7-8), but it never happened so frequently as in the days of Qānsūh al-Ghawrī.

<sup>61</sup> Ibn Iyās: iv, p. 321, ll. 19-21.

<sup>62</sup> Ibn Iyās: iv, p. 269, l. 10, and *ibid.* p. 230, ll. 3-7; p. 268, ll. 14-18; p. 391, ll. 13-14.

<sup>63</sup> Ibn Iyās: iv, p. 218, l. 23-p. 219, l. 10; p. 219, ll. 13-15; p. 220, ll. 17-21; p. 230, ll. 3-7; p. 265, l. 20-p. 266, l. 10; p. 268, ll. 14-18.

<sup>64</sup> Ibn Iyās: iv, p. 268, l. 18.

<sup>65</sup> Ibn Iyās: iv, p. 46, ll. 5-11; p. 154, ll. 7-9; p. 160, ll. 20-26; p. 383, ll. 20-21; p. 391, ll. 13-19.

<sup>66</sup> Ibn Iyās: iv, p. 391, l. 14.

<sup>67</sup> Units of arquebusiers were sometimes inspected by the Sultan himself (see p. 64 above). He was likewise present during the testing of cannon, as mentioned above on p. 48. But firearms were not included in the lavish state ceremonies.

<sup>68</sup> Ibn Iyās: iv, p. 143, ll. 15-16; p. 154, ll. 7-9; p. 219, ll. 13-15; p. 259, ll. 3-14; p. 265, l. 20-p. 266, l. 16; p. 383, ll. 21-23.

<sup>69</sup> Additional evidence of this repugnance, both towards artillery and small arms, will be given on pp. 63-95.

<sup>70</sup> Ibn Iyās: iii (KM), p. 263, n. 2. From now on only the terms "arquebus" and "arquebusiers" will be used in this work for reasons of convenience. The present writer is well aware of the possibility that older types of portable firearms besides the arquebus might be sometimes intended by the Mamluk sources (cf. also C. Oman, *A History of the Art of War in the Sixteenth Century*, p. 80; F. Lot, *L'Art militaire et les Armées* i, p. 421, n. 3; II, p. 202).

<sup>71</sup> Ibn Iyās: iii (KM), p. 335, ll. 18-19. Ibn Ṭūlūn, p. 73, ll. 14-27.

<sup>72</sup> Ibn Iyās: iii (KM), p. 356, n. 2; p. 357, n. 2; p. 360, l. 21-p. 361, l. 3; p. 449, ll. 19-21; p. 455, ll. 19-20; iv, p. 308, ll. 9-14; p. 309, ll. 3-9; p. 402, l. 23-p. 403, l. 3; p. 467, l. 1; v, p. 118, l. 21-p. 119, l. 1; p. 128, ll. 17-20; p. 131, ll. 12-23; p. 135, ll. 18-20; p. 136, ll. 16-22; p. 143, ll. 2-13; p. 154, ll. 4-6; p. 168, ll. 8-10; p. 319, ll. 17-18; p. 322, ll. 19-21. Al-Ishāqī: *Akhbār al-Uwal*, p. 128, ll. 34-36; p. 129, ll. 3-6. Cf. also references in many of the notes below.

<sup>73</sup> Cf. references in the previous note.

<sup>74</sup> Cf. *bunduq* in Dozy's and Lane's dictionaries and in de Sacy's glossary to his *Chrestomathie arabe* Huuri: pp. 106, 107.

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<sup>75</sup> Cf. the Arab dictionaries, Lane and Dozy. All the weapons firing *bunduq* described by al-Qalqashandī, such as *qaws al-bunduq*, *al-jarāwa* or *aẓ-ẓabīnīya* are used exclusively in hunting (*Ṣubḥ* ii, p. 138). Cf. also *Sulūk* i, p. 523. Abū al Fidā: iv, p. 18; p. 137. Khīṭaṭ ii, pp. 104-105. Maḥmūd Kashghārī: *Dīwān Lughāt at-Turk* i, p. 325 ll. 2-4; p. 398. For *bunduqat raṣāṣ* shot from a bow cf. *Mongols* (ed. Quatremère), pp. 291-292. For *bunduq* used in battle before the adoption of the arquebus cf. Huuri: p. 106; pp. 111-112. Cf. also Aydakīn al-Bunduqdārī's crossbow in L. A. Mayer: *Saracenic Heraldry*, Pl. xl, fig. 1.

<sup>76</sup> Ibn Iyās: iii (KM), p. 356, n. 2; p. 357, n. 2; p. 360, l. 21-p. 361, l. 3.

<sup>77</sup> Ibn Iyās: iv, p. 308, ll. 3-9. For *aṭ-ṭabaqa al-khāmisa* cf. pp. 71-82.

<sup>78</sup> Ibn Iyās: iv, p. 467, l. 1.

<sup>79</sup> Ibn Iyās: v, p. 67, l. 23.

<sup>80</sup> *Akhbār al-Uwal*: p. 128, ll. 34-36.

<sup>81</sup> Ibn Iyās: v, p. 143, ll. 3-4; p. 195, ll. 22-23. Ibn Zunbul: p. 9, ll. 11-12; p. 20, ll. 5-8; p. 29, ll. 19-21; p. 34, ll. 8-11; p. 35, ll. 19-24; p. 77, ll. 19-22.

<sup>82</sup> Ibn Iyās: v, p. 143, ll. 3-4; p. 168, ll. 8-10.

<sup>83</sup> Ibn Iyās: iv, p. 402, l. 23-p. 403, l. 3.

<sup>84</sup> For the part played by small arms and artillery in the Battle of Chaldīran cf. Hammer: *Geschichte des Osmanischen Reiches* ii, p. 416. Jorga, *Geschichte des Osmanischen Reiches*, ii, pp. 336-337. The number of the Ottoman arquebusiers is given by Hammer as 13,500 and as 4,000 by Jorga. Thus the Mamluk historian's figure lies between the two.

<sup>85</sup> Ibn Iyās: v, p. 295, ll. 7-12.

<sup>86</sup> *Ṣubḥ* ii, p. 138. Cf. also Steingass' Persian-English and Redhouse's Turkish-English dictionaries.

<sup>87</sup> *Akhbār al-Uwal*, p. 128.

<sup>88</sup> A suggestion that *tüfek*, the Turkish word for arquebus, is a corruption of *bunduq* seemed to be quite reasonable. The transformation might have taken place in the following manner: *tüfek*, *tüfenk*, *funduq*, *bunduq*; but a passage in Maḥmūd Kashghārī's *Dīwān Lughāt at-Turk* (i, p. 325, ll. 2-4) proves that *tüfek* is a pure Turkish word. This had already been pointed out by Irène Mélikoff-Sayār in *Le Destān d'Umūr Pacha*, Presses Universitaires de France, p. 56, n. 4. Cf. also Steingass: *Persian-English Dictionary*, art. *Tufak*.

<sup>89</sup> Ibn Iyās: iv, p. 154, ll. 4-6. For the other two references cf. notes 76 and 78.

<sup>90</sup> Ibn Zunbul: p. 16, l. 14; p. 17, l. 3; p. 20, l. 7; p. 33, l. 11 and on other pages. Ibn Ṭūlūn: p. 68, l. 13; p. 67, l. 3.

<sup>91</sup> Ibn Zunbul: p. 18, l. 25; p. 26, l. 2, and on other pages. Ibn Ṭūlūn: p. 47, l. 13; p. 44, l. 11; p. 43, l. 16.

<sup>92</sup> Ibn Ṭūlūn: p. 66, l. 13; p. 48, l. 13. The B.N. Arab MS. *Histoire de la Conquête du Yemen* seems to contain interesting data on the arquebus, as can be seen from quotations used by Quatremère (*Mongols*, pp. 291-292). The term *bunduqīya* is quite common in this MS. The arquebusier is called *bunduqī*, *bunduqālī* or *mubandīq*; the term *bunduq* is sometimes used to designate a cannon ball as

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well as small arms shot (*JA*, 1849, p. 310). Even a heavy cannon ball, weighing up to a hundred Egyptian *raṭls* is called *bunduqa* (*Subḥ* ii, p. 137, ll. 13-16). Cf. also Ibn Ṭūlūn: p. 44, ll. 9-11. In the last decades of Mamluk rule one meets in the sources weapons called *sabqīyāt*(?) (or *saḡqīyāt*) and *kaffīyāt*(?) which are invariably mentioned together with firearms (Ibn Iyās: iii [KM], p. 357, n. 2. *Ṣafahāt lam tunshar*, etc. Ibn Iyās: p. 192, l. 5. Al-Anṣārī: *Ḥawādith az-Zamān*, Cambridge MS., Dd. ii, 2, fol. 31a, ll. 1-3. Ibn Ṭūlūn: p. 67, ll. 3-4. Ibn Zunbul: p. 68, ll. 11-16. *Ḥujūm*[P] vii, p. 47, l. 17.) That the above were firearms can be gathered from the following two examples: (1) *makāḥil sabqīyāt al-'idda thalāthmi'a* (Ibn Iyās: iv, p. 201, l. 8); (2) *kathrat ar-ramyi 'alayhim min al-makāḥil al-bunduqīya wal-kaffīya* (Ibn Ṭūlūn: p. 69, ll. 17-18). The term *qarbzāna*, meaning cannon, is also mentioned at the end of Mamluk rule (Ibn Zunbul: p. 34, l. 21; p. 67, l. 19; p. 68, ll. 11-16; p. 71, ll. 13-21; p. 72, ll. 3-5; p. 73, ll. 19-20; p. 74, ll. 15-17; p. 83, ll. 2-8; p. 86, ll. 8-13; p. 98, ll. 11-15).

<sup>93</sup> Cf. the present writer's "Studies on the Structure of the Mamluk Army," *BSOAS*, vol. xv, 1953, pp. 448-458, and "The Wāfidiya in the Mamluk Kingdom," *Islamic Culture*, vol. xxv, Jubilee Number, pp. 89-104.

<sup>94</sup> Whether or not there were left in other Egyptian and Syrian towns many non-Mamluk horsemen, counted for very little, for not only was the centre of power and authority in Cairo, but also the units which constituted the backbone of the army were stationed there. Thus the almost total disappearance of the non-Mamluk horsemen from units stationed in the capital was of special significance. The nomad and semi-nomad horsemen—Beduin and Turkomans—served only as auxiliaries, and they ranked very low in the socio-military scale.

<sup>95</sup> Small arms became the Mamluk's weapon only and in so far as he could handle them easily from horseback. We shall return to this point again later in the present study. (See pp. 96-97.) True, the arquebus could be operated from horseback, but its efficiency as a weapon of the horseman had not been very great: "Horse arquebusiers had been known for many years—they were the legitimate descendants of the horse-crossbowmen of earlier decades. But neither crossbow nor arquebus are easy to manage on horseback, since each of them requires the use of both hands, which is incompatible with proper riding, and the smouldering match used for the arquebus must have been particularly hard to manage for a trooper who wanted to keep his left hand for the bridle. I imagine that (in spite of some military drawings of the time) the horse-arquebusier must have halted in order to fire, and have been compelled to drop his reins on his horse's neck. He could only, therefore, have been used for exploration and skirmishing. For he had but one shot to fire, and, when that was spent, would have been quite helpless, as he would want to reload, an operation taking a long time and requiring the use of both hands. It would be impossible to reload an arquebus when in movement." (C. Oman: *A History of the Art of War in the Sixteenth Century*, pp. 84-85).

<sup>96</sup> Oman: ii. pp. 228-229.

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<sup>97</sup> Ibn Iyās: iii (KM), p. 263, n. 2.

<sup>98</sup> Ibn Iyās: iii (KM), p. 263, ll. 10-16; p. 263, l. 18-p. 264, l. 9; p. 264, ll. 9-12; p. 265, ll. 1-3; p. 266, l. 21-p. 267, l. 7; p. 269, ll. 11-20; p. 270, ll. 10-13.

<sup>99</sup> The composition of the Mamluk army in Egypt was as follows: (i) The Royal Mamluks (*mamālik sulṭāniya*), who were subdivided into (a) the Mamluks of former Sultans (*mamālik as-salāḥīn al-mutaqaddima, qarānīṣ* or *qarāniṣa*); (b) the Mamluks of the reigning Sultan (*mush-tarawāt, julbān, ajlāb*). From among the *mush-tarawāt* a corps of pages and bodyguards was selected, known as *khāṣṣakīya*; (c) the Mamluks of the *Amīrs* who passed into the service of the Sultan on the death or dismissal of their masters (*sayfiya*). (ii) The Mamluks of the *Amīrs* (*mamālik al-umarā, ajnād al-umarā*). (iii) The sons of the *Amīrs* (*awlād an-nās*) and soldiers recruited from the local population (*ajnād al-ḥalqa*). The Mamluk *Amīrs* were divided into three classes: (i) *Amīrs* of ten; (ii) *Amīrs* of forty; (iii) *Amīrs* of a hundred. Cf. also "Studies on the Structure of the Mamluk Army," *BSOAS* xv, 1953, p. 204ff.

<sup>100</sup> *Nujūm*(P) vii, p. 450; p. 852, ll. 13-16. *Hawādith*, p. 678, ll. 7-15; p. 681, l. 22-p. 682, l. 3; p. 682, ll. 12-14. Ibn Iyās: iii (KM), p. 20, ll. 20-23; p. 21, ll. 1-5, ll. 7-9; p. 31, ll. 13-17; p. 271, ll. 12-14; p. 323, ll. 3-5; iv, p. 22, ll. 14-16; p. 25, ll. 6-15; pp. 65-66.

<sup>101</sup> A detailed description of the *ḥalqa* and *awlād an-nās* and their decline, is given in "Studies on the Structure of the Mamluk Army," *op. cit.*

<sup>102</sup> *Nujūm*(P) v, p. 528, ll. 1-2; vi, p. 55, l. 2; p. 121, ll. 19-21; p. 228, ll. 2-6; p. 253, ll. 9-23; pp. 480-481; p. 496, ll. 2-7. Ibn al-Fūrāt: ix, p. 371, ll. 11-15. In a later period the Mamluk treasury often paid less than 100 *dīnārs* as a *nafaqa*, yet the crack Mamluk regiments received much more than 30 *dīnārs*.

<sup>103</sup> *Hawādith*, p. 701, ll. 11-12. *Manhal* ii, fol. 64b, ll. 8-13. Ibn al-Fūrāt: ix, p. 57, ll. 1-9.

<sup>104</sup> *Hawādith*, p. 685, ll. 7-17. Ibn Iyās: iii (KM), pp. 256-257.

<sup>105</sup> The monthly pay (*jāmakīya*) of the ordinary Mamluk knight was 2,000 dirhams during the period when the ratio between *dirham* and *dīnār* ranged between 300 to 450 (it mainly oscillated between 360 and 380). (*Nujūm*[P] vii, p. 474. *Hawādith*, p. 223. Ibn Iyās: iii [KM], p. 246, ll. 9-10; v, p. 26, l. 6.) When the monthly pay was given in *dīnārs* it ranged between six and seven *dīnārs* (*Nujūm*[P] vii, p. 474. Ibn Iyās: iv, p. 119, ll. 6-9; v, p. 113, l. 22; p. 123, l. 19). The cut in the basic monthly pay of *awlād an-nās* was considerably less than that which they suffered in other kinds of pay and allowances.

<sup>106</sup> The present writer has come across *awlād nās naffīya* only once between the years 1490 and 1510 (Ibn Iyās iii [KM], p. 336, ll. 1-2).

<sup>107</sup> *Hawādith*, p. 19, ll. 11-20; p. 250, l. 11-p. 251, l. 6; p. 253, ll. 1-6; p. 256, l. 15; p. 330, ll. 5-12. Ibn Iyās: iv, p. 129, ll. 18-21; p. 356, l. 5.

<sup>108</sup> The above lines are based on a chapter dealing with the eunuchs in the writer's hitherto unpublished work on the Mamluk army.

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- <sup>109</sup> Cf. for example, *Sulūk* i, p. 485, l. 2. *Nujūm*(C), p. 153, l. 14. *Nujūm*(P) v, p. 259, ll. 3-6. *Ḥawādith*, p. 19, ll. 11-20. Ibn al-Fūrāt: ix, p. 73, ll. 19-20. Ibn Iyās: ii, p. 107, ll. 24-26; iii (KM), p. 355, ll. 20-21. *Ṣubḥ* iv, p. 10, ll. 8-9; v, p. 490, ll. 7-9.
- <sup>110</sup> *Ṣubḥ* v, p. 471, ll. 12-15.
- <sup>111</sup> *Nujūm*(P) vi, p. 641, ll. 2-5.
- <sup>112</sup> Ibn Iyās: iii (KM), p. 335, ll. 18-20; p. 373, ll. 19-23; p. 377, l. 12; v, p. 79, ll. 18-19; p. 101, l. 11; p. 116, l. 12; p. 131, ll. 21-22.
- <sup>113</sup> Ibn Iyās: iii (KM), p. 335, ll. 18-20.
- <sup>114</sup> Ibn Iyās: v, p. 143, l. 9. Al-Anṣārī: fol. 95a, ll. 7-13. An intermediary form between *rumāt bil-bunduq ar-raṣāṣ* and *rumāt is rumāt al-bunduq* (Ibn Ṭūlūn: p. 47, l. 13; p. 44, l. 24; p. 43, l. 16). Cf. also Ibn Zunbul: p. 28, l. 2; p. 61, l. 1, l. 4; p. 68, ll. 11-16; p. 74, l. 12.
- <sup>115</sup> Al-Anṣārī: fol. 19b, ll. 3-5.
- <sup>116</sup> Al-Anṣārī: fol. 95a, ll. 7-10, ll. 12-13.
- <sup>117</sup> Ibn Iyās: iii (KM), p. 373, ll. 19-23; p. 377, l. 12; v, p. 79, ll. 18-19; p. 101, l. 11; p. 116, l. 12; p. 131, ll. 21-22. Al-Anṣārī: fol. 31a, ll. 1-3.
- <sup>118</sup> See references in the preceding note.
- <sup>119</sup> Ibn Iyās: iii (KM), p. 393, l. 21-p. 394, l. 3.
- <sup>120</sup> Ibn Iyās: iii (KM), p. 335, ll. 18-20.
- <sup>121</sup> Al-Anṣārī: fol. 19b, l. 3-fol. 20a, l. 3. For the full quotation of this reference see pp. 70-71. In 908/1503 an expeditionary force sent to the Ḥijāz included more than 2,000 Royal Mamluks, 500 infantrymen (*mushāt*), and 500 black arquebusiers (*ʿabīd rumāt*) (Al-Anṣārī: fol. 95a, ll. 7-10, ll. 12-13).
- <sup>122</sup> Ibn Iyās: iii (KM), p. 335, l. 18-p. 336, l. 4. Cf. also *ibid.* p. 356, n. 2; p. 357, n. 2; p. 360, l. 21-p. 361, l. 3.
- <sup>123</sup> Cf. references in notes 112-117.
- <sup>124</sup> For *kaffiyāt* cf. n. 92, p. 119.
- <sup>125</sup> The *Nāʾib* was the governor of a district (*Niyāba*), while the *Kāshif* was the governor of a sub-district (*Kushūfiya*).
- <sup>126</sup> Ibn Iyās: iii (KM), p. 373, ll. 19-23.
- <sup>127</sup> The previous Sultans (*al-mulūk as-sāliḥa* or *mulūk as-salaf*), *i.e.*, the early rulers of the Mamluk kingdom, are usually described as the honest and upright kings whose example ought to be followed by contemporary rulers.
- <sup>128</sup> Ibn Iyās: iii (KM), p. 377, ll. 15-17.
- <sup>129</sup> Ibn Iyās: iii (KM), p. 377, ll. 17-20.
- <sup>130</sup> The following translation is largely, though not wholly, literal. In order to give a clearer idea of the exact meaning of the text some liberties have had to be taken. The task of giving a strictly accurate translation was also rendered difficult by the fact that some words of the MS. are illegible.
- <sup>131</sup> The *sallārī*-tunic and the *takḥḥīfa*-turban were considered as typically Turkish, *i.e.*, Mamluk dress (*ziyy al-Atrāk*), at least under the Circassians (L. A. Mayer: *Mamluk Costume*, Geneva, 1952, p. 24, p. 30).
- <sup>132</sup> The amir who later became Sultan az-Zāhir Qānṣūh.
- <sup>133</sup> The present writer cannot offer any satisfactory explanation

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for Sultan an-Nāṣir's proposal to sell his 'abīd bārūdiya to the Turcomans.

<sup>134</sup> Al-Anṣārī: fol. 19b, l. 3-fol. 20a, l. 3.

<sup>135</sup> On *aṭ-ṭabaqa al-khāmisa* cf. M. Mostafa: "Beiträge zur Geschichte Agyptens," *ZDMG*, 1935, pp. 218-219 (an inaccurate description), and A. N. Poliak: *Feudalism*, p. 14.

<sup>136</sup> Between the days of an-Nāṣir Muhammad Abū as-Sa'ādāt and the formation of a special unit of arquebusiers by Qānṣūh al-Ghawrī, small arms are sporadically mentioned in the sources (cf. Ibn Iyās: iii (KM), p. 449, ll. 9-12; p. 455, ll. 2-3; iv, p. 84, ll. 11-16. Al-Anṣārī: fol. 95a, ll. 7-10, ll. 12-13).

<sup>137</sup> Cf. the present writer's *L'Esclavage du Mamelouk* (Jerusalem, 1951), pp. 9-12.

<sup>138</sup> The usual days for the payment of the *jāmakīya* were the 15th, 16th, and 17th of the month (*Ḥawādith*, p. 698, ll. 6-7. Ibn Iyās: iii [KM], p. 391, l. 20; iv, p. 18, ll. 18-19, l. 21; p. 237, l. 18, l. 20; p. 291, ll. 3-6; p. 307, ll. 8-11; p. 312, ll. 13-14; p. 326, ll. 4-6; p. 330, ll. 4-6; p. 350, ll. 20-23; p. 360, ll. 2-3; p. 382, ll. 15-16; p. 386, l. 22-p. 387, l. 7; p. 416, l. 16; p. 430, ll. 20-21; p. 480, ll. 9-10; v, p. 19, ll. 16-18; p. 78, ll. 5-8). Seldom was the *jāmakīya* paid either earlier or later. (*Ḥawādith*, p. 134, l. 23; p. 194; p. 514, ll. 9-14. Ibn Iyās: iv, p. 471, ll. 4-5; p. 483, l. 11; v, p. 45, ll. 12-15.)

<sup>139</sup> In the early Circassian period the *jāmakīya* was paid during three pay-days. In 858/1454 and in 861/1457 the Mamluks tried to fight the government's tendency to spread the payment of the *jāmakīya* over more than three days (*Ḥawādith*, p. 201, ll. 10-12. *Nujūm*[P] vii, p. 474, ll. 6-13; p. 477, ll. 5-11), but their attempt failed. In the last seventy to eighty years it was commonly paid out over a period of four days (*Ḥawādith*, p. 486, ll. 6-10. Cf. also the references in the preceding note.)

<sup>140</sup> Ibn Iyās: iv, p. 206, ll. 3-8; p. 260, ll. 14-15; p. 269, ll. 21-22; p. 281, ll. 18-19; p. 324, ll. 8-11; p. 370, ll. 10-18.

<sup>141</sup> Ibn Iyās: iv, p. 200, ll. 16-18. Cf. also the very important reference *ibid.* p. 206, ll. 3-8.

<sup>142</sup> Ibn Iyās: iv, p. 206, ll. 3-8; p. 260, ll. 14-15; p. 269, ll. 21-22; p. 281, ll. 18-19.

<sup>143</sup> Ibn Iyās: iv, p. 309, ll. 3-9.

<sup>144</sup> Ibn Iyās: iv, p. 324, ll. 8-11; p. 331, ll. 7-15; p. 337, ll. 6-9; p. 360, ll. 2-6; p. 368, l. 23-p. 369, l. 2; p. 369, ll. 9-23; p. 370, ll. 8-10; p. 402, l. 23-p. 403, l. 3; p. 428, ll. 1-4; p. 436, ll. 16-20; p. 458, ll. 1-10; v, p. 199, ll. 11-12.

<sup>145</sup> Ibn Iyās: iv, p. 360, ll. 2-6. The term *aṭ-ṭabaqa al-khāmisa* is not strictly accurate because the number of the barracks (*ṭibāq*, *aṭbāq*) in the Citadel was about twelve, as mentioned above. For the purpose of payment, the *ṭibāq* were divided into four groups, each of them receiving its pay on one of the four pay-days. Thus *aṭ-ṭabaqa al-khāmisa* corresponds to one such group of *ṭibāq*.

<sup>146</sup> Ibn Iyās: iv, p. 206, ll. 3-8. Cf. also p. 260, ll. 14-15; p. 269, ll. 21-22.

<sup>147</sup> Ibn Iyās: iv, p. 369, ll. 12-13. A full translation of these lines is given on pp. 75-76.

<sup>148</sup> Ibn Iyās: iv, p. 458, ll. 1-3. This is the only case where Mamluks

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were demonstrably members of *aṭ-ṭabaqa al-khāmisa*. Such expressions in connection with this unit as *mamālik*, *mamālik tarākima* (Ibn Iyās: iv, p. 200, l. 17; p. 260, l. 14; p. 269, l. 22; p. 324, ll. 9-10; p. 331, l. 8) should not be translated literally, since the word Mamluk has at times a wider sense. For example: the troops serving under the Amirs of al-Gharb (near Beirut) are called *mamālik*, in spite of the fact that their names prove beyond any doubt that they were Arabs and sons of Arabs (Ṣāliḥ b. Yaḥyā: *Tārīkh Bayrūt*, second ed., pp. 96-98); the *awlād an-nās* who, by the very circumstances of their birth, could not be Mamluks, are quite frequently referred to as *mamālik sultāniya* in the later Circassian period (cf. for instance *Nujūm*[P] vii, p. 140, ll. 4-5; p. 850, ll. 7-9. *Ḥawādīth*, p. 175, ll. 10-13; p. 616, l. 1; p. 681, l. 8. Ibn Iyās: v, p. 43, ll. 3-4; as well as Poliak: *Feudalism*, p. 29, and n. 10), or even *khāṣṣakiya* (*Ḥawādīth*, p. 175, in the notes). The present writer has tried to explain this phenomenon in *BSOAS* xv, pp. 457-458, 466. That the members of *aṭ-ṭabaqa al-khāmisa* could by no means be Mamluks is proved by their being artisans, cobblers, pedlars and the like—occupations which no member of the Mamluk military caste would ever lower himself to practise. In connection with *aṭ-ṭabaqa al-khāmisa*, the following passage is instructive: *al-mamālik alladhī istajaddahum mā bayna Tarākima wa-A'jām wa-awlād nās* (Ibn Iyās: iv, p. 206, ll. 4-5). That the *awlād nās* could not be Mamluks has already been shown above. In the purely Mamluk regiments there were no Persians. There were only very few Turkomans known to have been Mamluks. Cf. also Ibn Iyās: iv, p. 84, ll. 11-18 where all kinds of socially inferior elements, including black slaves, are called *mamālik*, and *ibid.* p. 310, ll. 17-18.

<sup>149</sup> Ibn Iyās: iv, p. 331, ll. 7-15; p. 360, ll. 2-6; p. 369, ll. 9-23; p. 458, ll. 1-10.

<sup>150</sup> *Ibid.* iv, p. 84, ll. 11-16.

<sup>151</sup> *Ibid.* iv, p. 260, ll. 14-15.

<sup>152</sup> *Ibid.* iv, p. 324, ll. 8-11.

<sup>153</sup> Cf. above p. 120 notes 102 and 105.

<sup>154</sup> Pay and other parades took place in the courtyard.

<sup>155</sup> Ibn Iyās: iv, p. 370, ll. 10-18.

<sup>156</sup> *Ibid.* iv, p. 368, l. 23-p. 369, l. 2. The same complaint is voiced in very similar words on p. 428, ll. 1-4.

<sup>157</sup> That *suwaykhāta* (?) were food-vendors of some kind is clearly demonstrated in the following incident: the authorities allowed only five vendors' boats (*bayyā'ūn*) to enter the ar-Ruṭlī Lake. Those thus privileged were the sweet vendor (*ḥilwānī*), the fruit vendor (*fākihānī*), the cheese vendor (*jabbān*), the vendor of lentil soup (*'addās*) and the *suwaykhānī*, possibly a meat-vendor (meat roasted on spits—*suyūkh*, sing., *sīkh*) (Ibn Iyās: v, p. 55, ll. 9-11).

<sup>158</sup> *Ibid.* iv, p. 369, ll. 3-23.

<sup>159</sup> For the meaning of "Mamluk" in this context cf. n. 148 above.

<sup>160</sup> Ibn Iyās: iv, p. 206, ll. 6-8.

<sup>161</sup> *Ibid.* v, p. 85, ll. 1-3.

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<sup>162</sup> For Ibn Tagrībirdī's interest in firearms cf. Appendix I pp. 135-137.

<sup>163</sup> Cf. pp. 55-56 above, and the quotations from Ibn Zunbul's work cited on pp. 89-95.

<sup>164</sup> Ibn Iyās: iv, p. 360, ll. 2-6. This passage has already been quoted in full above. Cf. p. 73.

<sup>165</sup> Cf. the reference in n. 164 and the full quotation on p. 73.

<sup>166</sup> The figure is probably not exaggerated for there is every reason to believe that al-Ghawrī's foundry produced an even greater number of cannon. It only shows the very important rôle played by firearms on the Portuguese front.

<sup>167</sup> This consignment included other items, to wit 2,000 oars, iron, anchors, ropes and other kinds of naval equipment, wood, and 30,000 wooden arrows (Ibn Iyās: iv, p. 201, ll. 6-13). Cf. also p. 79 and notes 185 and 186, p. 124 below. For Ottoman consignments of firearms to the Mamluks see S. N. Fisher: *The Foreign Relations of Turkey, 1481-1512*, pp. 95, 101-102.

<sup>168</sup> Ibn Iyās: iv, pp. 365, l. 23-p. 366, l. 3.

<sup>169</sup> Ibid., p. 366, ll. 7-8.

<sup>170</sup> Ibid. iv, p. 458, ll. 5-6.

<sup>171</sup> Ibid. iv, p. 467, ll. 9-10.

<sup>172</sup> Ibid. iv, p. 467, l. 1.

<sup>173</sup> Ibid. v, p. 113, ll. 11-16, and especially ll. 13-14.

<sup>174</sup> Ibid. iv, p. 84, ll. 11-18.

<sup>175</sup> Ibid. iv, p. 308, ll. 3-9.

<sup>176</sup> Ibid. iv, p. 308, ll. 9-14.

<sup>177</sup> Ibid. iv, p. 310, l. 16-p. 311, l. 9.

<sup>178</sup> Ibid., p. 310, ll. 21-23.

<sup>179</sup> Ibid. iv, p. 331, ll. 4-12. The reason for the Sultan's sending strong reinforcements to Suez was the fact that the Portuguese dominated the Southern end of the Red Sea and were in possession of Kamaran Island (ll. 12-15).

<sup>180</sup> Ibid. iv, p. 337, ll. 6-9.

<sup>181</sup> Ibid. iv, p. 362, ll. 2-11.

<sup>182</sup> Ibid. iv, p. 453, ll. 3-10. That these were mainly old and disabled *qarāniṣa* may be inferred from p. 448, ll. 4-8.

<sup>183</sup> Ibid. iv, p. 458, ll. 1-10.

<sup>184</sup> Thus the number of the members of *aṭ-ṭabaqa al-khāmisa* in the expedition was reduced from 600 to 450.

<sup>185</sup> Ibn Iyās: iv, p. 467, ll. 2-6. The Turcomans are perhaps identical with the Ottomans (cf. the writer's "The Mamluk Army During the Early Ottoman Period" [in Hebrew], in Gotthold Weil Jubilee Volume, Jerusalem, 1952, p. 85, n. 2). According to another version, Ottomans and Maghribi sailors in this expedition numbered 2,000 or more (Ibn Iyās: iv, p. 365, ll. 16-19; p. 458, ll. 6-8).

<sup>186</sup> Ibid. iv, p. 365, l. 16-p. 366, l. 6; p. 458, ll. 6-8; p. 460, l. 8; p. 466, l. 18; v, p. 113, ll. 11-15; p. 185, l. 23-p. 186, l. 3; p. 199, ll. 3-13. An earlier expedition against the Portuguese was also launched without the participation of a single Amir of a Thousand. It was mentioned together with two other minor expeditions against the ruler of Yanbu' and against a Beduin tribe in the vicinity of

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Mecca (ibid. iv, p. 82, ll. 11-13; p. 93, ll. 4-5). Cf. also p. 479, ll. 15-23.

<sup>187</sup> That some firearms were employed by the Mamluks in Marj Dābiq may possibly be inferred from Ibn Iyās: v, p. 67, l. 2.

<sup>188</sup> Even in the last great expedition against the Portuguese, the Mamluk element did not exceed a few hundred (two hundred *khās-ṣakīya* and *jamdāriya* plus an unspecified number of Royal Mamluks in the contingent of *aṭ-ṭabaqa al-khāmisa*). On the other hand, expeditions sent to Syria usually included thousands, mostly Royal Mamluks.

<sup>189</sup> The temporary alliance between Mamluks and Ottomans against the Portuguese, about a year before the Battle of Marj Dābiq, did nothing to mitigate the enmity between them, which came into being during the rule of Qāyṭbāy and continued to increase thereafter.

<sup>190</sup> Units stationed in Syria inevitably faced the Ottoman front.

<sup>191</sup> The Mamluks' attitude towards the sea and naval warfare is discussed by the present writer in a chapter called "The Mamluks and Sea-Power" of his unpublished work on the Mamluk army.

<sup>192</sup> *Nujūm*(P) vi, p. 582, ll. 1-11; p. 588, l. 6-p. 589, l. 2; p. 590, l. 6-p. 592, l. 22; vii, p. 112, ll. 13-19; p. 113, ll. 17-18.

<sup>193</sup> Cf. Ibn Iyās: iv, p. 310, ll. 16f.; p. 311, ll. 4-9; p. 335, ll. 7-12; p. 362, ll. 2-11; p. 448, ll. 4-8; p. 453, ll. 13-19; p. 479, ll. 15-23; v, p. 23, ll. 1-8; p. 28, ll. 23-29; p. 45, ll. 15-22.

<sup>194</sup> Ibn Iyās: v, p. 199, ll. 3-12.

<sup>195</sup> Ibn Iyās: v, p. 100, ll. 19-20.

<sup>196</sup> Ibid., p. 135, ll. 18-20.

<sup>197</sup> Ibid., p. 141, ll. 22-23.

<sup>198</sup> *Shaqqa fi mawkib ḥafl wa-quddāmahu as-su'āt wan-naḥfiya* (ibid., p. 44, l. 21). Cf. p. 80, ll. 18-19.

<sup>199</sup> Ibid., p. 101, ll. 9-12. Cf. p. 79, ll. 18-19 and p. 116, l. 2.

<sup>200</sup> Ibid., p. 44, l. 20. Cf. also his eulogy in p. 44, l. 23-p. 45, l. 7. On his high moral standard see p. 54, l. 14-p. 57, l. 16. On his being loved and admired by the populace see p. 103, ll. 9-11.

<sup>201</sup> Ibid., p. 101, ll. 11-12.

<sup>202</sup> Ibid., p. 79, ll. 20-21.

<sup>203</sup> Ibid., p. 132, ll. 4-7.

<sup>204</sup> Ibid., p. 138, ll. 6-10.

<sup>205</sup> Ibid., p. 118, l. 21-p. 119, l. 2; p. 128, ll. 18-19; p. 131, ll. 15-16; p. 142, ll. 9-10. The wagons for firearms were built in the Citadel (p. 137, ll. 12-13).

<sup>206</sup> Ibid., p. 67, l. 23; p. 128, ll. 18-19. Ibn Ṭūlūn: p. 67, ll. 32-33; p. 45, ll. 21-22; p. 44, ll. 7-11; p. 43, l. 18. Ibn Zūbul: p. 83, ll. 3-9. Ibn Ṭūlūn gives two vivid descriptions of the Ottoman artillery wagons which he saw in Damascus. In the first one he says that when Sultan Selim entered that town he was preceded by thirty wagons (*'araba*) and twenty wheeled "fortresses" (*qal'a*), each being drawn by two mules. When the guns opened fire by the platform (*maṣṭaba*) the people of Damascus believed that Heaven had fallen down to earth (p. 45, ll. 21-22). In the second description he says that he went to have a look at the wagons and "fortresses," the like of which he had never seen before, and found them "a wonderful thing which

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proves the might of Selim" (*fa-idhā hiya amr 'aḥīb tadullu 'alā tamakkunihi*). The wagons were fastened together by chains, so that when they are arranged in a line they are like a fortified wall (*sūr*). Every wagon fired a lead projectile (*bunduq raṣāṣ*) of a size "to fill the palm of a man's hand" (*mil'a kaff ar-rajul*) (=fist). These were carried in a box about the size of a man underneath the wagon (p. 44, ll. 7-11). The Ottoman wagons and "fortresses" are referred to again on p. 43, l. 18.

<sup>207</sup> Ibn Iyās: v, p. 131, l. 15. Cf. also p. 137, ll. 11-16.

<sup>208</sup> At an earlier stage only thirty wagons are mentioned (*ibid.*, p. 118, l. 23-p. 119, l. 2).

<sup>209</sup> *Ibid.*, p. 131, ll. 12-22.

<sup>210</sup> It should be noted that the Ottomans won their greatest victories over their Muslim neighbours (Chaldiran, Marj Dābiq, Raydāniya) in the open field. It was there that the Mamluks learnt the invincibility of wagon-borne firearms. Hence there can be little doubt that when the Mamluks, after their defeat at Marj Dābiq, built their own artillery wagons the intention was to use them in open field rather than in siege warfare.

<sup>211</sup> *Ibid.*, p. 118, l. 23-p. 119, l. 2. It is difficult to ascertain whether artillery or small arms are referred to here because at the close of the Mamluk period *mukḥula* could mean either, while *al-bunduq ar-raṣāṣ* is sometimes used to designate a cannon-ball (p. 131, ll. 12-22).

<sup>212</sup> According to a dispatch which Selim I sent to Damascus after the Battle of Raydāniya, Ṭümānbāy employed Frankish arquebusiers (*aḥdarū rumāt min al-Faranj wa-ghayrihim*—Ibn Ṭūlūn: p. 39, l. 14). A European source states that artillery units were sent in support of the Mamluks by the ruler of Rhodes who feared that after the conquest of Egypt by the Ottomans his own turn would come (Giovanni Sagredo: *Die neueröffneten Ottomanischen Pforten*, Augsburg, 1694, p. 96). Ibn Iyās mentions an unconfirmed rumour to the effect that the number of arquebusiers sent to Egypt by the ruler of Rhodes was a thousand (v, p. 136, ll. 16-22). From another report it is learnt that weapons and gunpowder most probably from Europe, reached the port of Alexandria (p. 159, l. 23-p. 160, l. 1).

<sup>213</sup> Cf. references in the above notes. Black arquebusiers (*'abīd rumāt*) were among the soldiers who, under Ṭümānbāy, fought to the very end at the Battle of Raydāniya (*ibid.*, p. 143, ll. 9-10). The attempt to recruit 1,000 Maghribis was only partly successful because of their opposition to the Mamluks and their sympathy with the Ottomans (v, p. 134, ll. 12-13, ll. 15-23).

<sup>214</sup> Though Sultans an-Nāṣir Abū as-Sa'ādāt Muḥammad, Qānṣūh al-Ghawrī, and Ṭümānbāy who, as heads of the kingdom, were bound to look after its welfare, did show interest in firearms, the present writer has not been able to discover any individual Mamluk of a lower degree who had any special connection with firearms.

<sup>215</sup> Cf. above, pp. 13, 14, 35, n. 51.

<sup>216</sup> Ibn Zunbul: p. 13, l. 24-p. 18, l. 10; p. 19, ll. 17-25; p. 20, ll. 1-4.

<sup>217</sup> Ibn Iyās: v, p. 68, ll. 2-17.

<sup>218</sup> Ibn Zunbul: p. 15, ll. 2-25; p. 16, l. 12, ll. 20-23.

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<sup>219</sup> See n. 218, p. 4, ll. 24-25 ; p. 5, l. 13-p. 6, l. 5 ; p. 13, ll. 10-20 ; p. 17, l. 9f. ; p. 21, ll. 1-15 ; p. 22, ll. 22-25 ; p. 26, l. 7-p. 27, l. 6 ; p. 31, l. 10-p. 32, l. 15 ; p. 80, ll. 21-23.

<sup>220</sup> The extensive use of firearms by the Ottomans may be inferred from expressions like "rain" (*maṭar*), "abundant rain" (*maṭar midrār*) etc. (ibid., p. 72, ll. 3-5 ; p. 74, ll. 15-16. Cf. the dramatic description in p. 82, l. 24-p. 83, l. 2 and l. 7 ; p. 18, l. 25 ; p. 35, ll. 19-24 ; p. 67, l. 19). According to the same author, Sultan Selim brought to bear against the Mamluks 800 guns, 200 of which he left behind in Syria ; with the remaining 600 he marched against Egypt. Of these, 150 were heavy guns, and the rest of smaller calibre (*ḍarbzānāt*), the length of each being twenty-five spans (*shibr*). Each of the small guns was drawn by four horses, and each of the big guns by 30 to 40 horses. All of them were covered with a kind of red felt (*jūkh aḥmar*). When the leading guns in the column reached ar-Raydāniya, the last were still at al-Khānqāh (p. 83, ll. 3-9). For the Ottoman artillery wagons cf. pp. 125-126, n. 206.

<sup>221</sup> Ibid., p. 9, l. 12.

<sup>222</sup> Ibid., p. 34, ll. 8-11.

<sup>223</sup> Ibid., p. 35, ll. 23-24.

<sup>224</sup> Ibid., p. 121, ll. 2-3.

<sup>225</sup> Ibid., p. 77, ll. 19-21. Cf. also p. 34, l. 23-p. 35, l. 1 ; p. 68, ll. 11-16. For the decisive part played by Ottoman firearms cf. Ibn Iyās: iv, p. 402, l. 23-p. 403, l. 3 ; v, p. 135, ll. 22-23 ; p. 143, ll. 3-4.

<sup>226</sup> Ibid., p. 7, ll. 6-8. That firearms had been the decisive factor in the defeat of the Mamluks at Marj Dābiq is also clear from Ibn Ṭūlūn (p. 48, ll. 12-13), who says that early in the day the Mamluk army had the upper hand. By noon they were busily engaged in pillage and plunder, when the Ottomans counter-attacked and routed them with their arquebuses (*fa-raja'a 'alayhim malik ar-Rūm bil-bunduq ar-raṣāṣ fa-kasarahum*). In Ibn Iyās's description of the battle (v, pp. 67-68) the rôle of Ottoman firearms is more vague. In his description of other battles, however, he considers firearms a decisive factor in the destruction of Mamluk power (cf. for instance, ibid., p. 143, ll. 3-4 ; p. 195, ll. 19-23, and the translation of these passages in p. 60 above). The later historian al-Ishāqī, who probably copied from earlier sources, also points at firearms as the main cause of the Ottoman victory at Marj Dābiq: *wa-uṭliqat al-banādiq wal-zarbānāt fa-halaka man halaka wa-haraba man haraba wa-inqalaba an-nahār laylan bid-dukhān* (*Akhbār al-Uwal*, Cairo, 1311H, p. 148, ll. 20-21). The overwhelming power that firearms had acquired in the field of battle already during the early decades of the sixteenth century may also be proved from famous European battles (Ravenna, 1512 ; Marignano, 1525) (C. Oman, *A History of the Art of War in the Sixteenth Century*, pp. 50, 130-150, 160-170).

<sup>227</sup> Ibn Zunbul: p. 20, ll. 5-8. According to the same passage, the number of Ottoman dead was 4,000(!).

<sup>228</sup> Ibid., p. 29, ll. 19-21.

<sup>229</sup> *As-sayf wal-'ūd* (cf. also ibid., p. 9, l. 8 ; p. 68, ll. 22-23). This kind of fighting is contrasted with fighting with firearms, being considered more gentlemanly (see pp. 93-95).

<sup>230</sup> P. 91, ll. 14-19.

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- <sup>231</sup> P. 77, ll. 19-22. Cf. also p. 34, ll. 23-25 ; p. 70, ll. 23-24.
- <sup>232</sup> P. 70, ll. 23-24.
- <sup>233</sup> The expression *muqawwam bi-ulūf* is significant, for Ibn Iyās also used it when comparing the Mamluk horseman with Ottoman infantryman (see above, p. 77).
- <sup>234</sup> Ibn Zunbul: p. 98, ll. 11-15.
- <sup>235</sup> Ibid., p. 98, ll. 11-15.
- <sup>236</sup> Ibid., p. 75, l. 24-p. 76, l. 3.
- <sup>237</sup> Ibid., p. 105, ll. 22-24.
- <sup>238</sup> Ibid., p. 78, ll. 4-8. It was not only Ibn Zunbul who regarded the Ottomans as not very different from animals. A very similar opinion is expressed by Ibn Iyās who says: "Sultan Selim did not follow in Egypt the ways and rules of the previous Sultans. Neither he, nor his Vezirs nor his Amirs nor his army had an acknowledged order, but [all of them] were barbarians and savages, amongst whom it was impossible to distinguish between servant and master" (*wa-lā mashā Salīm Shāh fī Miṣr 'alā qawā'id as-salātin as-sāliḥa fī Miṣr wa-lam yakun lahu nizām yu'raf lā huwa wa-lā wuzarā'ihī* [sic!] *wa-lā umarā'ihī wa-lā 'askarihi bal kănū hamaj lā yu'raf al-ghulām min al-ustādh*—Ibn Iyās, v, p. 159, ll. 7-14. Cf. also p. 194, ll. 1-2 ; p. 204, ll. 3-5, ll. 9-10). Many customs of the Ottomans aroused an extreme feeling of disgust in the hearts of the Mamluks (ibid., p. 194, ll. 1-2, ll. 6-8 ; p. 204, ll. 5-9). The disappearance of the *furūsīya* exercises and other time-honoured Mamluk institutions were deeply lamented by Ibn Iyās (ibid., p. 194, ll. 9-10 ; p. 195, ll. 1, 2, 3-5, 7, 11).
- <sup>239</sup> Ibn Iyās, p. 71, ll. 13-21.
- <sup>240</sup> Ibid., p. 68, ll. 20-24 ; p. 70, ll. 19-24.
- <sup>241</sup> In these battles there were undoubtedly situations such as close combat, etc., in which firearms could not be used effectively, and when this happened the Mamluks could easily see how much higher their own *furūsīya* standards were in comparison with those of the Ottomans.
- <sup>242</sup> P. 27, l. 25-p. 28, l. 5. According to Ibn Zunbul, even Selim himself was fascinated by the *furūsīya* exercises, and made inquiries to discover whether any in his own army were able to perform such feats of arms and horsemanship (p. 119, l. 24-p. 120, l. 2). Traces of the Mamluk historian's claim that Selim showed admiration for the Mamluks' proficiency at *furūsīya* exercises may be found in one of the two legends telling of the formation of two Mamluk rival factions (*Qāsimīya* and *Faqāriya*) under the Ottomans (Jabartī: p. 22, ll. 3-5, ll. 21-22 ; p. 22, l. 27-p. 23, l. 15).
- <sup>243</sup> Ibn Zunbul: p. 9, ll. 7-12.
- <sup>244</sup> Ibid., p. 30, ll. 2-5.
- <sup>245</sup> Ibid., p. 104, ll. 18-21. Cf. also p. 88, ll. 14-17. A comparison between the Ottoman attack and that of Timurlane is made by Ibn Zunbul. The damage caused by Selim was much greater than that caused by Timur because of the use of firearms (Ibid., p. 86, ll. 8-13). It was "about fifteen times bigger" (Ibid., p. 116, ll. 3-5).
- <sup>246</sup> Ibid., p. 37, l. 7-p. 39, l. 3. An abbreviated and largely incorrect version of Kurtbāy's meeting with Selim is given in Hammer ii, pp. 498-499. Cf. also Oman: *A History of the Art of War in the XVIth*

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*Century*, London, 1937, p. 619. Kurtbāy was an Amir of a Thousand, holding the rank of Second Dawādār. 'Allān was the Great Dawādār, being appointed by Tūmānbāy, who relinquished the appointment on himself becoming Sultan (Ibn Iyās: v, p. 107, ll. 6-10).

<sup>247</sup> In Europe, too, the introduction of firearms aroused considerable antagonism (Hime: pp. 131-133), but there such opposition never constituted an obstacle as insurmountable as in the Mamluk kingdom.

<sup>247a</sup> It would appear that the use of the hand-gun from horseback had been introduced by the Ottomans in Egypt at a very early date. A firman of the year 931/1524 in *Kanunnameh Misr* of Suleiman the Magnificent deals with "The Corps of the Mounted Arquebusiers" (*Cema'at-i Tüfekciyān-i Süvari*). It is further stated in this firman that according to the *Kanun* each man of this corps has to keep a horse and to be able to fire with a hand-gun from horseback. The *aghās* must train those who do not know this art (Ö. L. Barkan, *Kanunlar*, Istanbul, 1945, No. CV, *Kanunnameh of Egypt*, p. 356). It was Professor P. Wittek who called the present writer's attention to this most important document.

<sup>248</sup> In the war between Timurlane and the Mamluks neither used firearms in open battle.

<sup>249</sup> The position of a Sultan who was the son or descendant of a Mamluk was much weaker than that of one who was himself a Mamluk (cf. "Studies on the Structure of the Mamluk Army," *BSOAS*, 1953, pp. 458-459).

<sup>250</sup> Cf. *L'Esclavage du Mamelouk*, pp. 9-22, 24-26.

<sup>251</sup> Cf. op. cit., pp. 16-22.

<sup>251a</sup> The word "slavery" for designating the relations between the master and the Mamluk or Ottoman *kul* may create a wrong impression in the mind of the non-Muslim and especially the European reader. It was obedience, not servility, of the "slave" to his master, springing from mutual feelings of devotion and loyalty.

<sup>252</sup> The Mamluk sultanate was hereditary during the Bahri period under the Qalāūn dynasty, but afterwards and especially under the Circassians, the principle of heredity was exceptional. It should be remembered that but for a few decades firearms had been the weapons of the Circassian period.

<sup>253</sup> The word "allegiance" is, of course, used here not in the meaning of a formal obligation to the ruling monarch, by which all Royal Mamluks were bound, but to that kind of obligation which grew out of the very essence of Mamlukdom, *viz.*, the sense of solidarity uniting all the Mamluks belonging to any one master, welding them into a slave family, and creating between them something in the nature of a family relationship.

<sup>254</sup> For additional and more detailed information on the various groups of which the Royal Mamluks were composed and on their relations with each other, cf. "Structure, etc.," *BSOAS*, 1953, pp. 204-228. It should be emphasised here that though dissension had been a constant feature of Mamluk society in the years 1250 to 1517, the hatred between the various Mamluk factions never reached such a pitch as it did when the Mamluks came under the Ottomans. In Ottoman Egypt the rival Mamluk factions (*Qāsimīya* and *Faqāriya*)

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had literally the one single aim of annihilating each other. After the *Faqāriya* had succeeded in wiping out their mortal enemies (1729), bloodshed within the victorious faction continued almost with the same intensity as there had been in the past between the *Faqāriya* and *Qāsimiyya*. The reasons for this phenomenon were analysed by the present writer in a lecture delivered at the 23rd International Congress of Orientalists at Cambridge in August, 1954, and entitled: "A comparison between the Mamluk societies of Egypt in the Mamluk kingdom and under the Ottomans." The present writer is now working on a comprehensive study of Egyptian society under the Ottomans.

<sup>255</sup> Gibb and Bowen: *Islamic Society and the West* I, i, Oxford University Press, 1950, p. 68. R. Anhegger: *Beiträge zur Geschichte des Bergbaus im Osmanischen Reich*, Istanbul, 1943-1945, pp. 133-146, 147f, 168, 173, 174, 204-206, 210-212.

<sup>256</sup> Le Strange, *Palestine under the Moslems*, pp. 408-410. *Daw' aṣ-Ṣubḥ*, p. 289, l. 7. *Ṣubḥ* iv, p. 111, l. 1.

<sup>257</sup> Cf. Heyd's and Schaube's books on European trade with the Levant. Cf. also Abū al-Fidā', *Taqwīm al-Buldān*, p. 219. For the shortage of metals see *Sulūk* i, p. 67, ll. 10-14; p. 103, l. 12-p. 104, l. 1; p. 568, ll. 12-13. Ibn Kathīr: xiv, p. 102, ll. 15-16. *Ṣubḥ* iii, p. 70; p. 444, ll. 8-12, ll. 17-18; viii, p. 213.

<sup>258</sup> No metal mines apart from that of Bayrūt have been found to have been worked throughout the Mamluk period. The only allusion to an attempt to discover ore suitable for casting cannon is that of Khāyrbak al-Mi'mār, who, having gone to Aqaba to build a *Khān* and granaries, sent to Sultan Qānṣūh al-Ghawrī stones which he supposed to have contained copper ore. But an examination of the stones proved that they contained negligible quantities of copper (Ibn Iyās: iv, p. 144, ll. 4-9). It would appear that there was occasionally a shortage of saltpetre or gunpowder (*bārūd*). Some time before the expedition against the Portuguese, the Mamluk Sultan sent a special messenger to the Ottoman ruler requesting war material and *bārūd* (Ibn Iyās: iv, p. 196). He received from the Ottomans—in addition to cannon, copper, and iron—40 *Qanṣārs* of *bārūd muṭayyab* (Ibn Iyās: iv, p. 201). In 916/1510, a native of Kerak discovered near by great quantities of saltpetre, and on bringing samples to the Sultan for examination these were found to be very rich. The Sultan rejoiced greatly at the discovery, and ordered large quantities of the material to be brought to Cairo (Ibn Iyās: iv, p. 204, ll. 9-12). During the preparations for the expedition against the Portuguese, Egypt experienced a severe shortage of sulphur (*kibrīt*) (Ibn Iyās: iv, p. 355, ll. 17-18).

<sup>259</sup> The present writer has no knowledge of the economic situation in the Ottoman Empire and its influence on the efficiency of its military machine. No economic comparisons are, therefore, made.

<sup>260</sup> This problem is discussed in the chapter on pay in the present writer's unpublished work on the Mamluk army. Cf. also "Structure, etc.," *BSOAS*, 1954, pp. 86-88.

<sup>261</sup> *Khīṭaṭ* i, p. 5, ll. 21-24; p. 365, ll. 19-23.

<sup>262</sup> *Khīṭaṭ* i, p. 5, ll. 1-24; p. 365, ll. 19-23. It should be noted that plague played no small part in accelerating Egypt's economic

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decline in the fifteenth and the beginning of the sixteenth centuries, for during that period its outbursts afflicted the country with much greater frequency than in the fourteenth century, though none was as severe as that of 749/1348 (cf. the present writer's "The Plague and its Effects upon the Mamluk Army," *JRAS*, 1946, pp. 67-73).

<sup>263</sup> *Khīṭaṭ* i, p. 365, ll. 19-23.

<sup>264</sup> For the internecine battles fought between Sultan Faraj and his supporters on the one hand and the Circassian Mamluks on the other, cf. "The Circassians in the Mamluk Kingdom," *JAOS*, 1949, pp. 141-142.

<sup>265</sup> *Khīṭaṭ* i, p. 365, ll. 18-21; ii, p. 131, ll. 26-27.

<sup>266</sup> One of the salient symptoms of Egypt's economic decay in the period under discussion was the steady decline in the value of the *dirham*, as compared with the *dinār* (cf. "Esclavage," p. 42, n. 54, and E. Strauss: "Prix et Salaires à l'Époque Mamlouke," *REI*, 1950, pp. 49-94).

<sup>267</sup> Cf. also *Khīṭaṭ* i, p. 101, where important data on the Egyptian dams are gathered by al-Maqrīzī.

<sup>268</sup> For the office and functions of the *Wazīr*, cf. "Structure, etc.," *BSOAS*, 1954, p. 61.

<sup>269</sup> *Nujūm*(P) vi, p. 271, l. 19-p. 273, l. 6. *Khīṭaṭ* i, p. 365, ll. 18-28.

<sup>270</sup> *Nujūm* vi, p. 108, ll. 17-20.

<sup>271</sup> *Manhal* iii, fol. 168a, ll. 16-21. *Daw'* iii, p. 310, ll. 12-17.

<sup>272</sup> For the *himāya*, cf. Poliak: "Feudalism," p. 25.

<sup>273</sup> *Khīṭaṭ* i, p. 111, ll. 26-29. *Nujūm*(P) vii, p. 651, ll. 5-12.

<sup>274</sup> *Hawādīth*, p. 108, l. 15-p. 109, l. 3.

<sup>275</sup> *Hawādīth*, p. 140, ll. 18-22.

<sup>276</sup> *Hawādīth*, p. 451, ll. 1-12. For the harm caused by the mischievous deeds of the *julbān*, cf. "Structure, etc.," *BSOAS*, 1953, pp. 206-213.

<sup>277</sup> *Hawādīth*, p. 458, ll. 6-13. On the havoc wrought by Beduin in the rural districts (*aryāf*), see also *Hawādīth*, p. 643, ll. 10-14.

<sup>278</sup> *Hawādīth*, p. 461, ll. 1-11.

<sup>279</sup> *Hawādīth*, p. 458, l. 14-p. 459, ll. 8.

<sup>280</sup> *Hawādīth*, pp. 653-655. Cf. also p. 673, ll. 16-19. It should be stressed, however, that the terms *kharība*, *kharraba*, *kharāb*, and the like frequently do not mean total destruction. Hence the economic situation might have been somewhat less sombre than that suggested by contemporary historians.

<sup>281</sup> *Hawādīth*, p. 734, ll. 2-4.

<sup>282</sup> Ibn Iyās: (KM) iii, p. 323, ll. 17-19.

<sup>283</sup> Cf. for example *Ibid.*, (KM) iii, p. 360, ll. 17-21; p. 366, ll. 4-11; p. 386, ll. 6-8; p. 440, ll. 6-8.

<sup>284</sup> *Ibid.*, iv, p. 45, l. 19-p. 46, l. 1. Cf. also p. 88, ll. 15-20.

<sup>285</sup> *Ibid.*, iv, pp. 262-263.

<sup>286</sup> *Ibid.*, iv, p. 359, ll. 11-16. The extent of Alexandria's decline, even in the early decades of the fifteenth century, may be gauged from the fact that the number of its looms—Alexandria was then one of Egypt's greatest textile manufacturing centres—dwindled from 14,000 in 790/1388 to 800 in 837/1433-1434 (*Nujūm*[P] vi, p. 714, ll. 11-17). Changes in the number of villages, on the other hand, cannot serve

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as a guide to the economic state of affairs, since reliable data are lacking. Ibn Taghribirdī says that according to al-Musabbiḥī the number of villages in Egypt in the fourth century A.H. (tenth century A.D.) was 10,000, whereas in 837/1433-1434 their number, according to a census carried out by the officials of the *Diwān al-Jaysh*, was only 2,170, and the Mamluk historian concludes that this decrease affords a striking proof of the country's decline (*Nujūm*[P] vi, p. 717, ll. 9-14). But this conclusion is open to criticism. First, his statement requires corroboration. Secondly, Ibn Taghribirdī contradicts himself when he says that the number of villages in the time of the Fatimite Caliph al-Ḥākim bi-Amr Allāh (A.D. 996-1020) was 2,390, while in 864/1459-1460 it amounted to 2,365 villages, about half in Upper Egypt and the rest in Lower Egypt (*Hawādith*, p. 333, ll. 14-19). (The word *kuwar* [sing. *kūra*] is in all probability used here wrongly.) If the second statement is correct, the number of villages did not, in fact, decline but remained more or less unchanged from the eleventh century A.D. to the middle of the fifteenth.

<sup>287</sup> A comprehensive analysis of the causes of economic decay is beyond the scope of the present work, but in passing it is worth noting that the above testimonies clearly demonstrate that economic decline prior to Egypt's occupation by the Ottomans was mainly caused by internal factors rather than by external ones, such as the circumnavigation of the Cape of Good Hope and the consequent diversion of European trade with India and the Far East, which are usually held to have been responsible. Egypt's economic deterioration had already assumed dangerous proportions many decades before the Portuguese made their appearance in the Indian Ocean, and the diversion of Indian and Far Eastern commerce was but an additional factor, which came too late to be really decisive.

<sup>288</sup> The geographical situation and technical backwardness of Persia gave the Safawis a much more limited opportunity for adopting firearms than the Mamluks, the latter being situated on the shores of the Mediterranean and enjoying regular contact with Europe. However, prior to the Battle of Chaldiran, the Safawis did make an attempt to acquire firearms (S. N. Fisher: *The Foreign Relations of Turkey 1481-1512*, The University of Illinois Press, 1948, p. 92; p. 94, n. 35; p. 96).

<sup>289</sup> True, the Safawis were saved from total destruction by various causes over and above their intrepidity and vigour. They were greatly helped by their geographical situation, by the bad roads of Persia, by the coming of the winter, and by the mutiny of the Janissaries against Sultan Selim. However, all this cannot alter the fact that but for firearms the Ottoman victory over them would have been incomparably less resounding.

<sup>290</sup> There is no doubt that the crushing defeat which the Ottomans inflicted on the Safawis in 1514 greatly aided the Ottomans in establishing the Sunna as the indisputable creed of the Empire, besides contributing to the establishment of boundaries between the Shī'a and the Sunna, which in general have persisted to the present day. This, too, can be counted among the important results of Ottoman superiority in firearms.

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<sup>291</sup> In stressing here the decisive rôle played by firearms in the Ottoman conquest of Western Asia and Egypt, it is not intended to belittle the supreme importance of the Ottoman military slave system. Yet, however efficient and disciplined, the Ottoman army would never have been capable of achieving such successes without the use of firearms.



## APPENDIX I

### Technical Information on Firearms

Though Mamluk sources refer very frequently to firearms, they furnish only the scantiest information on the technical aspects of those weapons, *e.g.*, their size, weight, range, the weight of the projectiles used, weight of charge, etc.<sup>1</sup> This serious deficiency cannot be repaired by recourse to archæological specimens, for the only artillery piece to come down to us from the whole Mamluk period is one single insignificant cannon from Sultan Qāyṭbāy's time, kept in a museum at Constantinople.<sup>2</sup> Hence the data gathered by the present writer is given in order of their bearing on the various points discussed. One important exception, however, will be discussed forthwith.

The only detailed description of a cannon to be found in published Mamluk sources is furnished by Ibn Taghribirdī, who was not only an eyewitness to its operation, but took part in measuring its range and was told about its size, weight, calibre, etc., from the mouth of the Mamluk Sultan himself.<sup>3</sup> The following is a translation of that description:

“And on Tuesday the 14th of Shawwāl, 868/1464, the Sultan Khushqadam<sup>4</sup> gave an order to test the firing capacity [*? taṣrīkh*] of the Royal Cannon (*al-miḍfa' as-Sulṭānī*) which the master artificer (*ustādh*) Ibrāhīm al-Ḥalabī had cast for the Sultan in the Cairo Citadel. Earlier, at the end of Ramaḍān, the cannon had already been tested once in the presence of the Sultan, firing several rounds. At the time of that test the cannon had been mounted under the walls of the Citadel and had fired in the direction of the Red Mountain (*al-Jabal-al-Aḥmar*). Afterwards it was transferred to the foot of al-Jabal al-Aḥmar and was mounted on a high wall near Qubbat an-Naṣr, outside Cairo, by Zāwiyat ash-Shaykh 'Alī Kahanbūsh. The rear part of the cannon was turned towards the above mountain while its muzzle was directed towards Khānqāh Siryāqus. On Thursday the ninth of the month [*i.e.*, Shawwāl] it was tested for the second time, firing several

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rounds in the presence of a big crowd and a group of Amirs of a Thousand and other high personages of the realm. The distance covered by the projectile was measured and found to be 4,620 ells (*dhirā'*) according to the new ell (*bidh-dhirā' al-jadīd*). As for the first test, it was impossible to measure the distance, for the cannon was fired in the direction of the mountain.

“In the second test I [*i.e.*, Ibn Taghrībirdī] was not present, and the information about the range of fire was not given to me by a reliable source, but by some of the people who quoted various figures, some of them giving higher figures and others lower ones. The Sultan questioned me about the cannon and its properties and characteristics, and he further asked me to measure its range in the third test. I answered him: ‘Neither do I know the weight of the cannon, nor the weight of its projectiles, nor the weight of its gunpowder.’ Then the Sultan personally dictated to me all these particulars which I shall submit below.<sup>5</sup>

“When the above-mentioned Tuesday [*i.e.*, the 14th of Shawwāl] arrived, the cannon was tested for the third time from the same place [*i.e.*, from al-Jabal-al-Aḥmar] facing Khānqāh Siryāqus. It was fired twice. The second projectile (*ḥajar*) fell towards Masjid at-Tibn from the side of al-Maṭariya. This distance is greater than that traversed by the first stone or that traversed by the stone fired in the second test on last Thursday<sup>6</sup> [*i.e.*, the 9th of Shawwāl]. I, and another man whom I trust, undertook to measure that distance with the greatest accuracy.

“The result of our measurements was 5,648 ells and one span (*shibr*) according to the new ell; while according to the ell (*dhirā'*) commonly used in the service of the post (*barīd*) the same distance was 6,589½ ells. This distance is about a *mīl* and a half plus a quarter of a tenth of a *mīl*; *i.e.*, about one-sixth of a *barīd*.<sup>7</sup> This is a rare and strange thing to which we have not been accustomed and of the existence of which we have not heard in the past generations. This cannon has greatly amazed the public. The days on which it was tested turned out to be festival days because of the numerous spectators.

“By Allah! had I not been an eyewitness to all this, I

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should not have recorded it in my chronicle because of its strangeness and magnificence. And all this was done by the Sultan's grace, may Allah perpetuate His rule!<sup>7a</sup>

“As to the measurements of the cannon, they are as follows, according to what the Sultan dictated to me, and according to my own observation: Its length, 15 spans, which correspond to  $5\frac{3}{4}$  ells. The perimeter of its muzzle,  $3\frac{3}{4}$  ells. Its thickness, about [?] ells. Its weight, 170 Egyptian *qanṭārs*. The weight of its projectile, 4 Egyptian *qanṭārs*. The weight of its gunpowder, 37 Egyptian *raṭls*.”<sup>8</sup>

#### ADDITIONAL DATA ON THE MEASUREMENTS OF MAMLUK ARTILLERY

##### *Weights of Cannon*

In 918/1512, under Qānṣuh al-Ghawrī, four cannon were cast, each weighing 600 Egyptian *qanṭārs*, according to what “was said.”<sup>9</sup> The accuracy of this figure is, of course, open to question.

##### *Weights of Projectiles*

When Sultan Faraj laid siege to Ṣarkhad in 812/1409, some of his cannon fired projectiles weighing 60 Damascus *raṭls*.<sup>10</sup> Quatremère, quoting Ibn Ḥajar al-‘Asqalānī and al-Maqrīzī, mentions a *midfa’* and a *mukḥula*, each firing projectiles weighing 600 Egyptian *raṭls*.<sup>11</sup>

By far the most important evidence regarding the weights of the projectiles of ordinary pieces of artillery is furnished by al-Qalqashandī, when he speaks of the cannon of Alexandria (see page 3). He says that in his time (close of the fourteenth century and beginning of the fifteenth) the weight of artillery projectiles varied between ten and over a hundred Egyptian *raṭls*.<sup>12</sup>

##### *Size of Cannon*

The above four pieces of artillery, cast during Qānṣuh al-Ghawrī's reign, measured ten ells each.<sup>13</sup>

### *Range*

Cannon mounted on the walls of the Cairo Citadel fired projectiles which reached Ṣalibat Ibn Ṭulūn.<sup>14</sup> The cannon witnessed by al-Qalqashandī in the hippodrome at Alexandria, fired projectiles which reached Baḥr as-Silsila near Bāb al-Baḥr, “and this is a great distance.”<sup>15</sup>

A unique and exceedingly important piece of information regarding the minimum acceptable range of a Mamluk cannon is given in the reign of al-Ghawrī who tested each of the guns produced in his foundry (several hundred pieces in all). The cannon were brought to Turbat al-‘Adilī and fired there. A cannon whose projectile fell near Turbat al-Ḥājj passed the test while one whose projectiles failed to reach the target was rejected.<sup>16</sup>

### *Ordnance Artificers*

One of the most important questions to which a student of Mamluk firearms would be happy to have a clear and detailed answer is the influence of external factors (especially European countries and perhaps the Ottoman Empire as well) on Mamluk firearms. Unfortunately Mamluk sources throw no light whatever on this vital point. While there cannot be the slightest doubt that the influence of Europe on Mamluk firearms was considerable,<sup>17</sup> there is no trace of such an influence in the sources.

One might expect that certain connections between Mamluk and European artillery could be established by means of the names of the artificers producing the guns. But here again we are still very largely in the dark. Mention has already been made of the names of the artificers Muḥamad b. aṭ-Ṭarabulusī and Ibrāhīm al-Ḥalabī, both of them Syrians. The present writer has come across the name of only one European artisan, Dominico, who built a big cannon nicknamed “the mad one” (*al-majnūna*).<sup>18</sup>

#### TEXT REFERENCES

<sup>1</sup> This scanty piece of information deals solely with artillery. No data whatsoever are supplied by contemporary sources on the technical aspects of the arquebus.

<sup>2</sup> Khalil Edhem gives a detailed description of this cannon in *Tarih-i Osmani Encümeni Mecmuası*, No. 45, pp. 128-139. The pieces of artillery described in the famous Petersburg *furûsiya* MS. (cf. above, references from the works of Reinaud and Favé and also Oman: ii, p. 211) belong to the earliest (possibly experimental) stages of firearms and cannot therefore be considered representative.

<sup>3</sup> The gun described by Ibn Taghrîbirdî is exceptionally big and very little can be learnt from it about ordinary Mamluk artillery.

<sup>4</sup> Sultan Khushqadam ruled in the years 865/1461-872/1467.

<sup>5</sup> The recording of such intimate relations between the Sultan and Ibn Taghrîbirdî should not be looked upon as mere boastful exaggeration, for Ibn Taghrîbirdî, though not himself a Mamluk, was the son of the Commander-in-Chief (*atâbak al-'asâkir*), i.e., the holder of the highest rank after the Sultan in the Mamluk military hierarchy. Ibn Taghrîbirdî was brought up among the highest-ranking Mamluk amirs. Hence his exceptionally intimate relations with the ruling class, an advantage denied to ordinary historians. Thus he was enabled to obtain a more profound insight into Mamluk society and its military organisation, weapons, and tactics than almost any other Mamluk historian.

<sup>6</sup> Ibn Taghrîbirdî's wording conveys the impression that he recorded the description translated above very soon after the day of the third test, i.e. Tuesday, 14th Shawwâl, 868.

<sup>7</sup> This is a most useful piece of information on the relations between the various linear measures in the Mamluk kingdom.

<sup>7a</sup> This is the sole instance known to the present writer prior to the reign of Tûmānbāy of an enthusiastic public reception of firearms. The cause of this enthusiasm, however, was entirely different in each case. Here it was caused by wonder and curiosity, while in Tûmānbāy's days it was due to a desperate hope that these weapons would save the country from Ottoman occupation.

<sup>8</sup> *Hawādith*, pp. 474-476. The measurements given throughout the above description should be compared with the measurements of contemporary artillery in Europe. Only then will it be possible to determine to what extent Ibn Taghrîbirdî's information is accurate. The relevant literature not being available to the present writer, he has not been able to make the comparison himself.

<sup>9</sup> Ibn Iyās: iv, p. 261.

<sup>10</sup> *Nujūm*(P) iv, pp. 210-211.

<sup>11</sup> *Mongols*, pp. 290-291.

<sup>12</sup> *Ṣubḥ* ii, p. 144, l. 17-p. 145, l. 2 (in another edition the page number is 137). The employment of light artillery by the Mamluks is mentioned in various references gathered in the footnotes of this study. When al-Mu'ayyad Shaykh laid siege to Safed, he transported his cannon on the backs of camels (*Nujūm*[P] vi, p. 117). This testimony is not in contradiction with the conclusion reached on p. 29 above, for Tûmānbāy's guns were fired from the backs of

#### TEXT REFERENCES

camels, while those of al-Mu'ayyad Shaykh were only carried into action on the animals.

<sup>13</sup> Ibn Iyās: iv, p. 261.

<sup>14</sup> *Nujūm*(P) vii, p. 206.

<sup>15</sup> *Ṣubḥ* ii, p. 144, l. 17-p. 145, l. 2.

<sup>16</sup> Cf. the references on pp. 112f., notes 8-15, and especially note 9.

<sup>17</sup> True, the Mamluks did not take full advantage of their contacts with Europe to bring their firearms up to date, and the reasons for this are outlined in Chapter III. However, it is inconceivable that, in view of these contacts, Mamluk firearms would not be profoundly affected by European developments.

<sup>17a</sup> For another (unnamed) artisan from Aleppo who had been sent to Damascus for the purpose of casting a cannon, cf. Ibn 'Arabshāh: *at-Ta'lif at-Tāhir fī Shiyam al-malik az-Zāhir . . . Jaqmaq*, B.M. MS., Or. 3026, fol. 96a, ll. 2-5.

<sup>18</sup> Ibn Iyās (KM) iii, p. 363, n. 1 ; p. 366, ll. 2-4.

## APPENDIX II

### The Earliest References to the Use of Firearms by the Ottomans

Ismail Hakki Uzunçarsılı<sup>1</sup> has collected from Ottoman chronicles some of the first references to the use of firearms. The two earliest quotations are, however, of doubtful validity:

(a) The Battle of Kossovo, 1389. Neshrī (end of the Fifteenth Century) mentions a certain Topchu Haydar, "a perfect master in the art of firing guns," who during this battle was stationed in the centre of the line of battle, in front of the Sultan.<sup>2</sup> This passage belongs to a section of the chronicle where Neshrī reproduces a source, the date and value of which have still to be assessed; it is clearly of a marked literary character and therefore cannot be very old—*e.g.*, in the council of war held just before the battle<sup>3</sup> the Sultan is reminded of the stratagem of Alexander, who by the use of guns routed the elephants of Poros.

(b) The first Ottoman siege of Constantinople, 1395-1402. 'Āshiqpashazāde (end of the Fifteenth Century, but reproducing here a much older source) tells us<sup>4</sup> that here and there catapults were set up, and adds: "guns they did not yet know very well at that time; they came into frequent use only under Murad (II) and his son Mehemmed (II)." The addition is evidently merely an aside made by 'Āshiqpashazāde for the benefit of his readers (or rather, audience). It does not belong to his source and cannot, therefore, be taken as evidence that even a few guns were in use during that first siege.

As for the Battle of Nicopolis (1396), I. H. Uzunçarsılı affirms that firearms were used there, but gives no reference. On the other hand, A. S. Atiya<sup>5</sup> states, after a careful review of the sources, that firearms were not employed on that occasion. Although C. Jirecek<sup>6</sup> mentions guns (*bombarde*) and gunpowder (*pulvis pro bombardis*) at Ragusa (Dubrovnik) in 1378, he also informs us that in Serbia catapults were for a long time still used in sieges. This shows that the new weapon penetrated from the progressive merchant republic on the

#### GUNPOWDER AND FIREARMS IN THE MAMLUK KINGDOM

Adriatic into the Balkan hinterland only slowly. I am inclined to think that before 1400 the Ottomans had no knowledge of firearms.

In what follows, the employment of guns in siege warfare will be discussed first, since it seems to have preceded their use in the open field. This, at least, is what the evidence suggests. While defending Adalia in 1424, the Ottomans killed their besieger, the Qaramanoghlu Mehemmed Beg, by a well-directed cannonball. This reference, found in 'Āshiq-pashazāde (p. 99, l. 10 ; and, dependent on him, Neshrī, ed. Taeschner, i, 157, *ult.*) as well as in the Anonymous Chronicle (ed. Giese, p. 62, l. 1), deserves our trust, not merely because it occurs in two distinct historical traditions, but also because the use of guns is explicitly attested already at the Siege of Constantinople in 1422, not, indeed, in the Turkish sources (which are almost silent about this siege), but in the Greek account by the contemporary writer Kananos, where the Ottoman *boumpardai* are said to have been very large, but of little effect.<sup>7</sup> Writing (*circa* 1480) of this siege, Chalkokondyles<sup>8</sup> describes at some length the *teleboloji* (bombards), which he regards as a then recent invention, probably of German origin. 'Āshiqpashazāde (p. 106, l. 4) writes of guns being used against Salonica in 1430 (*top ve manjılıqlar*, which Neshrī,<sup>9</sup> certainly committing an anachronism, changes into *toplar ve tüfekler*) and finds confirmation in Uruj.<sup>10</sup> Of special interest is his passage concerning the siege of the Hexamilion on the Corinthian Isthmus, in 1446,<sup>11</sup> because it shows that the guns were cast on the spot (a method still practised under Mehemmed II<sup>12</sup>) and that for this purpose the army was provided with supplies of copper. The rôle of artillery at the Siege of Constantinople in 1453 is so well known as to need no mention here.

More difficult is the task of discovering when guns were first used on the open battlefield. At Varna in 1444, the Christians seem to have had artillery, but the Ottomans none. As for the second Battle of Kossovo in 1448, there is evidence to show that the Ottomans brought guns into the field. Although his main source 'Āshiqpashazāde (p. 124) is silent on this point, Sa'd ad-dīn<sup>13</sup> (late Sixteenth Century) seems to rely on genuine information when he states that guns were

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placed in the centre of the line of battle, in front of the Sultan. This is precisely what we read in Chalkokondyles.<sup>14</sup> It is even possible that Neshri's Topchu Haydar of Kossovo I (see above) belongs in fact to Kossovo II. Mehemmed II's victory over Uzun Hasan in 1473 at Otlug Beli (Terjan) is generally attributed to his superiority in firearms,<sup>15</sup> but this matter requires further investigation.

With regard to muskets, *tüfek*, the oldest dated Ottoman text containing the word is Enverî's *Destürnâme*<sup>16</sup> composed in 1465. Mme. I. Mélikoff-Sayar (p. 56, n. 4) is probably right to recognise in *tüfek* the *tüwek* of Mahmud al-Kashghari's *Dīwān lughāt at-Turk*,<sup>17</sup> (*circa* 1075), which is there given the meaning of a blowpipe used to kill birds with small pebbles. When Enverî made use of the word, it had no doubt already the meaning of musket; his employment of it in connection with events of the mid-Fourteenth Century is certainly nothing but an anachronism. Thus by 1465 muskets must have been well known to the Ottomans and no longer regarded as a novelty. Indeed, in a brief outline of the organisation of the Ottoman army, composed in vulgar Greek in the late years of Mehemmed II (between 1473 and 1481), the entrenched position occupied by the Sultan during a battle is described as being abundantly guarded by bombards and *skopeta*.<sup>18</sup> Likewise in the chronicle of Zorzi Dolfin (it ends at 1478) Mehemmed II is said to have used in 1453 against Constantinople, besides his big gun, *alre minor machine*, among them *schiopetti*.<sup>19</sup> Furthermore, Iorga<sup>20</sup> quotes a German source according to which, in 1479 at Kenyérmezö, some of the Ottoman raiders were armed with *Puchsen*. I think we are justified in taking the *skopeta*, *schiopetti*, *Puchsen* as already denoting "muskets." Nevertheless, it seems that they came into general use only at a somewhat later date. Spandugino,<sup>21</sup> writing not long after 1510, tells us that the Janissaries had only recently learned the use of muskets (*hacquebute*; Italian version: *schiopetto*).

I cannot release these lines without emphasising that they are the result of a very hasty perusal of the main sources and reference books available. My conclusions have therefore to be regarded as tentative and provisional.

P. WITTEK.

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- <sup>2</sup> Edd. Unat and Köymen, i, p. 290, l. 12; ed. Taeschner, i, p. 80, l. 1.
- <sup>3</sup> Edd. Unat and Köymen, i, p. 282; ed. Taeschner, i, p.77.
- <sup>4</sup> Ed. Giese, p. 60, l. 20; cf. Neshrī (here following 'Ashiqpashazāde), edd. Unat and Köymen, i, p. 326, l. 1; ed. Taeschner, i, p. 89, l. 2.
- <sup>5</sup> *The Crusade of Nicopolis*, p. 61.
- <sup>6</sup> *Staat und Gesellschaft im mittelalterlichen Serbien*, i, p. 77.
- <sup>7</sup> Migne, *P. G.*, vol. 156, col. 65.
- <sup>8</sup> Ed. Darkó II, p. 10=p. 231, Bonn.
- <sup>9</sup> Ed. Taeschner i, p. 163, l. 3.
- <sup>10</sup> Ed. Babinger, p. 49, l. 10=p. 114, l. 15.
- <sup>11</sup> 'Ashiqpashazāde, p. 116, l. 15; cf. Neshrī, ed. Taeschner, i, p. 169, penult.
- <sup>12</sup> Cf. Iorga, *G.O.R.* ii, p. 227.
- <sup>13</sup> i, p. 374, *ult.*
- <sup>14</sup> Ed. Darkó II, p. 127=p. 358, Bonn.
- <sup>15</sup> Cf. Zinkeisen, *G.O.R.* ii, p. 353 *et seq.*
- <sup>16</sup> Ed. Mükrimin Halil, p. 22, l. 15=ed. Mélikoff-Sayar, verse 253.
- <sup>17</sup> Istanbul, 1333/35, i, p. 325, ll. 2-5; cf. i, p. 419, l. 11 *tüweklik*=Turkish translation, Ankara, 1940-1943, i, p. 388, l. 3 and p. 508, l. 15; Facsimile, p. 195, l. 8 and p. 253, *ult.*; Dizgin, p. 679.
- <sup>18</sup> *Ordo Portæ*, ed. Serif Bastav, Budapest, 1947 [=Magyar-Görög-Tanulmányok No. 27], p. 10, l. 105.
- <sup>19</sup> G. M. Thomas, *Belagerung und Eroberung von Constantinopel*, Sitz.-Ber. Akad. d. Wiss. München, 1868, II, i, p. 13.
- <sup>20</sup> *G.O.R.* iii, p. 241.
- <sup>21</sup> Th. Spandouyn, *Petit Traicté*, ed. Schéfer, p. 108.

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