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MILITARY EQUIPMENT IN THE BYZANTINE MANUSCRIPT OF SCYLITZES IN BIBLIOTECA NACIONAL IN MADRID

INSTITUTO DE ESTUDIOS SOBRE ARMAS ANTIGUAS
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PATRONATO MENENDEZ Y PELAYO
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ABBREVIATIONS

A. A.	Acta Archaeologica (Copenhagen).
A. B. A. W.	Abhandlungen der Bayerischen Akademie der Wissenschaften, phil.-hist. Kl.
A. G. W. G.	Abhandlungen der Gesellschaft der Wissenschaften. Göttingen.
A. J. A.	American Journal of Archaeology.
A. P. A. W.	Abhandlungen der preussischen Akademie der Wissenschaften, phil.-hist. Kl.
H. B. A. W.	Handbücher der klassischen Altertumswissenschaft (Ivan Müllers Handbücher).
J. A.	Journal Asiatique. Paris.
J. H. S.	Journal of Hellenic Studies.
J. R. S.	Journal of Roman Studies.
M. P. G.	J.-P. Migne a. o. Patrologiae cursus completus, series graeca.
N. G. W. G.	Nachrichten der Gesellschaft der Wissenschaften zu Göttingen, phil.-hist. Kl.
W. S.	Wörter und Sachen. Zeitschrift.
Z. H. W. K.	Zeitschrift für historische Waffen- und Kostümkunde.

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PREFACE

THE present work can trace its origin some years back in time to a coincidence in the Residencia del Consejo Superior de Investigaciones Científicas in Madrid. During my stay here I met the learned specialist in Greek palæography Dr. D. José María Fernández Pomar, collaborator at the Biblioteca Nacional. At that time he was about to catalogue Greek manuscripts of this library and among them the marvellous illuminated Byzantine manuscript of Scylitzes with its abundance of warlike representations. During our conversations about manuscript illuminations and their value for armeology we discussed their mutual importance in regard to chronology etc. I am highly indebted to Dr. Fernández Pomar who drew my attention to this true jewel of the Spanish Biblioteca Nacional. From these pages I wish to bring him my sincere thanks. In GLADIUS vol. III, 1964, Dr. Fernández Pomar published an article: El «Scylitzes» de la Biblioteca Nacional de Madrid. *It had been the intention to publish the two articles in vol. III. However investigations about military equipment of the manuscript appeared to be rather complicated. Time went on and my work took a long time owing to the many disciplines which had to be taken into consideration in regard to arms and armour. The two articles were separated. Nevertheless they make a connected whole.*

A work as the present requires investigations in many libraries and museums. It is a great pleasure here to express my gratitude for the generosity and kindness I have met during my work in Spanish libraries and museums. Above all I wish to bring my sincere thanks to the Biblioteca Nacional in Madrid, particularly to the director and vice-director of the Sala de Manuscritos: Dr. D. Ramón Paz and Rvdo. P. Dr. D. José López Toro, respectively, for all kindness and helpfulness to me and my work. A most cordial thank do I wish to bring to the former director of the Sala de Manuscritos now director of Instituto de Valencia de Don Juan, Rvdo. P. Dr. D. Pedro Longás y Bartibás, whose museum and library — so indispensable to my work — always opened their doors with great kindness. A special thank I wish to express to the Byzantine Institute of the Jesuit Fathers in Madrid, particularly to its director and librarian for their kind permission to use their most interesting library, which at that time had not been opened to the public and where I found much material of importance for my work.

ADA BRUHN HOFFMEYER

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INTRODUCTION

SCYLITZES, the annalist, kuropalates and drungarios of the Vigla at the imperial court in Constantinople, wrote his important work in the second half of the 11th century. As to his person and private life nothing is known. According to some investigators (e. g. G. Sarton: *Introduction to the History of Science,* vol. I, p. 776) he probably died about or after 1081 after having carried on his historical synopsis — in many ways a continuation of the chronicle by Theophanes — until the end of the emperor Michael VI Stratioticus (1056-1057). It is the period from the accession of Michael I Rhangabés (811-813) in the year 811, till the year 1057, which has been described in the long and important manuscript in the Biblioteca Nacional of Madrid, and illustrated with 574 illuminations in colours and gold. The history of this precious manuscript and its author as well as the palæographical investigations, contents and chronology from the point of view of a specialist in palæography was excellently treated by Dr. D. José María Fernández Pomar from this library in GLADIUS, vol. III, pp. 15-45. This part should not be dealt with here, only referred to, where matters coincident. After finishing the manuscript of the present investigation the author became acquainted with the magnificent publication: *Skyllitzes Matritensis,* tomo I, «Reproducciones y Miniaturas», Barcelona-Madrid, 1965, 420 pages in folio, by professor Dr. D. Sebastián Cirac Estopañán, director of the Byzantine Institute (C. S. I. C.), in Barcelona. In this enormous work all the illuminations from the manuscript have been reproduced, various of them in colours. The book by Dr. Cirac gives an impression of this precious Byzantine manuscript, here fundamentally treated for the first time.

The history treated by Scylitzes and his painters belongs to the so-called second Golden Age of the Byzantine empire, a splendid era, the political and cultural culmination under the reign of the Amorian (or Phrygian) and Macedonian dynasties, until the beginning of the Dukas and Comnenes dynasty, when the Byzantine military organization, the army and the navy together with the art of war were at their highest.

The period covers almost 250 years. It is an eventful era. As to politics, economics and trade it signifies the second and immense expansion of the empire, particularly to the East. As to the cultural life it signifies a flourishing and prosperous time after the bitter and violent

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struggle between the Iconoclasts and the Iconodules with its destruction of images, mosaics, frescoes, manuscripts etc., a struggle which with some interruptions lasted until 843 and ended with the victory of the Iconodules and the definitive manifestation of the Orthodox Church and the restoration of the cult. Art and science were florishing, architecture sumptuously adorned with mosaics and frescoes with historical elements. Precious religious books were made for the emperors and the nobility, cheaper and more popular editions for the monasteries and the monks; ivory-carvings, enamel-work, bronze-reliefs, silk-textiles and the like prospered. History, science and numerous other branches of cultural life had a prosperous time. Internally this period may seem violent with assassinations of emperors, rebellions, plots and intrigues, controversies between emperors and patriarchs, between pretenders and empresses, generals and dukes. In spite of all this, and even on account of all this, it was a powerful, glorious and brillant era, richly refined and elegant with all the most radiant colours of the spectre, with a secular imperial art patronized by the court and with a religious art of distinguished achievement.

In this period the weapons of defense as well as of attack played an important part in the life of the empire. Army and navy were the implements by means of which the empire enlarged and kept up its power and wealth. The emperor Constantine VII Porphyrogenitus had called the army the head of the state, but the navy played — at least during these centuries — almost the same part, particularly thanks to its modern and effective artillery, the strong stone-throwers and, above all, the Greek fire projected by special apparatus, siphons. Commanders of army and navy were of high quality, organization and discipline excellent.

Though all kinds of weapons — for defense as well as for attack and siege — were of such an importance to the empire and its keeping up the power, just for these very epochs knowledge about them is rather scarce. Byzantine arms and armour never have been object to special investigations. On the contrary, they seem to have been rather neglected and only occasionally treated in literature. This may be owing to several circumstances. Archaeological objects are rather few in number and are rarely found. Swords, spears, helmets, armours and mail shirts are even more rare objects to be found than war implements in the contemporary countries of the Occident. Matters are more complicated in the ancient East Roman empire than in the Western world, though there are just as many, or probably more, literary sources than in the Occident. The intercourses with the Near East, the Middle East

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and even with the Far East may be more or less unexplored. Particularly the abundant Islamic and other Eastern sources have not been sufficiently examined in regard to the history of the art of warfare and weapons, military equipment or manufacture of weapons.[1] Traditions and reminiscences from Greek, Hellenistic and Roman Antiquity are mixed up with influences from the variegated nationalities which met under the banners of the Byzantine emperors in the imperial army and navy or at the court in the capital. The political conditions in the Mediterranean were rather complicated in these centuries. The literature about military science and art of war, preserved to our days in this part of the world, has been studied only little and particularly more with references to the military organization and the recruitment of soldiers than to the weapons used by these armies and mariners who conquered great parts of the Mediterranean and Eastern world.[2] The scientific literature of the Byzantines referring to war built upon the Hellenistic and Roman literature on art of war. The Hellenistic and Roman authors were studied and examined thoroughly by the Byzantines, who during centuries made copies and used them as starting point for their own theoretic writings and books; even their illustrations are taken over from the Hellenistic models as seen for instance in some types of castles in the manuscript of Scylitzes.[3] Traditions from Antiquity are mixed with experiences from the time of the various authors, experiences learnt from the wars with the Eastern peoples or the Northern tribes coming to the marvellous capital at Bosporus. Many nationalities with the most different customs and practices met there. Influences from Mongol

[1] Among the works from the 19th century are: J. T. REINAUD: *De l'art militaire chez les arabes au moyen âge;* F. WUSTENFELD: *Das Heerwesen der Muhammedaner und die arabische Übersetzung der Taktik des Aelianus,* Göttingen 1880; F. W. SCHWARZLOSE: *Die Waffen der alten Araber aus ihren Dichtern dargestellt,* Leipzig 1886. J. HAMMER-PURGSTALL issued various investigations, amongst others about bows and arrows in Abhandlungen der K. K. Akademie der Wissenschaften zu Wien 1851. Other articles, e. g. dealing with iron and steel, appeared in Journal Asiatique, 1854 a. o. From the 20th century are amongst others: M. HERZ: *Armes et armures arabes;* L. A. MAYER: *Saracenic arms and armour.* HANS STÖCKLEIN published his investigations about Persian arms and armour in ARTHUR POPE: *A survey of Persian art,* and A. RAHMAN ZAKY has published various articles in GLADIUS, I-IV, with notes and references.

[2] F. LOT: *L'art militaire et les armées au moyen âge,* with literature; F. AUSSARESSES: *L'armée byzantine à la fin du VI siècle d'après le Strategicon;* CHARLES OMAN: *A history of the art of war;* A. VON PAWLIKOWSKI-CHOLEWA: *Die Heere des Morgenlandes. Tactica* by the emperor Leo, see: M. P. G., tome CVII.

[3] R. SCHNEIDER: *Geschütze auf handschriftlichen Bildern;* IDEM: *Griechische Poliorketiker:* Apollodor, Anonymos, Athenaios; IDEM: *Eine byzantinische Feuerwaffe; Cod. Mynas Parisinus suppl. gr. 607,* XIth cent.; *cod. par. 2449,* XIIth cent.; *cod. vat. gr. 1164,* XIth-XIIth cent.

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nomades, Turks, Persians, Arabs, Avars, Bulgarians, Franks, Italians, Scandinavians and Slavs were to be found.

An examination of the military equipment in the manuscript of Scylitzes to some extent must be an investigation of the Byzantine military equipment as a whole, its relations backwards in time and its contacts with and relations to the contemporary neighbouring nations, their methods of war and their equipment. The subject has shown rather extensive, the problems are numerous and often difficult to solve because so many of the branches concerning this subject almost never have been made object of scientific investigations. Still they render numerous questions open. The Greek-Roman traditions were strong in the days of Scylitzes and his painters.

The Hellenistic art, which just now got a renaissance, still inspired the painters and other artists, not only in gestures and attitudes of the figures and in their draperies but even in regard to motives and in war-equipment. At the same time the Hellenistic academic style got a splendour of life from the art of the Oriental neighbours with their colours and brilliancy. To all this should be added a tendency towards a lively realism in this secular art and the practical innovations coming from the peoples of the Central Asiatic steppes, from the deserts of Arabia and from North Africa. Such aspects must be kept in mind and taken into consideration at an examination of the arms and armours of the Byzantines. A thorough research has not been undertaken here. The material has not been sufficiently examined in all respects. Exhaustive investigations require examinations of the rich collections of weapons, art etc., in the museums of Istanbul, Athens and Cairo. Unfortunately the author has not had the opportunity. Numerous problems have been left open to further investigations. The present work doesn't pretend to be a complete survey. It must only be considered a preliminary and provisional investigation, an outline for further investigations of the military equipment of the Byzantine army and navy, seen from the point of view of an arms-and armour student, not from the point of view of a Byzantinist, philologist or historian expert in Byzantine matters, which should be beyond the power of the author.

The purpose of the present paper is to provide an introduction to the military equipment of the Second Golden Age of the Byzantine empire as represented — not by the text of Scylitzes — but by the illuminators of this marvellous manuscript, the relations of the illuminations to the actual weapons and their chronology. To a complete picture of these questions an exact comparison of the text with the illuminations and with other Byzantine military and historical texts as a matter of fact is necessary. And not the Byzantine sources alone, but even to a high

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degree the various Islamic and Asiatic literary sources must be taken into consideration. In regard to the art of war, military equipment, weapons etc., quite a lot of examinations and investigations remain in spite of the excellent researches made almost since the middle of the 19th century until now by scholars from various European and Oriental countries. Before looking at the arms themselves it may be reasonable just to have a look at the military organization of the empire and the sources, literary as well as archaeological and historical.[4]

The various categories of warriors must be considered as well as the equipment for each type of warrior. The most complete military equipment is to be found among the warriors belonging to the heavy cavalry with its iron-protected horsemen and their more or less protected horses. Their equipment constitutes the basis upon which the investigations start. The manuscript shows excellent and important examples of the famous Byzantine artillery and of Greek Fire. As these two components played an important part in the power of the empire, an examination of the artillery of the Byzantines must be done. But almost all categories of weapons are to be found in the illuminations, such as armours, helmets, shields, swords, spears, axes, clubs as well as slings and bows and arrows. Even a kind of hand-grenades is seen in one of the illuminations. Only torsion-artillery and cross-bows of Occidental type (the zangra mentioned by Anna Komnena) are missing. Almost the same categories were in use in the Occident during the Middle Ages, but various types and categories appeared in the East long before they came into use in the Occident, a fact that will be obvious in some of the illuminations.

As to types, development and chronology we have to compare the weapons from the manuscript with the representations of weapons in other objects, particularly in minor art, such as ivory-carvings, little reliefs in bronze or steatite, enamels, illuminations from other manuscripts, and now and then with mosaics and wall paintings. The contemporary art doesn't suffice for that, and we must look back to Hellenistic and Roman traditions just as it will be useful now and then to take a glance at ancient Syria, Mesopotamia, Persia and sometimes even further to the East. For the development of arms and armour in the Occidental Middle Ages these centuries of Byzantine warfare and equipment became of immense importance. In the West continuation had been broken with the turbulent events of the Migration time, while the East Roman empire uninterruptedly continued the traditions from the Roman empire though even these were mixed up with Oriental elements.

[4] L. BRÉHIER: *La civilización bizantina,* with literature. Almost all sides of Byzantine cultural life have been treated here.

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Little by little the heritage from ancient Rome diminished, owing to strong influence from the Asiatic steppes, the nomade tribes with their swift cavalry and archery on horseback and the heavy Iranian cavalry, iron-or scale dressed for both man and horse. Just as the enemies of Constantinople to some extent were different to the enemies of Occidental Rome, their art of war and their weapons differed. The Byzantines had to adopt the manners and customs of their enemies. Little by little their own art of war, organization and equipment changed, still, however, preserving something from the time of old. Particularly noteworthy were the changes in the 7th and the 9th centuries. And even now reminiscences from Roman time were to be found, just as were traditions from Hellenistic Seleucid time in Asia Minor and in Syria. The peoples from the Orient, particularly the Persians, gave a wealth of impulses to the West at the same time as they received some new impulses both from the West and from the North. As important intermediaries acted the Arabs, through whom the Greek traditions together with the new inventions and the novelties were spread from Constantinople via Egypt and North Africa to the Iberian peninsula and, across the Mediterranean to the same peninsula and to Sicily and South Italy. Important in regard to the 11th and 12th centuries were the Norman rulers of Sicily and South Italy, owing their nobility and knowledge to the excellent education received at the Byzantine court in Constantinople. An important route to the Occident passed through Northern Italy, South Germany and Switzerland to France. Even the Scandinavian countries were highly indebted to the Byzantine empire. Viking chieftains acting as body-guards and officers at the imperial court, and as mercenaries in the imperial army and navy, are well-known from literary evidence. In the Norwegian *Speculum Regale* from about 1250 we find various reminiscences from Byzantium, particularly in regard to the art of siege, war-engines, the short description of Greek fire and copper tubes for throwing this terrible combustible.[5] The Norse sagas mention chieftains and even kings who served as officers and mercenaries in the palatine guard, and they sometimes give descriptions of the adventures on the Mediterranean, amongst others the Norwegian king Harold Hardrade under command of George Maniakes in the 11th century. Danish and Norwegian kings of the 12th century visited Constantinople on their pilgrimages to the Holy Land. Sigurd Jorsalafar in 1110 visited the Byzantine emperor on his return from Jerusalem and presented him with his warships.

[5] *Konungs skuggsjá* (speculum regale), Copenhagen 1921, p. 67 ff. Warfare and military equipment, navy battles, sieges and war-engines see: p. 74 ff.

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BYZANTINE WARFARE IN LITERATURE

THE period between the 9th and the 12th century was the glory of the Byzantine army and navy. Military organization was perfectly established. Victory in battles had demonstrated the excellent capacity and effectivity of the military forces. One may wonder that contemporary theoretical books on an equivalent level have not been written. And yet military literature in Constantinople is comprehensive. Many treatises upon art of war have been issued during the Byzantine millenium. Only a few of them may be considered «up-to-date» and independent works. Though of considerable interest and importance to us, greater part of the military literature was based upon the ancient Hellenistic and Roman authors, the works of whom were examined, copied and extracted and often furnished with copies of the ancient illustrations from the originals by the Hellenistic technicians. The ancient tactics, poliorcetics and technics played an important part to the military authors of the Byzantine empire. We find such authors as for instance Aineas, Ælianus, Apollodorus, Arrianus, Athenaios, Biton, Heron, Philon, Polyaen and various others used and re-used for theoretical problems. The two late Roman authors from the end of the 4th century A. D. or about 400 A. D., *Flavius Vegetius* with his *Epitoma rei militaris* and *Ammianus Marcelinus* with his *History of Rome,* give excellent informations about their own epoch and the previous periods not only concerning Rome and the Roman army and navy but even about the Barbarians or the Persians. But after all they belong to Occidental military literature though they are of interest to the early days of the Byzantine empire too. From the very beginning of the 6th century is the theoretical treatise written by *Orbikios* to the emperor Anastasios, in which he recommends the introduction of transportable battering-rams for protecting the infantry in the field against the Barbarian cavalry. Famous is the work *Strategikon* from the 6th century, usually attributed to the emperor *Maurikios* (582-602), by some modern investigators, no doubt wrongly, ascribed to *Heraklios* (610-641) on chronological accounts. This excellent treatise deals with detailed descriptions of military instructions, strategy and tactics and with a mention of the various foreign peoples and their methods in war, particularly in regard to the Avarian tactics, as shown by the late scientist *E. Darkó* in his treatises: *Influences touraniennes sur l'évolution de l'art militaire,* Byzantion, 1935, X, pp. 443 ff, and

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1937, XII, pp. 119 ff. Considerable importance for these early periods have the descriptions in the work by *Procopius,* whose books about the Persian, Gothic and other wars of the emperor *Justinianus I the Great* (527-565) and his generals *Belisarius* and *Narses,* give a lot of information of his own time, regarding the Byzantines and their enemies. Most valuable of all is perhaps the second military handbook, that manual which has been ascribed to *Leo VI the Wise* (886-912): *Tactica* from about 900. Though this author has taken much from the manual of Maurikios, he gives some excellent chapters about methods of war, equipment and poliorcetics. His description of the equipment contains some important renovations. A special chapter is dealing with navy-battles. The arms and armour of the Barbarian peoples are mentioned together with their tactics. For the centuries treated by Scylitzes the manual of Leo is important. As to military art it has no equals in the Western world before the days of *Gonzalo de Córdoba* and *Macchiavelli.* About the middle of the 10th century one of the generals of *Nicephorus II Phocas* (963-969) wrote a booklet dedicated to the emperor: De velatione belli, with special reference to the Oriental peoples, particularly the Arabs. For that can be referred to *G. Schlumberger:* Un empereur Byzantin au X. siècle, Paris 1890, pp. 169 ff. A little later is the anonymous treatise: *De rei militari,* a little manual, containing important informations. From the 11th century originates the *Strategika* by a former warrior *Kekaumenos,* bringing, amongst others, his own experiences from his many wars and struggles. From 12th century we have the important descriptions in the *Alexiade* by the princess *Anna Komnena,* the daughter of *Alexis I Komnenus* (1081-1118), dealing with the wars in the days of her father and from her own time. Much useful information can be taken from this work. These sources are supplemented with information from the works by *Constantine VII Porphyrogenitus* (913-959), the epics by *Theodosius Diaconus:* De expugnatione Cretae, the chronographia by *Michael Psellos* and from several other chroniclers and treatises of the time as well as from paraphrases and commentaries to the ancient Hellenistic authors. The heroic and perilous life of a frontier soldier and his family — the life of the akrites — is described in the epics from 10th century: *Digenes Akritas,* in 10 songs. From here a most interesting material can be taken. The akrites were frontier-warriors, stationed near the dangerous mountain passes at the frontiers in the East. In these far-away borderlands with the incessant and violent fights and struggles against the Saracens, Turks and Persians almost an Homeric epoch arose. A series of legendary narratives about the dramatic achievements of the heroes and their adventures with the enemies arose in such regions where the life of a man depended

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upon his weapons and his horse. The poem of the klissurarch of Taurus, *Digenes,* of the Ducas family, which in various respects contains reminiscences of the amazonomachies of Antiquity, rapidly spread over the whole empire and gave rise to popular songs and ballads, some of which still exist, more or less changed, in remote parts of Greece as well as in Islamic countries.

From such literary sources a lot of considerable useful information can be taken. In regard to the present work the most important source is the *Tactica* by *Leo,* the constitutions of which form an excellent support to the representations in the manuscript, though there are only few details about the various categories of weapons. But even the Strategikon by Maurikios must be considered an important source, because some of the illuminations of the Scylitzes manuscript very likely *reflect wall-paintings* from a period before the days of Leo.

The warfare of the Byzantines passed three reorganizations. The first important reorganization took place in the 4th century with the constitutions of *Constantine the Great* (306-337), after the disastrous events in the 3rd century, when officers from the pretorian guard usurped the throne, one rapidly after the other, and with the rebellious legions in the provinces. From the organization prepared by Diocletianus and Constantine originate the regular frontier troopers of *limitanei,* recruited from the regions concerned, and paid with land, and the mobile central army of *comitatenses* paid by the emperor, which could rapidly be ordered to places where they were needed. After the collapse of the infantry at Adrianopolis in 378 A. D. where the legionaries succumbed to the swift cavalry of the Goths with their long, pointed swords and their cavalry lances, the Eastern part of the empire began to change tactics and to pay more attention to cavalry.[6]

The Spaniard *Theodosius I the Great* (379-395) created his foederati of Barbarian horsemen equally equipped as the hostile horsemen. The foederati led to the ruin of the Occident whereas their power augmented so much in the Orient that the emperors *Leo I* (457-474) and *Zeno* (474-491) felt it necessary, as a sort of counterbalance, to put in their special corps of Armenians and Isaurians. During this century the tendency appeared to distinguish between the legions of true Romans and the auxiliar corps of mercenaries. In the days of Justinianus the foreign corpses were in majority and included such peoples as e. g. Huns, Vandals, Goths, Lombards, Persians, Armenians, Arabs from Syria and Africans. A special class of soldiers of this time were the *bucellarii.*

[6] Claudio Sánchez Albornoz: *En torno a los orígenes del feudalismo,* III, Mendoza (Argentina), p. 85-87. La caballería visigoda.

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Belisarius had been a bucellarius to Justinianus before this emperor ascended to the throne. As a new kind of counterbalance it became necessary to introduce the particular cavalry from Asia Minor, the catafracti, highly praised by Procopios. The second important reorganization came in the 6th century with the erection of the thematical army under *Tiberius* (578-582) and *Maurikios* (582-602). The army became more dependent on the emperors. Such is the reorganization which we find in Maurikios' Strategikon. With this new army *Heraklios* (610-641) defeated the Persians in the 7th century. But it was the same army which, when exhausted, had to succumb to the Arabs, who had already established themselves in Syria, Egypt and North Africa. Military matters entered a difficult period with rebellions in the army, with civil wars, Saracen invasions etc. It is not till the 8th century that a time of prosperity took place during the emperors of the Isaurian dynasty and with the accomplishment of the thematical system. In consequence of the struggles with the Asiatic peoples the cavalry and, particularly, the cavalry from Asia Minor, Georgia and Armenia got paramount in importance. Already the reorganization in the 6th century had claimed introduction of appropriate weapons. With the increased importance of both heavy and swift cavalry new demands had to be performed. The equipment from now on became more in accordance with Asiatic use, and the use of bows and arrows from now was extended even to the heavy cavalry and part of the infantry. At the same time the Avarian javelin was made an important weapon to infantry. The cavalry was equipped in Touranian manner with coat of mail and collar covered with textile, korazin or jazerant, gloves, greaves, helmet with feathers, bow-cases with about 40 arrows, javelin and sword. The heavy infantry disappeared more or less, or at least its importance diminished. The light infantry was equipped with slings, javelins, shields and helmets as well as with greaves. Part of them only had a little shield, and not all soldiers wore greaves.

Until the middle of the 11th century great part of the army was recruited from the inhabitants of the empire with the Armenians, Isaurians, Georgians and peoples from the Eastern provinces as a predominant part, because these peoples always were considered excellent soldiers. (The armies of the Komneni comprised soldiers from all the Latin world, Anglo-Saxons and Scandinavians.)

Variegated in their compositions as were the armies of Justinianus, it was only generals of such a quality as Belisarius and Narses who possessed sufficient authority to rule them. The system with the hereditary soldiers' fiefs decayed in periods, and the emperors now and then had to liberate the little landowners from the hands of the great landowners.

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During the 7th century the system decayed, and it was not till in the 10th century that a restoration took place. The foreigners now consisted of Khazars, Patzinakes, Varangians, Russians, Slavs and Turks together with Scandinavians and Normans from Sicily. The regular troops were augmented with local militia in case of overwhelming danger of war. But still it was the great landowners who supplied the empire with militia and crew.

The military system was based upon the themes, the organization of which appeared and evolved during the 7th to the 12th century, extended possibly in the days of *Leo the Isaurian* (717-741). The governor, *strategos,* held both the civil and the military power of a theme. Particularly strong power did he possess in the frontier-themes, where special troopers of Barbarians were stationed to be on equal terms with the hostile bands. In these regions a greater independence was necessary than in other parts of the empire. During the days of the old organization of themes, these were rather extended, but in the 9th century the themes had to be reduced, and the new themes were organized. Most important of all was the Anatolian theme, the governor of which often was the commander-in-chief of the whole army in Asia. Special themes named *klissurae,* under the command of a klissurarch, who was independent of the strategos, were established in territories particularly exposed to danger. Here we meet the *akrites.* Besides there were the themes from which the crew was recruited. Naval stations too were established for coast-defences both in the Mediterranean and in the Black Sea.

The army of a theme comprised one, two or three turmae (brigades). Each *turma* consisted of three to five drungoi (battalions) under command of a drungarius, and each *dronga* comprised five to ten bandae (companies) commanded by a count. The bulk of a unit depended upon the size of a theme. One *banda* might comprise from 200 to 400 men. In war-time there was a domesticus for the Orient and one for the Occident, unless a common commander-in-chief was elected by the emperor or the emperor himself wished to be in command of the forces. In the 9th and 10th centuries the strategos of the theme Anatolikon was the commander-in-chief or grand domesticus of the whole army. Beside the themes another branch of the military forces was important, the four *tagmata* or regiments of the imperial guard which was stationed in the capital itself. Tagmata comprised: *scholae, excubitores, arithmus* or *vigla,* and the *hicinates.* The last regiment consisted of infantry from the numeri, and was founded by Nicephorus II Phocas. The other three regiments had grown up little by little from the various parts of the palatine guards. They were all cavalry and the regiments consisted

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of a limited number of men. Their chief was a domesticus while the commander of the hicinates was only a drungarius. True descendants of the antique palatine guard were the *hetairia,* composed of the foreign mercenaries, and commanded by a hetairarch. These soldiers were horsemen and they accompanied the emperor on his campaigns. When the emperor was absent they were under command of the domesticus of the scholae. Such a domesticus scholarum might be dangerous to an emperor. It happened that the domesticus usurped the throne, as did for instance Nicephorus II Phocas, who made himself emperor and tutor of the minor Constantine Porphyrogenitus. In the 10th century greater part of the hetairia were Russians, Khazars, Hungrians, Slavs, Scandinavians and Normans from Sicily. The *Varangian* guard arose early in the 11th century. Actually it was an enlargement of the hetairia, composed of Russians, Scandinavians (Danes, Norwegians, Icelanders) and particularly Anglo-Saxons. In Byzantine literature the Varangian guard doesn't seem to appear till 1028 under the reign of *Romanus III Argyros* (1028-1034). Now and then we find a mention in the Norse Sagas. Relations with the Northern countries had existed during a rather long time. The Russian prince Vladimir visited Sweden in 972 to enlist mercenaries for his conquest of Kiev. Some of the Norsemen served in the palatine guard, others were dispersed in various quarters in Asia Minor. They had a church of their own in Constantinople The emperor *John I Tzimisces* (969-976) created a special body-guard, the *Immortals,* particularly comprising nobles from Anatolia. This body-guard deserved merits in his expedition against Sviatoslav in 972. The very best soldiers in the armies of the Komnenian emperors indeed were the Latin peoples, such as Catalans (Almogávares, Catalans and Aragoneses, contra the Turks in 1302-1311), Frenchmen and Italians. But at that time the national defense of the empire had changed from the free fief-soldiers to mercenaries under aristocratic commanders.

The army, composed of soldiers from such variegated groups of peoples, had some advantages but on the other hand it had more weak points. Its efficiency depended upon the quality of its generals. Constantinople was happy during some centuries to have a series of excellent commanders, such as for instance the generals of Justinianus, Belisarius and Narses in the 6th century, the Isaurian emperors in the 8th century, John Curcuas, the members of the Phocas family and the Sclerus families, John Tzimisces, and Basil II Bulgaroctonos in the 9th to 11th centuries. Ultimately we must not forget the emperors of the Komnenian dynasty. Particularly the emperors of the 10th century took great care of their army. Encouragements, rewards and privileges of various kinds were bestowed upon the officers and the soldiers in order to keep them up to

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the mark. They considered themselves the true and genuine descendants of the invincible Roman legions, defenders of the Faith and the Christian community. The armies fought with patriotic enthusiasm and pious ardour. Their battlecry was: «Victory to the Cross.» We often find a Cross depicted upon their banners. A great many banners in the manuscript of Scylitzes are furnished with the Cross. The Byzantines considered themselves the true Cruzaders under the auspices of the *Celestial Kingdom*. No wonder that Warrior-Saints fully equipped in arms and armour play an important part in the art of the empire.

Before the Arabs in the 7th century appeared in the Mediterranean with a navy, Constantinople with its important geographical position between the Mediterranean and the Black Sea had been the only sea-power. There had been no competition and their ships were able to keep away the pirates from their trading-routes. In 439 A. D. the Vandals in North Africa had conquered Carthage. During almost a century, until Belisarius in 532 had recovered this place and had annihilated the Vandal kingdom, it became necessary to equip warships in order to defend the coasts. Under Justinianus an endeavour arose for establishing some navy units — almost a navy police — even so far away as at Ceuta to watch Gibraltar and keep an eye to affairs in Spain. But with the encreasing power of the Arabs, matters changed in the Mediterranean, particularly when the caliph Moyawiah in 649 organized an Arab fleet with which he intercepted the Byzantine routes, which were now even attacked by Slavonian pirates. Every spring during five years he undertook raids running out from Smyrna, Cypros and Rhodos to Constantinople and he became a serious menace to the imperial capital. The Byzantine navy succeeded in putting an end to these raids particularly thanks to the terrible Greek fire, this combustible liquid thrown from copper siphons in the prow of the war-ships against the Arab ships, which were completely burned. In the 7th and 8th centuries the Byzantine navy was strong enough to keep away the enemies and defend even the strongly threatened Sicily. The following years meant a decline to the navy, because the severe campaigns against the Arabs in Syria and Mesopotamia occupied the forces. Particularly severe were the struggles against the caliphate in Baghdad. But even the Arab navy entered a period of decline. The empire had to pay a high price for its negligence of the navy. Hispano-Arabs, originally coming from Córdoba, where they had rebelled against the emir *Al-Hakem I of Córdoba,* fled to Egypt where they tried to conquer Alexandria. They were defeated and expelled, but now they turned their ships against Crete. Supported by *Thomas the Slav* they conquered this island in 827 and from now on they became the great menace to the empire in the Archipelago. Even

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on Sicily the Arabs made themselves masters and they soon were dominators of the Tyrrhenian and Adriatic Seas. It was not till the end of the 9th century that the emperors began to take interest in their navy and to start a reorganization. The navy entered a prosperous time, which lasted until the end of the 11th century. When Alexios Komnenos in 1081 allied himself with the Venezians in order to defeat the Normans, he actually started its decline. Particularly under Basil I a reorganization took place. The maritime themes were enlarged and more units of warships were stationed at the coasts of the Mediterranean. Constantine VII Porphyrogenitus could justly boast of his navy and assert that he ruled the Mediterranean to the Columns of Hercules at the Ocean. Nicephorus Phocas in 968 declared to the Italian ambassador Luitprand of Cremona that the emperor of Constantinople was the only sea-power in the Mediterranean. At the end of the 11th century Kekaumenos Katakalon declared that the navy was the glory of the empire, though he at the same time spoke of sluggish commanders and ill-equipped ships. Though the emperors did not succeed in recovering Sicily Nicephorus after some unfortunate attemps, in the year 961 successfully defeated the Saracens and recaptured this important island. Already in 904 a Saracen chieftain had attacked Thessalonike and with his pillage probably gave a hard blow to the Byzantine supremacy. Basil II Bulgaroctonos handed over to the Venezians the superintendence with the Adriatic, possibly the first step towards the decay. The Italians from now on pushed themselves still more into the picture. When in the 12th century the Turkish Seldsjuks conquered parts of Asia Minor, this meant a dreadful blow to the navy, because by this were just those three maritime themes annihilated, the Aegaean, the Samian and the Cibyrrhaeotic, from which the best crew to the fleet was raised. The Komnenians little by little depended upon the Italian states. It is true that Alexios Komnenos in the time of his reign encreased the imperial fleet by building new ships and he still was able to hold his own against the Pisans and the Genoese. During the reign of his successors both Pisa, Genoa and Venice pushed still more forward and the Byzantines came to pay the penalty. The Italians became the dangerous menace to the empire. The emperors considered expenses to the navy useless. Contemporary authors complain and speak about the faded sea-power of the empire. The bitter consequence of this negligence was the disastrous defeat in 1204. Even with an improvement during the Palæologi dynasty it showed impossible to manage the Italians.

Originally the command of the whole sea-power was in the hands of one person, the *strategos* of the maritime theme, a position which gave him rank with the patricians. The Isaurian emperors parted the

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old theme into two the most important of which was the Cibyrrhaeotian theme including all the southern and western coasts of Asia Minor from Seleucia in Cilicia until Milet, the island of Rhodos and Atalia in which place the strategos resided. The Dodecanesian theme consisted of the islands of the Archipelago, Hellespontos and Propontis, originally commanded by a drungarius, later with a strategos as its commander-in-chief. In the 9th century this theme was parted and the Samian theme established. Maritime units belonging to the imperial fleet in Constantinople were stationed in still more places at the coasts, for instance in Hellas, Peloponnese, Dardanelles, Nicopolis, on the Dalmatian coast and on several other places. The crew came from the themes and had like the soldiers their hereditary fiefs. Among the crew were the Mardaïtes from Mount Lebanon, others came from Atalia, which province had its own government under a catapan. The Varangians were considered excellent sailors, and part of them served in the navy. To all this must be added the foreign mercenaries, amongst others the Normans.

Just like the army, the navy consisted of two groups. The imperial group anchored outside Constantinople under command of a drungarius. Under him was an officium, organized almost like the domesticus of the exercitus. The provincial or thematic navy was composed of squadrons from the themes. The thematic navy always was ready for action.

During important wars the two groups joined under a common commander-in-chief. The strength of the fleet just as of the army is not quite obvious, because sources vary as to informations. The commanders of the navy had a special education. The Tactica of Leo (Const. XIX) mentions the various classes of commanders and the types of ships. From various sources it is possible to get an impression of the types of vessels used. The illuminations of Scylitzes give a rather poor information though he often brings nice pictures of both warships and boats in navy-battles. The units were composed of *dromons,* the large, strong and rapid ships, some of them *triremes,* though at this time as a rule *biremes,* with a *xylocastron* on the middle for battering-rams, throwing-engines and the like, and — in the 10th century up till three siphons for launching Greek fire from their prow. The siphonator had his place in a little wooden room or on a special platform in the prow. The crew of a dromon might be from about 100 to 200 men, part of them oarsmen. Leo says that a dromon of middle size must have about 130 men, one hundred of them oarsmen. There is no clear distinction between soldiers and sailors neither in Leo's Tactica nor in the manuscript. According to Leo the upper bank of rowers were fighters armed like the land-soldiers, and the soldiers of the lower bank were furnished with spears. The war-ship as well as the crew had to be well equipped

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with all kinds of necessary weapons and instruments. Among the persons of the crew the flamulon played an important part, as he was the person to take care of the banner. The siphonator had to be a specialist in his particular art. Important too were the anchorman, the look-outman and various other specialists. Under the command of a dromon belonged the smaller and swift ships such as the *pamphylians* — even these biremes — often equipped with siphons for Greek fire. The flagship frequently was a pamphylian with a selected crew and weapons of particularly fine quality. The *galeras* only had one row of oars. Some particularly light and rapid ships, *ousiai,* probably were built with the Russian monoxyles as their prototype. All the ships together often were called *chelandia.* The smaller ships could be equipped with arrow-shooting apparatus, cheiroballister and toxoballister, a kind of arbaleste, some of them small, others of a type to be placed on a foot, a stand or a tripod. All of them differed from the Frankish type, the zangra, mentioned by Anna Komnena in her Alexiade. They were more like the antique Hellenistic arrow-shooting engines, euthytonon or palintonon. The particular forces of the Byzantine navy since the end of the 7th century was the use of Greek fire, this combustible liquid projected by siphons. The chemical composition of this stuff however still is a kind of mystery and very likely it is not one but various kinds and compositions of chemical material. Leo as well as Anna Komnena give excellent descriptions of these siphons and their use and in the manuscripts of Scylitzes (Fol. 34 v.) we find an outstanding illustration showing how the fire was projected *(Fig. 24).* Besides these siphons there existed other types for launching fire, such as the stone-throwers for pots with naphtha, toxoballister for fire-arrows, lever-engines for throwing pots with powdered quick-lime in order to suffocate the enemy, jars with poinsonous snakes, scorpions and the like into the hostile ships. Transport-ships were called *chelandia.* Such transport ships sometimes were rather large with four rows of oars, armed with a xylocastron, throwing engines and siphons. Beside the ordinary transport-ships there existed a type called *oneraria* especially built for the transport of horses. Such a ship with horses on board is rendered in folio 31 v. of the manuscript, with the navy of Thomas at Hellespontos outside Abydos (cf. the Bayeux-tapestry).

A special system of communication and signals by means of flags and banners in various colours, with figures and drawings were in use. We find them rendered several times in the manuscript. The flags of each dromon was benedicated by a priest before leaving its harbour for an expedition. Leo gives regulations for the ships, their equipment and manæuvres, the use of Greek fire and hand-grenades, fire jars, and

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the like, and even about the personal equipment of the crew. The weapons consisted in sword, throwing-spear, bow and arrows, axe, shield, helmet and scale armour. Among the particularly qualified persons were the siphonators and the anchor-men. Toxoballister and cheiroballister often belonged to the ships, and in the poem of *Theodosius Diaconus:* De expugnatione Cretae, we are informed that such engines were taken on board the ships together with a lot of little, heavy arrows (*myia*) of a special type. As a contrast to the Byzantine ships were the Arab types, the galeas, with their high curved rostrum like trumpets and manned with naval infantry. Leo recommends the use of both types, the Byzantine as well as the Arab one. Even the Russian monoxyles are recommended against various categories of enemies. Both Arab and Russian ships are seen in the manuscript. The characteristic Arab ships are similar to the galeas represented in the manuscript *Las Cantigas del Rey Alfonso el Sabio* in El Escorial, from about 1280, though more plain and simple in regard to details and less elegant in shape.[7] The first painter of the illuminations in Scylitzes usually represents little chalups, *sandalia,* with sail, mast and four or five oars, not unlike the «batel» in the manuscript of Las Cantigas. This type of boats was particularly in favour among the Mardaïtes of Lebanon. Excellent parallels to the ships of Scylitzes are to be found in the Byzantine manuscript of *Oppians Cynegetica* from the first half of the 11th century, now in Biblioteca Marciana in Venice (Marc. Gr. 479). Some of the other types of boats in Scylitzes find their nearest parallels in Coptic manuscripts from 11th century.[8]

[7] José Guerrero Lovillo: *Las Cantigas. Estudio arqueológico de sus miniaturas.*

[8] *Bibl. Marc. gr. 477,* see: G. Schlumberger: *L'épopée byzantine à la fin du dixième siècle,* vol. II, p. 369; *Coptic ms.,* see: José Pijoán: *Summa Artis,* vol. VII, p. 130, fig. 198.

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EVIDENCE FROM ARCHAEOLOGY AND ART

AS to arms and armour in the Byzantine empire very little archaeological material apparently has been handed down to us. Objects left to our time still are few and often of uncertain provenance. Actually very few pieces of arms and armour which with some certainty may claim the name of Byzantium are existing. The Topkapu Sarai museum in Constantinople possesses a series of early swords which are either Arab, Byzantine or Persian.[9] There may be swords with or without their scabbards, spear-heads, helmets, parts of strip-armour etc. in various European museums, all of them with more or less connexions to Constantinople or of Byzantine manufacture. But there do exist some pieces from this part of the world. From *Medinet Habu* in Egypt two segmented helmets are originating, one now in the museum of Cairo, the other one *(Fig. 9)* in Museum van Oudheiden in Leiden, in all probability Byzantine officer's helmets from 5th or 6th centuries.[10] It is a type of helmet which we shall later on find in use in the manuscript too. Three Persian helmets from the Sassanian period are known, one in the archaeological museum of Baghdad, the other pieces in Brit. Mus. in London *(Figure 10),* even these of the segmented type and with the big rivets which are characteristic of the Persian types.[11] Such helmets are depicted on Sassanian coins. The Scottish excavations in the Grand Palace of Constantinople have unearthed a number of iron lamels from strip-armour (more than 200 pieces) in the size 3 × 6 cm and with perforations for being sewn upon leather jackets. Most of them were found melted together by fire. A coin with the representation of the emperor *Manuel I* (1143-1180) was found melted together with some of them. Their arrangement seems to have been: three along one end, one on the other and two along each side, according to the excavators.[12] In the same place were excavated parts of arrows and lance irons. More ar-

[9] ARTHUR POPE: *A survey of Persian art,* vol. IV, pl. 205, 206; ADA BRUHN HOFFMEYER: *Introduction to the history of the European sword.*

[10] MAX EBERT: *Ein Spangenhelm aus Ägypten;* JOACHIM WERNER: *Zur Herkunft der frühmittelalterlichen Spangenhelme.*

[11] W. VON ARENDT: *Der Nomadenhelm des frühen Mittelalters in Osteuropa,* p. 26 ff, pl. IV; GUY LAKING: *A record of European armour and arms through seven centuries,* vol. I, p. 49, fig. 61 and others.

[12] *The Great Palace of the Byzantine Emperors,* second report, Edinburgh University Press 1958.

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chaeological material may be digged out at future excavations. Some of the weapons on exposition in European museums in their decoration show Byzantine elements or Byzantine style. Others may have been made either by Byzantine artists in Constantinople, or by Byzantine artists living particularly in Sicily, North Italy, Hungary or France. Byzantine influence in the decoration of hilt and scabbard is to be found in mountings from swords and daggers, e. g. from *Nocera Umbra* and from *Castel Trosino* or the *Avarian* tombs of Hungary. The same is very likely the case with the precious sword of the Cathedral treasury of *Essen* in Germany [13] with its richly ornamented, golden scabbard. The same may be the matter with some of the precious golden scabbards of the ceremonial swords in the imperial treasury of Vienna with their richly ornamented borders in coloured enamel in designs very similar to the borders and framings of Byzantine illuminations from 10th and 11th centuries.[14] Oriental prototypes have preceded such swords as for instance the famous sword of Charlemagne in Vienna, which has often been considered Hungarian or Avarian or at least of some Eastern origin. Scabbard mountings to such sabres decorated in Byzantine style are known from several Avarian tombs of Hungary.[15] It is a type which the painters of the manuscript of Scylitzes may have seen in the imperial palace. The Vienna sabre has an excellent Oriental blade with yelman. It is a type of blade which seems to appear about the 9th-10th centuries in the Byzantine empire, but it is in use at an earlier date, for instance in such regions as *Kuban*. We find related types in various art objects from Constantinople. About 1300 it is the current type used by the Mamluk emirs. Parts of the grip (pommel and cross) on the famous golden sword of Charlemagne in Gallerie d'Apollon in the Louvre *(Fig. 15)* may be Sassanian.[16] Such types even may have been worn by the officers of the imperial palace in the days of Scylitzes or his painters.

A throughout examination of the Byzantine military equipment seen in an arms and armour perspective has — as far as known to the author — not yet been undertaken. Very likely part of the sword material excavated in various regions of France, North Italy, Germany,

[13] HERIBERT SEITZ: *Blankwaffen,* pl. IV, p. 142; G. LAKING: *O. c.,* vol. I, p. 23, fig. 28.
[14] H. SEITZ: *O. c.,* p. 140, 148; A. BRUHN HOFFMEYER: *Middelalderens tveæggede Sværd,* vol. II, p. 24, no 134 with lit.
[15] W. ARENDT: *Türkische Säbel aus dem VIII-IX Jahrh.;* JOHANNES VON KALMÁR: *Säbel und Schwert in Ungarn;* H. SEITZ: *O. c.,* p. 184-185; HERMANN FILLITZ: *Die Insignien und Kleinodien des heiligen römischen Reiches,* fig. 65-66.
[16] A. BRUHN HOFFMEYER: *Middelalderens tveæggede Sværd,* vol. II, p. 9, no 16, pl. VII; LAKING: *O. c.,* I, p. 89, fig. 112-115.

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the Baltic regions, Hungary, and particularly South Russia and further to the East may be of Byzantine origin or at least influenced by Byzantine equipment. But until the Byzantine warfare and its equipment has passed a throughout investigation, reservation must be made. The present investigation only is to be considered preliminary and the results may be little more than a hypothesis because further archaeological evidence may modify results of to-day. Further comparison with the literary sources may give more detailed information about the equipment of the various categories of officers and soldiers in army and navy, parade and field armour and the like. An investigation of the Byzantine military equipment demands examinations even of the equipment worn by the neighbours of the empire, for instance the Persians, the Asiatic nomade tribes or the Arabs. We find all these categories depicted in the manuscript. But archaeological evidence from these peoples is scanty or little known, part of it still being unpublished. The greater part of weapons from Persia or the Arabs belongs to later periods, most of it being from the 15th century or later. The problems are legio, and most of the material has not yet been examined in regard to arms and armour. Important investigations already have been undertaken in regard to for instance Viking swords. South Russia may yield a good deal of material, not least in regard to swords and helmets.[17] The recent excavations here have unveiled much material of interest. Arab literary sources certainly will be an excellent help to further studies, when examined in regard to arms and armours.[18] As to war-engines and pyrotechnics the ancient Chinese sources cannot be ignored. Concerning the evolution of the arms and armours in Occidental Middle Ages the evidence from the Near and Middle East, the nomades of the steppes and all the Moslem world are most important. Maybe the Occident has given some novelties and some inspiration to the East, but it is beyond doubt that the East always yielded a richer and ever-streaming current of influence, and that it gave more to the Occident than it received from there.

To get an idea of the Byzantine warfare and equipment in the days of Scylitzes one cannot do without casting a glance backwards at the epoch of the Late Roman empire, the Huns of the days of Attila, the Avarians of the 6th and 7th centuries, ancient Iran and the early material from the Occidental Middle Ages. These areas must be taken into

[17] W. ARENDT: *Das Schwert der Währingerzeit in Russland,* recent publications from Russia (in Russian).

[18] A. RAHMAN ZAKY: *Islamic swords in the Middle Ages;* IDEM: *Military literature of the Arabs,* p. 149 ff; IDEM: *A preliminary bibliography of medieval Arabic military literature.*

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consideration in this connexion, because in regard to Constantinople and the development of weapons they contributed to a rather great extent.

Since archaeological evidence is so scanty, the investigator to a high degree has to base his examinations upon representations in art objects and on informations from literary sources. Important are the preserved monuments, not only monuments of the time of the manuscript itself, but even monuments from Antiquity as well as sometimes from subsequent periods. In addition relations to Hellenistic traditions and the close contact with the Asiatic and Oriental elements must be taken into consideration. Late Roman monuments have a particular interest in regard to the development in Constantinople. Some of the Triumphal Arches with their representations of Roman emperors, soldiers and Barbarian warriors show weapons and equipment of interest to the Byzantine development. In that respect for instance the Galienus Arch in Saloniki must be mentioned as well as some of the reliefs from the Constantine Arch in Rome or the basis of the Theodosius column in Constantinople, with its representations of the imperial body-guard. But even some of the artistically poor soldier's steles with representations of fully equipped soldiers and officers may give some information as to arms and armour. The silver dish of *Theodosius* from *Extremadura (Fig. 1)* in Spain, now in Real Academia de la Historia in Madrid, from the 4th century and other silver plates of the same type and almost the same time contribute to our impression of the military equipment from the early days of the Byzantine empire. From Syria and Cypros originate some silver dishes with battle scenes from 5th century A. D. Mural paintings and other funeral monuments from Kertsch are of importance, just as the portrait-statue of a Byzantine emperor, probably *Marcianus* (450-457) or — according to some scholars — *Heraclius* (610-641), and very likely after 1204, as war-booty, taken from Constantinople to Barletta, where it is now placed in front of the church of San Sepolchro *(Fig. 2)*. The emperor is represented in his parade-armour, just as we find various Roman emperors since the days of Augustus, as well as later time Byzantine emperors. Highly important are the objects of minor art. Almost contemporary with these early monuments are the consular diptychs of ivory from the cathedral treasuries of *Aosta* and *Monza*. For a comparison in regard to cavalry equipment there are objects such as some of the *Palmyrenian* warrior-steles, just as mural paintings and graffiti from *Dura-Europos* are of inestimable value. Palmyra was an important frontier fortress, strategically and comercially an important centre, where East and West met. Exactly in these places in Syria the Hellenistic and Roman civilizations met the civilizations of the Orient, the

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Parthians, Sassanians and even the Far Eastern with their tradesmen as well as other kinds of relations, some of them hostile, others amicable. From here we get information of the greatest importance to the development in the Byzantine empire. Currents from Hellenistic Alexandria, from Antiochia, from Mesopotamia merged into each other and contributed to the creation of a particular civilization, neither Greek-Roman, nor Oriental, but with elements from both parts. The discovery of beautiful mosaics from Antiochia and from North Africa are important too. Not only to the early centuries of the Byzantine empire but even to the later periods such as the 9th-12th centuries a lot of information may be taken from such monuments. Still other sources provide the investigators with copious material. Excellent in that respect are the magnificent ivory-triptychs and the little reliefs in bronze or steatite with their representations of warrior-saints. The 10th and 11th centuries were the golden age for such objects in Constantinople. The ivory caskets with Biblical and mythological scenes showing battles and series of warriors are important. Caskets such as the beautiful one from the cathedral treasury of *Troyes (Fig. 5),* a Byzantine work, probably brought to France after the conquest of Constantinople in 1204, the Joshua-casket in Metropol. Museum in New York and other pieces of the same type, are noteworthy for comparison with the manuscript and its illuminations. Such carvings actually are the counterparts in sculpture to the contemporary manuscript illuminations. In enamels and goldsmith's work we find the same type of ornamentation as in the illuminations, often giving suggestions as to chronology of the scenes illustrated in the manuscripts. Even in the woven silk tapestries we may find chronological and stylistical support. Monumental art such as mosaics from the Byzantine palaces and churches from the cathedral of Monreale in Palermo, and particularly from the cathedral in Cefalú in Sicily or the frescoes and mosaics from churches in Greece, the Balkans or the rock-churches of Kappadokia are of importance.

One must not omit the Russian icons with warrior-saints from the corresponding centuries. Close to the actual matters come the illuminations of the various manuscripts. Here we find evidence with reference to warfare, amongst others in scenes from the Old Testament, or from menologia and martyrologia. In respect to warfare and military equipment one cannot find a better illustration than the miniatures from the manuscript of Scylitzes, where both army and navy are represented with cavalry, infantry, artillery, engineers and Greek fire in bright colours and in most vivid drawings. Of course one has to take certain reservations, because antiquated types may be represented side by side with up-to-date forms. Old-fashioned types may be used to make the illustra-

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tions correspond to the period treated in the time of the painters. A tenacious sticking to old traditions, which frequently gives the impression of monotony, must be taken into consideration. There is in Byzantium no rupture of continuity such as in the Occident. The same possibilities for a sharp classification as in the Western world do not exist. In the art of war and in the war-implements Roman traditions continue for centuries. The changes which certainly took place in the 6th and 7th century and in the 9th century do not signify a sudden rupture with old traditions. They only indicate the introduction of an equipment more suitable for fight against enemies of a new type on the expenses of the old-fashioned manner. The novelties are introduced little by little as a consequence of the methods used by their enemies. The Oriental types of armour are prevailing in the 7th century but we are still able to find traces of Roman types even rather late in the Byzantine equipment. The conservatisme of the Orient, the rise of a national «renaissance» in Persia let ancient types still live or revive them. Folk's movements of Central Asia bring renovations too.

As a source to our knowledge of this Byzantine equipment the manuscript of Scylitzes is a most important document with its 574 illuminations among which the battle scenes are very frequent — almost prevalent. Like a kind of pictorial reporting the illustrations accompany the text. In spite of stylization and conventionalism they act almost like a series of snapshots of the situations described by the author. Several phases of the same episode often are represented in one illumination. These miniatures have a kind of counterparts in modern time picture books illustrating for instance the Great World War or other wars in photos and text, books commemorating history of the last hundred years or the like. Their liveliness, their actuality as to the events of the empire, mixed with a certain sense of humor make them an inestimable source, not only to warfare of ancient Constantinople but to almost all aspects of human and cultural life of the empire. Certainly these pictures are not snapshots, but the painters' more or less individual interpretations of the historical situations inspired by contemporary and ancient art representing similar topics, with proper and strong regard to the tradition. Indeed they give an impression of the life in the empire at the days of the author or the days of the painters, though a certain amount of manierism must be subtracted. The present investigation is not concerned with an appreciation of the miniatures from the view of history of art, nor from the view of a Byzantinist. Such judgements must be left to experts in these particular fields. Some reflections on the style of the painters however cannot be omitted, because they are important in order to explain various details in the renderings of the

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weapons represented or in the equipment of cavalry etc. Each of the painters has a manner of his own in regard to representation of arms and armour as well as to all other details. The painters are not uniform as to mentality either, nor to temperament or in their use of ancient prototypes, prevalent traditions or new and contemporary elements. We find Hellenistic and Oriental elements in the illuminations. There is a question of Syrian reminiscences too. But Christian Syria still had preserved some of its Hellenistic traditions though the art of Antiochia is more Oriental than for instance the art of Alexandria, from which place the Hellenistic traditions were brought to Constantinople by miniature-painters whose art rooted in this Egyptian cultural centre.

Almost all current types of military equipment are represented in the manuscript. Not only does the text mention arms and armour, the use of artillery and Greek fire, but representations of the actual use of these important weapons are illustrated. Though the manuscript contains almost all kinds of scenes from court, cathedral, monasteries, convents and gardens, executions of martyrs, prisoners and rebels, assassination of emperors, hunting scenes as well as scenes from the Hippodrome and the like, war and battle scenes however are predominant. The representations are filled with life, pleasure, often even drama. An almost stern sense of humor is characteristic for many of them. A wealth of bright colours such as red, blue, green, yellow, brown, grey in various shades and an abundance of gold, almost like a golden mosaic, enlightens the folios. It is impossible to give a true impression of the brilliant folios of this magnificent work in only black-and white reproductions. The illuminations were performed after the completion of the text, and they were never finished. The writers have spared out spaces for illuminations which never were made. Such open spaces are to be found for each of the painters concerned of this work. An examination of the existing illuminations shows that at least three painters were working in the scriptorium — in Constantinople or in Sicily maybe in Messina — with this book. Very likely some more persons have been at work, or at least some pupils or assistants.[19] A number of illuminations differs

[19] Sebastián Cirac Estopañán: *Skyllitzes Matritensis,* I, p. 29 ff. As a support to the theories set forth by Dr. Cirac one may call attention to the military equipment in the manuscript of Petrus de Ebulo: De rebus siculis carmen, from about 1187-1200, now in Stadt. Bibl. Bern. or to the ornamental borders in enamel on the golden scabbards of the medieval coronation swords in Vienna. Their resemblance with the ornaments from buildings and borders in Scylitzes and contemporary Byzantine manuscripts is evident. The scabbards often have been considered Sicilian work. Chronologically the scabbards correspond with the manuscript of the Scylitzes painters. The author agrees with Dr. Cirac in regard to various «hands» particularly as to the illuminations of the greatest group of paintings. However

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in style and colours from the three main-painters, and they even use other details in the military equipment (e. g. in fol. 195). Such a teamwork is not unusual. We find the same for instance in the menologion of Basil II in the Vatican library (Vat. Gr. 1613) and in many other manuscripts. The difference is obvious in the details of arms and armour, and in the renderings of battle scenes, the types of weapons used by officers and soldiers and the manners of using them. There is a noteworthy difference in scheme of composition, in details of architecture of palaces and churches, in towns and fortresses, furniture, ships, boats etc. as well as in dresses, manners, movements of the figures and the types of persons on the whole. A difference in the temperament of the painters and their selection of colours is obvious. Nor do they have the same prototypes. This is particularly evident in the representations of the enthroned emperors. For the present work the difference in the military equipment is of interest, and in this respect it is considerable.

Before we are going to look upon the painters and their work one important point must be taken into consideration. Just as the Roman emperors in Antiquity were fond of commemorating their great deeds in the shape of precious sculptures and reliefs, the Byzantine emperors wanted to see themselves and their deeds glorified in mosaics and paintings on the walls of their palaces. Justinianus, for instance, let mosaics set up in the vestibulum of his palace in Constantinople with representations of Belisarius and his victories over the Goths and Vandals.[20] At Blachernae were painted the wars of Maurikios (582-602). Theophilus had in a building, used as armoury, all types of arms in use in his days painted upon the walls. The emperor Basil I Macedonian let the Kainourgion, erected by him, adorn with precious mosaics representing himself enthroned by the side of the empress Eudoxia or standing among his guards, or in battle scenes.[21] Several of the later emperors led part of their palaces in Constantinople adorn with precious mosaics and paintings commemorating themselves or their great deeds. There must have been a wealth of warlike prototypes for the painters of this manuscript as well as for all the other manuscript illuminators in Constantinople.

she must maintain her opinion of three main-painters, among whom the second main-painter has used several collaborators, all of them differing more or less in regard to military equipment and its details. See further: JOSÉ MARÍA FERNÁNDEZ POMAR: *El «Scylitzes» en la Biblioteca Nacional de Madrid.*

[20] G. MAUROGIANUS, in «Ephemeris Archeologike», 1893, p. 23 ff; O. DALTON: *Byzantine art and archaeology,* p. 14 ff; CHARLES DIEHL: *La société byzantine à l'époque des Comnenes.*

[21] DALTON: *O. c.,* p. 261 and 393.

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That this must have been the case with the painters of the Scylitzes manuscript is evident from at least one of the illuminators.

The first hand seems to have painted the fols. 9-87 and probably fols. 227 to fols. 234, though these last pages may be the work of a pupil. Artistic quality and carefulness is inferior to the first folios. His drawings are nice and sober with a wealth of variation in details. His architecture often looks real and gives the impression that his prototypes were the palaces of the capital, particularly the older palaces. His towns and fortresses are simplified but are more traditional and remind of castles from Hellenistic time. They are similar to such castles as those seen in the manuscript of Cosmas Indicopleustes from 7th century in the Vatican Library. It is the same type of castles we meet in the oldest preserved manuscripts dealing with poliorcetics, such as e. g. the manuscripts of Apollodorus.[22] The colours are bright and pleasant. The figures are vivid with expressive faces and with natural movements. The dresses fall in plain and natural pleats. The selection of weapons is varied. In regard to cavalry-compositions and equipment he obviously uses the same prototypes as the illuminators of such manuscripts as e. g. Paris Ms. Gr. 510, Saint Gregory Nazianzus, with its representations of the conquest of Jerusalem, or the popular Octateuchs in the Vatican Library (Vat. Gr. 746), the Topkapu Saray (codex 8, fol. 197 v. etc.), the Evangelic School at Smyrna and a few other libraries. The military equipment is rich and shows both Hellenistic and Oriental elements. Of particular interest is the cavalry-equipment and the cavalry-battles. His horses are excellent and he seems to be a connoisseur in regard to horsemanship. As to sieges he has an excellent parallel in the illuminations of Petrus de Ebulo: De rebus siculis carmen, before ca 1200, now in Stadt. Bibl. in Bern *(Fig. 20)*.[23]

The *second main-painter,* the master of fols. 96-156 and probably fols. 203-218 — differs widely from the first painter. His drawings are coarser, the pictures are of a larger size, his colours are more vigorous and their features are often almost grotesque. The faces of the figures are rather dark-complexioned, and the movements of his persons have a special character, almost like ballet-dancers. In figure-scenes and compositions he sometimes seems to combine the lively polychromy of the Orient with the Hellenistic, almost Alexandrian arcades and terrasses,

[22] R. SCHNEIDER: *Geschütze auf handschriftlichen Bildern;* IDEM: *Griechische Poliorketiker.*

[23] W. ERBEN: *Die Bilderhandschrift des Petrus von Ebulo um 1200,* p. 85, 117, 208; DALTON: *O. c.,* p. 467 ff, mentions five manuscripts of the Octateuchs from 11th-12th centuries. The military equipment here corresponds well with the first «hand» in Scylitzes.

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flanked by architecture of his own time. The architecture is stately with a wealth of ornaments worthy of an emperor or a caliph. It makes one think of the monumental buildings of North Africa. The rich ornamentation, particularly the framing of the arcades, the walls and the doors possibly have their prototypes in the palatine architecture of Constantinople or in the capitals of the Moslem regions. His types of boats are plain and broad. Curiously enough the same types are to be found for instance in Coptic manuscripts from 12th century.[24] The manner of rendering plants and trees reminds one of the illuminations of the Baghdad school (Fol. 101 r.).[25] In the ornamental borders there is sometimes a kind of «Assyrian» air. He is fond of twisted columns with sculptured capitals sometimes in the shape of animals' heads. The elegant and detailed columns with lion's heads in fol. 145 representing the cathedral of Santa Sophia in Constantinople, is the work of one of his collaborators, a painter, whose works have parallels in Iranian art. Such capitals and columns are features popular in the 10th century. As to the military equipment one can find Hellenistic reminiscences, particularly in the armour of the officers. But his types are not so comprehensive as those of the first painter. There is a clear distinction between the Romans and the Arabs. His Arabs are more vivid and brisk than his Romans. Apparently he has a fine knowledge of the Arabs. Among his illuminations there are some which very likely have been painted by his assistants or pupils. Their colours are faint and pale. The tint is greyish-green and the figures are stiff and sterotyped. Particularly stereotyped are the galloping horses and the fallen warriors as well as his trumpeters. Groups and even single figures are repeated in a monotonous manner almost like clichés. Probably they are all going back to some particular prototype, unknown to us. Dr. Cirac classifies them as the works by the «tercer y cuarto miniaturista». Fols. 119-142 and 145 v.-156 v. according to him may be the works of the «tercer miniaturista», while fol. 143 may be the work of the «cuarto miniaturista». Fols. 144-145 may be made by the «quinto miniaturista». He is quite right in dissolving the second main-painter in several hands. But in the author's opinion the «tercer miniaturista» very likely was the painter of fols. 107 v., 108 r.-v., 109 r., 119 r.-v., 121-122, 126 r.-v., 135 r.-v., 136 r.-v. and 140 v.

The *third main-painter* (Cirac: «sexto miniaturista», fols. 157-186, and part of «últimos miniaturistas», 219-226), differs completely from the other painters. His work is to be found in fol. 157 r. to fol. 186

[24] J. PIJOÁN: *O. c.*, vol. VII, p. 130, fig. 198.
[25] ERNST KÜHNEL: *La miniature en Orient*, Paris s. a.

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and fol. 219 to fol. 226. He may be called the «Russian» painter because his figures have a rather Russian look. He repeats the polychromy in his backgrounds of the architectural ornamentations. His buildings are decorative, fanciful compositions, and his imagination is vivid, just as are his figures. All of them have been drawn with a fine, delicate red line. Hair and beard are red. The painter is fond of gold, bright red, azure, yellow and lilac colours. He seems to be a kind of relative to South Russian art for instance the art in Kiev. He is in favour of lance-armed cavalry with maces, and he apparently shows a strong *Eastern influence* or rather inspiration *in regard to art of war,* particularly from Central Asia and Iran. As to arms and armour his selection is rather plain. The weapons are long and slender. The horses have much resemblance to toy-or hobby horses and he repeats his types in most of his battle-scenes. Single combats are prevalent and his favorite weapon here is the mace, which is almost unknown or at least very rare in the illuminations of the other painters. On the other hand we don't find the axes represented among his selection of weapons. Strangely enough, considering his Eastern inspiration. He likes long, slender swords, more like European renaissance rapiers than Sassanian or Byzantine battle swords. But their counterparts may be found in Turkestan. As to horse-equipment he even here differs from his colleagues. Saddles, bridles, stirrups and ornaments of the harness are more plain. Banneroles or flamula are not seen. Particularly refined are his boats. The fine little ships have a «Nilotic» air, as one could find them in the tomb-walls from the mastabas of Ancient Egypt (tomb of Ti, 3rd mill. B. C.).

The last part of the manuscript, from fol. 227-fol. 234 differs from the former folios, but though a new painter apparently has been at work here, one cannot exclude the first main-painter or a pupil of his. The battle groups are reminding of amazonomachies, the cavalry equipment is as on the first illuminations in the manuscript. The prototypes must have been the same, and the painter — though less painstaking — represents scenes almost identical to the first illuminations. Dr. Cirac classifies him among his «últimos miniaturistas», with a style difficult to determine. As to the fol. 195 r. as well as fol. 200 v. and 202 r.-v., one of the pupils or assistants of the second main-painter probably was at work, trying to imitate the style of his master, at the same time putting in some elements of his own, particularly in the renderings of certain details of the military equipment, e. g. use of splint-leggings.

It is remarkable that the painters as a rule were less painstaking in their renderings as well as in their selection of colours in this second part of the manuscript. An examination of the style as a whole as well as in all the minor details such as faces, dresses, movements and — not

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least — details of the military equipment gives evidence that more than three hands have been working with the manuscript, some of them — probably three — as masters, others as pupils, assistants or maybe sometimes substitutes.

The *first main-painter* shows reminiscences of the painters of some of the popular psalters with their marginal illuminations. They must have had some prototypes in common. Still more similarity is to be found in the Octateuchs from 11th-12th century, particularly the Octateuchs from Istanbul, Smyrna and the Vatican. Significant are the scenes of the Exodus.[26] Possibly these prototypes must be looked for among the various unknown wall-paintings of the imperial palace, representing battle-scenes. There may be some influence from Alexandria, just as the art schools of Antiochia must have played some part as source of inspiration.

The *second main-painter,* whose work has some air of ancient Assyrian reliefs, from Mesopotamian and Persian glazed tiles, or even the monument of Trysa, may be of Oriental descent, while the *third main-painter* may have been of South Russian or Scythian descendence, at least from some place at the borders of the Black Sea.

Byzantine warfare and equipment does not rely only upon heritage from Late Roman time. It has taken over particularly many elements from the Hellenistic past, combined with elements from the neighbouring Asiatic regions. Seleucide and Augustean warfare and equipment have left lasting prints, but these stamps to a high degree have been mixed with a strong influence from Iran, particularly with Parthian and Sassanian warfare. Experiences from the uncessant frontier struggles made these peoples adopt a good deal of elements from Central Asia, from the nomade of the steppes, for instance from the Turans. At the same time the Byzantine empire received influence from the Occident, e. g. from the Frankish and — though to a rather small degree — from the Northern peoples coming down the Russian rivers to the coasts of the Black Sea or the Caspian Sea. The Byzantine empire, comprising parts of Europe but still more of Asia and with a certain measure of contacts with Africa, had to fight or control its enemies by the same means and methods as its enemies used against it in order to secure or extend the frontiers. And indeed it adopted the methods of the Iranian plateau, the Asiatic steppes and the Arab desert. The generals took advantage of the foreign impulses. Essential to the warfare against the Oriental peoples was the introduction not only of a heavy armed

[26] J. Puiggán: *O. c.*, vol. VII, p. 400-401, fig. 568-571; David Talbot Rice: *The art of Byzantium,* pl. XXI.

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cavalry like the Sassanian, but even of a swift cavalry of mounted archers using their particular shock tactics and their archery in backward turned position like the Turans. The Parthians had had a heavy as well as a light cavalry. Contrary to Roman warfare the infantry played an inferior part. In field battles it was of no use. It mostly served for keeping dangerous and inaccessible gorges. For that reason both the heavy armed Sassanian cavalry and the light Asiatic nomade horsemen became of greatest importance to Byzantine warfare in regard to armament and types of weapons. Of particular importance to the empire was the artillery, used at sieges and in the navy. In poliorcetics the Byzantines used the same cathegories of war-engines as did the Romans and before them the Hellenistic poliorceticians. But in addition to the ancient types of tormenta they created a heavier artillery with throwing-machines of balance-or lever-type. A novelty of epochmaking character was the invention and use of the so-called Greek fire (name given to this weapon by the Western Cruzaders) particularly in the navy, in hand-grenades thrown by the mariners when boarding a hostile ship or by infantrymen, when assaulting a citadel or a walled town. Scylitzes mentions the use of siege-engines, such as helepoles, battering-rams, scaling ladders and various types of throwing machines as well as Greek fire, and the painters demonstrate in some illustrations the use of throwing-engines *(Figures 42, 45 and 46)* and the launching of Greek fire by means of a siphon in the prow of a war-ship *(Fig. 24)*. As to arms and armour, artillery and Greek fire the illustrations of this manuscript are exceedingly valuable.

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MILITARY EQUIPMENT

IN the days of Scylitzes and his painters the military organization comprised the following arms:

The heavy cavalry, caballarii or catafracti and clibanarii, composed the most important force of the army. The members were fully equipped with corslets or mail-shirts, helmets, greaves or high boots, shields, swords, now and then a dagger or a short sword, cavalry-lance, sometimes a club or an axe, bows and arrows in a special case, and a mantle of wool or other material according to the season. Crest, mantle, shield, flag and pennon for the lance wore the colours of the regiment. According to both Maurikios and Leo the horses had to be equipped with chanfrein, pectoral, saddle, stirrups and bridle. The horsemen of the manuscript often are furnished with spurs. Saddle and stirrups were important to a cavalry of quality such as the Byzantine horsemen. Both objects were adoptions from Asia already from the 2nd and 3rd centuries A. D.

The light cavalry, trapezites, or mounted archers, did not protect their bodies with a heavy armour. A helmet of metal or preferably of leather, a light scale corslet (but rather often no corslet at all), a light bow and arrows and at some of the themes two or three javelins in stead of bows and arrows, a little round shield, dagger or macheira, formed the equipment. In reality the trapezites were equipped almost like the ancient Scythian archers. Cavalry chocks and scouting were their particular jobs. Rapidity was their force. They rushed forward like hurricanes, and suddenly turned off to send a shower of arrows from horseback in turned-back position against their followers.

The heavy infantry was equipped almost like ancient Greek hoplites with helmets, corslets, large shields, swords and lances, as a rule even with an axe of a special type. Their job was to defend the inaccessible gorges, where cavalry was of no use.

The light infantry almost corresponding to ancient Greek peltasts, wore a cap of felt, leather or of metal, and were mostly without corslets. Their weapons consisted in sling, a powerful bow and arrows, two — three javelins and sometimes an axe (depending upon their placement in battle). Slingers occur only a few times in the manuscript (e. g. in fol. 230 r. b).

Artillery-men had a cap of felt, leather or metal, with or without a

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short brim; sometimes they wore a scale corslet. This corpse comprised the persons who had to attend the throwing-engines, the various types of arrow-projecting ballistae, cheiroballistae, toxoballistae, moreover the *siphonators,* whose job was to operate the fire-launching siphons from the prows of the war-ships.

Engineers were non-combattants, and they were occupied with mounting siege-engines such as helepoles, testudines, battering-rams and the like. They were equipped with axes of a special type, pick-axes, a mixture of battle-axes and agricultural tools (fols. 72 r., 230 v. a), not unlike the «haches» used even in modern Spain in the vines and among craftmen. Their legs sometimes are dressed in puttees as seen in folio 72 r. *(Figs. 33 and 14, 20).* We find such engineers in various of the illuminations, where they are occupied with construction of walls or with destruction of walls and fortresses (Fols. 72 r., 230 v.).

Besides the various categories of soldiers there was a huge train consisting of carriages and carts for transport of war-engines, ballistae, stone-throwers, helepoles, testudines, battering-rams etc., bows, arrows and other kinds of weapons. On the carriages were transported a lot of tents and other camping equipment amongst others pickets for surrounding the camp in order to prevent nightly surprises, objects belonging to administration, ambulances with their physicians and surgeons. Leo recommends a physician and a surgeon together with six to eight bearers (XV, 7). Men who were dying, were attended by priests. There were standart-bearers, cantatores or heralds, musicians etc. For transport the Byzantines used oxen, mules and donkeys. The cavalry rode Arab horses.

The officers of the tagmata wore cavalry equipment when attending the emperor in his campaigns, but at court they wore a special costume, according to the prescriptions. Special rules and regulations for dressing at court and at all kinds of ceremonies, according to rank and type of ceremonies and occasion were carefully observed. In: *De ceremonibus* we find such regulations, many of them with ancient traditions from East and West. The protospatharians flanking the imperial throne were equipped with halberds of a special type, swords with precious hilts and ornamental scabbards, as well as preciously decorated shields. Such are the scenes of the enthroned emperors of the first painter (Fols. 42 v., 45 r. b). In older time they wore long spears and oval or round shields such as for instance the types represented in the Extremadura-clipeus *(Fig. 1).* Later on they are furnished with the kite-shaped shields, probably of Spanish or Frankish type and introduced by the Occidental foreigners in the imperial guard. Axe-carrying guards (particularly among the Varangians) are to be found in the 11th century. We find

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such an axe-bearing guard represented in the manuscript fol. 26 v., the guard of Michael the Amorian surrounding the palace and the body of the murdered emperor Leo *(Fig. 23)*. However the majority of axes represented in the manuscript of Scylitzes looks more Persian than Norse, a circumstance which may depend upon the sources of inspiration, the nationality of the painters or the facts.

The manuscript represents examples of almost every kind of weapons and armours used by the Byzantine army and navy, not only in the days of the painters but even in the days before their time. The three main-painters and their assistants differ in style and details but in spite of these divergences the types of equipment are more or less the same in all the illuminations. Most variations are to be seen in the illuminations of the first main-painter, less in the works of the third painter. There may be conventionalism, defects and incorrectnesses, now and then even confusion in details, elements taken from ancient prototypes and artist's individual details, but as a whole the painters seem to be acquainted with the military equipment which was current in the palaces and streets of Constantinople in their own days, as well as with elements and details from the preceding periods.

The first main-painter has a predilection for oldfashioned types, maybe deliberately, because he is illustrating situations which have taken place long before his own time, maybe because the antique wall-paintings from palaces and armoury-halls have served him as prototypes. Details from his illuminations correspond particularly well with minor art from 9th, 10th and 11th centuries, sometimes even earlier. The second main-painter as well as the third main-painter and their assistants apparently are more modern, more up-to-date though we still find antiquated elements. As to the second main-painter and his group we find relatives to the military equipment, for instance from the 11th and 12th century art. It holds good for all the painters that they are bound to ancient and ceremonial traditions at the same time as they are familiar with contemporary decorative art, monumental as well as minor. They stick to their prototypes in monumental art, such as for instance battle scenes in mosaics and wall-frescoes. The painters take much pains to render decorative details. We see it for instance in the rich use of gold and colours for helmets, scabbards, dresses, curtains and furniture or in the outer walls of the buildings. Even as to equestrian equipment they are in favour with decorative details.

Already from the first day the Byzantine empire showed a clear tendency towards an effective heavy cavalry like the Persian cavalry, instead of a heavy infantry like that of the Romans, which would be of little or no use against the hostile horsemen in the mountaneous terrains

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and the deserts of Asia Minor, Persia, Syria and other parts of the Orient. The introduction of a light and swift cavalry and a light infantry had shown to be rather effective. Already in Strategikon cavalry had overgrown the infantry. Bows and arrows as well as javelins played a more important part than before thanks to the influence from the Avarian warriors. The light horsemen, particularly introduced by Leo the Wise, were equipped almost like the Turan horsemen from the steppes, the main weapon of whom consisted in bow with at least 30-40 arrows, javelin and sword. The new tactics were based partly upon Turan and Berber tactics with mobility, chock and arrow-shooting, particularly in backward position. Though the Tactica of Leo indicates almost the same categories of weapons as did Maurikios' Strategikon, yet important changes are to be noted. Leo attaches more importance to the white arms such a for instance swords, knifes and machairae and he recommends a more effective and complete protection of the body. But this is a consequence of the great difference in tactics between Maurikios and Leo.

The heavy cavalry, the *clibanarii,* constituted the most important and the most distinguished part of the armies. Equipped with a complete suit of armour and the best weapons it is natural to base the investigations upon these horsemen, part of their equipment being identical with the equipment of the other categories. Leo in constitution VI says that the cavalry must wear a solid helmet, a complete body-protection with greaves and shield, lance, sword, short-sword as well as case with bow and arrows. A mantle belongs to the equipment.

The horses must be protected with chainfrein and pectoral. Saddle, stirrups and spurs complete them. The Armenians and the Iranians had used corpses of clibanarii since time of old. Already during the reign of Hadrianus these types of horsemen were introduced in the Roman armies, but it was particularly under the reign of Alexander Severus that the clibanarii — Persians and other Eastern peoples — constituted part of the Roman army. The Romans retained the name clibanarius. In monumental art representations of such horsemen are known from a rather early time. In the Orient we know them from Achemenaean time. From 1rst, 2nd and 3rd centuries A. D. we meet them on warrior's reliefs from Palmyra and on the Parthian and Sassanian monuments. From the excavations of Dura-Europos we possess some excellent representations of clibanarii and archers from 2nd-3rd centuries A. D. *(Fig. 6).*[27] Particularly important is the graffito on a wall of a private

[27] ROMAN GHIRSHMAN: *Irán, Partos y Sasánidas,* Madrid 1962, p. 51-52. See: *Excavations at Dura-Europos 1928-29,* and E. HERZFELD: *Iran in the ancient East,* pl. CXVI.

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house from Dura. This type of well protected horsemen can be followed through centuries in the Near East. The type continued with reinforced equipment during the Mongolian influence as seen in Persian art in the 14th century and later. Excellent examples of Persian and Turkish clibanarii are to be found in various illuminations from Persia from the beginning of the 14th century and from shortly after 1400 where the horsemen's equipment had changed very little since the days of the clibanarii from the walls in Dura-Europos.[28]

Cavalry scenes and representations of horsemen's groups are rather common in the manuscript of Scylitzes, particularly in the illuminations of the first main-painter. In most cases we find the heavy cavalry equipped with almost all the details mentioned by Leo in his Tactica *(Figs. 29 and 34)*. But the painter even shows us the lighter equipment of archers on horseback (Fol. 36 r.). It is noteworthy that as a rule there is no difference between the true Romans and the foreigners, for instance the Bulgarians, the Turks (Magyars), the Persians or the Scythians. The illuminations of the first main-painter hardly distinguish between the Romans and the Arabs (Fols. 39-40, *Figs. 26-27)*. This probably may give a suggestion as to the chronology of his prototypes. In this point the painter evidently is in contrast to the second painter and his group, who have an obvious distinction between Romans (or Europeans) and Arabs, to faces as well as to dressing and equipment. Sometimes the illuminations show persecution of enemies, in other pictures we have two almost heraldically placed groups in Oriental scheme, particularly among the illuminations of the first and the third painters. Warriors attacking a fortified town or a fortress are current, not least among the pictures of the second painter and his group. The third painter too shows representations of attacks on fortresses, but his compositions differ from the first and the second painters. The groups of the first painter are rather close or stocky, almost whole blocks of figures with massive compositions. The number of persons doesn't correspond to the number of lances represented, probably because the painter wishes to indicate a great number of horsemen. Sometimes one finds banneroles and pennons on the lances with two, three, up to seven splits in the flags (Fols. 30-31). In a few cases the emperor is represented with a vexillum (Fol. 86 r., *Fig. 35)*. The horses may move sedately, in some pictures they are at full speed but rarely they are represented in a class of flying gallop. Their movements are more like horses in the Hellenistic battle scenes such as the reliefs from the famous monuments of Asia Minor or the sarcophagus of Alexander in

[28] ARTHUR POPE: *O. c.*, VI, pl. 1409, p. 2558-2563.

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Nat. Mus. in Naples. The horsemen's groups of the first painter have much resemblance to the groups of amazones on Greek red-figures vases from 5th century B. C. or to amazonomachies on Hellenistic and even later time monuments. A certain similarity with the antique Thrakian or Thessalian cavalry is noted, known from representations on Greek vases. Though not a direct resemblance to the famous Alexander-mosaic in the Nat. Mus. of Naples one cannot deny a tie of kinship. Some of the battle groups painted by the second hand are rather brisk, whereas part of them are so stereotyped as if their painter had used a cliché. The renderings of the fallen warriors, the speeding horses, the trompet blowers — all of them — look as if they had been cut in the same shape or moulding taken from one certain prototype (Fols. 107 v., 108 r.-v., 109 r., 119, 121, 122, 129, 135, 136, 140). The figures are more like mechanical dolls than like living persons.

The warriors of the first main-painter wear armours of various kinds. Now and then possibly a leather corselet of muscle type is represented, with or without taps on the shoulders and at the abdomen. More common are the scale armours made of smaller or larger scales, sometimes with a little puff sleeve with one or two rows of taps to protect the upper arms and at the abdomen a cymationlike border of tongues together with one or two rows of long taps. The body armour sometimes is furnished with a lamellar sleeve but more usual are body armours without sleeves at all. Besides this armour they often seem to have a kind of mail skirt between their tunic and the trousers. The head is protected by a helmet or a cap almost always with lamellar curtains. Sometimes the warriors wear greaves, sometimes long boots. A few times we find a kind of lamellar leggings (Fol. 195 v., *Figs. 48 and 14, 18).* These leggings have their counterparts in certain types from Central Asia. The horseman from the golden vase from Nagyszentmiklas in Hungary, about 860, wears the same type of leggings.[29] Long and narrow trousers are usual. A particular arm's protection like that known from Islamic miniatures, doesn't exist in the illuminations.

The weapons consist in a long and heavy sword, as a rule with double edges, though now and then single edged swords are to be seen, the cavalry lance, a case for bow and arrows, a few times an axe, and — particularly in the miniatures of the third painter — a mace, sometimes spiked in accordance with the prescriptions of Leo. Three types of shields are represented: a little round shield of Oriental type, used by Romans and Saracens in the illuminations of the first painter, the large round shield used particularly among the Saracens of the second

[29] André Alföldi: *Étude sur le trésor de Nagyszentmiklas,* p. 124-138, pl. I.

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painter and the kite-shaped, sometimes almost oval shield, used by all the painters, but more in favour among the figures of the second and third painters than among those of the first one. As to details all of them differ. Cavalry battles as a rule are fighted with lances, now and then even with swords. Fights with swords are more frequent among infantrymen than among horsemen. A kind of sword-and-buckler fencing between footmen occurs in fol. 154 v. representing a scene from the hippodrome *(Fig. 43)*.

The painters differ in their renderings of methods of fighting and in their types of equipment. A difference between the equipment of the emperors, officers and soldiers is noted. Unmistakably there is a difference in the prototypes. The *first painter* has much in common to the painters of the popular Octateuchs now in Biblioteca Apostolica Vaticana (Vat. Gr. 746), in the library of Topkapu Saray in Constantinople and the specimen in the Evangelic School at Smyrna, but even in such art objects as for instance the Joshua casket in Metropolitan Museum of New York,[30] from 10th century. Particularly in the renderings of armours and helmets there is a convincing similarity. Evidently the *second painter* does not show the same rich variation in his weapons. Obviously he prefers a type of armour with long scales and with taps of the Roman type. His helmets are rather plain as to the shape, often only simple skull-caps. As to the officers their helmets are richly ornamented in a quite oriental manner, not unlike silk woven tapestries. The lances differ from those of the first painter with another type of lance irons. The swords are longer and of a heavy type, more like the Persian swords. He obviously prefers the kite-shaped shields for his European warriors, while the Arabs are furnished with large round shields, possibly of leather. His pupils or assistants are repeating the cavalry fights as if they are using a particular model or cliché for them. Counterparts to the warriors of this second painter and his circle are to be seen in mosaics representing for instance warrior-saints.[31] The *third painter* favours the single combats between horsemen or between footmen. There is only little variation in his type of equipment. The body armour as a rule consists of a short jacket of scales, represented almost like a fishing net. His helmets are rather plain iron-hats or felt and leather-caps. The swords are long, slender, pointed and more like renaissance rapiers than medieval swords. The lances are long and slender with small and pointed lance-irons. Several times we find single

[30] David Talbot Rice: *O. c.*, pl. 112, casket from Metr. Mus. New York, and from Vict. and Albert Mus. London. 10th-11th century; Pijoán: *O. c.*, vol. VII, p. 453, fig. 643.

[31] Konrad Onasch: *Ikonen*, p. 344, fig. 4 (Saint Demetrius).

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combats with maces. But these maces are not — as in the Occident — the weapons of a simple soldier. On the contrary they are seen in the hands of strategs and officers. This is a characteristic feature not only of such regions as Persia and Turkey but even of the steppes. Since Antiquity the mace had been a favorite weapon in Mesopotamia and Iran and traditions have been kept alive in these regions almost up to modern time. It is the weapon of «Digenes Akritas» the klissurarch of the passes of the Taurus mountains. The mace as a symbol of dignity later on became characteristic for instance in Poland and Hungary as well as in other parts of Eastern Europe. Sometimes it is seen used as symbol of dignity by princes, commanders and noblemen on their tombslabs even in Central Europe and in the Northern Countries.

As a rule one cannot distinguish between Roman equipment and the equipment of the Bulgarians, Persians, Turks and Scythians. In a few instances the Bulgarian princes and officers appear dressed in red-blue-white striped trousers as e. g. in fol. 18 v., or the Bulgarian zar wears at his court and at home the particular dress, which had been introduced from the Sassanians at the Byzantine court as an imperial dress and a court dress for persons of particular high rank, a *scaramangion*. It is the same dress with which the walls in one of the halls of the imperial palace of Constantinople at certain occassions were adorned, a dress of precious materials (gold-woven silk, brocades etc.) now and then used as a special present to foreign princes as a sign of friendship and honour. It is the same dress which — a little changed — later on became the forerunner of the Husar uniform in later time Hungary and from here spread to almost all European countries (see fol. 82 r., Krytagon, son of Krum on his throne). In the Ceremonies of Constantine certain rules as to material, colours, applications and use had been given. The emperor Theophilos on his way to his weekly audience in the church of Our Lady of Blachernae is represented in a precious scaramangion (see folio 43 r. b and J. M. Fernández Pomar, in GLADIUS, III, p. 29, fig. IV). His trousers correspond well with those of Krytagon.

Only as far as concerns the Arabs a difference is to be noted. The illustrations of the first main-painter only show few and slight differences. In such scenes as e. g. the delegates of Theophilos under John the Grammarian to the caliph Mumnes at Baghdad we find the caliph and some of his delegates in special Arab dresses, fol. 47 r.-v. The second main-painter and his group on the other hand seem to know the Arabs rather well. His distinction is evident. His Arabs are dressed in knee-long or foot-long tunics, often without armour but with a mantle. On their heads usually sits a turban, protecting the neck, chin and often even most part of the face. Their complexion is dark and

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their beards are of a type characteristic to the Orient. Their swords are large and heavy, the lance-irons differ from the Roman types. As to their horses and the horse-equipment the painter and his pupils now and then provide the Arab horses with the special Arab stirrup. The saddles differ from the current Byzantine types. As to the third painter he only has represented Arabs a few times, mostly with a white turban and without body armour. Hair and beard differ from other peoples in his pictures. This painter is fond of representing Russians and Scythians and all his figures are more like Russians than like Mediterraneans or Arabs. They are fair-complexioned and often reddish in colour in regard to hair and beard. On the fols. 165 v., 168 r., 171 r. and 178 r. we find a type of body protection which is more Asiatic than the armours in any other illustration of this manuscript. The last specimen has star-like ornaments like one of the warrior-gods from a Palmyrenian stele.

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ARMOUR OF THE HEAVY CAVALRY

THOUGH Leo in his Tactica gives rules for the cavalry equipment with its body protection and helmets we should hardly be able to reconstruct the equipment after the literary sources alone. The illuminations from Scylitzes supply our knowledge in a considerable manner. Still we must be aware of antique traditions with their heritage from Hellenistic and Roman equipment together with strong Oriental elements — ancient as well as contemporary together with a strong conventionalisme. However in connexion with other representations in minor art and in Oriental objects we should be able to get an impression of the armies of a Nicephoros Phocas, a John Tzimisces, a Basil Bulgaroctonos or a Komnenos.

The most obvious impression do we get from the *first main-painter.* Details here as a rule are rendered more carefully than by his fellow-painters. But since he is more oldfashioned, sticking more to ancient prototypes, the antique traditions — European as well as Oriental — are more evident in his figures. In spite of the many reminiscences from Hellenistic and Roman armours the relations to Parthian and Sassanian prototypes are rather strong. From the illuminations it does not clearly appear if his armours are of metal (bronze, iron), leather or for instance of horn. Metal probably is predominant. Most of his armours are rendered in gold probably representing gilt bronze, though we do find some armours in a greyish-blue, indicating iron. As a matter of fact most of the armours have been made of both metal and leather, as certified by the scarce archaeological material extant together with the literary sources. No doubt both the author of the manuscript and his painters have been familiar with the types of armour used in Constantinople in their own days.

According to Maurikios and Leo the caballarius or heavy cavalryman was equipped with a *mail shirt* from neck to thighs, a *steel cap* surmounted by a *crest, greaves, gauntlets* and *steel shoes.* A light *surcoat* usually covered his mail. The officers and the men in the front rank had to furnish their horses with steel poitrails, frontlets as well as saddles. Their weapons consisted of *broad sword, dagger* or *short sword, horseman's bow* with *quiver* filled with *arrows* and a long *lance* (kontarion), which in regard to special persons carried a *bannerole* or *pennon* in regimental colours, corresponding to surcoat, crest of helmet,

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shield and regimental standard. A long woolen cloak was strapped to the saddle, for use in cold or rainy weather or to conceal the glittering of the metal armour. Sometimes — but not always — the heavy trooper carried a little light shield as in fols. 12 r. b, 73 v. a or various other folios *(Fig. 34)*.

In the manuscript the caballarius wears a kneelong or sometimes a footlong tunic with long and narrow sleeves to the hand-wrist. The tunic is protected by his armour. For protection of the abdomen very often a mail-skirt or a scale-skirt is seen like a fishing-net, rendered in gold or in a greyish blue colour. Beneath both mail-skirt and tunic we find long, narrow trousers. The feet are dressed in long boots or leggings, but very often we find metal greaves of a type reminding of ancient Greek shapes. Greaves of this type and probably from the 8th century have been excavated in e. g. Tuapse at Gelendijk in Asia together with brasiers and helmets of a type met with in Scylitzes.[32] All these objects are now in the Archaeol. Museum in Moscow. Lamellar leggings of the Asiatic type occur in a few instances of the illuminations (Fol. 195 v., *Fig. 48)* almost of the same type as the leggings seen on the warrior from the Nagyszentmiklas vase or already from finds in the Swedish Vendel time graves from 7th-8th centuries.[33] The boots were introduced to the Western regions by the Huns. Sandals as worn in the preceding centuries of the imperium had been out of use at least since the 7th century if not before. Sometimes the boots are furnished with spurs of a type known to the Oriental world since Antiquity. Greek and Roman horsemen used spurs since 3rd or 2nd centuries B. C. The spurs of the manuscript are indeterminable as to type, some of them to a certain degree have resemblance to European prick-spurs from 10th and 11th centuries. We find a pronounced parallel to them in the gold spur from Saint Denis. To the horseman's equipment belongs a pair of stirrups of a plain type almost like the primitive Asiatic leather straps.[34] But in the manuscript they seem to be made of iron. As to stirrups the plain types are used by the third painter where they are often suspended in short leather thongs. The second main-painter now and then rep-

[32] W. v. ARENDT: *Der Nomadenhelm,* p. 31, fig. 10 a.

[33] GRETA ARWIDSSON: *Valsgärde 8.* See: R. EWART OAKESHOTT: *The archaeology of weapons,* p. 125, fig. 51.

[34] The spurs in Scylitzes have their counterparts in e. g. the gold spur from Abbey of Saint Denis. See: *Archaeologia,* vol. LXVI, pl. XII, fig. 2. They are characteristic for 11th-12th century, but may be even earlier; M. JAHN: *Die Entstehung und Entwicklung der ältesten Sporenformen* (Z. H. W. K. VIII, p. 305). The stirrups in Scylitzes resemble the Sassanian types from about 7th century. See: LEFÈBRE DES NOËTLES: *Deux plats sassanides du Musée de l'Hermitage,* pl. XXIV.

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resents an Arab type of stirrup. The long cavalry cloak is met with a few times.

By a preliminary investigation as here it is not possible to establish a clear distinction between the officer and the trooper, the member of the tagma or the thema. Officers and men of the rank and file apparently do not differ much. In the real army it was not so. A close examination compared with the literary sources, not least for instance the books of ceremonies by Constantine Porphyrogenitus no doubt will give further information. As a rule there is no particular difference in the manuscript between the equipment of army and navy, almost as in Medieval Occident. Beside the traditions from the Parthians and the Sassanians or rather previous to them we find an important influence from the Asiatic peoples of the steppes, particularly from the Turanians.[35] In the illuminations of Scylitzes the various elements to some extent seem to have entered a synthesis. For that reason it is often difficult to distinguish the prevailing influence. As to the emperors and some of the most prominent officers the painters of the manuscript sometimes dress them in an armour type of *Roman* character, while the ordinary horsemen are dressed in armour of *Hellenistic* (the cataphractarii) or pure *Persian* type, similar to the armours of the Persian clibanarii *(Fig. 6)*. Arab officers sometimes wear Roman armour of muscle type. But even the Roman armours show traces of ancient Oriental influence, originating in the types of armour introduced from Persia during the reign of Hadrianus or Alexander Severus, particularly in regard to the regiments of the Eastern regions. The protospatharians of the first main-painter frequently are dressed in scale-armour of Hellenistic type complemented with kite-shaped shield.

Among the armours some special types are recognizable: The *Roman muscle armour,* the *scale armour of Hellenistic descent,* the *scale armour of Persian clibanarius type, lamellar armour of ancient Asiatic type,* and moreover we find the *shirt of chain-mail,* the last one only very few times. Certain rules and regulations for the use of the various types existed but it is impossible to decide this from the illuminations alone. It doesn't seem possible to tell why one warrior is using this type and another warrior that type. Very likely the Byzantine reader could have told it.

The *particular Roman muscle armour* of metal or of leather with metal applications, epaulette-like belts on the shoulders and fastened to the breastplate with a ring and a button, with long taps or lamellar

[35] E. Darkó: *Le rôle des peuples nomades cavaliers dans la transformation de l'empire...*, p. 85 ff.

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lambrequins of leather and metal, more or less furnished with metal studs or with true metal strips, for instance at the shoulders and upper arms or as protection for the abdomen, is rarely met with in the manuscript. However it occurs now and then, more or less complete, and almost always in the illustrations of the first painter. We find it amongst others in fols. 31 r.-v. (Thomas talking to the Saracens), 34 r.-v., 35 r.-v., 36 r.-v. (the Hispano-Arabs), 39 r.-v., 40 r.-v. (invasion of Crete), 67 r. (the trial of the calumnious woman) and in various other folios *(Figs. 25-27 and 32).* Byzantine officers as well as some of the Arabs are dressed in plain muscle corslets, here without any kind of decoration, only with epaulettes and some renderings of anatomical details. As a rule they are furnished with lambrequins. Strangely enough many of the Arabs are dressed in muscle armours. The Byzantines had taken over the Roman muscle armour directly from the Roman armies. The type usually seen in Byzantine art is similar to the type worn e. g. by Augustus from Primaporta and other imperial statues from 1rst and 2nd centuries A. D.[36] The type is wellknown in Asia Minor, Syria and in the Near East from the numerous imperial statues of emperors represented in life-time or as Divus in the conquered provinces. The type is known from a series of imperial monuments in this part of the ancient Roman empire, and it can be followed not only in portrait sculpture but even in frescoes and mosaics such as the frescoes from Dura-Europos or the mosaics in Santa Maria Maggiore in Rome. In the Syrian and Cypriote silver bowls from 5th century A. D. we find such armours represented.[37] Almost the same type of armour — and not unlike the Augustean representations — are the Byzantine armours such as e. g. on the colossal bronze statue of a Byzantine emperor, Marcianus (450-457 or Heraclios (610-629), now in front of San Sepolchro at the harbour in Barletta in Italy *(Fig. 2),* originally very likely taken as a war-booty from Constantinople after the conquest in 1204.[38] There is a continuation from the Augustus-type via Trajanus, Hadrianus, the Pretorians on the reliefs in Louvre and Palazzo Conservatori in Rome. On Byzantine coins from 4th and 5th centuries A. D. the emperors wear such armours. Still the type can be followed in the consular diptychs from 4th and 5th centuries in Aosta and Monza, on the basis of the Theodosius-column in Constantinople and, in an Oriental stylization — probably Alexandrian — in the steatite groups of Byzantine princes now on the place of

[36] ERIKA SIMON: *Der Augustus von Primaporta.*
[37] J. PIJOÁN: *O. c.,* vol. VII, p. 178, fig. 272.
[38] MICHELE CASSANDRO: *Il colosso di Barletta;* JOHN BECKWITH: *The art of Constantinople,* p. 29, is of opinion that it represents Heraclius; LEO HJORTSÖ and VAGN POULSEN: *Klassisk Kunst. Rom.,* Copenhagen 1963, p. 113, that it is Marcianus.

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Saint Marcus in Venice.[39] Very likely these groups belong to the 5th century though their dating has been a little disputable. Already in the 6th century the shoulder epaulettes often take the shape of a little puff-sleeve as seen e. g. in the Barberini diptych in Louvre from about 500.[40] A more stylized rendering is noted in Byzantine ivory-and bronze plaques from 10th and 11th centuries such as e. g. one of the panels from the ivory casket in the cathedral of Veroli, now in the Victoria and Albert Museum, or in the Joshua casket in Metropolitan Museum in New York and other works of minor art from these epochs.[41] The figures represented as a rule are of a high social rank, emperors, princes etc. The type is seen in the representation of some of the warrior-saints. A stylized rendering is met with in the mosaics in the cathedral of Cefalú on Sicily made by a Byzantine artist about 1147 for the Norman ruler Roger II of Sicily.[42] Saint Nestor is wearing such a Roman muscle armour not unlike some of the armours in the manuscript, such as folio 67 r. Though both renderings show us a rather stylized and degenerated type, its descent is clear. Saint Nestor in this mosaic is represented as a Russian prince in Roman-Byzantine equipment. This type of armour got a long lifetime. More or less changed in details and stylized in accordance to time and mode it was taken over by the Russian artists who painted icons. In Italian Renaissance the type became favorite to the emperors and princes who liked to be represented «a la romana» in their parade armours. Perhaps the most striking example is to be found in the Armería Real in Madrid in the parade armour of Carlos V, a work by the Italian armourer *Bartolomeo Campi* from Pesaro, about 1546 *(Fig. 3)*.[43] As an armour for officers and pretorian guard the type had ended its days already in the 4th century A. D. Its only continuation was in the reproductions of saints and emperors. When it appears in the manuscript of Scylitzes it must be considered neither an imperial field armour for practical use in his lifetime, nor a special sign of dignity but a reflection of the predilections for ancient Roman traditions characteristic to the Second Golden Age of the empire. As a parade armour the Byzantine emperors may have used this type. The Roman armours of the first Scylitzes-painter correspond well with the reproductions of

[39] DALTON: *O. c.*, p. 127, fig. 74. See: DELBRÜCK: *Spätantike Kaiserporträts*, Berlin-Leipzig 1933; IDEM: *Die Consulardiptychen und verwandte Denkmäler.*

[40] DAVID TALBOT RICE: *O. c.*, pl. 19; DELBRÜCK: *Diptychen*, no 48.

[41] RICE: *O. c.*, pl. 108-112.

[42] J. PIJOÁN: *O. c.*, vol. VII, p. 479, fig. 678; O. DEMUS: *The mosaics of Norman Sicily*, p. 393. As to Mon Reale: see *Historia del Arte Labor*, vol. VI, p. 316.

[43] CONDE DE VALENCIA DE DON JUAN: *Catálogo histórico-descriptivo de la Real Armería de Madrid*, 1898, p. 64 ff, pl. XI.

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the types seen in minor art objects of the 9th-11th centuries, with some exceptions from first half of 12th century (Cefalú).

By far the most frequent type of armour in the manuscript is the *scale corslet,* represented by all three main-painters, as well as by their pupils or assistants, though differing in regard to details. Not only the characteristic scale corslet is to be found, but even a corslet made by square or feather-like lamels, this last one particularly among the warriors of the first main-painter. The painters differ in their manners of representing the scale-or lamellar corslets *(Figs. 7-8).* Very likely the first main-painter comes closer to the actual armours of the time than the other painters do. Two more or less distinguishable types of scale armour are to be found, one of them based upon the *Hellenistic traditions,* going back to Attic and Etruscan types, and the other one of *pure Oriental style,* almost like the armours worn by the Sarmatians, Parthians and Sassanians, whose clibanarii were equipped with this type. Both types were adopted in the Occidental Mediterranean world and have much in common with the so-called jazzerant, which became so well-known to the South European world in the 15th century. An excellent specimen of this type is now in Metr. Mus. New York. The *Hellenistic type* almost only occurs in the illuminations of the *first main-painter,* though this painter shows both types — with scales and with lamels — as well as the clibanarius type. The *second main-painter* and his pupils are more stylized and prefer a scale armour made of large feather-like scales, sometimes not unlike later time Malayan bark-coats. Some of their armours are fanciful mixtures of Hellenistic and Oriental elements. The large scales are rather decorative, and the painters often furnish them with decorative long lines, imitating holes for fastening the scales on their brick-or leather underlayer. Along the borders often are long decorative taps as seen e. g. in fols. 113 v. *(Fig. 40),* 114 r., 213 v., 217 v. and various other illuminations. Sometimes a scale shirt with little sleeves is to be seen. Though some of the armours may represent lamellar armours, it is difficult if not impossible to distinguish them. Some of the scale jackets are more like little dressing-gowns of feathers buttoned in front, as e. g. in fols. 108, 109, 121, 122, 126 r., 129 v., 140 v., 151 r.-v., 153 r.-v. and various others. Armours with such feather-like scales are met with already in the 7th century e. g. in a representation of Saint Theodor from the monastery of Mount Sinai.[44] The «dressing-gown» armours frequently are worn by the infantrymen or artillerists (Fol. 151 r., *Fig. 42).*

The *third main-painter* prefers the short scale corslet without sleeves

[44] *Jahrbücher der Berlinermuseen,* III, 1961, p. 140, fig. 5.

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at all or with very short sleeves. There doesn't seem to be much resemblance with any of the types of the body protection used in the Occidental world, though we may meet the Byzantine types of body-protection now and then in Western illuminations of about 10th-12th centuries. But there they apparently have been borrowed from Byzantine art or from centres under Byzantine influence. As to the first painter his body protection has similarity with minor art in Constantinople, such as ivory-carvings, bronze-objects etc. particularly from 9th-11th centuries. His prototypes in mosaics, wall-paintings etc. chiefly belong to the previous time. The types used by the second main-painter sometimes represent a more «modern» type, though in many respects even a more fanciful type. Western manuscript illuminators have borrowed much from him. Another category of prototypes — very likely from the 12th century — has served him as models. As to the third main-painter there doesn't seem to exist much material for comparison. He may represent the 12th century. His antecedents may be sought for near the Caucasian regions.

The *scale armours of Hellenistic type* are descended from the ancient Greek scale corslets, cataphractae, though they in the manuscript often have got a rather Oriental stamp, just as e. g. the Persian clibanarius armour often seems to have got a Hellenistic stamp. The evolution of the Greek type took its way from Ionian Greece to Attica and further to the West, even to the Etruscans and from them to the Romans. Moreover Hellenistic traditions were kept in the Seleucide kingdom as far away as to Baktria. The Byzantines thus had sufficient possibilities to adopt or continue the ancient type either through the Roman revival of it or through the tradition kept in the former Hellenistic kingdom, and not least in Syria. The type is particularly in use among persons of high rank. The Hellenistic type of corslet represented in Byzantine art is neither absolutely Greek as to all its details, nor is it Oriental. Part of it may be Roman. A kind of puff-sleeves with lamels or taps, sometimes even with a kind of cymation border covers the shoulders and part of the upper arms. The sleeves may be an imitation of the Roman epaulettes. A cymation border is seen along the brim above the abdomen just as on the muscle armours e. g. on the colossus in Barletta, and from this border the taps are hanging down. The taps on the armours of the first painter often are long and narrow, more like a series of lamels, while they in the illuminations of the second painter have got the appearance of a row of flower petals. The true Persian scale armour has none of these taps or puff-sleeves nor do they have cymation border. There may be long narrow scale sleeves to the hand-wrist, short sleeves of lamels or no sleeves at all *(Figs. 29 and 7, 8)*.

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The Roman corslets sometimes seem to have been furnished with for instance cymationlike borders, epaulette-like shoulders and puff-sleeves. A type akin to the Scylitzes type is to be found in the monument of Adam-Klissi, on the Arch of Orange in France — and a little more simplified — on some of the reliefs of the Constantine Arch.[45] However the ancestors of the Hellenistic type is to be found in the Near East as early as in the 14th century B. C., for instance from Ras-Shamra in Old Anatolia. It was current in Mesopotamia. Forerunners for the later time strip-armours were worn by Assyrian horsemen as seen in the alabaster-reliefs from 9th-8th centuries B. C. and from North Syria about 800 B. C. Transitional types between strip-and scale armours are, probably, some of the fragments found in Cypros from about the 7th century B. C.[46] But the earliest true scale armours very likely belong to the 6th century B. C. as shown by M. Rostowzeff. The earliest datable graves with scale armours were excavated in South Russia.[47] Probably these types were brought to Europe by the Scythians. They took their way to Ionian Greece and to Attica. The type is based upon a leather corslet reinforced with horizontal leather-bands, strengthened shoulder-bands and a solid waist-belt. Below the waist-belt quadrangular leather taps or straps are placed. Later on, in decorative art, we find such straps in the shape of cymationlike borders. Ornaments either have been painted upon them or have been added in embossed metal. The Attic Greek type may be plain leather with embossed metal applications or it may be covered with scales. The last type is well-known among the Etruscans who took it over from Ionian Greece. It may be of lamellar construction too, but in a similar shape.[48] In pictorial art it can be followed e. g. on the Clazomenian sarcophagi from an early

[45] L'ORANGE and VON GERKAN: *Der spätantike Bildschmuck des Konstantinsbogens,* Berlin 1939.

[46] YIGAEL YADIN: *The art of war in Biblical lands,* p. 196-197. Fragments of scale armour in bronze are known already from 17th cent. B. C. in Egypt (Metr. Mus. New York). Wall paintings in Theban tomb from 15th cent. B. C. shows a specimen with rich details; H. BONNET: *Die Waffen der Völker des alten Orients,* p. 209 ff.

[47] B. THORDEMAN: *The Asiatic splint armour in Europe:* A. A., IV; IDEM: *Armour from the battle of Wisby 1361,* p. 280 ff, with references; W. v. ARENDT: *Ein alttürkischer Waffenfund aus Kertsch,* p. 41 and p. 59 ff; A. WESTHOLM: *Cypro-archaic splint armour;* IDEM, in *The Swedish Cypros-expedition,* 1935, II, p. 13, pl. V, CL, p. 538 f, 596 ff, pl. CLXXIII; M. ROSTOWTZEFF: *Skythien und der Bosporos,* 1931, p. 298; IDEM, in *Dura-Europos 1928-29,* p. 73; *1929-30,* p. 79; *1932-33,* p. 440 ff.

[48] An excellent specimen, not of scale, but of lamellar construction, is represented in the bronze figure of Mars from Todi in the Vatican mus. from an early part of 4th cent. B. C. See: G. Q. GIGLIOLI: *L'arte etrusca,* Milano 1955.

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part of the 6th century B. C. An excellent Attic illustration is seen on the Aristion stele from Athens from about 525 B. C. with all the details excellently rendered. Other representations of such armours — more or less differing in regard to details — do we find e. g. on the frieze from the Siphnian treasury in Delphi or from the Aigina gables now in the Glyptotek in Munich.[49] Attic vase-painting renders excellent examples. Outstanding specimens are for instance the warriors on the red-figured Sosias-cup in Berlin.[50] Numerous specimens from 5th century B. C. vase-painting could be mentioned. On the Harpye-monument from Xanthos, now in Brit. Mus., the straps are narrow and extend from the lower part of the breast plate. The monuments from the 4th century B. C. such as the Aristonautes stele, about 380 B. C. and the early Hellenistic monuments with representations of amazonomachies render excellent specimens. The same is the case with the Alexander-sarcophagus and the relief of Alexander from Troja now in the archaeological museum in Madrid. Of particular interest is the Alexander-mosaic in Naples,[51] probably a 3rd-2nd century B. C. copy of the painting made by Philoxenos from Erithrea from the end of the 4th century B. C. The armour of Alexander consists — as in most other representations — of breast-and back corslet made of solid leather overlaid with metal bands and covered with scales of horn or metal. The broad shoulder-pieces starting at the back-plate are fastened to the breast-plate with special buckles. In the side is cross-lacing with leatherstrings. A girdle surrounds the waist. The taps on the upper arms seem to be made as lamellar pieces, just as the fringed taps of the abdomen. As a contrast to the Hellenistic type we see a true clibanarius-armour worn by a Persian in front of the chariot of Dareios. On the reliefs from the Athena temple of Pergamon, now in Berlin, we find two different types of Hellenistic armour, simple leather types and more elaborate armours. The taps ending in fringes are known from various representations of this types of armour. Sometimes a row of cymationlike taps are brimming the lower border of the corslet, and from their backside the long narrow taps are issuing. But the cymationborders mostly are to be seen in the Roman representations of this type, and in the Byzantine renderings. The Greek heroes and warriors wear beneath their corslets a short linen chiton just as the Etruscans, who took over the Ionian shape, and the Romans who wore a short tunica, as seen in the represen-

[49] A. W. Lawrence: *Classical sculpture,* London 1929, pl. 13, pl. 18 a; Max Wegener: *Meisterwerke der Griechen,* Basel 1955, p. 23, fig. 13; p. 157, fig. 139.
[50] *Ibidem,* p. 97, fig. 79.
[51] E. Pfuhl: *Meisterwerke griechischer Zeichnung und Malerei,* München 1924, p. 86-87, fig. 121.

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tations. Though the type was in mode in various periods among the Romans it was particularly during the Antonine time that the Hellenistic type of armour was in favour, and — as it seems — reserved for special troops. Side by side with the muscle armour, which became influenced by the scale corslet, it was handed down to the Byzantine armies. Just as the muscle armour was particularly worn by the emperors and princes, the scale armour — whether Hellenistic or Oriental of type — was particularly in use among the cavalry officers and the protospatharians. The Hellenistic corslet, in use in the Near Orient since the days of the Seleucides, continued after the Roman conquest of these regions. We find the type represented on Palmyrenian monuments from 1rst and 2nd centuries A. D. such as for instance some of the warrior-reliefs representing warrior-deities. The Palmyrenian stele in Brit. Mus. from about 55 A. D. representing a deity, the almost contemporary relief in Berlin and another relief representing the divine Triade from 1rst half of the 1rst century A. D. demonstrate the Hellenistic type, but in Oriental style.[52] The stele in Brit. Mus. doesn't show the current Palmyrenian warrior's dress. It has a more Oriental stamp and reminds of the Assyrian strip-armours from the 7th century B. C. Of Hellenistic type is the border of taps below the corslet and on the upper arms. The lance with the bannerole and the little round shield — almost of the same type as met with in the manuscript several centuries later — are typical Oriental. The warriors on the relief in Berlin with the local deities, show the Hellenistic officer's armour — apart from the ornamentation with stars, which may be Parthian. Actually the armour type from the relief in Brit. Mus. is represented in some of the folios of Scylitzes by the second painter who places the horizontal and vertical lines very clearly between his feather scales. But between the Palmyrenian and the Byzantine armours we find the same type represented in some of the wall-frescoes from Dura-Europos from 2nd and 3rd centuries A. D.[53] The armours from Dura are more Oriental than the armours from the stele in Berlin. The style in the Dura frescoes may possibly be called Syrian (with remote ancestors in Hittite and Assyrian armours). One of the walls from the synagogue of Dura shows Joab in Persian costume and a soldier in the Hellenistic armour. It is noteworthy that we find this armour used by Palmyrenian and Syrian triads of deities. Almost identical are the armours — scale corslets — which we find in

[52] R. GHIRSHMAN: *O. c.,* p. 7, fig. 10; *Berytus,* III, 1936, pl. XXX and pl. XXXI, 1.

[53] COMTE DU MESNIL DU BUISSON: *Les peintures de la synagogue de Doura-Europos,* p. 245-256, pl. XXXII; CORNELIS C. VERMEULE: *Hellenistic and Roman cuirassed statues.*

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the ivories and particularly in the illuminations from 9th-12th centuries in Byzantine art, but here worn by warrior-saints. It is an almost direct transference from Greek heroes and officers in Ionian and Attic style via Roman emperors and high rank officers to the Near East deities and from them to the Christian saints of the Byzantine empire. With Constantinople as an intermediary this warrior-type with some changes takes its way to Russia, the Balkans and all parts belonging to the Orthodox church.[54] Russian illuminated manuscripts from 15th-16th centuries still have descendants of the same types. Even in the Byzantine mosaics in Sicily from 12th century — during Norman reign — we meet it, as for instance in the cathedral of Cefalú from about 1147.[55] There can be no doubt as to this armour as an imperial and high rank officer's dress. In a manuscript, in Bibl. Nat. in Paris, the officers surrounding the bed of king Salomon wear this type of armour.[56]

The armour of the *Persian clibanarius type* occurs frequently in the illustrations, particularly in the illustrations of the first painter. Both officers and cavalry troopers seem to be furnished with this type. It is the type of armour met with in some Roman monuments from the days of Hadrianus and particularly with the time of Alexander Severus. This last emperor, reorganizing his armies adopted the heavy Persian cavalry together with its name. The Persian clibanarii in the Roman armies were furnished with this particular type of armour. The loricati equites, mounted lancers and archers, were dressed in tightfitting scale armours with long sleeves and even their horses were dressed in scale armours. Such are e. g. the Sarmatian cavalry men already on the column of Trajanus in Rome. In the Orient this type of armour had been in use already before the Parthians in Iran. It was characteristic to the Scytho-Sarmatians and it may originate in Iran. Very likely it has been brought to the Scythians from the Parthians by the Mongol nomades of Central Asia. Metal scales of a type very similar to those seen in the manuscript and particularly used by the second painter have been found in provincial Roman areas. Sometimes such scales have been laced or attached together in a manner which resembles that of the splint-armour principle as seen in some fragments from Yugoslavia.[57] With their holes for laces they come close to the scales of the second Scylitzes painter. The Par-

[54] From the monastery of Saint Lucas in Phocis, Greece, is a wall-painting in the vaults, from the end of 10th cent. with Saint Theodor as an excellent parallel to the warriors in Scylitzes. See: G. SCHLUMBERGER: *O. c.,* p. 197.

[55] J. PIJOÁN: *O. c.,* vol. VII, p. 477, fig. 678.

[56] IDEM: *O. c.,* vol. VII, p. 515, fig. 735.

[57] B. THORDEMAN: *Wisby,* I, p. 280, fig. 280-281; IDEM: *The Asiatic splint armour,* p. 133, fig. 21-22.

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thian heavy cavalry, which was iron cladd with scale armours for both man and horse, was taken over by the Sassanians. In Persia it was considered an important part of the army. Ammianus Marcelinus in his Roman History, XVI, 10, 8 mentions the clibanarii and in XXV, 1, 12 he gives a description of this cavalry against which the Romans had to fight under the emperor Julianus Apostata in the year 363. Ammianus tells how the Persians were dressed in tightfitting steel plates covering the whole body, and how their faces were well protected by steel masks, so that only little openings for eyes and for breathening were left. The breathing holes were hardly great enough for giving sufficient air. The parts of the body particularly exposed for danger were protected with chain-mail. Possibly they used both knee-cups and elbow-cups, just as the knights of European Middle Ages used chain-mail reinforced with cuir bouilli and later on with iron pieces. In the late Roman armies a heavy cavalry dressed in chain-mail or scales was introduced, corresponding almost to the description by Ammianus. It is seen e. g. in the manuscript of Vergil in the Vatican Library.[58] Armenians, Parthians and Sassanians contributed to the introduction of it in the Roman empire, in the West Roman as well as in the East Roman part. It can be followed in early monuments in the Eastern world. Clibanarius-equipment is found in the mural paintings from Sarmatian tombs at Pantikapeion from Crimea from 1rst and 2nd centuries A. D. An excellent representation of a horseman in this equipment is to be seen in the wall-graffito from Dura-Europos from 2-3 century A. D. *(Fig. 6)*.[59] A horseman in scale-and lamellar armour and with reinforcement of chain-mail, the head protected by a helmet furnished with lamellar curtains for the nape-neck, shoulders and great part of the face, is seen mounted on his horse and equipped with cavalry lance and sword (or dagger). He is an excellent representative for such a clibanarius. His horse is covered by a complete suit of scale armour. This outstanding clibanarius — in its primitive drawing — is a fine counterpart to many of the horsemen in the manuscript of Scylitzes, but only to the figures by the first painter. The Dura-clibanarius and the Scylitzes clibanarii correspond in almost all details, even in regard to the top and feathers on the helmet (see Fols. 54 v. and 73 v. a, *Figs. 29 and 34)*. In the Dura-warrior greater part of the armour is composed of both

[58] *Vat. lat. 3225.* Mentioned in: ANDRÉ GRABAR and CARL NORDENFALK: *Early mediæval painting from 4th to 11th century,* p. 94.

[59] R. GHIRSHMAN: *O. c.,* p. 51, fig. 63 c; M. ROSTOWTZEFF: *L'art greco-iranien,* p. 302-322, pl. LXIV; IDEM (Parthian warriors from graffiti), in *Dura-Europos; Preliminary reports of second season,* p. 194-200; As to Pantikapeion see: ROMAN GHIRSHMAN: *O. c.,* p. 265, fig. 341.

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scales, lamels and chain-mail. Belove the breast the scales are replaced by lamels. The body armour has very short scale-sleeves or almost no sleeves. There are no taps. Such very short sleeves we find in Scylitzes too (Fols. 54 v., 171 r. b, and various other pictures). The horseman's underwear consists in a knee-long tunic with long, narrow sleeves terminating at the hand wrist. These long sleeves may either be of the same type as the sleeves on the stele with the warrior-triad from Palmyra, 1rst century A. D., now in Louvre, or they may be of very tight rings of lamels as seen in the rock-reliefs with representations of king Ardashir in Firuzabad. He further wears a skirt or little trousers of scale construction like the later time Byzantine chain-mail skirts. Beneath them he has a kind of long, narrow trousers in the same style as his long sleeves. The feet are covered in the same manner, but probably one must imagine little boots or shoes of iron, corresponding to Leo, who mentions use of iron shoes. The rendering is rather summary and primitive, but very likely the artist has intended to represent an equipment like that seen on the Palmyrenian warrior steles. The head is protected by an iron-cap, the top of which is high and pointed with a little tube for flattering bands or feathers. The lamellar curtains cover most part of nape, neck, face and shoulders. Such helmets are known from Russian archaeological excavations in Gelendijk from 8th century. Just as in the graffito these helmets have lamellar curtains of various sizes hanging down to cover the shoulders. In his hand the clibanarius of the graffito holds a long cavalry lance and at his waist a sword is suspended, the grip of which is seen behind him. The horse is dressed in scale armour covering the whole body. Further it is protected by chanfron and a muzzle. The Tactica recommends horse-armour, but we do not find it represented among the objects of armour in the manuscript. A few times a kind of scales are painted all over the body of the horses (e. g. Fol. 54 v.), but it just as well may be a manner of procuring decorative designs on the horses themselves. A complete clibanarius equipment is represented on the above mentioned rock-reliefs from 3rd century A. D. in Firuzabad at the gorge of Tang-i Ab with king Ardeshir I and his victory over Artaban V.[60] Like the Dura-clibanarius the king on this rock-relief and his granvizir as well as their officers are dressed in the same type of scale and mail. They wear helmets in the shape of skull-caps with tubes and flattering bands and scale curtains for nape-neck. The horse protection is complete. In Persia this type of cavalry protection can be followed through the ages, and it is met with in Turkey, India, Armenia, Caucasus and other places in

[60] R. GHIRSHMAN: *O. c.*, p. 126, fig. 165.

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the East from Antiquity till 14th century and later — and with some changes in regard to details even almost up to 20th century. In Persian miniatures from 14th and 15th centuries with representations of scenes from Shah Namah we find almost the same type of body-protection, though very likely more of lamellar-armour type than of scale-type.[61] It is noteworthy that the type is seen in illuminations from India from 15th and 16th century, where horsemen are equipped with helmets almost identical to some of the helmets used by the first Scylitzes-painter. The various regions of the Near East and the Middle Orient have types of their own, body protections composed of chain-mail and iron-lamels, iron plates such as the «four mirrors» and the like, but still the basic type seems to be the ancient clibanarius-armour originating probably in Iran passing from there to Central Asia and in its development following various routes, in each region developping a face of its own. One of the collaborators of the second main-painter in Scylitzes has represented an excellent portrait of the iron clad clibanarius in fol. 195 v., Basil II's victory over the Scythian sovereign Georgios *(Figs. 48 and 8, 2)*.

The clibanarius armour passed to various regions of Europe even in a far later time, for instance to Poland. Just as we meet Carlos V and other sovereigns of the renaissance dressed «a la romana», we find the scale armour of the Persian clibanarius type e. g. in Poland in the 17th century in such an armour as that of Stanislaus Jablonowski, who died in 1702.[62]

The *lamellar armour* of ancient type is only met with a few times in the manuscript of Scylitzes and particularly among the officers of the first painter. However a kind of lamellar armour with quadrangular or hexagonal lamels occurs more frequently as a variation in his groups of horsemen. Most of his warriors however are dressed in scale armours. As a rule details as to the lamellar construction are not seen. Now and then the artist has added some few details in regard to the construction. The lamellar armour may originate from Central Asiatic types or from ancient Mesopotamia. In Asia Minor it was in use at an early time. Probably it was well-known in Constantinople as seen e. g. from finds of lamels in the Scotch excavations of the Grand Palace of the metropolis. The type found here has exceedingly old Anatolian traditions. Such pieces have been found e. g. in Ras Shamra and they probably date from about 1400 B. C.[63] On the reliefs of Tiglat Pilesar III at Nimrud, a

[61] E. KÜHNEL: *O. c.*, pl. 35 and 37; J. PIJOÁN: *O. c.*, vol. XII, p. 352, fig. 488.
[62] ZBIGNIEW BOCHENSKI: *L'armure en écaille polonaise en XVII^e siècle.*
[63] B. THORDEMAN: *Wisby*, I, p. 245 ff. There are many types, and their history and development is rather complicated. As to types from Antiquity see: CL. SCHAEFFER (in *Syria*, 1937, p. 125 f, 147, and 1938, p. 239, and 241).

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similar type occurs. Roman time specimens from Sebastopol are now to be seen in Brit. Mus. In Central Asia and in the Far East even in Corea and Japan, types of the same construction have been in use for centuries almost down to modern time. Such types have been in use as late as the days of the Scylitzes-painters, or at least in the days of their prototypes. The first main-painter furnishes part of his cavalry with such corslets. Warriors with undoubtedly lamellar corslets perhaps are even more common than are the armours of the muscle type. Fish-scales and lamels are found side by side in the same illuminations, just as is the case e. g. in the Octateuchs from 11th to 12th century. Scale and lamellar armours of various constructions are found for instance in the Smyrna-Octateuch. Exquisite specimens of the type are met with by various Byzantine art objects of the same epoch, e. g. in a steatite relief in Mus. Archeol. in Angers from 11th-12th century.

Saint Michael as the guardian of Paradise in the gold-and enamel plate from a bookbinding now in the cathedral treasury of Saint Marcus in Venice, from 11th century, is dressed in a similar armour, here made of square lamels or plates,[64] just as the armour worn by *Basil II Bulgaroctonos* in his psalter in Marcianum in Venice (Bibl. Marc. cod. gr. 17). The little relief from Vatopedi of Mount Athos from 10th-11th century shows us Saint George wearing such an armour, very similar to both the ancient Hellenistic type and the Byzantine specimen from Scylitzes.[65] In Brit. Mus. there is a small gilt bronze relief representing Saint Theodor, an excellent example and an exquisite parallel to the armours of the manuscript.[66] The shield, here kite-shaped, corresponds well with the kite-shaped shields in the manuscript of Scylitzes, particularly with the shields of the first painter. A close parallel to the Scylitzes-painter is to be found in a Syrian manuscript, now in the University Library of Cambridge, representing amongst others Joshua who wears a characteristic armour, a mixture of the Hellenistic and the Oriental type.[67] This manuscript belongs to the late 12th century. Another closely related type is met with on the relief of the façade of Saint Marcus in Venice, representing Saint Demetrius.[68] Very likely this relief is part of war-

[64] DAVID TALBOT RICE: *O. c.,* pl. XV.

[65] G. SCHLUMBERGER: *O. c.,* I, p. 273 (Saint George in Vatopedi). Saint Theodor Stratilate from the Menologion of Basil II in the Vatican library, one of the most important military patrons of the Byzantine army, has a type of lamels, known from several representations of the first painter in Scylitzes. See: SCHLUMBERGER: *O. c.,* p. 184.

[66] *Guide to the department of early Christian and Byzantine antiquities,* no 544, p. 47, fig. 24; DALTON: *O. c.,* p. 162, fig. 13 (Saint Theodor).

[67] JULES LEROY: *Le cycle iconographique de la Buchanon Bible,* p. 103 ff.

[68] A. GRABAR: *Le trône des martyres,* pl. VI, 2.

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spoil taken from Constantinople to Venice in the year 1204, and thus made at least before 1200. Good examples in the manuscript of Scylitzes of these types of armour are seen in fols. 11 v., 12 r.-v., 13 v., 16 r., 18 v., 22 v., 30 v., 31 r., 36 r., 54 v., 80 r., all of them with close parallels in the psalter of Basil II in Venice as well as in the other monuments of the epoch *(Figs. 22 and 29)*.

Whether the armour represented is of the Roman, the Hellenistic or the Iranian and Asiatic type the helmets of the first main-painter are almost always furnished with a particular protection for the neck-nape and the shoulders in the shape of lamellar curtains.

As to *chain-mail* it only plays a very small part in the manuscript. It occurs a few times in the illuminations of the first main-painter and always clearly distinguished as chain-mail with its horizontal wavy lines in a greyish-blue colour. Of course chain-mail must have been known and in use in Constantinople at that time; it even has been rather common just as it was among the neighbouring peoples. The Romans had used it as seen on their monuments; the Parthians, the Sassanians and other peoples used it. In the regions of Caucasus it was in use through centuries almost up to modern time.[69] Some of the frescoes from Dura-Europos render examples, even coats of mail with long and narrow sleeves. Compositions of chain-mail and lamellar constructions and scales are known from art representations from both Persia and from Byzantine art. A Sassanian silver plate in the Hermitage mus. of Leningrad from 8th century gives excellent examples.[70] The long byrnie of mail with additions of splint greaves and gauntlet-cuffs is worn by the horseman in the golden Nagyszentmiklas vase from about 860. An armour very similar to this is seen in the manuscript in fol. 195 v. *(Figure 48)*. The first main-painter leaves no doubt about his few renderings of chain-mail. In the illuminations of the second main-painter it doesn't occur. If the third main-painter now and then has intended to represent chain-mail, it seems at least impossible to point it out. His armours are plain and simple with very few details, and a close determination is difficult. In some instances he shows an armour of a construction similar to the best armours of the second main-painter (Fols. 168 r., 181 r., 185 r.).

This painter seems to prefer a short scale jacket without sleeves. Now and then he renders a sleeve to the elbows, and as a rule without taps. His types have much in common with the ancient Scythian equip-

[69] W. ARENDT: *Der Nomadenhelm...*, p. 33; A. RAHMAN ZAKY: *Islamic armour.*
[70] ARTHUR POPE: *O. c.*, vol. III, chapter 58, p. 2555, Persian armours; B. THORDEMAN: *Wisby*, I, p. 268, fig. 257.

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ment, or with the equipment of the nomades from the steppes, a fact that confirms the opinion that he may be of South Russian descent. His heavy armed cavalry as well as his light horsemen and mounted archers wear such light jackets. It is the current body protection of all nations represented in his part of the manuscript. Probably archaeological counterparts to his types are difficult to find, just as contemporary archaeological pieces of armour corresponding more or less to the types of Scylitzes for the present are few and uncertain. Russian archaeological excavations have yielded a lot of material, which is going to be published. No doubt these excavations in South Russia and around the Black Sea to a high degree will contribute to our knowledge of the military equipment of the Byzantine empire.

The reason why the scale-or lamellar armour got such a diffusion among the horsemen of the Orient was that the cavalry — prevalent as it was — needed a body-protection which was flexible and confortable, when the warrior was mounted. Besides his actual armour the horseman used greaves of iron or leather boots. We find both kinds of footgear in the manuscript just as we once or twice find the splint-leggings (Folio 195 v., *Fig. 48)* even of a type known from the Palmyrenian steles. Specimens dating from the 5th century A. D. have been found in Egypt. From Constantinople they were taken over by the Egyptians. But boots as well as leggings were brought to Constantinople by the Sassanians, who in turn had them from the nomades of Central Asia and the Huns. The remnants of greaves from Gelendjik in Russia from 8th century, certainly are not much older than the prototypes used by the first main-painter of the Scylitzes manuscript.[71]

[71] W. Arendt: *Der Nomadenhelm...*, p. 31, fig. 10 a.

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THE LIGHT HORSEMEN (THE ARCHERS)

IN the Byzantine army as well as among the neighbouring peoples, not least the Persians, archery was very important, just as the mounted archers composed an important part of the army. From an early time of Antiquity archery from horse-back has been known and performed in the Near East. Numerous representations are to be seen in Assyrian reliefs. Among the Scythians and further on to the East, on the steppes and among the nomade tribes of Central Asia the bows and arrows were main weapons. The Persians were excellent archers, and bowmen are frequently represented in ancient Persian art. In Persia the bow was considered a kind of royal or princely weapon, as seen from representations in Persian art. In Greek art, not least in Greek vase-painting the Scythian peltasts make a usual motive in the interior of the drinking cups, the kylices, or on the outer sides on other types of vases. The Greek peltasts, named after their special type of light shields, were dressed like Scythian archers with tightfitting trousers and jackets with long narrow sleeves. Their heads were covered by the Phrygian cap or hood of leather. The Scythian bow was their main weapon. A similar equipment is often carried by the amazones in art representations. These female warriors were famous as excellent archers, who knew the art of shooting from horseback in turned backward position. The Byzantines used their light horse-archers against their Asiatic enemies such as Turks, Persians and Arabs and they fought in the same manner and with the same type of weapons as did their enemies. In his Tactica Leo recommends exercises in archery. It was considered one of the most important disciplines for the young Byzantine nobleman. The archers were furnished with the «cupido-bow» carried in a case in which they moreover had room for 30-40 arrows in a special pocket. Another pocket of the case contained an extra bow-string. The bow had to be carried in a bandoler on the archer's back. It was the same type of bow which was in use among the Huns and it was by far not so strong and far-reaching as the bow used by the infantry. The Hunic bow was the most dangerous weapon of this nomadic tribe and it always was used from horse-back. The type belonged to the family of Asiatic composite bows and had a length of about 140-160 cm. The ends and the middle part were stiff and reinforced by means of bone plates. As to the end plates the bow was unsymmetrical. The long end had a quadrangular

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carving for fastening the bow string. The opposite short end had a semicircular carving in which the string could be fastened for bending the bow. Various kinds of wood could be used for the construction, but prevalent was horn prepared and glued by a complicated procedure. The bow-type could trace its ancestors far back in time. Probably the earliest specimens were to be found already in prehistoric time in the regions of the Baikal lake. In the Occident it became known in the time of Augustus as testified by archaeological finds in Roman camps near the Rhine and Danube. The various Oriental auxiliar troops had brought it with them to the Romans from the Parthians. Thus the Hunic bow had been known among the Romans before the Huns themselves brought it to Europe. Among the Germanic tribes it never got footing, particularly because the Germanic people did not understand the complicated technique of fabrication. To Central Europe it further was brought by the Avars but even now it did not become popular. Only now and then it is seen in use among Franks and Lombards. The arrow-head used for this type as a rule was of the heavy, pyramidal shape.

In the manuscript of Scylitzes mounted archers occur now and then in the illuminations. Several times they are represented by the first main-painter. His heavy cavalry apparently is furnished with a bow of a larger and more heavy size as seen in e. g. fols. 32 v. a, 36 r., 72 r. *(Fig. 33)* and some other folios such as fols. 229 v., 230 v. Details in regard to bow or arrows are difficult to find. Most frequent are the strong double curved bows with long-hafted arrows, furnished with barbed arrow-heads. It may be the type particularly used by the Persians and Arabs, whose bows generally were of a larger size than the current Central Asiatic composite types. The usual equipment of the light horsemen consisted of a cuirass of scale, mail or horn, or at least of a cape for protecting the shoulders and the neck, a light helmet or a feltcap and a shield of a larger size than the shield used by the heavy cavalry, though even different to the infantry shield. The weapons were — beside bow and arrows — composed of javelin, sword, sometimes a dagger or an axe. Such mounted archers or light cavalry are represented only a few times in the manuscript, while on the other hand infantry with bows and arrows are frequently represented, e. g. at sieges. In fols. 59 v., 202 r., we probably may find light archers but as a rule it is almost impossible to distinguish them from the heavy cavalry *(Figures 31 and 50)*. Already the author of Strategikon informs us about the importance of archery and the training in this art.

Leo in Tactica gives directions in regard to the archers, their equipment, bows and number of arrows and he too says that those among the young noblemen who are not able to learn archery must in stead of

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this art be trained in javelin-throwing. Not all warriors of the light cavalry were archers. Horsemen from certain themes were specialists in javelin-throwing. As a rule archery was more esteemed than javelin-throwing, as confirmed in the texts of Leo.

The greatest exigence for mounted archers was the ability in managing the bows and arrows from horseback, not only in forward direction, but particularly in turned backward position. This manner of managing the bow was the tactics characteristic for the Tourans of the Asiatic steppes, introduced to the Parthians, and from them to the Sassanians from whom the Byzantines — with their excellent bows — took over this art. These tactics were particularly practised by the themes neighbouring to the Asiatic peoples.

As a matter of fact the nomade tribes from Mongolia and Turkestan influenced to a high degree upon the Byzantine cavalry, not only in regard to tactics and weapons but even in regard to their dress. The nomadic caphtan, the scaramangion, was adopted in Constantinople as a court-and officers' dress. The scaramangion is known for instance from Palmyrenian graffiti from 3rd century A. D. as a *kind of uniform for mounted archers*[72] and it took its way to the Far East as seen in Indian illuminations just as it went to the Occident where it is to be found in Italian renaissance paintings from 15th century. From the imperial court in Constantinople it was taken over at the courts of the princes in Croatia, Serbia, Rumania, Dalmatia, very often brought as gifts from the Byzantine emperors as a sign of friendship. The Huns brought with them to Europe the long boots. Already in the 7th century the light sandals and small shoes had been replaced by such high boots, and in the manuscript of Scylitzes many persons are furnished with such boots. The long trousers originate in the same tribes as the scaramangion, being suitable and appropiate for this special category of horsemen. Together with these details in regard to uniform the Asiatic peoples brought with them their characteristic tactics, the chock-tactics, which were soon adopted by the Byzantine light cavalry. These tactics were based upon mobility, surprise, chock and archery, and it got triumphs in the Byzantine army and went from the empire to the Occidental armies. But in the Western world it never came to play any important part. Already the Sparthanians of ancient Greece had learned their archery from the Oriental world. In regard to archery the islands

[72] N. P. KONDAKOV: *Les costumes orienteaux à la cour byzantine,* p. 6 ff; F. CUMONT: *L'uniforme de la cavallerie orientale,* p. 181 ff. As to bows see: JOACHIM WERNER: *Beiträge zur Archäologie des Attila-Reiches,* München 1956, with references.

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of Crete and Cypros seem to have played an important part in Antiquity. From the Homeric epics we become acquainted with famous archers such as Odysseus, Teukros and various other heroes. With Alexander the Great archery grew still more important in the ancient world. The Romans adopted it through the Parthians, the Byzantines got it via the Sassanians. It was during the reign of Heraklios that archery was completely introduced in the light cavalry, which since his days became almost exclusively composed of archers, the javelin-throwers only forming a little and special group.

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THE HELMETS

ACCORDING to Leo the cavalry besides the body-armour must be equipped with a helmet of metal, inside covered with leather, linen or some other kind of soft material, or else made of chain-mail or scales. A kind of hood must be drawn on to cover the outside as an utterly protection not least against the burning sunshine. An examination of the illuminations shows that various shapes and types of helmets have been in use in the Byzantine army *(Figs. 12-13)*. This variety is natural considering the many nations gathered under the Byzantine banners. As one could expect the most comprehensive selection of helmets is to be found in the illuminations of the *first main-painter*. Almost all his helmets and hoods are furnished with protecting curtains of lamels for neck and shoulders, even where the body-protection is made only of leather or is of scales. Some of his head-gears may represent leather or other kinds of material, but from the illuminations it is impossible to distinguish the various classes of material. Most of the helmets certainly are made of iron or bronze, but probably some of them have a cover of leather. The *second main-painter* and his assistants mostly use tightfitting skull-caps or caps made of iron, without curtains at all, and frequently they are ornamented with scrollwork, dots and lilies in gold upon red or red upon golden background, no doubt in order to represent precious metalhelmets with gold-incrustations. The *third main-painter* apparently is very plain in regard to head-gears. Most current is a simple iron hat with a short brim or a tightfitting iron skull-cap, sometimes adorned with scrollwork or dots finely made and hardly visible. Some of his iron hats have a very fine parallel in the iron hat with representations of saints, now in the State Armoury in Moscow *(Fig. 11)*. Some of his figures wear a kind of felt-cap and probably a leather hood of almost the same type as the antique Scythian and Phrygian hoods known from Greek vase-paintings.

The *first main-painter* shows an interesting selection. Sometimes we are reminded of the ancient Attic amazonomachies from 5th-4th centuries B. C. vase-paintings. The ancient Greek representations of peltasts and Scythian archers depict the warriors furnished with their Phrygian hoods, a specimen similar to the hoods represented upon the Persian gems and coins, or on the gold plate from the Oxus treasure. Almost the same types are to be found in rock-reliefs in Lycia, or on the palatine

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reliefs from Persepolis.[73] We can follow them e. g. on the Alexander-sarcophagus from 4th century B. C., or in the Alexander mosaic in Naples. Such Persian headdresses, similar to the ancient Persian satraphoods are seen e. g. in Byzantine representations of the Epiphany, such as in the mosaics from San Apollinare Nuovo in Ravenna or elsewhere from that period.[74] Proper Roman helmets do not occur, no more than do ancient Greek types. The first main-painter in some of his illustrations uses helmets similar to the specimens represented in cavalry groups from the various Octateuchs from 11th-12th centuries, and to some of the ivory caskets, e. g. the Joshua casket in New York. As to the lamellar curtains they have their counterparts in Parthian and Sassanian monuments. Sometimes the upper part of a helmet consists of iron, while the lower part is made of leather for the protection of neck and chin. In later time we find the same types for instance in Central Asia or even in Tibet. But here we to some extent leave archaeology and enter the field of ethnology.

The Arabs of the first painter sometimes have been furnished with elegant and finely drawn turbans of a special construction, differing from the turbans used by the second and third painters, e. g. in the fols. 40 r., 47 r.-v., 60 r., 75 r.-v. and various other fols. But frequently there is no notable difference between the Arabs and the Byzantine warriors at all. The second painter and his group provide the Arabs with white turbans covering not only the head, but even neck and chin and they act as excellent protection against the sunshine of the desert as well as protection against the sand and dust. In regard to chin and cheek-protection they resemble the Persian headgears from the Alexander-sarcophagos. Their appearance is very naturalistic. The third painter in his few representations of Arabs is very naturalistic as to their turbans. Artillerists as well as slingers (only very few slingers occur, fol. 230 r.) and other types of infantrymen as a rule wear caps of a rather plain type. This cap may be made of iron, or probably of felt or leather. The illuminations do not indicate the type of material. Among the types used by the first painter are some interesting specimens. Prevalent is the *plain bacinet* or *skull-cap* (used in the Occidental world at least since the 11th century),[75] sometimes with lamellar or scale curtains, sometimes without. The *segmented helmet* with or without cheek-pieces but almost always with lamellar curtains is rather

[73] H. VON DER OSTEN: *Die Welt der Perser,* pl. 62, staircase from Persepolis; pl. 64, Oxus treasure. For the Alexander mosaic see: n. 51.

[74] DAVID TALBOT RICE: *O. c.,* no 59, p. 300.

[75] LIS JACOBSEN and ADA BRUHN HOFFMEYER: *Pakkenellike, ordet og hjelmen.* (Aarb. f. nordisk oldkyndighed 1955, p. 31 ff.)

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frequent. None of these helmets have nasals or eyebrows. The only helmet with a nasal is probably seen in fol. 28 v. a.[75b]

A particular type is rather frequent in the illuminations of the first painter. It is the *sou'wester-like shape* or salade-like headgear with a little knob at the apex, ornamental rivets along the brim and as a rule with lamellar curtains. This helmet is current and has many counterparts in Byzantine minor art in the 9th - 11th centuries. The shape may depend upon Roman reminiscences. More complicated are *the types similar to the Scythian or Persian satrap-headgears.* Various shapes of this type occur, and very likely they have been made of some soft material, possibly leather just as they are related to the Scythian hoods. Interesting is a *clibanarius helmet,* met with in some of the cavalry groups, corresponding almost exactly to the helmet worn by the clibanarius of the wall-graffito from Dura-Europos. Various of the cavalry groups have much similarity with the ancient Greek amazonomachies, not only in regard to composition but even in regard to such details as for instance the headgear which could be called *the «amazone-cap».* Common to almost all of them are the lamellar curtains, as seen e. g. in fols. 12 r., 54 v., 58 v., 72 r.-v., 73 v., 234 r. and others *(Figs. 29, 33 and 34).*

The *true skull-cap* only occurs a few times and is very plain as to shape. It may sometimes have a little top on the apex not unlike the skull-caps worn by the Dacian warriors on the Trajanus column and other late Roman monuments *(Fig. 12).* But on the Roman monuments this Eastern type of helmet mostly is furnished with cheek-pieces and neck-pieces suspended in hinges above a kind of curtains whether of chain-mail or lamels. The type — a plain metal bowl — is met with in later time Persian and Indian monuments showing mounted warriors, and with very little change. Its relatives were to be found in regions of the Caucasus rather late in time.

More frequent is *the conical helmet of segmented type,* sometimes with the segments clearly rendered, so that it appears almost fluted, as in fols. 85 v. and 86 r. (Basil dominating the horse of the emperor; *Figs. 35 and 12, 14).* Such «fluted» helmets are not without parallels. The famous Kertscher «Spannfeder» helmet now in Moscow from 5th century may be mentioned here.[76] Now and then such a helmet has cheek-pieces, but almost always do we find lameller curtains. The

[75b] A close parallel to this helmet is seen in the seal of the French king Louis VII (1119-1180), in G. DEMAY: *Le costume au moyen âge d'après les scéaux,* Paris 1880, p. 42, fig. 18.

[76] W. ARENDT: *Beiträge zur Entstehung des Spangenharnisches,* p. 50, fig. 1; B. THORDEMAN: *Wisby,* I, p. 281, fig. 283, 284.

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apex often is crowned by a little knob. The current helmet among the Parthians and Sarmatians was the conical, segmented skull-cap much like the segmented helmet excavated in various regions of Eastern Europe and the Near East, from about 5th - 7th centuries. It is the type known amongst others from Kertsch and Egypt. Probably its outspring must be sought for in Central Asia among the Mongol tribes. The mounted nomades from these regions wore segmented headgears, a felt cap, as a rule made of four triangular pieces seamed together and with a little top on the head. More than twenty segmented helmets have been excavated in various places of Europe and the Near East. Possibly they may be classified in three main groups, among which the group represented by the famous *Baldenheimer* typus is the most comprehensive.[77] The other Western group is represented by the *Bretzenheimer* type (beg. of 6th century) from Mainz, as well as the helmet from Trivières near Hennegau.[78] An Eastern group differing in details from the two other groups is represented by the helmets from Kertsch and Hendö.[79] The two Western groups, which possibly have developed on basis of Eastern types — very likely a loan from the Iranians and brought to the Occident (South Germany, North Italy and South France) by the Ostrogoths and the Lombards — differ from the Eastern types by their material (often bronze), ornamentation (stamped metal bands) but particularly in some details of their construction. The Eastern type as a matter of fact comes nearer to the nomade types from Central Asia. Just as the nomadic headgear had been sewn together from four triangular felt-pieces, the Eastern helmets were «sewn» together from triangular segments of metal or leather by means of metal wire as seen e. g. on the helmet from Kertsch in which ribs and plates have been tied with wire. The closest parallel of the Occident to the Eastern types is to be found probably in the helmet from *Morken* with its particular top, its rivets of an almost Persian type, its higher apex, which is a characteristic Eastern feature, and its remnants of mail curtains.[80] The two segmented helmets found in *Dêr el-Medineh* in Egypt, from about 5th - 6th century are primitive as to construction and closely related to the Eastern types of helmets. They probably show the types used by the Byzantine cavalry before or about

[77] R. HENNING: *Der Helm von Baldenheim,* p. 71; JOACHIM WERNER: *Zur Herkunft der frühmittelalt. Spangenhelme;* P. T. KESSLER, in *Mainzer Zeitschr.,* 1940, p. 10.

[78] G. BEHRENS: *Germanische Kriegergräber des 4. bis 7. Jahrh.*

[79] As to development in the Eastern world see: A. POPE: *O. c.,* III, p. 2563; A. ALFÖLDI: *Eine spätrömische Helmform.*

[80] R. EWART OAKESHOTT: *O. c.,* p. 127, fig. 54.

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the days of Belisarius *(Fig. 9)*. These Byzantine helmets from Egypt are constructed of a metal stand, consisting of four to six hoops fixed to a headband of ironsheet and riveted together.[81] The plates between the ribs are of iron too. This agrees with the fact that the Byzantines augmented the segments from four to six. On the apex is a circular plate with a little tube more or less cylindrical. It is a type related to such segmented helmets as the three Sassanian specimens, one from Niniveh and now in the mus. of Baghdad, the two others from Van and now in Brit. Mus. *(Fig. 10)*. The segments between the frames of the Niniveh helmet are decorated with a scale pattern. One of these helmets has a tube. There are no traces of cheek-pieces or neck-pieces, nor remnants of mail curtains. The apex is rather high, a characteristic Oriental feature. Particularly characteristic for these helmets are the large rivets along the headband and on the framings. Iranian coins representing Sassanian kings show the same type. A very similar type has been found in Russia.[82] It is composed of four or more triangular plates put together with rivets, but without rib-construction. The border-brims may be decoratively cut with tongues. Below, a metal band often runs around the head. The apex sometimes is crowned by a circular plate, sometimes by a little corner-like piece of iron ending upwards in a tube for feathers. Such Russian helmets dated by other datable objects such as coins and the like mostly belong to the 8th-11th centuries, and correspond in time to the prototypes of the ms. of Scylitzes. The type in its various shapes can be followed in South Russia and great part of Asia.

Possibly the first painter has tried to reproduce the Oriental rivets, known from helmets on Sassanian coins, on some of his helmets, though here they occur particularly on the sou'wester types. The segmented helmet is represented several times in the ms., but with a few exceptions only by the first painter. Segmented helmets with cheek-pieces are rarely seen in the ms. The second painter (or rather one of his pupils or assistants) demonstrates such a type in the illuminations of the siege of Taranto, fol. 99 v. where Byzantine warriors have a rather pointed helmet with cheek-pieces protecting the ears *(Figs. 36 and 12, 11)*, not unlike the wallpaintings from the early catacomb-tombs at Kertsch *(Figs. 12, 2-4)*. This helmet too finds parallels in the Occident, where such a cornershaped helmet is to be seen in some of the mss of Beatus de Liebano from 11th century, e. g. the ms. in Pierpont Morgan library

[81] KARL HEINRICH DITTMANN: *Ein eiserner Spangenhelm aus Kairo,* fig. 15.
[82] A. N. KIRPICHNIKOW: *Die russischen Helme des 10.-13. Jahrh.;* E. LENZ: *In Russland gefundene frühmittelalterliche Helme* (Z. H. W. K., 1924); *The Bayeux-tapestry a comprehensive survey,* London 1957, p. 58 ff.

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in New York, or on the Bayeux-tapestry.[83] On the other hand they are not quite unlike the headdress worn by Geoffrey Plantagenet on his sepulchral bronze and enamel slab in Mans, about 1175. Moreover such pointed helmets with cheek-pieces occur in the Psalter Aureus of St. Gall from 10th century.[84]

Already at an early time the segmented nomadic helmet takes its way to the Occident, at the same time as it finds its way even to the East. Among the earliest known Occidental representations are the Gallo-Sarmatian helmets from the Trajanus column, some of them with a scale curtain in the nape-neck *(Fig. 12, 1)*. They have ear-protection and a high apex sometimes with a little tube. The wall-paintings from some of the chamber tombs of Kertsch from about 1rst and 2nd centuries A. D. *(Fig. 12, 4)* render types, the nearest parallels to which are met with in graffiti in Dura-Europos. Even here we find ear-protection. Some of the helmets look more like lamellar helmets though most of them probably are of the segmented type. On the triumphal arch of Galienus in Saloniki, remembering the wars of Galienus in 293 A. D. against the Persians, a similar type is worn by the Sarmatian warriors. A Sassanian silver bowl in the Hermitage Mus. in Leningrad from 8th century represents a horseman wearing lamellar armour, segmented helmet and lamellar curtains in the neck, while his arms are protected by chain-mail *(Fig. 12, 5)*. Though rather rough in its lines this horseman comes close to the horsemen of the first Scylitzes-painter, just as he finds a parallel in the Nagyszentmiklas-vase.[85]

Probably from the 8th century are the wall frescoes from the Shorchuq-caves in Turkestan where the same type is represented.[86] The type represented by one of the helmets found in Kertsch is the nomadic helmet translated into metal. In Persia this helmet becomes the basic form of the particular Persian type, which was in use — more or less changed as to details — until the 19th century. Its principal characteristics are the skull-cap of iron, the diamond sectioned top on the little circular plate of apex and the chain-mail curtains. In Caucasus, among the Kirkassians, the Tatars of Crimea and in various other places in the neighbourhood some types of the skull-cap of the 19th century, all iron, still have preserved reminiscences of the ancient seg-

[83] J. Domínguez Bordona: *La miniatura española,* I pl. 68; *The Bayeux-tapestry,* p. 58 ff.
[84] J. Pijoán: *O. c.,* vol. VIII, p. 322, fig. 435; *Historia del Arte Labor,* vol. VI, p. 366.
[85] W. Arendt: *Der Nomadenhelm...,* p. 29, fig. 5.
[86] Albert von Le Coq: *Bilderatlas zur Kunst- und Kulturgeschichte Mittel-Asiens* (with a chapter on armour).

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mented helmet. In Moslem India it is met with in miniatures from 15th and 16th centuries in a shape, which is almost identical with some of the representations in the Scylitzes ms. The current Turkish helmet with its arched eyebrows and its turban-like skull probably has a different development, its basic shape very likely being the linen turban and not the felt-cap, transferred into iron. Still early Turkish helmets are of a plain segmented type with arched eyebrows and short nasal as seen from the little figures of Turkish warriors found in Russian steppes and in Central Asia.

One of the segmented helmets from Egypt shows such eyebrows just as the Longobardian helmets and the Scandinavian specimens, though these last types may be constructed more or less on the basis of Gallo-Roman types influenced from Asia. In Scylitzes we do not find such eyebrows. However, in the Iranian art they are to be found, both on segmented helmets and on skull-caps, e. g. in the post-Sassanian silver plates now in the Hermitage mus. of Leningrad. Here we even find the nasal or the forerunner for the movable nasal, characteristic to later Oriental helmets.[87] However the types with cheek-pieces and nasal are to be found in Byzantine art already in the 6th and 7th centuries as seen e. g. on the famous Archer's Brocade, in the cathedral of Cologne.[88] It is a type of headdress particularly in favour among the mounted archers, and originating in the horseman's equipment.

In fol. 54 v., where the imperial army is defeating the Arabs, as well as in some other illuminations by the first main-painter two cavalry groups are fighting *(Fig. 29)*. The warriors are dressed in scale armour and their helmets are of a rather characteristic type. Most interest probably must be attached to the right group, the Arab cavalry. It is dressed in scale-armour and carries as its weapons long cavalry lances and little round shields, rondaches. The helmets consist of high black cones with a tube from which little flattering bands or feathers are flowing. Belove comes a part which may be of leather or metal, placed in several horizontal segments. Neck and shoulders are protected by lamellar curtains. The whole type has a rather Asiatic appearance. The forerunners of these warriors are to be found in the before mentioned wall-graffito in Dura-Europos *(Fig. 6)*. It is exactly the same type of helmet, rendered in a more primitive manner, consisting of exactly the same elements: conical top, tube with flattering band, lamels

[87] A. POPE: *O. c.*, vol. III, p. 2563 ff. It is to be found on Russian helmets from 8th-9th century. See e. g., W. ARENDT: *Ein alttürkischer Waffenfund aus Kertsch,* p. 51, fig. 2; IDEM: *Der Nomadenhelm...,* p. 30, fig. 7-8; KIRPICHNIKOW: *O. c.*, p. 59 ff.

[88] *Historia del Arte Labor,* vol. VI, p. 292.

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for protection of face, neck, shoulders, etc. One can hardly find a better parallel to the ms. of Scylitzes. Here we have to do with a special Asiatic type of lamellar helmet, a type not without counterparts from archaeological discoveries. One of the earliest parallels is the «Spannfeder» helmet from the tomb in Kertsch, now in Moscow.[89] This piece was found together with another segmented helmet, two lamellar armours and various parts of weapons. The tomb may be dated to the 5th century on account of a coin with the Byzantine emperor Leo (457-473). Both helmets from this tomb were of the segmented type, but the last one of lamellar construction had a metal top-bowl, upon which was a tube for the bands or feathers. According to the Russian archaeologist Wsewolod Arendt, who published the find, they probably are of Avarian origin,this people invading Crimea in the 5th century from Central Asia. The lamellar helmet is not unlike the Tibetan laced lamellar helmets with nape-neck and curtains. When reconstructed both of them show much similarity with some of the helmets in the ms. for instance those on the fols. 54 v., 86 r. and various others *(Figs. 29 and 35)*. The type is found in some of the Persian mss. from the beginning of the 14th century for instance the illuminations of a Shah Namah manuscript now in Art Institute in Detroit, U. S. A.[90]

Very likely the fragments of the helmet from Gelendjik from about the 8th century, now in Hist. Mus. in Moscow, represents the same type. This helmet probably has been furnished with the same kind of tube for flattering bands as the Scylitzes-helmets and that of the clibanarius from Dura-Europos *(Fig. 12, 6-7)*. Again we must refer to the bowl-shaped bacinets with flowing bands on the top and with curtains of scale for neck and shoulders, on the rock relief in Firuzabad with Ardeshir I, from 3rd century A. D. *(Fig. 12, 8)*.[91] About one thousand years later with the Mongol influence in Persian art in the 13th and 14th centuries we meet this type, only very little changed, for instance in the manuscript of the World History made in Tabriz by orders from Rashid ed-Din between 1306 and 1314, now in the University Library of Edinburgh and in Royal Asiatic Society in London, as well as in later time Persian illustrations of the Shah Namah *(Fig. 12, 9)*.[92]

[89] W. ARENDT: *Ein alttürkischer Waffenfund aus Kertsch,* p. 50, fig. 1; THORDEMAN: *Wisby,* I, p. 281, fig. 283.

[90] J. PIJOÁN: *O. c.,* vol. XII, p. 352, fig. 488, and p. 353, fig. 490, 491. Figure 489 is from coll. Moniff, New York.

[91] W. ARENDT: *Der Nomadenhelm...,* p. 30, fig. 10; R. GHIRSHMAN: *O. c.,* pp. 127-128, fig. 165.

[92] J. PIJOÁN: *O. c.,* vol. XII, p. 348, fig. 482, 483, 484; E. KÜHNEL: *O. c.,* pl. 37.

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The battle group in the Scylitzes manuscript has a rather Eastern feature though still reminding of the groups of amazones from antique Greek art. At the same time it has much similarity with Mongol battle scenes from a little later time. The Scylitzes painter has emphasized the character of the Persian clibanarius at the same time as he has emphasized the ancient Syrian influence from his prototypes. The type of clibanarius helmet here represented, was not going to be introduced in the Occident, though it may occur now and then in paintings influenced by Byzantine or Oriental art. It is noteworthy that the guards surrounding the Lombard king Agilulf on the golden eyebrow-piece of a helmet from Val de Nievole from about 590-615, now in Bargello-Mus. in Florence, wear similar helmets with a flattering band in the top.[93] The corner-shaped Norman helmets from the Bayeux-tapestry and from contemporary Occidental illuminations differ widely from this Oriental shape, and in no Western pictorial representations occur the flowing bands or the little feather. The Mongol nomadic horsemen in the 13th century wore helmets of the clibanarius type, with the upper part of iron and the lower part of leather or of lamellar construction. It appears from certain 13th century regulations dealing with their equipment. Some of the other types of helmets in the manuscript possibly intend to represent clibanarius helmets. Segmented helmets with curtains such as the specimen from the golden Nagyszentmiklas vase probably got a continuation in the flat slightly bowl-shaped Caucasian helmets.

Sometimes the first main-painter has used a *kind of bacinet with a thick brim and a high crown* surrounded by ornamental rings and at the back furnished with lamellar curtain. The aspect is almost like a later time Spanish capacete or the English pike-man's pot, but it may be some form for a simplified clibanarius helmet (see Fol. 19 r., here *Figure 13, 11).* Its forerunners may be seen in the Hellenistic Athena Polias Nicephoros temple from Pergamon.

The *sou'wester shaped helmet* almost similar to the 15th century Italian sallet, with its knob on the apex, rivets along the brim and its lamellar curtains is well known in Byzantine art objects from 9th-12th centuries though it occurs even earlier. It is seen in the various Octateuchs, for instance in the representations of the transition of the Red Sea, where the Egyptian cavalry is equipped with helmets of exactly the same type, and in various other representations of the same manuscript.[94]

[93] B. THORDEMAN: *Wisby,* I, p. 270, fig. 261; ALFÖLDI: *O. c.,* p. 119, fig. 13.
[94] J. PIJOÁN: *O. c.,* vol. VII, p. 400, fig. 568, and p. 401, fig. 570; B. THORDEMAN: *Wisby,* I, p. 291, fig. 293; DALTON: *O. c.,* p. 464 ff; TALBOT RICE: *O. c.,* pl. XX-XXI.

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Very close parallels are to be seen in the ivory casket with Joshua in Metr. Mus. New York. An archaeological helmet of this type doesn't seem to exist. Probably its prototypes must be looked for in some of the types handed down from the Romans. In some of the early Byzantine manuscripts we find a similar type, only more stylized and decorative in its performance. Very likely a helmet of this early type is represented in the frescoes from the synagogue in Dura-Europos with the representations of Joshua and the Jewish soldiers, and again in the mosaics of Santa Maria Maggiore in Rome.[95] Particularly in the Joshua Rotulus in the Vatican Library do we meet this type, just as it occurs in the Utrechtpsalter.[96] Its relationship to some of the Roman helmets with Attic or Ionian reminiscences is evident. This type is taken over by the Ottonian and Carolingian minor arts. Probably a similar helmet is represented in the Evangeliar of Lothar, where the protospatharians of the emperor wear a decorative helmet, apparently without counterpart in actual types, but with antecedents in late Roman and Byzantine art representations.[97] It is to be found in Codex Aureus in St. Gall. In Saint Marcus in Venice the type occurs from the end of the 11th century in a scene with the Roman guards at Santo Sepulchre.[98] In some of the illuminations the helmet at its apex has a little circular plate with a prismatic top, almost like the Prussian «pickelhaube» from 19th century. This prismatic top is taken over in later time by the Persian and Indian helmets.

Besides these helmets we find a special shape, probably not a metal helmet, but rather a *leather protection,* much in the shape of a *Phrygian* cap or a *Satrap* cap. In Scylitzes it appears like a headdress composed of a metal ring or band round the forehead. A leather cap with a series of folds has been fastened to this ring, and the top is crowned by a little knob. Neck and back are protected by lamellar curtains or with stuff- or leather curtains arranged in pleats. Above the forehead is a pyramidal plate, possibly an iron plate of a kind used by officers and soldiers of the front ranks as an additional protection. This headgear is not unlike the headgear worn by Dareios in the Alexander mosaic, or the caps from Hellenistic monuments such as the Alexander-sarcophagus. Almost the same type is seen in the mosaics of Ravenna (the Epipha-

[95] André Grabar and Carl Nordenfalk: *O. c.,* p. 39; J. Pijoán: *O. c.,* vol. VII, p. 35, fig. 38; *ibidem,* pl. VIII.

[96] J. Pijoán: *O. c.,* vol. VII, pp. 164-165, figs. 254-256; Dalton: *O. c.,* p. 447, fig. 265; Grabar and Nordenfalk: *O. c.,* p. 143; K. Weitzmann: *The Joshua Roll,* Princeton 1948.

[97] Grabar and Nordenfalk: *O. c.,* p. 150 (Paris Nat. Bibl. ms. lat. 266).

[98] *Historia del Arte Labor,* vol. VI, p. 366.

ny).[99] This type only occurs in the illuminations of the first painter, just as most of the other types of helmets here mentioned. However this type must not be confounded with the turbans of the first main-painter. It cannot be out of question that the headgear represents a leather cap or a leather cover of the types mentioned by Maurikios and Leo. In fol. 43 r. the emperor Theophilos no doubt has a similar cover of some soft material on his headgear. On the other hand these types have a certain resemblance with some of the fragments from about 9th century found at Tschernaja Mogyla or Gulbische Tschernigow. These represent a more modern type of helmets than the usual «Spangenhelm».

Still another type of head protection is to be found in the manuscript by the first main-painter. It is a type reminding of the antique amazone-caps or Scythian caps from Greek vases. For the sake of convenience they have here been called *amazone-caps*. No doubt it is no metal helmet, but a leather hood, covering the top of the head. Round the forehead and covering the ears and the neck is a broad belt apparently of leather, but reinforced with transverse lamellar strips. Neck and shoulders are protected by lamellar curtains as on the other types of helmets. The cap is used together with scale armour and worn by lance-armed cavalry as well as by mounted archers (see Fols. 11 v. and 12 r., *Fig. 13, 17-20*). Probably it is the question of an archer's cap like its forerunners, the Scythian and Phrygian archer's caps. This type is to be found in the same category of monuments as all the other types used by the first painter. None of these types are to be seen in the illuminations of the two other painters and their collaborators.

Turning to *the second painter* and his assistants they never use the same types of helmets as the first and third painters. All their Arabs wear turbans covering head, neck, chin an cheeks *(Fig. 13, 6-7)*. The Romans and their non-Islamic enemies are equipped with simple head-gears, only skull-caps or hoods. Sometimes we find these last types of helmets richly ornamented with scroll-work, lilies, acanthus, dots etc. of the same type as seen now and then in their shields and particularly in the architecture *(Fig. 12, 15-16)*. An exquisite specimen of helmet is seen in fol. 113 v. as well as in fols. 212 v. and 217 v. *(Fig. 40)*. The head-protections in regard to style and ornaments remind of woven silk tapestry. Particularly princes and high rank officers are wearing such elegant helmets. These ornamented head-gears may represent a type similar to the later time Persian, Indian and Turkish helmets with their rich damascening in gold, silver or copper. One of the assistants or pupils of this second painter only shows a rather plain iron-cap with-

[99] Talbot Rice: *O. c.*, no. 59, p. 300.

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out brim, ear protection or curtains. Even the apex is left bare, but he now and then has decorated the helmet with red dots as seen in fols. 107, 108, 109, 119, 121, 122, 126, 129, 213 and various other illuminations. Only a few times we find the corner shaped helmet with ear-protection, not unlike Occidental helmets of the time, fols. 97 v. and 99 v. *(Figure 36)*. Decorated or not the helmets of the second painter have their counterparts in the actual helmets of the epoch of the illuminations. They represent nothing unusual, but are more or less schematic renderings of a plain bacinet or skull-cap. Whether segmented or not the painter at least has omitted such details as ribs and headbands. The segmented helmets found in various parts of Europe were adorned with golden figures and ornaments, stamped or engraved, on the segments and particularly on the ribs and headband. Richly decorated helmets have been excavated in many places, such as e. g. the helmet from Sutton-Hoo in England, the Swedish Vendel helmets, or the Sassanian helmets from Niniveh. Later time Oriental helmets as a rule are richly decorated with damascened work in gold, engraved, chiseled, or with finely made incrustations, inscriptions and precious stones just as were the parade helmets in later time Europe. There is tradition for richly decorated helmets since time of old. In the manuscript as in actual life it is only the princes and high officers who wear such ornamented helmets. The cavalrymen or the infantrymen only were furnished with plain bacinets, now and then decorated with dots.

The *third main-painter* uses a *plain bacinet* with and without decoration or an *iron-hat* with a short brim *(Fig. 12, 17-18)*. The first type is seen in the Occident in the same epoch. In some of his folios a high, pointed shape with a little brim is represented, e. g. in fols. 162 r.-v., 164 r., 170 v., 171 r., 176, 178 r. and various other folios *(Figs. 44, 46 and 47)*. This type has counterparts in archaeology. A fine specimen from 12th-13th centuries is the helmet in the State Armoury of Moscow *(Fig. 11)*. Besides the bacinet and the iron-hats a kind of *Scythian cap* is represented. Possibly the material is leather. On the top of the head there are one or two pleats *(Fig. 12, 19-20)*. However in some of the illuminations this third painter who is highly in favour of finely engraved ornaments in his golden surfaces even furnish his figures with precious helmets, plain in regard to shape, but richly decorated with fine scroll-work engraved in the golden surface, or fine little dots. The decoration is so subtle that it is hardly to be seen without a magnifying glass. No doubt he intends to represent either segmented helmets or that kind of bacinet, which became the forerunner of the later on so characteristic Persian and Middle Eastern helmets. None of his helmets have curtains. Coifs of chain-mail don't occur.

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Very likely some of his head-gears are simple caps, made of leather or felt, particularly for his infantry and artillery.

The plain bacinet or skull-cap of the Occident with its chain-mail fixed to the brim is not seen in the manuscript. However a bacinet with scale-curtains almost in the same manner as chain-mail is found several times, e. g. in fol. 195 v. *(Fig. 48)* and in fol. 202 v. Coifs of chain-mail covered by bacinet is hardly to be found in the East. We do not find head-protections similar to the helmets used for instance in the Bayeux-tapestry or in other kinds of Western monuments. In Persia, India, Caucasus etc. an iron-helmet with chain-mail curtains fixed to the brim became the current helmet in later time, and it is met with at least before 1400. The Romans used helmets with a particular mask to cover the face. Such helmets have been found in the Roman provinces, amongst others in Syria. The famous Damascus helmet from 1rst century A. D. is an outstanding specimen. It was found in a royal tomb near Homs (Emesa) and is now in the Nat. Mus. of Damascus. Ammianus, cap. XXV, I, 12, describes the Persian helmets with masks as a protection for the face. This type is not encountered in Scylitzes or in other Byzantine illuminations, though it may have been known and probably in use. The helmets from e. g. Sutton Hoo or the Swedish Vendel helmets have such protections for the faces.[100] In various Occidental manuscript illuminations such helmets with face-protection are seen now and then, for instance in some of the illuminations of the Biblia de Avila from 12th-13th century, in Madrid.[101]

A main difference between the early Occidental helmets and the Byzantine specimens of the manuscript of Scylitzes and his painters is the use of curtains. The Byzantines and the peoples of the Near East wear curtains of lamels, scales or chain-mail fixed to the helmet in a special manner. The Western peoples wear coifs of chain-mail. Sometimes these coifs have been drawn over the steel skull-cap or bacinet, but most frequently it is worn directly on the head, the bacinet placed upon the coif as seen e. g. in the Bayeux-tapestry. In the 14th century we find the chain-mail «sewn» to the bacinet brim with leather thongs. In the 13th and 14th century the coifs and bacinets were worn under the heavy helm. But this Occidental helm is not found in the Orient. It was too heavy and unconvenient for a mobile cavalry. Conditions of cavalry equipment and battles differed in East and West.

[100] R. L. S. BRUCE-MITFORD: *The Sutton-Hoo ship burial* (Proceedings on the Suffolk Institute of Archaeol., XXV, 1949); SUNE LINDQVIST: *Vendel time finds from Valsgärde,* p. 21 ff; GRETA ARWIDSSON: *A new Scandinavian form of helmet from Vendel-time.*

[101] DOMÍNGUEZ BORDONA: *O. c.,* I, pl. 49.

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THE SHIELDS

THREE types of shields are represented in the manuscript. Most frequent is the almost *kite-shaped shield,* particularly in use among cavalrymen and to be found in illuminations by all the painters. The second type of shield is the *little round shield,* the rondache, especially in use among the heavy cavalry in combination with the long cavalry lance as seen in fols. 54 v., 73 v. *(Figs. 29 and 34)* and in some other representations of heavy cavalry groups in battle. Now and then such a rondache can be found in the hands of an infantryman or in single combat with sword and shield, such as e. g. in fols. 25 and 26, or in fol. 154 v., the scene from the Hippodrome *(Fig. 43).* The rondache is characteristic to the first main-painter. The second painter and his assistants show a *third type of shield,* round but of larger size and particularly in use among the Arabs, though even these warriors now and then are seen carrying kite-shaped shield *(Fig. 14).*

The *kite-shaped shield* is rather oblong, sometimes triangular, sometimes with more or less curved sides. The upper line is almost always curved, while the sides converge into a more or less rounded point. It is a horseman's shield, and when in saddle the horseman carries it at his left side. Warriors assaulting a fortress or a town wall sometimes are furnished with this shield too. The imperial guard often is represented with this type of shield, which apparently now has replaced the ancient oval shield of the type worn by the princes and guards in earlier Byzantine art. The oval shield probably had been introduced during or after the reign of Constantine the Great. Each of the painters has a shape of his own: elegant, richly adorned by the first painter, plain as to shape and decoration by the second painter and his assistants, and vaulted with a characteristic ornamentation of transversals by the third painter. This type of shield particularly belongs to the high classes, to the nobles and officers. In other kinds of Byzantine art e. g. the warrior-saints very often are furnished with this type of shield instead of the ancient oval or even vaulted roundshield. The origin of this type is uncertain. It is difficult to point out its homeland. During the 11th to 13th centuries is was spread over great part of Europe. To Constantinople it may have come from the Occident. A Germanic origin is possible (as proposed by various investigators), though it appears more frequently and moreover at an earlier period in Mediter-

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ranean monuments of art. We find the very best parallels and earliest representations in Spain, Italy and France as well as in the Ottonian art in Germany. In the Northern countries it came to be used later on. Particularly England and the Scandinavian countries have yielded excellent representations of the type. But probably it came to these countries from the South, very likely via France.

It is the main type on the Bayeux-tapestry from the end of the 11th century, here almost always in the hands of the Norman knights, who are represented in the continental equipment in contrast to the old-fashioned Anglo-Saxons.[102] The continental knights — cavalrymen — carry their triangular shields on their left side when fighting with their long cavalry lance from horseback. From its occurrence on the tapestry this type has often been called the *Norman shield,* a name which probably is incorrect. In some of the representations of the tapestry the inner side is seen with its thongs and handles for grasping it. Its front side sometimes carries ornaments and figures of various types. The type is larger than the types in Scylitzes, and the artist of the tapestry probably took it over from Southern prototypes. Close to the shields from the Bayeux tapestry come the types used by horsemen in the Spanish Bible from the *monastery of Roda* near Oviedo, from 11th century, now in Bibl. Nat. in Paris.[103] These types are rather similar to the types in Scylitzes. Excellent parallels to the manuscript are to be found in various other Spanish monuments such as e. g. the ivory carvings of the little reliquary casket of *Sain Millán de la Cogolla,* dated 1067, now in Mus. Arch. in Madrid.[104] From the 10th-12th centuries are the representations in the manuscripts of San Beato de Liébano's Commentaries to the Apocalypse in Bibl. Nac. and Archivo Histórico Nacional in Madrid as well as in New York.[105] Various representations are to be seen on the sculptured capitals from the palace of the Duke of Granada in Estella in Navarra, from 11th-12th centuries.[106] One of them, from 11th century, is very similar to the representations in Scylitzes. On one of these capitals the ancient type of shield with rounded top occurs on one side, while on the other side the «modern» type with flat top is represented. In all instances it is used in cavalry combats. The capital with the two types must belong to the transitional period, in

[102] *The Bayeux-tapestry,* o. c., figs. 56-58, 60-65, and numerous others. Text p. 63 ff.
[103] See note 102, p. 49, fig. 26.
[104] J. Pijoán: *O. c.,* vol. IX, p. 140 ff, fig. 207 ff.
[105] Domínguez Bordona: *O. c.,* I, pl. 68 and others.
[106] James G. Mann: *Notes on the armour worn in Spain from 10th to 15th century,* pl. LXXVII, figs. 1-2.

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which the modern type is going to replace the old one. The Mozarab manuscript of Los Testamentos from about 1126-1129 now in the treasury of the cathedral of Oviedo, lets us see the same type, but in a rather long shape.[107] Certainly many other examples in early Spanish art could be mentioned. In Italy it is known from the Northern part of the country and in regions dominated by Byzantine art. From the end of the 11th century and the beginning of the 12th century are some representations cut in stone, e. g. from some reliefs on Porta della Pescheria on the cathedral of Modena, by Nicholaus and Wiligelmus about 1099-1106, and representing the legend of «Artus de Britania», and a relief on the portal of the church San Zeno Maggiore at Verona, by the same artists, from about 1139.[108] An Italo-Byzantine manuscript of a psalter, now in the municipal library of Mantova, from the same century shows Goliath with such a shield. On the manuscript of Petrus de Ebulo: De rebus siculis carmen, from the end of 12th century, now in Bern, the type represented corresponds well with the types used in Scylitzes *(Fig. 20)*, just as various other details from this manuscript are corresponding in style and shape with objects in Scylitzes.[109] On the Limòges-enamels from the same century we meet this shield in similar shape and style.

The sepulchral monument of bronze and enamel of Geoffrey Plantagenet in the cathedral of Mans, about 1175 has the same type of shield. Still in the 12th century is a representation of Saint Maurice of the Theban Legion on an embossed silver plate from a reliquary from the Abbaye of St. Maurice in Valois in Switzerland. This round topped shield corresponds fairly well to the shields of Scylitzes. Even in Ottonian art we find excellent parallels, such as in the Codex Aureus Epternacensis, with the parable of the Vineyard (Matt. XXI, 33) from Echternach, about 1035-1040, fol. 78, now in German. Mus. Nuremberg.[110] Various other examples in Ottonian art from the same epoch could be mentioned.

In Byzantine monuments we find it particularly in the 11th and 12th centuries, sometimes carried by warriors-saints, such as San Theodor in Brit. Mus. and San George in Vatopedi, or San George and San Demetrius in Leningrad on the reliefs of gilt bronze and steatite.[111] Even in the Near East it is to be seen, both in the heraldry for coats of

[107] DOMÍNGUEZ BORDONA: *O. c.*, pl. 69 a. o.
[108] *The Bayeux-tapestry*, o. c., p. 49, figs. 27 and 28.
[109] W. ERBEN: *Die Bilderhandschrift des Petrus von Ebulo*, pp. 85, 117 and 208.
[110] *The Bayeux-tapestry*, p. 64, fig. 31; ANDRÉ GRABAR and CARL NORDENFALK: *O. c.*, p. 212.
[111] DALTON: *O. c.*, p. 162, fig. 93; SCHLUMBERGER: *O. c.*, II, p. 273; PIJOÁN: *O. c.*, vol. VII, p. 448, fig. 635.

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arms and for real use. As an instrument of war it got a long lifetime here, and the Saracenic types always are represented with the rounded top, just as the Byzantine types. As a coat of arms it is to be found in 13th and early part of 14th century. Northern exemples are known from the end of 12th and from 13th centuries, e. g. on the little figures carved in bone for game from the Lewis Isles, about 1200, from the Norwegian Hyllestad Portal, the Baldishol tapestry, on which the old type with rounded top is represented.[112] The tapestry probably belongs to the time about 1100 and the shield is of the old type. Most of the Northern representations however are later than the South European specimens, and the type very likely has come to the North at a rather late time.

After the middle of the 13th century the flat-topped type disappears and gives way for the short, broad and triangular Occidental shield which became characteristic to greater part of the 13th and 14th centuries and was taken over by European heraldry. The material of the shields probably was wood, covered with leather and parchment for the painting. The manner in which e. g. the arrows in the pictures stick in the surfaces seem to indicate such a material. As to chronology the type used by the Scylitzes-painters seems to indicate a dating between 11th and 12th centuries and probably not later than the end of 12th century or about 1200. The *little round-shield* or rondache is only found in the illuminations of the first painter. Just as with the kite-shaped shield the material of the shield may have been wood, covered with leather, parchment and plaster for decoration. It may for instance have been covered with rhinoceros leather like the little round-shields in use in North Africa, Persia and even in India. Shields of iron certainly have been in use too, as we learn from Strategikon and from Leo. In some of the illuminations we see a long leather thong for suspending the shield round the neck when not in use, as in fols. 54 v., 73 v. and 233 r. *(Figs. 29 and 34).* But else it must have been handled in the same manner as the usual Oriental round-shields with their handles on the inner-side. The little round-shield is particularly in use among the nobles; it is a cavalry shield worn in combination with the long cavalry lance. Most of the illuminations show the shield in the hands of horsemen, as e. g. in fols. 12 r., 16 v., 54 v., 229 r. and various others. In a few instances it is worn by footmen in single combats between swordmen, not unlike the representations of fighting Vikings from the Blaker-chair, in Oldsaksml., Oslo, or in the hands of officers intruding the

[112] *The Bayeux-tapestry,* o. c., p. 49, fig. 24.

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bedroom of an emperor in order to assassinate him, as in fols. 25 r.-v., 39 v. *(Fig. 27)* and 40 v.[113]

The type of the Scylitzes rondache is purely Oriental and it can be followed since Antiquity. Some of the Palmyrenian warrior steles represent this type of shield combined with the cavalry lance,[114] for instance the bas-relief from Palmyra from about 191 A. D., now in the French Institute of Archaeology in Beyrouth. Probably the type comes from Inner Asia to the Parthians who used it together with the long lance. The Sassanians took it over from the Parthians together with the horse-armour, and from them it was adopted in the Byzantine cavalry, probably in the days of Justinianus. In some of the Sassanian silver plates it is represented, e. g. in the plate showing two warriors in armour, now in the Hermitage Mus. in Leningrad. With the Moslem warriors it passed through North Africa to the Iberian peninsula, where it is to be found in various art objects among which the little Arab ivory casket from the cathedral of Pamplona is very characteristic.[115] On one of its side panels a cavalry combat is fighted with swords and small round-shields. Another of the panels shows lance, sword and rondache. It is unusual to find this rondache in Byzantine illuminations or in other kinds of Byzantine art objects, but it does occur now and then. In the Octateuch in the Evangelic School in Smyrna (12th century) it is represented in battle scenes, here combined with lances, and in some of the popular manuscripts from almost the same time we find it in use. Probably the closest parallels are seen in the Persian miniatures in Rashid ed-Din's World History, from Tabriz, ca. 1306-14. The Persian and Indian miniatures let us follow the type through centuries. In his chapter VI Leo recommends a very small round target for the light infantry.

The third type of shield is a round shield of a larger size and it is particularly met with in the illuminations of the second painter and his group. Though European warriors sometimes are furnished with this type, it is particularly in favour among the Arabs. From the representa-

[113] Interesting is to note that the Romanic wooden shields with decorative iron mountings, known from archaeological finds in Denmark and Norway and from Norse illustrations from 12th-13th century have much in common with the little rondaches in Scylitzes and in other contemporary Byzantine manuscripts. It is tempting to imagine the types from Scandinavian countries brought home by Vikings or by Norse tradesmen on their return from their service in the imperial army or from trading centres of the empire. In the North they got a particular performance.

[114] R. GHIRSHMAN: *O. c.,* p. 75, figs. 86 and 87 A; *Berytus,* III, 1936, pl. XXX. As to the Persian rondaches see: A. POPE: *O. c.,* vol. IV, pl. 233 B, silver plate in Leningrad.

[115] RAMÓN MENÉNDEZ PIDAL: *Historia de España,* vol. V, p. 736, fig. 573, and p. 739, fig. 576.

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tions it looks like a wooden shield covered with leather upon which the ornaments have been painted (Fols. 135 v., 136 v. and various others). The material even may be iron, richly engraved with various kinds of designs and ornaments. Such iron-shields were used in Persia and the Middle Eastern regions as far as to India. The wooden shields were composed of several pieces of some special kind of wood, sewn together with cotton strings or leather thongs. Shields of that kind apparently have not survived. But representations of the type occur on various monuments, amongst others from Cairo, dating from the end of the 11th century (about 1087), as well as from the end of the 12th century. They can be followed in Mameluk art, on Syrian bronze bowls and the like.[116] The type was in use among cavalry and infantry. Most frequent is it among footmen assaulting fortresses and town-walls. The front face sometimes looks slightly vaulted, but details are few, and one cannot quite depend upon them. As a rule the shape is circular. No doubt it is the same type we meet in ancient Spanish manuscripts such as e. g. the Biblia Segunda from about 1126, in the Real Colegiata of San Isidro in Leon. In the manuscript of Scylitzes there doesn't seem to be any indication of that special leather shield, which later on was going to be the characteristic Arab shield, the adarge. This shield originally was almost heartshaped, later on it consisted of two twin-ovals fitted together about a central axis.[117] The type is to be found already at the end of the 12th century. In the 13th century we find it in use in Spain, where it is carried by the Moors, e. g. in Las Cantigas del Rey Alfonso el Sabio in El Escorial, and in Libro de Ajedrez in the same library. In Gran Conquista de Ultramar, from 14th century, we find it among the Saracens, just as it occurs in various manuscripts of the time.[118] From Spain it took its way to France and even to England, where it became highly favoured in the following centuries. As the adargas do not occur in the manuscript of Scylitzes this may indicate that the type yet was not in use in the days of the painters, and that it has been unknown to them. Excellent specimens from Spain are seen on one of the ceilings of Alhambra in Granada.

The current shield type inherited from Late Roman time and represented in numerous Byzantine monuments, illuminations, bronze-and silver works as well as in ivory carvings, with its large round or slightly oval shapes and vaulted front sides is not seen in the manuscript of Scylitzes. The shields carried by the imperial guard surrounding the

[116] L. A. MAYER: *Saracenic arms and armour,* p. 12, with references.
[117] ENRIQUE DE LEGUINA: *Glosario de voces de armería,* pp. 30 ff, 351 ff; GUERRERO LOVILLO: *O. c.,* p. 162, lám. 110.
[118] DOMÍNGUEZ BORDONA: *O. c.,* II, pl. 94.

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emperor Theodosius on the Extremadura-clipeus in Madrid *(Fig. 1)*, are in use in a series of art objects at a far later time too. In Scylitzes however the imperial guard is equipped with the kite-shaped shield.

A change must have taken place already before the time of the prototypes of the painters. Greater part of the Mozarab manuscripts from 10th and 11th centuries still show the ancient large round shields with vaulted surface, just as the Catalan wall paintings or the contemporaneous manuscripts from France, Italy and Germany prefer this type. The Joshua Rotulus in the Vatican Library, the Utrecht psalter and many other illuminations of similar type have the ancient round shield of the type represented upon the Extremadura-clipeus.

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THE BYZANTINE SWORD

ACCORDING to Leo the warriors must wear such important accessories to their equipment as the pointed swords. In chapter XII he says that the cavalry man has to be furnished with a large, double edged sword, besides a smaller one, a gladius or a semispatha. Further certain groups must have the single edged cutting sword, the machaira. In the manuscript all the nations mentioned are represented with swords, the Romans as well as the foreign nations. Particularly the Arabs are furnished with large, heavy cutting swords with two edges. First and foremost the horsemen are equipped with double edged swords, but even the infantrymen wear swords now and then. We find the sword used in cavalry battles swung from horseback, when the two fighting groups have come close to each other, though the lance is used more frequently. The warrior draws his sword to make away with his antagonists when these have fallen off their horses thanks to a well-aimed thrust from the lance. The sword used in single combat on foot is seen for instance in fols. 39 v. (in connexion with the rondache), 40 v., 67 r., 150 r., 154 v., where little round-shields are used in a particular fencing, reminding of later time sword-and-buckler combats *(Figs. 27, 32 and 43)*. There are ancient traditions for this type of fencing in the Mediterranean and in the Orient, but it is noteworthy that we find almost the same type of fencing with little round shields and double edged swords in Northern art from 12th-13th century. The theme can be followed in art-representations over a great part of Europe during the early part of the Middle Ages. Such a sword-an-buckler play is represented in an English manuscript from 13th century in Royal Library, London (no. 149, 20, E IV, and D IV).

Swords of the current type are used in naval battles (Fols. 41 r., 130 r., 226 v.). This corresponds well with the remarks of Tactica about naval equipment *(Fig. 41)*. In the naval battle in fol. 130 r., between the imperial navy and the Russians we find long, heavy swords, and kite-shaped and round shields in the hands of the warriors. Precious swords were in use as ceremonial weapons — sometimes in the hands of an enthroned emperor, sometimes in the hands of the guard behind and beside the imperial throne. The scabbards often are richly ornamented with dots and stripes in various colours, obviously representing precious stones and ornamental borders in variegated enamel, just as

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on the sword handed from the angel to the emperor Henry II in his Sacramentar from Regensburg, about 1001, now in Staatl. Bibl. in Munich, cod. lat. 4456.[119] An outstanding parallel to these swords (Fols. 12 v., 42 v., 43 r.) do we find in the silvergilt sword from the cathedral treasury in Essen.[120] But the precious and richly decorated swords only occur in the representations of the first painter. The emperors of the second and third painters have replaced the ceremonial sword by the sceptre.

Executioner's swords are frequent, and they don't differ from the swords used in war.

Though the lance or the spear is the main weapon of the cavalry, the sword is represented numerous times in the manuscripts. As a rule we find it rendered as a solid *spatha,* used for cutting. When in scabbard, it is suspended in a long narrow belt from the right shoulder across the body at the left side in accordance with Roman practice. Besides the spatha type we find special types such as the Persian single edged straight *pallache* with *sabre grip.* A few times we find another single edged sword type, similar to the falchions known for instance from Durham in England (about 1300-1325), with a more or less curved blade. Even the curved blade with the characteristic *yelman* occurs. This is noteworthy. The type is known already in the 8th century in the regions of Kuban, but it is unknown in the Occident at so early a time. In the Occident we find the type with yelman in the shape of a fauchon or baudelaire about 1300 and later, e. g. in France and in Italy. The Germans of later Middle Ages used it rather often. Modern time called it *Malchus sword,* because it in the paintings from the Italian renaissance and in Germany is frequent in scenes of Saint Peter cutting off the ear of Malchus.

Most frequent is the *spatha-type.* The manuscript as a whole gives a good idea of the swords in Constantinople. As a rule the swords are strong and well-proportioned. Sometimes the act of cutting is rendered in the shape of a curved blade in order to express the force of the cut. But the accompanying scabbards give evidence that the blades in fact are straight. The types represented in the manuscript seem to be the current types of the Byzantine army and navy *(Fig. 16, 1-25).* The three main-painters differ in their manner of rendering a sword. As usual there are more variations in the swords by the first painter. The second painter has a type of his own, probably more Oriental in its character, particularly in the renderings of the quillons,

[119] *Historia del Arte Labor,* vol. VI, pl. X.
[120] H. SEITZ: *O. c.,* pl. IV; G. LAKING: *O. c.,* I, p. 23, fig. 28.

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and the third painter usually furnishes his warriors with long and slender swords; in regard to their blades they are almost like renaissance rapiers more than veritable war instruments, but as to grips they resemble East-Iranian types from the 4th-5th centuries A. D. As to the various types there doesn't seem to be much Roman traditions left. According to Strategikon the Byzantines got their swords from the Herules. Part of this may be true, but on the other hand there are quite a lot of elements from the Eastern world, from the Persians and from Central Asia. We find types almost similar to some of the specimens excavated from the gravefields of Central-and West Europe from the periods after the Great Migrations, such as the Alaman types. But typical Occidental types do not seem to exist in the manuscript. The particular Carolingian types with their lobated pommels, straight or slightly curved, short quillons as for instance the types represented in the Utrechtpsalter, or the types known from Norse Viking graves are evidently not found.[121] However such types no doubt were to be seen in the streets of Constantinople. The Arab authors and historians from these centuries tell about them and let us know how highly appreciated the «Frankish» and «Slimanish» swords were, because of their beautiful and well-made blades. The pattern-welded blades with inlaid inscriptions were robbed from the tombs of fallen Norse warriors.[122] An important trade trafic really existed between the Baltic and Northern countries on one hand and the kingdoms and principalities at the Black Sea and the Caucasus on the other hand. *Ibn Chordadba* from the second half of the 9th century relates in his work about the Varangian tradesmen bringing swords from the regions of the Rhine, for instance the famous Cologne swords, to Constantinople and even as far away as to Baghdad. As a matter of fact Occidental swords with the name of *Ingelri* (11th-12th century) inscribed in their blades have been excavated as far to the East as to river Volga. Another chronicler Ibn Fadlan tells in the year 921 or 922 to the caliph *Muktadir* that the Varangians had swords which were large and damascened. On the other hand it must not be forgotten that the Northern countries in this time were not able to forge sword-blades of a quality equal to the blades of the Carolingian forgeries and not at all equal to the Persian watered steel blades.[123]

[121] J. Pijoán: *O. c.,* vol. VIII, p. 305, figs. 406-407; A. Bruhn Hoffmeyer: *Middelalderens tvæggede Sværd,* II, pl. III, p. 7, no. 8.

[122] A. Rahman Zaky: *Islamic swords in the Middle Ages;* A. R. Ellis Davidson: *The sword in Anglo-Saxon England,* Oxford 1962, pp. 15 ff and 115 ff; A. Zeki Validi: *Die Schwerter der Germanen nach arabischen Berichten,* p. 19 a. o.

[123] Ellis Davidson: *O. c.,* p. 15 ff; Carlo Panseri: *Damascus steel in legend and in reality,* p. 5 ff, with references.

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The Norsemen themselves imported Frankish blades which were mounted by local Norse sword-cutlers (see note 121), just as they imported ready-made swords from Carolingian workshops. Persia, which above all was the foremost centre for manufacture of weapons in the Orient in regard to types, ornamentation, quality etc. (excellent steel from Ceylon and the Far East) differed widely from the types handed down from the Romans, introduced by the Barbarians or directly imported from the Western centres. Possibly Frankish and Baltic swords have been on view in Constantinople. But the provinces, particularly the Eastern ones probably were more characterized by the Oriental types. The Byzantine empire must have been an important meeting place for different types coming from the regions of Caucasus, Armenia, the Mongol steppes and from Persia and the Arab deserts. The Arabs who possessed centres for weapons in Khorassan, in Yemen and several other places, to a large extent adopted the shapes coming from Persia as well as the shapes coming from the steppes, transformed them into shapes fit for their particular use. Through them they were dispersed over all regions conquered by the Moslems. It is particularly the types hereditary from the Sarmatians, the Parthians and the Sassanians or brought by the warriors of Turkestan, we find in the hands of the warriors of the manuscript, and not least in the hands of warriors by the second painter. From an Occidental point of view some of his sword-types could seem to belong to the 14th century, particularly the last half of this century, because they have counterparts among such Spanish, Italian and French types, which were in use among the Christian knights from Cypros in the unsuccessful battles against the Moslems from Egypt in 1366-67. Such swords were taken as spoil from the Christian knights and brought by the victorious armies of the sultan to his arsenal in Alexandria, where they — furnished with Arab inscriptions — came to adorn the walls of the arsenal in order to commemorate the Moslem victory.[124] It would be tempting to date the illuminations made by the second painter by means of these swords. However this won't do, because the Occidental types with their particular shapes of quillons came to South Europe from the Arabs and not vice versa. The Spanish and Italian swords of the characteristic late 14th century type have come to the Mediterranean peninsulas from Persia, via North Africa during the 12th and 13th centuries, or brought by tradesmen and craftsmen coming from the Orient to Venice, Genoa and other Italian republics. Oriental sword-makers

[124] Et. Combe and A. F. C. de Cosson: *European swords with Arabic inscriptions;* A. Bruhn Hoffmeyer: *Middelalderens tveæggede Sværd,* II, pp. 24, 1, and 31, 88.

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and artisans settled in various Italian cities, where they established their workshops, just as for instance part of the Syrian workshops moved to Spain, where they settled and established centres for forging sword-and knife-blades.

Sword-material which with some amount of certainty can claim the name of Byzantine apparently doesn't exist. Possibly modern time archaeological excavations may reveal swords, or further investigations in Byzantine warfare may bring to light material hitherto unknown. No doubt it will prove to be difficult or impossible to establish a special Byzantine type, considering the almost international character of the Byzantine military organization with the various nationalities gathering around the imperial banners. Types from many corners of the empire were in use among the officers and soldiers. The investigations to a large extent must build upon representations from art objects. For that reason it is difficult to establish facts about the types of swords and the manufacture of the blades. As for the material of the blades one must examine the ancient Arab authors and scientists who were writing about the different types of iron, their homelands and their centers of manufacture. Part of this literature originates from 9th-10th centuries but refers to sources from earlier periods. As a rule we are forced to build the investigations upon the shape of the hilt, the pommel and the quillons. In some cases the blades however give important informations, particularly where we have to do with curved blades, single edged blades and blades with yelman. A series of problems must remain unsolved until more archaeological material possibly turns up. A further difficulty is offered by the many problems concerning ancient Persia and the ancient Arab swords. Most of the early Oriental material is depending upon representations in art objects. Only very few and uncertain pieces are existent and our knowledge about the swords from Central Asia still is limited.

Commencing the investigations with the hilt, we find a selection of shapes, possibly about seven in total *(Fig. 16)*. There may be even more. On the other hand some of the drawings may represent the same type though they differ in regard to details. Besides the true sword-hilt with its variations we have the Persian sabre hilt, which differs from the sword hilts. Further some particular shapes are to be found, types unknown in the Occident at least at so early an epoch, but evidently well known in Central Asia, where they have a long tradition behind them.

The following types are to be found: 1) *Swords with a semicircular or semi-spherical pommel,* short hilt and a short heavy crossbar *(Figure 16, 1)*. The type reminds of the common Germanic types well-

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known from the so-called Ulfberth-swords, from the 9th-11th centuries, particularly the oldest Ulfberth-types. On the other hand the quillons sometimes are more like the cross-bars of the swords known to us from the Alaman «Reihengräber» or the swords from Kertsch.[125] Thus some of the representations may look more like the Alaman or the Gotho-Sarmate swords. 2) The second type is the sword with the *flat, horizontal, circular or lozange shaped* plate in stead of pommel. The plate sometimes has a little bud at the top and a perforation in the plate to a thong with a tassel *(Fig. 16, 2-3)*. The cross-bar is short and thick, straight or curved; it may even be in shape of an oval or circular plate. Swords of this type are known not only from Crimean and South Russian tombs, but they are well-known from such illuminations as for instance the manuscript of *Cosmas Indicopleustes* in the Vatican Library.[126] 3) The third type has a *trifoil pommel* and quillons sometimes very short, sometimes longer, but almost always curved *(Fig. 16, 16)*. The ends of the quillons sometimes are volute-shaped and the ends as a rule join the edges of the blade. The swords with trifoil pommel and curved quillons ending in volutes or in animal's heads became very popular in Persia,[127] from where the Arabs took them over and transmitted them to North Africa and the Iberian Peninsula. 4) The fourth type has a *globular or circular pommel* of a shape which is going to be common in South and West Europe. This pommel in the Scylitzes is combined now with curved, now with straight quillons *(Fig. 16, 4-5, 9-10)*. The shape of the pommel is known already from the Roman gladius, but it still is more common in the East, where it is to be found on Persian swords. We find it for instance on the swords represented on the Sassanian silver plates and in post-Sassanian art. 5) The fifth type has a more or less *globular pommel with a top* which makes it almost *onion-shaped (Fig. 16, 12-13)*. This type of pommel later on appears on the so-called *Boabdil swords in Spain* from 14th and 15th centuries.[128] But we may find it even further to the North, probably coming from South Europe. 6) The sixth type has taken shape of a *ring-pommel*.[129] The type is known at an early time in the Orient, for instance among the *Scythians*. In Central Asia as well as in China

[125] A. KIEKEBUSCH: *Eine alamanische Goldgrifspatha aus Kleinhünigen bei Basel* (I. P. E. K., 1938); M. ROSTOWTZEFF: *Une trouvaille de l'époque Gréco-Sarmate de Kertch.*

[126] *Vat. gr. no 699.* The swords in use and the manner of beheading martyres in Scylitzes and in Cosmas have much resemblance.

[127] A. POPE: *O. c.*, vol. VI, pl. 1423; GLADIUS, I, p. 48, fig. 6.

[128] GLADIUS, I, p. 49, fig. 7; J. FERRANDIS TORRES: *Espadas granadinas* (Anuario Cuerpo Facult. Archiv. Bibl. y Arqueol. Madrid 1935, vol. 3, p. 142 ff).

[129] WALDEMAR GINTERS: *Das Schwert der Skythen und Sarmaten in Südrussland.*

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it is to be found, probably brought by the Mongol nomade tribes. In the Sassanian silver plates some of the princes represented wear a sword with such a ring-shaped pommel, combined with straight quillons. Some of the swords represented in Scylitzes may be of the ring-pommel-type. 7) The seventh and last type possibly has a *pommel shaped like upturned horns (Fig. 16, 15)*. This pommel is not unknown from Scythian and from Central Asiatic swords, where it as a rule is combined with a very long grip and short quillons, narrowing towards the ends. It is no imaginary type for it has counterparts in various Asiatic swords represented in silver-bowls and in Turkestan wall-frescoes. The third painter is in favour with them.

The types used by the third Scylitzes-painter even seem to have their counter-parts among the actual sword-types. This painter is fond of the long, slender rapier-like type with a pommel in shape of a reversed cone. We may look for them in Turkestan.

Some of the shapes represented in the manuscript of course may be imaginary, or the types may have been more or less simplified and stylized by the painters. On the other hand the painters to some extent certainly have real swords as their prototypes. A number of sword-types no doubt were in use in Constantinople as well as in all parts of the empire. The Byzantine market must have offered a lot of types according to taste, nationality and means of the owners. Swords of Carolingian types as well as German, Hungarian, Persian and Indian swords must have been on sale in the capital, forged in centres dispersed in the empire. Certain towns in the Byzantine empire as well as in the Oriental world had specialized in sword-manufacture, while other towns had specialized in helmets, armours, shields etc. Even such types as the Indian swords seen in the wall-paintings of the Ajanta-caves from 7th century with the upturned, bowl-shaped pommels certainly have been on sale.[130] Apart from the pommels these swords have a particular shape of quillons, which has nothing to do with European shapes, but which later on is taken over by the Persians, Arabs and at last by the *Spanish jinetes* (cf. *Fig. 16, 13)*. Swords with such types of quillons were to be found in Europe at a much later time. The particular type of quillons, almost straight, with hook-shaped ends, met with in South-and West Europe after the middle of the 14th century and particularly shortly before and after 1400, is no European type, its origin possibly is in the Middle East (Persia) or among the Arabs. The second main-painter has used them several times *(Fig. 16, 6-8)*. The

[130] OTTO FISCHER: *Arte de India, China y Japón* (Historia del Arte Labor, vol. IV), p. 229.

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sword-blades of the manuscript often are painstakingly made and the fuller is drawn from hilt to point. Particularly careful is the second painter and his group, while the third one doesn't care much for the details. His blades look as if they had a high midrib or «grat» through the whole blade, and they are resembling some types of blades met with in Spain in the 14th century.

Scabbards frequently are reproduced. Sometimes the sword is drawn off the scabbard, and we see the persons with the scabbard in one hand and the sword in the other. The scabbard often has been suspended at the warrior's left side in a long sword-belt across his right shoulder. The material of the scabbards mostly is undeterminable. Sometimes it looks like brown or dark grey leather, while other swords give the impression of red leather or rather brocade, velour or silk. Mountings such as ferrules and brims often are rendered, and the ferrules have the shape of a hood, an U or an oblique U. Sometimes this U has a chape at one side, which is quite natural considering the manner of wearing the sword. But even the straight chape is to be found, this type mostly in use among the Arabs and Persians, and known for instance for swords and chapes preserved in the Top Kapu Saray museum in Istanbul *(Fig. 16, 26-27)*.[131] Besides the chapes the scabbards often are furnished with two mountings in which are little rings for fastening the scabbard to the sword-belt *(Fig. 16, 7, 14, 24-25)*. Sometimes these little rings have been placed one at each side, sometimes both of them are sitting at one side. The current manner however is a ring at each side. Scabbards ornamented with plait band, volute rolls or dots representing precious stones are not unusual. Locket mounts are rarely found, though they were in use. Such precious scabbards are met with in Carolingian and German illuminations from almost the same epochs. Counterparts as to ornamental scabbards do we find for instance in the golden scabbard of the before mentioned (see p. 29, 92) so-called Saint Kosmas-and St. Damianus-sword from the cathedral treasury of Essen, to which the name of Byzantium has sometimes been attached.[132] The blade of this sword very likely is ancient. But the gold work with filigree and precious stones on the lobated pommel and with little enamel plates in the quillons assigns it to the 10th or 11th century. Locket mount and ferrule are later additions. It may be a Byzantine work, but the possibility exists that it has been made either in Trèves or in Ratisbon where Byzantine influence was strong. The Essen-sword however corresponds well with some of the types from the manuscript of

[131] GLADIUS, I, p. 48, fig. 6; A. POPE: *O. c.*, vol. VI, 1423.
[132] H. SEITZ: *O. c.*, pl. IV; LAKING: *O. c.*, I, 23, fig. 28.

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Scylitzes. The goldsmith's work resembles other kinds of Byzantine jewelry from the 10th and 11th centuries. Some of the scabbards represented in the manuscript are not unlike the golden scabbards from the imperial treasury in Vienna, the enamel borders of which are in a style often said to be Sicilian but reminding of the borders of Byzantine manuscripts. These scabbards — from the 11th century — have been much restored in later time, but still ancient parts of them have been preserved.[133]

The suspension of swords in a long shoulder belt is ancient Roman practice. The Persians like other Oriental peoples wear their long swords at the waist-belt as seen in the Sassanian silver plates. Leo in Tactica says that the sword must be carried after Roman usage. The practice is taken over by the Arabs as seen not only from the Scylitzes-painters, but even from later monuments such as for instance the preserved ceiling-paintings in Alhambra of Granada.[134] In cavalry battles the sword sometimes is fixed to the saddle, as seen in the manuscript (Fol. 73 v. a, *Fig. 34)*. From the manuscript drawings it is impossible to distinguish between Arab and Byzantine double edged swords. The Arab swords in the manuscript sometimes seem to have a larger size, as seen clearly from the Arabs attacking fortresses and town-walls (Folios 97 r. b, 200 v., 212 v. b). For comparison one must cast a glance at the Arab swords from the Top Kapu Saray museum in Istanbul (GLADIUS, I, p. 48, fig. 6).

Archaeological sword-material which with some certainty may claim the name of Byzantine, still is unknown. However some of the swords unearthed in various places in Europe, Caucasus, South Russia, Turkey or elsewhere in the Near East possibly are of Byzantine manufacture. It is even possible that certain swords from Scandinavia or the Baltic regions have some relation to Constantinople. But very likely there is more influence from Byzantium on the Northern sword-material than reversely. Norse literature as a rule gives only little information as to the origin of the swords. Famous swords mentioned and praised in the sagas and the Scaldic poetry almost always are gifts from foreign princes, war-booty or the like. In a few cases swords brought home from Byzantium are mentioned, such as for instance the sword Brynjubítr in the Sturlungesaga. According to legend Sigurd the Greek had brought it from Constantinople. Swords brought from the North to Constantinople are to be found in Norse literature. The Norwegian Heimskring-

[133] LAKING: *O. c.,* I, p. 97, fig. 118; A. BRUHN HOFFMEYER: *Middelalderens tveæggede Sværd,* II, p. 24, no. 134, pl. XVII; H. SEITZ: *O. c.,* p. 148.
[134] J. PIJOÁN: *O. c.,* vol. XII, pl. XXI.

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la by Snorre Sturlason — Hákonar Saga Herdibreids XX — tells the story of the sword Hneitir of the Norwegian king St. Olav, which after the king's death on the battle field at Stiklestad in 1031, was taken to Constantinople by a Swedish man, who had broken his own sword. This Swedish warrior entered the imperial body-guard. The emperor, who had been informed about the famous sword, bought it and let it place upon the altar in the church of St. Olav in Constantinople. As to the origin of this sword the saga says nothing, only that it was a very old sword, taken from a burial mound, and that it in time of old had been the property of a king.

Merchants and craftmen from many parts of the Asiatic, African and European world met in Constantinople. Syria was famous for its factories of weapons since days of old. Iron as well as half-made or ready-made weapons were brought on market from Ceylon, Persia, Yemen, Khorassan and other places and Damascus was the important meeting place for arms-trading.[135] In this town the dealers sold weapons from the Orient as well as from the Occident. Frankish and Slimanish swords were to be found side by side with swords from Persia. Arab sources tell about the various classes of iron and steel for making sword-blades, the technical methods for forging, and they just mention the famous places for the fine and excellent watered steel blades. The particular Oriental technics seems to have been known at least as early as in the 6th century A. D. in Persia and India. The Oriental technics differed widely from the Occidental pattern-welded one. The Oriental blades were of a high quality, so tells us for instance Al-Kindi, who highly praises the Indian blades. And these were extremely expensive. But though their own blades were so beautiful and excellent, the Arab sources give praise to the Occidental pattern-welded blades too. From about 9th century and later we find Arab authors mentioning the Northern blades. Ibn Fadlan, the Arab traveller, Al-Kindi from Baghdad of the 9th century, Al-Biruni from Ghasna (Afganistan) from 11th century — just the epochs treated by Scylitzes — know rather well the Occidental swords and are able to distinguish Frankish from Slimanish, the last ones probably coming from Northern, perhaps Baltic regions and particularly used by the Rus. The Persian geographer Hudud al-Alem from 11th century gives a mention of the Slimanish types, while the Arab author Nasireddin al-Tusi has a description of the Frankish specimens. The Arab Ibn Miskawaih, who died in 1030, tells how the Moslems in a special region of the Caucasus opened the Scandinavian

[135] A. Rahman Zaky: *Centres of Islamic sword making in middle ages;* Idem: *The sword in the Moslem world* (In Arabic).

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warrior's graves in order to rob the swords. There must have been an important trade with Frankish swords towards the East, since even the emperor Charlemagne prohibited — by special laws — the export of swords from his lands. To Egypt they were smuggled and sold at very high prices, about 1000 dinars. But still the watered-steel blades were considerably more expensive.

As to the development of the European sword in the Middle Ages Constantinople played an important part, particularly during the centuries treated in the manuscript and the immediately preceding centuries. The importance of the long sword encreased with the importance of cavalry. The elements coming from Sarmatians and Alanes to Europe and later on the elements brought by the Sassanians and the Mongol nomade tribes of Central Asia and Turkestan were of decisive importance to the evolution in Europe. A good deal of the details, which characterized the European medieval swords of the 13th and 14th centuries are to be found in Constantinople already in the 9th and 10th centuries. In Iran and the regions around the Caspian Sea, they may probably be followed further back in time.

The sword type met with in early Byzantine art joins the types known from excavations in Crimea, in Kertsch and some of the types excavated in Central Europe from Migration time, — the Gotho-Sarmate type.[136] The same type or at least a closely related type is to be seen on the little ivory pyxis in Kaiser Friedrich Museum in Berlin from first part of 4th century.[137] Almost the same type is represented on the consular diptychs from Monza and Aosta from about 400. We shall return to the other sword-type represented on the diptych of Honorios. The type can be followed for instance in the mosaics in Ravenna in the scene of the sacrifice of Isac, and in the Slaughter of the Innocents in Santa Maria Antiqua in Rome. We find this type not only in Byzantine, but even in other art influenced by Byzantium in the next centuries. The Codex Aureus in St. Gall (bibl. coll. no. 22), the Evangeliar of Lothar in Paris (Bibl. Nat. Lat. 266) and in various of the Mozarab manuscripts in Spain from 10th century or on the representations of David and Goliath in manuscript gr. 510, Bibl. Nat. Paris, Saint Gregory Nazianzus from 10th century.[138] The little ivory casket in Victoria and Albert Mus. London, from the cathedral of Veroli, has the same plain type as in the manuscript of Scylitzes.[139]

[136] M. ROSTOWTZEFF: *Une trouvaille...* (Mon. Piot, 1923, p. 128 ff).
[137] DALTON: *O. c.*, p. 191, fig. 115.
[138] HENRI OMONT: *O. c.*, pl. IV; SCHLUMBERGER: *O. c.*, I, p. 185; J. PIJOÁN: *O. c.*, vol. VIII, p. 260, fig. 346 (Sta. Maria Antiqua).
[139] DALTON: *O. c.*, p. 217, fig. 131; *Cat. Ivory,* pp. 18-20, figs. 9-10.

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The almost *brazilnut-shaped pommel,* seen various times for instance in fol. 154 v. *(Fig. 43)* and in fol. 206 r., where the emperor is represented sitting upon his throne with sword in hand, the sword is almost of the same type as the precious swords seen in the Sacramentar of the emperor Henry II in Munich (cod. lat. 4456). The scabbard indeed has its counterpart in the scabbard from the sword in Essen, which further has a similar type of pommel. This type of pommel is widely distributed in all parts of Central and Northern Europe as well as in England and France, and it is met with even in part of Russia, coming from the Occident with the Ulfberth-and Ingelri swords of the 10th-12th centuries. But we find it already in Sassanian art at a much earlier point of time. Several of the swords represented in the Sassanian silver plates are furnished with just this type of pommel. As to shape of pommel and crossbar there should be nothing against the opinion that the famous gold sword in Gallerie d'Apollon in Louvre — the ancient coronation sword of the kings of France — is of Sassanian origin, if style of ornamentation and manufacture of the gold agree *(Fig. 15).* Tradition has that the sword once belonged to the royal insignia of Charlemagne. Laking in European Armour and Arms I, p. 89 ff refers the opinion given by Sir Martin Conway in Archaeologia 1915, p. 103 ff, 132 ff, 132 ff pl. V, 1, and Dieulafoy in L'Art antique de la Perse, vol. V, p. 164. Later investigators have denied its Sassanian origin on account of the shape of pommel and quillons. In regard to pommel nothing speaks against a Persian origin from about 6th-8th centuries.[140] The original parts of the hilt may either be of pure Persian workmanship, or a Western imitation of a Persian sword from 7th-8th century. An exact determination of the sword and its chronology necessitates a painstaking examination. A very similar sword is found for instance in the Menologion of Basil II, Vat. gr. 1613, fol. 242 f from about 1000-1025 and in the Psalter (about 1020) of the same emperor in Bibl. Marc., Venice.[141] These swords have the same oblique U — shaped chape as some of the swords in the manuscript of Scylitzes.

The *clover-leaf or trifoil-pommel* — sometimes just as much like a palmette — is seen various times in the manuscript (e. g. fol. 16 v.) and

[140] I am grateful to M. Robert-Jean Charles, Musée de l'Armée, Paris, who in a letter from 1960 kindly told me that he considered the pommel and cross Carolingian, the ends of the quillons 13th century work and the blade about 1250. The chape of the scabbard may be Carolingian too, according to him. The problems however still must be considered unsolved. As to style and chronology of the oldest parts of the sword legend may contain some grains of truth. The shape of the pommel may be Persian.

[141] *Bibl. Marc. Venice,* no. 17; J. Pijoán: *O. c.,* vol. VII, p. 496, fig. 703; Talbot Rice: *O. c.,* pl. XI.

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it is met with in the Byzantine art in 11th and 12th centuries. A characteristic specimen carries San Demetrius on his sword in the mosaics from 11th century in the San Sergius church in Daphnis near Athens. Another specimen is reproduced in San Lucas at Phokis.[142] In a more decorative style the type may be followed on some of the early Russian icones from 13th century and even later. This type of pommel has its outspring in the East. It is much in favour among the Persians and the Arabs, the last ones bringing it to the Iberian peninsula, where it is to be found for instance in early Mozarab illuminations and in the sword of San Fernando in Armeria Real[143] (see: GLADIUS, I, p. 50, fig. 8). Several times it occurs in French illuminations from 13th century. Separate pommels, some of them made in bronze, with coloured enamel, have been found in Syria, originating from cruzaders' swords. The cruzaders brought the type to their own countries, particularly to West Europa.

The most frequent type in the manuscript is the sword with *circular or spherical pommel* and straight or curved quillons. This type is current in the Persian silver plates. It becomes one of the most current types in the Occidental Middle Ages particularly in the 13th century and later. With curved quillons it is particularly favoured in the Western and Southern parts of Europe, with straight quillons in Central and Northern Europe, though both types may be found in South as well as in the North. From the Byzantine regions the shape was taken over by the Arabs and was brought to Egypt and to almost all Moslem parts of North Africa. Still up to modern time descendents are to be found in the Tuareg types, which often show the ancient type of hilt, while the blades may be both 15th, 16th centuries or even almost modern. In the manuscript from St. Gall we find the type several times, and we can follow its routes in South and West Europe during the next centuries. East to the Rhine and North of the Alps it rarely occurs before 1250.

With curved quillons this type is frequent in Byzantine minor art in 10th, 11th and 12th centuries. Perhaps the most obvious specimens are to be found on some of the ivory triptychs from the late 10th century, for instance the triptych now in Palazzo Venezia in Rome, the Harbaville triptych in Louvre *(Fig. 4)* and the triptych in Brit. Mus. Not only the

[142] KONRAD ONASCH: *O. c.*, p. 344, fig. 4 (Daphnis); SCHLUMBERGER: *O. c.*, I, p. 232 (Phokis). Cf. Saint George of the Novgorod-School, second half of 13th cent. Staatl. Mus. Leningrad.

[143] GLADIUS, I, p. 50, fig. 8; CONDE DE VALENCIA DE DON JUAN: *Cat. Real Armeria, Madrid,* no G 22, p. 203.

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swords but even the armours are very obvious in these triptychs.[144] Possibly the very best specimen of Byzantine arms and armour is the ivory casket in the cathedral treasury in Troyes from about 975-1000 *(Fig. 5)*. As to almost all the arms we have here the most exquisite parallel to the equipment in the first part of the Scylitzes manuscript. The sword type on the Troyes casket has its counterparts in the 13th and 14th century swords in Spanish art objects and in Spanish paintings from the time after the middle of the 14th century. The type is met with in Italy in paintings of the 14th century too. Examples of this sword-type are numerous in Byzantine minor art. Just as the Scylitzes-painters of the first and even the second hand have rendered the fuller or the mid-rib of the blade in a very distinct manner, we find in the little ivories, particularly in the Troyes casket the high and sharp midrib of the blades.[145] The pommels and the strongly curved quillons are rendered in an excellent manner, as are the mountings of the scabbard too. It is this type, which with the reorganization of the Spanish jinetes in 12th and 13th centuries, were introduced almost as a kind of regulation swords, and which arrive at their uppermost development in the so-called *Boabdil swords* (see: GLADIUS, I, p. 49, fig. 7).

The particular shape of quillons seen in the *Boabdil swords* with their stylized elephant-trunks have their forerunners in the Orient. From the beginning of the 11th century we find a good counterpart in the Arab manuscript of Al-Sufi in Bodleian library in Oxford, with renderings of the constellation of Perseus. From the 11th century it occurs in the Byzantine ivory carving in Metr. Mus. New York.[146] More Oriental in type, because of its rather long grip and the langet, such a type has been rendered in a floor mosaic from the great palace of Constantinople. Odd shapes, but rather near to the Boabdil type are some decorative swords in the manuscript of Saint Gregory Nazianzus in Paris (e. g. fol. 137) from 10th century. But these swords remind of certain types of Indian swords, e. g. the types represented in early Indian wall-paintings.[147]

The type with spherical pommel and long curved quillons are to be seen in the mosaics in Sicily, for instance in the mosaics of *Mon Reale of Palermo,* from about 1174-1182. This last type is very close to the swords used by the second painter of the manuscript. The quillons have almost the same length as the quillons of the swords from the Psalter

[144] TALBOT RICE: *O. c.,* pl. 99, 101, 105, pp. 313-315.
[145] IDEM: *O. c.,* pl. 152-153, p. 325 f.
[146] J. PIJOÁN: *O. c.,* vol. VII, p. 6, fig. 2.
[147] *Bibl. Nat. Paris, ms. gr. 510,* Sermons de Saint Gregoire de Nazianze; OMONT: *O. c.,* pl. XVI and pl. XXXII a. o.

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of Basil II in Venice. As to origin it is no European type. One of the earliest specimens known to the author is seen in a Sassanian sardonyx gem possibly from 4th century A. D. in Brit. Mus. In coins it occurs several times.[148]

Curved quillons — whether long or short — are not European as to origin. Their home very likely must be sought for in the Central parts of Asia. The shape has spread from its Asiatic centre towards the East to China and Turkestan, towards the West to the regions of Mesopotamia and from there to Constantinople. Among the Arabs the shape is found probably before the 8th or 9th century. In Central Asia the quillons sometimes are not quillons at all, but two rings for the fingers beneath the grip. The nomades have a different manner for using their swords from horseback than the Western peoples.

The purpose with the rings or curved quillons is to give the hand a better grip of the sword in order not to loose it in the act of cutting, such as seen in Chinese representations of horsemen using their swords with the first and the second finger passed through the rings. With the Mongol nomade tribes it comes to the cavalry peoples of Iran, and it becomes the favorite shape in Persia just until almost modern times. In Persia the ends of the quillons sometimes took the shape of dragoons — influence from China — or lion's heads. This type with animal's heads was brought to Egypt, North Africa and to Spain. The earliest examples in the Occident are possibly the swords represented in some of the Mozarab manuscripts: Libro de los Testamentos from 1126-1129 in the cathedral of Oviedo and the Cartulario de Ucles, in Archivo Histórico Nacional of Madrid, from 13th century.[149]

A rather *Oriental shape of quillons* is found in the manuscript of Scylitzes. It is seen on some swords with onion-or beak-shaped pommels. The quillons on these swords are rather short, flattened and a little broader at the ends than at the hilt-cross, where they have a long langet. The ends of the quillons may be decorated with an ornamental roset or some other kind of ornament. This type is to be found on Sassanian swords too. In Byzantine art it is met with in the 11th century on the Staurothec from Reichskapelle in Rezidensmuseum in Munich, on the little bronze relief representing warrior-saints in Berlin from about 1100, and the steatite plaque in Louvre with Saint Demetrius from almost the same time.[150] There is another representation of it on the steatite relief with Saint George in the monastery of Vatopedi on Mount

[148] See: *Arethuse,* 1923-24, p. 26, fig. 5.
[149] Domínguez Bordona: *O. c.,* I, pl. 80.
[150] *Historia del Arte Labor,* vol. VI, p. 323; Schlumberger: *O. c.,* I, p. 493; II, p. 57.

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Athos from the 12th century and on the little ivory casket from Metr. Mus. in New York from the 12th century. The type is to be found in manuscripts such as the Menologion of Basil II, Vat. gr. 1613, from about 1000-1025. The pommel differs from that on the other swords mentioned, but the quillons are the same. It may be met with in Occidental representations, but here it seems to be rather rare. The Sassanian silver-plates as well as the rock-reliefs at Bichapour with representation of Chapours triumph over Valerianus from the end of the 3rd century A. D. have the same type *(Fig. 16, 26)*.[151] Moreover this type has a very long and distinct langet. This type of quillons with langet is going to be highly favoured by the Persians and Turks, and is seen on the Persian shamshirs and the Turkish kilidjes. They were taken over by the Polish karabelas and the Hungarian sabres. But they take their way to Africa too, where they are to be met with on the later time Tuareg-swords, though a little changed as to details.

Another Oriental type represented by the Scylitzes painters is the sword with the *extremely long grip (Fig. 16, 11)*. Such long grips do not come to the Occident before the end of the 14th and the beginning of the 15th century. In the Occident — and particularly in the German part — this feature is a consequence of the introduction of a heavy iron dressed cavalry. In the Orient and specially among the peoples of the steppes we find this kind belonging to certain groups of cavalry peoples. Their origin however is not evident. Some of the earliest specimens are to be seen on some of the Palmyrenian warrior's reliefs *(Fig. 16, 28)*.[152] One of these reliefs, now in Louvre, from about 2nd century A. D. represents a warrior in a long-sleeved tunic, and long trousers. At his waist-belt a sword with a long grip is suspended in little thongs. The whole sword has a rather large size, the blade shows a clear midrib, and the lower hilt is of a shape met with in Far Eastern swords, for instance in some Chinese types. The extremely long grip has an almost cylindrical pommel crowned by a little knob. (In regard to the manner of using such swords Tacitus in Hist. I, 79, 5 refers to the Sarmatian Rhoxolanes). This type of sword is a clear contrast to the swords of ancient Roman type, the Gotho-sarmate swords and the swords known from Danubian and Pontian areas. In the Sassanian silver plates we can follow the type. One silver plate, now in the archaeological museum in Teheran, shows a prince hunting lions with just such a sword. Another silver plate is to be seen in the Hermitage museum

[151] H. VON DER OSTEN: *O. c.*, pl. 97; HERZFELD: *O. c.*, pl. CXVI; A. POPE: *O. c.*, vol. IV, pl. 154 B, 155 A.

[152] R. GHIRSHMAN: *O. c.*, p. 79, fig. 91. Long sword type on Parthian reliefs; W. ANDRAE and H. LENZEN: *Die Partherstadt Assur*, Leipzig 1933, pl. LIX b.

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in Leningrad, from 6th century while still a third specimen is now in Teheran. The two last plates are very similar to the Palmyrenian swords. Already from the 4th century it is to be found in East Iranian silver howls such as the bowl in Brit. Mus. while the same types occur in the 5th-6th century in the Indo-Iranian ceiling-paintings of the Ajanta-caves [153] and in wall-paintings of the Qumtura-caves of Turkestan from about the 7th or 8th century *(Fig. 16, 29-30)*. The Turkestan swords from the Qumtura-caves are of a special shape and in some instances accompanied by a corresponding dagger in the waistbelt. The manner of grasping these swords as a rule is the same as the manner used in the Occident on the fencing rapiers of the Renaissance. The swords of the third painter find their closest relatives on the above mentioned East Iranian bowl and in Qumtura.

The grips are long in order to support the lower arm and the hand-wrist, while one or two fingers are crossing the quillons. It is an Oriental manner of grasping the sword. The manner of crossing the quillons with one or two fingers is seen even in some illustrations of warrior-saints, where it is of no practical importance. From the Orient still another manner of grasping the sword has come to the Occident. It comes with the Arab and the Berber tribes via North Africa to the Iberian peninsula, where it is still used by bull fighters. But here we have to do with a very short grip, the pommel of which is placed inside the palm, while one or two fingers are crossing the quillons. This grasp is to be found in the manuscript several times, amongst others in fol. 142 r., where Nicephorus Phocas is about to attack a town — Berrhoia — in Syria. But this manner has ancestors back in time and we find a related manner for instance in the frescoes from the Synagogue in Dura with the representations of the Ark of the Convenant carried away.[154]

Besides the sword there is another type of weapon which in its origin is absolutely Oriental. It is the *pallache,* the solid single edged straight blade with the sabre grip. In the manuscript it occurs several times, and often with the particular Oriental quillons (Fol. 173 r.). The details of the blades are difficult to see. The blades may have one or two edges. The grip however leaves no doubt *(Fig. 16, 17-19)*. It has the particular pistolshaped handle, which later on became characteristic to the Persian shamshirs *(Fig. 17)* and especially to the Turkish kilidjes. The quillons are of the short, broad type, sometimes with

[153] R. GHIRSHMAN: *O. c.,* p. 323, fig. 433; J. PIJOÁN: *O. c.,* vol. II, p. 523, figs. 754-755.
[154] J. PIJOÁN: *O. c.,* vol. VII, p. 35, fig. 38.

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long langets. A parallel to the types met with in the manuscript is to be found in the front relief from Saint Marcus in Venice, in the representation of Saint Demetrios.[155] The grip is pistolshaped, and the quillons are of the Oriental type. There are counterparts to these types of swords in the Syro-Egyptian copper bowl, the Baptistère of Saint-Louis in Louvre, from about 1290-1310, made for the vice-king Salâr of Egypt, possibly by a Syrian artist. It is the same type to be found in Persian manuscripts from 14th century, for instance in the Shah Namah in Art Gallery Kansas City.[156] Just as with the Turkish kilidj from a later epoch there is a perforation in the «pistol-head» of the grip for a thong with a tassel, to fix round the hand-wrist. Such perforations are to be seen already in the Sassanian swords from 4th-7th centuries, in various Byzantine manuscripts from 10th century and in church frescoes of Kappadokia from 11th century.[157] The blades of the swords from the Baptistère of Saint-Louis are single edged, and they have an obvious yelman, double edged at the uttermost third with a very sharp point. The swords from this Baptistère are not ordinary soldier's swords, but swords worn only by emirs. This type of sword has its outspring among the nomade tribes of Central Asia, in the Kuban areas and further to the East. On European areas it is not met with before at a much later time. A few times we find in the Scylitzes manuscript swords with curved blades and yelman *(Fig. 16, 20),* as a rule combined with an ordinary sword-grip and not with a sabre-grip as might be expected from the Mamluk swords on the Baptistère. A pronounced specimen is seen in fol. 230 r. b. Blades with such a yelman occur in Hungary already in the 8th century if not earlier, brought by the Asiatic tribes invading Hungary after the days of the Great Migrations. Such swords no doubt have been in use in the Byzantine empire. Even the peoples on the Balkans may have used them. A famous and excellent example of this type is the sword in the Imperial Treasury in Vienna, the so-called Charlemagne sword.[158] The blade here is of excellent workmanship, long, slightly curved and with a thick back of the blade, a pronounced yelman and a pointed tip. The material is watered steel. The hilt is of the sabre type with slightly curved grip of a type to be found in the Sassanian silver plates. The quillons are of the characteristic

[155] *Cahiers Archeologiques,* vol. VI, 1952, pl. VI, 2.

[156] D. S. RICE: *Le baptistère de Saint-Louis,* Paris, 1951, pl. VIII; PIJOÁN: *O. c.,* vol. XII, p. 352, fig. 488 (Shah Nameh, Art Gallery, Kansas City).

[157] J. PIJOÁN: *O. c.,* vol. II, p. 504, fig. 725; HENRI OMONT: *O. c.;* cf. Scylitzes, fol. 173; Saint Demetrios, Saint Marcus Venice, 12th cent. (Cahiers Archeol. VI, 1952, pl. VI, 2); DIEHL: *La peinture Byzantine,* Paris 1933, pl. XXI.

[158] H. SEITZ: *O. c.,* pp. 183-185, fig. 116.

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Oriental shape, well known from several of the pictures in Scylitzes. Shape and type correspond well with the Persian specimens from 8th and 9th centuries. This type is to be found in Central Asiatic areas, we meet it for instance in the region of Kuban and in Chinese Turkestan. Its prototype must be looked for among the Mongol nomade tribes. In the 9th century the Khazars in the Kuban district are using it. Swords with a pronounced yelman are to be seen in Spanish art as early as in the 13th century, for instance in the miniatures of Las Cantigas of Alfonso el Sabio from about 1280. In the 15th and 16th centuries it is in favour among European painters who like to represent the scenes of Saint Peter cutting of the ear of Malchus, after this called Malchus-sword. Actual swords of the type are existing from 15th and 16th centuries in various museums, most of them of French or Italian origin.

Among the types with single edged blades the painters of the manuscript sometimes have represented a sword with a very thick back of the blade, a pointed tip and a sabre grip in shape of a bird's head with curved beak and the feathers diligently rendered. Such bird's head grips are known from various Byzantine monuments such as the consular diptych from Aosta, where the consul Honorius on one of the sides has exactly this type of sword. Again we find it represented in the statue groups of the Byzantine princes in Saint Marcus in Venice from 5th century.[159] Representations of the type are not frequent, but still we can follow them through the centuries. In the before mentioned Arab manuscript in Bodleian Library in Oxford from about 11th century, the constellation of Orion is represented with such a machaira with bird's head and curved quillons (Ars Islam., III, pl. 18, fig. 45). While the single edged blade with yelman is taken up by the Renaissance in the Occident, the single edged machaira more or less with a sword handle is taken up in West Europe, for instance in England. A well preserved specimen exists in the cathedral of Durham from about 1280.[160]

In miniatures from 13th century it is seen several times. Belonging to the early part of the 13th century are the representations from the painted chamber of Westminster. About 1300 Guiart gives mention of it. But in these Western types the quillons are almost always straight and the pommel has the current Western shape, the thick profiled and heavy form. The blade has the shape of a solid cutting knife and misses the elegant lines which are so characteristic of the Oriental

[159] J. Pijoán: *O. c.*, vol. VII, p. 276, fig. 410. Sculptures of the princes; *ibidem*, p. 244, figs. 352-353.

[160] H. Seitz: *O. c.*, p. 187 ff; Oakeshott: *O. c.*, p. 235 ff. A fine specimen from Viking time was kept in the coll. of the late M. Pouillac, Paris.

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types. Mongol manuscripts from 13th century give regulations for the equipment of the Mongol warriors. Here we learn that the well-to-do warrior besides his body-protection of chain-mail and his helmet had to be furnished with a single-edged sword.

Knifes are found several times in the manuscript of Scylitzes *(Figure 16, 21-23),* some of them with an elegant curved blade and obvious yelman, others more plain in shape, as in fol. 98 v. and fol. 105 r. The knives with yelman are to be met with already in the 5th century for instance in the Syrian silver bowls (Hist. Gen. Arte, VII, p. 178, fig. 272).

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HAFTED WEAPONS

AMONG the hafted weapons in the manuscript two categories are to be found: *the axe* in its various shapes and *the mace (Fig. 18, 1-11). The axe* occurs now and then in the illuminations of the first and second painter and his group, while it is not seen in the scenes by the third painter. This artist prefers the mace, and he is in favour of representing single-combats with mace.

Several times the first painter lets his warriors use the axe in battle scenes. In fol. 26 v. the guard of Michael Amoriense surrounding the murdered emperor Leo, is equipped with axes besides their various types of weapons such as spears and lances *(Fig. 23)*. Almost all the axes represented are of the broad-bladed type with a large curved edge and a narrow neck. The axe is hafted on a slender shaft, which may have been of wood, though a metal hafting cannot be let out of question. Several types of axes are noted in the manuscript. But details are not sufficiently informative for a determination as to their origin and nationality. Nevertheless among the various shapes it seems possible to discern a European and an Oriental shape as well as a combination of axe and tool, characteristic to the Scythians since time of old.

It would be obvious to think of the reputed and terrible Frankish throwing-axe, the francisca or the so-called «Danish» battle axe used, as we are told, among the vikings everywhere in Europe, where these warrior-groups made their raids. With the Norse mercenaries and chieftains coming to the court at Constantinople this type of axe as a matter of fact became known at the Bosporus and in the regions at the Black Sea. However axes similar to the specimens represented on the Bayeux-tapestry do not occur. When axes with a similar blade are seen, they are hafted in a way different to the Norse axes. Blades of a shape resembling the Norse axes, such as for instance the Mammen-axe from Jutlandia in Denmark, the Hultsjö-axe from Sweden or the bearded Viking-axes in Brit. Mus. occur now and then in the manuscript. Still they are more similar to the Finnish axes of the same time.[161] No doubt axes of Norse types have been borne in Constantinople in the days of the Scylitzes-painters. Probably they even have been on sale. But

[161] J. BRÖNDSTED: *Danmarks Oldtid,* I-III. Kbhvn. 1940. III, p. 324, fig. 307; H. SEITZ: *O. c.,* p. 239, fig. 155; L. A. MAYER: *O. c.,* p. 11, figs. 15-17.

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the painters of the manuscript certainly have used various other types of axes as their models. Very likely most parts of the axes represented in the manuscript are of Persian type with the broad, strongly curved blade, narrow neck and slender metal shaft. Above the head of the axe the shaft ends in a long and slender point, maybe of prismatic section as in many Persian axes. In fol. 100 r. a soldier is cutting off the right hand of the blinded Leo with an axe of this type. Its nearest relatives do we find for instance in the famous Baptistère of Saint-Louis. Here the axe is seen in the hands of the Mamluks. In fol. 153 v. the gates of Antiochia are broken by such an axe *(Fig. 8, 7)*. In some of the illuminations, such as in fol. 72 r. *(Fig. 33)*, the siege of Samosate, we find axes of purely Persian type, originating in the antique axes. It is the axe with a long narrow blade with short edges at one side and with a strong slightly curved beak behind. The shaft appears as a high top above the axe-head. This type is used as a combination of tool and weapon by the engineers, the «securis» of the heavy infantry, according to Leo, who says that even the psiloi, the light infantry, was equipped with such an axe and a rondache.

In Persia this type — a kind of pick axe — usually occurs with an iron shaft, in later time often richly decorated with inlaid silver incrustations. Since Antiquity the type has been in use in Asia Minor and in the Middle East. It occurs from archaeological finds and we meet it for instance on Attic red-figured vases with representations of amazonomachies. In ancient Greek art it is the typical amazone-and Persian axe.

The fourth type is a purely Scythian axe, in use among this people since Antiquity. It is a solid slender but strong tool, drooping downward in a slight curve at either side of the central shaft hole. At either end is a short, curved edge, and the whole shape is more like a mattock. The type is used for instance by the engineers when about to break down the gates of a town wall, digging mines outside a fortress and the like. As a direct war-instrument it is only rarely seen. But in various folios we find it in the hands of the engineers (Fol. 230 r.-v.). Similar tool-weapons do we find already in the Assyrian alabaster reliefs from Niniveh from 9th century B. C. and they are to be followed through Antiquity in almost all the Mediterranean and Near Eastern civilizations through centuries — even up to modern time.

The mace occurs particularly among the illuminations of the third painter, though a mace and a rather primitive club is seen in the illuminations of the first and the second painters *(Fig. 18, 7-11)*. In folios 85 v. and 86 *(Fig. 35)* the emperor is equipped with a special mace of Oriental type, used for throwing. His whole apparition here is very

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Persian in style. The third painter several times represents single-combats from horse back with maces swung or thrown. The weapon is of the Oriental type, and it occurs mostly among officers and nobles (Fols. 160 r., 161 r.-v., 162 v., 164 r., 167 r.-v., 169 v., 171 r., 175 v., 178 r.-v.; *Fig. 46)*. Duels perfomed with maces are for instance seen in fols. 162 v., 164 r., 167 r., 169 and 171 r. (GLADIUS, III, p. 32, figure VI, 2). Sometimes the mace consists of a long, slender shaft with a piked head, much like the later time Central European «Morgenstern», while in other pictures the head is shaped like a flower with four or five petals. The piked maces may be more or less like certain Indian types, while the other specimens are of Persian type. Similar maces used in the same manner, from horseback do we find in Persian miniatures from the beginning of the 14th century and later. The mace belongs to the earliest and most primitive weapons in almost all civilizations. In some parts of the Orient it was predominantly an infantry weapon as seen for instance in Assyrian reliefs. The Greeks and the Romans did not use this weapon. But in the Oriental civilizations it got a wide extension. Particularly the nomadic tribes of horsemen from Inner Asia got use of it. The cylindrical or spherical mace heads furnished with spikes and hafted upon a slender shaft were in favour. In the various regions of India this weapon was highly appreciated. The types varied in accordance to the regions. The Persians and the Turks are often represented with maces of iron, richly inlaid with ornaments. From the Orient this weapon took its way to Eastern Europe, where it became a favorite weapon for instance in Russia and in Poland. During the later Middle Ages the mace in these regions to some degree was considered a sign of dignity, a kind of marshall-staff, worn by princes and nobles on horseback when dressed in precious parade armours. In the manuscript of Scylitzes it is often used as a throwing weapon, thrown with both hands, in the same manner as among many Eastern peoples. The shapes represented in the manuscript are of no definite chronological type. Maces with petal-shaped heads are met with for instance in the Bayeux-tapestry, but here they certainly must be considered foreign elements, not Norman. (Various elements from this tapestry no doubt have been borrowed from Byzantine art.) They are more fancyful than the maces of Scylitzes. Their gay colours on the tapestry probably intend to tell about a shining and bright metal. According to Maurikios maces used in the Byzantine army must have been made of a rather delicate or oxydable material, which could not resist the weather, since it seems necessary to keep them in a leather case when not in use. The maces seen in Scylitzes are of a more simple and plain type than the maces seen in the Persian manuscript from Tabriz of the World History,

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painted by order of Rashid ed-Din in 1306-14. The illuminations in this manuscript show a rather strong Chinese influence (dominant in Persia in this epoch), and they give an excellent picture of a Persian cavalry combat with the mace as a most effective weapon. The mace head is more complicated and detailed than in the Byzantine pictures with its conical lantern shape and sharp projecting edges. Even in later Persian manuscripts we find such combats from horseback with maces not unlike the types used in the Byzantine armies.[162]

[162] J. PIJOÁN: *O. c.*, XII, p. 348, figs. 482 and 484; p. 352, fig. 488.

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LANCE AND JAVELIN

LANCE and spear — in more recent time the names of the long hafted weapons of respectively cavalry and infantry — played an important part in the Byzantine army. In the Middle Age the two names were used in the same sense for both categories of warriors. In the days of Maurikios the heavy armed horsemen carried a cavalry lance, kontarion, about 3,60 meter long. The shaft was made of wood, solid but light. The lance head of iron was strong and pointed — and as told by Maurikios — bright in the sunshine. Towards its butt it was fitted with a leather thong. It was not before the introduction of the stirrups and the saddle that this long weapon, so difficult to manage, had been introduced from the cavalry people of Asia, particularly the Sarmates, who had used stirrups at least as early as in the 3rd century B. C., the Huns and the Persians acting as intermediaries. Standart-bearers had a bannerole in the regimental colours fixed to their lance. The bannerole consisted in a little more or less quadrangular flag ending in several splits. In the flag itself the symbol of the army or the regiment was to be seen. The manuscript contains numerous representations of such banneroles or pennons, but exclusively among the illuminations of the first painter *(Fig. 19, 1-3)*. These banneroles sometimes have two or three flammes, but now and then we can count up to seven, probably depending on the number of the bands in the turm. The emperor Theophilos on board a ship visiting the navy of his empress, in fol. 44 v., is surrounded by his officers wearing lances with such banneroles *(Fig. 28)*. Leo in Tactica mentions large and small banners. The main colour of the flags and banneroles in the manuscript of Scylitzes is red with white cross in the flag itself and with alternating red and white flammes, or sometimes red, blue and white. In the actual army not two bands of a turm had the same colours of their banneroles. Each displayed a facing of its own.

To the light cavalry the lances and particularly the short javelins, the rhiptaria, were considered important weapons. In Scylitzes both types are in use. The light cavalry had as its main weapon besides the javelin the little horseman's bow. Among the infantrymen some groups, particularly from montaneous districts to the East, did not use the bow, but were in stead of it furnished with javelins *(Fig. 18, 12-17)*. Particularly the second painter and his group frequently demonstrates the javelin in sieging scenes *(Fig. 51)*.

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Almost the same types of weapons mentioned by Maurikios are to be found in the Tactica of Leo, though this author instead of the very long kontaria recommends lances of a somewhat shorter size. Exercises in the managing of lances were considered important to the young noblemen — almost just as important as exercises in using bows and arrows. Just as in the Arab world, where manuals were written about how to use lance, bow and other kinds of weapons, the Byzantine youth had to be educated in how to manage lance and bow.[163] (The Arabs were above all lance-fighters.)

As the Byzantines always in battles used to adopt the methods and weapons of their antagonists, we may expect to find the same types of weapons on both sides, on the Oriental as well as on the Byzantine side. However a difference is sometimes noted in the illuminations of the second painter and his group, these painters as a rule distinguishing the Byzantine lances from the Arab types *(Fig. 19, 4-21)*.

The history of the lance goes far back in time not only in the Mediterranean world but almost everywhere in human civilization. Weapons for stabbing and throwing were of importance not only in prehistoric time or in Greek-Roman Antiquity but even in the European Middle Ages as well as later on. In later time lances got their importance to cavalry, spears to infantry, just as did the long pikes of infantry in various countries and epochs in Europe. (The Brabançons, the Spanish and Swiss footmen.) Special types for hunting developped in Europe as well as in the Orient. Already in the Sumerian monuments, in the Assyrian and Babylonian alabaster-and glazed tile reliefs we meet lances used for cavalry as well as for infantry or hunting. In Persia and in various parts of the Near and the Middle East it was a very important weapon, and among the ever-fighting horsemen from the Asiatic steppes a cavalry lance belonged to their most important equipment in battle. Alexander the Great had introduced a very long infantry lance, the sarissa, which was almost like the pikes used in the Middle Ages for the Flemish and the Swiss infantry. The Hellenistic type from these armies of Alexander became important to the armies of the Seleucides as far away as to Baktria.[164] The Macedonian cavalry was furnished with a shorter type of sarrisa, later on taken over by the Romans.[165] The true

[163] H. RITTER: «*La parure des cavaliers*» *und die Litteratur über ritterlichen Künste* (Der Islam 1929, vol. XVIII). See: A. RAHMAN ZAKY, in GLADIUS, IV, p. 107 ff.

[164] KROMAYER UND VEITH: *Heerwesen und Kriegsführung der Griechen und Römer*.

[165] For Roman lances see: COUISSIN: *O. c.*, pp. 15, 121 ff, 479 ff; AUSSARESSES: *O. c.*, pp. 48 ff and 51 about the length of the lances.

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cavalry lance however came from Central Asia with the various horse breeding tribes and it was introduced into the European battle fields during Migration time by the Sarmates, Alanes and the Huns. The Parthians adopted it for their heavy cavalry. The Goths defeated the Roman armies at Adrianopolis in 378 A. D. by means of cavalry lances and long swords. The Sassanians took it over from the Parthians. Already in some of the Palmyrenian warrior-stelae long lances are to be found, here combined with the little round shield, the rondache. It is the same type and combination which occur in the wall-paintings in Dura-Europos.[166] Exactly the same combination do we find in the manuscript of Scylitzes, but here the types of lance-irons differ.

Lance-irons constitute one of the most current archaeological objects. In spite of their frequency however they belong to a category of objects which are rather difficult to classify and to date. Though for instance in Western Europe various types became current during the first years of the Middle Ages, it is not before about 1200 or even later that a richer variation of types and shapes appears. This phenomenon is partly owing to changes in the art of war and in changes of the defensive weapons. The Avarian javelin had been introduced in the 8th century. But most of the changes took place in the Occident particularly after the encounter with the Oriental world during the Cruzades. New weapons, new methods and particularly stronger types of defensive weapons became the result of the Western knights and their encounter with the Saracenic armies. On the Iberian peninsula such changes took place before the days of the Cruzades, brought by various currents of invaders from North Africa. Not least the invasions of Berber tribes in the 12th-13th centuries brought new tactics and new cavalry weapons to the peninsula and changed to a high degree even the tactics of the Christian knights as seen from the introduction of certain types of swords and lances in this very epoch. The Moslem invasion on the Iberian peninsula meant a great development to the art of war as well as to military equipment not only here but even in other parts of Europe.[167]

The types of lances and spears in Greece and Rome in Antiquity differed widely from the types used in the European Middle Ages. The Greeks and Romans preferred the extremely long lance for the infantry at the same time as they adopted the shorter type, a throwing lance or a javelin for both infantry and cavalry. The Romans used various types of lances and spears, the long hasta and such throwing spears as the pilum, which in certain periods particularly was used for the defense of

[166] R. GHIRSHMAN: *O. c.*, p. 75, fig. 87; *Berytus,* III, 1936, pl. XXX.
[167] F. LOT: *L'art militaire et les armées au moyen âge,* II, p. 248 ff.

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camps and from the towers of the besieged towns or fortresses just as we see it in the manuscript of Scylitzes. The so-called pilum murale was a rather heavy and strong javelin, which later on was exchanged with a lighter type of pilum for field battles. Vegetius mentions another kind of javelin, the spiculum, about 1,72 meter long and with a triangular lance iron.[168] On the Arch of Constantine some of the infantry soldiers are furnished with a long hasta, while for instance some of the guards carry barbed javelins with a shorter shaft. The most current type of lances in late Roman time and for instance on the Extremadura-clipeus, where the imperial guard of Theodosius is furnished with this type *(Fig. 1)*, is a solid long lance with almost leaf-shaped iron through the middle of which a midrib is seen. The lower end of the lance-iron has a short tube, and the shaft is solid and of moderate length. This lance almost always is combined with the large oval shield. It is this type of lance which is often met with for instance in ivory triptychs and other ivory carvings from the 10th-11th centuries, as well as in various Byzantine art objects from the same centuries. From this period is still another type of lance, particularly used by the scale-mail or otherwise ironclad cavalry, a type of lance with a lozange-shaped lance-iron, a central midrib, often a rather pointed end, and below the lance-head a thickening, much like a pair of short thick wings, below which there is a tube. Length of shaft is almost as in the foregoing type. This lance is combined with an oval light shield. The type is to be found in early Byzantine medaillons and coins, such as for instance some medaillons with representations of Constantine II. A gold solidus, now in Brit. Mus., struck in Nicomedia about 355 A. D. represents a very fine specimen of this lance type.[169] Another one is to be seen in the illuminations of the Virgil manuscript in the Vatican Library. We find it too in a silver dish from about 522-567 in the Hermitage Mus. in Leningrad, representing Aphrodite in the tent of Anchises.[170] This type became the current type in the Byzantine manuscripts, just as it is frequent in Carolingian, Ottonian and Mozarab illuminations in the 9th-11th centuries. Even at an earlier time it is reproduced in illuminations.

While the late Roman infantry — as mentioned by Vegetius, II, 14; II, 15; III, 14 — was armed with javelins, which sometimes may have been used like pikes, and with lances as seen in some of the archaeological monuments, the cavalry almost always was equipped with a special

[168] See note 165 with references to Vegetius.
[169] JOHN BECKWITH: *O. c.*, p. 8, fig. 3.
[170] *Ibidem*, p. 44, fig. 56.

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lance, the contus. It is mentioned by Vegetius, III, 24, who tells that it is very similar to the sarissa, but with a shorter shaft. Not all corpses carried this lance, but special corpses, contati or contarii (Vegetius, III, 16) were equipped with these long weapons, such as for instance Ala I Ulpia contariorum, known from various inscriptions. The emperor Leo says in his Tactica VI, that among the «ancient» the heavy cavalry was divided into thyreophoroi and doryphoroi, and that the last category had no shield but only their long lances. These lances were so long and heavy that it would probably have been impossible to manage both lance and shield, for which reason the shield had been omitted.

In Central Europe other types of lances were current in the same epochs, as we learn from the ancient writers. Tacitus tells about the framea of the Germanic tribes, a special weapon used for both throwing and stabbing, almost like a rapier. The Merovingian armies of a little later days were proud of their so-called angon, throwing lances with a barbed lance-iron, a type known from archaeological excavations as well as from illuminations and literary sources. During Merovingian time in France appeared a spear, the iron of which had a short tube and a little knob or little wings between tube and iron blade. These spears sometimes have been considered the forerunners of the winged lance-irons. The winged lance became the typical lance in Carolingian time, used by both cavalry and infantry as well as by the imperial guards.[171] It got a wide extension, and it is to be found in France, parts of Germany, Hungary, Bosnia, Croatia, North Italy and even in the Scandinavian countries. It is met with in the contemporary illuminations, and it occurs frequently in archaeological excavations. The archaeological lance mostly belongs to the 9th-10th centuries or a little later, but in pictorial art it is to be seen even as late as in the 12th-13th centuries. In the illuminations from the Occident and from Constantinople it may often be difficult to discern this kind of winged lance from the type hereditary from the late Roman cavalry from 3rd and 4th century A. D.

France was reputed for its factories of lance-irons, particularly the factories of Poitou, the irons of which were desired almost everywhere in the European world and even farther away. The emperor Charlemagne forbade the exportation. Such lance-irons are frequent in the illuminations of the Western world and in the Mozarab illuminations. Probably the Carolingian and the Byzantine lances, as represented in the art objects, have a common source, descendants of the late Roman cavalry lances, though they later on differed. But there is more Roman tradition in the types represented in Byzantine art than in the Frankish.

[171] E. A. Gessler: *Die Trutzwaffen der Karolingerzeit,* p. 39 ff.

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In the Oriental world this types apparently do not appear. Besides the Roman traditions the Byzantine lances contain some Oriental elements. As the Byzantines had adopted many features from the nomadic tribes of Central Asia and from the steppes, we may expect to find lances of the types used by those tribes. The Sarmates, the Avarian horsemen, the Huns used cavalry lances, and in the heavy Parthian cavalry as well as in the Sassanian cavalry we find these types taken over.[172] But the Asiatic lance-irons are of a type different to the Occidental lances. They are often long, slender and diamond-shaped in section. We find such lances in the Persian miniatures from 14th century, where the long shafts are furnished with such a slender, but strong lance-iron and with a point, a spike, in the opposite end of the shaft, some of the lances with, others without a bannerole. The Arabs used long cavalry lances as well as shorter throwing lances and their cavalry got a special training in how to manage the long cavalry lances and the javelin. Cavalry battles with long lances are represented in many Persian illuminations, not least in the illuminations influenced by the Mongol style of the 14th century.[173] Apart from Roman tradition and continuation of late Roman types the Byzantines took over the use of the long cavalry lance from the Parthians and Sassanians and their heavy cavalry and from others of their Asiatic enemies. At the same time they took over the shorter and more primitive types of lances and spears used by their enemies for instance from Slavonian regions of the Balkans, in order to fight these enemies in their own manner and with their proper weapons. This is the reason why Maurikios recommends the akontion with throwing thong of Slavonian type, which had to be thrown with both hands, for battles against the tribes on the Balkans. The *light Byzantine cavalry* was furnished with javelins beside their bows and arrows. Javelin-throwing was considered very important and had to be practised by special training. Certain groups of the *Byzantine light infantry* were equipped with javelins besides their bows and arrows. Such an infantry was particularly used in montaneous districts and not least against the Slavs in the Balkans. The large javelin, berytta, was only for infantry and acted as something between a javelin and a mace. In various of the illuminations of the manuscript we find Byzantine or foreign javelin-throwers, for instance in fol. 97 v., the siege of Euripos. Javelin-throwers were important in special regions, where they replaced bowmen. The art of throwing javelin probably had been taken over not

[172] R. GHIRSHMAN: *O. c.*, p. 52; p. 55, fig. 69; p. 179, fig. 220; p. 181, fig. 223.
[173] J. PIJOÁN: *O. c.*, vol. XII, p. 348, fig. 484; E. KÜHNEL: *O. c.*, pl. 37; *Historia del Arte Labor*, Arts of Islam, 1932, p. 597.

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only from the Slavs, but particularly from the Scythians who besides bows and arrows used their javelins from horseback. In Scythian art objects we find representations of such types of spears.

As to the art of managing the cavalry lance, the Goths brought it with them from the Bosporan and the Crimean areas to various parts of Europe. Jordanes tells about the Goths and their use of the lance and so do other authors. The invasion by the Goths, the Huns and the Avars brought the cavalry lance into the foreground so that it came to play an important part in the European armies during the Middle Ages.

The manuscript of Scylitzes contains various kinds of lances and spears. Details in regard to the rendering of the weapons often are rather few, and we are not able to discern all types. But taken as a whole it seems possible to classify some of them. Each of the painters has a type of his own. As with the former categories of weapons and armours there is a clear distinction between them. A deliberate differentiation in regard to the epochs represented by the three main-painters is notable.

The first painter here, as in all his illuminations is oldfashioned. He represents types older than the types used by his colleagues. The reason — besides his prototypes — may be that he is describing periods previous to the other painters. Most frequent are the cavalry-lances with more or less distinguishable wingfigures below the lance-iron *(Figure 19, 4-9)*. The irons themselves are almost leaf-shaped with a long slender point, a kind of slender stem, and below this a ball or a wingfigure. This last figure sometimes have horizontal wings, sometimes downward turned wings, while it is more like a ball on some of the lances. The lance is used by heavy cavalry in combination with a long sword, sometimes with a little oval or kite-shaped shield, sometimes with a little target. Most frequent are however representations without shield. Not only the Byzantines themselves but even their enemies carry this type of lance, whether Saracens, Bulgarians or other nationalities. Even in the navy this lance is to be found. Now and then the imperial guard is equipped with it too. Fine specimens are seen for instance in fols. 11, 12, 13, 15, 16, 26 v., 31 r., 32, 44 r. (imperial navy), 72, 73, 76 v. and many other illuminations *(Figs. 22, 33 and 34)*. In most of the battle scenes as well as in navy battles we find one or more lances furnished with the bannerole, rendered as a short, square flag, mostly showing the figure of a cross and with long splits, at least two, often three and more, up till seven. The colours in the manuscript mostly are red alternating with blue or white. (See fols. 26 v. a, 30 v., 31 r.-v., 32 r.-v., 72, 73 as well as others; *Figs. 23, 33 and 34)*.

This type of lance probably must be considered the descendant of

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the late Roman lance as seen for instance in the manuscript of Virgil in the Vatican library, from the 5th century and from various late Roman monuments of the same period (4th-5th centuries). It is natural that the old-fashioned first painter is using an old type, worn by the late Roman heavy cavalry (where it however occurs in combination with the oval shield). It is quite in accordance with his style. Again we meet it in Byzantine small art from 9th-11th century, such as for instance among the warrior-saints. Even this is in accordance with the style by this painter. Nevertheless it it tempting to compare with various Occidental manuscripts, Carolingian as well as Ottonian and Mozarab illuminations from 10th-11th century.[174] In the Utrecht psalter, in Codex Aureus from St. Gall and some other illuminations from almost the same time similar lances are to be found, but some of these representations are more like the Frankish winged lances and they often have two sets of wings. A very coarse edition of the type do we find in the Mozarab illuminations. Maybe the Scylitzes painter did not intend to represent this winged type. He only wanted to emphasize the ancient tradition. The same type of lance, without the ball or wings is seen side by side with the winged lance, but the lack of wings or balls depends upon the carefulness of the painter.

Though the protospatharians sometimes are furnished with this type, their usual lance very likely was of another, more solid shape. In some of the illuminations a type occur with a strong, lozange-shaped iron, a pointed top and with midrib as well as a strong tube. Excellent specimen are to be seen in the fols. 13 r.-v., 42 v., 45 r. b and v. with the emperor Theophilos. The guard is equipped with such a partisanlike lance and with the kite-shaped shield. The same type is seen for instance in fol. 58 v. as well as in several other pictures. The type has its relatives in for instance ivory carvings, little reliefs in steatite or bronze representing warrior-saints such as the little black relief from Cherson on Crimea from the 11th century. We find similar representations in e. g. the Lothar Evangeliar in Paris or the Evangeliar of Otto II in Munich.[175] The special lance-head or rather partisan, worn by the protospatharians in the representations of the enthroned emperor, is characteristic to the first painter. We cannot expect to find it among the other painters' works, because there is a fundamental difference in regard to representations of the emperor in the works of the painters. The first painter has preserved the ancient and traditional type of rep-

[174] Domínguez Bordona: *O. c.,* I, pl. 18 (Ms. in Valladolid, ca 970).
[175] *Historia del Arte Labor,* VI, pp. 356 and 377; A. Grabar and Nordenfalk: *O. c.,* p. 150.

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resentation, the two other painters and their groups have their inspiration from other sources.

Though the first painter usually doesn't distinguish the Byzantine from the Arab equipment, in some of his illuminations another type of lance is used, particularly by the Arabs. The lance-iron is smaller and of lozange shape. The type probably is of Oriental origin. It is found e. g. in fols. 18 v., 19 r., 22 v., 33 v., 34 v., 58 v., 59 r.-v., 230 v., as well as in some more pictures *(Figs. 24 and 31)*. That the painter really intended to distinguish the two types appears from the manner in which he has drawn them. The Arab lances mostly are drawn in outline, while the Byzantine specimens are made in colour only. An excellent specimen of Saracen cavalry lance is found in the scene with the Saracen captive who is demonstrating to the emperor his ability in managing two very long lances from horseback, fol. 55 r. Here the lance-irons are of the lozange-shape, drawn in outline, the shaft extremely long *(Fig. 30)*.

Javelins are found now and then by this painter, used at sieges of towns or fortresses, such as in fol. 59 v. *(Fig. 31)*. The iron is lozenge-shaped with a long point, while the lances of the so-called Turks are almost leaf-shaped with tube and midrib in lower half of the blade.

The *second painter* and his group differ widely from the first one as to lances. The characteristic and dominating shape from the first painter has disappeared, just as have the banneroles on the lances. The lance-irons are long and rather broad, and their tubes have a short continuation in the blade. Such are the blades in fol. 110 v. a, the Arab navy at Tauromenion and at Lemnos and in fol. 111 v. with the Saracen navy before Thessalonike, where the Saracens are about to carry off some of their Byzantine captives for execution *(Fig. 39)*. There is hardly any difference in the Byzantine and the Arab lances. The characteristic lance-iron has a long, slender, but strong blade with incurvings above the tube and now and then a slight midrib. This type is clearly seen in fol. 97 r., where it is combined with the usual Arab round-shield. In fol. 113 v. with the Arabs pursuing the Byzantine noblemen, who are flying from their prison, both parts are using long cavalry lances of the Oriental type *(Fig. 40)*. There is no difference in the types used by the two groups. This picture certainly gives the best representation of the cavalry lances of the second painter. Frequently the second painter is using javelins both in the hands of the Byzantines and in the hands of the Arabs or other enemies, as seen in fol. 99 v. and 100 v. The lance-irons are large and broad, almost like African assagais. However they are sometimes slender like the Oriental jarids. The javelins used by the Byzantines in the same picture are of the same

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type, but smaller. The Byzantine soldiers carry kite-shaped shields, the Arabs their usual round-shields *(Fig. 37)*.

As for parallels to these lances and javelins it is difficult to support with analogies from pictorial and archaeological specimens. The closest parallels very likely are to be found among the Turkish lances of a little later epoch, or the Persian sinans from the 16th century.

In regard to the *third painter* his lances are summarical. Probably they are furnished with a short prismatic, diamond-sectioned lance-iron on the long, slender shaft. They have more in common with the Persian illuminations from the 14th century. The cavalry-lances of the third painter as a rule are combined with the little kite-shield and with the Oriental mace. Apparently javelins do not occur. The spike, known from Greek, Roman and Oriental lances, where it is often furnished with a special socket is rarely seen, though this important detail must have existed. In some of the illuminations by the second and third painter representing military camps with tents, lances have been stuck into the ground. Shields are hung upon them. Just as in Persian illuminations horses have been tied to the vertically placed shafts. Without the spike such an arrangement would not have been possible. (See fols. 121 r. b and 201 v. by the second painter and 176 r. by the third painter; *Fig. 49.)* An excellent parallel to this manner of using the lance is seen in a Persian manuscript from about 1396 in Brit. Mus. (reproduced by E. Kuhnel, o. c., pl. 35).

As to the chronology of the illuminations in Scylitzes the first painter mostly brings types common in Byzantine art in the 9th-11th century, though they probably have been in use already in the armies of Justinianus, while the second and the third painter probably correspond better to their own time, about 1200, not only in regard to the representations in art, but even to the actual specimens in use. Here as in regard to his other weapons the first painter often appears more in accordance with Maurikios than with Leo. However, this may be due to his prototypes.

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BYZANTINE ARTILLERY

BOTH army and navy made frequent use of artillery. Various categories and types of war-engines are mentioned by the Byzantine literary sources, not only in the manuals of Maurikios and Leo, but in the works by Nicephorus II Phocas, Constantine VII Porphyrogenitus, in annals and chronicles as well as in poems. Scylitzes in his text tells about various kinds of war-engines placed upon the walls of fortresses or upon city-walls. The besiegers as well as the besieged to a high degree made use of artillery, arrow-shooting as well as stone-throwers. But the various categories are only mentioned, not described in details. To the author it was a matter of fact that everybody in the empire was acquainted with them. Almost all kinds of war-engines were in use — for defense as well as for attack — even the use of incendiaries was common, such as Greek fire, fire-pots and handgrenades. The illuminators of the manuscript are acquainted with the war-engines although they have only rendered them a few times. In the illuminations we find the stone-thrower of lever-or balance system three times, the use of Greek fire from a siphon once, while two illuminations probably show a kind of handgrenade.

The knowledge of war-engines had been taken over from the Romans, who in their turn had it from the Greeks and particularly from the Hellenistic technicians.[176] On the whole the types were the same, with more or less alterations, innovations or improvements. The Roman engineers had built upon the Hellenistic scientists and their drawings. The works of the famous Hellenistic technicians such as Athenaios, Biton, Heron, Philon and others were well-known to the Roman and Byzantine war-experts. Further some innovations very likely had come to the Byzantine scientists from the Sassanians, and even from so far away places as China during the period between the 7th and 11th centuries. Very important not only to the Roman, but even to the Byzantine warfare was the work written by the Greek architect *Apollodorus from Damascus,* the general of the emperor Hadrianus. This expert had written his book as a manual for the soldiers, particularly for the sappers and engineers of the Roman army. It was a skilled work with detailed

[176] Bibliographical references see: KALERVO HUURI: *Zur Geschichte des mittelalterlichen Geschützwesens aus orientalischen Quellen;* A. BRUHN HOFFMEYER: *Antikens Artilleri;* J. R. PARTINGTON: *A history of Greek fire and gunpowder.*

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descriptions of the various types of war-engines in use, and furnished with drawings. It was higly appreciated even in far later times. There is tradition for war-engines in Constantinople, in so far as some of the most famous Hellenistic technicians originated in this city. *Athenaios* from about 214-212 B. C. was from *Byzantium.* His work about war-engines, written to *Marcus Marcellus* was higly used by later time experts such as e. g. Vitruvius and others.

The native soil of *Biton* from 3rd century B. C. is unknown, but he at least wrote his book to king *Attalos I of Pergamos.* One of the most important, *Philon,* seems to have been a native of Byzantium, from about 200 B. C. His Belopoiika and Poliorketika — only partly extant — treat various types of engines, and they were used again and again by later time experts. *Heron* from *Alexandria,* probably from about 62 A. D., in his Belopoiika gives important and detailed descriptions of the various war-engines. The traditions are followed by the Roman experts such as *Vitruvius* during the reign of *Augustus, Apollodor* (the general of *Hadrianus)* and not least by *Vegetius* from about 400 A. D., who wrote his work: *Epitoma rei militaris,* to the emperor *Valentinianus II* at a point of time when Roman warfare and tactics were at a decline. Moreover numerous Hellenistic and Roman authors and historians give more or less detailed descriptions of war-engines. Important too is the Roman historian *Marcelinus Ammianus,* whose work about the history of Rome contained several important descriptions of war engines as well as of military equipment among the Romans and the Persians. Particularly interesting in that respect is his description of the campaign by the emperor *Julianus Apostata* against the Persians in the year 363 A. D. where the emperor was killed in battle. The Hellenistic poliorcetic manuals were well-known in Constantinople, where they were copied over and over again even with their original drawings. The oldest extant copies of the work of Heron, handed down to us, are almost contemporary with the history of Scylitzes, from about the year 1000 or shortly after, a. o. the *cod. Mynas Parisinus, cod. Medicaus Par. 2442* and *cod. vat. gr. 1164.* The carefully made drawings in these manuscripts after thorough examinations now are considered copies of the original illuminations from the Hellenistic works. The same is the case with the work of Apollodorus. From Byzantine literature the artillery-machines can be followed through the descriptions in the work of *Procopius,* e. g. in his: *De bello gotico* dealing amongst others with the siege of Rome by Vitiges and his Goths and the artillery of Belisarius, which destroyed the helepoles of the Goths. *Maurikios* and particularly *Leo* give descriptions of machines; interesting mention is to be found e. g. in the work of *Constantinus Porphyro-*

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genitus, in the poem by *Theodosius Diaconus:* «De expugnatione Cretae», as well as in the works of other Byzantine authors such as *Orbikios* from 6th century, *Nicephorus Phocas,* 975 etc. From both Roman and Byzantine authors we know that war-engines were in use not only in the army but to a high degree in the navy where they were of the greatest importance. Most important to the Byzantine navy was the *Greek fire,* invented or probably only improved in the 7th century. Both *Leo* and *Anna Komnena* give important descriptions of this terrible weapon and the apparatus for throwing the various types of incendiaries upon the enemies. Scylitzes lets the Byzantine navy use this combustible various times, launched by a special apparatus, a siphon. Famous became the use of this fire against the Russian fleet in the year 941 when the Russian prince Igor with his navy went to attack Constantinople. Scylitzes describes the battle, and the second painter gives an illustration — fol. 130 r. — to this terrible battle, but here without Greek fire, though this is mentioned in the text *(Fig. 41).* The manuscript contains a very important illumination showing the use of the siphon, fol. 34 r., the defeat of Thomas in the golf of Blachernae *(Figure 24).*

Such war-engines as for instance the various types and sizes of *battering-rams, testudines, movable towers or helepoles, scaling-ladders* and the like had been in use for centuries, already in Ancient Mesopotamia and in Egypt. The Hellenistic poliorcetians treat them with all details in their manuals just as the Roman military authors do. Their appearance is known from the drawings in the manuscripts of Heron and Apollodorus, as well as from some other manuscripts. The Byzantines took over the types, the history of which to some extent can be followed up to the European Middle Ages, the Cruzaders taking over the types with which they became acquainted during their stay in Constantinople or at their encounters with the Saracens, who in turn had their knowledge of war-engines from both the Byzantines and the Persians. The Arabs were even more skilled mechanicals than the Occidental peoples. In the chronicles of Arnold of Lübeck, William of Tyrus, Albertus Aquensis and many others such engines played an important part on the side of the Cruzaders as well as on the side of the Saracens. From 13th century are such important works dealing with the Occidental war-engines as Villard de Honnecourt (about 1250), Alfonso el Sabio in: Las Siete Partidas (about 1260), Ægidius Romanus Colonna (about 1275) and in the 14th century Marinus Sanutus Torsellus.[177]

[177] As to artillery of the Middle Ages, vol. VI of GLADIUS will bring an investigation by M. J. F. FINÓ: *Armes et machines de jet dans l'Europe médiévale.*

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The main war-engines in use were *battering-rams, testudines, helepoles, scaling-ladders, stone-throwers, arrow-shooting engines* of various types, and several kinds of *pyrotechnics*. Besides these were various specialities of more or less importance.

Battering-rams in many sizes were well-known to the Byzantine army and even to the navy. The constructions could be more or less complicated, depending upon size, type, manner of suspending the ram etc. Orbikios recommended to the emperor Anastasios battering-rams upon carriages for field-use as a support for infantry. In the Occidental Middle Ages such rams played an important part too, as seen in the various manuals and descriptions. (According to Athenaios the invention was made by the Phenicians, who are told to have used it at their siege of Cádiz in Spain in the 7th century B. C.) *Testudines,* wheeled or placed upon the ground, continued since Greek and Roman Antiquity, and were used by the Byzantines as well as later on in the Occident. Constantine: De cer. mentions such testudines among the naval equipment for the invasion of Crete in the year 950.

Important were the *helepoles,* often constructed like huge buildings in many floors. Already the Hellenistic authors let us know about their formidable sizes with the many floors (up to 10), staircases, fall-bridges, armed with artillery, their pipings sometimes in form of tubes made of ox-gut, for incendiaries in these huge towers. Reputed in Antiquity and in the Middle Ages were the gigantic helepoles of *Demetrios Poliorketes* at Rhodos in 305-304 B. C., and of *Cesar* at Massilia, Alesia and Avaricum with their excellent constructions. The drawings of Apollodorus are informative. *Procopius* tells about the helepoles constructed by order of Vitiges in front of the Aurelian wall at Rome. They were built of wood, placed upon wheels, 16 for each tower, and drawn by oxen. Belisarius with his artillery put them into fire, after having killed the oxen. The towers burned to the ground, an easy prey to the fire-arrows of Belisarius. In the battle at *Manzikert* in the year 1071 the emperor *Romanus IV Diogenes* let build gigantic helepoles. From the *Alexiade* we learn that the Komnenes used helepoles together with various types of war-engines, not least machines for throwing incendiaries. When *Robert Guiscard* besieged *Dyrrhachium* in 1082 under the reign of the *Komnenes* the Normans constructed a gigantic helepole using the wood from the Venezian ships. Inside this tower had an imposing stair-case, and the platforms of the floors had room for 500 fully equipped soldiers. Famous for its size too was the helepole used by the German emperor *Frederic Barbarossa* at *Cremona* in the year 1167. The Norman rulers of Sicily imported wood from Lebanon for their helepoles, because there was not sufficent wood of

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adequate quality in Sicily. Byzantine illustrations of such helepoles are rarely seen, almost only known from the descriptions. In such manuscripts from the end of the 13th century as, *Gran Conquista de Ultramar,* or *Crónica Troyana* from 14th century, we find helepoles, but their construction is more plain and primitive than the construction known from the Hellenistic poliorcetians.[178] To the Occident such machines had come from the Byzantines and from the Arabs, who in turn had learned the use from their Byzantine neighbours. Though the painters of the manuscript of Scylitzes have rendered many illuminations with sieges, none of the scenes shows such towers. But the author several times tells about helepoles. They were well-known and in use in the days of both the author and of his illuminators.

In some of the illustrations by the second main-painter and in one illustration by the third main-painter *scaling ladders* are represented all of them of a very plain type. broad. in one piece, without fall-brigde or mechanical means for prolongation. Such complicated types as the scaling-ladders described and reproduced by the Hellenistic poliorcetians, for instance by Apollodorus, do not occur. In fols. 100 v., 101 v., 127 r., 142 r., 151 v., 153 r., 166 r. and in some other illuminations scaling-ladders are in use for attacking fortresses and towns *(Figs. 37, 45).* Neither of them are furnished with fall-bridges or hooks for climbing the hostile wall. Often they seem very similar to modern fire-escapes.[179] It is beyond doubt that the Byzantine engineers have known and constructed such scaling-ladders though these refined types have not been depicted by the Scylitzes-painters.

By far the most interesting and important war-engines were the different types of artillery for throwing stones and other kinds of heavy or dangerous projectiles, arrows, bolts and fire. The Byzantine literary sources still have not been sufficiently examined for giving an exact picture of the artillery in spite of the very important and learned investigations made by the late Finnish scientist *Kalervo Huuri* more than 20 years ago. Huuri examined Byzantine, Arab, Persian, Syrian, Armenian, Chinese and Indian sources as well as sources of the Occident, an enormous achievement in a very difficult field.[180] As to the development in the Medieval Occident these Near-and-Far-Eastern sources are of the greatest interest and importance. Just here do we find — as

[178] GUERRERO LOVILLO: *Miniatura gótica castellana,* lam. 44, 2.

[179] *Cod. vat. gr. 1605* from 11th century shows such a mechanical fall-bridge; A. BRUHN HOFFMEYER: *Ant. Artilleri,* fig. 16; *Ms. Bologna 1497; cod. Bononiensis Sancti Salvatoris 587; Abhandl. Königl. Gesellsch. Wissensch. Göttingen,* philol.-hist. Klasse N. F. XI, 1 tv IX, p. 69, fig. 22.

[180] KALERVO HUURI: *O. c.,* p. 232 ff.

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shown by Huuri — possibilitites for solving the problems in regard to the continuation of the Hellenistic-Roman torsion artillery, and the origin of the European medieval artillery before the days of gunpowder and cannons. The Hellenistic-Roman artillery continued during various centuries in the Byzantine army and navy, side by side with the new inventions of stone-throwers of lever-system. Illustrations of Byzantine tormenta still are unknown, but the Scylitzes-painters have left us three illustrations of stone throwers of the lever-system. As a chronological indicator in regard to the date of the illuminations these pictures are extremely important.

Stone-throwing war-engines: Several times in the manuscript we read about sieges of towns and fortresses, and about the placing of machines upon the walls or city-gates and in front of the hostile town. As a rule these engines are stone-throwers though arrow-shooting machines often occur. The author mentions tetrarea, petrobolon, manganon, lithobolon, organon and alakation as if he takes it for granted that the reader is well acquainted with them. In fol. 151 r., 166 r. and 169 r. we find such stone-throwers in use *(Figs. 42, 45 and 46)*. They are used for siege and for that reason they must be of the heavy type. The first illustration is made by the second main-painter, the two others by the third main-painter. Most information in regard to details is to be found in the first illustration. In spite of differences in regard to ornamental, stylized and simplified details the two other engines certainly represent the same type as the first one. The differences correspond to the artistic differences in the style of the painters and even very likely to different sizes. A common name is manganon, sometimes used for the heavy types, sometimes for the light types or for both types. From the literary sources it appears that two different types were in use, the heavy and the light one, current name of the heavy being the *tetrarea or petrarea,* for the light one *alakation.* But many other names occur. Among them we find e. g. lithobolon, petrobolon, often followed by the word organon. In fol. 151 r. the simple stone-thrower — the hand-thrower with its row of ropes for pulling it — is represented though in a rather schematical manner. A pair of wooden posts have been erected on a solid base (only one post is seen), a wooden tripod. Between the vertical posts a horizontal beam is placed in a frame and acting as an axis. On this beam another long beam — a lever — is suspended revolving on the axis. This beam has a short, thick and a long slender part. The short end carries cross-beams from which a number or ropes for the men are hanging down. The long, narrow arm has at its end two hooks, one closed around one of the loops of the sling bag, the other hook open for the other loop. The current proportions of such

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levers are: 1/5 or 1/6 for the thick and 4/5 or 5/6 for the slender end. The sling bag for containing the stone ball or other kinds of projectiles usually was made of leather, the loops often were iron chains. From literary sources we learn that not only stones were thrown, but even iron balls, pieces of iron, fire jars, beehives full of bees, poisonous snakes, scorpions, powdered quicklime and the like were hurled into the hostile camps or on board the ships. Sometimes literature even mentions dead horses, living spies or — as in the poem of Theodosius Diaconus: De expugnatione Cretae — a living donkey.[181] Although the sources often mention the number of soldiers necessary for pulling ropes, their number frequently seems to be exaggerated. The ancient torsionpower from the peritretes of the onager has here been substituted by the simpler living power produced by the soldiers. The system of this lever-thrower is nothing else but the system used in the hand-sling of the infantry.

The illustrations of fol. 151 r. have a very fine parallel in the illuminations of the manuscript by *Petrus de Ebulo: De rebus siculis carmen,* from about 1187-1200, now in Stadtl. Bibl. in Bern *(Fig. 20).*[182] No wonder that we find the very best parallels for this engine in the manuscript of Petrus de Ebulo, considering the historical events of the time, the close contacts — friendly and hostile — between Constantinople and Sicily or South Italy. Already long before 1100 this kind of artillery had spread from the Byzantine empire to all parts of the Mediterranean world, to Italy and to Spain. The Islamic world had used the same type of artillery as their Byzantine neighbours at least since the 7th century. In Scylitzes four men are pulling the ropes. A stone has been placed in the bag. The engines represented in fols. 166 and 169 *(Figs. 45 and 46)* show the same system but they are of a smaller size and of a more simplified and misunderstood construction. Moreover the levers are of a more stylized and ornamental appearance.

War-engines of this type are well-known from Occidental illustrations from about 1200 and later. Further they are mentioned and described in literary sources of the Occidental countries. In the Occident there are two main types, most frequently called manganellus and petraria, the first one according to the investigations by Huuri probably a light stone-thrower, and no doubt of the torsion type, an onager used for field-artillery, upon city-gates, walls and on board the ships, while the second type is a heavy stone-thrower of the lever-system, used particularly for sieges. After about 1200 three main types of lever-system

[181] M. P. G., vol. 113, 1040 B.

[182] L. A. Muratori: *Rerum italicorum scriptores,* New Ed. Milano, 1900, XXXI, I, 1904; W. Erben: *O. c.,* pp. 85, 117, 208. For Spain a later type in *Gran conquista,* Madrid (Domínguez Bordona: *O. c.,* II, pl. 94).

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are known: the simple lever-thrower, such as the one seen in Scylitzes and two more complicated and developped types in which the pulling ropes have been replaced by a large box filled with stones as a counter weight.[183]

The *Frankish* lever-thrower was in use already at the end of the 12th century, e. g. at Thessalonike and at Lisbon in the year 1185, where the Arabs used it at their siege. It continued in use even long after the introduction of gunpowder and cannons owing to its greater effectivity. A series of names are to be found in the literary sources, and it is impossible to identify the machines by their names. *Alfonso el Sabio* in *Las Siete Partidas,* about 1260, particularly the chapter II, 23, 24 and 24, 9, is speaking about «los engeños que tiran piedras por contrapeso como de los otros que las tiran por cuerdas de mano». Special types of stone-throwers are used in Las Cantigas as seen in one of the folios with a representation of the siege at Constantinople (shown by Lovillo Guerrero, o. c., pl. 33). Inventories from various arsenals tell about such war-engines and their huge projectiles, their force and effectivity. During the Cruzades they played an important part to the Christian knights as well as to the Saracens. The Arabs were intelligent artillerists, more skilled for mechanics than the Europeans and several Arab manuscript-descriptions and drawings are extant. As for details they often are different to the Occidental types.[184]

An important question was if the Hellenistic-Roman tormenta with torsion mechanism had survived and got a continuation in the European artillery of the Middle Ages, preserved as it must have been in the Byzantine empire and among the Arabs. The Moslems probably took it via North Africa to Spain from whence it may have wandered to the rest of Europe. Or it may have disappeared completely in the Western world during the tumultuous centuries of Migration time. In the East Roman empire little by little various types of torsion artillery disappeared, but the most practical types apparently have survived, such as the onager as well as some cross-bow types. All the types must have been well-known to the military scientists, who studied and copied the Hellenistic manuscripts. The changes of tactics in Byzantine warfare which took place at certain periods, sometimes reduced the importance of artillery. In other periods it augmented. It is, as Huuri has said, difficult to solve problems dealing with the development of artillery. The Hellenistic and Roman sources almost only treat such machines as euthytona, palintona and their derivations. The Roman sources, par-

[183] This type and the problems concerned will be treated by M. J. F. Finó, in Gladius, vol. VI.

[184] Claude Cahen: *Un traité d'armurerie composée pour Saladin.*

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ticularly the late Roman, treat ballistae, catapults and the one-armed simplified onager, the stone-thrower, in Syrian called 'arradah, both names standing for «wild donkey». Quite a lot of them must have been stored in the arsenal of Constantinople. The manuscript Anon. Schneider, the date of which has been considered problematic, though very likely a manuscript from about the 10th century, takes it for granted that stone-throwers of torsion type, onager, were still in use.

As to the invention of the simple lever stone-thrower various theories have been set forth. Huuri in his investigations about the Oriental sources comes to the conclusion that this stone-thrower possibly is a Chinese invention, which at an early period spread to the Western parts of Asia, not least to Iran. From here the Byzantines became acquainted with them, and even the Arabs got knowledge of them — not directly from Persia, but probably through Yemen, this country being highly influenced from Persia. Literary sources tell of Arab and Persian engineers working in Constantinople and Byzantine engineers constructing war-engines for the Arabs. Investigations of Byzantine, Persian, Arab, Chinese and various other sources from the East little by little bring a solution in regard to the problems. The similarity as to details of construction between lever-throwers in Chinese manuscripts and the lever-throwers of Scylitzes is remarkable. Byzantine literary sources through various centuries give some information about the artillery and the stone-throwers. The descriptions however often are rather dim and uncertain. The Byzantine sources mention such machines as mechana, mangana, organa, petrobola, lithobola, petropompa etc., all of them signifying stone-throwers. But as to the construction and the types they are rather silent.

Procopius was well acquainted with the types of tormenta. The artillery of Belisarius carried tormenta in the campaigns, as seen from his: De bello gotico.[185] To Maurikios artillery probably did not mean so much because in his days greater importance was attached to swift cavalry. In his lifetime the names underwent a modification. He mentions petrobola but without detailed description. In his days all of them certainly have been tormenta. *John of Ephesus* from 6th century and *James of Edessa* from 7th century as well as for instance *Chronicon Paschale* which relates of the Avarian siege of Constantinople in the year 626, speaks of war-engines with new names such as manganika and tetrareai (besides of helepoles). Leo in Tactica talks about the various types of war-engines and says that there are two types of manganika, the small alakation and the larger tetrarea. The name man-

[185] PROCOPIOS: *Historia de bello gothico.*

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ganikon is frequently used as a common term for both types. The name alakation, which occurs already in the book of Maurikios and is used by Leo, signifies an engine used in the same manner as the onager (or Syrian 'arradah), and for the same purposes, such as we find it in Vegetius. According to Huuri this alakation after all has to be identified with the onager, that is to say a stone-throwing tormentum of light type (for projectiles). There is much evidence for this theory, though a definitive proof still has not been found. Further the engineers of Constantinople were well acquainted with the strong traditions from Hellenistic and Roman time, the manuals dealing with mechanics, poliorcetics, tactics etc. The painters of Scylitzes' manuscript do not reproduce such tormenta, probably because they were more or less out of use in the days of the painters, very likely substituted by the modern lever-system.

About 1100 the Byzantine sources become more scanty, but now the Occidental sources give important informations in regard to Byzantine and Arab warfare, as well as to the engines used by the Cruzaders. Arnold of Lübeck from 12th century, in 227, 22, says that the Byzantines constructed two types, the large petrarea, and the small type, the manganellus. The last one possibly was an alakation. The petrarea, like the tetrarea, was of the lever-system. In the poem by Theodosius Diaconus: De expugnatione Cretae, dealing with the campaign of the emperor Constantine Porphyrogenitus to Crete in the year 950, we find descriptions of the military equipment of his soldiers and the artilleristic equipment on board his ships. Among his engines are stone-throwers such as the powerful apparatus used for launching the living donkey, placed in the sling bag. This engine is called a sfendone, a sling (Migne: Patr. Gr. bd. 113, 1040 B). For such a heavy projectile a tormentum like the onager or alakation would not suffice. And as the machine further is called a «sling» pulled by a certain number of soldiers hanging in the ropes there can hardly be any doubt about the type. It must be a lever-thrower. An Arab source speaks of the gigantic artillery used by Romanus IV Diogenes in the year 1070 in one of his campaigns. Among his artillery-machines there were several mangana; but particularly one huge machine was noteworthy, a stone-thrower with pulling ropes for 1200 men. To its transport 100 carriages were necessary. The projectiles had a weight of about 90-125 kg. each. Though the description may be exaggerated such lever-throwers evidently were in use in the days of Scylitzes and his painters. The historian himself seems to have known them rather well and so did his illuminators, who probably were not acquainted with the «modern» types, the «Frankish» stone-throwers.

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On board the ships of Constantine various types of artillery were placed, such as manganika (probably alakatia) petrareai and labdereai. The last name is not quite clear. Possibly it signifies some throwing-engine of the same type as the two others. For chronological reasons it may hardly be the Frankish lever with its counter-weight system. Moreover his artillery comprised arrow-shooting machines some of them very likely of torsion type, and Greek fire. In fol. 140 r. Scylitzes mentions the conquest of Crete by Nicephorus Phocas and says that all kinds of war-engines were in use for besieging the towns of this island. The illumination however only let us see the camp and the capital of Crete, Kandia.

The Arabs knew two types of stone-throwers, the little one, the 'arradah, and the larger type, the manganiq. Several of the sources put forward by Huuri date from the 9th century and later, but are referring to sources from 7th-8th century. From one of these sources it appears that the Arabs just as the Byzantines used manganiqe and 'arradahs outside the walls of Damascus in the year 635 and in Mesopotamia in 640. At Alexandria in 641 the Arabs had manganiqe and the Byzantines at least 'arradahs. The Persians used both manganiqe and 'arradahs at Ktesiphon in 637, and here the Arabs had built about 20 manganiqe. A Syrian source from 8th century referring events from 665, where the Arabs besieged Constantinople, gives description of a huge manganiq. A Byzantine architect from Paphlagonia, expert in constructing war-engines, boasted of his skill and offered to build a stone-thrower of a size not yet seen. He let procure solid timber of oak. When the machine had been erected in front of the city walls, the men began to pull the ropes of the lever. The projectiles broke away several stones of the wall. After a few shots the artillerists heard a derisive laughter from the besieged and suddenly their huge machine was turned over by a well-aimed shot from the stone-throwers on the besieged wall. By the fall it was crushed to pieces and several men were killed. At the siege of Suman in Khorassan in 710 the Arabs used a manganiq which was called the broad-legged, a name proper for such a lever-stone-thrower. The Arabs used manganiqe against Constantinople during the siege in 717. Already in 683 at the siege of Mekka they had used a manganiq called «mother of the scalp» or the «long-haired». A little later some poems speak of «witches, from the heads of whom ropes are hanging down like hair of a woman». During the war of succession in Baghdad in 865 'arradahs and manganiqe were in use outside and upon the walls. A certain number of men were placed behind the machine for pulling the ropes. In Arab sources these types can still be followed during the time of the Cruzades, and illustra-

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tions of such engines are to be found in Arab manuscripts. About the middle of the 13th century each of the Mongol warriors according to their regulations had to be equipped with a rope for pulling stone-throwers, besides their bows, arrows, axes and single edged swords. The «Frankish» lever-type was introduced to the Byzantines and the Arabs from the Western, particularly the Mediterranean, peoples, and this type took its way to the East, to Persia and China, just as the simpler types had come from there to the Mediterranean and later on to the Occidental world. Among the Arabs it was called «Farangi» or manganiq magribi.

By the Byzantines and the Arabs the old type had spread to all the Mediterranean world. We find the light lever-thrower in use at Salerno in 871, and at Syracuse in the years 877-887. With the Arabs it went through North Africa to the Iberian peninsula, where it was in use as early as in 761 when the Arabs — without results — besieged Visigothic Toledo. In the 9th century Arab and Spanish sources tell about the Viking invasions on the Iberian peninsula, not least in Andalucía. The Vikings feared the caliphale artillery, which threw firepots with naphta upon them from such lever-throwers. In Sevilla the arsenal of the caliphs was well equipped with war-engines of that type, just as the Arab war-ships were armed with stone-and fire-throwing machines (already in 792 the Arabs had used them at their siege at Narbonne). Probably the Vikings learned something from their raids in Spain. They may have adopted them or learned to construct such machines, since we hear about their use at the siege of Paris in 885-886. The epic by *Abbo de Saint-Germain* from 890 — an eye witness to the siege — speaks about machines throwing stones and beams against the city, and the description of some of the machines, called manganum, may agree with such machines as those tetrarea-manganiqe mentioned in Byzantine and Arab sources. The early Spanish literary sources, written in Latin, as a rule give the Latin or latinized Greek names of the machines, such as mangana, manga, mangonella, petraria and lapidaria. But from about the 13th century, where many sources are written in Spanish we find instead of the Latin names Arab names such as almanganiq, almajaneque, algarrada, although the terminology doesn't always agree exactly with the original Arab terminology. Annales Toledani, about 1220, mentions I, 356, 12, «almagenequis, é con algarradas», the same is the matter with *Las Siete Partidas. Gran Conquista de Ultramar,* about 1290, sometimes speaks of almagaña and algarrada together with the third type in use at that time, trabuquete. From the end of the 13th century the various Occidental historians and learned experts mention a multitude of names, the identification of which seems almost impossible.

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ARROW-SHOOTING ARTILLERY

AS to tormenta or torsion artillery it doesn't occur in the manuscript of Scylitzes. No doubt it was still in use in the days of the author and his illuminators though we cannot say it for certain. In the periods described by Scylitzes however such arrow-shooting artillery was in use. The Byzantines knew various types and sizes of cross-bows, for infantry as well as for siege-artillery. With the decreasing importance of infantry to the advantage of cavalry already before the days of Maurikios, the use of that kind of weapons decreased too. But still we are able to follow their use, though it sometimes seems to be a rather difficult work on account of failing sources.[186]

The Hellenistic poliorcetic manuscripts were furnished with drawings representing the various types of crossbow-like war-instruments, such as gastrafetes, euthytona, palintona and other kinds of engines with torsion as motive power. Various references in the contemporary Byzantine literature seem to indicate that such types were still known and probably in use though we until now have not found any illustrations. Although Scylitzes himself wrote his history in the second half of the 11th century, and his painters worked out the illuminations probably at the end of 12th or beginning of 13th century we do not find any representation of such artillery. The ancient type of crossbow — very likely even a type with steel bow adopted from the East — seems to have been in use almost up to the time when the new Occidental invention the zangre appeared mentioned by Anna Komnena in her Alexiade. Anna Komnena says that this Western crossbow was the most cruel weapon ever invented, and she gives a description of the type and the manner of bending it.[187] We find the Western type of crossbow in Occidental literary sources already from the 10th century, and we find the weapon represented in art, e. g. in Spanish capitals, from 11th-12th century.[188] This crossbow became the current infantry weapon in the Occidental Middle Ages. It came into use in Spain and France, probably in Italy too, at an early point of time. A little later it appeared in Germany. Such crossbows are represented in the illuminations from

[186] K. HUURI: *O. c.*, p. 71 ff.
[187] W. ROSE: *Anna Komnena über die Bewaffnung der Kreuzfahrer.*
[188] Romanic capital from San Pedro de las Dueñas (prov. León), 11th century, now in mus. arqueol. Madrid.

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Petrus de Ebulo, but in Scylitzes we only find the current types of handbows for mounted archers and the larger size for infantry.

Nevertheless the Byzantine military authors tell about arrow-shooting engines both for hand-use and for artillery. Even some of the Barbarian peoples used tormenta as told by Jordanes in his Getica, 114, 17, where he says that the Huns at Aquilegia in 452 used tormenta. The Goths had torsion crossbows. So tells us at least Ammianus, who says that the Goths had learned the use during their stay in the Bosporan regions. As to Spain *Isidorus of Sevilla* in his *Originum sive etymologiarum,* XVIII, speaks about ballista, fundibulum and funda and he tells about such apparatus, which by means of torsion-power are hurling both lances and stone blocks. Isidorus himself no doubt has known such engines from eye-sight, moreover he has much knowledge from his Roman literary sources, such as Frontinus, Hyginus and particularly Vegetius. In the days of Vegetius, about 400 A. D. the arrow-shooting tormenta were in use. Even the Sassanians used them, though such weapons were of less importance in their armies owing to the special Iranian military organisation and tactics, swift mounted archers and heavy cavalry. Vegetius in IV, 22, besides his carroballistae mentions two types of crossbows, the old type, manuballista, and the modern arcuballista. The first one is used even as carroballista. Originally it probably was identical with a stand-crossbow, its antecedents being found in the Hellenistic artillery. The arcuballista very likely is identical with the crossbow represented upon the Gallo-Roman reliefs from 4th century A. D., now in the museum of Puy, from Solignac-sur-Loire, a type which very likely must be considered the forerunner for the medieval Western crossbow.[189] A special crossbow for bullets was in use in Spain about 700, possibly of Persian origin and brought by the Arabs.

During the transitional period in Constantinople (7th-10th centuries) we now and then find mention of crossbows, particularly as a weapon for the navy. No descriptions are extant and after all it seems to be almost like later time European crossbows but without stirrup and mechanics for bending. Usually it is called toxobalistra and it may be reproduced now and then in siege-scenes in Scylitzes, though we cannot identify it.

In the period between the 7th and 10th century the Byzantine army seems to have had a light artillery on carriages, possibly corresponding to the Roman carroballistae and very likely a torsion artillery. In Constantinople it is called toxobalistra. These toxobalistrai were arrow-shooting, particularly for fire-arrows. To the navy they were consid-

[189] WENDELIN BOEHEIM: *Waffenkunde,* p. 402, fig. 480.

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ered important weapons. The emperor Constantine Porphyrogenitus on board his war ships armed for Crete in the year 950 carried both *toxobalistrai* and *cheirobalistrai.* The projectiles seem to have comprised both the heavy bolts for crossbows, myiai, and the more current for ordinary types. Even in the Tactica of Leo, Const. XV, dealing with sieges, arrow-shooting crossbow artillery is mentioned. Such machines were particularly fit for incendiaries, such as showers of fire-arrows in order to set fire to the hostile ships and buildings.

Toxobalistrai formed an important part of the naval equipment. At least the name toxobalistra turned up particularly in the navy. Constantine in: De cer., mentions the armament of the war-ships, amongst other 50 «Roman bows», probably some kind of hand-bows with twofold strings, one for use, one for spare, 20 hand-arcubalistrai with plaited strings, 10.000 arrows, 200 bolts for crossbows, which may have been either for handbalistrai or for stand-balistrai. Stand-balistrai were mounted on boats and ships. Leo talks about a field artillery mounted on carriages and in 1025 the improved text by Constantine mentions this type of artillery. It looks very likely that these kinds of weapons really were in use in the days of Scylitzes, although they in the days of his illustrators already may have been considered old-fashioned and out of use. Arrow-shooting artillery of large size was in use among the Arabs at the famous siege of Acre in the third Cruzade (1190-1191). Arab sources as well as Occidental sources certify this.

The various types of tormenta of course were rather complicated. No wonder that the Byzantine military engineers have experimented with improvements and simplifications. Experiments probably were undertaken with carrobalistrai furnished with *steel bows.* Various types may have been known but still the sources do not give sufficient information. At least during the 12th and 13th centuries Chinese steel-crossbows appeared, first in Russia later on in Persia and further to the West.[190] The steel bow here was placed vertically, not horizontally as in Hellenistic or Occidental medieval crossbows.

[190] K. Huuri: *O. c.,* p. 230; R. Schneider: *Die Artillerie des Mittelalters.* See: A. N. Kirpichnikow: *Die Wurfartillerie des alten Russlands,* p. 43 ff (in Russian).

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BYZANTINE PYROTECHNICS

ONE of the most important and interesting illuminations in the manuscript is the illumination in fol. 34 v. *(Fig. 24).* An imperial warship is about to burn up the hostile ship representing the navy of Thomas the Rebel about to attack Constantinople. An immense fire from a copper tube in the prow is almost covering the ship of the rebel. One or perhaps two men are operating the siphon, while another one is attending the oars and the rudder. In the middle of the ship the crew is represented by a warrior with a long lance and in the stern the oarsman is sitting. The wind fills the sail. The crew onboard the hostile ship is represented by three men, two of them pulling the oars. They are more or less concealed behind the smoke and the long red flames. The artillery ship is decorated with rosettes. All the crew pay attention to the terrible blaze. Only the siphonator turns away his head to avoid the insupportable heat and the abominable smell. The particular interest of this illumination is that we are here confronted with that terrible invention which the Cruzaders and later time Occidental authors gave the name *Greek fire.* It was the most effective and terrible weapon of the imperial navy. Not only the fire is seen, but even the apparatus used for launching it, the siphon, though the details of its mechanisme are not distinguishable. The Byzantines themselves did not call this weapon for Greek fire. They used various designations such as sea-fire, wet fire, Median fire and several other names. Though the various authors may be more or less consequent in their names of this fire one cannot exclude the possibility that a difference really existed in regard to the chemical compositions of the incendiaries mentioned by the Byzantine authors.[191]

Several times in his text Scylitzes mentions the use of Greek fire or the use of combustibles thrown against the enemies. Hostile ships, castles, cities, camps etc., were completely burned to the ground by the terrible heat caused by the combustibles. A detailed description or an exact information about the incendiaries or the siphons or other kinds of apparatus apparently do not exist. They are at least until now un-

[191] MAURICE MERCIER: *Le feu Grégeois.* With literature; J. R. PARTINGTON: *A history of Greek fire and gunpowder,* with bibliographical list. See: SCHLUMBERGER: *O. c.,* II, p. 120 (the navy of Tzimiszes against Kiev).

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known. The best and most comprehensive description of this phenomenon is to be found in Leo's Tactica, in the work by Constantine Porphyrogenitus and in the Alexiade by Anna Komnena. Leo and Anna are the most informative.[192]

The knowledge and the use of incendiaries in the art of war goes back to Antiquity where it was an important means in sieges from outside and defense from inside. Torches, fire-arrows, burning pitch and fire-jars always have played an important part in the art of sieges. Torches and fire-arrows are to be seen in Assyrian reliefs from 12th-9th century B. C., in the Babylonian bronze-doors from Baalawat from 9th century B. C. and in other monuments. They are hurled or shot against hostile walls, which had to be protected with vinegar, alun-water, raw or wet oxe-hides, etc. According to Herodotus the Persians used fire-arrows against Acropolis in the year 480 B. C. The wooden walls of Plataiai were protected against fire-arrows in 429 B. C. during the Peloponnesian war. Pyrotechnical machines are mentioned by Tuchydides who in his history, IV, 100 tells about a special type of fire-machine, a large wooden tube on wheels, with its lebes filled with charcoal, sulphur, pitch, and with its bellows for making blast in order to blow a long and hot flame. At Syracuse fire-ships and resinous-torches were in use in the year 413 B. C. Famous was the siege by Demetrios Poliorketes at Rhodos in 304 B. C. From his gigantic helepoles fire-arrows and other kinds of fire-missiles were launched. Already the military author Aineas, about 360 B. C. tells how to produce a violent fire by means of fire-pots filled with a mixture of resin, sulphur, pitch and pine-shavings. Charcoal and bellows were not missing. Wooden pestles furnished with such mixtures and with iron-hooks at both ends were effective when thrown on wooden ship-decks and the hooks attached themselves in the ropes and sails. The fire produced by the antique incendiaries was unextinguishable by water, which only made it burn more violent. During his campaign to India Alexander the Great became acquainted with «liquid fire» — burning naphtha. After his death the use of fire-arrows and fire-pots became common in the Hellenistic armies. Plutarch mentions the use of naphtha. Arrianus relates about the siege of Tyrus in the years 332 B. C. how the Phenicians used kettles with sulphur, bitumen and various other ingredients in order to keep up a fire, while the prow of the ships was filled up with combustibles and inflammable materials. When set into fire it burned down the mole built by the Macedonians. Apollodorus

[192] LEO: *Tactica,* XIX, 51 and 57; ANNA KOMNENA: *Alexiade,* XI, 10; XIII, 3-4; XIV, 2.

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from Damascus gives descriptions as well as drawings of the use of fire and fire-machines. A long series of examples of incendiaries used by the Greek and Hellenistic artillery could be mentioned. From the Roman authors and military experts many examples supplement the Greek ones. Vergil (70-19 (B. C.) and Livius (59 B. C.-17 A. D.) as well as many others let us know about the Roman use of incendiaries. Tacitus (55-120 A. D.) mentions fire-lances thrown by means of tormenta, and Vegetius and Ammianus are describing malleoli and falarica. The fire caused by such projectiles could not be extinguished by water. Vinegar or sand were the only remedies against it. Vegetius has a recipe for such a composition for fire, consisting of bitumen, sulphur, resin, incendiary oil or petroleum. Dio Cassius in the 3rd century A. D. tells about the emperor Caligula, who had entertained himself with producing explosions by means of a fuse combined with a vessel.

Plinius relates about a pool of inflammable mud (maltha) in the neighbourhood of Samosate near Euphrat. This maltha would even burn upon water. It is not extinguishable with water, only with sand or earth, which suffocates it. Such maltha is found at Babylon and in the Parthian regions. The countries between the Black Sea and the Caspian Sea were famous in Antiquity for their abundance of petroleum. The narratives about Medea of Kolchis and the burning dress and crown of Glauke no doubt have some historical background. According to Strabon Alexander the Great near to Ekbatana in Media found a lake with naphtha, which burned as soon as it was set into fire. He too mentions the Babylonian black and white naphtha, of which the black one, asphalt, was used in lamps. The white naphtha, mentioned by several authors, amongst others Dioskurides and Plinius occurs in these regions. According to Procopios the regions between Media near the Caspian Sea and Mesopotamia in Antiquity were reputed for their petroleum. Median naphtha was called «oil of Medea» by the Greeks. Very likely a kind of rectification or a destillation of these materials was well-known. Oil-like bitumen was known both at Babylon, in Macedonia, Zakynthos, and on Sicily (Agrigentum). According to Vitruvius: De architectura, a kind of petroleum was found in the river Liparis in Cilicia. Peoples bathing in this river were covered with a grassy layer of oil from the earth through which the river was flowing. Carthage had a well with a special kind of petroleum. Ethiopia had a lake with oil. Herodianus about 240 A. D. tells about the emperor Maximinus, whose soldiers at Aquileia were attacked by the inhabitants who threw jars filled with bitumen, sulphur, asphalt and pitch against them. In the 5th century the Vandal king Genseric sent fire-jars against the Roman fleet (468 A. D.) the Byzantines and the Persians used incendi-

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aries in the 6th century, just as the Visigoths at Nîmes in 673 used such kinds of incendiaries.[193]

Another type was the so-called «automatic fire», a name probably used by Athenaios of Naukratis as early as about 200 A. D. to various mixtures, which came into fire spontaneously under certain circumstances.[194] Most important is the information about this fire from the work attributed to *Julius Africanus,* born about 160-180 A. D. in Ælia Capitolina at Jerusalem, and probably an engineer in the army of Alexander Severus. This officer (according to some sources even bishop of Emmaus) wrote various works, among which is one: *Kestoi,* in 24 books, parts of which still are extant. The first part is written in classical Greek, about 225 A. D. The later part is in Byzantine Greek. Probably this part was written after the 6th century or later. Here we find the recipes. Many of them draw upon ancient Oriental sources or Hellenistic authors. Some scholars have dated the original (now lost) to 9th century. A 10th-11th century manuscript is now in Spain, in El Escorial. After all this work contains a most interesting recipe of incendiaries and explosives (a special mixture in bronze boxes, which would explode under certain circumstances). The recipes give evidence of the interest the Byzantine scientists took in this matter. Although the use of incendiaries in warfare had been known for centuries, the first important use of them came up in the 7th century. Byzantine and Arab authors agree that the most terrible means of destruction for warfare came into use at the end of this century. Literary sources let us know that the invention of the so-called Greek fire was made about 668-673 by a certain architect or engineer Kallinikos from Heliopolis near Baalbek in Syria.[195] His invention consisted in a special composition — probably some kind of liquid — of various combustibles, which, when thrown against the enemy, set fire to everything. This fire was unextinguishable with water which made it burn more violently. Only sand or earth could suffocate it. As to Kallinikos — of Greek descent or perhaps a jew — he was a runaway from the Arabs. Nothing else is known about him. Whether he himself was the inventor or later time legend has ascribed to him the invention, remains an open question. In his days Constantinople teemed with inventors. Probably the recipe date back to still older sources. Its origin very likely is to be found in the ancient Orient. Theophanes relates in his Chronographia (811-

[193] PARTINGTON: *O. c.,* p. 5, with literature.

[194] *Deipnosophistae,* I, 35. Ed. Strassbourg 1801; JULES L'AFRICAIN (in: *Veteres mathematici,* Paris 1693).

[195] See: PARTINGTON: *O. c.,* p. 12 ff, with literary notes; THEOPHANES (in *Corpus script. hist. byzant.* Ed. Niebuhr, Bonn 1839, I, 540-542; 1842, II, 178).

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815) for the year 668-672 about the Arab menace to Constantinople under the caliph Mu'awiya and his son Yazid, who every spring undertook raids from Smyrna against the Byzantine coasts and besieged Constantinople. According to him the emperor ordered raised a navy of fire-ships, furnished with siphons. Partly by a storm, partly by the fire invented by Kallinikos the Arab ships were burnt at Kyzikos. Kallinikos is said to have brought his recipe to Constantine IV Pogonatus, and his combustibles were manufactured for use in the new Byzantine navy. The material was thrown by means of special compressors or pumps, siphons, placed in the prow of the ship. As to the material and the recipe brought by Kallinikos it is very difficult to find out the various components. Very likely the basis of this combustible was a liquid composed of rectified petroleum, quicklime, sulphur, resin and various other inflammable materials. Some investigators have supposed saltpetre to be one of the components, but this problem still is left open. Nearest to the truth comes perhaps Charles Oman in his History of the Art of War. Partington in his book about Greek fire and gunpowder to some extent agrees with him, but he will not join him in regard to the use of saltpetre.[196] We cannot, however, quite exclude the possibility of a kind of primitive gunpowder. Saltpetre has been known in the Mediterranean in Antiquity and the Chinese knew it since time of old.

Neither the material itself nor the apparatus for throwing it are quite clear. In spite of many learned investigations the problems still are unsolved. Very likely the epoch-making matter of the invention by Kallinikos is — as said by various scholars — that he made the liquid more heavy-fluid than the combustibles of earlier time, so that it became more effective. At the same time it became more adhesive. It was almost impossible to remove it from the victims who had to burn down like torches. At the first attack on Constantinople in the years 668-673 and under the sieges in 717-718 or 718-720 Greek fire was used with great effectivity. According to Theophanes who tells about these sieges, the imperial war-ships had been equipped with siphons for combustibles already before the days of Kallinikos, so that his invention perhaps only consisted in an improvement of the siphons by which the liquid was made more effective. The Arabs probably did not possess the material at that time, but there are good reasons for believing that among the multitude of inventors in a capital like Constantinople existed some ingenious persons sufficiently gifted for such inventions and improvements. Further the Greeks of Constantinople carried on the traditions

[196] PARTINGTON: *O. c.*, p. 32.

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from Alexandria and from the Alexandrian technicians and chemists as well as from the treatises inherited from the ancient authors. Even the Romans had taken over their knowledge and books from Hellenistic Alexandria. Since the period from Trajanus and the first Byzantine emperors a continuation in culture had existed. Constantine Porphyrogenitus on his deathbed confided to his son — legend tells us so — the secret in regard to these explosive materials which were said to have been handed over from Constantine the Great, who in turn had received them from an angel. After all the truth perhaps is that the name Greek fire doesn't cover one single material, but comprises various materials and compositions just as there are many methods for using it. The difficulties not only are due to the discovery of the correct chemical compositions and the time for this discovery, but the invention of the siphons, their construction and use in the artillery is still problematic. According to Theophanes Constantine Pogonatus let his warships furnish with siphons already before Kallinikos had brought his invention to the emperor. Constantine Porphyrogenitus says that Kallinikos invented the siphons for throwing the fire. Leo in Tactica Const. XIX, in his ordenances and rules for warships says that many kinds of valuable engines have been invented since time of old in order to destroy the enemy, the hostile ships and fortresses. Perhaps the most effective and terrible is the invention of how to emit a burning smoke under noise of thunderblazing flames by means of siphons and to burn down the ships. The text by Leo let us know that in the prow of the ships a copper siphon could be placed — just as seen in the illustration of Scylitzes — so that the fire could be directed forward or to boths sides or to fall from above. A false floor had to be constructed above the deck, and on this floor the siphon was mounted, while the specialist-troops were placed on the deck itself. The ship must — besides the soldiers for fighting the enemy — have a specialist, a siphonator. As to the type of war-ships some investigators, among others Finlay in his history of Greece, 1877, vol. II, p. 361, says that the war gally, the dromon, had taken the place of the ancient Greek triremes, and that it had only two tiers of oarsmen. It carried about 300 men, and among them only 70 were soldiers. The cheland was smaller, lighter and more swift and this type of ship was equipped with siphons for throwing Greek fire. The crew consisted of between 120 to 160 men. From the literary sources it is difficult to get an impression of the kind of war-ships which carried the siphon for Greek fire. There may have been even smaller ships. If one should trust the illustration by Scylitzes the fire ships were considerably smaller. But in regard to this matter we certainly have to count on the artistic licence. In his text Scylitzes various times

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refers to the use of combustibles and fire thrown upon the enemies, without detailed descriptions in regard to the manner of launching it or the apparatus used for this operation. Scylitzes as well as other authors mentions the use of Greek fire at various occasions. In the year 941 under the reign of Constantine Porphyrogenitus and his co-adjutor the usurping Rhomanus I Lecapenus, the Russian prince Igor with an enormous fleet consisting of ten thousand ships menaced Constantinople, and this fleet was defeated by only 15 semifracta chelandria, which from all sides threw Greek fire upon the Russians.[197] The Russians were so struck with horror when their ships took fire that they threw themselves into the sea. But this liquid fire burned violently upon water, and those who were not drowned, weighted down by their heavy armours, were burned when swimming in the inflammable water. Luitprand of Cremona, from 10th century, whose nephew was then ambassador at the court in Constantinople, gives a mention of this terrible battle (book V, 6). According to Luitprand not only the prows of the ships but even all their sides were fit with siphons for projecting fire. He continues that God had favoured the Greek navy with good fortune in regard to wind and calm sea. The Russian chronicler Nestor in his description of this naval battle with Greek fire let us know how terrible it was. Even Leo Diaconus testifies how terror-struck the Russians were by this fire. The second painter of the manuscript gives in folio 130 v. *(Fig. 41)* an illustration of the naval battle, but without the fire. The Russians, in boats reminding of their famous monoxyles, are jumping into the sea, while the Byzantines are fighting them with long swords. John Tzimisces sent a navy from the Golden Horn against Kiev and Djnepr equipped with Greek fire.

Anna Komnena describes the naval battle in 1103 between the Byzantines and the Pisans near the island of Rhodes.[198] Each of the Byzantine war-ships in the prow was furnished with a copper tube ending in a lion's head or in some other animal's head of iron or of brass, gilt and terrifying to look at. Through the mouth of these animals' heads the liquid fire was thrown by means of a flexible apparatus. At the first time during the battle the siphonators projected the fire at random, but after a short lapse of time one of the engineers invented how to manage the tubes up and down and to all directions just as he wanted it. The Pisans had no experiences in such matters and wondered that fire which usually burned upwards could burn even downwards and to the sides. They were struck with terror and fled. The Norwegian

[197] *Cambridge Mediæval History,* IV, p. 205, with references.
[198] *Alexiade,* XI, 10.

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Speculum Regale, from the mid. of 13th century, contains in its description of war-engines a mention of fire launched from a bent apparatus and projecting a flaming blaze. One of the Norwegian sagas (Yngvars saga Vidforla) relates how this terrible blaze is projected from a copper tube by means of bellows.[199] The Norse king Sigurd Jorsalafar during his stay in Constantinople about 1110 became acquainted with the Greek fire, and Norse literature describes it as something terrible. The mention in the saga of Yngvar is built upon some historical facts, probably the description by Cedrenus of how the Byzantines burned the navy of Vladimir in 1043 by means of Greek fire. The use of Greek fire can be followed in the literature dealing with the Cruzades, in Occidental as well as in Arab sources. At least up to 10th century it was mainly used in naval battles or from ships. But at various occasions later on, e. g. at the siege of Acre in 1191, in the third Cruzade, it was used both from land and from sea.

Beside the sea fire thrown from siphons of ships there were other manners of using this liquid fire, and various more or less unexplicable apparatus for projecting it. Leo says that the soldiers must be equipped with hand-siphons kept behind an iron shield. From these hand-siphons, as they are called, filled with liquid combustibles, they can project fire into the faces of the enemy, and he concludes that such hand-siphons recently have been manufactured in Constantinople. No doubt these hand-siphons are identical with the apparatus in the manuscript, Vat. Gr. 1605, from 11th century, or from the later manuscript in Bologna.[200] The construction of these hand-siphons is unknown, and for the present one can only conjecture as to its details *(Fig. 21).* The illuminations do not give sufficient informations. It is not out of question that this apparatus has some kind of spring-mechanism or wheel and a tinder-box for emitting sparks. Constantine Porphyrogenitus speaks of siphons, hand-siphons and strepta. What the name strepton signifies, still is a puzzle. Heron from Byzantium in his Poliorketika has a passage in which strepton is mentioned, and we find the same strepton mentioned by Anna Komnena.

About 1013 a Spanish Moslem physician Abu 'l-Qasim, wrote a book about surgery. In this book he gives a description of cylindrical syringes with a piston, and he says that a liquid may be spouted out in the same manner as with the tube with which naphtha is launched in battles. The siphons mentioned by Leo and other authors may have been of

[199] *Konungs skuggsjá, speculum regale.* Det kgl. nord. Oldskriftselsk, Copenhagen 1921, pp. 67 ff and 83 ff.
[200] A. BRUHN HOFFMEYER: *Antikens Artilleri,* p. 16.

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some construction with jets to which the liquid combustible or mixture could be pumped through flexible leather tubes and a force-pump as some investigators have said. The military authors even let us know about little hand-grenades made of earthern ware and filled with quick-lime, pitch and other incendiaries. The Arabs used them e. g. in 904 at Thessalonike. So tells us Ioannes Kameniata. When such a grenade is crushed against a person, he will be set on fire. Such hand-grenades probably are represented in fol. 229 v. of the manuscript. They are very similar to the grenades seen in Musée de l'Armée in Paris, or in the museums of Damascus, Beiruth and Cairo. Receptacles for Greek fire, made of earthern-ware or of glass have been found in various places in the Mediterranean, e. g. at Baalbek and at Hama in Syria.[201] Others have been found in Fustat in Egypt. Probably many of them may belong to 10th-11th centuries. Various opinions have been set forth as to the contents of these grenades as well as to the material projected by hand-siphons. The problems still are unsolved in spite of the many skilled investigationes.

Anna Komnena mentions both siphons and some kinds of blow-pipes, through which fire-balls and resin could be projected. In XIII, 3, she relates of the Frankish siege of Dyrrhachion in the year 1107 and tells how the men inside the walls burned the beard of the besieging Franks outside by projecting fire over them through a hole in the wall. The fire for these blow-pipes was made of pine-resin and other kinds of evergreens which had been rubbed and mixed with sulphur and then stuffed into a pipe. By persevering and strong blowing through the pipe this mass was ignited when it met the fire on the tip of the pipe, and darted like a fiery whirlwind or flash on the faces of the enemy. In other places she gives various descriptions of how to use liquid fire.

Anna even mentions the flashing blazes sent down by the soldiers from the city-wall upon the great heaps of brushwood, soaked with oil and piled between the city-wall and the huge moveable helepoles of the besiegers. The soldiers did not succeed in setting fire to the heaps before they went to project liquid fire upon them. In her days the recipe of Greek fire was still considered a state secret. Cedrenos from the 11th century relates that in his days the secret was kept by a certain Lampros, a descendant of Kallinikos. But this Lampros may be a fictitious person, his name being a late Greek name for fire. Probably some special officer or chemist at the arsenal in Constantinople by oath was bound to keep the secret which may have been handed down from

[201] Cf. these grenades with grenades from Konrad Kyeser's Bellifortis from about 1395-1405 (Göttingen ms.); MERCIER: *O. c.,* pl. II ff; PARTINGTON: *O. c.,* 146 ff.

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one generation to the next without any written recipe, as seen in the legend about the emperor Constantine Porphyrogenitus, on his deathbed instructing his son about the state secret.

The Arabs, among whom certainly inventors florished, soon learned the compositions and the use of Greek fire and other kinds of pyrotechnics. They used them against Constantinople, and particularly against the Cruzaders, in Syria as well as in Egypt. Arab fire-work books give recipes of various kinds of incendiaries for war, naphtha pots, etc. Arab scientists studied the art of siege of the Byzantines. They translated and prepared the Hellenistic poliorcetics and technical works and the Byzantine scientific works about warfare. About the middle of the 10th century a learned Arab wrote a book about fire and naphtha and the use of these materials in warfare. His work has gone lost, but it is known in part from an Arab manuscript now in Leyden, extant in two copies, from about 1225 (no 92 and 499). The title is: *Treatise on stratagems, wars, capture of towns and defense of passes according to the instructions of Alexander, son of Philip.* (The Arabs very often attributed inventions dealing with warfare to Alexander or to his «Vizier» Aristotle.) [202] Besides art of war this manuscript deals with pyrotechnics, such as various kinds of naphtha, white, red, black, Persian and a special type from the Red Sea, just as various kinds of incendiary oils and tars, sulphur in many colours and various dissolutions of sulphur in incendiary liquids, as well as compositions for procuring fire, which could burn upon water. The long title in the first folio of the manuscript Leyden 92 even contains the mention of manufacturing «barud», gunpowder, though there is no mention of saltpetre in the manuscript itself. Probably this last part of the title has been added in later time. Another important manuscript dealing with pyrotechnics is the work by *Al-Hasan al-Rammah Najm al-din al-Ahdab,* who probably lived in Syria and wrote his work about 1280-1290. The title of the work is: *Treatise on horsemanship and stratagems of war,* and it exists in two manuscript in Paris, Bibl. Nat., Ancien fonds 2825, old no 1128, and fonds Asselin 643. In this manuscript pyrotechnics play a rather important part, such as for instance machines of fire in war, on land and sea, for defense of fortresses, in sieges, when a place is to be set on fire, in saps, when doors covered with iron are to be burnt, when pots are to be thrown by mangonels, pots with narrow necks, clubs for fire-lances, instruments for destillation, smokes, flying fire or rockets, fire-flowers, lance-heads etc. The fire pots were made of

[202] Reinaud and Favé: various articles in *Journ. Asiatique,* e. g. 1848, pp. 193-237; 1849, pp. 262-327.

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earthern ware, glass, paper, leather, metal etc., and were filled with saltpetre in various mixtures. The sections of incendiaries in this manuscript are detailed and rich as to informations. A third manuscript, now in the Asiatic Museum of Leningrad, a 15th century copy made for a Mamluk sultan of Egypt, the original possibly going back to about 1300 or at least between 1300 and 1350, contains some interesting informations and recipes of incendiaries together with illuminations.[203] In this manuscript we find an interesting recipe of gunpowder, in a composition containing saltpetre (barud), and the name midfa used for an instrument to project bullets (bunduks), or bolts (of type for crossbows) and a description of how to load this midfa. Whether Greek fire in the days of Kallinikos, Leo, or Scylitzes contained saltpetre or not has been a problem discussed by a series of investigators and specialists of chemics. Greek fire, however must be considered forerunner for later time artillery with gunpowder, just as the Arab midfa probably is a forerunner for later time fire-arms.

The European knights coming to Constantinople on their way to the Holy Land in order to fight against the Moslems, found here an art of war and weapons of a type unknown to them and not seen before in the Occident. At their various encounters with the Moslems — in Syria, Palestine or Egypt — they became acquainted with Greek fire. The Occident never became familiar with it. The Western world did not understand Greek fire and this weapon never came to play any important part in the Occidental warfare. Western literary sources relates of the Moslem use of incendiaries against them, launched by stone-throwers such as mangana, mangonella and ballistae. The author of the work: Richardi Regis Itinerarium Hierosolymorum, from about 1222, tells how Richard I Lionheart on his voyage from Cypros to Acre captured a Saracen ship loaded with all kinds of artillery such as ballistae, besides bows, arrows, lances and an abundance of Greek fire in bottles. It is in the same source we find the name Greek fire used: «oleo incendiario quod ignem Græcum vulgus nominant...» And it continues with telling that it is a fire that burns with a vivid flame, smells abominably, consumes even stone and iron and that it cannot be extinguished by water, but only by sand, though vinegar to some extent can subdue it.

Arab sources speak about the great stocks of naphtha stored in the Byzantine churches as a war-stock. The emperors have several thousand grenades filled with «flying naphtha». The Arabs themselves boast of their own stock of grenades filled with «white volatile Syrian

[203] A. Bruhn Hoffmeyer: *Antikens artilleri,* p. 122; J. F .Finó, in Gladius, VI (in preparation).

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naphtha». The Venetians during the third Cruzade (1189-1192) in Constantinople probably were the first Occidental Europeans outside the Byzantine empire, who became acquainted with the composition of Greek fire. At the siege of Damietta in 1208 it was used, according to an eye-witness. Joinville as late as at the end of 13th century and the beginning of the 14th century in his chronicle about the siege of Mansura in Egypt in 1248 where the king of France, Saint-Louis, was taken prisoner by the Sultan of Egypt, gives a vivid description of the use of Greek fire which to him was something new and terrible. As late as in 1453, when the Turks besieged Constantinople, Greek fire was used by side with cannon and gunpowder. The Byzantine historian Doukas gives an account about the capture of Constantinople by the Turks [204] and tells about the bronze guns, their terrible smoke and noise and the Greek fire used beside them, because of their defectiveness. But the invention which had saved the empire in the 7th century could not save it after a lapse of almost 800 years. This however was more owing to the quality of the emperors and their generals than to the Greek fire. As to the manuscript of Scylitzes and his painters the illuminations of Byzantine artillery — few in number as they are — correspond well to the period before or about 1200.

The historical manuscript of Scylitzes with its abundance of illuminations is an unique cultural document from the Byzantine world. Text and illuminations treat one of the most important and prosperous epochs of this mighty empire, the connecting link between the great civilizations of Orient and Occident. The literary sources, accompanied by the pictorial descriptions, make it a fundamental monument for investigations in Byzantine history as well as in all parts of Byzantine cultural life. As a document for the armeological development in medieval Europe, in the Mediterranean world and in the Near East it is of the greatest importance. It represents a significant connexion with and a continuation of Mediterranean Antiquity combined with strong cultural currents from the various civilizations not even of the Near East but with Central Asia and now and then the Far East.

For years the famous embroidery, the *Bayeux-tapestry* with its historical representations of Norman and Anglo-Saxon warriors and battle scenes justly has been considered an almost fundamental document in regard to warfare and military equipment in medieval West Europe. The historical events of the tapestry took place in the year 1066, the pictorial description probably is only about ten to twenty years later.

[204] DOUKAS: *Historia Byzantina.* Ed. Bekker, Bonn 1834, 273; PARTINGTON: *O. c.*, p. 142, note 318.

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The Byzantine *Madrid-manuscript of Scylitzes* with its rich illustrations of the historical events during a period of almost 250 years, its representations of emperors, patriarchs, foreign princes etc., may (apart from the difference of materials) be considered a kind of parallel to the Bayeux-tapestry though very likely even more important. The author of the manuscript is almost contemporary with the events depicted on the tapestry and his illuminators are only quite a century later. Further Scylitzes and his illuminators belong to one of the most important periods of the Middle Ages, the early period of the Cruzades. This precious work in the *National Library of Madrid* gives evidence of the numerous sources from which European armeological development during Middle Ages and later time got influence and inspiration.

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