

THE FABRICAE: STATE ARMS FACTORIES OF THE LATER ROMAN EMPIRE

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INTRODUCTION

'The harsh necessity of war has invented the guild of fabricenses, which guards the decrees of the Emperors with a kind of immortality... for this guild arms, this guild equips Our army.

1. Hence provision has been made that such persons shall be subservient to their own skills, and when they have been exhausted by their labours, they, together with their offspring, shall die in the profession to which they were born...'²

In this dramatic language Theodosius II portrays the fabricenses, or imperial armourers, as an hereditary caste of 'industrial serfs',³ labouring until they died to forge the arms which defended the beleaguered empire. The reality of these state arms factories was a good deal more prosaic, but the text quoted above does emphasise the genuine strategic importance of the work of the armourers.

Beyond brief articles in the major classical encyclopaedias⁴ there has been no thorough study of these factories, the fabricae,⁵ perhaps the most numerous and important of a number of classes of state production centres, which also included the mints, textile factories and purple-dye works.

The following pages are intended to be a full consideration of the fabricae, their staff - the fabricenses - and the context of these within the imperial service and the empire.

SOURCES OF EVIDENCE: 1. THE NOTITIA DIGNITATUM

Apart from a number of references in ancient writers and historians (see below p.259), there is a considerable quantity of relevant imperial legislation to be found in the Codes of Theodosius and Justinian.⁶ But the most important sources for understanding the distribution of the factories and the variety of their products, are the lists to be found in the Notitia Dignitatum.⁷

The relevant sections are Oriens Chapter XI and Occidens Chapter IX, which list the offices, military units and government installations under the control of the Master of the Offices of the Eastern and Western empires respectively, at a date sometime in the early fifth century AD.⁸ The Eastern section⁹ lists fifteen fabricae, while the Western list¹⁰ contains twenty (see Table I and Fig.1). In addition, the lists of officials under each of the two magistri include individuals entitled subadiuvae fabricarum. There were three in the East¹¹ and an unspecified number in the West.¹²

Both the Eastern and the Western factory lists convey essentially the same information, noting the city of location of each fabrica, with, it would seem, information on what each was producing. The individual entries are grouped by region under headings which, with three slight exceptions,¹³ correspond to dioceses in approximate geographical order from East to West.

Before the information in the lists can be analysed, it must be tested for its reliability and completeness, insofar as this is possible. Superficial inspection makes it at once apparent that there are some corruptions and/or omissions, apart from simple spelling errors. For example, only one of the entries for the four East Illyrican factories includes information on what was produced there.¹⁴ Seeck¹⁵ believed that the three other fabricae in this group were not accompanied by any classification because they were general arms works, and not specialised like many others. Yet other factories producing a general range of arms are listed as such, e.g. Argentomagus, armorum omnium,¹⁶ while Seeck is prepared to explain the absence of a production category for the Soissons entry as a lacuna.¹⁷ Taking these observations into account, it seems preferable to regard the absence of categorisation for these Illyrican fabricae as something other than a deliberate omission. The Eastern list also contains a clear corruption, resulting in some confusion amongst the lists for Pontica, Asiana and Thraciae (see Table II). Sardis Lydiae is listed under Pontica,¹⁸ but was actually in Asiana; similarly Hadrianopolis, entered under Asiana,¹⁹ was actually in Thraciae. Clearly what has happened is that the Asiana and Thraciae headings have each been displaced down the list by one line. They may be restored, so that Thraciarum duae now lies correctly above its two entries, Hadrianopolis and Marcianopolis, and Asianae una falls above Sardis.

There now remains the problem of a heading reading Ponticae quatuor, followed by only three entries. Seeck amended quatuor to tres,²⁰ but this seems less satisfactory than the other alternative, that originally there had been four entries, and that the fourth was later deleted or accidentally omitted. The confusion in the existing manuscript may well be an attempt at a correction by a later copyist.

Since there is a strong probability of an omission in the Pontica list, the possibility that there are others elsewhere must be considered.²¹ At the broadest level, if the existing entries are projected onto a distribution map (Fig.1), it is clear that large parts of the Empire are wholly devoid of fabricae. This applies not only to Spain, Africa, Peninsular Italy and the Islands, but also (and this is surprising considering their military significance), Britain and Egypt. Jullian suggested that the lists of fabricae for these areas are missing from the Notitia.²² The absence of these hypothetical lists from the existing manuscript might be due to deliberate erasure or accidental omission during copying, perhaps by truncation. However, we can at least test the latter possibility, due to the regular geographical structure of these and the other Notitia lists.

A number of other catalogues of government installations and provincial dignitates in the Notitia are set out according to a standard pattern. One of the fullest examples is the list of praesides, divided, as always, into an oriental and occidental part.²³

Like the fabrica lists, the individual entries are grouped together by diocese, except that those in Galliae and Septem Provinciae are listed together, as are those in Italiae and Suburbicaria. These diocesan groups are then set out in the geographical order outlined in Table III. Essentially similar sequences are to be found in other Notitia lists, such as those for consulares.²⁴ More directly comparable to the fabrica lists, is the register of state textile factories, the gynaecea,²⁵ another group of state production centres. Unfortunately, only the Western half of the list is preserved,²⁶ but this again follows the same geographical course of arrangement (Fig.2). These examples and others (such as the lists of consular governors and vicariates) show that the longer of the geographically-organised lists²⁷ follow a consistent and fixed order of notation by diocese around the empire, which is set out in Fig.3.

If this is applied to the fabrica lists, the position of Jullian's hypothetical missing lists can then be seen. Starting in Oriens, it is immediately obvious that fabricae in Aegyptus should be at the head of the Eastern list. In the West any fabricae in Peninsular Italy, the Islands, Africa, Spain or Septem Provinciae should fall between the lists for Italia and Galliae.²⁸ This is confirmed by the fact that the last entry in the Italia list is Lucca,²⁹ which actually lies in Suburbicaria. Although it is put in with the factories of Italia, it is placed after them, as Suburbicarian entries should be. Likewise, although Argentomagus is included in the list for Galliae, it actually lies in Septem Provinciae.³⁰ According to the theoretical order, it should be listed before the fabricae of Galliae itself, and indeed it comes at the head of the Gallic list. It is not possible to maintain that lists for Italy and the South-West have been lost. They should have been placed right in the middle of the Western list, and the fact that there were actually fabricae in two of these dioceses, Lucca and Argentomagus, and that each was incorporated into the list of the neighbouring diocese, suggests that they were two isolated outliers which were not considered worthy of separate diocese headings.

The conclusion must be that Jullian's hypothetical extra lists never appeared in the Notitia and that there is no evidence that there were any fabricae in Egypt (see next section), Peninsular Italy or the South-Western provinces. This leaves only Britain, which the order model suggests should come at the end of the Western list, the position most vulnerable to damage. If the other blank areas never had fabricae, then it is unlikely that Britain had any either, but there is more room for doubt in this case, and this question is considered in more detail below (p.263).

SOURCES OF EVIDENCE: 2. OTHER LITERARY SOURCES

Having shown that the internal evidence suggests that the fabrica lists are substantially complete, the external evidence for factory locations must then be considered as an independent check. In the works of ancient writers and historians there are references to fabricae at Nicomedia,³¹ Caesarea Cappadociae,³² Damascus and Edessa,³³ Hadrianopolis,³⁴ and Cremona.³⁵ Malalas mentions three fabricae at Antioch,³⁶ where the Notitia records only two;³⁷ but it is likely that he is including the body of barbaricarii or precious metal smiths known

to have been at Antioch.³⁸ These craftsmen were involved in certain aspects of arms production, and were sometimes referred to as fabricenses,³⁹ although they belonged to a different branch of the imperial service.⁴⁰ Ammianus also contains a possible reference to one of the Trier fabricae,⁴¹ and circumstantial evidence for the two factories at Augustodunum (see below p.275).

Jullian cited a law from the Theodosian Code⁴² as evidence for a fabrica at Constantinople by the time of the Notitia, but the text refers specifically to barbaricarii. There is no evidence for a fabrica at the Eastern capital before Justinian.⁴³

SOURCES OF EVIDENCE: 3. SUBLITERARY TEXTS

A papyrus document discovered in Egypt contains references to fabricae.⁴⁴ The governor of the Thebaid is ordering that smiths be sought out and forcibly sent to him for work in the fabricae. The date, AD298, is Tetrarchic, and this may seem to provide evidence for the setting up of state arsenals in Egypt at this date. However, we have seen that no fabricae are recorded in Egypt in the Notitia. Is the latter incomplete? The historical context of the papyrus makes this conclusion unnecessary. In AD298 war was raging in Egypt. Diocletian had arrived personally to suppress the dangerous usurpation of Domitius Domitianus. Egypt was swarming with troops, and the population was restive.⁴⁵ The climax was the long seige of Alexandria, which ended in spring 298. Under war conditions, it is not surprising to find a governor impressing craftsmen to help out in the fabricae, which in this case are most probably regimental workshops or possibly temporary facilities linked to the seige. There is no solid evidence for state arsenals in Egypt before Justinian.⁴⁶

SOURCES OF EVIDENCE: 4. EPIGRAPHY

There is also a small quantity of relevant epigraphic material, consisting mainly of the tombstones of fabricenses. There is one from Salona,⁴⁷ one relating to Marcianopolis,⁴⁸ two from Sardis Lydiae,⁴⁹ and no less than six from Concordia.⁵⁰ A further inscription mentions a 'comes fabricarum of the whole civitas of Beneventum',⁵¹ but these fabricae are unlikely to be arms works. The rank of comes fabricarum is unknown in this context, and in any case, arsenals as far south as Beneventum are unlikely (see below p.263). Seeck suggested that this comes was in charge of building work,⁵² fabricae being used in its more general sense to mean a place of construction. Less ambiguous is an inscription from Ravenna, set up by Sertorius Silanus, v(ir) p(erfectissimus) p(rae)positus/ fabricae, dating to the reign of Constantine.⁵³ It is possible that, like the fabricae of Beneventum, the Ravenna establishment was not producing arms. It may well have been producing ship's fittings for the Praetorian fleet based there.⁵⁴ There still remains a strong possibility, however, that this inscription records a fabrica armorum not mentioned in the Notitia.

SOURCES OF EVIDENCE: 5. CONCLUSION

Except for the doubtful cases of the Egyptian papyrus and the Ravenna inscription, the independent evidence relating to fabrica locations is in complete agreement with the Notitia lists. It seems reasonable to conclude, therefore, that the Notitia lists form a sound basis for a consideration of fabrica distribution. Before doing so, however, it is necessary to look at the production categories which accompanied each entry in the registers.

THE CATEGORIES OF PRODUCTION OF FABRICAE IN THE NOTITIA

Most of the terms used in the Notitia lists are readily interpreted. Arcuaria clearly refers to workshops making bows, ballistaria to artillery production, hastaria to spears, sagittaria to arrows, scutaria to shields and spatharia to swords. It is also fairly certain that scordisci are military saddles.⁵⁵ More problematical, due to their overlapping meanings, are the terms loricaria, armorum and clibanaria. It has been suggested that the latter refers to heavy cavalry armour, from clibanarius,⁵⁶ or that it refers to iron cuirasses in general, loricaria referring to leather defences.⁵⁷ Armorum has been taken to refer to weapons of offence.⁵⁸ There is, as yet, no real evidence for the widespread use of leather or rawhide armour in the Roman period,⁵⁹ so the interpretation of loricaria and clibanaria in this way will not stand. Secondly, the term arma is not confined to weapons of offence, but is a general term for the panoply, including armour, helmet, shield and weapons, excluding missile weapons (tela). It is worth noting that arma, as used in the Notitia, does not include shields, as indicated by the recurrent use of the phrase scutaria et armorum, especially in the Eastern lists. The two terms must be mutually exclusive here. It seems sound to interpret clibanaria as heavy cavalry armour workshops, on the basis of the distribution of these fabricae in relation to the units they served, as revealed in the Notitia. While only part of one Western fabrica is given over to clibanaria,⁶⁰ in the East, three entire factories are devoted to such work.⁶¹ This strong oriental bias is reflected by the distribution of units of catafractarii and clibanarii, with only three regiments in the West,⁶² and no less than fourteen in the East.⁶³

There remains, then, the question of the distinction between fabricae loricariae and fabricae armorum. Presumably both types of workshop were involved in the production of body armour for infantry and perhaps lighter cavalry. The loricaria centres are confined to the West,⁶⁴ and it is no coincidence that this is also where the only centres described as fabricae spathariae are to be found.⁶⁵ It is suggested that for reasons unknown, swords and body armour were produced in separate factories in parts of the West, whereas along the Danube and throughout the East, they were made in the same workshop. Hence, the more general term arma was used. This seems to resolve the problem. In connection with armour, it is curious to note that helmets are nowhere mentioned in the Notitia lists, especially so since helmets are the only item of late Roman armour which are well known in the archaeological record.⁶⁶ It is possible, however, that they were made in the general arms works, the fabricae armorum.⁶⁷

Finally there is the problem of the Edessa armamentaria.⁶⁸ Armamentarium is a workshop category unique to that city. This has been regarded as a factory producing naval equipment,⁶⁹ presumably because the word armamenta is often used to denote marine fittings. However, there is no evidence of a standing Euphrates fleet at this date⁷⁰ and the Notitia contains no mention of such production establishments (although see the Ravenna inscription p.260 above). But armamentaria also means 'arsenal, armoury, weapons-store'. Malalas records that the Edessa arms factory was built 'for the nearer supply of arms'.⁷¹ The Edessa armamentaria may therefore be explained simply as a major arms depot attached to the fabrica scutaria at the city, a strategic stockpile for the forward resupply of forces operating against Persia.

If nothing else, the categories outlined above imply an often astonishing level of specialisation of production. Is this impression accurate? The correspondence between the distributions of clibanaria and heavy cavalry regiments has been discussed above, but could production of items as basic as arrows really have been confined to fabricae in the West? Some of the Concordia inscriptions⁷² specifically mention the fabrica sagittaria listed by the Notitia,⁷³ vindicating even this most extreme case of specialisation. The Notitia registers of arms factories seem, then, to be essentially complete, and the appended details of their products reliable. There are grounds, therefore, for relying on the results of an analysis of the distribution pattern revealed in the Notitia.

THE DISTRIBUTION OF FABRICAE

At the most general level, it is not possible to say whether there is any particular significance in the fact that, while there are twenty factories in the West, there are only fifteen in the East. It is not certain whether this is due to differences in the relative sizes of the armies of the two halves of the empire, or to a systematic difference in size of the Eastern and Western fabricae, or to the extent to which state production in the two halves of the empire was complemented by private production. The latter possibility is discussed below (p.282).

As might be expected, the factories producing for general requirements are most common; shield⁷⁴ and armour⁷⁵ centres are spread evenly across the Eastern and Northern frontier zones, and form the largest classes of fabricae (Figs.4 and 5).

The specialist fabricae occur in smaller numbers, and are irregularly distributed. Centres producing missile weapons are confined to the West (Fig.6). The only bow factory in the empire is at Ticinum⁷⁶ and is complemented by two arrow factories at Concordia and Matisco.⁷⁷ The only ballistariae are at Augustodunum and Trier.⁷⁸ Conversely, the Eastern bias of clibanaria has already been commented on (spathariae are considered as part of the general group, as they are evidently associated with Western loricariae, see above p.261).

There are thus two distinct classes of fabricae, centres producing equipment used by the majority of ordinary fighting units and centres making equipment for specialist units. As might be expected, the former are numerous and widely distributed. The latter class consists of

smaller groups in distinct concentrations.

In the past little attention has been given to the significance of the distribution of the fabricae. Why, for instance, were there apparently no factories in Britain, Egypt or the Southern empire? Seeck proposed that the overriding factor was internal security.⁷⁹ He believed that Diocletian had set up the fabricae and sited them only in places where the Tetrarchs could observe them in order to prevent arms stocks from falling into the hands of usurpers. This certainly might explain their absence from Britain or Egypt, both of which were scenes of major revolts during the Tetrarchy.⁸⁰ Diocletian was particularly hostile to the Alexandrians as he had to mount a prolonged siege of the city.⁸¹ His continued distrust of the city, and perhaps Egypt in general, may indeed have dissuaded him from establishing arsenals there. On the other hand, it is my opinion that Britain lacked factories not because the Tetrarchs feared a repetition of the troublesome revolt of Carausius, but because the province no longer had a large army.⁸² Consequently, it had no more need of its own arsenals than Spain or Africa; it could be supplied from the main concentration of capacity in Northern Gaul.

Seeck extended his line of argument to explain factory specialisation as well, by suggesting that it was a measure intended to prevent army commanders from being able to arm their troops completely from the factories in any one area. This is a far from satisfactory explanation. It is incredible that Diocletian would have allowed any fear of usurpers to override strategic and other considerations in the siting and output of his factories across the entire Empire, whatever special reasons there may have been for excluding Egypt. In any case, if a revolt did break out among the principal army groups on the Rhine, Danube or Eastern fronts, production was not sufficiently dispersed to prevent them seizing all they needed from a handful of nearby centres.⁸³

What is clear is that the fabricae were located broadly where the bulk of the army was, in the zone behind the Rhine and Danube, and throughout the Eastern frontier provinces (Fig.1). Despite their strategic significance, the military importance of Britain and Egypt was very much reduced in the fourth century. Major activity was concentrated on the Northern and Eastern frontiers. The Southern empire had almost no troops, and so had no need of fabricae. The arms factories appeared only where they were needed. A more detailed scrutiny of the map of fabricae reveals an interesting pattern in the distribution of centres producing body armour across the Empire (excluding the specialist clibanaria). For each major zone of the frontier there are precisely two such centres, listed in Table IV. The pattern is so regular that it betrays deliberate planning. This suggestion is confirmed when the same information is projected onto a map showing provinces and dioceses (Fig.4), and it can be seen that the pairs of armour factories correspond exactly with the dioceses. In two cases,⁸⁴ one of the pair lies to the rear of the diocese it serves, but this is explained below and does not affect the truth of the equation, as the map demonstrates. Only the diocese of Dacia has no armour centres, but this is certainly because the Notitia fails to record what its known fabricae were making.⁸⁵ When the distribution of fabricae scutariae is considered in the same way, an even more remarkable

pattern appears (Fig.5). Along the entire length of both the Rhine and the Danube, each frontier province has one shield factory (the only possible exception is Dacia Ripensis, where it is not known what the fabrica was producing). As with the armour factories, some of these centres are to the rear of the areas they served.⁸⁶

There is no such obvious pattern in the East, but this is because there is no simple linear frontier here, but rather a deep zone of garrisoned provinces of varying importance.

This remarkable correspondence of fabricae scutariae with European frontier provinces, and of pairs of armour factories with frontier dioceses is highly significant. Such a regular distribution is unlikely to have arisen by accident, and can only be satisfactorily explained by the existence of a deliberate planning policy behind at least those factories making the basic panoply.⁸⁷ There seems to be ample justification, therefore, for postulating an armaments factory system, established as a single conception rather than piecemeal.

Before considering the implications of this, it is important to examine the distributions of specialist centres. Clibanaria have been considered above (p.261) and their Eastern bias was shown to reflect that of the units they served.

The same cannot be said of factories producing missile weapons, all of which are concentrated in the West (p.262). This distribution is curious considering that large numbers of archers were employed in both halves of the empire,⁸⁸ and even more so since archery had always been an Eastern speciality. Peoples from the fringes of the Eastern empire, even Persians, continued to supply the best archers. Why, then, were the fabricae in the West?

The answer may be that such centres were unnecessary or impracticable in the East. It is possible that it was simply not feasible to organise the best bow makers into factories because many of them were tribesmen, or at least not urban craftsmen. John Lydus reveals that bows were raised as a tax in kind, perhaps an easier solution to the supply problem.⁸⁹ Some of the skilled archers of the Eastern regiments, who used bows from childhood, may well have made their own weapons and ammunition.⁹⁰

The situation in the West was quite different. With no important local tradition of archery, there was no comparable native tradition of production. While it is not certain that bow production was entirely confined to Ticinum,⁹¹ there was a sound motive for centralisation of production. The horn which was a vital component of the composite reflex bow used by the Roman army had to be imported into Europe.⁹² Ticinum's location is suitably central for distribution of finished bows North and East.

Coulston has suggested that the two arrow factories were specially designed to supply the field army, again at strategically convenient places.⁹³ If so, this may suggest that they are relatively late additions to the system, as the field army per se did not exist during the Tetrarchy when many, if not most, fabricae were founded.

Why artillery fabricae occur only in the West is a mystery. It is possible that for some reason the production of catapults remained with artillery units or in private hands in the East. There is certainly evidence for private activity in this field in the sixth century AD,⁹⁴ but the question will have to remain open.

THE FOUNDATION OF FABRICAE

There is no direct evidence for the date of the establishment of most of the fabricae. One of the few direct references is Malalas' statement that Diocletian built fabricae at Edessa and Damascus, and three at Antioch.⁹⁵ Lactantius records Diocletian's foundation of fabricae at Nicomedia.⁹⁶ Largely on the basis of these references it is widely assumed that the fabricae are a Tetrarchic phenomenon.⁹⁷

It is true that many fabricae are not attested until later in the fourth century,⁹⁸ while the only record of others is in the Notitia itself.⁹⁹ However, some may have existed before Diocletian. The origins of the fabricae are considered below, so let it suffice here to observe that the scutariae at Aquincum, Carnuntum, and Lauriacum¹⁰⁰ might be expected to have grown out of the earlier army fabricae of the legionary bases at those sites,¹⁰¹ and were not new creations of Diocletian. Despite the lack of direct evidence, plausible dates can be suggested for the foundations of a number of fabricae. For example, Lactantius¹⁰² reveals the construction of the Nicomedia fabricae to be part of the great building project which Diocletian undertook at his favourite city of residence.¹⁰³ It is highly likely that the Tetrarchic fabricae of Antioch¹⁰⁴ were also part of such a major scheme, which, as at Nicomedia, included the erection of a palace.¹⁰⁵ The Tetrarchy was remembered as a period of rebuilding and restoration of cities and there are a number of other cases where construction programmes of this time probably included the construction of fabricae. A good case is Thessalonica,¹⁰⁶ which was not particularly important until Galerius chose it as his residence.¹⁰⁷ A major building programme caused by the arrival of the emperor, his court and units of troops, provides the only apparent motive and opportunity for the setting up of a fabrica at this site which was relatively remote from the frontier zone.¹⁰⁸ Augustodunum provides a similar case, where Constantius Chlorus initiated a general restoration of this important city, seconding troops and even importing artisans from Britain. This work is well documented,¹⁰⁹ and again, is the most likely context for the construction of the fabricae of Augustodunum. The same arguments could be applied in the case of Sirmium¹¹⁰ and other sites.¹¹¹

As to the date when the fabricae were organised into the system outlined above, a terminus post quem can at least be established, since the distribution of scutariae depends on the map of provinces as it was reorganised by Diocletian,¹¹² and more conclusively, the distribution of armour factories relates to the dioceses which were a Tetrarchic innovation. The system cannot, therefore, be pre-Tetrarchic, and indeed, for a number of reasons, fits best into a Diocletianic context. If it was set up at a later date in the fourth century, the system would still fit the civil and administrative geography, but not the military geography. From the early fourth century onwards this ceased to be closely related to the provincial structure, primarily due to the

separation of civil and military organisation, a process which started under Diocletian, but was only completed under Constantine.

During the Tetrarchy, the army was still on the frontiers, and mainly under the control of provincial governors.¹¹³ At the time, the military and civilian hierarchies were still integrated, and so the provincial and diocesan distribution of the general arms works related them automatically to the civilian organisation which supported them, and to the garrison organisation which they supplied.¹¹⁴ From the beginning of the fourth century provincial governors started to lose their military command functions, which went to new officers, duces of the frontier zones, men often commanding troops of more than one province.¹¹⁵ Although the process began under the Tetrarchy in some areas, it only became general under Constantine, who also set up the permanent mobile field army.¹¹⁶ From this time the civil and military geography ceased to be identical. Clearly, fabrica distribution fits best under the Tetrarchy, and this is supported by the fact that the only certain foundation dates of fabricae are in this period, at Nicomedia,¹¹⁷ Edessa, Damascus and Antioch.¹¹⁸ It is significant that these include both general arms works¹¹⁹ and specialist centres.¹²⁰

Several lines of evidence converge to make it fairly sure that the basic structure of the fabrica system was a Tetrarchic innovation. Even if this hypothesis is accepted as valid, it does not rule out the possibility of later additions to, or changes in the system. Two such possible cases appear in the Notitia lists, and might be explained as additions or alterations after the original composition of the registers. The Notitia lists are unusual in that not only are they arranged in geographical order of dioceses, but within each diocese the individual entries are also carefully ordered,¹²¹ with two exceptions (see Fig.7). The North Gallic group of fabricae are strung out in a line along the road from Boulogne to Trier (Fig.8), and are listed in West-East order, except that Ambianum, the most westerly and therefore theoretically first, is entered last.¹²² Similarly, in Illyricum, the fabricae are listed from South to North. Salona, as most southerly, should be the first entry, but comes last.¹²³ These two could be additions to the original list, but this is unlikely since both belong to the 'basic arms factory' category,¹²⁴ and so, at most, are replacements for other factories now abandoned. It is more likely that they simply represent the re-siting of two fabricae whose staff were transferred en masse to a different city. Such relocations of government production centres are attested in the Notitia,¹²⁵ and of particular interest is the case of the gynaecium at Salona which was originally at Bassiana on the Danube, east of Sirmium.¹²⁶ It is suggested that the Salona fabrica was also originally at Bassiana which is, in any case, a more typical site for a lower Danubian fabrica, being close to the river and the main highway across the Balkans to Italy; and that both installations were moved to the hinterland when the frontier zone became untenable in the late fourth century.¹²⁷ The Ambianum case may well be susceptible to a similar explanation, in that it represents a change of location, recorded as an order anomaly in the list, from a more forward site, possibly at Tongres.¹²⁸ The implications of all this for the history and dating of the Notitia are discussed in Appendix 1.

FACTORS DETERMINING THE LOCATION OF FABRICAE

Jullian, one of the few writers to consider the rationale behind fabrica distribution, suggested that access to raw materials was the main factor.¹²⁹ He observed that Augustodunum and Caesarea Cappadociae were in important iron mining zones. Argentomagus,¹³⁰ Nicomedia,¹³¹ Sardis Lydiae,¹³² and Trier¹³³ may also be added to the list. The suggestion in no way contradicts the explanation of fabrica distribution outlined above, which postulates a government plan to set up certain types of factory in given provinces of dioceses. Jullian's suggestion may be an explanation of the choice of a particular site for the factory within its designated area. Access to iron seems an eminently reasonable explanation.¹³⁴

However, there is one important anomaly, in that the fabricae of Italy are such a great distance from the mines of Noricum which presumably supplied them.¹³⁵ Why were they not nearer to the mines, where they would also be nearer to the troops? Clearly other factors were at work.

If it is accepted that most of the sites were chosen during the Tetrarchy, then close proximity to the army may also be discounted as a major factor. Certainly the fabricae were in the frontier dioceses, but nevertheless, often scores or even hundreds of miles to the rear of the actual frontier where the troops were stationed, many days travel for a wagon.¹³⁶ The key to the problem is found in the Notitia lists themselves, which record fabricae under cities of location. It is clear that the fabricae were at urban centres, usually major ones, often provincial or diocesan capitals.

The basic requirements of the fabricae must be considered. They needed secure sites to prevent arms falling into the hands of barbarians or bagaudae, accommodation for work forces and dependents, and access to raw materials as well as food, goods and services for their staff. Finally, they needed communications with means of transportation to get the finished weapons to the army.

Urban wall circuits, often containing settlements which were considerably reduced by AD 300, certainly furnished accommodation and security. With regard to the question of materials, Jullian over-emphasised the need for iron. Many factories would not have needed large quantities. Fabricae making bows, arrows or shields would have had a greater need for wood and other organic materials which were more widely available in the provinces. Those centres whose production required large amounts of iron - such as clibanaria etc. - do actually tend to be in the iron-making zones, for indirect reasons outlined below (p.269). The fabrica required a broad variety of materials and fuel, food, clothing etc, and it is not difficult to identify the mechanism of collection. The entire basis of administration and tax collection in the empire was the city council, which was expected to assemble taxes from its territory for collection by imperial officers.

By the end of the third century, this system had been extended so that the decurions were responsible for collecting taxes in kind, food, materials and bullion.¹³⁷ The machinery for assembling the materials for the fabricae already existed. Needless to say, all these cities

were nodal points on the road system, and many were also on navigable waterways, allowing easy distribution. Major cities, then, were the obvious places to locate the fabricae. The government simply 'plugged in' the new installations at the places where the raw materials were being assembled. The finished items could then be fed straight into the distribution system. The latter consisted of vehicles impressed by the government to move supplies from the city-centred collection points of the army.

The Law codes lend support to this reconstruction in edicts mentioning levies, not only of iron, but of wood and charcoal as well.¹³⁸ Furthermore, a law preserved in the Code of Justinian proves that the transport services were indeed used to move arms along the major arteries in the manner suggested.¹³⁹

In considering the subject of communications, it is worth noting that groups of fabricae are often strung out along the main regional strategic highway. This is most clearly to be seen in Northern Italy where all but one of the fabricae are on the major road from Aquileia and the Danube provinces in the East, to Milan and the Alpine passes in the West (Fig.9). Similarly, the factories of Northern Gaul all lie on the road which arcs west and then north from Trier to Boulogne, the road providing a lateral communication behind the late Roman frontier in modern Belgium, and linking the garrison of Britain with their sources of arms in Gaul (Fig.9). Further examples include the centres dotted along the strategic road through the Balkans from Aquileia to Constantinople,¹⁴⁰ and those in Asia Minor.¹⁴¹ For Northern Illyricum (Noricum Ripense, Pannonia I and Valeria), where there was no major through-route, the Danube provided the thoroughfare.

While the foregoing seems to produce a coherent explanation of fabrica distribution and location, it has so far failed to take into account one further vital factor, namely, the availability of skilled manpower. The armourer's trade was a specialised craft; what were the sources of such manpower for the new factories?

The obvious source for these artisans (apart from the army) is the old, supposedly free-enterprise arms industry of the Principate. Less is known of the industry in the first three centuries AD than in the fourth to sixth, either in terms of organisation or of location.¹⁴² However, there is some evidence for a tendency for fabricae to be located where communities of armourers already existed. An obvious instance is Antioch,¹⁴³ for centuries a military base which must have developed considerable production capacity (whether military or 'private') after, if not before the arrival of the legionary garrison. In this particular case, the strategic and economic necessity of fabricae located at Antioch probably happened to be in harmony with the location of skilled manpower, but in other cases there seems to be a conflict. Why, for example, were fabricae established as far from the frontier as Augustodunum, when many other Gallic factories were much further forward? That city actually held two factories, one of which was highly specialised.¹⁴⁴ It was clearly a particularly important centre, and the best explanation is that there was a major industry already in existence there, or at least in the area. This is supported by an inscription of the third century,¹⁴⁵ and it may well be that the tradition of arms production in the region goes back to prequest

times.¹⁴⁶ An almost identical case can be made out for Argentomagus, which is even further from the frontier zone.¹⁴⁷

It is probably significant that both these examples are in iron-producing zones, as indeed is Sardis Lydiae, another centre remarkably far from the frontier.¹⁴⁸ Not surprisingly, many iron-mining areas developed advanced metal-working industries, including arms production, from early, often pre-Roman periods,¹⁴⁹ so that when sites were chosen for the new state factories, these pre-existing centres exerted an attraction which outweighed other considerations. To this extent then, it may be that iron production centres had some indirect influence on fabrica distribution, and so the argument comes full circle to Jullian's original hypothesis (see above p.267).

This analysis raises as many questions as it answers. Since there already was an arms industry, why were the factories built at all? The origins of the fabricae and the fabricenses must now be considered.

ORIGINS OF THE FABRICAE AND THE FABRICENSES

It was postulated above that at least some, if not most of the fabricae, grew out of pre-existing industries at such places as Augustodunum. In an area such as Pannonia there is no real evidence for such a native industry and it may be significant that the late Roman fabricae in that part of the empire occur at the sites of the old legionary bases at Carnuntum, Aquincum, and Lauriacum.¹⁵⁰ Since these were also the only major urban centres in the region, it is likely that during the Principate, local arms production was also centred on them, with the army producing for itself,¹⁵¹ or being supplied by artisans (including veterans) in the attached civil settlements. Further down the Danube, Ratiaria may provide a similar case.¹⁵² Within the legionary bases are workshops identified as legionary fabricae. A discussion of whether or not the identifications are correct, and if so, whether they were the sites of actual army production rather than simple equipment maintenance during the Principate, would be out of place here.¹⁵³ Nevertheless, it has been suggested - even assumed - that the late imperial fabrica at Carnuntum was housed in the structure identified as belonging to its supposed legionary precursor.¹⁵⁴

While there is no proof of this, it does serve to raise the point that fabricenses, who appear as a homogeneous group in the fourth century, may have had their origins in two different sources, civilian industrial communities (e.g. at Augustodunum) and the army itself. If the Lauriacum hypothesis is correct, then the change from legionary fabrica to 'imperial' fabrica would have been nominal, the factory and its workers ceasing to be part of the legion and coming under direct central government control.¹⁵⁵ But it is evident that the government generally built new installations, and the new system must have required an immense effort of construction and organisation. MacMullen has asked why the state had to build arms factories - 'Why not simply confiscate them [i.e. the private establishments]?'¹⁵⁶ More fundamentally, why did the state have to involve itself directly in arms production at all?

Motives ascribed to Diocletian for this act of state interference

(assuming that it was this Emperor's decision) fall into two groups, political and economic. Among the former, Seeck suggested that fear of rebels contributed to the take-over, in order to deny arms to usurpers.¹⁵⁷ Ensslin suggested that the fabricae were set up because existing sources were inadequate to supply Diocletian's 'greatly increased' army.¹⁵⁸ However, the degree of expansion of the army is hotly debated, and it is by no means proven that Diocletian's army was vastly larger than the army of Severus.¹⁵⁹ MacMullen proposed that the immediate reason for the establishment of fabricae mentioned in Malalas was the Persian threat.¹⁶⁰ Yet the North was also threatened. MacMullen also made the vague suggestion that the new factories were linked with Diocletian's concern at the trend towards more skimpy equipment among the soldiers.¹⁶¹ The present writer is not convinced of the existence of any such general trend, at least before the later fourth century, nor would it be easy to relate to the new fabricae.

The economic explanations are more satisfactory. Seeck observed that the inflation of the third century led to tax in kind.¹⁶² Since arms cannot be so acquired, the state had to make them. MacMullen cites 'the chaos of the currency', but goes no further.¹⁶³ The effects of the great third century inflation on the arms industry may be considered in more detail. Whether he bought his arms privately or had them issued, the soldier of the Principate had to pay for his equipment himself. Whether by direct payment or as stoppages, the cost fell ultimately on his pay,¹⁶⁴ which was, of course, in cash.

The nature of the armaments industry of the principate has recently been discussed by several writers.¹⁶⁵ Bishop has made a strong case for a largely self-sufficient army, at least in the first century AD, and has played down the importance of private production.¹⁶⁶ However, the situation is far from clear in the East, where the city-based legions had access to many private craftsmen. Even in the West, other authorities detect a trend away from purely 'in-house' production, for arms and other equipment, in the second and third century.¹⁶⁷ What are we to make of the rather thin, disparate and often apparently conflicting evidence? For the present, it seems reasonable to conclude that there was no great uniformity across the empire or over time, and that in some areas, the army provided entirely for itself, while in others, private craftsmen made a substantial contribution. While there certainly were some, perhaps many, specialist armourers,¹⁶⁸ production of certain weapons could have been a standard part of the repertoire of bronze-smiths and blacksmiths, to be taken up as occasion required, allowing expansion of capacity in emergencies.

The effect of third-century disruption on arms production capacity can clearly be imagined. The civil wars and foreign invasions of the mid-third century led to massive dislocation of the established military infrastructure as legions were moved and split up, auxiliary regiments dispersed or destroyed, and many forts, with their production and storage facilities, were abandoned, at least temporarily. On the Rhine, Danube, and Euphrates, the army's capacity to supply itself with arms would almost certainly have been reduced, just at the time when, due to increasing rates of attrition, demand for arms was increasing. The nature of the effective part of the army of the 260s and 270s, a mobile striking force, was ill suited to self-supply. Temporary field forges are not ideal for making swords, armour and helmets. Under such

circumstances, it may be suggested that the army became increasingly dependent on civilian production.

But civilian craftsmen were also vulnerable to military disruption. Even in secure areas they were threatened by other pressures, perhaps most importantly the collapse of the coinage. Private armourers could not legally sell to the public, for private possession of arms was an offence and export was banned.¹⁶⁹ For armour and shields their only legal market was the army, which presumably paid in cash. The result of the inflation was to make the cash near worthless. Soldiers could not buy arms, and armourers could not afford raw materials. Presumably they either starved, or turned their skills to other work. Under such circumstances, if the state wanted arms it had to maintain the armourers, give them food and pay and provide them with raw materials in exchange for weapons.

In practice, armourers had always been dependent on the state as their only legal customer. The government could dictate conditions, and close supervision had long been exercised.¹⁷⁰ This may well have been something more than quality control, and even as early as the second century state regulation may have been so tight that 'private industry' is an inappropriate description. Inflation was affecting the economy well before the Tetrarchy, and it may be expected that the change from cash payments to direct maintenance of armourers occurred long before AD 284. In this case, all Diocletian did was to take the next logical step of officially incorporating the armourers directly into the imperial services, regularising the de facto situation and putting things on a properly organised basis.

The fact that Diocletian did have to go to the expense of building accommodation for the new state fabricae, suggests that the existing private industry was not organised in large production units, but consisted of individuals or small groups; private fabricae on such a scale were not available to be 'nationalised'.¹⁷¹ The careful accounting of materials and scrutiny of work force and product which are such features of the established system in the fourth century clearly necessitated centralized facilities into which the hitherto separate artisans were drafted: hence the building programme. Locating the manufacture and stockpiling of arms in compounds which could be guarded inside walled cities, would also have a beneficial security aspect, not so much against marauding barbarians, for it would cut down the availability of Roman arms outside the frontiers, whether lost as booty or exported.¹⁷² Within the frontiers it had long been illegal for provincials to bear arms. The law is repeated forcefully in the fourth century,¹⁷³ and with good reason. Gaul especially was plagued with the rural disturbances caused by the bagaudae, a shadowy group, perhaps dispossessed peasants turned to brigandage, in numbers large enough to cause serious disruption. The defensible locations of the new fabricae helped to deny them arms.

REVOLUTION IN THE ARMS INDUSTRY REFLECTED IN HELMET DESIGN

This period of upheaval and reorganisation in the arms industry also saw a sudden break in continuity in the design of helmets. The first three centuries AD had seen a progressive development of design,

ever greater elaboration and improvement of protection, as the neck-guard form deepened and broadened, throat-flanges were added to the cheek-pieces, and the helmet skull became strengthened by reinforcing bars (Fig.10).¹⁷⁴ Sometime around AD 270-300, this tradition was abruptly replaced by a totally different one, incorporating a new range of helmet designs which were both simple and functional.¹⁷⁵ These had in common a skull made in two halves joined and reinforced by an iron strip running over the top of the head from brow to neck, with separate neck-guard and cheek pieces.

Clearly, the design standard for helmets had been completely re-thought. All the established types required a large amount of very skilled work, especially to make the helmet bowl and neck-guard, which were worked from a single piece of metal. They had to be the correct thickness at different points, and often had raised panels or corrugations worked into them for additional rigidity. Fashioning accurate hinges for the cheek-pieces was also a relatively delicate, time-consuming job. The new helmet types did away with all the most complex elements. The abandonment of the one-piece bowl in favour of composite construction eliminated the need for difficult forgings, for the bowl was now made in two halves, each of which was often itself made of three smaller plates, all much simpler forgings which were rivetted together. The fore-and-aft strip which connected the two half-shells was usually of T- or box-section for rigidity, eliminating the need for additional reinforcing bars which had been a constant feature of earlier imperial helmets. Finally, the neck-guard and cheek-pieces were much less elaborate than hitherto, cut out of flat plate and given the appropriate curvature, then attached to the bowl by laces, leather straps, or sometimes buckles. Complex hinges were generally abandoned (Fig.10).

What was the cause of this apparently sudden revolution in helmet design? It seems unlikely that it can be explained solely in terms of changing fashion, if only because there seems to be no overlap in time between the old and the new designs. The earlier types were still current in the mid third century and the new pattern helmets were established by the beginning of the fourth.¹⁷⁶ What had happened to make armourers completely alter their repertoire and also reduce their standards (for even the magnificent silver-plated and bejewelled 'officer's' helmets of the fourth century are often structurally crude by comparison with third century examples)? It seems to the present writer that this must be linked to the reorganisation of the arms industry which occurred at the same period. Hitherto, it is supposed, the individual craftsmen often worked to produce fine pieces commissioned by wealthy soldiers on a private basis. But with the 'nationalisation' of the industry, the armourers no longer worked to private orders but almost certainly to fill quotas set by the government.¹⁷⁷ Since the state was now paying, it exercised control over the quantity and quality of the product. Hence the new range of helmet designs which appears, probably in response to a government specification for a design which provided similar protection for much less cost and time. The helmet ceased to be the work of art that it had been in the third century. It is not surprising then, that quality deteriorated so sharply,¹⁷⁸ for the smiths had neither the time nor the profit motive to produce more than the absolute minimum standard. The new system, it would seem, delivered the goods but could not maintain

the quality and pride of craftsmanship.

ADMINISTRATION AND OPERATION OF THE FABRICA SYSTEM

The Notitia records not only the details of the factories, but also some details of the bureaucratic superstructure which controlled them. This was part of the ministry of the magister officiorum of each half of the empire.¹⁷⁹ Considerable attention has been given by other writers to the fact that, since the fabrica system apparently antedates the title of magister officiorum, the factories must originally have been under the control of some other department. Much confusion and disagreement surrounds the question of who was originally in control of the fabricae, and at what date and under what circumstances the factories passed into the hands of the magister. This question is dealt with in detail in Appendix II, which concludes that they probably belonged to the magister from the inception of the office under Constantine the Great.

The Master of the Offices of each half of the empire had subordinates called subadiuvae fabricarum, drawn from the agentes in rebus. There were three such officers in the East,¹⁸⁰ but the Western list is not specific.¹⁸¹ The Eastern figure may have increased to four in the fifth century.¹⁸² These men were very senior officials indeed, drawn from the highest grade of agentes, holding the rank of principatus.¹⁸³ The subadiuvae of other ministries were of considerably lower status.¹⁸⁴ The fact that these posts went to such senior men, who, within the master's officium were second in status only to his personal assistant and his deputies, serves to underline the high priority given to the maintenance of the state arms factories. The post of subadiuva fabricarum was held for one year before the incumbent proceeded to yet higher honours.¹⁸⁵

No mention is made in the Notitia of the scrinium fabricarum, apparently a full-scale bureau of fabrica administration which existed in the East by the reign of Leo, and to which the subadiuvae fabricarum were annually appointed.¹⁸⁶ Since the Notitia chapters dealing with the magistri do not mention other scrinia within their ministries,¹⁸⁷ it would seem that the establishment of the scrinium fabricarum as such, must post-date the Notitia and pre-date the reign of Leo, putting it in the first half of the fifth century. Whatever the date of foundation, the scrinium fabricarum is presumably the same as the scrinium fabricensium mentioned in Justinian's Novel, LXXXV, permitting us to trace the bureau to AD 539. The bureau probably had the standard complement of clerks, although the only ones recorded are chartularii, apparently accountants.¹⁸⁸

There is very little evidence of how the scrinium functioned, but we may assume that not only did it deal with all aspects of fabrica administration, supply and production, but also legal jurisdiction over, and disciplinary control of the fabricenses, for all these functions fell to the Master and his officium. The fabricenses were the largest group under the Master's control, probably far outnumbering the scolae.

It has been suggested that each subadiuva controlled all the

fabricae of one diocese.¹⁸⁹ While there is no direct evidence for this, there may well be some truth in the idea as the fabricae were largely distributed on a provincial and diocesan basis (cf. p.267). Details of the process between the request for, and the delivery of arms to a particular unit are lacking, but it is possible to reconstruct it in outline, by analogy with the process used for other supplies. 'The Masters of the Soldiers were before the beginning of each indiction to send to the imperial scrinia returns of unit strengths, and the Praetorian Prefect was to check issues made by the susceptores against these returns...'.¹⁹⁰ It may be inferred that requests for arms followed a similar course, passing from the unit concerned up to the office of the magister militum, whose department then forwarded the requisition to the Master of the Offices. The scrinium fabricarum would then direct the appropriate factory to make or release from stock the specified arms. The Praetorian Prefecture was also involved in the process, for it held ultimate responsibility for the collection, shipment and delivery of arms consignments. The magister officiorum had 'to notify the eminent Prefecture, and state the quantity of arms and the place from which they are to be transported, in order that the Prefect may immediately order the illustrious governor of the province to provide ships or vehicles out of those belonging to the public for the conveyance of said arms...'.¹⁹¹ Presumably this procedure was the responsibility of the prefect's scrinium armorum mentioned by John Lydus, who tells us little except that the office 'has definite payments from the provinces, I mean bowstrings, horn and other things. And for the emergencies of war, it provides by direct requisitions'.¹⁹² From this it seems that the scrinium armorum had a variety of duties, including the procurement of arms not made in the fabricae (e.g. bows in the East, probably raised as tax in kind, cf. p.264 above) and responsibility for delivery of supplies to, and movement of product from the fabricae.¹⁹³

THE NATURE OF THE FABRICAE AND THE ORGANISATION OF PRODUCTION

It is unfortunate that so little is known of the functions of the fabrica administration, but the historians are virtually silent on the matter.¹⁹⁴ A good deal more is known about the individual fabricae themselves, although this is based almost entirely on the Notitia and the Law Codes. Before looking at this evidence, the archaeological evidence, or lack of it, must be examined.

All fabricae seem to have been at urban centres, and were presumably intramural for security reasons. Yet none of the historically attested ones has yet been indisputably identified on the ground. Possible candidates include the legionary fabricae (if they are correctly identified) in the middle of the Danubian bases, but the archaeological evidence is meagre and ambiguous, and no inscription has been found to prove that the legionary fabricae became the state fabricae of the fourth century. Certainly the best candidate so far is Building A at Sardis. This well defended late Roman enclosure of large, but indeterminate size stands in the midst of the city. However, once again there is no specific evidence that this is indeed the fabrica.¹⁹⁵ While it is not suggested that the Severan foundation at Corbridge is a fabrica in the sense under discussion, both this and the legionary fabricae may be used as analogies to give an idea of the scale of the

later establishments. In area, these early complexes range from about 0.1 to 1.0 hectares, but average less than 0.25 hectares.¹⁹⁶ Corbridge falls in about the middle of the range, and it has been suggested that it could accommodate 100-150 men in its barracks, perhaps more.¹⁹⁷ As will be shown below, the post-Tetrarchic centres were probably on this sort of scale, or not much larger in area. Considering the fact that perhaps most of the cities known to have had fabricae are dozens, even hundreds of times bigger than this, and that very few have seen archaeological excavation on a significant scale, it is not surprising that the fabricae are so elusive.¹⁹⁸

All this assumes that the fabrica was localised within the city. J.P. Wild believes¹⁹⁹ that the roughly analogous imperial gynaecea operated as a scattered cottage industry, but arms were politically sensitive, so it may be expected that they were walled in and guarded in a defined compound, containing workshops and warehouses, as at Corbridge in the third and fourth centuries AD.²⁰⁰

No description exists of the fabricenses at work, but it may be expected that each man worked individually to produce finished pieces from scratch. It is possible that there was some division of labour in the production of some items; for example, metal and wooden parts of shields may have been made by different workmen. The only real hint of such specialisation comes from Sardis where a tomb inscription records a fabricensis who is also described as zographos or painter.²⁰¹ They probably worked to production quotas assessed in terms of finished pieces.²⁰² As discussed above, supervision was close, with strict accounting of materials and quality control perhaps facilitated by dividing the fabrica into a number of officinae like the mints,²⁰³ although there is no evidence of such divisions. It is difficult to see how some of the specialist fabricae could have operated on this basis, since neither artillery nor heavy cavalry armour was suited to mass production. The latter was required in relatively small quantities and it is likely that each full suit of armour had to be tailor-made to fit an individual soldier (and perhaps his horse too). The needs of artillerymen were also highly specialised and required the highest standards of craftsmanship available often to make unique pieces of equipment for siege-warfare. Direct liaison between these factories and the specialist units which they supported is to be expected, and so it is not surprising to find in the mid-fourth century a unit of ballistarii and a unit of cataphracts at Augustodunum, the site of the only Western cavalry armour factory, and one of only two artillery factories in the empire.²⁰⁴ Did these units send damaged and worn equipment to their fabricae for refurbishing? This raises the broader and perhaps unanswerable question, to what extent did army units in general repair their own equipment? For example, was Corbridge a centre for the servicing of equipment rather than its manufacture? Was old equipment recycled to the fabricae for complete refurbishment?

THE FABRICENSES: STATUS, ORGANISATION AND RANKS

The status of the fabricenses within the imperial service differed from that of any other group of workmen. Although they were artisans, they ranked higher than those who worked in the imperial textile factories or gynaecea, or in the mints. These were slaves, but the

fabricenses and the related barbaricarii were free men (though legally tied to their work) and service among their ranks counted as a full militia.²⁰⁵ This status gained them the same privileges, legal exemptions and rights to draw the annona as government clerks or soldiers, and like them they were regarded as milites.²⁰⁶

The staff of each fabrica were organised into some kind of corporate body resembling the so-called guilds of civilian artisans, resulting in a strange mixture of civil and pseudo-military organisation among them. It has been observed²⁰⁷ that each factory was organised like a military unit, commanded by a praepositus, with a primicerius, and many lower grades, all possessing the names of army ranks. But of course, all these military titles had passed into standard usage in the civil service as well, and so the military analogy should not be pressed too far. The unusually high status of these artisans reflects their importance to the imperial service. Within the jurisdiction of the Master of the Offices, they seem to have been second only to the Scolae among his priorities.²⁰⁸

Fabricenses were also very numerous. No exact figures survive, but estimates may be made. The only contemporary estimate is that there was a 'great multitude' at Hadrianopolis.²⁰⁹ As MacMullen says, 'to supply the Roman army, (the fabricae) had to be big. If, as seems likely, they were modelled on legionary fabricae, they may each have housed a couple of hundred workers...'.²¹⁰ Jones' analogy²¹¹ of fabricae and army units might suggest greater numbers, perhaps four hundred to five hundred men, but this is highly speculative. With thirty-five fabricae known to have existed, these figures would give estimates of the order of 7,000 to 17,500 men engaged on arms production across the empire, with perhaps twice as many dependents. Even the higher figure is not unreasonably large to supply an army of (supposedly) half a million or more.

After the army and the civil service, the fabricenses were apparently the largest group in the state employ. They were unusual among the branches of the imperial service in that they were organised into what was more or less a trade guild, or consortium fabricensium.²¹² The government made membership compulsory, and used it as a means of enforcing joint responsibility for recovering losses incurred through embezzlement by individual fabricenses.²¹³ A roll of members was carefully kept.²¹⁴ It is unclear whether there was one guild for all armourers, as one law seems to imply,²¹⁵ or whether each fabrica had a separate guild for its staff. A law of Theodosius suggests that the guild had an elected hierarchy of men who apparently looked after the accounting of the materials for which all were responsible.²¹⁶ Whether these officers also dealt with quality control and supervision is unknown, and even more problematical is the question of whether they are to be identified with the junior officers whose army style ranks are well attested in inscriptions. Were there separate guild officers and supervisory officers? If they were identical, to what extent were they elected, promoted by seniority or appointed by the government? It is hard to believe that any but the lowest were appointed by ballot!

The so-called non-commissioned officer ranks used in the late Roman army and civil service were, in ascending order of importance:

circitor, biarchus, centenarius, ducenarius, senator and primicerius.²¹⁷ A number of tombstones of fabricenses are known, each recording the rank of the deceased. There are three inscriptions of ordinary fabricenses, one from Salona²¹⁸ and two from Concordia,²¹⁹ from a cemetery which also produced two of biarchi,²²⁰ and one of a centenarius.²²¹ A second centenarius is attested at Marcianopolis.²²² Two recently discovered monuments at Sardis Lydiae belonged to fabricenses of the rank of ducenarius.²²³ Another gravestone, of a scutarius of the rank of senator found at Nicomedia was interpreted by Grosse as a fabricensis at the fabrica scutaria at that city.²²⁴ The lack of any mention of the fabrica within this text makes it more likely that the individual concerned was a soldier of a unit of scutarii (a common unit designation in the later Roman army) rather than a shield-wright.²²⁵

The most senior rank, apart from the fabrica commander himself, that of a primicerius fabricae is not attested on any known inscription, but it is the subject of a law issued in AD 390.²²⁶

The only posts of this military-style hierarchy not directly attested so far are circitor and senator, but it may be assumed that they were used.

The duties and methods of selection and promotion of these officers remain generally obscure.²²⁷ However, one man, Flavius Zenis, seems to have entered the Marcianopolis fabrica with the rank of centenarius, having served in the army,²²⁸ suggesting some form of 'direct commission' to some ranks. A little more is known about the most senior 'NCO' grade, that of the primicerius, apparently a sort of foreman. He held his post for only two years, before being retired and given membership of the protectores, a considerable honour for a 'mere' artisan.²²⁹

Each fabrica had a director or commander called a praepositus fabricae,²³⁰ as is illustrated by the tombstone of Flavius Romulianus, p(rae)p(ositus) fab(ricae) sagitt(ariae) at Concordia.²³¹ At Ravenna there is an inscription set up by Sertorius Silanus v(ir) p(erfectissimus) praepositus fabricae during the reign of Constantine.²³² No fabrica armorum is otherwise attested at Ravenna, so this example is uncertain. Ammianus mentions fabrica directors in three separate incidents. In one he uses the title praepositus fabricarum, but the official concerned was probably the commander of the Trier barbaricarii, and thus nothing to do with the fabricae proper at all.²³³ Elsewhere, Ammianus consistently uses the title tribunus of the directors of the fabricae²³⁴ at Cremona, and Antioch.²³⁵ This is the only source to use tribunus rather than praepositus, and there have been various attempts at an explanation.²³⁶ It is probable that Ammianus simply used tribunus as a general term for commander, and did not mean it as the official title, which probably was praepositus.²³⁷

The ranking of the praepositus fabricae within the imperial service is not clear. The Constantinian Ravenna inscription,²³⁸ which, if not set up by a fabrica commander was set up by an officer in a comparable post, records that the rank was held by a man titled vir perfectissimus, and therefore a member of the equestrian order. The tombstone of the Concordia praepositus does not mention such a title,

but it probably dates to the end of the fourth century when the title vir perfectissimus had greatly declined in importance and was even being granted to regimental quartermasters.²³⁹ The Notitia contains some further clues as to the status of the office. This document seems to be primarily a catalogue of official posts important enough for the emperor himself to appoint their incumbents. These were the prized posts of the laterculum maius, and most of the lists are in terms of appointments, i.e. field army unit commanders, or the procuratores of mints and clothing factories.²⁴⁰ The less important frontier commands were not part of this system, and formed the laterculum minus. The Notitia simply records that the factories were under the magistri officiorum, but does not list them by their commanders, who are nowhere mentioned. This suggests that despite the strategic importance of the factories (evident from their prominence and the attention given to them in the lists), their directors were not very important men, and their posts were probably part of the laterculum minus.²⁴¹ If the Ravenna praepositus is accepted as a valid analogy, if not actually an arms factory commander himself, then his title of vir perfectissimus (still quite an exalted rank under Constantine), and the insignificance of fabrica commanders in the Notitia may reflect a serious decline in the prestige and importance of the post during the fourth century.

Little is known of the praepositi beyond a few names.²⁴² Were they drawn from the civil service, ambitious, wealthy citizens, decurions buying posts in the service of the emperor to escape their curial duties, or from other sources? All may well have been represented. One director of the Cremona fabrica, involuntarily embroiled in a court intrigue, found himself out of his depth and appealed to be told what was going on, for he himself admitted that he was a 'somewhat rude and plain man'.²⁴³ He, at least, was no worldly-wise civil servant versed in the ways of court life.

It is not beyond the bounds of possibility that some or most of the praepositi were drawn up from the fabricenses themselves. It has already been seen (p.277) that after two years service, the primicerius fabricae was promoted to the corps of protectores. This parallels a practice in the army where soldiers who achieved the rank of primicerius were likewise promoted to the protectores.²⁴⁴ It seems that the corps acted as a kind of staff college, and many unit commanders were drawn from it. There thus existed a route by which common soldiers might reach high commands. Perhaps a similar practice existed in the fabrica service, with praepositi being drawn from retired primicerii fabricarum among the protectores. Such men would have an intimate knowledge of the workings of the system.

THE FABRICENSES: CONDITIONS OF SERVICE, PRIVILEGES, RECRUITMENT AND DESERTION

The fabricenses were tied to their jobs, as were many other professionals both within and outside the service of the state. Despite Theodosius' epic vision of armourers labouring until they dropped,²⁴⁵ there is evidence that fabricenses could retire, even if they did not become primicerius (p.277). A law exists which defines the legal privileges of fabricenses, which continued 'even after their term of service had expired'.²⁴⁶ The tombstone of Zenis indicates that there

was a fixed length of service; he signed on for twenty years.²⁴⁷ One of the Concordia tombstones is of 'Flavius Calladinus veteranus militavit in fabrica sagittaria...'.²⁴⁸ It is most likely that Calladinus was, like Zenis,²⁴⁹ an army veteran who transferred to the fabrica on discharge.²⁵⁰ However, the lack of any details of an army career may indicate that his veteran status comes from service in the fabrica. However, there is no evidence that fabricenses were entitled to retirement grants of land or money, and even in the army many veterans preferred, or were forced, to stay with their regiments. Eventually, soldiers were legally entitled to stay on until they died. It is likely that a fabricensis could only afford to retire if he was lucky enough to have a son to replace him at the forge and support him in his old age.

The staffs of fabricae were mainly kept up to strength by the sons of fabricenses replacing their fathers, as the law required.²⁵¹ However, there was apparently a shortfall significant enough to require outside recruitment, presumably as a result of childless marriages and early deaths, etc. One source of recruits was army veterans,²⁵² since in the fourth century the government assisted them to take up a trade.²⁵³ A law of AD 412²⁵⁴ details the procedure for scrutiny of recruits to the fabricae, and is particularly interesting because it makes it clear that (at least at that time) there was actually a pressure of volunteers to get into the factories; conscription was unnecessary. The main reason for the close scrutiny of recruits was to ensure that the applicant was not already liable to service in some other compulsory trade or post, especially in a city ordo, which was always unpopular and evaded if possible. Decurions in the fabricae are discussed below.

While constrained to remain in their jobs, the fabricenses were, nonetheless better off than the majority of the provincial population because of the privileges following from their employment in the service of the emperor, which was a militia. Like soldiers and civil servants that they were exempt from compulsory public service or curial duties, even when retired.²⁵⁵ They also had immunity from billeting of troops or officials in their homes and workshops (unless the Sacred Comitatus itself was in the city²⁵⁶). They further enjoyed the privilege of being liable to appear before no court save that of their ultimate superior, the Master of the Offices, a right which was extended to their wives and families.²⁵⁷ Such legal privileges and immunities were a common feature of the late imperial service, where officials of each branch of the state were accountable only to their heads of department. Soldiers of the comitatenses, for example, were answerable only to the magistri militum.²⁵⁸ The result might be interdepartmental warfare and attempts at empire building, as ministers tried to enhance their influence by impinging upon or poaching each other's territory. Rufinus' 'theft' of the fabricae is a case in point (Appendix 2). People like the fabricenses naturally looked to their superior and patron, in this case the magister officiorum, for protection. The magister is to be seen acting in this capacity in the Codes, for example, securing the fabricenses' aforementioned immunity from billeting in AD 405.²⁵⁹

While protecting the armourers from outside interference, the Master also had to ensure that they stayed at their jobs. Desertion of

officials and citizens from compulsory duties was a common occurrence in the late Empire, and the introduction of the branding of fabricenses (in imitation of army practice), suggests that the staff of arms factories were no exception.²⁶⁰ Fabricenses may not have deserted because life in the factories was intolerable; they were better off than many civilians.²⁶¹ There are indications that many were tempted, rather than driven away from their jobs. Two curious laws imply that fabricenses were in considerable demand as estate managers, presumably because of the accounting skills possessed by many of them.²⁶² It would appear that the more ambitious were tempted in significant numbers to desert the security of the fabricae for this lucrative but illegal career.

Indeed, the fabricae cannot have been too unpleasant, for there were other deserters trying to get into the relative haven of their ranks. These men were mostly decurions from the city councils. A common method of avoiding the onerous burden of curial responsibility was illegal entry into government service. The Praetorian Prefect held the responsibility for keeping these men in their posts so that the civil administration could function, and he was constantly combing the ranks of the army and civil service for runaways to return to their positions. The Codes contain several texts on the subject,²⁶³ including one specifically about the procedure with regard to decurions in the fabricae.²⁶⁴ These laws were promulgated over a period of seventy years, and make it plain that apprehension of decurions in the fabricae was a perennial task for the prefecture. For those who were caught, length of service, no matter how great, was no protection.²⁶⁵

THE FABRICENSES IN SOCIETY

It is unfortunate that so little is known about the role of the fabricenses in the lives of their cities. It would be of particular interest to know something of how they ranked socially in the local community. They were a numerous and permanent presence of imperial servants in the cities. In this they were unlike the army, stationed either permanently on the frontier or billeted temporarily in the cities for the winter, or the civil service, whose representatives in a city were far less numerous, but probably more influential than the average fabricensis.

How, then, did the community as a whole view the armourers in their midst? On the one hand, they were the visible manifestation of a government whose exactions strained local resources (and a large proportion of those resources were flowing into the fabricae themselves). On the other hand, many fabricenses were local men, by blood fully part of the local community, and, like any other citizens, owned houses in the town.²⁶⁶ Fabrica service, as a militia, brought privileges and exemptions, giving the armourers advantages over their neighbours. Whether these advantages were commonly exploited and abused is unknown.

Little is known of the relative or absolute wealth of the fabricenses. MacMullen has described them as 'industrial serfs'²⁶⁷ and indeed, the fact that the armourers were branded might seem to suggest that they lived in fairly desperate circumstances. However, the recent

discovery of a stone tomb with wall paintings belonging to a junior officer (ducenarius) of the Sardis fabrica has led Foss to suggest that at least some fabricenses were quite affluent, although his speculation that the individual concerned was an equestrian is to be rejected.²⁶⁸ Generalisation on this question is not useful. It is highly likely that there were systematic differences in wealth and status between fabricenses who were plain milites and those who occupied the officer posts (it would be surprising if there were not) and, in any case, the lot of the staffs of the individual fabricae may have varied widely in different areas at different times. For example, in the early fifth century the fabricenses in the West must have suffered as the provinces which supported them disintegrated, and the army they supplied dwindled away. The armourers in the factories of the largely intact Eastern empire seem to have prospered.

It is from these Eastern centres that the only historical glimpses of the fabricenses at large come, and it is clear that they could be a source of considerable trouble to the city authorities. Christian sectarian rioting in Caesarea Cappadociae involved most of the population, but 'especially those concerned in the manufacture of arms, and the Imperial weavers. And indeed, these are the hottest in matters of this kind, having the audacity, being made bold by their freedom of action'.²⁶⁹ The second sentence suggests that the fabricenses' legal immunities tempted them to flout the law, with virtual impunity. Furthermore, it is known that this was not a unique instance,²⁷⁰ and it is clear that whether they were materially better off than other citizens or not, the fabricenses were evidently a prominent element in city life, and were prepared to use their local political weight if only in the violent religious dissensions of the period.

A more peaceful and altogether happier picture of the life of a fabricensis is to be found in this Christian tomb inscription:

'With good fortune. Flavius Zenis lived for 50 years; having served in Legion XI Claudia, he enrolled in the fabrica of Marcianopolis for twenty years service as a centenarius; he lived a blameless life with his wife and children and many friends, and in leaving his life, leaves behind as heirs both his wife Aurelia Martima and his son Nominatus aged twelve. He left married daughters and four unmarried. His son Marcianus died aged 20; he lived with his wife 30 years; his daughter Valeria died, married, aged 22; he had 12 children; his heirs erected this stele as it is necessary to do for the sake of his memory. Farewell, passerby.'²⁷¹

THE LATER HISTORY OF THE FABRICAE

In the Eastern empire it is possible to trace the history of the fabricae far beyond the time of the Notitia, mainly via the Codes. The fate of the fabricae in the West is more problematical. The oriental factories continued down to the early Byzantine period, and the Code of Justinian contains several fifth century texts on the subject.²⁷² Justinian himself issued a Novel on arms production and the fabricae in AD 539.²⁷³ The latter is the latest existing legislation to discuss them. Fabricenses are also mentioned by Constantine Porphyrogenitus in

a context relating approximately to this period.²⁷⁴

Justinian's Novel is particularly interesting in that it reveals the existence of a considerable private arms industry alongside the state capacity in the early sixth century. Does this suggest that the armament industry had never been completely nationalised? It has already been noted that certain areas of production were probably never organised into factories (p.264). The absence of weapons from Diocletian's Price Edict is instructive,²⁷⁵ and probably suggests that there was no private production and so no need for the government to specify what it will pay. It is suggested that the independent craftsmen (i.e. not state-employed), which figure so prominently in Justinian's Novel LXXXV, represent a reappearance of commercial, or at least black-market production. Alexandria seems to have been a particularly important centre of this industry,²⁷⁶ and Justinian decided to take action against this dangerous source of arms for the provincials and foreign enemies. The Novel provides for the smiths to enter the fabricae if their work is adequate and they are willing. There is no evidence of any fabrica in Egypt before this time, so perhaps Justinian organised the Alexandrian industry into one (cf. p.263).

There also seems to have been a fabrica at Constantinople by AD 539,²⁷⁷ which must be a late foundation post-dating the Notitia, which does not mention it.²⁷⁸ It is not known whether there were other significant changes in the Eastern fabrica system in the later fifth and sixth centuries. Seock stated that 'a number of fabricenses were attached to the individual military units and they were then known as deputati',²⁷⁹ a view which is reiterated by MacMullen.²⁸⁰ This conclusion was based on Novel LXXXV, chapter 1, which discusses these deputati who clearly were armourers assigned to units, but the text nowhere states that these men were seconded from the fabricae. While this is one acceptable interpretation of the term deputatus, it might equally mean simply 'conscript', i.e. a civilian armourer drafted into service in the army.²⁸¹ Consequently, there are no firm grounds for believing that the deputati were seconded fabricenses, especially in view of the fact that much of Novel LXXXV was concerned with eliminating private production and drafting the armourers into the service of the government, especially into the fabricae.

If Justinian's wishes were complied with, the Eastern fabricae were rejuvenated by an influx of skilled recruits in the mid-sixth century. The West, however, presents a wholly different picture. Laws pertaining to the fabricae continued to be promulgated in the name of the Western emperor down to the reign of Anthemius,²⁸² but they mostly originated at Constantinople so that the appending of the Western ruler's name may only have been a formality. Existing opinion is divided over whether the Western fabricae survived down to the time of the Ostrogothic kingdom of Italy, as some believe.²⁸³

The only evidence for this period consists of two texts in the Variae of Cassiodorus, an important Roman civil servant in the government of Theodoric the Great. The first, entitled 'formula de armifactoribus', is a standard form for a letter from the king appointing an officer to command a body of soldiers and armourers.²⁸⁴ The second, entitled 'formula ad PPO de armifactoribus', is a similar

set formula for the royal letter notifying the Praetorian Prefect of the appointment.²⁸⁵ It is worth setting out in full these texts, which have been little studied, in a literal translation from the highly involved Latin by Dr. Robert Ireland.

XVIII. Formula de armifactoribus

Consider well what you are taking on, and you can understand that you are not to employ your place in sinful actions. For to make arms well, is to desire to guard the safety of all, because, as soon as he has seen them, the enemy is terrified by them, and begins to lose his courage, if he realises that he has nothing like these. And thus, from such-and-such an indiction, we have set you above the soldiers and makers of arms [armifactores], induced by our opinion of your character, so that you may demand of the craftsmen such a work as you may know may please us. Let security resulting from our absence not lead you astray. We can see what you are doing. For indeed, by our experience of most subtle enquiry, we are able at first glance to detect mistakes by craftsmen, and also to judge what has been properly carried out. Take care, therefore, of the diligence and attention with which that is to be made which is known to be about to be submitted to our examination [sic!]. Act, therefore, so that no venality may sink you, because what is done wrong in such a matter is unforgivable. Make sure that you are not punished in respect of your evil actions. This is a work which brings death and safety, the death of sinners, the preservation of property, an always necessary aid against the evil. It is said that Phoroneus first offered this art to Juno that he might make his invention holy by the auspices of this deity, as they believed. Their things are necessary in war, becoming in peace. And last of all, these make weak and frail mortals stronger than all animals.

XVIII. Formula ad PPO de armifactoribus

By the reports of many, we have discovered that so-and-so, a man of excellent character, can carry out faithfully that which has been entrusted to him. Consequently, your illustrious Magnitude is to know that we have chosen him, so that he may be both in charge of the soldiers, according to ancient custom, and may give instructions to the makers of arms [armifactores], so that they may carefully fulfill their customary tasks that no offence may be found in them. Although negligence anywhere is dangerous, this is a serious blow if the apparatus of war is neglected. For indeed it is the equivalent to treachery to remove from the army that with which it is agreed it is armed. To these [the armourers], your Providence will allot their customary tasks so that the necessary things may be more easily required of them, since the excuse of food is removed from them [sic].

It is worthy of note that the rank, title and geographical location of the dignitas are nowhere mentioned. Also, neither the term fabrica nor fabricensis appears. Thirdly, the latter formula is addressed to the Praetorian Prefect, even though the magister officiorum still existed under Theodoric.²⁸⁶ These texts do at least

prove that the Ostrogoths maintained a government supervised, and probably state-run arms industry. However, the fabricae as they are presently understood in the fourth century had evidently ceased to exist by this date. It is to be remembered that the fabricae formed part of a complex supply system for the Western army, so it would be expected that they would disintegrate along with the rest of the system and the army itself in the fifth century. The communities of armourers presumably lived on in their cities (at least in Italy), and will have had little trouble making a living in a trade in great demand in war-torn fifth century Europe.

They were presumably still there when Theodoric established his kingdom in Italy with a large, well-equipped army which had great need of their services.

One of the most remarkable things about Theodoric is that he was an ardent romanophile. He took over and repaired the Roman tax system and civil service in Italy and in most aspects of government closely followed imperial tradition, maintaining the principal ministers in their old jobs. It would not be unexpected, then, if he also imitated the maintenance of a state arms industry. The Ostrogoths continued to raise the annona for the government and army, and the reference at the end of the formula XVIII to the 'excuse of food' may be an allusion to the right of the armourers to draw it as royal servants.

Whatever the exact status of what looks to be a revived state industry, it was now under the Praetorian Prefect rather than the Master, for formula XVIII is addressed to the former and explicitly mentions his control of the armourers. He supervised production, and the curious passage about the 'excuse of food' probably indicates that the armourers were kept working by the threat of the withdrawal of rations.

A little more information can be gleaned from the context of the two formulae. Cassiodorus put together the twelve books which go to make up the variae at the end of his public career, after his term as Praetorian Prefect, while Byzantine armies were overrunning the Italian peninsula in AD 535-6.²⁸⁷ Ten of the books are composed of official letters apparently drawn from the correspondence files at Ravenna. The remaining two, books six and seven, are of different material, the nature and purpose of which Cassiodorus himself explains in his preface to the work:

'...I do not wish others the difficulty I frequently run into in conferring titles of honour, so that they produce rough and hasty compositions on the spur of the moment, and so in books VI and VII, I have included the formulae for [letters of appointment to] all official positions'.²⁸⁸

The formulae are broadly arranged in order of diminishing importance, so that those for the Praetorian Prefect and the Master of the Offices are in book six. The two armifactores texts are well into book seven, suggesting that they are not very senior. What, then, was the rank and title of the official concerned? It is clear that he was not only in charge of the armourers but a body of soldiers as well, but it is his responsibility for the armourers which receives repeated

emphasis in both texts, and the milites are mentioned only in passing.

Some of the other formulae in the same part of book seven pertain to officials entitled comes civitatis,²⁸⁹ officers 'who commanded the garrisons of such cities as possessed them'.²⁹⁰ Some of these comites were given duties over and above purely military ones. For examples, the comites of Naples and Syracuse were responsible for administering the ports of those cities.²⁹¹ The two arms-related formulae are adjacent to those for various comites civitatum.²⁹² It is therefore reasonable to suggest that the two formulae in question related to appointments of comites civitatum to commands of garrison cities with communities of armourers. Supervision of the armourers was an extra duty like control of the port at Naples. The passing reference to soldiers is also explained, as command of these would be taken for granted as the basic duty of the comes: it was his special additional responsibility which required emphasis. These officers probably held their posts in the old fabrica cities of Northern Italy. Ticinum, the site of a bow factory in the fourth century, is known to have had a comes,²⁹³ so the formulae may refer to him and perhaps others.

In Italy then, a derivative form of the state arms industry survived into the sixth century, even if the characteristics of the fourth century itself were no longer evident. The fate of the armifactorum of the Ostrogothic period or the fabricenses of Gaul and Illyricum after the time of the Notitia is even more obscure. The outline of the collapse of the West gives a rough guide to the latest possible dates of survival. For instance, the Trier fabricae are unlikely to have survived the withdrawal of the imperial court to Arles in AD 413, and the loss of control of Northern Gaul accompanied by the disintegration of the army, makes the survival of the Gallic fabricae after the 420s unlikely. When the Pannonian and Moesian fabricae ceased to operate is equally unclear. It may have been at about the same time as that suggested for the Gallic centres, although there are indications that it may have been significantly earlier. Ammianus records that in AD 378 Aquincum was deserted and Carnuntum too dilapidated to serve as winter quarters for the army.²⁹⁵ Given this fact, it is hard to see how the fabricae known at these sites from the Notitia²⁹⁶ could have been operating in the last quarter of the fourth century. Ammianus is supported by the archaeological evidence, which suggests that Aquincum was declining from the mid-fourth century, part of a general trend among cities along this part of the Danube at the time.²⁹⁷ All this suggests that these fabricae had already ceased to function at a date half a century before the supposed closing date of the Western Notitia lists, around AD 425. By that time the frontier zone had long been vulnerable to attack, and it was suggested above that at least one fabrica was evacuated to a more secure rear area (p.266).²⁹⁸

Claudian gives the latest reference to the Lower Danubian factories. He puts into the mouth of Alaric a speech in which the Gothic king reveals that he drew on the fabricae of Thrace to equip his troops.²⁹⁹ This causes no surprise as Alaric was made magister militum by the Eastern government in AD 397, and may therefore have been given access to the factories.

It is unknown whether the fabricae of the Eastern Balkans survived

up to or after the Hunnic invasions of the 440s. The disruption caused by the depredations of Attila, involving widespread destruction and wholesale evacuation of Roman territory, could have resulted in withdrawal of the fabricenses to the safety of the capital, providing an explanation for the reference to a hitherto unattested factory at Constantinople in Justinian's Novel LXXXV.

It appears that the fabricae continued to equip the army throughout the sixth century, and indeed the latest relevant textual reference known to the writer dates as late as AD 612, consisting of a mention of three fabricenses from one of the Nicomedian factories.³⁰⁰ In the absence of other evidence, we may for the present conclude that state production remained the norm. By the late sixth century, and perhaps much earlier, it was standard practice to give soldiers cash allowances for arms rather than to issue them in kind,³⁰¹ money which, of course, often went on other things. Maurice issued arms in kind to troops on the Danube,³⁰² an action which contributed to the growth of disaffection in the ranks and, ultimately, to the usurpation of Phocas. If soldiers were free to buy their own arms, was production still limited to the state factories? There is no way of deciding the question at present.

In many ways, the early seventh century marked the watershed in the development of the Eastern Roman empire into the Byzantine empire. The first three decades of the century saw almost the entire empire overrun by foreign enemies. Bulgars and Persians reaching the gates of Constantinople. No sooner had Heraclius liberated Egypt and Syria-Palestine than the Islamic armies swept out of the desert, driving Roman power out of these areas forever. The loss of Syria gives an effective terminus ante quem for the end of the fabrica system as such, even if the craftsmen themselves lived on to serve new masters. Indeed, it may be doubted whether the complex system of supply which maintained the factories had survived the Persian invasions.

In any case, it is probable that from the reign of Heraclius there was no longer any need for a comprehensive system of state arms production centres. The Persian invasions precipitated a series of far-reaching reforms, which encompassed a total reorganisation of the armed forces.³⁰³ The old army consisted of standing units of regulars, the maintenance of which required the complex system for levying supplies run by the civil service and provincial administrations. The fabricae were an integral part of the system. However, the new army was very different, being organised on a largely territorial basis. Soldiers were maintained by giving them land, and in return were expected to equip themselves and be available for service.³⁰⁴ This new organisation eliminated much of the need for a large-scale military supply system, and may have made the network of big arms factories largely obsolete. This is not to say that state arms factories were not maintained to supply the small field army which was quartered around Constantinople. Indeed, there seems to be some evidence that individuals called fabricenses still existed in the Byzantine Empire as late as the eleventh century.³⁰⁵

The vestiges of the comprehensive network of state arms factories probably disappeared along with the bulk of the army it had been designed to equip, the regular army as reconstructed by Diocletian and

Constantine, which, during the crises of the early seventh century was replaced by the Thematic army of the Byzantine Empire.

SUMMARY AND CONCLUSION

The fabricenses occupied a unique position in the imperial service. Although artisans they were not slaves like the workers in the state clothing factories or the mints, but, like civil servants as well as regular soldiers they ranked as milites. This anomalous situation probably arose from the fact that when the state took over arms production, apparently late in the third century, many of the craftsmen drafted into the new factories were drawn from the ranks of the army and so were milites already. Nevertheless, the relatively privileged position which fabricenses continued to enjoy in succeeding centuries reflects the importance and prestige of their work.

It is argued that the state arsenals did not appear piecemeal in the later third and fourth centuries, but were, probably from the start, created as the elements of a well-conceived and highly organised state production system, perhaps partly developed from the old fabricae of the legionary bases and other military production capacity, but built mainly on the ruins of the earlier, supposedly free-enterprise, industry which had supplied weapons during the Principate.

The earlier industry is believed to have collapsed as a result of the military and economic upheavals of the third century (especially the collapse of the coinage). However, the continued demand for weapons precipitated direct state action to keep production going. The little evidence we have suggests that the ambitious new system of state factories was the work of Diocletian as part of his great restructuring of the empire in the decades around AD 300. Yet, state interference in the arms industry was nothing new. The formal government take-over was just the culmination of a long process of increasing official control and domination of an industry in the almost unique position of having the state as its sole legal customer.

If the rarity of their appearance in the sources suggests that fabricenses seldom impinged on the mainstream of historical events, the large numbers of them living in many major cities across the empire cannot have failed to have had a profound economic and social effect on local life. At the same time, their strategically vital work led them to become an integral part of the services of the imperial regime. Over the centuries, the fabricae became as much an inseparable part of the fabric of the empire as the standing army they served. They were such a fact of life in the empire that the Ostrogoths, whose government faithfully preserved so many imperial institutions, apparently went so far as to revive state arms factories in Italy, long after the last Western emperor had been deposed.

APPENDIX 1: THE DATES OF THE FABRICA LISTS IN THE NOTITIA

Hoffmann's analysis of the army lists in the Notitia Dignitatum (1969) has done much to elucidate their structure, development and dating. The lists are revealed as palimpsests, consisting of information becoming progressively modified as the order of battle of the army changed during the fourth and earlier fifth centuries, when the lists reached their final form. The lists of regiments are organised by type of unit (i.e. infantry or cavalry) and within each list, at least for the field army, the units are arranged in order of precedence.

The fabrica registers, like other Notitia lists of installations, are organised on an entirely different basis, in which order of notation was determined by geographical location (cf. p.258). It seems likely that the lists of factories remained open to amendments for some time after their original compilation, as is suggested by the cases of Ambianum and Salona discussed on p.266.

The main clue to the date of the registers comes from the Eastern list, specifically the entries for East Illyricum;

- NDOr. XI,36. Thessalonicensis
37. Naissatensis
38. Ratiarensis
39. Scutaria Horreomargensis

Unlike other entries, the first three of these contain no mention of the arms made in the factory concerned. Seeck³⁰⁶ thought that this was because they were general arms works. This is not an acceptable explanation, since general arms works are elsewhere designated as such (e.g. armorum omnium at Argentomagus. The various factories categorised as scutaria et armorum also seem to be general arms works). An analogous case is to be found in the Western lists, where the entry for Soissons also lacks a production category.³⁰⁷ Seeck inconsistently regarded this as a lacuna.³⁰⁸

It seems unlikely that the omission of categories from three successive entries in the Illyrican lists could be a simple accident. The copyist either did not bother to note the categories or did not know them. It is significant that the fabricae under scrutiny were in an area which was subject to a boundary change between the Eastern and Western empires at the end of the fourth century. In AD 395, the Praetorian Prefect of the East, Rufinus, demanded that Stilicho permanently relinquish Western sovereignty over the dioceses of Dacia and Macedonia to the Eastern government. Stilicho conceded.³⁰⁹

If, as is likely, the fabrica lists already existed in AD 395, amendments would have been deleted from the Western list and added to the Eastern. Such amendments would provide the opportunity for the omissions to occur. After all, the Notitia as it survives, is agreed to be primarily a Western document and indeed, the fabrica lists are unusual in bothering to itemise the locations of the Eastern installations at all. For other classes of government production centres, notably the analogous gynaecea, the Notitia lists only the Western textile factories.³¹⁰ It might be that the alterations were

made by a Western scribe, who deleted the fabricae from the Western list and rather carelessly scribbled them on the end of the Eastern list. Since they then ceased to be a concern of the Western government, accuracy and completeness may not have been important. But why then, did the scribe bother to note that Horreum Margi, the last of the entries, had a fabrica scutaria?

An alternative explanation is that in AD 395 the Eastern and Western lists had not yet been brought together. The amendments were made by the separate governments to their own lists, and it may be that the Eastern scribe did not have full information on what the newly adopted factories were producing, except for Horreum Margi.

This would imply separate origins for the lists, and indeed, they are put together in different ways. For example, the Oriental register specifies how many fabricae are in each diocese, while the Western list does not. More fundamentally, in the Western list, the city comes before the production category in each entry. The Eastern entries are arranged the other way round.

If the two lists were separately compiled in the two halves of the Empire, there is a terminus post quem for their compilation of AD 364, when the Empire was divided by Valentinian and Valens and the offices of state, including the post of magister officiorum became formally and permanently duplicated.³¹¹ From that time fabrica direction must have been territorially divided between the two magistri. The independently compiled lists would therefore date to AD 364 or later. The anomaly of the East Illyrican entries suggests that they existed in AD 395. Unfortunately, no greater degree of certainty is possible.

APPENDIX 2: THE CONTROL OF THE FABRICAE IN THE PALATINE MINISTRIES

The Notitia Dignitatum shows that in the early fifth century the fabricae were under the control of the magister officiorum of each half of the empire.³¹² This cannot always have been so. It has been shown above (p.266) that the fabrica system was almost certainly a Tetrarchic innovation, but the post of Master of the Offices was not created until somewhat later, during the reign of Constantine the Great. During the intervening years at least, the fabricae must have been the responsibility of some other official.

The reform of the government during the Tetrarchy made the Praetorian Prefect more powerful than ever before, effectively chief minister and commander of the armed forces. He also bore responsibility for raising recruits and supplying the army, and it is the latter function which makes it reasonable to suggest that he was also given charge of the new arms factories, for this would have constituted a natural adjunct to his jurisdiction in the area of military supply. However, it should be emphasised that there is no proof that this was actually the case. It is often stated as a proven fact,³¹³ but is no more than a reasonable inference. The problem of identifying the department controlling the fabricae at this early date is somewhat complicated by the existence of a career inscription, dating to the last years of the reign of Diocletian, of a certain Tertullus, who held the post of praepositus fabric[...].³¹⁴ The individual concerned was probably not a plain praepositus fabricae, because he held the highest posts of state and the title under discussion is very prominent in his career inscription. It was placed second only to the Urban Prefecture and a final title which may have been the Proconsulate of Africa. The proposed reconstruction of the title in CIL is praepositus fabricarum, since it was supposed, then and since, that the office was too important to have been confined to the control of a single fabrica. This has resulted in a number of unsubstantiated statements about the relationship of this official to the fabrica system and to the Praetorian Prefecture. Boak³¹⁵ flatly stated that the alleged praepositus fabricarum was a subordinate of the Prefect with responsibility for all or some of the fabricae, while Seeck believed³¹⁶ that the official was independent of the Prefect, and represented the latter's loss of control of the fabricae before the reign of Constantine. MacMullen³¹⁷ speculated that this praepositus fabric[...] was commander of one fabrica when they were still few and relatively important. It is also possible that Tertullus held a special post, created as a temporary expedient to deal with the enormous administrative task of setting up the new factories. However, in the absence of other evidence, it is most likely that the fabricae were in the charge of the Praetorian Prefecture at the accession of Constantine.

A crucial question is at what date did the magister officiorum acquire control over the fabricae, probably out of the hands of the Prefecture? Did this occur when the post was created by Constantine, or later, closer to the time of the Notitia? Seeck seems to have believed that the Master took over the factories almost as soon as his ministry was established.³¹⁸ Most other authorities opt for later dates; e.g. by AD 390, and probably between 388 and 390;³¹⁹ 'unknown but after 369'.³²⁰ Boak was more reticent, observing that the first clear proof

of the Master's control dates to AD 390, while noting the inactivity of the Prefect in this sphere beforehand.³²¹ Waltzing opts for the latest date, AD 396, linking the changeover with the fall of the prefect Rufinus,³²² an event of great importance to the question in hand.

Waltzing chose the fall of Rufinus as the moment on the basis of two similarly worded passages in John Lydus,³²³ which record that the emperor Arcadius took away (among other things) Rufinus' control over the arms factories. The latter was Praetorian Prefect at the time. This is not as conclusive as it appears, because of the evidence on which the slightly earlier dates mooted by Boak, MacMullen and Jones are based. These were derived from an examination of the addressees of various dated laws relating to fabricae in the Codes of Theodosius and Justinian.³²⁴ MacMullen's relatively early terminus ante quem of AD 388 is apparently based on the belief that the text CTh. X.xxii.2 of that year was addressed to the Master, whereas in fact it was addressed to Tatianus, the Praetorian Prefect.

There are three possibilities to consider:

1. That the fabricae were given over to the magister by Constantine (Seeck).
2. That the changeover came about in AD 388-390 because laws related to fabricae begin to be addressed to the Master from that time (Jones).
3. That the changeover occurred in AD 396, when the fall of Rufinus precipitated the diminution of the Prefecture (Waltzing based on John Lydus).

In an attempt to choose between these alternatives, the last may be considered first. According to John Lydus,

'...a man called Rufinus, insatiable in greed, whom Arcadius employed as Praetorian Prefect, decided upon a tyranny departing from purposes good to the state, and hurled the magistracy into an appalling abyss, for the Emperor immediately took away from his magistracy his power over the arms, and then that over the fabricae as they call them, that is the factories making arms... and the cursus publicus, ...from all of which his magistracy is composed...'.³²⁵

It seems clear enough from this that the changeover occurred in AD 396, the date of Rufinus' fall, and that up to this date 'the oversight of fabricae regularly belonged to the Praetorian Prefect'.³²⁶ But MacMullen draws attention to the fact that a law related to fabricae of AD 390³²⁷ was addressed to the Master of the Offices. He explains this by suggesting that the prefect Rufinus had poached the fabricae from the Master after 390. Boak³²⁸ took a similar view, i.e. that the Prefecture was temporarily usurping something which was already a function of the magister officiorum by 390.

All this directly contradicts Lydus, but the latter was writing long after the events he was describing, so he may not have been entirely clear about the relationship of the fabricae to the palatine ministries at the end of the fourth century. It is noticeable, for

example, that while loss of the fabricae is mentioned as part of the damage to the Prefecture caused by the fall of Rufinus, Lydus does not elaborate. He is much more forthcoming on the consequences of the loss of the cursus publicus, about which he clearly knows much more. If laws on the fabricae were being addressed to the Master in AD 390, then Lydus was simply wrong in thinking that the fabricae were still an integral part of the Prefect's jurisdiction in 396. The changeover must have happened at some earlier time. The evidence for Jones' proposed changeover bracket of AD 388-90 must now be examined. This proposal is derived from the identity of the addressees of various laws related to fabricae in the Codes. The dates and addressees of all such laws are presented in Table V. It is at once clear that up to AD 388, all laws were addressed to the Praetorian Prefect. From AD 390, virtually all were addressed to the Master of the Offices. (The two texts addressed to the comes rerum privatarum were instructing him not to interfere in the fabricae cf. p.279). This seems to lend strong support to Jones.

Jones also observed that the Master of the Offices in AD388-90 was none other than Rufinus, the same man who became Prefect in 392 and whose bloody end in 396 damaged the Prefecture as Lydus records. Jones proposed that Rufinus, as magister officiorum, usurped control of the fabricae from the Prefecture in 388-90, but held onto them when he himself became prefect in 392, thus taking them back again. They were then transferred back to the Master in 396. If Jones is right, then the complexity of these events helps to explain the confusion over the dates.

However, if in addition to the addressees, the contents of the legal texts are considered, a significantly different picture emerges. All texts addressed to the magister, which are dated after 390, deal with issues pertinent to the running of the arms factories and the administration of the staff. The topics covered include the promoting of foremen, the primicerii fabricarum,³²⁹ branding of armourers,³³⁰ their immunity from billeting,³³¹ and punishment for dereliction of duty.³³² Others concerned the despatch of arms shipments,³³³ and the absorption of private armourers into the fabricae.³³⁴

If the Praetorian Prefect had been in charge of the fabricae prior to AD 388, it might be expected that the laws relating to fabricae promulgated before that date and all addressed to him should also be concerned with such internal matters. This is not the case. Two of them concern the apprehension of decurions hiding in the fabricae or other branches of the imperial service, several of which were certainly not under the Prefect's control, e.g. the army and the argentarii.³³⁵ Another pertains to measures to be taken against palatines for neglect of duty. Again, praepositi fabricarum are included as part of a much broader list of officials from a variety of departments.³³⁶ Finally, the law of AD 388 is concerned with the quality of metal delivered to the fabricae, and not what happens afterwards.

None of these shows the Prefect in charge of the fabricae. In fact, all are explicable in terms of other known functions of the prefecture. For instance, as head of the civil administration it was the Prefect's responsibility to keep the decurions in the city councils, and to pursue deserters in all branches of the imperial service, including fabricae. As chief legal officer, he was concerned

with prosecution of crime (including dereliction of duty) in all government departments. His involvement with quality control of materials being supplied to the fabricae may be seen simply as part of his wider responsibility for supplying all government needs for material, not only for the army, civil service and fabricae, but for the imperial mints too.³³⁷ The latter were not under the Prefect, but under the comes sacrarum largitionum.

The supposed changeover in the addressing of fabrica legislation in 388-390 is also more apparent than real, for there is one final law addressed to the Praetorian Prefect, dated as late as 412.³³⁸ Like the others, this one is explicable in terms of the Prefect's other functions, for it covers the question of deserting decurions and scrutiny of recruits, in this case with reference to arms factories.

It is suggested that Jones and others have misinterpreted the evidence in the Codes, and that the changeover of AD 388-390 will not bear close scrutiny. The true situation is that the codes contain two groups of laws. The first consists of texts addressed to the Prefect on matters where his activities impinged on the 'foreign territory' of the fabricae. None shows the Prefect in charge of the factories, and they range in date throughout the fourth century and into the fifth. The second group is concerned with the internal affairs of the fabricae and all the rescripts are addressed to the Master. The fact that the earliest of these texts dates to 390, probably relates more to the sources of compilation of the codes than the history of palatine administration over the factories. The two groups of laws do overlap in time, but not in content. They are complimentary, and together provide the kind of coherent body of law on the subject which was the entire purpose of the writing of the Codes.

What, then, are the implications of this? The Codes contain a selection of legislation. Presumably there was at least some bias towards later laws where these superceded older legislation, and this may well be the reason for the lack of texts addressed to the magister dated before AD 390. The fact that the Codes are a selection and not a complete catalogue of legislation makes them in any case a dubious basis for dating the changeover, and as has been seen, they cannot be held to do so. In fact, there is no real evidence for the date in question, although there are indicators. If it is assumed that the Master had achieved control of the fabricae well before 388, Jones' complex sequence of events surrounding the end of Rufinus can be disposed of (p.291), and also the curious fact can be explained that the fabricae went to the magister again in 396 when, according to Jones, they had been usurped from the prefecture to that office only four to eight years previously. What probably happened was that Rufinus, appointed Master in 388, simply inherited the fabricae from his predecessor. He then refused to relinquish control of them when he became Prefect in 392. As an established part of the officium of the Master, the factories reverted to the latter when Rufinus was assassinated in 396.

One further piece of evidence is to be found in Ammianus, who records the unwitting involvement of the Cremona fabrica director in a political intrigue.³³⁸ The plot misfired, and the treasonable correspondence ended up at the imperial court. The letter was handed

over to one Florentinus, who is described as agens of the Master of the Offices. The inference must be that the Master's officium was already responsible for the fabricae at the time, so that all matters relating to the factories or their staffs were handed over to its jurisdiction. The date is AD 355, thirty-five years before the date suggested by Jones.

The evidence, such as it is, does not allow the date at which the Master acquired control of the state arms production system to be fixed. However, the undermining of the late fourth century dates leaves the way open for the simpler hypothesis that the magister officiorum held them from the start, when Constantine created his post as part of the wider reorganisation of the government. The most significant part of that reorganisation was the reduction of the monolithic Praetorian Prefecture, which is known to have lost its power over the army and other areas at this time. The deliberate partial dismemberment of the prefecture by Constantine provides both the obvious motive and the opportunity for the transfer of the fabricae to the newly-created magister officiorum.

NOTES

1. This paper was written in 1980-81 and was intended to appear in Roman Military Studies I which was to have been published by VORDA. However, as the volume was never published, this and all the other papers were withdrawn. I would like to thank Ralph Jackson and Fiona Cameron for the editorial work they undertook for the abortive publication, and Jon Coulston for including it in the present volume. I have taken the opportunity to update and rethink it somewhat, although not as much as I would have wished.

I would also like to thank the staff of the Roman Department of the Institute of Archaeology, London, namely Profesor J. Wilkes, Dr R. Reece and Mr M. Hassall, for reading this paper in draft form and making many useful comments and suggestions. My colleague Rowena Loverance, and Alan Griffiths of University College, London, gave me invaluable help with Greek texts. Particular thanks must go to Dr Robert Ireland, also of University College, who took my barrage of questions on the sources with great patience and good humour, and went to great lengths to track down and interpret some very obscure texts for me. I should also like to thank my mother for typing the original manuscript, Patricia Price for the hours she spent retyping it onto computer, and Mike Bishop for retyping it onto another one!

2. Nov. Th. 6, AD 438 (trans. Pharr).
3. MACMULLEN, 1960, 32 note 82.
4. JULLIAN, 1896; SEECK, 1909.
5. A number of writers have discussed the fabricae as part of the larger subjects, e.g. WALTZING, 1896; BOAK, 1919; JONES, 1964; MACMULLEN, 1960.
6. See especially CTh. X,xxii, 'de fabricensibus', and below, index.
7. The following takes as its basis the printed edition of SEECK, 1876.
8. The complex problem of the date of the Notitia is not relevant here. What is clear is that some or all of the lists were altered and amended for some time after their original composition. Hoffmann, studying the army lists, argues for a closing date between AD 396 and 410 for the Oriental lists (1969, 52), and concludes that the Western lists cannot have closed later than AD 425 (1969, 58).
9. NDOr. XI,18-39.
10. NDOcc. IX,16-39.
11. NDOr. XI,44.
12. NDOcc. IX,43.

13. The exceptions are Argentomagus (NDOcc. IX,31) which is in Septem Provinciae and not Galliae; Lucca (NDOcc. IX,29) which is in Suburbicaria and not Italiae; and the list of East Illyrican fabricae, which is simply headed 'Illyricum', not distinguishing between the dioceses of Macedonia and Dacia (NDOcc. XI,35-39).
14. NDOr. XI,36-39.
15. SEECK, 1909, 1927.
16. NDOcc. IX,31.
17. NDOcc. IX,35; SEECK, 1909, 1927.
18. NDOr. XI,30.
19. NDOr. XI,32.
20. SEECK, 1876, 32; note 2, following Ghelen's editio princeps of 1552.
21. Especially in the Western lists, where the regional headings do not specify the number of entries following.
22. JULLIAN, 1896, 960.
23. NDOr. I,79-125; NDOcc. I,84-121.
24. NDOr. I,57-77; NDOcc. I,50-77.
25. NDOcc. XI,45-60. The gynaecia have been studied by WILD, 1976.
26. In common with almost all other lists of installations, such as thesaurii (NDOcc. XI,21-37 as opposed to NDOr. XIII,10), monetae (NDOcc. XI,38-44 as opposed to NDOr. XIII,18) or bafii (NDOcc. XI,65-73 as opposed to NDOr. XIII,17). The fact that only for the fabricae is the Eastern empire covered in detail, underlines the importance of these establishments.
27. And indeed the shorter ones, for example the Western rationales summarum (NDOcc. XI,9-20) and comites rei militaris (NDOcc. I,30-36).
28. I.e. between NDOcc. IX,29 and 30.
30. NDOcc. IX,31. Note that the entries for Galliae and Septem Provinciae are grouped together, as are those for Italia and Suburbicaria, just as in the lists of praesides.
31. Lactantius, de mort. pers. 7, which seems to imply more than one fabrica. NDOr. XI,27-28 record two at Nicomedia.
32. Greg. Naz. Or. XLIII,57.
33. Malalas 13.

34. Athanasius, Hist. Ar. 18; Amm. XXXI,6,2.
35. Amm. XV,5,9.
36. Malalas 13.
37. NDOr. XI,21-2.
38. CTh. X,xxii,1.
39. CTh. X,xxii,1 relates specifically to barbaricarii, but in the Theodosian Code is the first law in the chapter de fabricensibus.
40. Occidens XI: Sub dispositione viri illustris comitis sacrarum largitionum:
74. Praepositi branbaricariorum* sive argentariorum:
75. Praepositus branbaricariorum* sive argentariorum Arelatensium:
76. Praepositus branbaricariorum* sive argentariorum Remensium:
77. Praepositus branbaricariorum* sive argentariorum Triberorum:

* Copyist's error for barbaricarium; cf. NDOcc. XI, note 3 in Seck edition.

In the oriental section appear the following entries: (under the Master of the Offices) NDOr. XI,

45. (Subadiuvae) Barbariorum (sic) tres (sic).
46. Orientis unus.
47. Asianae unus.
48. Ponticae unus.
49. Thraciarum et Illyrici unus.

Seck identified these as subadiuvae barbari(cari)orum, resulting in the widespread belief that by the time of the Notitia the Eastern barbaricarii were in the hands of the magister officiorum. However, in his unpublished doctoral thesis, J.P.C. Kent has demonstrated that this was not the case, and that the officers referred to here were indeed subadiuvae barbarorum, for that title is attested in the Eastern empire twice in the fifth century (KENT, unpub., 206).

41. Amm. XXIX,3,4. It is not explicitly stated that the incident occurred at Trier. In any case, the reference is concerned with embellished armour, apparently for the Emperor himself; such pieces were almost certainly made by the barbaricarii, of whom there was a body at Trier, (NDOcc. XI,77). It is likely that the praepositus mentioned by Ammianus was commander of these, and that the fabricae were not involved at all.
42. CTh. X,xxii,1.
43. Nov.J. LXXXV seems to imply the existence of such a centre by AD 539.
44. P. Beatty Panopolis I, especially lines 213-6, and 314-46;

- MACMULLEN, 1976, 156 note 23.
45. WILLIAMS, 1985, 82.
46. Just. Nov. LXXXV; see p.888.
47. CIL III,2043.
48. MIHAILOV, 1965, 150-3, no.3; ROBERT & ROBERT, 1966, 395 no.257. This stone was not found at Marcianopolis, but in the region of Pautalia, near Kiustendil, Bulgaria (thanks to Dr Andrew Poulter for assistance with this find).
49. FOSS, 1976, 106, inscription IN64.3; FOSS, 1979, 279; GREENWALT, 1979, 4, tomb 76.1.
50. CIL V,8742; Diehl 503, 508; CIL V,8745, 8757; Diehl 538a+b = CIL V,8662+8697+8721.
51. ILS 5508 = CIL IX,1590.
52. SEECK, 1909, 1927.
53. CIL XI,9 = ILS 699.
54. NDOcc. XLII,7, Praefectus classis Ravennatum cum curis eiusdem civitatis, Ravennae. If the Ravenna fabrica was serving the fleet and not making weapons it would not come under the control of the magister officiorum. Hence its omission from NDOcc. IX.
55. Diocletian, Edict on Prices X,2; LAUFFER, 1971, 248; VON PETRIKOVITS, 1981, 285, 303, scordiscarius.
56. ENSSLIN, 1942, 65.
57. SEECK, 1909, 1926-7.
58. SEECK, 1909, 1927.
59. The idea that leather armour was extensively used in the late army is firmly entrenched, and of obscure origins. No unambiguous literary evidence for such armour is known to the present writer, and of its nature leather is unlikely to survive in the archaeological record. Two cuisses of leather scales were preserved in the dry conditions of Dura Europos (ROSTOVITZEFF et al, 1936, 450 and pl.XXIII; ROBINSON, 1975, 163), but the extensive collections of leather from waterlogged sites in the Western empire have produced no comparable finds. In my opinion there is no reason to think leather was ever very widely used for armour under the empire.
60. Augustodunum, NDOcc. IX,33.
61. Antioch, NDOcc. XI,22; Caesarea Cappadociae, XI,26; Nicomedia, XI,28.

62. Units of catafractarii and clibanarii in the West:
equites catafractarii, Morbio (Britain; NDOcc. XL,21)
equites catafractarii iuniores (vex. com. in Britain; NDOcc. VII,200)
equites sagittarii clibanarii (vex. com. in Africa; NDOcc. VI,24 + 67 = Oc. VII,185).
63. Units of catafractarii in the East (total six):
equites catafractarii, Arubio (Scythia; NDOr. XXXIX,16)
equites catafractarii (vex. com. praesental army; NDOr. VI,35)
equites catafractarii Albigenses (vex. com. in Thrace; NDOr. VIII,29)
equites catafractarii Ambianenses (vex. com. in praesental army; NDOr. VI,36)
equites catafractarii Biturigenses (vex. com.; NDOr. V,34)
comites catafractarii Buccellarii Iuniores (vex. com. in Oriens; NDOr. VII,25).
- Units of clibanarii in the East (total eight):
comites clibanarii (palatine vexillation in praesental army; NDOr. V,29)
equites secundi clibanarii Palmyreni (vex. com. in Oriens; NDOr. VII,34)
equites primi clibanarii Parthi (vex. com. in praesental army; NDOr. V,40)
equites secundi clibanarii Parthi (ditto; NDOr. VI,40)
equites quarti clibanarii Parthi (vex. com. in Oriens; NDOr. VII,32)
equites Persae clibanarii (vex. pal. in praesental army; NDOr. VI,32)
equites promoti clibanarii (vex. com. in Oriens; NDOr. VII,31)
schola scutariorum clibanariorum; (NDOr. XI,8).
64. Mantua, NDOcc. IX,26; Augustodunum, IX,33.
65. Lucca, NDOcc. IX,29; Remi, IX,36; Ambianum, IX,39.
66. They also figure prominently in the illustrations heading the chapters in the Notitia on the Masters of the Offices (NDOr. XI. Oc. IX). For the archaeological evidence relating to late Roman helmets cf. KLUMBACH, 1973; JOHNSON, 1980; JAMES, 1986.
67. Helmets are depicted in the illustrations heading the sections of the magistri officiorum of East and West, but this is hardly firm evidence that the factories produced helmets. The barbaricarii were also involved in helmet production, although the indications are that they only plated existing components with precious metal (CTh. X,xxii,1).
68. NDOr. XI,23.
69. SEECK, 1909, 1926.
70. VIERECK, 1975, 258.
71. Malalas 13.

72. CIL V, 8742; Diehl 508, 538A.
73. NDOcc. IX, 24. The modern town is known as Concordia Sagitaria. Is this a survival from the fourth century, or a piece of modern antiquarianism?
74. Fabricae scutariae; in the East (NDOr. XI); Damascus (20), Antioch (21), Edessa (23), Nicomedia (27), Sardis (30), Hadrianopolis (32), Marcianopolis (34), and Horreum Margi (39), a total of eight centres. It is probable that there was another one at Ratiaria (NDOr. XI, 38. Cf. p. 269). In the West (NDOcc. IX); Sirmium (18), Aquincum (19), Carnuntum (20), Lauriacum (21), Verona (25), Cremona (27), Augustodunum (34), Treveri (37), and Ambianum (39), a total of nine.
75. Fabricae armorum: in the East (NDOr. XI); Damascus (20), Antioch (21), Nicomedia (27), Sardis (30), Hadrianopolis (32), and Marcianopolis (34), a total of six. It is probable that Naissus (37) and Thessalonica (36) can be added to the list (cf. note 30). In the West (NDOcc. IX); Sirmium (18), Salona (22), Verona (25), Mantua (loricaria, 26), Argentomagus (31), and Augustodunum (loricaria, 33), a total of six.
76. NDOcc. IX, 28.
77. NDOcc. IX, 24 and 32.
78. NDOcc. IX, 33 and 38.
79. SEECK, 1909, 1926.
80. That of Carausius and Allectus in Britain (AD 287-296) and two in Egypt, one in AD 292, followed by another shortly afterwards, under Domitianus Domitianus.
81. WILLIAMS, 1985, 82.
82. JAMES, 1984, 162-172.
83. Seeck also thought that the Western fabricae were more specialised than the Eastern ones (1909, 1926). He believed that the fabricae were moving towards greater specialisation in the later fourth and early fifth centuries AD, so the Western list, which he regarded as later, shows the process taken further than is the case in the Eastern register. This idea seems to stem mainly from the fact that there is a tendency towards separation of production of swords and armour in the Western centres. There is no reason to think that this division is a new phenomenon of the fifth century. It is more likely due to differences in the organisation of the arms industry in East and West, perhaps going back to pre-Tetrarchic times.
84. Argentomagus (NDOcc. IX, 31) actually lies outside Galliae, and Sardis Lydiae is outside Pontica (NDOr. XI, 30).

85. NDOr. XI,36-8.
86. Augustodunum (NDOcc. IX,34, probably serving Maxima Sequanorum), Treveri (37, serving Germania Prima), Ambianum (39, serving Germania Secunda), Verona (25, serving Raetia Secunda?), Cremona (27, serving Raetia Prima?), Hadrianopolis (NDOr. XI,32, serving Moesia Secunda), Marcianopolis (34, serving Scythia) and Nicomedia (27) and Sardis (30) serving the Eastern frontier.
87. The correlations are reliable enough to reconstruct with some confidence what the East Illyrican fabricae were producing. Dacia Ripensis should have had a fabrica scutaria. There are known fabricae at two cities in that province, Ratiaria and Naissus, so the shield factory was probably at one or the other. Ratiaria is the more likely, since it is an old legionary base on the Danube like Aquincum, Lauriacum and Carnuntum, all of which had fabricae scutariae. This would leave the factories at Naissus and Thessalonica to be the two armour factories which may be expected for the diocese of Dacia.
88. The Notitia lists fifty units of sagittarii, thirty-seven mounted, thirteen of foot. Twenty-four regiments of horse archers are listed in the East, thirteen in the West. This approximately two-to-one Eastern bias is also seen for foot archers, with nine regiments in the East and four in the West. Despite the Eastern bias, it is clear that archery was regarded as important in the West, units of sagittarii far outnumbering, for example, units of heavy cavalry (cf. notes 21 and 23).
89. John Lydus, de mag. 3,5.
90. There is evidence that bows were widely available in the East in the late empire. Synesius, a bishop in Cyrenaica in the early fifth century AD wrote to his brother in Syria to procure weapons to defend his flock against nomadic raiders. He complains that Egyptian arrows will not fly straight, so he wants some good Syrian ones complete with points. Bows are not too much of a problem; he knows where he can buy them (epistulae 133, AD 405?). Private manufacture and trafficking in arms led to a crack-down under Justinian (Nov. LXXXV, which places bows high on the list of proscribed items). Von Petrikovits (1981, 303) also claims reference to a shield-wright in a fourth century Egyptian papyrus (from Hermopolis; P. Cair. Preis. 39,4), but this is erroneous. The individual concerned was certainly a soldier, in a cavalry unit called Mauri scutarii, which is known to have been in Egypt from the Notitia (NDOr. XXXI,23; Cuneus equitum Maurorum scutariorum at Lykopolis. Note also XXXI,24, Cuneus equitum scutariorum at Hermopolis itself).
91. Horn composite bow ear laths in all stages of manufacture have been found in late levels at Intercisa (SALAMON & BARKOCZI, 1982, 171).
92. COULSTON, 1985, 259.
93. COULSTON, 1985, 259.

94. Nov. J. LXXXV.
95. Malalas 13.
96. Lactantius, de mort. pers. 7.
97. MacMullen thought that the bulk of the fabricae had possibly been established by the end of the reign of Constantine; MACMULLEN, 1979, 156-7.
98. For example Hadrianopolis is first attested in a context dating to AD 375 (Amm. XXXI,6,2), Cremona in AD 355 (Amm. XV,5,9). The Concordia tombstones date to the very end of the fourth century (HOFFMANN, 1969, 83-107).
99. Definite evidence for the existence of specific fabricae before the date of the Notitia is available for only the ten centres mentioned on p.265. Even among these, one of the Sardis inscriptions may post-date the Notitia.
100. NDOcc. IX,19-21.
101. For example the fabrica at Carnuntum (VON PETRIKOVITS, 1975, 90-1; VON GROLLER, 1909, 35-43).
102. Lactantius, de mort. pers. 7.
103. Lactantius, de mort. pers. 7, makes clear the scale of the building programme. 'The emperor himself attended the dedication of the hippodrome at Nicomedia in 304, which suggests that the palace and the hippodrome there had been put up together' (VICKERS, 1972, 31, note 49).
104. Malalas 13. MATTINGLY suggested that they may have been established when Diocletian arrived at Antioch to support Galerius in AD 296 (1939, 336).
105. DOWNEY, 1961, 318. The palace at Antioch already existed by AD 298.
106. NDOcr. XI,36.
107. Galerius arrived about AD 300. This event seems to have precipitated a wide-ranging construction scheme including not only a palace but the hippodrome (VICKERS, 1972) and the triumphal arch which still stands. The fabrica was probably built as part of this programme.
108. Thessalonica is far to the rear of the frontier line and did not even have a proper harbour until AD 314 (Zosimus, II,22).
109. Eumenius, pan. lat. ix,5,15 and 6,23; BUCKLEY, 1981, especially 297-8.
110. There was a Tetrarchic building programme at Sirmium (MOCSY, 1974,

312).

111. Possibly Trier and Salona although the latter is less likely because Diocletian's energies there went into the erection of the great palace at nearby Split. In any case it is possible that the Salona fabrica may have been sited elsewhere until the late fourth century (see p.266).
112. The changes involved here are that Raetia was divided into Raetia Prima and Raetia Secunda, Pannonia Inferior became Valeria and Pannonia Secunda, and Moesia Superior became Moesia Secunda and Scythia.
113. MANN, 1977, 12.
114. The dioceses were controlled by vicarii, who are not usually thought of as military officers. However, their subordinate provincial governors were often also commanders of the provincial garrisons. Since their superior, the Praetorian Prefect, was commander-in-chief of the army, it would be surprising if the intermediate vicarii had no military functions at all. There is at least evidence that they were involved in fort building (JONES, 1964, 47).
115. MANN, 1977, 12.
116. VAN BERCHEM, 1952, 114.
117. Lactantius, de mort. pers. 7.
118. Malalas 13.
119. Scutaria et armorum, Nicomediae (NDOcc. XI,27)
scutaria et armamentaria, Edessa (23)
scutaria et armorum, Antiochae (21).
120. Clibanaria, Nicomediae (NDOcc. XI,28)
clibanaria, Antiochae (NDOcc. XI,22).
121. For example, the fabricae of Italia are in strict East-West order (NDOcc. IX,24-28).
122. NDOcc. IX,35-39.
123. NDOcc. IX,18-22.
124. Ambianum was the shield factory serving Germania Secunda (NDOcc. IX,39 and cf. figs.6 and 10). Salona was one of two armour factories serving Illyricum. Despite its association with Diocletian, Salona does not seem to have undergone a major rebuilding during the Tetrarchy; local resources went into the palace at Split. There is, therefore, no reason for the fabrica to be there as early as Diocletian's reign.
125. For example, the gynaecium at Matisco was originally sited at Augustodunum (NDOcc. XI,59).

126. NDOcc. XI,46.
127. The probable date of the two amendments of the Notitia (NDOcc. XI,22; 46), which must have been made between the original compilation of the lists and the date when they were no longer available for modification. See also note 125.
128. See also note 125.
129. JULLIAN, 1896, 960.
130. WEST suggested that the Argentomagus fabrica was based on the iron working of the Bituriges (1935, 81 note 67).
131. HEALEY, 1978, 63.
132. FORBES, 1972, 278.
133. DAVIES, 1935, 170.
134. As an analogy, it has been shown that the state textile and clothing factories were distributed in wool-producing areas (WILD, 1976, 53).
135. Iron production in Italy had effectively ceased centuries before (HEALEY, 1978, 63-4).
136. This is especially so in Italy, and the fabricae of western Anatolia; see Fig.1.
137. JONES, 1966, 35.
138. Even the imperial household was not exempt from providing charcoal for the fabricae (CTh. X,xxii,2, AD 388; XI,xvi,15, AD 382; XI,xvi,18, AD 390).
139. CJ. XI,ix,7, dating to the late fifth or early sixth centuries, which lays down procedure for procurement of wagons or ships to move consignments of arms to the troops. Responsibility for providing these vehicles is shown to lie in the hands of the Praetorian Prefect, who is known to have been in ultimate control of the maintenance of these communications.
140. The trans-Balkan road which passed through Naissus, Horreum Margi, Hadrianopolis, etc.; MOCSY, 1974, 212, 214 and 246.
141. Of the two great roads crossing Anatolia from west to east, the northern route runs through the fabrica cities of Nicomedia and Caesarea Cappadociae. Sardis Lydiae is astride the southern route. Zosimus records the use of the southern road for major troops movements between the Danube and the East (IV,30).
142. The sparse evidence for the arms industry of the Principate is considered in MACMULLEN, 1960; OLDENSTEIN, 1976, 1985; and BISHOP, 1985.

143. NDOr. XI,21 and 22.
144. NDOcc. IX,33; Augustodunensis loritaria, balistaria et clibanaria.
145. CIL III,2828 = ILS 7047, recording lorica production in the territory of the Aedui.
146. A pre-Roman arsenal has been claimed at Come Chaudron (BULLIOT, 1870).
147. NDOcc. IX,31, armorum omnium, therefore presumably a major centre: fabricae possess this description in the Notitia lists.
148. NDOr. XI,30.
149. For example, Lydian steel was valued for swords (FORBES, 1972, 278). This process may also explain ROBINSON's 'Imperial-Gallic' industry of the early empire (1975, 8), apparently a native industry taken over by the Romans as a going concern to serve the imperial army. It may well have been based on Augustodunum and Argentomagus, for these were later important fabrica centres (see note 64).
150. NDOcc. IX,19-21.
151. There is some archaeological evidence for the army making its own weapons, but this may have been limited to manufacture of such simple items as projectile heads (as at Corbridge; FORSTER & KNOWLES, 1912, 250; RICHMOND & BIRLEY, 1940, 106, 112-3).
152. NDOr. XI,38.
153. VON PETRIKOVITS, 1975. The structures he identifies as legionary fabricae are heterogenous, and there is very little good archaeological evidence for their individual functions, largely due to inadequate excavation. For the most recent discussion of early military fabricae, see BISHOP, 1985.
154. VON GROLLER, 1909, 43; VETTERS suggests the same for Lauriacum (1977, 365).
155. Such a change would have been in harmony with the centrifugal tendencies at work in the legions in the late third century, as they lost their specialist troops such as ballistarii (apparently formed into separate units) and their bodies of cavalry (upgraded to independent status as regiments of equites promoti). Loss of their fabricae might have been a logical extension of the process.
156. MACMULLEN, 1960, 39.
157. SEECK, 1909, 1926.
158. ENSSLIN, 1942, 65.
159. See, for example, MACMULLEN, 1980.

160. MACMULLEN, 1960, 29.
161. MACMULLEN, 1960, 29.
162. SEECK, 1909, 1926.
163. MACMULLEN, 1960, 29.
164. MACMULLEN, 1960, 23.
165. BISHOP, 1985; OLDENSTEIN, 1985.
166. BISHOP, 1985.
167. OLDENSTEIN, 1985; VAN DRIEL-MURRAY, 1985, 65-6.
168. For example, the Aeduan loricarii, CIL XIII,2828 = ILS 7047.
169. The lex iulia de vi publica forbade arms to citizens other than soldiers, a ban which was reiterated in the late empire (e.g. CTh. XV,xv,1. For the banning of arms exports, CJ. IV,xli,2).
170. As the Aeduan inscription makes clear, mentioning an army officer supervising production in central Gaul (CIL XIII,2828 = ILS 7047).
171. Large establishments had existed in Greece centuries before. Some of them employed up to 120 slaves (MOSSE, 1969, 89).
172. Roman arms are far from rare beyond the northern frontiers, being found all over Free Germany (e.g. HUNDT, 1971) and in the Jutland bog deposits (TODD, 1975, 174-6). See also the law banning arms exports (CJ. IV,xli,2).
173. Cf. CTh. XV,xv,1: 'No person whatever, without our knowledge and advice, shall be granted the right to employ any arms whatsoever,' AD 364 (trans. Pharr). This law must have been impossible to enforce as the army became increasingly powerless to prevent barbarian incursions and civilians looked to their own defence (see note 90).
174. See ROBINSON, 1975.
175. KLUMBACH, 1973; JOHNSON, 1980; JAMES, 1986.
176. A number of examples from Europe are now known, from Berkasovo, Budapest, Intercisa, Augst-Pfersee, Worms, Augst, Deurne and elsewhere (KLUMBACH, 1973). One has recently been identified from Burgh Castle (JOHNSON, 1980).
177. CTh. X,xxii,1. AD 374. This law is often said to refer to fabricenses but in fact, refers specifically to the closely related barbaricarii, precious metal smiths under the control of the comes sacrarum largitionum. Nevertheless, in this case the barbaricarii are making arms so the text provides a very good analogy for the fabricae.

178. Especially the Intercisa helmets (THOMAS, 1971; KLUMBACH, 1973).
179. NDOr. XI,44; NDOcc. IX,43.
180. NDOr. XI,44.
181. NDOcc. IX,43, 'subadiuvae fabricarum diversarum'. BOAK (1919, 102) interpreted this to mean that there were more than three under the eastern magister. This seems to be because he translates subadiuvae fabricarum diversarum as 'various subadiuvae with responsibility for arms factories' rather than 'subadiuvae with responsibility for the various arms factories'. The latter sense is surely the correct one, and has no implication as to the actual number of subadiuvae.
182. As CJ. XII,xx,5, dating to the reign of Leo, would seem to indicate.
183. CJ. XII,xx,5; BOAK, 1919, 102.
184. JONES, 1964, 579 note 35.
185. CJ. XII,xx,5.
186. CJ. XII,xx,5; BOAK, 1919, 102.
187. Scrinium memoriae (NDOr. XI,13; NDOcc. IX,10), scrinium dispositionum (NDOr. XI,16; NDOcc. IX,11), scrinium epistolarum (NDOr. XI,14; NDOcc. IX,12), scrinium libellarum (NDOr. XI,15; NDOcc. IX,13).
188. Nov. J. LXXXV,3,5.
189. JONES, 1964, 579.
190. JONES, 1964, 628, based on CTh. VII,iv,24 and VIII,i,14 (both dated to AD 398).
191. CJ. XI,ix,7, AD 467-515, trans. Pharr.
192. De mag. III,5. Translated by Dr Robert Ireland. The same scrinium is apparently referred to in the Code of Justinian, in a law which survives only as an untitled and undated Greek summary (CJ. XII,xlix,13), but which nevertheless appears to have been directed at the prefecture.
193. Were the comitatenses armed through the same long-winded bureaucratic process? They may have spent sufficient time in winter quarters for this to be feasible, but how could they re-arm quickly on campaign? Field army units were provided with warrants authorising them to draw victuals from the provinces through which they passed, so it may well be that when on the march they could draw on any of the fabricae dotted along the main strategic roads as they came to them.

194. An interesting passage in Ammianus records the sending of a forged treasonable letter to the 'tribune' of the Cremona fabrica as part of a court intrigue. The letter fell into the hands of the government, and was handed to Florentinus, who is described as 'agens... pro magistro officiorum' (XV,v,12). That the letter should go to the department of the Master of the Offices makes sense; the 'tribune' concerned was a subordinate of that minister. Was the agens Florentinus one of the subadiuvae fabricarum? Unfortunately there is the objection that the same Florentinus went on to become magister officiorum himself (Amm. XXII,iii,6), advancement otherwise unknown for agentes in rebus.
195. The fabrica of Lauriacum legionary base has been identified with the later fabrica scutaria at the same place (VETTERS, 1977, 365), but this is an unsubstantiated assumption. A rather better case for the legionary fabrica developing directly into one of the Notitia centres can be made for Carnuntum, where the structure in question produced substantial numbers of fourth century coins and evidence of metalworking (SIGLITZ et al, 1977, 585-7 and 642-3). This is still a far cry from proof that full scale arms production was undertaken in the building, let alone proof that it is the fabrica scutaria of the Notitia. At Sardis 'about 500m East of the Gymnasium stands the long wall of an extensive Roman construction [Building A] built in a style similar to that of the city wall... Its central location and fortress-like appearance suggest the possibility that it may have been the weapons factory of Sardis, but there is no evidence to support my identification' (FOSS, 1976, 36-7). Thanks to Jon Coulston for drawing my attention to this reference, which I had overlooked. Identifying a state factory as opposed to any other kind of factory is a problem not readily approachable via archaeological evidence; it is really an historical problem soluble only by discovery of an inscription or other document.
196. Based on the illustrations in VON PETRIKOVITS, 1975, Bild. 25-6.
197. MACMULLEN, 1960, 29; RICHMOND, 1943; BRASSINGTON, 1975.
198. Some examples of areas of cities where fabricae were sited: Antioch, 400+ha; Augustodunum, 200ha; Remi, c.100ha; Sardis, c.250ha; Salona, 94.4ha. (Figures drawn from the Princeton Classical Site Index, except Salona, which is from WILKES, 1969, 358). Even if by chance an excavation should hit upon a fabrica, conclusive proof of identification would depend on the discovery of epigraphic material.
199. WILD, 1976, 51-2.
200. Arms were certainly stockpiled in cities (e.g. Zosimus, III,3) perhaps on a large scale at Edessa (armamentaria, see p.262). Since the fabricae probably worked to fixed quotas, in peacetime, large stocks might build up at the factories, requiring secure storage facilities.
201. FOSS, 1979, 279-83; 1981. The term is used in the context of the painting of the tomb of the fabricenses: it is ambiguous since it

is impossible to tell if it refers to his painting of the tomb himself, or only his responsibility for the work, or whether he was a zographos or painter (of shields?) in the fabrica itself. Medieval armourers' workshops were often highly specialised, some men being wholly engaged on making hinges, or polishing (BLAIR, 1958, 188).

202. By analogy with the barbaricarii of Constantinople and Antioch, who according to CTh. X,xxii,1 had fixed monthly production quotas for helmets (see note 75).
203. MACMULLEN, 1960, 39, note 93.
204. Amm. XVI,ii,5.
205. CTh. XII,i,37; CJ XI,ix,6; see also CIL V,8742. WALTZING (1895, 242) suggested the use of slaves in the fabricae, but the law from which he drew this conclusion (CJ. VI,1,8) is addressed to the prefect of the city of Rome. No arms factories in his territory are known, and if there were any, he would have had no jurisdiction over them. Some other kind of fabrica must be intended.
206. CIL V,8742.
207. JONES, 1964, 835.
208. NDOrr. XI; NDOcc. IX.
209. Amm. XXXI,vi,2.
210. MACMULLEN, 1960, 39.
211. JONES, 1964, 835.
212. CTh. X,xxii,6.
213. Nov. Th. VI.
214. Nov. J. LXXXV,3. 'Flavius Zenis... enrolled in the fabrica at Marcianopolis', MIHAILOV, 1965, 150, no.3, lines 5-8 (translated by Alan Griffiths and Rowena Loverance).
215. CTh. X,xxii,6.
216. 'Finally, if any one of them should commit a wrong, such a delinquency is at the risk of the entire number, so that they are constrained by their own nominations [i.e. to positions of responsibility] and they maintain a certain watchfulness over the actions of their associates' (Nov. Th. VI,2, trans. Pharr, with the writer's bracketed note).
217. GROSSE, 1920, 113-4.
218. CIL III,2043.

219. CIL V,8742 and Diehl 530.
220. CIL V,8754, 8757.
221. Diehl 508.
222. MIHALLOV, 1965, 150 no.3; ROBERT & ROBERT, 1966, 395 no.257.
223. FOSS, 1976; 1979. In publishing these inscriptions, Foss has inclined to the view that the title ducenarius held by these individuals denoted membership of that degree of the equestrian order. It seems more likely that the army-style non-commissioned officer rank is intended here, for these were commonly used among the fabricenses. Nevertheless, it is not impossible that from the later fourth century, junior officers of the fabricae could hold equestrian rank, for the order became greatly inflated in numbers, debasing the prestige of the lower grades. Some junior army officers came to hold the perfectissimate (JONES, 1966, 270). Consequently, even if Foss is correct and the Sardis ducenarii are equestrians, this need not suggest that they were particularly influential or wealthy men.
224. GROSSE, 1918, 131; CIL III,14188.
225. MACMULLEN also rejects Grösse's identification on the grounds that 'industrial serfs surely did not hold (the rank of senator)' (1960, 32, note 82). MacMullen seems to have thought that membership of the senatorial order was intended. However, senator is a well attested army non-commissioned officer rank and it is surely this which is intended here.
226. CTh. X,xxii,3.
227. SEECK favoured seniority as the principle of promotion, but adduced no evidence (1909, 1929). On his model the primicerius would have been the longest-serving fabricensis in each factory.
228. 'Having served in Legio XI Claudia, [Zenis] enrolled in the fabrica at Marcianopolis for 20 years service as a centenarius' (translated by R. Loverance); MIHALLOV, 1965, 150 no.3.
229. This was the procedure from AD 390, if not before (CTh. X,xxii,3). MACMULLEN states that this was later changed to lifelong service (1960, 32), but this is based on a passage in Nov. Th. VI which in epic language describes the hardships faced by the fabricenses who, when they have been exhausted by their labours... shall die in the profession to which they were born' (trans. Pharr). Even at a two-year rate of turnover, most fabricenses would never have become primicerius with the subsequent promotion to the protectores, so Theodosius' statement is substantially true without suggesting that the post of primicerius became a lifelong one.
230. CTh. VII,xx,10.
231. Diehl 538A + B = CIL V,8662 + 8697 + 8721.

232. CIL VI,9 = ILS 699.
233. Amm. XXIX,iii,4.
234. Amm. XV,v,9.
235. Amm. XIV,vii,20.
236. Seeck speculated that some may have been styled tribunus as a personal rank, or because they were in charge of particularly important factories (SEECK, 1909, 1928). Jones dodged the question: '...each factory was... commanded by a tribune or praepositus' (JONES, 1964, 835).
237. Ammianus regularly utilises terms no longer in current usage but demanded by literary convention. For example, he uses 'legions and cohorts' in contexts where these terms are anachronistic. However, Ammianus considered them stylistically preferable to the contemporary technical unit names, such as auxilia and vexillationes.
238. CIL XI,9.
239. A late fourth century date is suggested by HOFFMANN (1969, 83-107). For the decline of the perfectissimate, see JONES, 1964, 526; 1966, 270.
240. NDOcc. XI,38-44; 45-60.
241. BOAK (1919, 89) reaches this conclusion, probably for similar reasons.
242. Epigonius and Eusebius at Antioch around AD 354 (Amm. XIV,vii,20), Flavius Romulianus at Concordia c.AD 395 (?) (Diehl 538A) and perhaps Sertorius Silanus at Ravenna during the reign of Constantine the Great (CIL XI,9).
243. Amm. XV,5,10.
244. JONES, 1964, 634.
245. Nov. Th. VI, AD 438, trans. Pharr.
246. CJ. XI,xi,7; c.AD 470.
247. See note 228.
248. CIL V,8742.
249. See note 228.
250. The state helped veterans take up a trade; CTh. VII,xx,3 (AD 325). See JONES, 1964, 635. Old soldiers are known to have entered the arms trade in earlier times (CIL XIII,6677 = ILS 2472, a veteranus who became a negotiator gladiarius in the reign of Commodus).

251. Nov. Th. VI,1.
252. JONES, 1964, 634. See notes 228 and 250.
253. See note 250.
254. CTh. X,xxii,6.
255. CJ. XI,ix,6.
256. CTh. VII,viii,8.
257. CJ. XI,ix,6.
258. JONES, 1964, 488.
259. CTh. VII,viii,8. A further and most revealing example concerns a dispute over the right of the corpus fabricensium of a factory to jointly inherit the goods of any member who died intestate. Normally such estates would go into the coffers of the res privata, but the fabricenses and other privileged groups such as soldiers, civil servants, decurions and clerics were exempt (CJ. VI,lxii,2,3; CTh. V,ii,1; V,xxxi). During the reign of Theodosius II, the res privata tried to seize the goods of the intestate fabricenses, something which apparently resulted in a dispute between the magister officiorum and the comes rerum privatarum. The judgement found for the fabricenses, whose rights were affirmed or reaffirmed. (CJ. VI,lxii,5). Clearly Aurelianus, comes rerum privatarum, chose to ignore the emperor's decision, which prompted a reaction from Theodosius. The emperor delivered a chilling rebuke and threatened the res privata with dire consequences if that department should 'even attempt to draw up a petition [against the fabricenses] after they have received a divine Imperial response of this kind' (Nov. Th. VI; AD 438, trans Pharr).
260. CTh. X,xxii,4; AD 398. Those caught harbouring fugitive fabricenses were suitably punished by relegation to an arms factory themselves.
261. The situation was probably worse in the West than the East, especially from the later fourth century onwards as the Western empire started to disintegrate and shortages of men and materials made themselves felt.
262. CTh. X,xxii,5, AD 404; CJ. XI,ix,7, late fifth to early sixth century.
263. E.g. CTh. XII,i,37; AD 344 concerning decurions in any branch of the imperial service. Significantly, fabricae are mentioned specifically.
264. CTh. X,xxii,6, AD 412.
265. CTh. XII,i,37; X,xxii,6.

266. CTh. VII,viii,8, AD 400-5.
267. MACMULLEN, 1960, 32, note 82.
268. FOSS, 1979. See note 223.
269. Greg. Naz. Or. XLIII,57, trans R. Ireland.
270. After similar trouble at Hadrianopolis, one side struck back at the other by arranging that 'from the fabrica there (as it is called), the heads of ten laymen should be cut off' (Athanasius, hist. Ar. XVIII,57, trans. Dr Robert Ireland). Presumably the fabricenses had been prominent in the preceding disturbances for them to be singled out in this way.
271. MIHALLOV, 1965, 150 no.3; ROBERT & ROBERT, 1966, 395 no.257. Translated by Alan Griffiths and Rowena Loverance.
272. CJ. XI,ix,6 of the reign of Leo and Anthemius; CJ XI,ix,7 of those emperors or of Anastasius.
273. Nov. J. LXXXV.
274. De ceremoniis; appx. ad lib. I 497.13 - 498.13, Bonn.
275. The edict does mention spearshafts (XIV,5; FRANK, 1940, 360). It is not possible to explain the absence of other weapons from the Edict in terms of the illegality of arms sales on the open market, for the Edict does include other items which only members of the imperial service could buy, such as military uniforms, which it was illegal for civilians to wear.
276. Implied by Nov. J. LXXXV,3,1. Private arms production in Egypt has already been discussed (p.282).
277. Nov. Th. LXXXV,3.
278. A twelfth century Byzantine writer records that Constantine the Great built a depot for storing artillery in part of the city of Constantinople which became known as the quarter of the Mangana after the catapults and other machines stored there. There is no indication that it was actually a factory for making as well as storing equipment. (Michael Glycas, CSHB, 1836, 468, line 6ff, dating to AD 1118, cf. also Banduri Anon. II,69, a text of unknown date which records the Mangana storage depot where '...the war-engines of the whole city and the mechanical stores were preserved... and the apparatus for beseiging walls'. This source also attributes the depot to Constantine. His description suggests that this is a strategic store of seige equipment as well as the depot for the city's defensive artillery. Again, mention of production of machines is conspicuously absent). Excavations in the quarter of the Mangana found no trace of the depot (DEMANGEL & MAMBOURY, 1932, 7). Constantinople is also known to have had an armamentarium, or city armoury (such seems to be the conclusion from Nov. J. LXXXV, and is, of course, no surprise). The

- armamentarium was rebuilt by Maurice or Phocas (DU CANGE, 1729).
279. SEECK, 1909, 1929, trans. writer.
280. MACMULLEN, 1960, 32.
281. Thanks are due to Dr Robert Ireland for assistance with the precise interpretation of this passage.
282. CJ. XI,ix,6, AD 467-72.
283. MACMULLEN concluded that the factories were taken over as going concerns and 'that soldiers from legions [!] were detached to the fabricae' (1960, 32). JONES drew similar conclusions, i.e. that arms 'were apparently, as in Roman days, issued from the state factories...' (1964,256). Seeck (followed by GROSSE, 1920, 104) concluded that 'under the Gothic kings in Italy the manufacture of arms was once more under the control of the Praetorian Prefect... it seems that this was no longer carried on in special fabricae, but in the army, where the same officers commanded both soldiers and armourers together...' (SEECK, 1909, 1928).
284. Cassiodorus, Variae VII,xviii.
285. Cassiodorus, Variae VII,xviii.
286. Cassiodorus was himself both magister officiorum (AD 523-527) and later Praetorian Prefect (AD 533-537) (O'DONNELL, 1979, 57).
287. JONES, 1964, 275.
288. Translated by Dr Robert Ireland.
289. E.g. Variae VII,xxvi to xxviii.
290. JONES, 1964, 257. Besides the formulae, letters to such comites appear in other books of the variae (e.g. III,xxxiv to the comes of Massilia).
291. Variae VI,xxii-xxv.
292. Variae VII,xxvi-xxviii.
293. Variae IV,xlv and X,xxix.
294. The other candidate cities would be Lucca, Cremona, Verona, Concordia and Mantua (NDOcc. IX,24-27,29).
295. Amm. XXX,v,2 and 14.
296. NDOcc. IX,19-20.
297. MOCSY, 1974, 310.
298. It may be asked why the Notitia includes establishments defunct before the text reached its final form. But the Notitia seems to

be a handbook of what should, in theory, exist at the time the lists ceased to be amended. It includes, for example, details of the British garrison (NDOcc. XXVIII and XL) which was defunct before the lists were closed about AD 425.

299. Claudian, de Bello Gothico 535-9.
300. Vita S.Theodori 159,45-7, concerning three fabrikesioi, Theodorus, Anthimos and Protasios, brothers-in-law of one of the soldiers of the imperial guard (a scholarios). This underlines the continued social prestige of these artisans. For discussion of the passage, see KAEGI, 1975, 62.
301. JONES, 1964, 314.
302. JONES, 1964, 314.
303. BROWNING, 1980, 49.
304. BROWNING, 1980, 49; HALDON, 1979, 72 note 127.
305. 'Das Kollegium der fabricenses und andere Handwerkerkollegien erfüllten in Byzanz mindestens bis ins 11. Jahrhundert staatlich festgesetzten Aufgaben' (VON PETRIKOVITS, 1981, 291). Von Petrikovits refers the reader to his comments in BECK et al., 1981, but the present writer has been unable to locate them and so is not aware of the evidence on which von Petrikovits bases the above statement.
306. SEECK, 1909, 1927.
307. NDOr. IX,35.
308. SEECK, 1909, 1927.
309. JONES, 1966, 75; 1964, 183,986.
310. NDOr. XIII,16; NDOcc. XI,45-60 and see also XII,26-7.
311. It was the general practice in the fourth century for the administration of the empire to be divided between a number of emperors, each with his own ministers, a system formalised for a while in the Tetrarchy. The sole rule of Constantine or Constantius II was exceptional, and the former delegated power to, and finally divided the empire between his various sons. Constantius II likewise found that he could not cope without a deputy, appointing first Gallus, then Julian as Caesar. The territories of these duplicate administrations changed repeatedly, and only became fixed along the lines reflected in the Notitia in the joint reign of Valentinian and Valens.
312. NDOr. XI; NDOcc. IX.
313. E.g. MACMULLEN, 1960, 31: 'Under Diocletian [the fabricae] were supervised by the praefectus praetorii...'.

314. CIL VI,1696.
315. BOAK, 1919, 86.
316. SEECK, 1909, 1928, followed by GROSSE, 1920, 104.
317. MACMULLEN, 1960, 31.
318. SEECK, 1909, 1928.
319. JONES, 1964, 161,369.
320. MACMULLEN, 1960, 32.
321. BOAK, 1919, 85.
322. WALTZING, 1895, 241.
323. De mag. 2,10 and 3,40.
324. BOAK's 'earliest recorded date' of AD 390 is clearly based on the fact that CTh. X,xxii,3, promulgated in the year, was addressed to the magister officiorum (1919, 87, note 6). JONES arrived at his dates on the same basis (1964, 161).
325. John Lydus, de mag. 3,40, literal translation by Dr R. Ireland.
326. MACMULLEN, 1960, 32.
327. CTh. X,xxii,3.
328. BOAK, 1919, 87.
329. CTh. X,xxi,3, AD 390.
330. CTh. X,xxii,5, AD 398.
331. CTh. VII,viii,8, AD 400-5.
332. CTh. X,xxii,5, AD 404.
333. CJ XI,ix,6, AD 467-72.
334. Nov. J. LXXXV, AD 539.
335. CTh. XII,1,81, AD 344.
336. CTh. VII,xx,10 AD 369. Officers of the fleet, laeti, largesses and cohort commanders are included. None of these was under the control of the prefect.
337. CTh. XI,xvi,15 and 18.
338. CTh. X,xxii,6, AD 412.
339. Amm. XV,v,12.

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- NDOr. = Notitia Dignitatum Orientalis
- Nov. J. = Justinian Novellae

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Table I

NDOr.IX

3. Sub dispositione viri illustris
magistri officiorum:
.....
18. Fabricae infrascriptae:
19. Orientis V:
20. Scutaria et armorum, Damasci.
21. Scutaria et armorum, Antiochiae.
22. Clibanaria, Antiochiae.
23. Scutaria et armamentaria, Edesa.
24. Hastaria Irenopolitania, Ciliciae.
25. Ponticae [quatuor] tres:
26. Clibanaria, Caesarea Cappadociae.
27. Scutaria et armorum, Nicomediae.
28. Clibanaria, Nicomediae.
29. Asianae una:
30. Scutaria et armorum, Sardis Lydiae.
31. Thraciarum duae [Asianae una]:
32. Scutaria et armorum, Hadrianopoli
Haemimonti.
33. [Thraciarum duae:]
34. Scutaria et armorum, Marcianopoli.
35. Illyrici quatuor:
36. Thessalonicensis.
37. Naissatensis.
38. Ratiarensis.
39. Scutaria Horreomargensis
40. Officiorum autem suprascripti viri
illustris magistri officiorum de
scola agentum in rebus est ita:
.....
42. Subadiuvae.
.....
44. Fabricarum tres.

NDOc.XI

3. Sub dispositione viri illustris
magistri officiorum:
.....
16. Fabricae infrascriptae:
17. In Illyrico:
18. Sirmensis scutorum, scordiasorum et
armorum.
19. Acincensis scutaria
20. Carnuntensis scutaria.
21. Lauriacensis scutaria.
22. Salonitana armorum.
23. Italiae:
24. Concordiensis sagittaria.
25. Veronensis scutaria et armorum.
26. Mantuana loritaria.
27. Cremonensis scutaria.
28. Ticenensis arcuaria.
29. Lucensis spatharia.
30. In Galliis:
31. Argentomagensis armorum omnium.
32. Matisconensis sigittaria.
33. Augustodunensis loritaria,
balistaria et clibanaria.
34. Augustodunensis scutaria.
35. Suessionensis
36. Remensis spatharia.
37. Triberorum scutaria.
38. Triberorum balistaria.
39. Ambianensis spatharia et scutaria.
40. Officium autem suprascripti viri ill-
ustris magistri officiorum de scola
agentum in rebus habetur hoc modo:
.....
43. Subadiuvae fabricarum diversarum.

NE. Oriens line 25 is Ponticae quatuor in the MSS but only three entries are listed. Also, lines 29-33, brackets show actual positions of headings in the MSS, underlining the correct positions

Table II

NDOR. XI, 25-34

TEXT

Ponticae Quatuor;
 Clibanaria, Caesarea Cappadociae
 Scutaria et armorum, Nicomediae
 Clibanaria, Nicomediae
 Scutaria et armorum, Sardis Lydiae

Asianae Una;
 Scutaria et armorum, Hadrianopolis Haemimonti
 Thraciarum Duae;
 Scutaria et armorum, Marcianopolis.

PROPOSED RESTORATION

Ponticae Quatuor;
 Clibanaria, Caesarea Cappadociae
 (...?missing entry here?...))
 Scutaria et armorum, Nicomediae
 Clibanaria, Nicomediae

Asianae Una;
 Scutaria et armorum, Sardis Lydiae
 Thraciarum Duae;
 Scutaria et armorum, Hadrianopolis Haemimonti
 Scutaria et armorum, Marcianopolis.

Table III: Diocesan order of praesides

(Based on NDOr.I and Oc.)

The East:

Egypt
Oriens
Asiana
Pontica
Thraciae
Illyricum (E)¹

The West

Illyricum (W)
Italiae²
Africa
Hispaniae
Galliae³
Britanniae

Notes:

1. Equals Macedonia and Dacia together.
2. Includes Suburbicaria.
3. Includes Septem Provinciae.

Table IV: armour factory doublets in frontier zones

Syria: Damascus and Antioch
Anatolia: Sardis Lydiae and Nicomedia
Thrace: Marcianopolis and Hadrianopolis
Illyricum: Sirmium and Salona
Italy: Verona and Mantua*
Gaul: Argentomagus and Augustodunum*

(All listed as fabricae armorum except * indicates loricariae)

ADDRESSEE	Praetorian Prefect	Master of the Offices	Count of the <u>res privata</u>	DATE AD	REFERENCE
388-390				344	CTh.XII.i.37
				369	CTh.VII.xx.10
				380	CTh.XII.i.81
				388	CTh.X.xxii.2
				390	CTh.X.xxii.3
				398	CTh.X.xxii.4
				400 405	CTh.VII.viii.8
				404	CTh.X.xxii.5
				412	CTh.X.xxii.6
					CJ.VI.lxii.5
				438	Nov.Th.VI
				467 472	CJ.XI.ix.6
				457 472	CJ.XII.xx.5
				467 472	CJ.XI.ix.7
				539	Nov.J.LXXXV

Table V

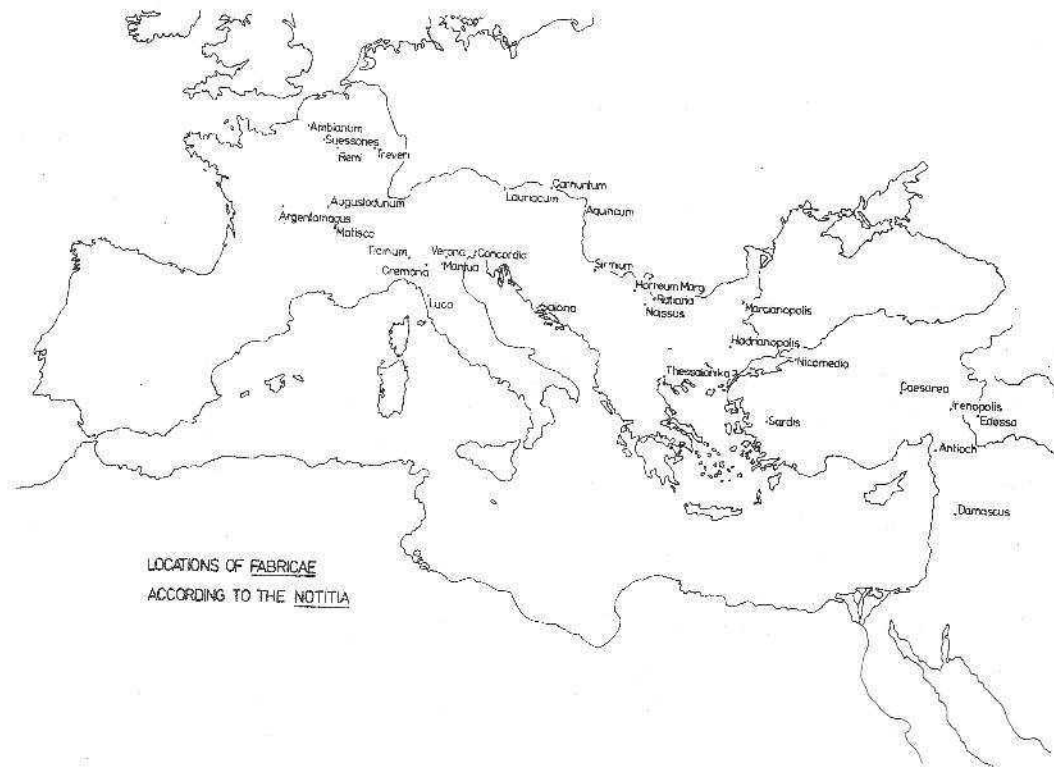


Fig.1

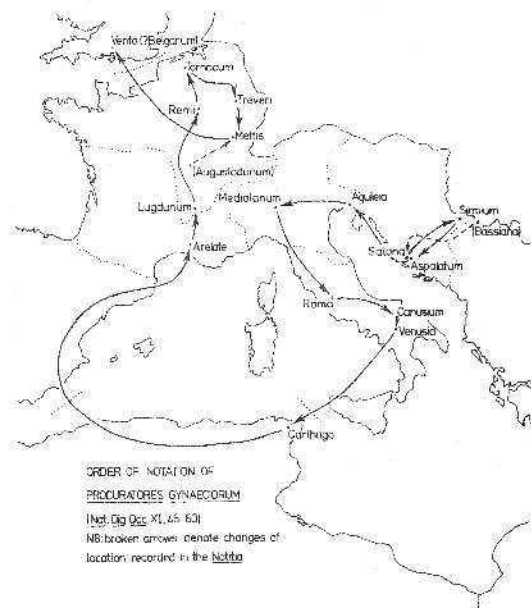


Fig.2

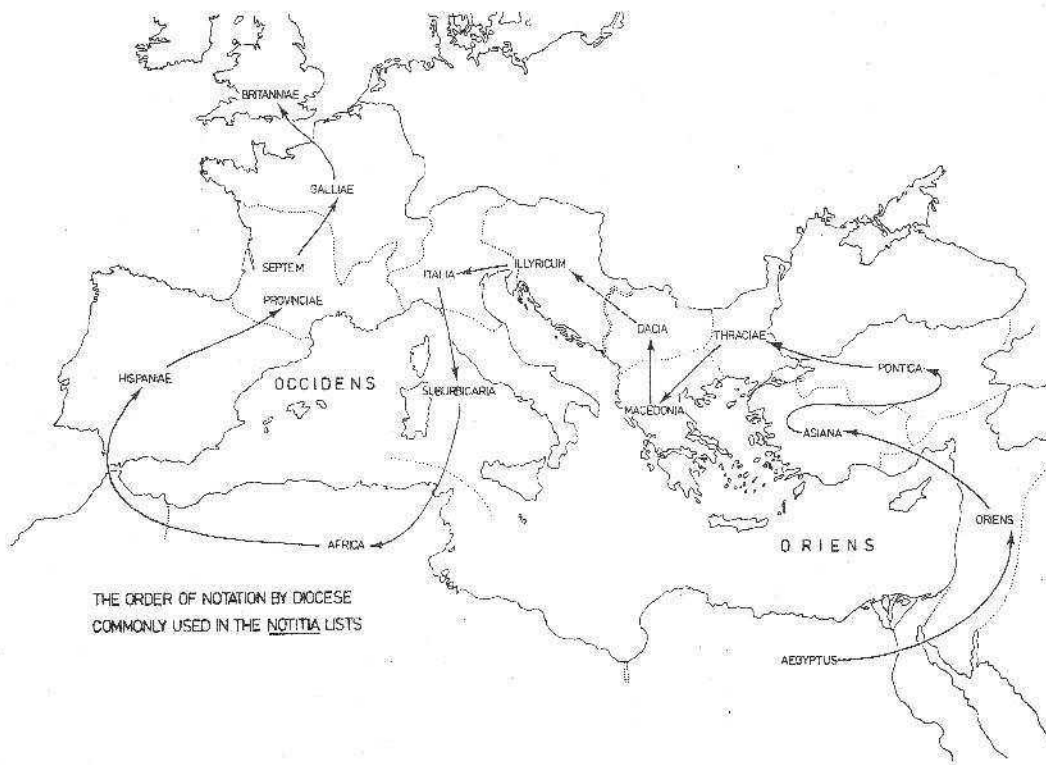


Fig.3

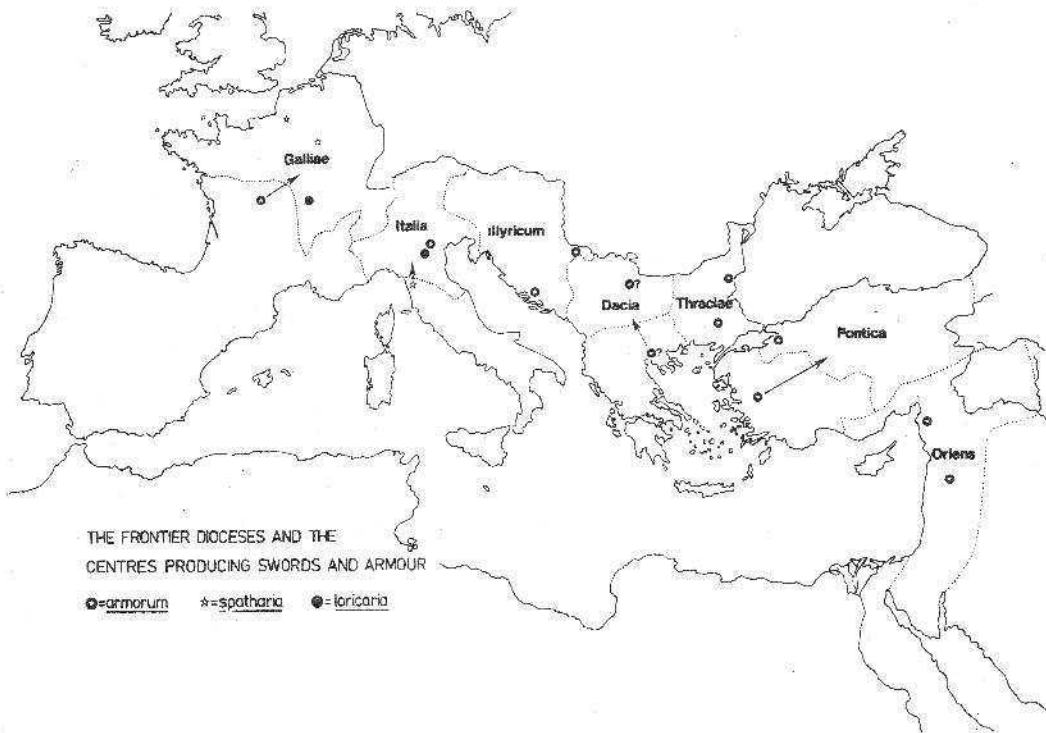


Fig.4

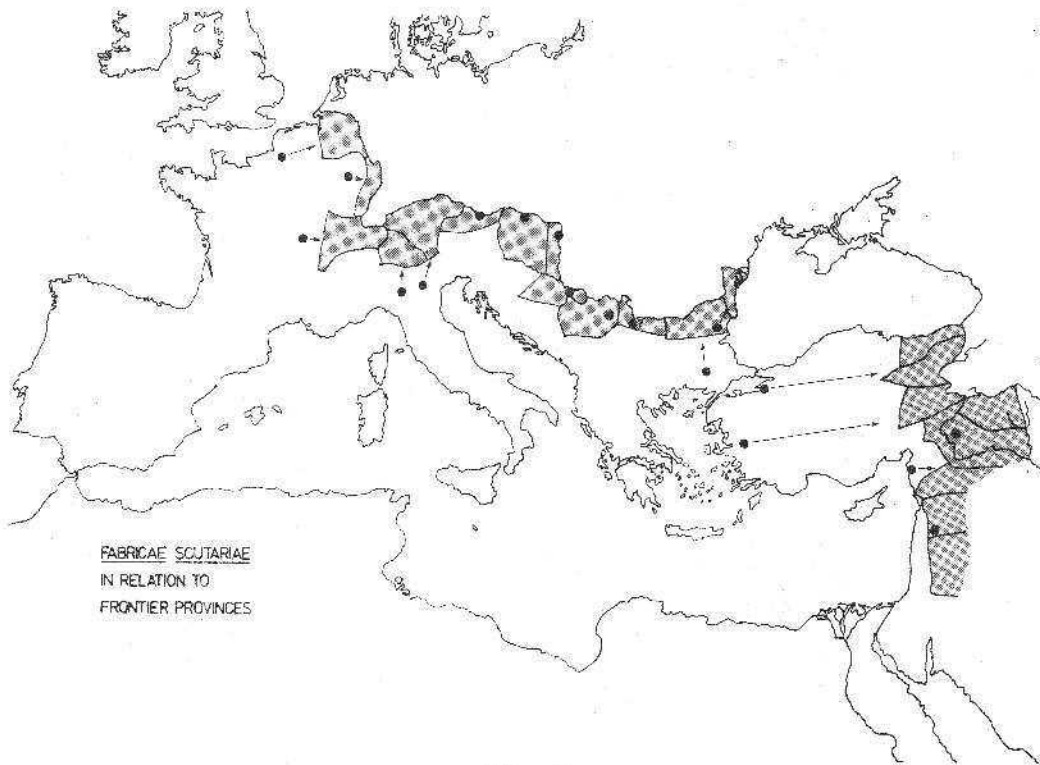


Fig.5

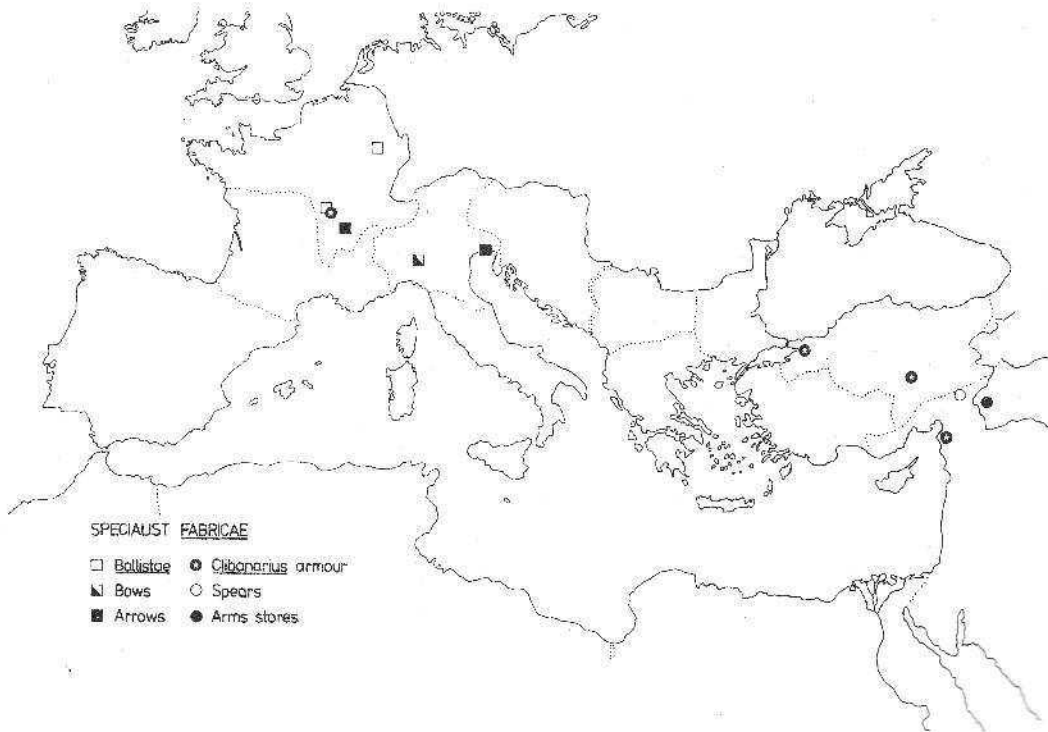


Fig.6

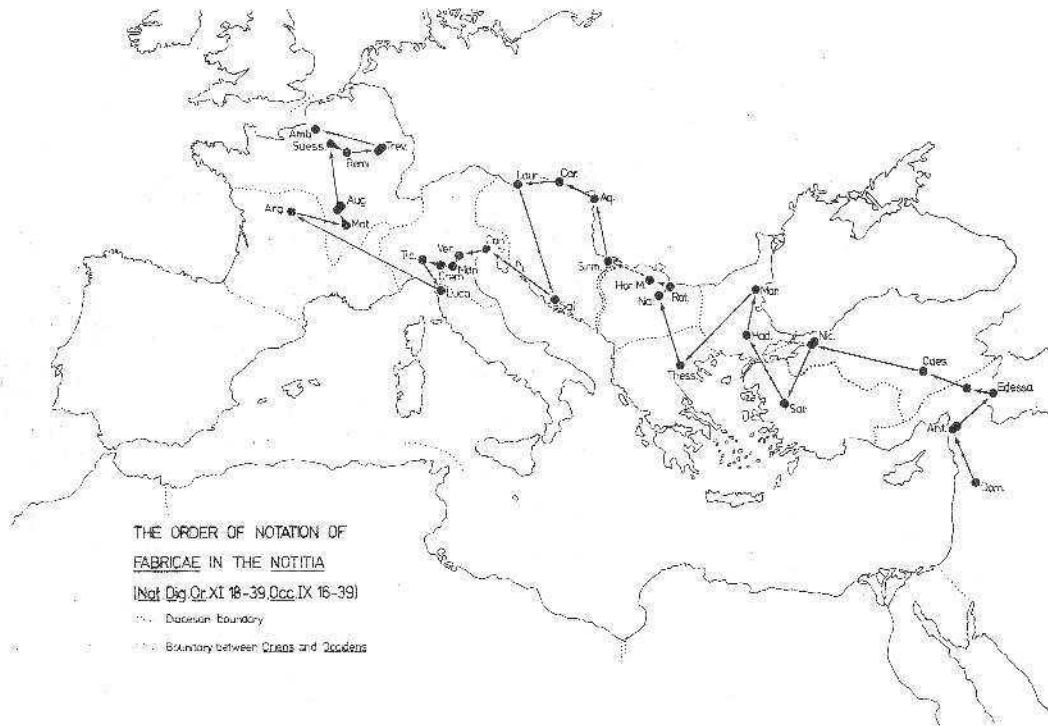


Fig.7

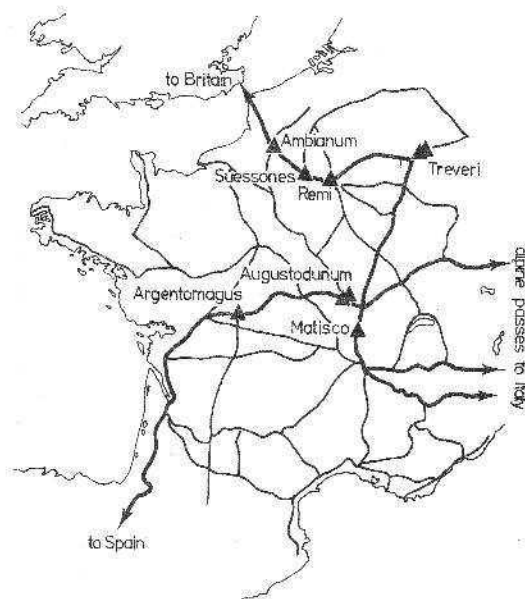


Fig.8: Fabricae and principal roads of Gaul.

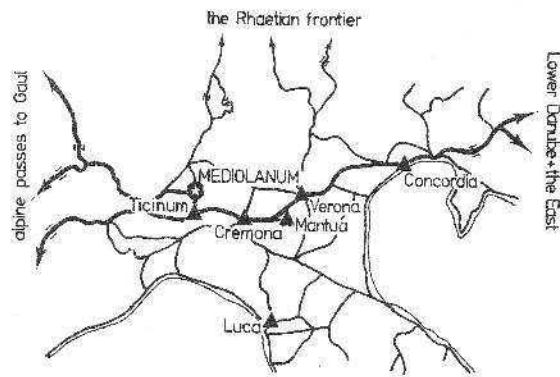


Fig.9: Fabricae and communications in Italy.

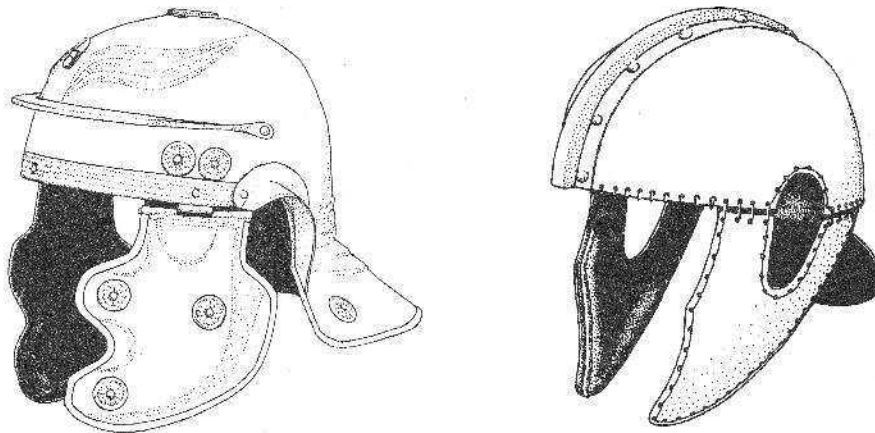


Fig.10: Early imperial (left) and late imperial (right) helmet types.