

THE MILLS-BAKERIES OF OSTIA

DESCRIPTION AND INTERPRETATION



GIEBEN

THE MILLS-BAKERIES OF OSTIA

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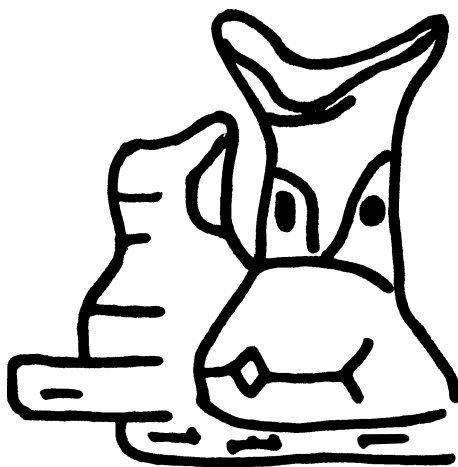
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EDITED BY

JAN THEO BAKKER



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The inclusion of other bakeries in this collection became possible after Dr. Heres' appointment as Head of the Archaeological Department of the Dutch Institute in Rome, in 1987. Dr. Heres and I invited Drs. J.H. van Dalen and Drs. B. Meijlink to join the project. The Institute awarded grants to them, for a period of three months (September to November 1989). They studied the Caseggiato delle Fornaci and Molino I,XIII,4. The Soprintendente, Prof. Dr. A.G. Zevi, kindly gave permission. They too have returned to Ostia for other research, and could on these occasions carry out final checks. At Amsterdam University Drs. Meijlink was supported with advice by Dr. M. Gnade, Prof. Dr. J.S. Boersma and Dr. S.L. Wynia.

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Jan Theo Bakker

Leiderdorp
September 1998

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1

Introduction

Jan Theo Bakker - Bernard Meijlink

§ 1 Subject-matter and aims of the study - Jan Theo Bakker

This study was inspired by the analysis of a shrine in one of Ostia's bakeries, the Caseggiato dei Molini (I,III,1-2), published by the present author in 1994.¹ It was summarized as follows:²

"In the years c. 210-215 AD a *sacellum* (area c. 13 m²) was built in a corridor. The shrine could only be reached by walking through the building. Inside are four wall-niches and an altar (a later addition). The religious function of the room was retained until the end: some fifty bronze and silver statuettes and a marble statuette of a Lar were found inside. The shrine is known as the Sacello del Silvano, because Silvanus was the main deity worshipped here. A painting of him was inside, another was later added on the outer wall next to the entrance. The painting in the interior was installed by someone *ex viso*.

In the year 214 or 215, but before April 25th 215, a number of paintings was added. Directly behind the entrance the two Dioscures and at least four horses were depicted. This part of the shrine was an ante-room, set apart by a wooden partition. In the rear part of the shrine two groups of figures were added, one of which has been preserved fairly well. Depicted are Augustus, Harpocrates, Isis, Fortuna, Annona, probably a Genius, and the lysippian Alexander the Great. Later in the first half of the third century some repainting took place. Augustus and Alexander the Great were from then on towering above the figures in between.

Augustus and Alexander were introduced as predecessors of Caracalla, in compliance with an order from the Emperor himself. Caracalla had left for the orient in 214 AD and upon reaching Thrace was overcome by an Alexander-mania. From Thrace he ordered depictions to be set up everywhere, showing him as a new Alexander the Great. The Genius may well be the Genius Augusti, and a *victimarius* depicted in the floor mosaic may refer to the sacrifice of the bull for this Genius. The remaining deities refer to a benefaction of the Emperor: the distribution of grain. Isis and Harpocrates symbolize the Egyptian grain imported by the Emperor; Annona is the personification of the food supply; the Dioscures were in Ostia protectors of seafaring, here specifically of the transport of the Egyptian grain.

The added paintings are evidence of the economic reality of life for the Ostian bakers. Already in the second century AD the members of the *corpus pistorum* baked bread for the fisc, consumed by the *vigiles* and presumably by Imperial slaves. There was therefore a connection between a number of Ostian bakeries and the Emperor. One of these bakeries was the Caseggiato dei Molini.

In 215 AD a *sebaciarius* (night-watchman) from the *vigiles*, Calpurnius, scratched a graffito next to Silvanus with *vota decennialia* for Caracalla. On April 25th of the same year the shrine was visited by a Marius and an Anna. Work in the building had stopped on this day for the celebration of either the Sarapia, a feast of Serapis, or the Robigalia, the feast of Robigus, a deity

¹ Bakker 1994, chapter 9.

² Bakker 1994, 65-66.

protecting grain.”

These conclusions were based not only upon the analysis of the shrine, but also upon a preliminary study of the Ostian bakeries, and upon Sirks’ studies of the legal regulations concerning the bakers in Rome, Ostia, and Constantinople.³ The following quotation is vital:⁴

“A remark by Aurelius Victor, referring to Trajan, shows that the *corpus* in Rome had been established to perform tasks for the *annona*: *Adhuc Romae a Domitiano coepta forum atque alia multa plusquam magnifice coluit ornavitque, et annonae perpetuae mire consultum, reperto firmatoque pistorum collegio*.⁵ The duty implied here must be the baking of bread. The members of the *corpus pistorum* could of course have helped the *annona* by, for example, controlling the fiscal grain stored in *horrea*, but the text suggests a different, more conspicuous contribution. A dedication to Annona Sancta by a certain Aelius Vitalio, *ensor* of the *corpus pistorum siliginariorum* in Rome, confirms that the members of the Roman *corpus* performed duties related to the food-supply.⁶

From Aurelius Victor’s words Sirks has deduced that the members of the *corpus pistorum* processed the grain of the *frumentationes*.⁷ For this I find no direct evidence, but the proposal is attractive. The thousands of recipients of free grain did not form an economically defined group. Some were poor and may have eaten their grain as porridge (*puls*), but others were not,⁸ and these people will have been satisfied only with bread.⁹ The apartment buildings in Rome were of course not suited for the processing of grain. Therefore Herz suggests that as a rule the grain was taken to “a *pistor*”, who bought it or supplied bread for a lower price.¹⁰ The *corpus pistorum* would be a convenient organizational framework.

Further evidence concerns the *vigiles* in Rome, Ostia and Portus (the *vigiles* in Ostia and Portus came from Rome, and were stationed in the harbours for periods of four months).¹¹ An inscription from Rome records that a *centurio* of the *vigiles*, Ti. Claudius Messallinus, *adampliavit columnis purpuriticis, valvis aereis, marmore et omni ornamento a novo ex pecunia furfuraria centuriae suae fecit, volentibus manipularibus suis*, in 156 AD, an *aedicula cum Genio*, which had been erected in 111 AD.¹² The *pecunia furfuraria* was apparently a fund resulting from the sale of considerable quantities of *furfur* (bran), the waste left over after grinding grain, which may have been used as fodder. Apparently then the *vigiles* owned grain, either free grain or grain which they had bought.

The grain of the *vigiles* was most likely free grain. Those *vigiles* who were Latini Iuniani received the full Roman citizenship after three years of service. From then on they were also entitled to free grain supplied by the Emperor, and a collection day and counter in the Porticus Minucia Frumentaria in Rome, where the grain of the *frumentationes* was distributed, were allotted to them.¹³ The latter favour was not the result of the enfranchisement. Only citizens could receive free grain, but the grant was not linked automatically to the citizenship. For the distribution of free grain there was a *numerus fixus*, and those citizens who wanted to become

³ Bakker 1994, 135-145.

⁴ Bakker 1994, 143-145.

⁵ Aurelius Victor, *Liber de Caesaribus* 13, 5. On *reperito firmatoque* (“by devising and making permanent a guild of bakers”) see Sirks 1984, 605-606 and 1991(1), 313-315.

⁶ CIL VI, 22 (Hadrianic or later, given the name Aelius).

⁷ Sirks 1984, 467, 604-607. It is not known whether Ostia knew *frumentationes*. For *frumentationes* in other cities than Rome and Constantinople: Carrié 1975, 1070-1090.

⁸ Carrié 1975, 1030-1035.

⁹ Presumably one had to pay for the services of the bakers. If not, distribution of free grain in the Porticus Minucia Frumentaria could have been skipped and replaced by distribution of free bread.

¹⁰ Herz 1988, 71.

¹¹ Meiggs 1973, 304-309; Rainbird 1986.

¹² CIL VI, 222.

¹³ CIL VI, 220 and CIL XIV S, 4499 ff. with Meiggs 1973, 307. Cf. Herz 1988, 92-95 and Bruun 1989.

incisi had to try to buy a *tessera frumentaria*, or inherited one if they were lucky.¹⁴ It must be the criterion of having served the *vigiles* for three years that led to both the enfranchisement and the granting of free grain to the Latini Iuniani. It seems unlikely that the new citizens were favoured above long-time citizen-colleagues. It may therefore be assumed that all citizen-*vigiles* received free grain.

Where was the grain of the *vigiles* processed? In a bakery inside or outside the barracks? There is hardly any archaeological data about the barracks in Rome,¹⁵ but the Ostian one, the Caserma dei Vigili (II,V,1), has been fully excavated and is well preserved. There is no trace of a workshop in that building. Apparently the bread for the *vigiles* was produced elsewhere, most likely in the Caseggiato delle Fornaci (II,VI,7), a bakery across the street.¹⁶ There is no evidence that the Caseggiato delle Fornaci was affiliated to the Ostian *corpus pistorum*, but again: this is the obvious organizational framework.

To the *vigiles* as customers of the *corpora pistorum* in Rome and the harbours may hypothetically be added the soldiers in other *castra* and the many Imperial slaves, whose bread-supply must also have been centralized.¹⁷ The *corpus pistorum magnariorum et castrensariorum*, documented in Rome around 350 AD, was apparently related to *castra*.¹⁸

The analysis of the shrine leads to two important conclusions. First of all, the shrine is a dating criterion for the bakery:¹⁹

“On the basis of the remains of the workshop the installation of the bakery cannot be dated. However, from layers 3 and 4 can be deduced that the building housed a bakery at the time of their application. This is indicated not so much by the theme of the paintings, focusing on the Emperor and the grain-supply, as by the importance of the added theme in the shrine. It has been explained that Silvanus took pride of place before and after the additions. The latter were however not of a minor order, an expression of loyalty towards the Emperor as might be expected in many private shrines. In the ante-room the Dioscures were depicted, setting the scene for the rest of the shrine. The row of figures on the east wall was over three metres long and, together with one or more figures on the west wall, formed the focal point of the new paintings. The additions covered at least 60% of the long walls. Such emphasis on the grain-supply strongly suggests that the bakery had been established. In view of the unity which the Severan alterations in the building present it may then be assumed that the bakers were present in the building during the earliest of these modifications, dated to the period of Septimius Severus.”

Secondly the shrine suggests that the bakers were working for the Emperor:²⁰

“The reference to grain is only half the story of the new paintings. The bakers showed devotion towards the Emperor, and the grain was fiscal grain. Keeping in mind again the importance of the additions the hypothesis may be forwarded that a direct relation existed between the bakery and the Emperor, and that the bakery was related to the fiscal component of the grain supply. In view of the analysis of the organization and customers of the Ostian bakers we may then conclude that the bakery was owned by a member of the *corpus pistorum* or by the *corpus* itself, and that an exemption from *munera* was earned by baking bread from fiscal grain, for the *vigiles*, for Imperial slaves, or perhaps even for the beneficiaries of Ostian *frumentationes*.”

¹⁴ Rickman 1980, 181, 191.

¹⁵ Rainbird 1986.

¹⁶ It may be noted that the bakery is situated in a part of town where relatively few people lived: to the west are the Theatre and the Piazzale delle Corporazioni (II,VII), to the south-east the Terme di Nettuno (II,IV,2).

¹⁷ For a conspectus of people working in Ostia and Portus for the local and Roman authorities: Meiggs 1973, 298-308 and Hermansen 1982(1), 58-59.

¹⁸ CIL VI, 1739.

¹⁹ Bakker 1994, 165.

²⁰ Bakker 1994, 165-166.

It thus became clear that further study of the Ostian bakeries and of the legal regulations would be of importance for the understanding of the fiscal involvement with both the local economy and that of Rome.

It was therefore decided to make a detailed study, including catalogues, of three Ostian bakeries: the Caseggiato dei Molini (Thea Heres and Jan Theo Bakker), Molino I,XIII,4 (Bernard Meijlink) and the Caseggiato delle Fornaci (Jan van Dalen, assisted by Thea Heres and Jan Theo Bakker). The first bakery was selected, because it contains the Sacello del Silvano. The third one was studied, because it presumably supplied the *vigiles*. Molino I,XIII,4 was included, even though it was not clear at the outset whether it too supplied bread for the fisc. However, it has been preserved very well, and is in size comparable to the other two. Boudewijn Sirks wrote a detailed analysis of the legal regulations. It is based on his study "Food for Rome" (plates 97-100).²¹

A short and preliminary study of other (possible) bakeries and of related evidence, such as inscriptions, has been added (Jan Theo Bakker). The installation dates of the remaining bakeries are of course provisional. This may seem regrettable, but it will give others the chance to draw up a full description of these bakeries and to verify our conclusions.²² A map of Ostia with the location of many buildings discussed in this study is found in chapter 7 (figure 29).

The study of the bakeries is preceded by an overview of the functioning of Roman bakeries (Jan Theo Bakker and Bernard Meijlink). A short survey of the bakeries in Pompeii, Rome and Constantinople is included in this chapter. Also, calculations of the output of the bakeries are discussed.

In the concluding chapter (Jan Theo Bakker) the functioning of the Ostian bakeries will be discussed first. Next their date and distribution are dealt with. Thus the background is completed for the primary question we have asked ourselves: what did the relation between the Emperor and the bakers in Ostia (and Rome) amount to? Which people did the bakers working for the fisc supply? Did their bakeries differ technically from bakeries working for the private sector? Do we find indications of an Imperial policy towards the actual bakeries, comparable to the concern that many Emperors showed towards storage and harbour facilities?

§ 2 The functioning of Roman bakeries - Jan Theo Bakker, Bernard Meijlink

The Roman *pistores* were both millers and bakers until the introduction of watermills, leading to a separation of milling and bread baking, in *panificia*.²³ In this section an overview is presented of the mills-bakeries and of the watermills, after which the output of these establishments is discussed.

2A Mills-bakeries using animal power

A short outline of the functioning of the Roman mills-bakeries where animals turned the millstones is presented first of all. It is based on discussions of evidence that comes largely from Italy (Campania, Rome, Ostia).²⁴

The grain that was processed in the bakeries had to be supplied from *horrea*. This was done by *saccarii*, porters, and possibly by pack animals.²⁵ In the bakeries it may well have been stored

²¹ Sirks 1991(1).

²² Furthermore various technical aspects of the bakeries need more attention. The authors have no plans to study the remaining bakeries.

²³ Sirks 1991(1), 307.

²⁴ Based on: Bennett-Elton 1898-1904; Blümner 1912, 58-67; Jasny 1944; Mayeske 1972; Moritz 1958; Rossetto 1973; Warsher 1930; Zimmer 1982, 20-25, 106-120.

²⁵ *Saccarii*: Sirks 1991(1), 257-259. Pack animals: Le Gall 1994.

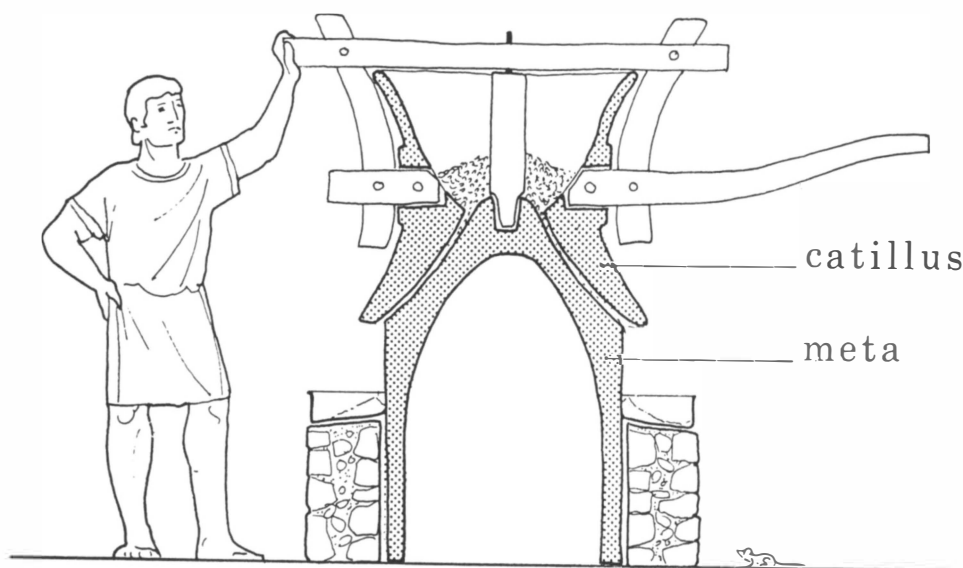


Figure 1. Cross-section of a millstone.

on attics. Little is known about the cleaning of the grain before the milling. It may have been moistened to make the bran more resistant to the action of the mill.

It was ground in machines operated by donkeys or horses (figure 1).²⁶ The millstones in use in Italy were made of rough, volcanic stone. Peacock has determined that in most cases a grey leucitite from the neighbourhood of Orvieto in Umbria was used.²⁷ This rock is very rough and remains so after abrasion, which makes it very suitable for grinding.

The lower part of the machines was called *meta*. It had a cylindrical lower and a bell-shaped upper part. It sometimes rested on a masonry base. On top of the base wooden or metal containers for the collection of the flour were presumably placed. Over the *meta* the *catillus* was lowered, that had the shape of an hourglass. The lower part fitted over the *meta*, the grain was poured into the upper part. Both halves were the same size, so that the *catillus* could be turned upside down when the lower part was worn. In the middle part of the *catillus* horizontal beams were inserted and secured with pegs. To the ends of these beams vertical ones were attached, connected above the *catillus* by a further horizontal beam (the wooden parts were presumably made by a carpenter on the spot). To this frame the yoke or harness of the donkey or horse was attached, usually very close to the millstone.²⁸ The animal rotated the *catillus* over the *meta* by treading in a circle.²⁹

The grain was ground between the *meta* and *catillus*. Ideally the two parts touched each other in a few places at most, or it would be impossible to turn the mill. The distance between the

²⁶ In Diocletian's Edictum de Pretiis (XV 56a-59) the following prices are mentioned: a *mola caballaria cum lapidibus* (horse-mill with stones) 1500 denarii, a *mola asinalis* (donkey-mill) 1250, a *mola aquaria* (watermill) 2000, a *mola manualis* (handmill) 250. The horses seen on reliefs may be mules (Wikander 1984, 36).

²⁷ Peacock 1989, 205-214. For the distribution of this type of mill (the "Pompeian" or "hourglass" mill) see Wikander 1984, 34-35.

²⁸ In Pompeii the minimum distance between a millstone and the wall is c. 0.46, and between two millstones c. 0.90. The normal distance between two millstones is in this town c. 1.05 (Moritz 1958, 82, 94 n. 1).

²⁹ Average meas. of the mills in Pompeii (Moritz 1958, 75): diam. of *catillus* 0.70; h. of *catillus* 0.70; diam. of *meta* 0.75; h. of *meta* 0.45 (upper part) + 0.15 (lower part); h. of base 0.45; diam. of base 1.35.

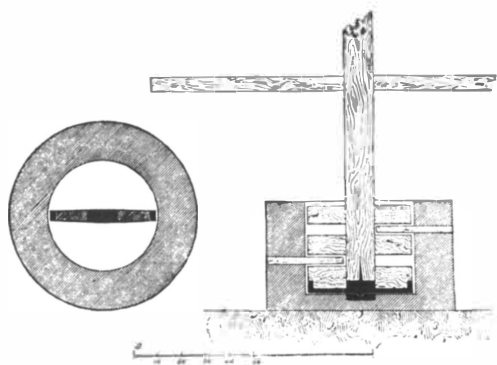


Figure 2. Cross-section of a kneading-machine.

meta, but it may also have ensured, together with a millrind (a disc with holes), an even flow of the grain. Sometimes a hopper was attached above the *catillus*, to feed the grain into the mill more conveniently and evenly. Slaves urged the animals on with a whip, filled the hopper, and collected the meal.

The Romans knew two kinds of grain: *triticum* and *siligo*. *Siligo* was preferred because it produced better meal. The best meal of *triticum* was called *pollen*, the common meal *secundarium* or *similago*.³¹ *Siligo* could produce *flos*, but the usual meal was called *cibarium* or *siligo*. The quality of the meal could be improved by sieving and repeated milling. Experiments have shown that the grain had to be ground twice in order to separate the common meal from the *furfures* (bran).³² Fine and coarse sieves called *pollinarium* and *farinarium* were used before and after the second grinding. Nevertheless the bulk of the meal presumably contained a considerable amount of bran.³³

Two reliefs from Ostia show the milling.³⁴ On a marble block for the insertion of urns a donkey operating a millstone is depicted. Around the *meta* is a bin, and a whip and a sieve can be seen. A similar scene is depicted on a relief in the facade of a tomb. Here a horse with eye-flaps is seen. The bin and sieve are found again. Above the *catillus* is a hopper, hanging down from a horizontal beam, possibly a pipe through which the grain flowed into the hopper. Next to the millstone is a slave with a whip. On both reliefs a bell is attached to the millstone. According to Moritz it rang automatically at every rotation, indicating that the animal was working.³⁵ However, in large bakeries, with up to ten mills, this makes little sense. In mills in eighteenth-century France bells warned the miller that the hopper needed to be filled.³⁶

After the grinding and sieving the dough was made: large quantities of water, yeast, salt, and possibly other ingredients were added to the flour.³⁷ Machines operated by people or animals

grinding surfaces must have been the thickness of a grain of corn: if the pressure was too big the meal would overheat, if it was insufficient too much bran would be left.³⁰ Abrasion of the stones would necessitate recutting and readjustment of the distance between *meta* and *catillus*.

A number of millstones had a vertical spindle, attached to a metal bowl upside down over the top of the *meta*, or resting in a hole in the top of the *meta*. The spindle may have been attached to the crossbeam over the *catillus*. It may have fixed the distance between *catillus* and

³⁰ See also Kaplan 1984, 232-237.

³¹ In ancient literature the bread of the poor is called *panis secundus*, *secundarius*, and *cibarius*.

³² The bran was used as fodder and for medicinal purposes. "It is an old rule of thumb with millers of many countries that business is good when all the flour obtained pays in full for the wheat, and the miller has the millfeed [bran] to cover milling costs, sacks, marketing costs, and to provide for his profit." (Jasny 1944, 164). The price of the grain may have been c. 50% of the price of the bread (Sperber 1974, 119-121).

³³ This paragraph is based on Moritz 1958, 172-183. Cf. Jasny 1944, 151-155

³⁴ See chapter 5, § 3.

³⁵ Moritz 1958, 89-90.

³⁶ Kaplan 1984, 244-245.

³⁷ The water-absorption is c. 5.5 litres for 10 kilograms of grain. For a *modius* of grain, that is for c. 6.8 kilograms or c. 8.7 litres, a little over 200 grams of yeast is needed (Moritz 1958, p. 195 ff.).



Figure 3. Removal of loaves of bread from the oven in bakery VII,1,36-37 in Pompeii.

were used for the kneading (figure 2).³⁸ These were low, round reservoirs, made of the same material as the millstones. A vertical spindle was attached to the bottom. To the spindle and in the side of the reservoir blades were attached. Pushing against a crossbeam rotated the spindle. The dough was kneaded by the passage of the fixed and turning blades. Next the bread was moulded on tables, after which it was left to rise.

Round or oval ovens resting on a base were used for the baking (figure 3). A table was often in front of the oven. Before the baking the bread may have been moistened.³⁹ Fuel had to be on hand. The ashes were dumped in a pit or in a niche in the front part of the oven-podium.⁴⁰ The smoke passed through chimneys. The animals rested in a stable and had to be fed. The floors of the rooms where the grinding and kneading took place had to be resistant to wear and were therefore made of basalt blocks, the same kind used for the paving of streets. Obviously the bakeries had to be roofed.⁴¹

Working in the mills-bakeries was unattractive, to put it mildly. Apuleius describes it as follows:⁴² “Ye gods, what a set of men I saw! Their skins were seamed all over with marks of the

³⁸ Found in eight bakeries in Pompeii (Mayeske 1972, 169).

³⁹ Drs. G. Jansen pointed out to me that in the masonry of some Pompeian ovens a small metal reservoir is found, in which water was heated by the oven itself (Grant 1971, photo on p. 197: niche to the right of oven; below the niche was a basin; bakery VII,1,36-37). Modern home-bakers suggested three purposes for the warm water to me: for better rising (by creating a warm room, or by making lukewarm water for the kneading of the dough); for cooking the bread before baking; for various purposes, such as cleaning, washing, perhaps even sale.

⁴⁰ Mayeske 1988, 153, on the Pompeian bakery I,12,1-2.

⁴¹ One bakery in Pompeii (IX,3,19-20) may have had a canvas covering (Mayeske 1972, 169).

⁴² Apuleius, *Metamorphoses* 9, 12, 3.4: *Dii boni, quales illic homunculi vibicibus lividis totam cutem depicti dorsumque plagosum scissili centunculo magis inumbrati quam obtecti, nonnulli exiguo tegili tantum modo pubem iniecti, cuncti tamen sic tunicati, ut essent per pannulos manifesti, frontes litterati et capillum semirasi et pedes anulati, tum lurere deformes et fumosis tenebris vaporosae caliginis palpebras adesi atque adeo male luminati et in modum pugilum, qui pulvisculo perspersi dimicant, farinulenta cinere sordide candidati*. Translation Loeb. The text refers to forced labour or slaves (Sirks 1991(1), 414 on the *pistrina* as *ergastula* and the harshness of the work).

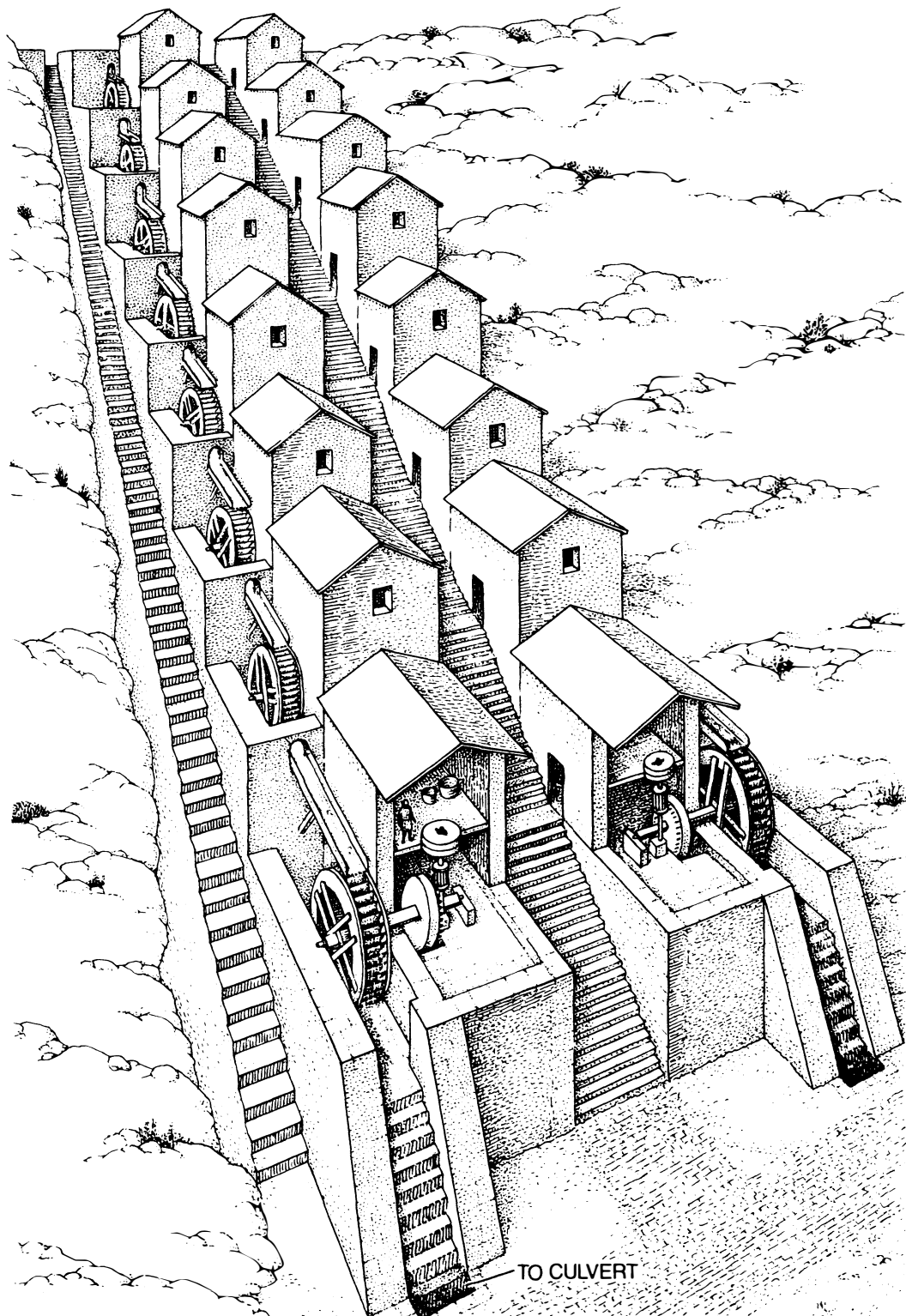


Figure 4. Reconstruction of the watermill Barbegal, Arles.

lash, their scarred backs were shaded rather than covered with tattered frocks. Some wore only aprons, all were so poorly clothed that their skin was visible through the rents in their rags! Their foreheads were branded with letters, their heads were half-shaved. They had irons on their legs. They were hideously sallow. Their eyes were bleared, sore, and raw, from the smoke of the ovens. They were covered with flour as athletes with dust!”

2B Watermills

A prerequisite for the commercial use of waterwheels was the vertical wheel.⁴³ Horizontal wheels had a low output, and had to be fed by rapid streams on hills. The vertical undershot wheel was less efficient than the overshot wheel and required fast flowing rivers and an even supply of water. Nevertheless it still had a much higher gear ratio than the “hourglass” mills operated by animals. The water for vertical overshot wheels was obtained from rivers, wells, aqueducts and baths. It was collected in a millpond and from there fed the wheel. In the fifth century AD Palladius wrote: “If there is an abundant supply of water, the bakeries should receive the waste water from the baths, so that the grain can be crushed in watermills constructed there, without the toil of animals or men”.⁴⁴ However, it must have been difficult to supply watermills in cities with water: aqueducts were complex and expensive structures, the water of the rivers in the Mediterranean countries moves slowly, and the water table can vary throughout the year. The vertical wheel was already known in the first century BC, but its widespread commercial use only began at the end of the second and in the third century AD. The reasons for this breakthrough are still unknown.

Watermills for grinding grain have been found in several places in the Roman empire, and the number is still increasing.⁴⁵ Two geared watermills have been found in North Africa, in Simitthus (Chemtou) and Tichilla (Testour), to the south-west of Karthago (Tunis).⁴⁶ The former has been dated to the late third or early fourth century. The most famous mill is the Barbegal, at a distance of 9.5 kilometres from Arles in southern France (figure 4).⁴⁷ It is located on the slope of a hill and contained two parallel rows of eight overshot wheels.⁴⁸ An aqueduct, serving this sole purpose, fed them. The axles connecting the wheels passed through rectangular openings in large stone blocks and were then attached to millstones.⁴⁹ The date of this complex is still uncertain: proposals range from the early second to the fourth century AD.⁵⁰

Watermills on the Ianiculum in Rome are mentioned in ancient literature, for the first time in the fourth century. During excavations in 1990-1991 the remains were examined of what seemed to be two rows of six mills, on a particularly steep slope of the Ianiculum (although less steep than that of the Barbegal).⁵¹ The Aqua Traiana and perhaps also the Aqua Alsietina fed this complex. Undershot wheels powered the mills.⁵² The youngest material from the foundation trench has been dated to the first half of the third century. It has been suggested that the construction of the complex was related to the introduction of the distribution of free bread, an initiative of Alexander Severus or Aurelian. It is likely that the builder was familiar with the Barbegal, or vice versa.

⁴³ This paragraph is based on Forbes 1965, 88-98 and Wikander 1984, 11-12, 20-23.

⁴⁴ Palladius, *Opus agriculturae* I 41 (42): *Si aquae copia est, fusuras balnearum debent pistrina suscipere, ut ibi formatis aquariis molis sine animalium vel hominum labore frumenta frangantur.*

⁴⁵ Wilson 1996, 19-21.

⁴⁶ Rakob 1993.

⁴⁷ Benoit 1940; Forbes 1965, 93-95; Sellin 1983; Trevor Hodge 1990.

⁴⁸ Total area c. 42 x 20 metres, diam. of wheels 2.10, w. 0.70.

⁴⁹ H. of openings 0.90, w. 0.75. A complete *meta* was found (diam. 0.90, h. 0.45).

⁵⁰ Recent excavations point to a date in the early second century: Leveau 1996.

⁵¹ Coarelli 1987, 450; Wikander 1979, 15-24; Bell 1993; Bell 1994. A second, similar complex may have been nearby.

⁵² Diam. of wheels c. 2.30, w. 1.65, diam. of millstones c. 0.75.

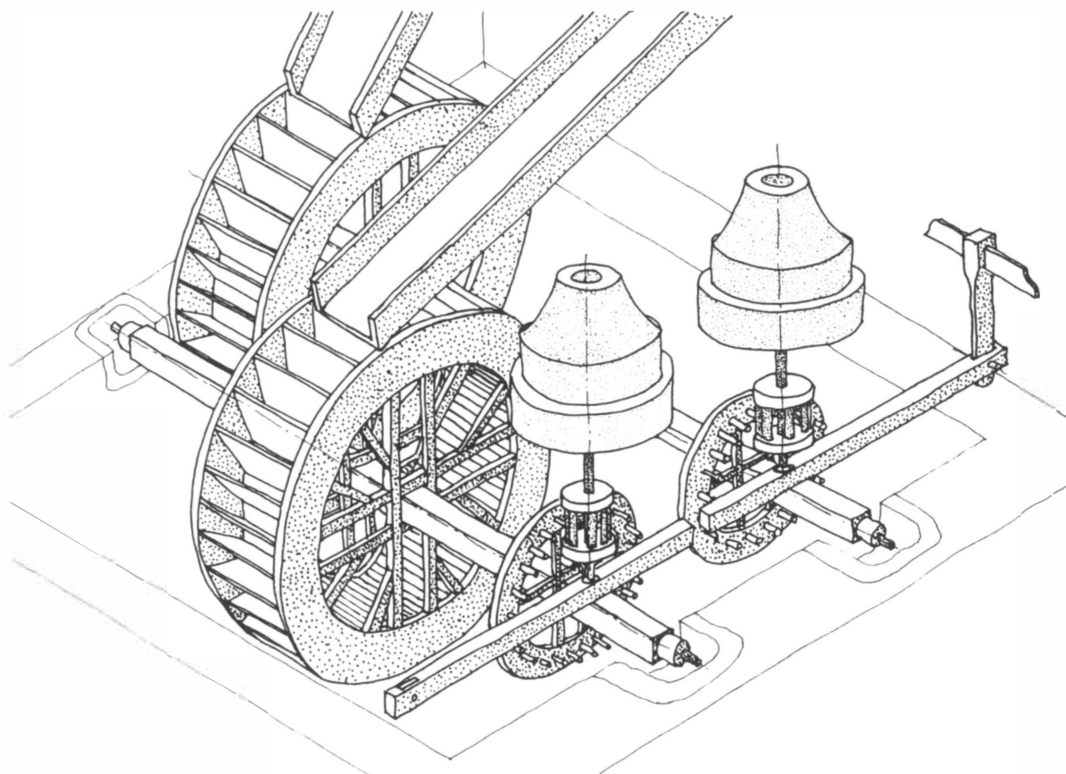


Figure 5. Reconstruction of the watermill machinery in the Baths of Caracalla, Rome.

A further mill in Rome, much smaller, has been found in underground rooms in the Baths of Caracalla (figure 5).⁵³ It was fed by surplus water from the baths that entered through a hole and worked two small overshot wheels.⁵⁴ The water supply was controlled by means of a lock gate. Partitions prevented the water from reaching the meal. This mill was probably built in the period Caracalla - Alexander Severus. It was destroyed by fire around or shortly after the middle of the third century and rebuilt in the last quarter of that same century.⁵⁵

Work in the watermills will have been as unpleasant as in the mills-bakeries. A modern description of eighteenth-century watermills in France seems applicable:⁵⁶ "His long hours fatigued the miller, but it was the confined, turbulent space in which he worked that seriously threatened his health. The miller and his aides worked in an atmosphere thick with dust. Mouth, nostrils, eyes, and ears were filled with flying particles. The consequence was eye irritation, infection of the ears, and the miller's wheeze and/or cough, a veritable identification card in the profession. After years of inhaling the dust, the miller often contracted asthma or other lung disorders, sometimes lapsing into dropsy. Cold and humidity further debilitated the respiratory system of water millers, and provoked rheumatisms. The incessant noise of the wheels and millstones and the roar of falling water made millers hard of hearing - another symptom of professional experience. Millers often had lice ... they were perpetually covered with dirt and

⁵³ Schioler - Wikander 1983; Wikander 1979, 27-29.

⁵⁴ Diam. 1.95 - 2.10, diam. of millstones 0.65.

⁵⁵ In 537 AD floating mills were installed on boats below a bridge over the Tiber (Procopius, *De Bello Gothico* I,19; Forbes 1965, 105-106). In the second half of the fifth century an overshot wheel and two millstones were installed on the northern slope of the Areopagus in Athens (Forbes 1965, 95-96).

⁵⁶ Kaplan 1984, 246-247.

hardly ever took off their clothes. Finally, millers had to lift sacks of grain and flour that weighed up to 325 pounds ... they suffered back problems and ran a great risk of herniation.”

2C The mills-bakeries in Pompeii

In Pompeii 21 bakeries can be identified with certainty (ten other buildings were *pistrina dulciaria* or perhaps bakeries; figure 6).⁵⁷

1. I,3,27: kneading-machine, four rubble mill-bases.
2. I,4,12-17: kneading-machine, four rubble mill-bases, two broken *catilli*.
3. I,12,1-2: kneading-machine, four mills (two complete).
4. V,3,8: two rubble bases, one complete mill (total: three).
5. V,4,1-2: one base, three mills (one complete) (total: four).
6. VI,2,6: three mills (one complete).
7. VI,3,3/27: four mills, kneading basins.
8. VI,6,17-21: kneading-pan, three mills.
9. VI,11,9: three mills.
10. VI,14,31-33: one base, two mills (one *meta*, one complete) (total: three).
11. VI,14,34: four bases. No millstones were found during the excavations and the bases had been lowered. The excavator, Fiorelli, concludes that it was not functioning in 79 AD.
12. VII,1,36-37: four mills (one complete, three shattered *catilli*; two *metae* were found in the street before the entrance).
13. VII,2,3/6: one rubble mill-basin and four mills (three complete, one *meta*) (total: five).
14. VII,2,22 : four mills and a miniature mill.
15. VII,15,1-2/15: remains of one mill (but the building was searched in antiquity).⁵⁸
16. VIII,4,26-29: three mills (incomplete).
17. VIII,6,1/9/10: four rubble bases, one smashed *catillus*.
18. IX,1,3/33: one rubble base, three mills (one complete) (total: three). A further mill, not on a base, seems to have been a replacement mill.
19. IX,3,10-12: four rubble bases, two broken *catilli*.
20. IX,3,19-20: four mills (two complete).
21. IX,5,4: three rubble bases, one mill (total: four).

In these 21 bakeries 75 mills were found. Approximately two-thirds of Pompeii has been excavated, so the total may have been 30, with a little over 110 mills. The establishments are of a modest size (figure 7). Usually three or four millstones are found, the largest number is five. It is not clear yet whether the bread was usually sold in the bakeries. Shops are absent in six establishments.⁵⁹ Many handmills were found in Pompeii, indicating that home milling was not uncommon.⁶⁰

In Pompeii commercial buildings are found mostly in regions VI, VII and IX, to the north and east of the Forum. Few such establishments are found in the south part of VIII, that was predominantly residential, and in the east and south-east part of the city, with many green areas for horticulture. The distribution of the bakeries fits this picture.⁶¹

⁵⁷ Mayeske 1972, chapter IV. *Pistrina dulciaria* or perhaps bakeries: I,3,1; V,1,14-16; VI,5,15; VI,6,4-5; VII,2,51; VII,4,29; VII,12,1/2/36; VII,12,7; VII,12,11; VII,12,13.

⁵⁸ Franklin 1990, 35-42. Not mentioned by Mayeske.

⁵⁹ Nrs. 1, 4, 9, 11, 14 and 15. Cf. Mayeske 1972, 168.

⁶⁰ Mayeske 1972, 166-167.

⁶¹ Eschebach 1970, Laurence 1994, 55-57, maps 4.1 and 4.2.

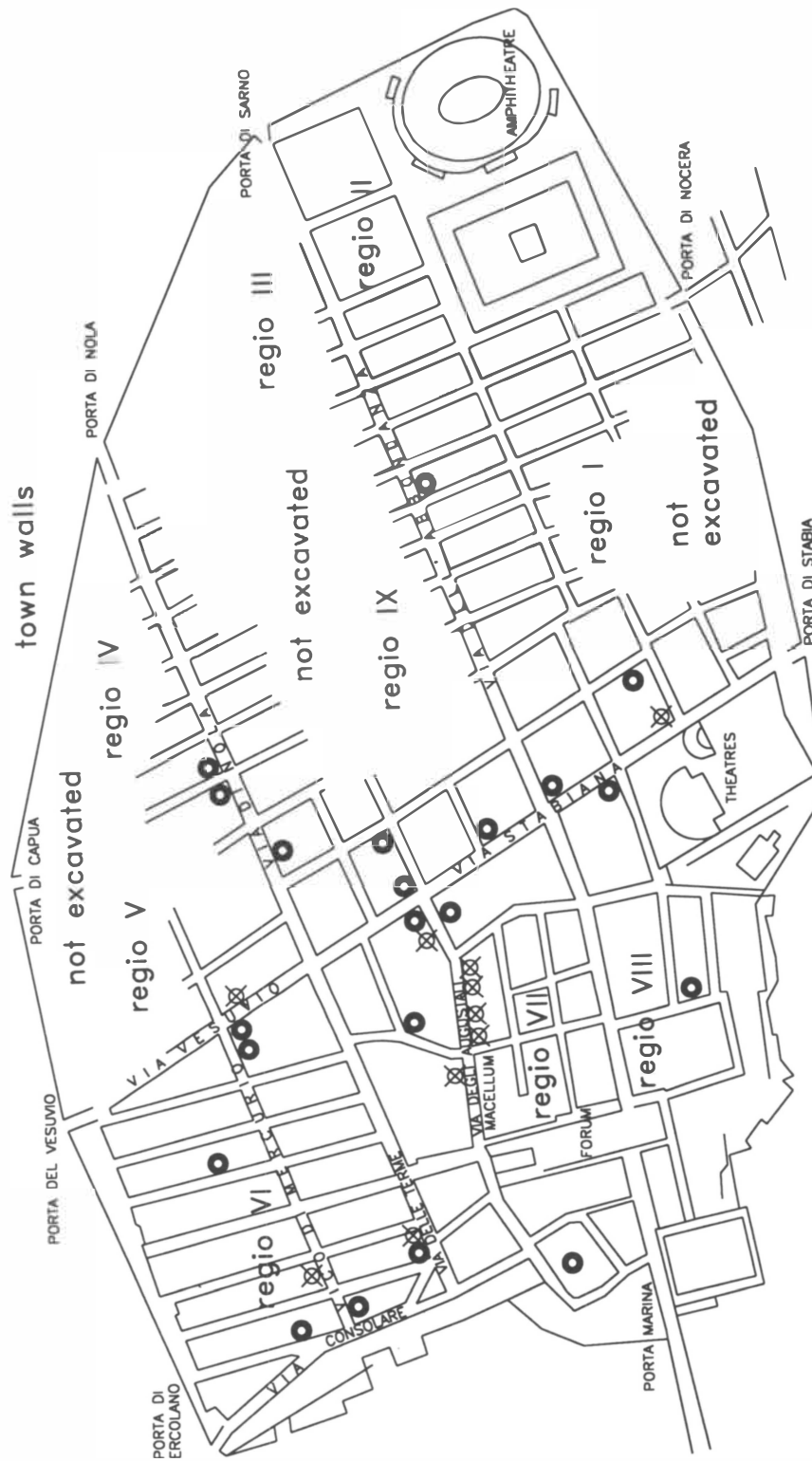


Figure 6. Distribution of bakeries in Pompeii.
Circles: bakeries. Circles with cross: *pistrina dulciaria* or uncertain.

Of the 21 bakeries 16 are on a main street and/or an intersection (11 are on a street leading to a city gate, 15 on an intersection).⁶² Most can be found on or near the Via Vesuvio / Via Stabiana, Via di Nola, Via di Mercurio, and Via Consulare. Sometimes clusters of bakeries are found: VI,14,31-33 is next to VI,14,34; V,3,8 and V,4,1-2 are opposite each other; VII,1,36-37 is opposite VII,2,3-6, that in turn is opposite IX,3,10-12. Bakeries VII,2,3/6 and IX,3,10-12 were presumably owned by one family, the Terentii.⁶³

There is a striking absence of *horrea*. Bakery VII,15,1-2/15, described by Franklin in detail, seems to be an exception. This bakery covers an area of some 100 square metres, and adjoining rooms (approximately 300 square metres) may well have been used for storage.⁶⁴ The complex is situated to the west of the Forum, not far from the Porta Marina. The street to the north is extra wide, so that this may have been a place for loading and unloading. The narrowness of some streets and a slope suggest that the grain arrived here from the Porta di Stabia or the Porta di Ercolano. Franklin adds: "Sizable horrea have been identified nowhere else in Pompeii". "Nor are there extensive horrea associated with any of the city's *pistrina*".⁶⁵ This suggests that grain was transported to the bakeries from store-buildings outside the town. Palynological analyses have confirmed the production of wheat and oats in the Vesuvian area.⁶⁶

2D The mills-bakeries in Rome and Constantinople

Mills-bakeries have not been found in Rome and Constantinople. Late regionary catalogues provide us with numbers. In fourth-century Rome there were between 250 and 275 bakeries. They are referred to as "large establishments". How many were *panificia* is unknown, nor do we know in how many the distributed bread, *panis gradilis*, was baked.⁶⁷ Of course the number of mills-bakeries was directly related to the number of inhabitants, and constant fluctuations must have taken place. Fourth-century Constantinople had 20 or 21 *pistrina publica* and between 113 and 120 *pistrina privata*. There were 106 to 117 *gradus* for the distribution of free bread, so one bakery served several *gradus*. Eleven *pistrina publica* were located near five *horrea*.⁶⁸

2E The output of the mills-bakeries

Calculations of the output of the bakeries are hazardous, but some estimates can be made. The population of Pompeii may have been approximately 10.000.⁶⁹ With a total of a little over 110 mills, one mill would have served some 90 people and the average bakery 270 to 360, assuming that all grain was handled in the bakeries.⁷⁰ The number may have been a bit lower, if hand milling was common in larger households. Similar calculations could be made for Rome and Constantinople, if only the size of the bakeries would be known. In this respect the situation in Ostia might be helpful, and we will return to this problem in the concluding chapter.

Those in Rome who were entitled to free grain received five *modii* per month, equivalent to a

⁶² The five remaining bakeries are: VI,II,9 (entrance on an intersection of Via di Mercurio, but the bakery is in the back part of the building); VI,14,34 (next to a bakery on an intersection); VII,1,36-37 (opposite a bakery on an intersection); I,3,27; VII,15,1-2/15.

⁶³ Mayeske 1972, 129-131, 182-183, 189-193.

⁶⁴ Franklin 1990, esp. 35-42.

⁶⁵ Franklin 1990, 41. Cf. Laurence 1994, 55, 57.

⁶⁶ Ciarallo 1994. On grain production see also Jongman 1988, 131-146.

⁶⁷ Carrié 1975, 1064-1068; Jordan 1871, 150 and 1878, 49; Sirks 1991(1), 340-341; Sirks 1991(2), 224; Wikander 1979, 13.

⁶⁸ Carrié 1975, 1065-1066; Sirks 1991(1), 358; Sirks 1991(2), 234.

⁶⁹ Eschebach 1970, 60-61; Eschebach 1975; Jongman 1988, 108-112; Wallace-Hadrill 1991, 199-214 (min. 6.400-6.700, max. 20.000; "Scholarly consensus tends to 10.000").

⁷⁰ By comparison, in Augsburg in 1475 there was one baker for 200 inhabitants, in 1615 for 330 inhabitants (Roeck 1987, 165, 175-176).

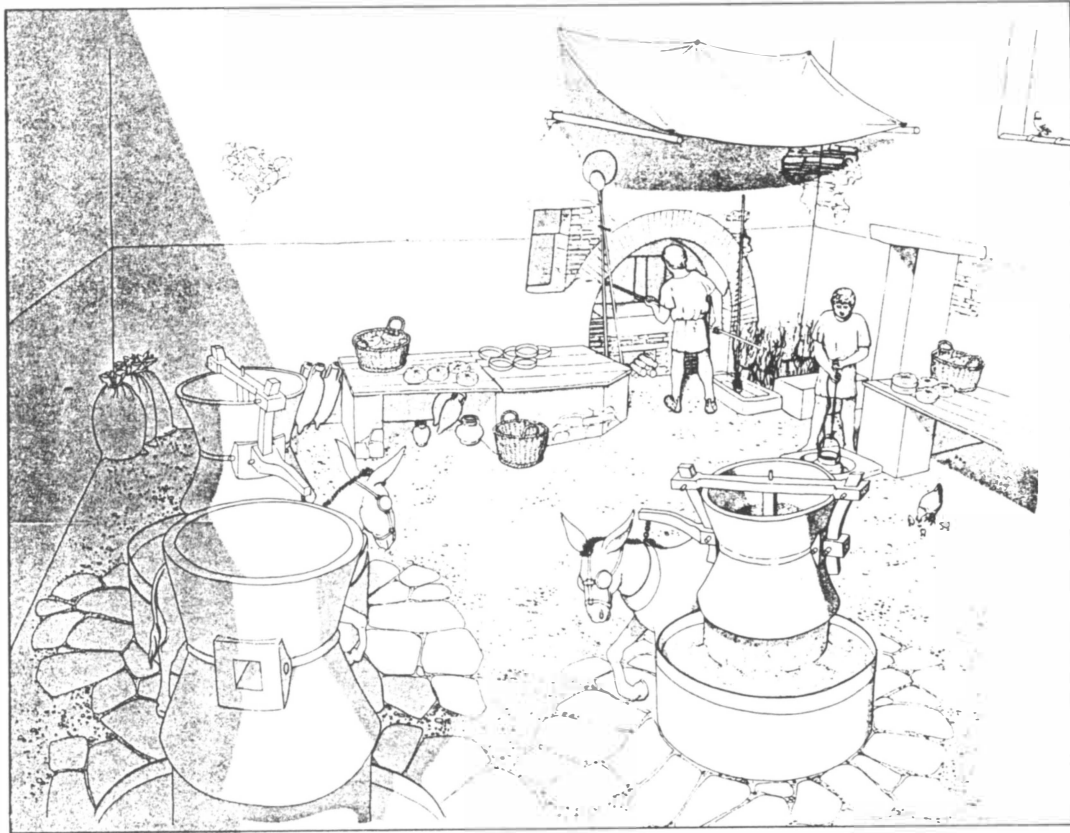


Figure 7. Reconstruction of the interior of bakery VII,2,3/6 in Pompeii.

total of 43.5 litres or 33.5 kilograms.⁷¹ The average bread yield was in the order of 8.2 to 8.5 kilograms per *modius*.⁷² This was certainly enough for one person. Cato informs us that 3 *modii* sufficed for slaves with light duties, 4 to 4.5 for unchained field slaves, and 4.8 to 6 for those on the chain gang.⁷³ According to Sirks and Rickman, comparing to consumption in Mediterranean countries in the 19th century, five *modii* were on average consumed by one person per month. Sellin's estimate is much lower: 350 grams of meal, or 2.35 *modii*.⁷⁴ Garnsey suggests 350 to 600 grams of meal as a minimum. He notes that some of the grain may have been unusable, as a result of moisture and diseases.⁷⁵

Estimates of the amount of grain that could be ground with one mill powered by an animal vary from almost 10 to 25 kilograms per hour.⁷⁶ If our estimates regarding Pompeii are near the truth, then a millstone in that city would have had to grind c. 90 kilograms per day, assuming that five *modii* were consumed per person per month (or 42 if one person needed only 350 grams of meal per day). The time needed to produce this amount could have varied from 3.5 to 9 hours.

⁷¹ For weights and measures see Moritz 1958, 221 note S. One *modius* equals 8.733 litres or 6.7 kilograms (Moritz 1958, 185-186).

⁷² Moritz 1958, 203.

⁷³ Cato, *De Agricultura* 56,8.

⁷⁴ Rickman 1980, 10; Sirks 1991(2), 216; Sellin 1983, 101. Cf. Virlouvet 1995, 272 (three to four *modii*). The weight of the meal was c. two-thirds of the weight of the grain (Moritz 1958, chapter VII).

⁷⁵ Garnsey 1991, 70-79.

⁷⁶ Forbes 1965, 93; Jasny 1944, 159.

More than half a century ago grain-mills powered by animals were still in use in Sardinia:⁷⁷ “Encore aujourd’hui, chaque paysan a son moulin domestique, qui est véritablement la *mola asinaria* des Anciens. Comme les moulins de Pompei, ceux de Sardaigne sont en pierre volcanique, le plus souvent en tuf grisâtre e poreux. Le grain est versé dans un entonnoir de bois tétragonal. Il tombe entre les meules par un trou étroit taillé dans la pierre supérieure, la farine est recueillie dans une caisse. Le moulin est actionné par une âne aux yeux bandés.” Perhaps old millers from Sardinia can provide additional information.

The watermills must have produced much more meal than the mills in Pompeii. According to Forbes they were six times as efficient and ground 150 kilograms per hour. The Barbegal could then have processed 24.000 kilograms in ten hours, enough to feed approximately 21.400 people. The size of the population in third-century Arles may have been 10.000 and Forbes suggests that the Barbegal also served the army.⁷⁸ Sellin makes a more conservative estimate and suggests that the mills processed 36 kilograms of grain per hour. If they were operated ten hours a day this would be enough to feed 11.000 people, assuming a consumption of 350 grams of meal per person per day, as does Sellin.⁷⁹ If five *modii* of grain was the average amount for one person per month, the Barbegal would have fed some 5.100 people. The watermill was therefore far more efficient than the Pompeian mill, with each millstone serving between 320 and 690 people. This is not only due to the machinery. Presumably the watermills in a large industrial complex were operated longer and more efficiently.

⁷⁷ Le Lannou 1941, 283.

⁷⁸ Forbes 1965, 93-95.

⁷⁹ Sellin 1983, 101; Trevor Hodge 1990.

The Caseggiato dei Molini

Part I

The building history

Thea Heres

§ 1 Introduction

The Caseggiato dei Molini (plates 1-29; figures 8a-b, 12a-b) received its name from the excavators of the early 20th century.¹ At the end of a campaign started in 1913 the excavated complex consisted of 23 rooms and a long corridor running along its west side (24-29). The total surface is c. 950 m². The main entrances open to the east (Via dei Molini; plate 1), whereas a corridor (24) and two separate shops (15 and 16) open to the south (Via di Diana). To the north is building I,III,6, with which the complex shares a common wall; the north end of the corridor (29) is closed off. At the west side the corridor is flanked by the outer east wall of the Caseggiato di Diana (I,III,3), which has no entrances on this side (plate 26).

§ 2 The Hadrianic period

2A General

The oldest visible walls that form the Caseggiato are datable to the reign of the Emperor Hadrian, 117-138 AD.² Brickstamps found in the neighbourhood and in the building itself seem to confirm the date of a major Hadrianic layout that occurred c. 127 AD.³

One may suppose that the building was also the first Hadrianic structure in the south-east of block I,III. No visible remains of that era have been found in the two adjacent buildings, the Caseggiato di Diana and the northern commercial building (I,III,6). Both were in their original layout of Antonine construction.⁴ More than one feature in our building confirms that - at least

¹ At least as late as 1914 the Caseggiato dei Molini was still named Edificio delle Pistrine, cf. Calza 1914(2), 244.

² The oldest remains in the building are the foundation walls of the Castrum, visible nowadays in a trench in room 17 and situated at a considerably lower level. See for a discussion of their structure and date SO I, 63-78, and, most recently, Rasmus Brandt 1985, 25-89, especially 29-53.

³ See for the excavation in general: Vaglieri 1913(2), 184; Calza 1915(1); Calza 1917(1), 323. The latter relates a striking lack of brickstamps found *in situ* in the building, cf. also Vaglieri 1909, 26, where the find is mentioned of one brickstamp, and, for that matter, not *in situ* (CIL XV, 693). Cf. also Bloch in SO I, 216. See for the original building phase of the house also: SO I, 141; Blake 1973, 171.

⁴ See for the excavation of the Caseggiato di Diana: Calza 1914(2), 248ff. He mentions (o.c. 249) the excavation of "un mosaico semplice a bianco e nero, appartenente a edificio anteriore occupato dalla costruzione del nuovo C.." (building C is the newly excavated Caseggiato di Diana). Calza (1917(1)) gives a detailed description of the

for a while - it was a free-standing construction on the north side, for instance the window in the north wall of room 14, receiving light from the north and thus indicating that the space later occupied by I,III,6 was at that moment not built upon, or at least not covered.⁵ Furthermore, the construction technique of the outer west wall of the building indicates, that it was not an outer but an inside wall: it was erected in opus reticulatum mixtum, a technique employed very rarely for outer walls. Therefore it seems very likely that at the time of construction of the Caseggiato an adjacent western structure of an earlier date was still standing.⁶ This structure was demolished presumably only after Hadrian's reign, and subsequently rebuilt as the present day Antonine Caseggiato di Diana.⁷

Hadrianic walls in the Caseggiato dei Molini are visible in all rooms, with the exception of shop 16 and corridor 24. The building phase is verified both in inner and outer walls; these form a constructional entity wherever they appear. The average width is 0.60, the normal Roman standard of two feet for loadbearing walls.⁸ No relieving arches appear in the Hadrianic masonry. Putlogholes for scaffolding occur in most of the walls in both sides and at various heights.

2B Outer walls

Both sides of the north, east, and south outer walls were exclusively erected in brickfaced masonry. The bricks are all fresh and well formed. Their colour varies from yellow to darkish red, with a preponderance of pink and red. The horizontal courses are well laid and the mortar beds are narrow and regular. No bonding courses of bipedales are visible.⁹

2C Inner walls

The inner walls form an entity with the outer walls, their technique however is different, for they were erected in opus reticulatum mixtum. An exception are the junctions of the north-south and east-west walls in the centre of the building: these were erected in brick.¹⁰ The reticulate of the inner walls consists of large c. 1.20 or 1.50 high fields (respectively four and five Roman feet). The reticulate fields are divided by one horizontal course of usually six bricks high. Where the walls have been preserved high, this brick band may re-appear far up in the wall and then consist of five or six bricklayers. Quoinings of five or six bricks appear on either side of the reticulate fields.

Caseggiato di Diana. See also SO I, 237; Blake 1973, 217-218; Pasini 1978, 90. Compare for the date of the Caseggiato di Diana: stamp CIL XV, 1081 of 150 AD; cf. Bloch in SO I, 216.

Building I,III,6 is dated by Blake to the Hadrianic age, or rather, she remarks "...probably contemporary with the House of Lucretius Menander" (Blake 1973, 175). In view of its masonry however, I strongly prefer to give it an Antonine date.

⁵ It is possible however, that until the Antonine age north of the Caseggiato dei Molini ran an alley, more or less similar to the - later blocked - alley 24-29.

⁶ One may think of a Claudian structure, in view of the neighbouring Grandi Horrea (II,IX,7), or of a Flavian building. Remains of the latter period have been verified on several sites between the Decumanus Maximus and the Tiberbank. When the Caseggiato di Diana was excavated (cf. Calza 1914(2), 248ff.; Calza 1917(1), 323) no such remains were found at floor level.

⁷ No brickstamps of Hadrianic date have been found *in situ* in the Caseggiato di Diana, see Calza 1917(1), 323. Cf. SO I, 216 (Bloch). In the house was found the stamp CIL XV, 1081, dated by Dressel to 145-155 AD. See also for this stamp: Bloch 1938, 134. Calza (1914(2), 254) published a general list of brickstamps found during the cleaning of the house and its neighbourhood, without specifications.

⁸ In the house they average in reality between 0.56 and 0.61 wide.

⁹ Cf. for a description of the masonry also Blake 1973, 174.

¹⁰ The usual building procedure in second-century Ostia and Rome was to erect the outer walls of a structure and the inner junctions of the walls in brick, and the dividing walls in reticulate and brick, a practice that can be observed in large parts of Ostia. The motive for the employment of two techniques was, I assume, that brickfaced masonry was thought to be more solid than any mixed technique. In reality however, it is not the brick finish but the masonry core that determines the strength of a Roman wall. See also Heres 1982, 43.

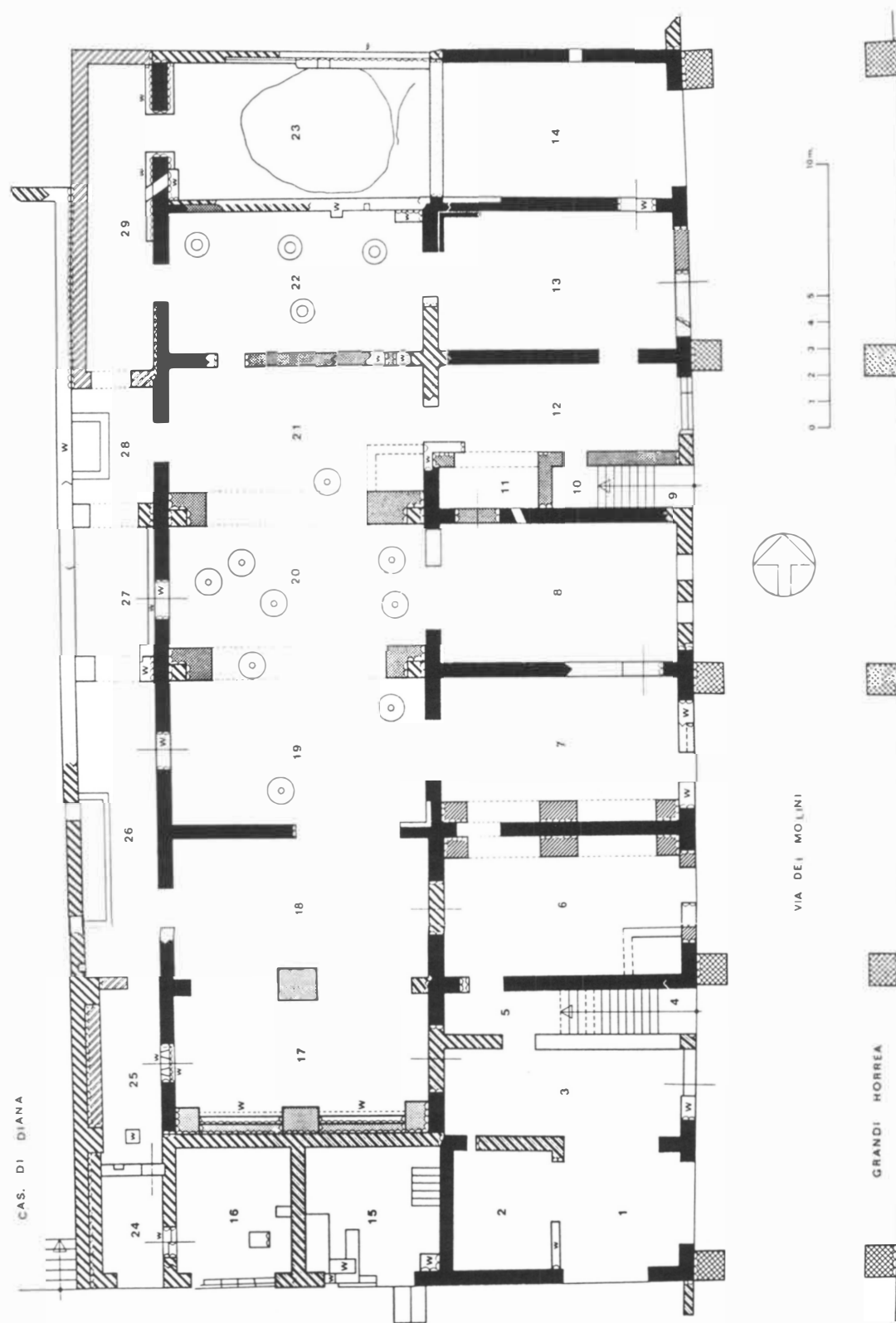


Figure 8a. Plan of the Cas. dei Molini (legenda: see fig. 8b).

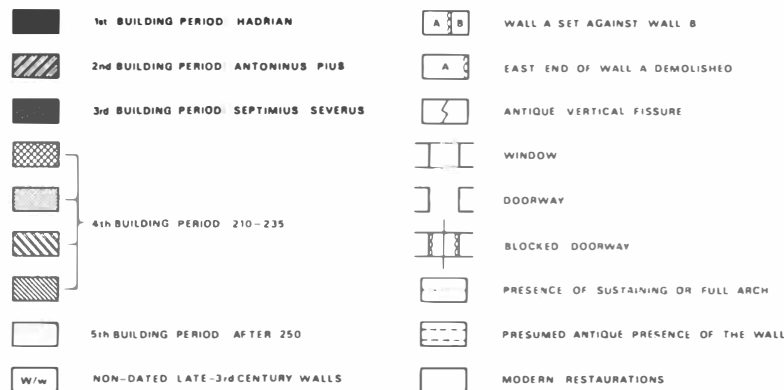


Figure 8b. Plan of the Cas. dei Molini: legenda.

2D Staircases

Two staircases are visible in the plan: rooms 4 and 9. Both have at one side been imbedded in Hadrianic masonry. In both cases however, it cannot be ascertained that they were part of the Hadrianic scheme, since the stairwell masonry is of a later date. A wooden construction is however not to be excluded for the Hadrianic age, especially given the presence of beamholes (see below).

In room 4 the non-Hadrianic date of the masonry staircase may be contradicted by the headpier of the original north wall, which is not, as is the case elsewhere, a T-shape, but is L-formed, a rather normal procedure if a staircase was planned at that point (plate 4).¹¹

2E Beamholes

The presence of holes suitable for heavy beams in the Hadrianic walls of rooms 6, 7, and 17, which have been preserved at a sufficient height, suggest the existence of an upper floor extending at least over that part of the building during the Hadrianic era.

2F Doorways

In the original layout the two parallel series of rooms, 1-14 and 15-23, were connected with each other and with the adjacent streets, respectively Via dei Molini and the present corridor 24-29, by means of doorways of varying width. Furthermore, each of the Hadrianic sidewalls has a doorway, and thus originally every room was accessible from four sides.¹² In the eastern series of rooms the place of these doorways is intriguing: although they were all a part of the Hadrianic scheme and must have been built at the same moment, their position is very irregular. Those in rooms 5-6-8 are in one line, those in 7, 13, and perhaps 1 in another line, whereas the situation in 12 differs from both.¹³

In the western series of rooms too little is left of the Hadrianic inner walls to allow for any conclusions. The Hadrianic doorways were generally covered by a slightly curved lintel arch, in most cases made of bipedales.

2G Windows

Between rooms 8 and 11 a narrow oblique window was cut through the Hadrianic wall (plate

¹¹ See many other staircases in Ostia placed in similar circumstances. On the other hand an exception to this rule is the L-shaped head pier flanking the staircase next to room 24 and giving access to the upper floors of the Caseggiato di Diana. Cf. in general Packer 1971, 28ff., especially 31.

¹² An exception of course are the four corner rooms 1+2, 14, 15+16, 23.

¹³ The only thing they do have in common is their width: it averages 1.47 (c. five Roman feet).

9). Its sides are still covered with a rather coarse plaster, thus not permitting to observe whether the window was placed here in the Hadrianic phase or opened at a later date. The window can only have functioned as an illumination to room 11: its oblique position from south-east in 8 to north-west in 11 would allow for a maximum of daylight to enter into room 11. Since the latter was created in relation to the staircase in rooms 9-10 at a considerably later date, I assume that both the installation of the window and the blockage of the Hadrianic doorway between rooms 8-11 must be dated to the early third century.

The window in the north wall of room 14 has already been discussed above. It is surprising that when the Antonine edifice I,III,6 was erected, the window was not blocked but continued to function as such throughout the building's history. Due to the high level of its sill it may not have caused a nuisance to the neighbours. On the other hand building I,III,6 does not have an independent outer south wall, but shares a common wall with rooms 14-23-29. This might indicate that the structure was not roofed, at least at its south side.

The Hadrianic outer west wall of the building contains a series of six large windows on the upper floor level (plates 14, 18). One of them, in 17, west, was placed in an oblique position high in the wall.¹⁴ The window-openings were cut into the Hadrianic reticulate, but it is not certain that they were opened in a second building phase. At the upper side of the windows the reticulate is partially a modern restoration. What remains of the antique wall was constructed rather well. The oblique position of the window in 17 is marked south-east to north-west, thus - as was the case in room 11 - allowing for a maximum of daylight to enter into the room.

2H Summary

The general plan of the Caseggiato dei Molini during the Hadrianic period thus appears as a rectangular building consisting of a double series of rooms (now rooms 1-14, and 15-23) divided by a long north-south central wall pierced by doorways.

The eastern series consisted of eight units, comprising the present rooms 1+2, 3+4+5, 6, 7, 8, 9+10+11+12, 13, and 14. Each of the rooms originally had a wide doorway of presumed equal width giving onto Via dei Molini.

In the western part of the Hadrianic structure dividing walls have been considerably less well preserved, in fact only in rooms 17-19 and 21-23. The position of the secondary walls and piers however, may justify the assumption that there too originally a regular division in eight units occurred.¹⁵

Connecting doorways between the two parallel series of units were verified in all cases, with the exception of room 1+2, and of room 14.¹⁶ The western rooms in the Hadrianic age all opened onto the western corridor 24-29.

§ 3 The Antonine period

3A General

An extensive rebuilding took place during the reign of the Emperor Antoninus Pius, 138-161 AD. Evidence of this activity can be found both in the house and in two new adjacent structures. To the west the Caseggiato di Diana was erected *ex novo* in a building lot where no traces of a previous Hadrianic structure can be found.¹⁷

¹⁴ Cf. for room 17: Caseggiato del Temistocle (V,XI,2), and Caseggiato V,XI,4. See also: Hermansen 1982, 100.

¹⁵ See also: Blake 1973, 174.

¹⁶ A solid Hadrianic wall forms the western extension of present room 2; there are no traces of a doorway. The present west wall of room 14 is a mixed late-antique and modern construction; it is therefore impossible to say whether it ever contained a doorway to room 23.

¹⁷ See note 4.

The building technique is brickfaced masonry, quite different from that in the Hadrianic walls. The bricks are quite thick and rather long and have a pale-yellow colour. The mortar is rather dark-grey, and contains almost exclusively black and occasionally grey-brownish pozzolana. Many of the bricks were not sawn but cut, giving them their characteristic coarse surface. This masonry is altogether characteristic for the Antonine period in Ostia, and can be verified in several buildings.¹⁸

I observed similar masonry in the scarce remains of the northern adjoining structure (I,III,6), the south-east corner of which was set against the Hadrianic north-east corner of room 14.

3B Inner walls

South-east corner of the building

The construction of a north and east wall in room 2 created here a separate unit; its west and south end have now been demolished, so that - at least in the last case - the original division with room 1 cannot be observed.¹⁹ The Antonine wall is brickwork, with reticulate placed on top of it. It was restored in many places.

Room 3, north-east pier and west wall

A rather high brick pier consisting of irregular and mixed material separated room 3 and stairwell 4 (see below).

The Hadrianic doorway to room 17 was bricked up, forming an entity with the new north-west corner of the room. This was done with rather irregular brickwork, all mixed material. The north wall of 3, with which it forms an entity, contains much modern restoration and a relieving arch at the present floorlevel.²⁰

Room 6, west

The wide doorway to room 18 was filled in (plate 16). The masonry shows various phases of repair, including modern restorations. The reticulate visible in the centre of the west side may very well be from the Antonine period.

¹⁸ Examples are:

1) Horrea Epagathiana et Epaphroditiana (I,VIII,3), dated by Bloch to c. 145-150 AD (Bloch in SO I, 217; Lugli 1957, 611).

2) Terme del Foro (I,XII,6), dated to the Antonine period by Becatti; Bloch, while examining its brickstamps, confirmed this as the year c. 160 (Becatti in SO I, 145 and 237; Bloch in SO I, 217-218; Meiggs 1973, 411ff. and 548. See also Heres 1979, 38 and note 22; Heres 1982, cat. nr. 53).

3) Caseggiato degli Aurighi (III,X,1), dated by Bloch to the first years of the reign of Antoninus, during examination of the brickstamps from the 1938-1939 excavations (Bloch in SO I, 224).

4) Schola del Traiano (IV,V,15), dated by Bloch to 145-155 AD while examining the brickstamps from the 1938 and 1951 excavations (Bloch in SO I, 226; Becatti in SO I, 146. See also Heres 1982, cat. nr. 76).

5) Domus della Fortuna Annonaria (V,II,8) (see for its Antonine date Heres 1982, cat. nr. 80, and Heres in Boersma 1985, 47-58).

6) Terme dell'Invidioso (V,V,2) (Heres 1982, cat. nr. 81).

7) Caseggiato del Sole (V,VI,1), dated by Meiggs, by comparison, to the reign of Antoninus Pius (Meiggs 1973, 548).

8) Sede degli Augustali (V,VII,2), dated by Bloch to a period not earlier than Antoninus Pius, during his examination of its brickstamps from the 1939 excavation. Lugli dates it to the reign of Marcus Aurelius (Bloch in SO I, 227; Becatti in SO I, 141; Lugli 1957, 611. See also Heres 1982, cat. nr. 82).

¹⁹ The place where 2, north was set against the original Hadrianic north-west corner has been demolished, thus leaving a 0.30 wide passage.

²⁰ The presence of a drainage-channel might be assumed here. This may lead to a further assumption that a latrine was possibly installed in the stairwell, a not uncommon place for an Ostian privy. See on latrines and drainage-channels inside a building Jansen 1990.

Room 8, east and north-east

The wide doorway, assumed to be Hadrianic, was replaced and closed off by a brick facade containing two windows of slightly different width (plates 6, 10). The new facade is an entity with the north-east corner of the room and ends, or rather starts at a wide fissure in the Hadrianic north wall (plates 10, 11). The crack is also visible in the south wall of 9. The wall was set against the Hadrianic south-east corner of room 8.

Room 12, south-east and north-west

After a crack had appeared in the Hadrianic north wall, the remainder towards the north-west corner was replaced by a brick wall of a different material. The same masonry is present in the rest of this junction, which forms a constructional entity: the south-west corner of 13, the north-east corner of 21, and the south-east corner of 22.²¹

In the facade of 12 a brick pier was set in the south-east corner, obviously meant to separate the stairwell 9-10 from the room. Its masonry is identical with that in room 4, where a pier was built for a similar purpose (see above).

Rooms 15 and 16

A major rebuilding occurred in the south-west corner of the house. Here we can assume that an original unit may have been demolished in order to create the two small rooms 15 and 16 (plate 12). These have no connection with the rest of the house and may have been let out independently, presumably as two bars.²²

In 15 the east and south-east walls are part of the Hadrianic layout of the building. It is important to observe here, that the east wall is not laid out in line with the Hadrianic east wall of rooms 17-22, but projects c. 0.30 to the east. It is not correct however, to think of it as an independent construction, because, when observed from the south-west corner of room 3, both walls seem to be an entity. I can think of no reasonable explanation for this.

When one looks from the north-east corner of 15 a new (at a first glance almost identical) section of masonry can be observed. The corner itself has been cut off, but was restored recently. I am convinced however, that the Hadrianic structures of 15, east and 17, east were interrupted here, and replaced by new walls: 15, north was now set against, or rather in, the Hadrianic east walls of 17 and 15. More evidence is found high in the east wall of 25. There the north-west corner of 16 was undoubtedly set against the Hadrianic east wall of 25 (that is, 17, west). The sequence of construction is clearly evident, as the bare masonry core is still visible. It can be observed, with great difficulty, from the top of the outer east wall of the Caseggiato di Diana.

The other side of 15, north (that is, 17, south) contains similar masonry, which is striking because it contains exclusively black pozzolana.

Rooms 17-21

The Antonine rebuilding is here less conspicuous than in the front of the house: one of a pair of brick piers was presumably replaced against the east wall of rooms 17-18, while the Hadrianic south-west pier was preserved, as well as the north wall of 18. Whether the Antonine south-east pier of 18 does replace an original Hadrianic pier cannot now be verified (plate 16). I think however that it does, because its position and measurements are identical to the Hadrianic one in 18, south-west. Furthermore, it was set in a peculiar way in, and not merely against, the Hadrianic wall. As seen from 17 the pier is evidently set against the masonry of the east wall. In 18 however, a fissure is visible in the Hadrianic east wall just north of the pier, and the secondary

²¹ It is enigmatic how this junction of walls could be replaced at all without first removing the upper floor. The only possible conclusion is, that not sooner than the Antonine period one or more upper floors were installed in this part of the building.

²² Cf. Gnade 1982, 38-39 for a description of the rooms and their function.

masonry of the pier also extends up to the fissure. The result is a constructional entity of pier and adjoining wall-section in the south-east corner of room 18.

Rooms 19-21

Two pairs of secondary brick piers were set against the east and west walls of rooms 19-21 (plate 14). Only their southern sides are visible, because in a third phase (see below) large brick piers carrying arches enveloped them. Their visible masonry however is identical to the Antonine masonry described above.

Room 21, north

In the north-west corner the mixtum is regular, whereas above and east of the secondary doorway the wall seems to have sagged a little. I assume that this was caused by the insertion of the doorway, perhaps done without the help of a solid lintel. It was repaired afterwards in a rather clumsy Antonine reticulate extending through a large part of the upper wall. In the top of the wall the regular Hadrianic opus mixtum continues, without however the presence of brick bands.

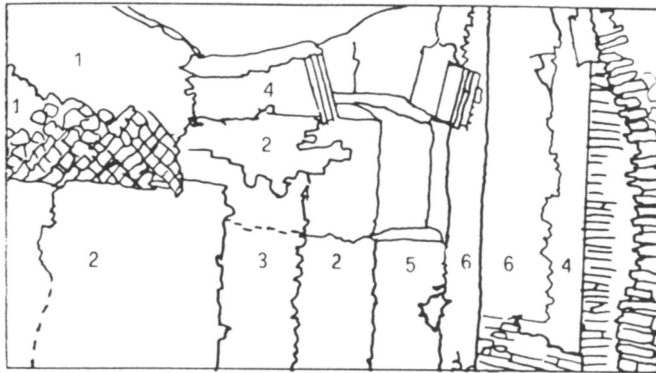


Figure 9. Cas. dei Molini, room 21, northeast corner.

1: Hadrianic reticulatum; 2: Severan brickwork; 3 and 5: two later-3rd century periods; 4: modern restoration; 6: Antonine brickwork.

Rooms 21 and 22, east

The entire Hadrianic junction of the north-south and east-west walls in 21-22, east was replaced by a new and undoubtedly Antonine wall, which can also be observed in rooms 12 and 13, west (see above). In 21-22 the Antonine replacement ends with a neat vertical joint, obviously the east jamb of a doorway (plate 17; figure 9).

Room 22, north and 23, south

Fragments of Antonine opus reticulatum mixtum appear in two non-corresponding sides. In both cases the Antonine repairs did not affect the opposite side. The masonry is intersected by two horizontal brick bands, each six bricks high; in the quoinings the bricks are five courses high. The masonry in 23, south seems to be connected with the possible blockage of a doorway in 22, north-west. In 22 north, the Antonine reticulate appears higher in the wall and on top of an early third century repair in brick.

Room 23, north

The Antonine reticulate here is a restoration extending from behind the west wall of the room, that is, from behind the original Hadrianic west wall. The wall was restored completely over a

considerable distance from the north-west.²³ However, how far this Antonine wall extended cannot be verified, since a brick wall later replaced its eastern section. The latter, constructed in the third century, contains a large number of reused Antonine bricks. It should be noted that in the facade of the room the Antonine masonry continues considerably further.

It is noteworthy also that the facade of the north wall was restored in reticulate. This would indicate that at that time the adjacent structure I,III,6 had been built and that this wall, being common between the Molini and I,III,6, was constructed as an inner wall. Moreover, in the north-east corner of 23 a small remnant of an Antonine wall was set against the Hadrianic north wall of 14.

I am inclined to think that - perhaps because of or due to damage during the building of I,III,6 - the whole outer north wall of 23 was removed. Subsequently it was replaced by an entirely Antonine wall, which was in turn partially replaced by third century masonry.

Room 24

The east wall is a part of the Antonine layout of room 16. It consists of reticulate with fields intersected by bands six bricks high. The south and west walls are an entity; they reinforce the outer east wall of the Caseggiato di Diana. The west wall was placed upon a plinth of red bipedales, now partially removed. Its masonry is strikingly similar to that of the Caseggiato di Diana.

In the east and west walls some holes were cut, near the present north wall of the room; they presumably served for the insertion of beams that closed off further entrance to the alley 25-29 before the Severan dividing walls in rooms 25 and 29 were built (plate 27).²⁴

Room 25

The west wall of room 24 extends for some distance into room 25. Adjacent to it the west wall appears as a wide pier projecting slightly into the room. In the north-west corner a pier built with similar masonry appears. Between them a long secondary brick wall was set at a considerably later date. The function of the two piers may have been to sustain the stairwell in the adjacent part of the Caseggiato di Diana.

Room 26, west

The wall is here a common wall with the Antonine Caseggiato di Diana (see above). A fissure north of a basin may indicate destruction and repair of the northern section of the outer wall of the Caseggiato di Diana.

Room 27, north-east

Two pairs of projecting brick piers (see below) and two basins or troughs interrupt the long corridor 26-29 (plate 26). The brick piers in 27 correspond with the Antonine piers in rooms 19-21. In contrast to these, the piers of the corridor were demolished and considerably restored in recent times. An exception is the north-east pier, the Antonine date of which is beyond question.

The function of the piers was undoubtedly that of a counterweight for the piers in 19-21, the outward pressure of which needed some sort of support in the long, open and uninterrupted corridor which was not structurally connected with the Caseggiato di Diana. The most

²³ Cf. catalogue, outer north wall, room 23.

²⁴ Cf. also Blake 1973, 174, where she remarks that the private alley, that is, the Angiporto di Silvano, could be barred to the public by closing the door on Via di Diana. I am not certain however, whether she means the present doorway in the north of 24 (I am convinced this is a third century structure), or rather refers to the holes in the east and west walls near the (later) third century north wall of 24.

endangered section was of course the wall behind the piers in 19-21.²⁵ The choice of this section is therefore testimony of careful building.

3C Staircases

Room 4

The staircase in this room was embedded in a Hadrianic north wall (plate 4). The south wall sustaining this staircase now consists of two parts: the western section is entirely a modern restoration, whereas the eastern part - a pier - is antique and consists of fairly mixed brick, mostly new material (see above). On the north side of the pier its masonry core is visible to some extent, as if a narrower wall has been cut away here. The date of the pier is evidently Antonine.

Room 9

This staircase was likewise partially imbedded in a Hadrianic wall, whereas its north and west walls are evidently from a later date (plates 6, 11). First, the north-east pier of the staircase, along Via dei Molini, consists of masonry very similar to the Antonine facade of room 8. The north wall of rooms 9 and 10 was set against it. Some similarity may be surmised in the positions of the staircases in 4 and 9:

- 1) In both cases an adjacent Hadrianic facade wall was perhaps replaced by an Antonine brick pier (respectively 4, south and 9, north).
- 2) The other dividing wall is in both rooms an L-shape, starting from a vertical wide fissure in the masonry (respectively 4, north, and 9, south). The fissure in 4 was repaired in Hadrianic masonry, whereas that in 9 was restored in the Antonine era.

3D Doorways

Room 3, west

The doorway to 17 was blocked in the Antonine period, while its west side was repaired on several occasions. In the north wall of the room an entrance was made to the stairwell (and possibly a latrine?) in room 5.

3E Windows

Room 8

The closed facade contains two windows, placed irregularly in the wall.

Room 26, west

The two windows in the east wall of the Caseggiato di Diana are evidence of the open character of this part of the corridor in the middle of the second century, since they admitted light from the corridor. Near the south-west corner a vertical drainage channel was built into the outer east wall.

3F Summary

The general plan of the building - if compared with the previous period - presents some irregularities. First, the series of wide and regular Hadrianic doorways to Via dei Molini was partially disrupted by the installation of two staircases (rooms 4 and 9) and by the closure of room 8, the entrance to which was turned into a closed facade, albeit with two fairly large

²⁵ The opposite wall, that is, 7-12 west, was likewise loaded. Here however the dividing walls of rooms 7-12 controlled the outward pressure.

windows.

Next, the regular inner division of the building was interrupted by the blockage of the doorways in 3 and 6, west, by the north wall in room 3, by the creation of rooms 15 and 16, and by the piers in 19-21.

In certain respects the new walls in 23 would have given the room the same exceptional place in the Molini as rooms 15-16: both are partially the fruit of an Antonine layout affecting the entire north-west and south-west of the structure, and both schemes originated from the erection of two thoroughly Antonine neighbours: the Caseggiato di Diana and building I,III,6.

In connection with the first the alley 24-29 was now narrowed at its south end by a second wall, by the two projecting piers in 25, and in its centre (room 27) spanned by arches resting upon two pairs of piers, the construction of which I surmise was originally Antonine.

§ 4 The Severan period: 193-211 AD

4A General

The highly characteristic brickwork of Septimius Severus is found only in some Ostian public buildings, e.g. in the second major building period of the Theatre.²⁶ It has not been observed in the Caseggiato dei Molini. Therefore it is important to emphasize that, in the eyes of the Ostian authorities in charge of building, the structure in question was presumably not regarded as a public building.

However, the masonry in the Molini dated to the Severan dynasty (c. 190-235 AD) is easily recognizable as such, and can be divided into two characteristic groups. The first group comprises masonry which I prefer to date to the reign of Septimius Severus, 193-211 AD.

4B Staircase and inner walls

1 Staircase 9-10, north and west

A masonry stairwell was constructed in the south-east corner of room 12 and set against the Antonine east wall-sections (see above; plates 6, 11). The Antonine staircase must have been a wooden construction and was, some forty years later, replaced by a solid masonry one, in which case of course a loadbearing north wall was required. The staircase itself has been completely removed or destroyed, and has left only traces of its construction in the south wall of room 9. In the outer north-west corner of the stairwell a wall extended into room 12; it was later demolished and its function is uncertain.

2 Room 11, north-west

The Severan masonry in the north-west corner of room 11 is a heavy brick pier carrying an arch in bipedales. The arch originally formed an entity with the north-west corner of the stairwell; it is now mainly a modern restoration. One may assume that it sustained the second floor of the stairwell. Room 11 originally connected to 8 by means of a doorway.

3 Rooms 19-21, arches

The characteristic Severan masonry appears in four heavy brick piers (plate 14). They partially envelop the smaller brick piers that had been placed there in the Antonine period. The dimensions of the new piers are considerably greater. The masonry is very different from that in the smaller piers. The heavy piers carry arches spanning the rooms in east-west direction and

²⁶ See SO I, 151. Cf. for the dedicatory inscription: CIL XIV, 114. The Severan brickstamps have been discussed by Bloch in SO I, 221.

faced with regular and well-formed bipedales. Three of the arches thus observed are equal in dimensions, whereas the north-eastern one projects further into the room. This does not seem to have affected the general plan. A possible motive for its larger size may have been the installation of a concrete basin against its northern side (plate 15).

4 Room 21, north

The same characteristic masonry appears here in two repairs within a very complicated facade. While the original wall, given its western section, had been constructed in the Hadrianic period and in opus reticulatum mixtum, east of the secondary doorway the Severan masonry is used. Next, it reappears as the west section of a bricked-up doorway. The other side - room 22, south - presents the same characteristics (plate 21).

4C Doorways and windows

5 Rooms 8 and 11

The doorway between 8 and the new room 11 was now blocked in mixed material (plate 9). Simultaneously a window was inserted in the wall, and although this is difficult to date with any certainty, in my opinion a window of such size would be installed only if the adjacent, considerably wider, doorway had been blocked.

6 Rooms 9 and 10

The north and west Severan walls form a stairwell in which a narrow doorway was opened into room 12, supported by a vanished lintel and an arch made of irregularly placed bipedales. Subsequently the voussoirs of the arch were partially cut off in order to make way for the staircase. It is uncommon to find a doorway of this modest width covered by a lintel and a brick arch, the latter being not of small-size bricks but the most expensive type, the bipedalis, where one would rather expect a simple wooden or stone lintel.²⁷ As a matter of fact the very size of the voussoirs necessitated the builders to demolish part of them in order to pour the concrete sloping vault carrying the staircase.

4D Summary

A fundamental change took place in the building during the reign of Septimius Severus. This was the installation of the stairwell in rooms 9-10, because it entailed a division of room 12 into separate small units and necessitated the installation of the heavy brick piers in rooms 19-21.

First, a proper stairwell was created, leading to room 12 by means of a narrow doorway. Second, the remaining area in the south of room 12 was turned into a separate room 11. The independent character of the latter room was emphasized by the blockage of the doorway to room 8, and by the presence of an arch, now partially demolished, placed over its north side, resting on a pier and the stairwell. Third, from the north wall of the stairwell a short side wall, now completely vanished, separated the back of room 12, and therefore the entrance to 11, from the front of the room and the main street. Room 11 was illuminated by the opening in its south wall of a window with an oblique course (SW-NE), presumably in order to catch a maximum of sunlight, already scarce after blocking the doorway to 8.

The considerable strengthening of the Antonine brick piers in rooms 19-21 by enveloping them with heavier brick piers was most likely necessitated by the wish to cast a new second floor after the installation of the masonry staircase in 9. The top of the new arches indicates that the ceiling in rooms 19-21 may have reached double height.

Less radical is the Severan (partial) restoration of the north wall of 21, because it was built

²⁷ See also Packer 1971, 21ff.

upon an older brick base, and below and beside Hadrianic and partially Antonine masonry. If a new floor was being laid on top of the arches in 19-21, then the simultaneous partial repair of the north wall did not cause any constructional problems.

§ 5 The late-Severan period: 210-235 AD

5A General

Several walls and piers in the building are datable to the second and third decades of the third century. They are easily distinguishable from the earlier Severan masonry described above. A more specific date than the years 210-235 AD cannot be attributed to them. They fall into five groups, each characterized by the use of a specific and distinct masonry:

- a. Two series of three loadbearing piers with arches, and the narrowing of two entrances, in rooms 6, 7, and 13.
- b. Four heavy loadbearing piers with arches, and an intermediate wall, in room 17.
- c. Two secondary walls in rooms 25, and walls carrying a new barrel-vault in room 29.
- d. A partially blocked doorway in room 17, west.
- e. Two series of five heavy brick piers along the east and west sides of Via dei Molini.

5B Inner walls and piers on Via dei Molini

a Rooms 6, 7 and 13

A series of three brick piers varying in width and depth was built against the Hadrianic north wall of 6 and its other side in 7, south. The masonry of the piers is identical in both rooms. It resembles masonry found elsewhere in Ostia, dated to c. 230 AD.²⁸ In the Molini I surmise that it may be dated a few years earlier. The piers carry heavy brick arches lying flat against the walls. The voussoirs, like those of the somewhat earlier arches in 19-21, consisted of bipedales, as can be deduced from the traces in room 7, south-west.

The beamholes visible in 7, south were inserted into the original wall; some of the holes seem to have been filled-in. Obviously the height of the top of the new arches made the beams superfluous.

In the Hadrianic facade of room 6 high narrow brick piers were erected, thus considerably narrowing its entrance. Their masonry is somewhat less regular if compared with the adjacent Hadrianic brickwork, and similar to that of the piers inside the room. In the north-east corner of 6 the heavy pier of the north wall seems to have been set against the presumed contemporaneous east pier.

In room 7 a similar situation occurs: a low wall (often repaired) was erected against the Hadrianic facade; the restorations took place in at least two different periods and are very difficult to distinguish. Against this wall the heavy south-east pier in room 7 was placed.

In the north wall of room 13 a doorway was filled in with brick laid in rather irregular courses, while in the facade the wide doorway was narrowed by a brick wall.

b Room 17, north and south

Three heavy brick piers were set in the south-east and south-west corners of room 17, that is, against the Hadrianic and Antonine walls of the room (plate 13). As in rooms 6 and 7 the piers here likewise carry arches lying flat against the south wall. In room 17 the piers are thicker than the arches and thus project into the room. The arches have often been restored; however at the

²⁸ See for instance the second building period in the Domus delle Colonne (IV,III,1), cf. Heres 1986 and the chronological list in Heres 1982, 85, with relevant dated and non-dated buildings in Ostia between c. 200-250 AD.

base some original thin, red bipedales can be observed. Between the piers and against the south wall a sustaining wall was placed; it is only partially preserved. Its masonry and that of the piers are identical. A low bench was set before and against the sustaining wall; its function is not clear as it is only partially preserved.

The division between rooms 17 and 18, until now only indicated by the second century brick piers in the east and west walls, was emphasized by the construction of a central heavy brick pier; its masonry corresponds with the piers set against the south wall.

c Rooms 25 and 29

In room 25 (the Sacello di Silvano) the original Antonine west wall, common with the adjacent Caseggiato di Diana, was reinforced by a second brick wall. The Antonine wall projects with two piers into room 25; the secondary wall was placed between them. This is confirmed by the position of two putlogholes, respectively near the north and the south end of the new wall. They can only have safely held scaffolding in the masonry if the flanking piers were already there. The masonry of the secondary wall is of an early third century date and is very similar to that in other Ostian buildings.²⁹

Van Essen already discussed the date of the secondary west wall of the Sacello di Silvano. He explains the secondary wall by the installation of a second floor in the Caseggiato di Diana and dates both to the age of Marcus Aurelius. No motivation however was given for this earlier date; his conclusion was based upon a discussion of the wall paintings in the Sacello, and in Ostia in general.³⁰

The secondary north wall of 25 was placed against the northern Antonine pier in the west wall. Its masonry possibly is contemporary with that of the new west wall; humidity however prevented further conclusions. This north wall partially closed off the corridor running west of the building, leaving open only a doorway.

Finally, in the east wall of 25 a doorway to room 17 was now partially blocked.³¹ In it two slit-windows were left open; from their shape one may deduce that they transmitted the light coming from corridor 25 to room 17.

In the north-west corner of the building lot, between the Hadrianic Caseggiato dei Molini and the Antonine Caseggiato di Diana, the long corridor, now known as the Angiporto del Silvano, had been left open. It connected the Via di Diana and the left bank of the Tiber, presumably only for local traffic. North of the Caseggiato di Diana and north-west of the Caseggiato dei Molini it formed a small "piazzetta" of c. 8 x 7.80. From there it continued, with a small bend and considerably wider, between the back walls of the Caseggiato del Mitreo di Menandro (I,III,5) and commercial building I,III,6, and ran from there towards the river.³²

Walls of identical masonry to that used for the secondary wall in room 25 now closed off the north end of the corridor behind room 23. Next, the whole section 29 of the corridor was covered with a long and narrow barrel-vault, now demolished, which had been set into the original Hadrianic east wall of 29 (plate 28). The need for a barrel-vault presumably led to the construction of the west and south walls of 29; to simply block the corridor a short north and west wall would have sufficed.

As a consequence of the blockage of 29, north, the northern part of the existing street, running southward from the bank of the Tiber, lost its thoroughfare character. One mansion, the Caseggiato del Mitreo di Menandro (I,III,5), took advantage of this when its owner had a

²⁹ E.g. Caseggiato V,II,11, Caseggiato V,II,12, and the Caseggiato del Pozzo (V,II,13). Their brickwork was dated to the late-Severan period, that is 210-235 AD, by Becatti in SO I, 238. See for a discussion of their date: Heres in Boersma 1985, 62-69.

³⁰ Van Essen 1954, 37-38 and 47.

³¹ This doorway is hardly distinguishable as such, because plaster and painting cover the greater part.

³² All structures lying to the north have long ago been obliterated by the meandering course of the water.

mithraeum installed in the “street”.³³

There is no connection in material or building techniques between the masonry blocking the Angiporto del Silvano in rooms 25 and 29, and the walls of the *mithraeum*. Examining the materials and techniques employed, I presume that the *mithraeum* was built only after the corridor behind the Caseggiato dei Molini had been blocked, and not earlier than the third quarter of the third century.

d Room 17, west

Finally, apart from the late-Severan masonry described so far, but distinctly belonging to the same era, the doorway in room 17, west was completely filled in. The west side of the doorway had been blocked perhaps a few years earlier; in it two slit-windows had been installed (see above). This did not extend to the full thickness of the wall, and at the side of room 17 a shallow niche must have been left open. The new masonry filled this niche and blocked the windows completely.³⁴

The masonry is different to that in the first blockage, although the lapse in time may be small. The filling is executed with mixed materials, which makes dating difficult. Since it is not loadbearing, one might expect that the masons would not select the materials too carefully. A closer inspection of the bricks and the mortar on the other hand reveals that the work was executed with care.

e Brick piers along Via dei Molini

In the first decades of the third century two series of five piers were placed against the facades of the Caseggiato dei Molini and the opposite Grandi Horrea (II,IX,7) (plates 1-3).³⁵ Most of the piers have been heavily restored; where the original masonry could be observed, it was uniform. They were erected against the Hadrianic masonry in the outer east wall of the Molini. Although this does not preclude an earlier construction date than the third century, their masonry is evidence of the latter date, as it is very similar to the other early third century piers in the Molini.

On the opposite side of the street they rest in all cases against the earliest phase of the Grandi Horrea, that is, the opus quadratum in tufa of the Claudian age with its characteristic “bugnato rustico”.³⁶ Their relation to the secondary masonry of the Horrea, dated by Calza to the Severan era, cannot easily be established. It is my opinion however that the Severan north-west outer brick masonry of the Horrea was set against the piers. A very short period may however have elapsed between the construction of this secondary wall and of the piers.³⁷ The function of the piers can only have been to support arches spanning Via dei Molini.

5C Summary

The late-Severan piers support arches for new floors given the situation in rooms 6, 7, and 17. Although their masonry is distinct from each other and from that of the previous Severan

³³ Cf. Becatti 1954, 17-21. The installation of the *mithraeum* had a very simple and non-bearing character: two only 0.20-0.25 wide walls were erected in opus vittatum B, very little of which has been preserved (largely modern). Some rather well cut oblong tufa blocks can be observed where the side walls were set against previous constructions. As an entrance to the *mithraeum* a doorway was opened in the east (= back) wall of the Caseggiato del Mitreo di Menandro.

³⁴ It was not possible to take any measurements of the depth.

³⁵ See for a general history of these horrea: Calza 1921; SO I, 118 and passim; Meiggs 1973, 132 and passim; Rickman 1971, 43-54 and passim.

³⁶ See for a description of the Claudian masonry: Calza 1921, 363 and 366ff.

³⁷ The Severan brick wall of the Horrea disappears behind the most northern pier. The masonry emerging from behind the pier and continuing in a southern direction is however the typical Claudian opus quadratum. Calza (1921, 379 and passim) does not mention the relation between the two walls and the brick pier. From his plan (fig. 1 on p. 361) the situation is not clear either.

construction in the building, these and the older Severan loadbearing elements - piers, arches, walls - are all connected with the installation of staircases and upper floors. The nature of the work may have led to a division of the (re) building project into separate phases and tasks. This raises the possibility of independent activities both in time and/or in crew. It is my opinion however that both the Severan alterations in rooms 9-12 and 19-21 and the late-Severan ones in rooms 6, 7 and 17, should be regarded as belonging to one major reconstruction in the Molini.

As far as the non-loadbearing structures are concerned, the blockage of the doorway between rooms 13 and 14, and the partial blockage of the facade in rooms 6, 7, and 13 mean that several parts of the building became independent units.

The late-Severan walls completely changed the character of the Angiporto del Silvano. In the south, room 25 was created. The construction of a second west wall, set between the two projecting Antonine piers, may have been caused by a desire to have a flat and continuous surface for the wallpaintings. The presence of the wall decoration implies that the room was, at least from then on, covered. Its separate character was even more emphasized by blocking the doorway to 17; although at the same time two slit-windows were left open. It is interesting to consider the function of these windows: the undeniable fact that their wide side is placed in 25 suggests that the light came from there and was supposed to illuminate room 17. If on the other hand the late-Severan date of the windows is correct, hardly any light can have reached room 17 at all.

The north section of the Angiporto was closed off by the construction of three brick walls forming an entity and creating room 29. The implication of this blockage for the layout of the whole block and the circulation of the traffic has been discussed above. The new room 29 stands apart because of the installation of a concrete barrel-vault. Reason for the cover may have been the presence of openings leading to the furnace in room 23. Although there are no indications whatsoever about the date of the furnace, I surmise that its logical consequence would have been the installation of a ceiling (plates 22-25).

Finally, although the heavy brick piers on both sides of Via dei Molini did not structurally affect the building, they may point to a combination of the interests of the Molini and the opposite Grandi Horrea.³⁸

§ 6 The second half of the third century

6A General

The building activities that took place in the Caseggiato dei Molini after the middle of the third century were not a large-scale intervention like those of the previous periods. They are mainly of a secondary nature, that is, the (partial) blockage of doorways. An exception is room 23 where major work was carried out.

6B Inner walls

Room 6, east and south

In the facade of room 6 the wide doorway to Via dei Molini was now further narrowed, while in the south wall the west side of the doorway to room 5 was blocked.

³⁸ I gratefully acknowledge my debt to Professor Geoffrey Rickman, Dept. of Ancient History, University of S. Andrews-Fife (Scotland), who in the summer of 1988 kindly discussed with me the function of the Grandi Horrea and their possible relation to the Caseggiato dei Molini.

Room 7

The facade was now further narrowed by a wall, the construction of which is in two phases and partially modern; another opening to room 8 was blocked in irregular brickwork.

Room 13, east and west

The wide entrance on Via dei Molini had been blocked in a previous phase; the remaining aperture was now closed completely by a wall in mixed material. The opposite doorway to room 22 was narrowed at the south side; the bricks employed in the opus vittatum are similar to those in the east wall of the room, where the facade was partially blocked (plate 19).

Room 15

Against the east wall a low staircase consisting of five now no longer visible steps was placed.³⁹ Its masonry consists of opus vittatum, the date of which cannot be ascertained in view of the poor quality and scarce remains of the masonry.

Rooms 18-20, west

The south jamb of the doorway to 26 was restored in brick. Also, at a further unestablished moment in the second half of the third century, the connection between the Angiporto del Silvano (corridor 26-28) and the bakery was restricted by the blockage of 19 and 20, west. In corridor 27 a thin secondary layer of brick was erected against the east wall, simultaneously with a restored brick pier in the south-east corner of 27.

Room 23

At a further unknown date the west wall of 23, the east wall of 29, and the jambs of the passage between the rooms were enveloped by thin brick walls. In the east part of the north wall the original structure was skinned to the core. A secondary brick wall was set against it; reused yellow Antonine bricks abound. In the north-east corner the wall was partially demolished.

In the west part of the secondary north wall is an opening that, as can be observed from the outer facade, was not a window but possibly a chimney for the furnace.

§ 7 The destruction of the Caseggiato Dei Molini

At some time during the last decades of the third century the entire building was devastated by a large fire that, according to the excavators, had left many traces on the wall-paintings, mosaics, coins, and bronze objects found in the building.⁴⁰ The year in which this calamity took place can more or less be established through a group of coins found in the complex; the latest emission is one of the Emperor Probus (276-282 AD).⁴¹ Additionally none of the walls in the building, loadbearing or not, are datable to the age of the Tetrarchs or later, as I have tried to prove.⁴² Therefore in or about the year 280 AD the edifice was destroyed. The structure of the Molini was neither rebuilt after the fire, nor were the ruins ever properly cleared away.⁴³

³⁹ Cf. Gnade 1982, 39.

⁴⁰ Cf. Calza 1915(1), 249.

⁴¹ See for the complete list: Calza 1915(1), 249, who mentions 38 coins, among which 21 recognizable: 2 coins from the first century AD, 8 from the second, and 11 from the third century. Cf. Vaglieri 1908(1), 249: "... Nell'occasione dei restauri fatti nei locali dei molini, movendosi uno dei poligoni del selciato si raccolsero tredici monete ..." , and 336: "... presso i mulini (*sic*) monete di Adriano, M. Aurelio, Gordiano e altre monete irricognoscibili ...".

⁴² The only example of Tetrarchic building activity in Ostia is found in the Domus del Tempio Rotondo (I,XI,2) (Heres 1982, 378ff., cat. nr. 50 and p. 96ff.).

⁴³ Calza 1915(1), 249. Compare Meiggs 1973, 85.

Calza wrote (somewhat astounded, at a moment when most of the town's area still had to be excavated and studied): "... pezzi di muri caduti sulla strada sono stati ivi lasciati e si è camminato sopra un forte battuto di terra da cui vennero ricoperti. Ciò indica che alla fine del III sec., ..., c'era in Ostia la possibilità di occupare altre aree ed altri edifici senza di curarsi di ripristinare i vecchi ...".

Part II

The history of the excavations

Jan Theo Bakker

The excavations of the Caseggiato dei Molini were completed in the years 1913-1916, by Raffaele Finelli and Guido Calza. Calza talks of earlier excavations around 1860 (without mentioning his source), in his excavation-report in the *Notizie degli Scavi*.¹ Finelli, who wrote the field-notes (*Giornale degli Scavi*), reports excavations before 1870 by Carlo Ludovico Visconti, and activities in the years 1867, 1869 and 1870 (March 14th).² He too does not mention a source. Dante Vaglieri also mentions excavations in 1870.³

It is certain that the building was investigated around March 14th 1870. Rodolfo Lanciani mentions the find on this date of water pipes in the Casa di Aquilina and below the Strada delle Pistrine. The house and the street are today known as the Caseggiato dei Molini and the street to the east, the Via dei Molini, as can be deduced from an accompanying plan (figure 10).⁴ Finelli knew this plan, which was published in 1880. It shows: the west half of Via dei Molini in front of rooms 1-12; rooms 1, 3-12, 13 (west half), 21 and 22. No millstones or kneading-machines can be seen, but the name of the street (Strada delle Pistrine) leaves no doubt that these had been found. The situation before the 1913-1916 excavations can also be seen on a plan drawn by Paschetto and published in 1912 (figure 11).⁵ This is an inaccurate sketch, but the following part seems to have been excavated: the west part of rooms 7, 8, 11, 12 and 13; rooms 19-23 (with millstones in 19-21; 22 and 23 are shown as one room), 28 and 29; an oven in the south-east part of the Caseggiato del Mitreo di Menandro (I,III,5).⁶

The excavations in Ostia were in the years 1855-1870 financed by pope Pius IX.⁷ Around March 14th 1870 only one building was apparently being investigated. The excavations had begun in December 1869 and lasted until June 1870.⁸ I have found the following short reports. There is first of all a letter written by Visconti to the Principe Runa, dated March 8th 1870.⁹ Visconti describes an investigation to the east of the Capitolium, at a distance of about 100

¹ Calza 1915(1), 242.

² GdS 1913, 112; 1914, 154, 157; 1915, 87; 1916, 97. The *Giornale degli Scavi* can be consulted in the offices of the Soprintendenza in Ostia. The pages on the Molini are: GdS 1913, 112-113, 126, 130-131; 1914, 154-158, 161-163, 165-176, 228-230, 234, 247-249; 1915, 87-101, 163-188; 1916, 93-94, 96-97. Finelli was known for his accuracy in writing reports (Pigorini 1899, 1130) and in our view lived up to his reputation during the excavation of the Molini.

³ Vaglieri 1913(2), 184.

⁴ Lanciani 1880, 197-198, Tav. X, 4, 5, 7. The name Casa di Aquilina was for some time given to the building on the basis of an inscription on a lead water pipe. The pipe however was made in the workshop of Iulia Aquilina. On this workshop: Barbieri 1953, nr. 38; fig. 6, 38-38. A date in the later third century has been suggested on the basis of the shape of the letters (Barbieri 1953, 174).

⁵ Paschetto 1912, 344 fig. 90.

⁶ This oven can also be seen on fig. 17 in SO I. Part of it, made of large tufa blocks, is still preserved. A fragment of the Fasti was found nearby (Calza 1917(1), 180; CIL XIV S, 4535; CIL XIV S II, p. 845). Calza must refer to this oven and not to the one in the Molini, because in 1917 he would surely have stated explicitly that the furnace was in the Molini.

⁷ On these excavations, conducted by P.E. Visconti, and on the reports: Calza 1916(2), 161-172.

⁸ Paschetto 1912, 558-559.

⁹ To be consulted in the offices of the Soprintendenza in Ostia.

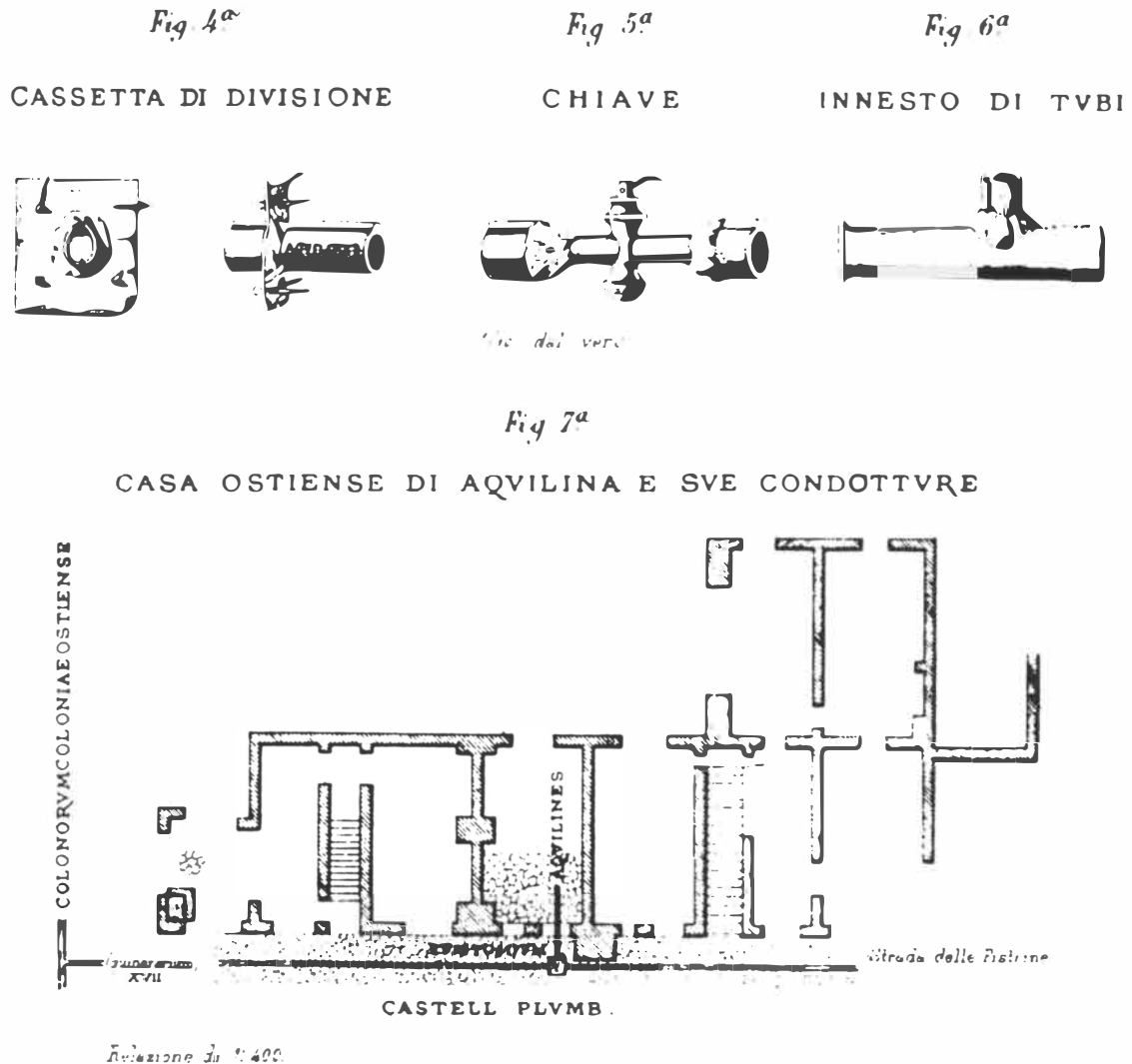


Figure 10. Plan of the Cas. dei Molini and drawings of lead pipes, from Lanciani 1880.

metres, and at a similar distance from the Tiber. A building is being excavated 30 metres long and 14 wide. It showed many traces of fire. After the fire it had not been searched. The next report is in the *Giornale di Roma*, March 15th 1870. We learn that Pietro Ercole Visconti is directing the excavation. Next comes a letter by P.E. Visconti to cardinal G.E. Berardi, dated April 5th 1870.¹⁰ Two more reports can be found in the *Giornale di Roma*, of May 16th and June 3rd. In the latter we read that the excavation has been ended for the season. The “extraordinary sequence of large and well-decorated rooms” is left partly unexcavated. Still in 1870 De Rossi described some of the lamps found during the excavation.¹¹ The first paragraph of his article is: “Grande rumore giustamente ha levato la rara e fortunata scoperta, avvenuta negli scorsi mesi in Ostia, d’un ricco tesoro di statuette in bronzo e di utensili varii, con due preziosi anelli d’oro, e grande numero di monete imperiali, accumulato dentro le stanze ed il cavedio d’una casa romana”. De Rossi then describes the results of the investigation, using notes that were sent to

¹⁰ To be consulted in the offices of the Soprintendenza in Ostia.

¹¹ De Rossi 1870.

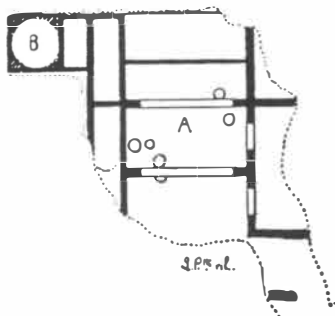


Figure 11. Plan of the Cas. dei Molini, from Paschetto 1912.

results of the 1870 and 1913-1916 excavations (traces of fire; building left as it was; coins dating the destruction to the end of the third century). No other excavations were to my knowledge carried out in the building between 1855 and 1913.¹³ However, the plans published by Lanciani and Paschetto overlap only partly. If we assume, as I think we must, that Paschetto's sketch shows rooms excavated in 1870, then we must conclude that more rooms had been excavated in that year than is indicated on Lanciani's plan. Presumably a number of rooms had been filled with earth before Paschetto drew his plan, a practice not uncommon in the 19th century.

Room 25, the Sacello del Silvano, must have been investigated in 1870 as well. In the *Giornale di Roma* of May 16th the find is reported of a painting of Silvanus. De Rossi describes it as well. It was a large painting of Silvanus "with the usual attributes", found "near the entrance" to the building. On it *EX VISO* was read, written with large purple letters. It had a graffito with a date, "possibly from the time of Maximian". In 1887 the words *EX VISO* were published in the CIL by Dessau, who remarks that the painting can no longer be found, and that not even C.L. Visconti and Lanciani, who had been present at the excavations at the time, knew anything about it.¹⁴ Now on a painting of Silvanus found in the Sacello during the First World War a graffito with the consular date 215 AD was found by Wirth in 1928. It is hard to believe that the building had two paintings of Silvanus with a date.

The description of the place of discovery of the painting does not obstruct the identification: Finelli, who conducted the excavations for Calza, regards room 24, to the south of the Sacello, as the main entrance to the building.¹⁵ The words *EX VISO* were never seen again, but they can easily have disappeared if they had been applied "dry". The disappearance of the painting could be due to the filling of the room with earth after the excavation.

A further problem is that in 1914 a layer was found in the Sacello described as "incendio o materiale incendiato", of varying height, with an average height of one metre. In this layer a large number of objects was found, mainly fragments of utensils and tools, and a marble statuette of a Lar. The statuette was found between the altar and the large niche in the south wall of the Sacello. The other finds were, according to Calza, made near the entrance of the shrine.¹⁶ Now the Visconti's did not work with the accuracy of modern times, but they will not have missed the statuette. And what is more, the statuette, with a preserved height of 37 centimetres, was found at

¹² Meiggs 1973, 108-109; Paschetto 1912, 560-563.

¹³ 1855-1870: Paschetto 1912, 537-559. 1870-1913: Paschetto 1912, 560-563; Perhaps some restorations were carried out in 1908 (Vaglieri 1908(1), 249; Vaglieri 1908(2), 336; Paschetto 1912, 343-344).

¹⁴ CIL XIV, 54. Cf. Bulard 1923, 475.

¹⁵ GdS 1915, 170-171.

¹⁶ Calza 1915(1), 250.

a distance of only approximately 80 centimetres from the painting of Silvanus, at a height of approximately one metre, that is some 25 centimetres above the bottom of the painting. If the painting was found, how could the statuette have been overlooked? But the story becomes more complicated.

In 1909 Lanciani wrote: "In the excavations of 1858 led by Visconti a house was discovered in the "Strada delle Pistrine", in the lararium of which some fifty bronze and silver statuettes of domestic gods were lying partly on the steps of the altar, partly on the floor".¹⁷ In the survey of the 1855-1870 excavations compiled by Paschetto there is nothing that concurs even vaguely with this description.¹⁸ C.C. van Essen has suggested that the Sacello del Silvano is meant here.¹⁹ There are two arguments in favour of the identification. First of all the location of the shrine, on the Strada delle Pistrine (Via dei Molini): I know of no other large private shrine along this road. Secondly the nature of the find: apparently the shrine was suddenly destroyed and left as it was, which concurs with the fire which destroyed the Caseggiato dei Molini.

However, the words "on the steps of the altar" do not seem to refer to the Sacello, because there a simple, rectangular altar may be seen. The answer to this problem lies perhaps in Finelli's remark "tutta l'ara ... fu anche rialzata più tardi facendovi sopra una costruzione molto andante".²⁰ A second problem is of course that the find of the statuettes is not mentioned in the reports from 1870. Here 14 statuettes from the building are mentioned, all found before April 5th, whereas the painting is mentioned for the first time on May 16th (we do not learn where and in what context the statuettes were found). Why is Lanciani the only one to report this spectacular find, why does he do so at such a late date, and why does he mention the year 1858?

The answer probably partly lies in a theft. It is hinted at by Finelli, who says that the first excavators were "scavatori poco scrupolosi e gli oggetti rinvenuti non tutti raggiunsero i musei papalini".²¹ J. Carcopino goes into more detail: "Une circonstance qui ne dut pas engager C.L. Visconti à donner à ses fouilles dans ses parages une trop bruyante publicité, ce fut l'affaire G..... A 83 m. à l'Est de l'angle Est du temple, et à 21 m. au Sud «fra gli avanzi di edificio privato incominciati a scavare sul principio di quell'anno (1870) ... si rinvenne una quantità prodigiosa di sculture figurate ed ornamenti in bronzo quasi che una o più delle officine tornate in luce avessero appartenuto ad un fonditore di metalli. Molti di questi piccoli oggetti d'arte furono involati (G.....) e venduti a Napoli» (Notes Lanciani). Ce surveillant indélicat est nommé en toutes lettres dans les notes de M. Lanciani: il se déroba, par la fuite, aux poursuites judiciaires".²² Lanciani clearly refers to the Molini (21 metres to the south of the (north-) eastern corner of "the temple" (the Capitolium) must be to the north; the mention of workshops should be noted). The theft furnishes an explanation for a gap in the reports. All finds had been reported on April 5th. Next the painting of Silvanus is mentioned for the first time on May 16th. Then the end of the investigations is reported on June 3rd. The gap may be the result of the avoiding of a "trop bruyante publicité".

The available data does not allow a reconstruction of what exactly happened in the Sacello del Silvano in 1870. We may wonder for example whether illegal excavations took place. Nevertheless, the arguments for thinking that the Sacello was excavated, and that the painting of Silvanus and a large number of statuettes were found are, in my view, sound.

Thus the rooms excavated in 1870 would be those indicated on the two plans, to which room 25, the Sacello del Silvano, is to be added: 1, 3-12, 13 (west half), 19-23, 25, and 28-29. Room 23 however, that is found on Paschetto's plan only, must be dropped. On the plan from 1912

¹⁷ Lanciani 1909, 59.

¹⁸ Paschetto 1912, 537-559.

¹⁹ In "A Brief Description of Ostia", unpublished manuscript, to be consulted in the Istituto Olandese in Rome.

²⁰ GdS 1914, 166.

²¹ GdS 1915, 172.

²² Carcopino 1910, 403-404 n. 4. I have not been able to find Lanciani's notes.

rooms 22 and 23 are shown as one room. In his short description of the bakery Paschetto mentions the kneading-machines in 22, but not the oven in 23, which suggests that the latter room had not been (fully) excavated.²³ According to Paschetto's plan then, the west end of rooms 7, 8, 11, 12 and 13, and rooms 19north, 20-22, 28 and 29 were empty in 1912, whereas the rest of the building was filled with earth.

The excavation was continued in 1913. Unfortunately Finelli furnishes little information about the rooms which were empty at the outset of his excavation and about the nature of the layers he found. The few details he offers confirm the reconstruction of the earlier excavations offered above.²⁴

The west half of Via dei Molini was unearthed first. The east half was left buried, so that trolleys for the disposal of earth could pass. The excavation of the street was finished in 1916.²⁵ The east part of Via di Diana was excavated in 1914. As to the interior of the building, in 1913 Finelli started in the south-east part. Rooms 1-3 and later the remainder of 7 were unearthed (there is no report of 4-6; 4 and 5 are not numbered separately by Finelli). Next he proceeded towards the west, in the south part of 19. Then excavations started in the south-west part of the building. Rooms 24, 25, 17 and 18 were investigated. In 1915 work was continued in two places. Rooms 9-13 (there is no report of 8), a remaining part of 19south, and rooms 26 and 27 were investigated. Room 15 was next (I found no report of 16). Finally rooms 14 and 23 were excavated. The height of the destruction-layer was in room 15 one to one-and-a-half metres, in room 24 approximately three metres.

At some point in time after 1916 the east half of 17 was further excavated, in search of the Castrum wall. In the 1990's the building was cleaned. Some structures became visible again and some modest further excavation took place. This work, especially in rooms 13-17, 23, and 24, was carried out under the direction of dr. A. Marinucci.

The finds from 1870 were taken to the Vatican.²⁶ All coins found in 1913-1916 were taken to the Museo Nazionale Romano.²⁷ I located a small part of the other finds from the final excavation in the museum and storerooms in Ostia. Part of the finds from these years was stolen in 1959. Sometimes Finelli remarks that metal objects have been preserved so badly that nothing can stop them from disintegrating. A large number of finds however seems to have disappeared into thin air.

²³ Paschetto 1912, 343-344.

²⁴ See the description of the rooms in the catalogue, item E.

²⁵ Finelli says that the water pipe described by Lanciani in 1880 "fu trovato sotto e in fra più strati di terra battuti e che dagli scavatori dell'epoca furono creduti il pavimento della strada, strati che si trovano più alti di in media di m. 2,20" (*sic*). I do not think he is right, because the basalt blocks of the street are indicated on the 1880-plan, and because a missing stretch of basalt blocks corresponding with the position of the water pipe can still be seen.

²⁶ On P.E. Visconti's letter to cardinal Berardi the latter has written that the finds were to be exhibited in the Lateran Museum.

²⁷ This is recorded next to each entry in the *Giornale degli Scavi*.

Part III

Interpretation

Jan Theo Bakker

§ 1 The early building periods

1A The Hadrianic building period: ground floor

The earliest masonry in the building (figures 8a-b, 12a-b) is Hadrianic (117-138 AD), with two exceptions.¹ In a trench dug in the east part of room 17 a short stretch of the Castrum wall - belonging to the oldest settlement on the site of Ostia - and a small part of an Augustan wall were found.² The outer north, east and south walls were erected in opus latericium, the outer west wall and the interior walls in opus mixtum. This means that the outer west wall was not regarded as an outer wall, indicating the presence of a building to the west.³

The thickness of the Hadrianic and almost all other walls is approximately 0.59, two feet of 0.296.⁴ In the east half of the building eight rooms can be recognized: 1-2, 3-5, 6, 7, 8, 9-12, 13 and 14 (figure 13). Except for 1-2 and 14 they are 18 feet wide (c. 5.33). Room 1-2 is 15 feet wide, room 14 17 feet. With the exception of the same two rooms they are 30 feet long (c. 8.88). The length of room 1-2 is a little under 30 feet, because its west wall has, for some reason, been set a little further to the east than the other west walls. Room 14 probably originally had a length of 30 feet. It is now longer because of a later rebuilding of its west wall. The west half of the building had at least six rooms: 17, 18, 19-20, 21, 22 and 23. In spite of some deviations it is clear how this half was planned: with a width of 18 feet (c. 5.33) and a length of 32 (c. 9.47). Almost all rooms in the east half are a bit longer than 8.88, while all rooms in the west half have a slightly smaller length than the theoretical 9.47.

The available plot was thus 158 feet wide (c. 46.77) and at least 68 feet long or deep (c. 20.13). The true average width is 46.49, the result of small deviations in the widths of the individual rooms, the average length is in reality 20.075.

In the east facade the following regular features are found. Between the rooms, wall-ends of 5 feet were built and entrances with a width of 15 feet. As to the central north-south wall, here passages 8 feet wide alternate with stretches of wall 12 feet long. On either side of the passages are stretches of wall 5 feet long. The west wall was an inverse mirror image of the east wall. Walls 15 feet long alternate with entrances 5 feet wide. As to the west-east walls in the east half, here doors were built with a width of 5 feet with on either side stretches of 23 and 2 feet. The west-east walls in the west half were largely destroyed in the course of time. The best preserved one is between rooms 18 and 19. Its east part, next to a doorway, is 3 feet long. The doorway was not wider than 6 feet.

¹ Brick-stamps from Via dei Molini and the building (not *in situ*) suggest a date of c. 125-128 AD.

² SO I, 67. On the Castrum: SO I, 63-77. On the dating of the masonry of the building see Part I, Heres 1988 and Van Dalen 1991, 242-244.

³ In the north-east part of the adjacent, Antonine Caseggiato di Diana (I,III,3-4) a pre-Antonine floor has been found (Calza 1914(2), 249; Calza 1917(2), 323).

⁴ A bone measure that originally had exactly that length was found in Ostia (Borsari 1897, 524-525).

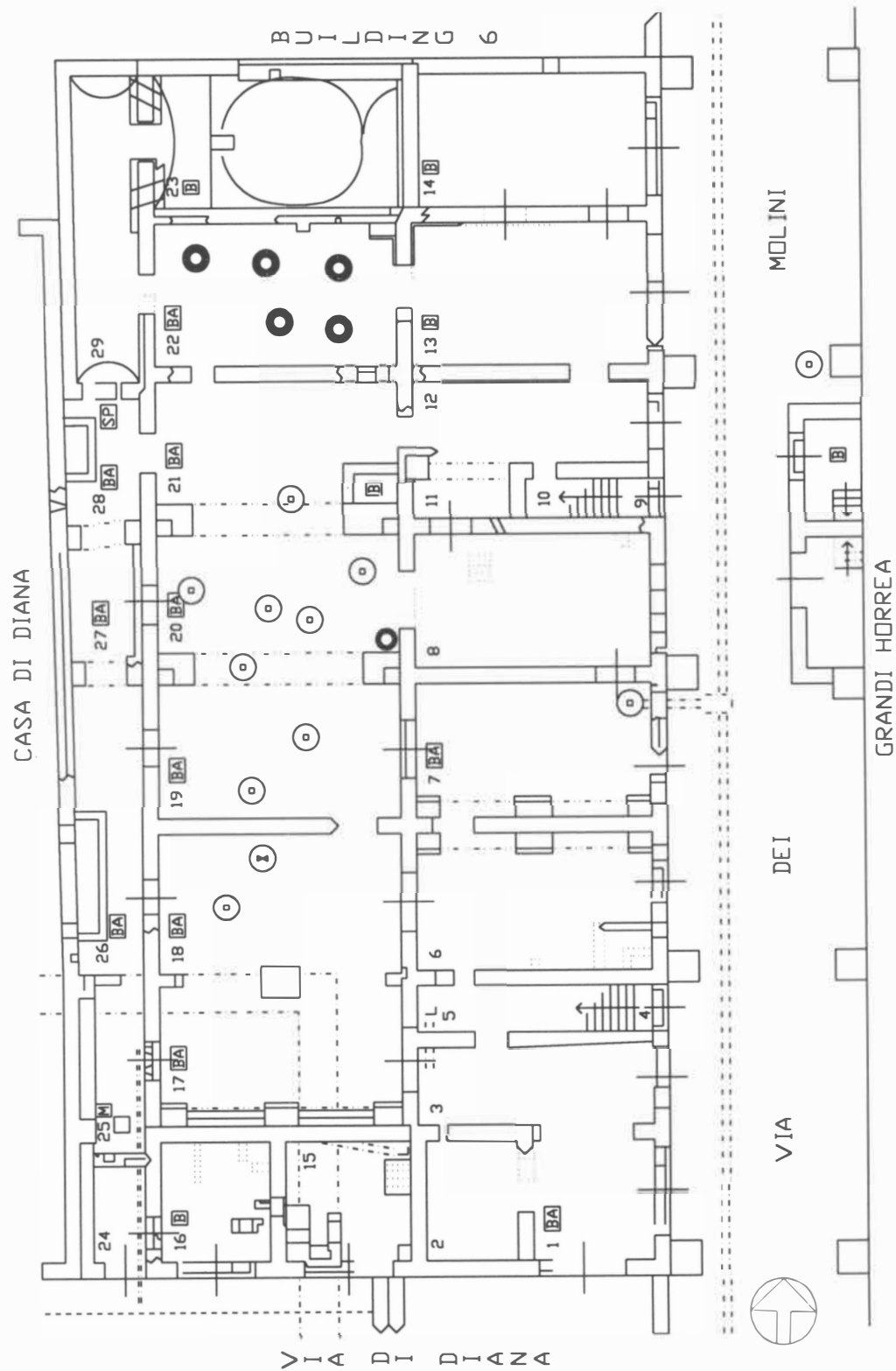


Figure 12a. Plan of the Cas. dei Molini (legenda: see fig. 12b).

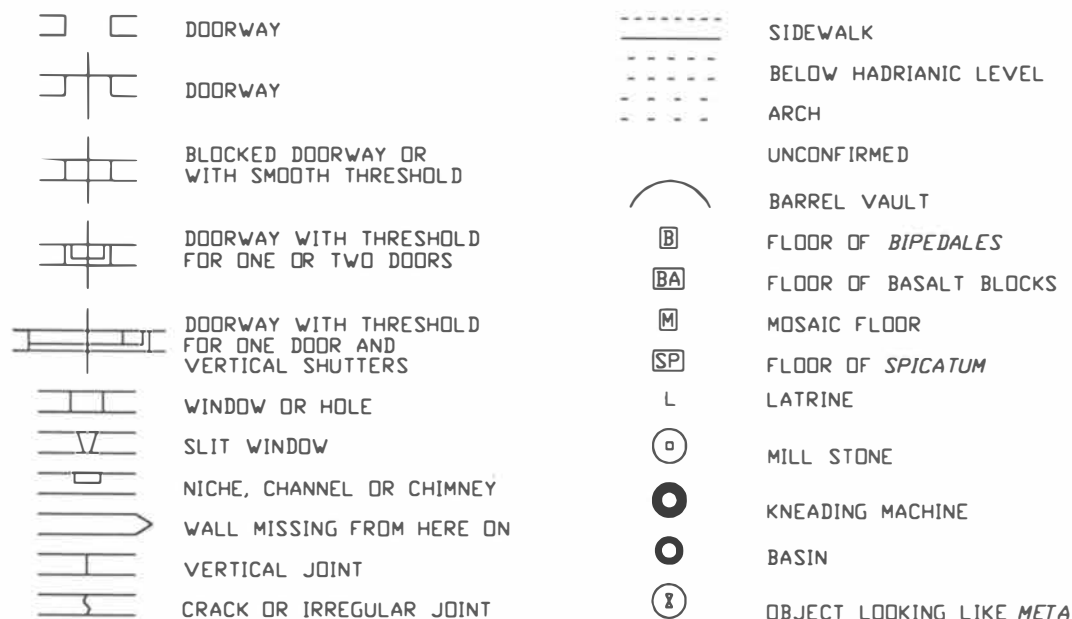


Figure 12b. Plan of the Cas. dei Molini: legenda.

In rooms 15 and 16 no Hadrianic masonry is present, apart from the east wall of room 15. The south end of this wall is T-shaped, indicating that Hadrianic masonry has been present on the spot of 15 and 16.

Two wide entrances, from Via di Diana and Via dei Molini, lead to room 1-2 and indicate that it was a shop. This function can also be deduced from the presence of a shop-threshold, with a recess for a door and a groove for vertical shutters, in the east entrance. A fragment of a shop-threshold is in the south entrance.⁵ On an old plan of the building a few basalt blocks are indicated on the floor of room 1. The passage to room 3-5 is extremely wide, but Hadrianic masonry may have been demolished here.

Room 3-5, containing a staircase, is discussed in § 1C. Room 6 was a shop, as is indicated by the wide entrance from Via dei Molini. The brick foundation of a threshold can be seen in the door between rooms 6 and 7. Room 7 was a shop as well, given the wide entrance in the east wall. In the passage from room 7 to room 19 is a threshold for two doors. Because of the later rebuilding of the east wall of room 8, nothing can be said about the original function of this room. Room 9-12, also with a staircase, is discussed in § 1C.

Room 13 was a shop, again indicated by a wide entrance. Against the north part of the west wall and the west part of the north wall are thin, low walls. They may have supported a large wooden table. The inside of the right jamb of the passage to room 22 is made of bricks up to the height of the thin wall, whereas higher up the core of the wall is visible. The west-east wall separating rooms 13 and 14 has been built with a 20/5/5- instead of the 23/5/2-distribution of feet. On an old plan a floor of bipedales is indicated, in the *Giornale degli Scavi* a black-and-white mosaic is mentioned, a small part of which has been preserved.

Room 14 was a shop as well. It has the usual wide entrance and a shop-threshold. The room received light through a window in the north wall.⁶ Also in the north wall and at a great height are the lower parts of three niches or vertical channels (modern).

⁵ The installation of such a threshold can of course not be dated on the basis of its remains.

⁶ Heres 1988, fig. 1.

Rooms 17 and 18 are separated at the west side by a thin, high brick pier. A similar pier at the east side was set against the Hadrianic east wall in the Antonine period. A small part of the east wall was then rebuilt, suggesting that Hadrianic masonry had been demolished. The central part of the lintel arch of the passage between rooms 18 and 6 does not have the usual *sesquipedales*, but an irregular hole with some bricks.⁷

In the Hadrianic period three rooms (19-21) apparently took up the area to the north of 17 and 18. This is suggested by the regular distribution of doors (three in the west wall, three in the east wall), and by the similar distribution of windows above the doors in the west wall. No Hadrianic west-east walls have been preserved. Brick piers were later set against the possible places of attachment, but above the preserved part of the western Antonine pier between rooms 20 and 21 the core of the wall is visible, showing that Hadrianic masonry has been demolished there. In the west and central part of the north wall of room 21 a considerable quantity of Hadrianic *mixtum* has been preserved, not leaving room for a door, that can therefore only have been in the east part. Hardly any Hadrianic masonry has been preserved in rooms 22 and 23.

In the east facade two recesses for reliefs have been preserved. One, between rooms 6 and 7, is empty. In the other, between rooms 12 and 13 above the preserved part of a later brick pier, is a terracotta relief. Depicted are a Genius with *cornucopiae* and *patera*, and a snake (the Genius Loci).⁸

1B The Antonine building period: ground floor

The following alterations and additions have been dated to the reign of Antoninus Pius (138-161 AD).

Against the east end of the south facade a short wall was set. There is a pendant across the street. Apparently the Via di Diana was partly blocked at the east end from the Antonine period onwards.⁹ Rooms 1, 2, and 3 were separated clearly, possibly after the demolition of Hadrianic masonry. The west end of the wall separating rooms 2 and 3 does not touch the Hadrianic masonry, but leaves a narrow opening. The inside of this end shows the core of the wall, but has a regular, fairly smooth surface (plate 7).¹⁰ Presumably it was set against something, such as the wooden casing of a vertical drainage channel.

The passages from room 3-5 to room 17 and from room 6 to room 18 were closed off.¹¹ It is possible that of the former passage the lower part only was blocked. The east wall of room 8 was rebuilt with two large windows.¹² On the inside the wall has a brick plinth. In the north part of the exterior, directly to the south of the entrance to staircase 9, is a recess for a (lost) relief (plates 6, 10). The intersection of the walls of rooms 12, 13, 21 and 22 was rebuilt.

Rooms 15 and 16 were built as shops given the wide entrances from Via di Diana with shop-thresholds. Both rooms have a floor of *bipedales*. In the facade between the rooms is a recess for a (lost) relief (plate 12). These rooms were not connected with the interior of the building. Room 16 was accessible from the alley to the west. The south end of the Antonine west wall of this room was rebuilt in the Antonine period.

Between rooms 17 and 18 a pendant of the Hadrianic brick pier was set against the east wall, probably replacing Hadrianic masonry. Four slender, supporting piers separated rooms 19, 20

⁷ Calza - Nash 1959, fig. 159.

⁸ Cf. Bakker 1994, 96-97, Pl. 59. On the Genius Loci: Boyce 1942. The snake does not seem to have a comb or beard, in which case it is feminine. The relief is executed too crudely however to be certain.

⁹ Perhaps there was a relation between the Molini and the commercial premises *Caseggiato del Portico delle Mura del Castrum* (I,1,4) across the street. On official traffic regulations in Rome see Wallace-Hadrill 1995, 51.

¹⁰ Heres 1988, fig. 4.

¹¹ Heres 1988, fig. 6 (room 18, mistakenly indicated as 6).

¹² Heres 1988, fig. 7.

and 21 (plate 14). The greatest preserved height is 4.41.¹³ A door was created in the east part of the north wall of room 21. The wall separating rooms 22 and 23 has some Antonine masonry. The west end of the north wall of room 23 was rebuilt.

Between the Molini and the adjacent Antonine Caseggiato di Diana (I,III,3-4) was an alley. This continued to the north between the Antonine Caseggiato I,III,6 and the Hadrianic Caseggiato del Mitreo di Menandro (I,III,5). A large number of doors in the west wall of the Molini opens onto it. Along the Molini the alley widens towards the north (the width at the south end is 2.56, at the north end 3.23 is measured). The floor of the alley gradually slopes downwards towards the north, like Via dei Molini.

In the south part of the alley two Antonine phases are found. The northern part of the east wall of the future rooms 24 and 25 is Hadrianic, the southern part Antonine. The southern end of the latter part was rebuilt in the Antonine period. The west wall, containing two brick piers,¹⁴ is Antonine as well. Set against the southern part is another Antonine wall. The latter wall and the rebuilt part of the east wall form an entity and create the southern entrance to the alley.

In the lateral walls of room 24 and directly to the south of the dividing wall of rooms 24 and 25 are two F-shaped grooves, one in each wall, meant to receive beams which presumably blocked the alley for the general public or for animals (plate 27). The nature of the obstruction indicates that for some time no rooms were installed in the southern part of the alley on the ground floor. The doorway in the dividing wall between room 24 and room 16 to the east was freely accessible.

The west wall of room 26 (belonging to the Caseggiato di Diana) is largely Antonine. It has two windows and a vertical drainage channel (emptying in a large latrine in the Caseggiato di Diana). On the four corners of room 27 are brick piers carrying arches. The north-east pier is Antonine.

1C Staircases, ceilings, upper floors and roof

In the eastern half of the building beamholes can be seen in the east-west walls between rooms 3-5 and 6, 6 and 7, 8 and 9-11, and 12 and 13. They are all in Hadrianic masonry. The tops of the holes are at an average height of 3.74, taking the height of the first floor to a little over four metres, assuming a total height for the rafters and floor on top of the tie beams of some 0.30.¹⁵ Nothing can be said about the situation above rooms 1-3. No changes with regard to the ceilings in this part of the building can be established in the Antonine period.

Traces of large staircases can be found in rooms 4 and 9. The former was already present in the Hadrianic period, given the L-shape of the north-east corner of room 4 and in view of the great width of the opening of rooms 3/4 (plate 4). Both staircases have Antonine masonry. The south wall of room 5 (the understairs) is in the typical position to support a landing. On either side of the entrance to room 9 are L-shaped walls (plate 6).

The east part of the inside of the Antonine south jamb of the entrance to staircase 4 shows the core of the wall and is slightly curved inwards. The west part consists of bricks. In the entrance is a threshold for two doors. In the north wall of room 4 is a row of thirteen round holes, running diagonally upwards towards the west. The corresponding row in the south wall is lost. In these holes beams were inserted, on which the treads rested.¹⁶ The first tread started at 0.60 from the threshold and at a height of c. 0.50.¹⁷ The height of the risers was c. 0.24, the depth of the treads

¹³ Meas. converted to east part of building. The west part of the building is at a lower level than the east part. The difference in height is 0.23.

¹⁴ The north-western part of the northern pier forms an entity with the west wall. In the north face of this pier is a vertical joint. It cannot be established whether the southern pier forms an entity with the wall.

¹⁵ Cf. Boersma 1985, 117.

¹⁶ For the use of wood in staircases see Mielke 1977.

¹⁷ The height indicates that there was one more tread, not resting on a beam.

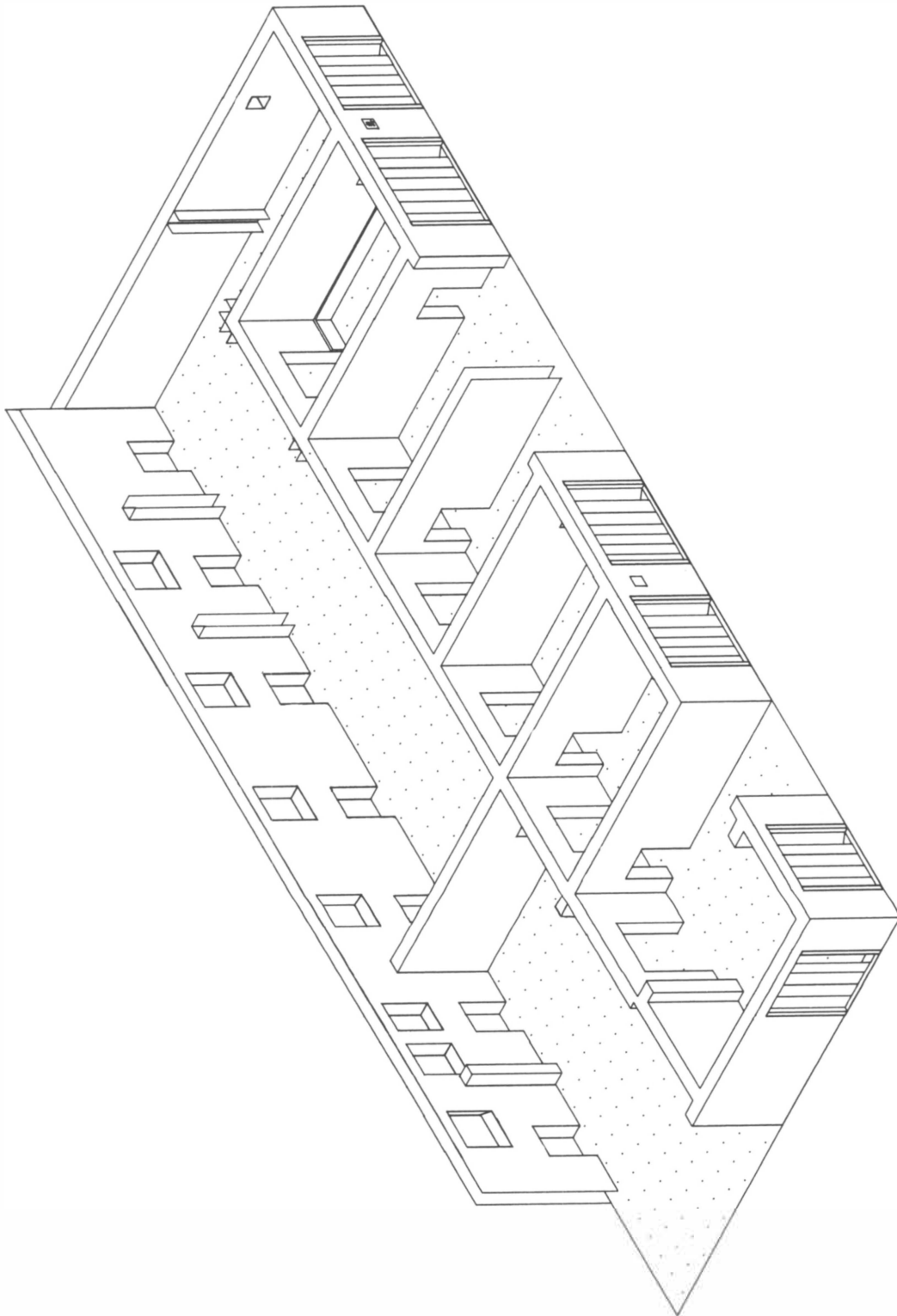


Figure 13. Cas. dei Molini, 3D-view of the Hadrianic remains, from the south-east.

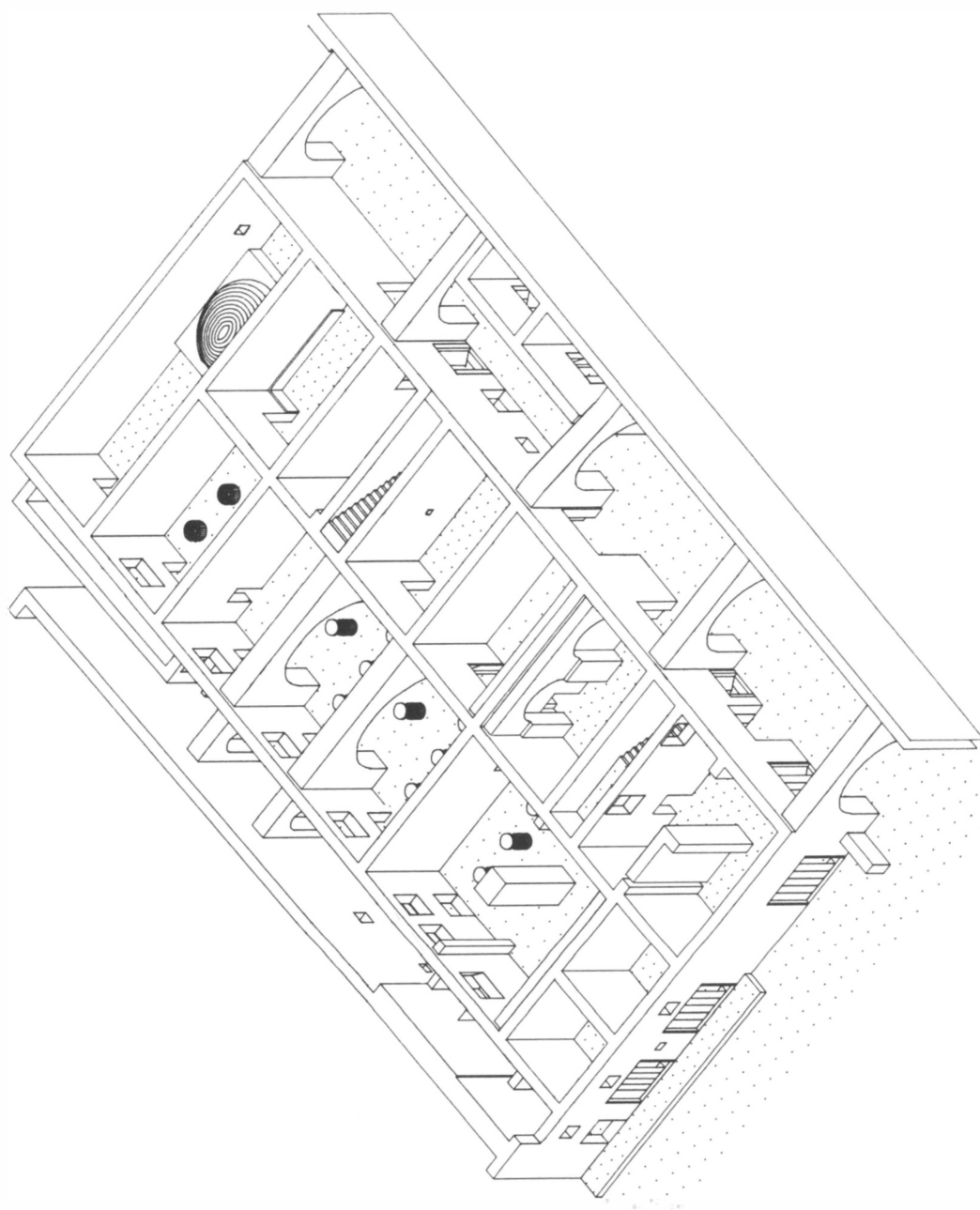


Figure 14. Cas. dei Molini, 3D-reconstruction (c. 235 AD), from the south-east.

c. 0.32. At an average distance of 0.50 from and below the holes, diagonally running upward, is the place of attachment of a concrete vault. The angle of the staircase was c. 37°. It cannot have spanned two floors with one flight, for if we suppose that there was a landing one metre deep between the west wall and the staircase - and it cannot have been much shorter -, the landing would have been at a height of c. 6.05. This leaves a height of only some 1.46 for the first floor (6.05 - 0.30 (height of floor) - 0.25 (height of tie beams) - 4.04). The first flight must therefore have led to the first floor with some fifteen treads, and the landing was c. 3.53 deep.

Below the place of attachment of the concrete vault are a few grooves and many holes, used for fastening shelves and the like. Doorways connected room 3, understairs 5, and room 6. In the door between 3 and 5 the brick foundation of a threshold can be seen. In the wall to the west of this door is a small relieving arch (the only one on the ground floor), indicating the presence of a water pipe or drainage channel.¹⁸ Understairs 5 could then have had a latrine, but of this no traces are visible.

Another large staircase was in room 9. The present main entrances to rooms 9 and 12 were created in the Antonine period. In the entrance to 12 is a heavily damaged and worn threshold, with a recess and a pivot-hole. In the entrance to the staircase is a threshold with part of a groove for vertical shutters and a recess for a door, a reused shop-threshold. The distance between the north jamb and the south end of the recess is only 0.32, too narrow for a door. A pivot may however have been inserted in the space between the threshold and the jamb, for a door that did not use the recess.

Traces of the staircase can be seen in the north and south walls of room 9 (plate 11).¹⁹ In the Severan north wall are thirteen small, square holes, in the Hadrianic-Antonine south wall thirteen large, round holes, partly filled in, leaving small, square holes. The square holes can be related to a Severan rebuilding of the staircase, the round holes belong to the Antonine or perhaps Hadrianic period. They served the same purpose as those in room 4. The first tread started at c. 1.10 from the threshold and a height of c. 0.45 from the present floor. The height of the risers was 0.22 to 0.23, the depth of the treads c. 0.28.²⁰ In the north wall, directly below the holes, is the place of attachment of a concrete vault. The masonry of the south wall however is intact below the holes. Here traces of mortar can be seen, corresponding with the place of attachment. The angle of the staircase was c. 40°. It cannot have spanned two floors with one flight. Again, if we imagine a landing one metre deep, the staircase would reach it at a height of c. 6.45, leaving a height of only approximately 1.86 for the first floor (6.45 - 0.30 - 0.25 - 4.04). Here too the staircase led to the first floor and to a landing c. 3.95 deep (corresponding with the depth of the Severan room 11).

Over the Antonine rooms 15 and 16 was a mezzanine-floor. This can be deduced from the presence of a mezzanine-window over the main entrance of room 16, from the presence of beamholes in the west and east walls of the rooms (at the height established in the east part of the building),²¹ and from the remains of mezzanine-staircases. As to the staircases, in room 15 a few treads leading to a podium were found, set against the east wall, at some distance from the north wall (restored). In the east end of the north wall is a groove, as wide as the staircase. Apparently a wooden landing for a ladder was inserted in the groove.²² A similar groove can be seen in the east end of the north wall of room 16.

¹⁸ Heres 1988, fig. 5.

¹⁹ Heres 1988, fig. 2.

²⁰ Calculated on the basis of the small, square holes.

²¹ Tops at av. h. 2.91. The floor of rooms 15 and 16 is c. 0.95 lower than that of the east part of the building. The beamholes are passing through the walls, except for those in 15, east.

²² The landing is at a h. of only 1.20/1.37. A drainage channel was found in the north part of 15, related by the excavator Finelli to a latrine in the north-east corner of the room (uncovered in 1996; a few years before a basin was uncovered in front of the north wall).

In the Antonine south wall of 17 are six beamholes for a roof at the height established in the east part of the building (plate 13).²³ The beams could have been inserted at the north end in a demolished wall, but the slender piers there contradict the presence of such a wall. More likely, two beamholes directly to the south of the piers are related to the support.²⁴ The large Severan brick pier in the centre of rooms 17 and 18 interrupts an imaginary line between these holes. In this pier are no corresponding holes. The two holes are therefore older than the pier. The beams that were inserted in them probably rested in a predecessor of the Severan pier and supported north-south tie beams.

There is no indication that rooms 18-21 were covered. The presence of a roof is shown in room 22 through beamholes in Hadrianic or Antonine masonry of the south wall. The top of the roof was at a height of c. 3.86, i.e. somewhat below the 4.04 of the east part of the building.²⁵ There are no corresponding beamholes in the Antonine masonry of the north wall. This wall has beamholes for a new roof, that are on the average 0.06 higher and 0.24 higher up in the wall, that is, at the height established in the east part of the building.²⁶ They are passing through the wall, suggesting that room 23 also had a ceiling.²⁷

The two protruding piers of the west wall of room 24/25 did not of course strengthen the Caseggiato di Diana. Presumably they carried two high arches, supporting the west wall of the Molini. Windows suggest that on top of the arches rested a ceiling. Seven very large windows are high up in the west walls of rooms 17 to 22, above the doors: two in 18, one in each of the other rooms (plates 14, 18). The one in 17 has oblique jambs, running from the south-east to the north-west.²⁸ The date of the windows is not apparent. They obviously provided air and light to the west part of the building. A roof over and to the east of the windows was present first in the Severan period. A high ceiling over room 25 would explain the orientation of the window in 17, and the presence of two windows in 18. It may also be noted that these three windows are a bit closer to the floor than the other four, and that the one in 17 starts at a greater distance from the south wall than the others.²⁹

Beamholes can be seen in the west and east walls of the future rooms 24 and 25 (one of these in Severan masonry). Their tops are at the average height 3.65, the normal height for the Hadrianic and Antonine periods in the rest of the building.³⁰ The beamholes in the west wall of room 16 are passing through the wall, suggesting that there was a roof over room 24 during the first Antonine phase.³¹ The secondary west wall can only have been meant for the insertion of beamholes: apparently permission was not given to insert them in the Caseggiato di Diana. The existence of an upper floor in the second Antonine period is indicated by the presence of a mezzanine-window over the entrance from Via di Diana. There was no door on the first floor in the dividing walls of rooms 16 and 24, and 17 and 25. Apparently then access to the mezzanine-floor was via a mezzanine-staircase or ladder in the alley.

²³ Tops at av. h. 3.58, converted to east part of building 3.81.

²⁴ The top of the western hole is at 3.46, that of the eastern one at 3.92. Meas. converted to east part of building (tops at h. 3.23 and 3.69).

²⁵ Meas. converted to east part of building (av. h. 0.22; tops at av. h. 3.33). Not passing through the wall.

²⁶ Meas. converted to east part of building (av. h. 0.28; tops at av. h. 3.57). The south wall of the room has not been preserved high enough for the corresponding beamholes to be preserved.

²⁷ North wall not preserved high enough for the corresponding beamholes to be preserved.

²⁸ Heres 1988, fig. 27. Windows with oblique jambs are also found in the Caseggiato del Temistocle (V,XI,2) and Caseggiato V,XI,4 (Hermansen 1982, 100).

²⁹ The windows in 17 and 18 start at the av. h. 3.24, the others at 3.56 (converted: 3.47 and 3.79). The window in 17 starts at 2.29 from the south wall of 17, those in 19-22 at av. dist. 1.77 from the south walls. The one in room 22 was blocked at an unknown point in time.

³⁰ This measurement has been converted to the heights in the eastern part of the building (tops in reality at av. h. 3.22 and 3.12). The floors in the west part of the building are c. 0.30 above those of rooms 25 and 26. The floor of room 25 is c. 0.10 above the plinths in room 24.

³¹ The east half (in room 16) of one of these beamholes was for some reason blocked later.

No beamholes can be seen in rooms 26-29. The preserved height of the walls of these rooms makes it certain that if these rooms had a ceiling, it was not at the usual height.

No vertical drainage channels are present in the Hadrianic masonry, suggesting the presence of sloping or gable roofs. A drainage channel was hacked out in the Antonine masonry of room 8, another one, in room 26, is contemporaneous with the first building period of the Caseggiato di Diana.

§ 2 The Severan interventions

2A Septimius Severus

During the reign of Septimius Severus (193-211 AD) a series of related and important alterations began (figure 14). In the central western part of the building a high ceiling was installed. Four huge brick piers carrying arches were set against the Antonine piers in rooms 19 to 21 (plate 14).³² The north-eastern pier is longer than the other three, probably because a basin in the south-east corner of 21 had to be set against it (plate 15). In the north side of this pier is a beamhole, for which I have no explanation. The southern arch has been fully preserved. The height of the top of its intrados is 4.51.³³ The height of the first floor relative to ground level can be approximately calculated: 4.51 + 0.60 (bipedales of arch) + 0.25? (several layers of bricks) + 0.25? (beamholes) + 0.30? (floor) = c. 5.91. It may be assumed that a first floor at approximately this height was above rooms 19 to 21.³⁴

Staircase 9 was rebuilt, without changing its incline. Below the staircase is the small understairs 10,³⁵ behind that room 11. The latter room was no longer accessible from room 8. It was lit through a small window with oblique jambs in the back wall (plate 9), which in turn received its light from the two windows in the east wall of 8 (the oblique window cannot be dated).³⁶ A pier in the north-west corner of room 11 was set against paintings on a thin wall (c. 0.30), that partly blocked the passage from rooms 11-12 to 21, and then branched off towards the east. The basin in the south-east corner of room 21 (now modern) was an entity with this wall. The eastern continuation of the thin wall is missing. It may have formed an entity with the western part of the south wall of room 12, because here a vertical band of masonry (c. 0.30 wide) is missing, from the floor to a little below the base of the lintel arch over the entrance to room 11.

Masonry from this period is also found in the very complicated dividing wall of rooms 21 and 22 (plate 17).³⁷ The central part of this wall, above latericum that could not be dated and below Hadrianic or Antonine masonry, was given new masonry on both sides. This masonry helps create the east jamb of a secondary door to the west.³⁸ The Antonine door to the east had already been narrowed and its west jamb restored, now the door was closed off. In the north side of the blocked doorway a low floor-niche was hacked out at an unknown point in time (plate 21).

Finally a secondary door in the west part of the dividing wall of rooms 22 and 23 was blocked.³⁹

³² Heres 1988, fig. 9.

³³ Meas. converted to east part of building (4.28).

³⁴ The south wall of 19 and north wall of 21 were not reinforced for a new ceiling, but related alterations in rooms 6 and 7 (see § 2B) show, that not always both lateral walls were reinforced.

³⁵ Heres 1988, fig. 17.

³⁶ Heres 1988, fig. 3.

³⁷ Heres 1988, figs. 15 and 16.

³⁸ The door has no lintel arch. The left jamb and the lower part of the right jamb cannot be dated.

³⁹ The door has no lintel arch and the jambs are very irregular (Heres 1988, fig. 10).

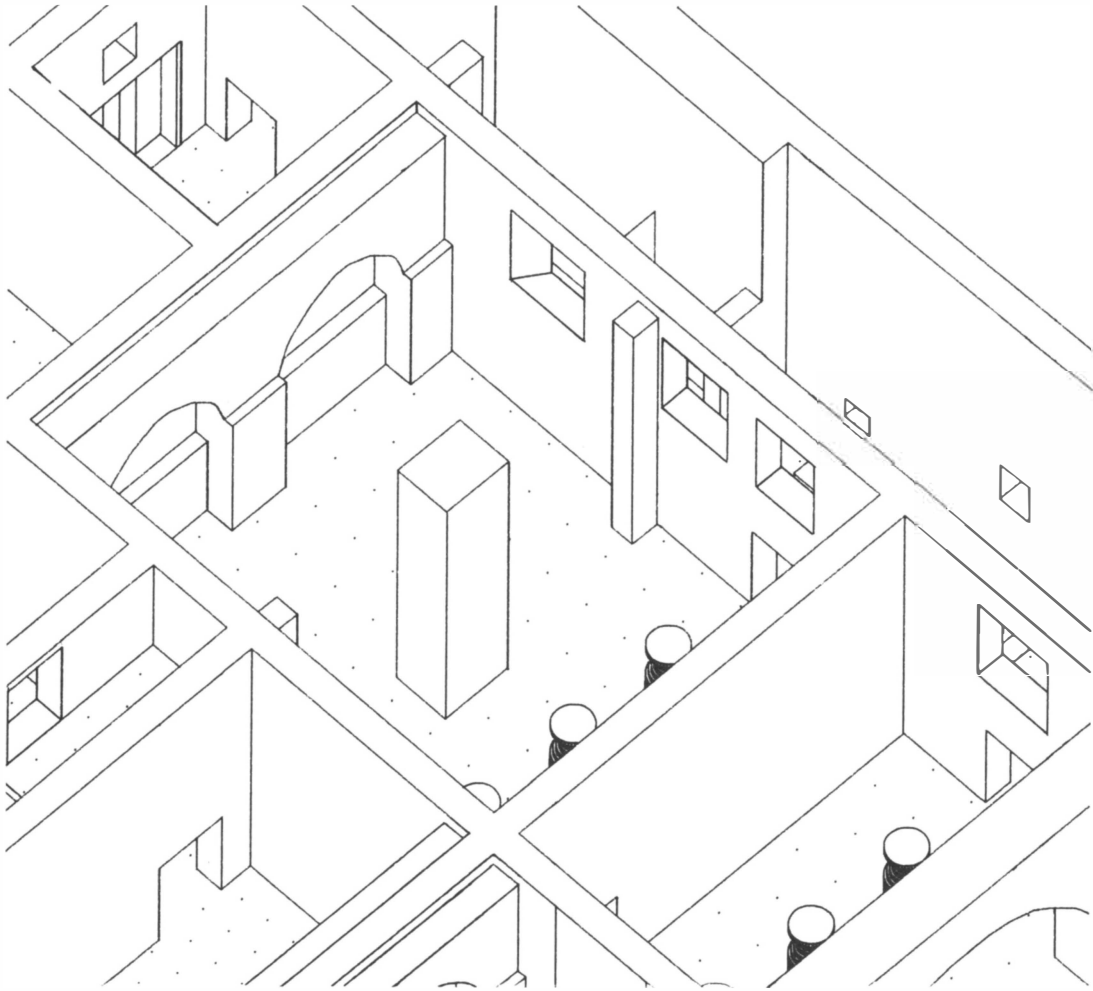


Figure 15. Cas. dei Molini, 3D-reconstruction of rooms 17-18 (c. 235 AD), from the north-east.

2B Caracalla to Alexander Severus (late-Severan)

The alterations were continued through five kinds of masonry, dated to the later Severan period (c. 210-235 AD).

To the first kind belong two pairs of high arches, set against the dividing wall of rooms 6 and 7. The arches supported north-south running tie-beams of a new and higher ceiling. Similar arches set against the remaining two lateral walls of the rooms were apparently not thought necessary. Two beamholes in the wall between rooms 6 and 7 were filled in. The bases of the arches are at 3.48, the tops of the intrados must have been at c. 4.90. The reconstructed height of the first floor is then c. 6.30. A blocked beamhole in the north wall of room 8 suggests that here also a higher ceiling was installed.

The entrance to room 6 from Via dei Molini was narrowed on either side, the south jamb possibly because a basin (restored) had to be set against it.⁴⁰ The south part of the main entrance to room 7 was now or had already been blocked. The entrance to room 13 from Via dei Molini was narrowed as well. Finally, a door between rooms 13 and 14 was blocked. The upper part of

⁴⁰ Heres 1988, fig. 19. A smaller basin is indicated on an old plan in the south-east corner of room 6.

this blockage and the east end of the wall to the left were later repaired.⁴¹

The second kind of masonry is in rooms 17 and 18. Three brick piers, carrying two arches, were set against the south wall of 17 (plate 13), and one pier in the centre of 17 and 18, the latter one creating two wide passages between the rooms (figure 15).⁴² North-south running tie-beams must have rested on two west-east beams, that were inserted in the central pier, and in no longer visible beamholes in the west and east walls. The bases of the arches are at a height of 3.28. The height of the top of the intrados of the western arch (the other one has collapsed) is 4.80.⁴³ The reconstructed height of the new first floor is c. 6.20. Between the three piers two walls were built, the purpose of which I do not know.

The third kind can be found in rooms 25 and 29. In the period c. 210-235 AD room 25 (the *Sacello del Silvano*) in its present form was created. The space between the two Antonine brick piers of the west wall was filled in. Against the northern pier a wall was set at a right angle, leaving an entrance 0.96 wide. The western half of the door in the Hadrianic east wall was filled in. In the filling are two slit-windows, lighting room 17.⁴⁴ The dividing wall between rooms 24 and 25 has been so heavily restored that its masonry cannot be dated. It was set against the west wall and into the east wall of the alley.⁴⁵ In the eastern part of the south side was a 0.75 wide floor-niche, which was later filled in.⁴⁶ In the west part of the north side are two wall-niches, one 0.41 wide, the other measuring only 0.15 x 0.12 x 0.15. The former was later filled in.

The alley to the west of the Molini was closed off at the north end by the creation of room 29.⁴⁷ The hacked out place of attachment of a barrel vault can be seen in the east wall of the room (the west wall has not been preserved to this height; plate 28).⁴⁸ A similar place of attachment is found in the south wall of room 23. Neither ceiling can be dated. In the door in the south wall of 29 is one smooth threshold block. The lower part of the southern stretch of the east wall was given new masonry.

The fourth kind is represented by the blockage of the eastern half of the doorway between rooms 17 and 25. The slit-windows were now blocked, but not filled in, so that two niches resulted in room 25.

Five large brick piers were set against the east facade, another five opposite these, across the street, against the *Grandi Horrea* (II,IX,7). The second and third pair from the north are not precisely opposite each other. The piers obviously supported west-east running arches (plate 3).

The new first floor installed in part of the building is estimated to have been at heights of 5.91, 6.20 and 6.30 above ground. This floor could have been reached with one flight of staircase 9, which reached a height of c. 6.45 with a landing one metre wide. The ceiling of the old first floor will not have been at a greater height than c. 7.53 ($4.04 + 4.04 - 0.30 - 0.25$), so that it was then at c. 1.30 or less from the new floor. This ceiling must therefore have been removed as well. The alterations obviously destabilized the building, and this is one reason for the arches spanning

⁴¹ On the date of the blockage: Heres 1988, 50, fig. 20 (incorrect dating on plan, fig. a). As to the east end of the wall to the left, its north face is of latericium, its south face of reticulatum. The latter masonry must be a repair of Hadrianic masonry, because Hadrianic doors were framed by bricks, not by reticulatum. The upper part of the blockage formed an entity with the wall to the left, that has at this height not been preserved.

⁴² Heres 1988, figs. 22 and 23.

⁴³ Meas. converted to east part of building (3.05 and 4.57).

⁴⁴ On the date of the blockage: Heres 1988, 51-52 (incorrect dating on plan, fig. a) and cf. the dates of the paintings, discussed in Bakker 1994, chapter 9, section 4C.

⁴⁵ From the datings of the paintings in room 25 can be deduced that this wall and the blockage of the door in the east wall of room 25 are not later than c. 210-215 AD.

⁴⁶ A blocked wall-niche is seen, starting at h. 0.50 (0.45 from plinth). Most likely this height corresponds with a new floor level, related to the sidewalk along the south facade (for which see below).

⁴⁷ The continuation of the alley to the north was closed off by two rooms, the paintings in which are, according to Becatti, Antonine, whereas Wirth and Van Essen suggest that they belong to the period c. 170-180 AD (Becatti 1954, 20; Wirth 1934, 33; Van Essen 1954, 39).

⁴⁸ Heres 1988, fig. 26. The place of attachment is also indicated in the south wall of room 29, but this is modern.

Via dei Molini.

A relative chronology for the various kinds of masonry cannot be established. Neither is it clear whether a plan was slowly being completed, whether situations that were found to be unsatisfactory were changed, or some kinds of masonry are contemporaneous, and simply the work of different groups of masons.

§ 3 The later third century alterations

Some of the later third century alterations cannot be dated more accurately. They all predate the reign of Diocletian (284-305 AD). The masonry from the period c. 235-284 AD will be discussed first.

A wall was built between rooms 1 and 2, but a passage was left open. The entrance to room 3 from Via dei Molini was narrowed. Later this entrance was blocked (restored). The north part of the main entrance to room 7 was blocked.

A reinforcing pier was erected in the south-east corner of room 15. In the same room a bar-counter was built. It is in and behind the entrance to the room, as are almost all bar-counters in Ostia.⁴⁹ Remains of a bar-counter (restored) were also found in room 16 (plate 12). The eastern half of the door between rooms 16 and 24 was blocked, in two phases. In room 24 a recess or floor-niche resulted,⁵⁰ on the back of which slight traces of red paint have been preserved. In the upper right corner of this niche was a second, small wall-niche.

Against the two walls that had been set against the south wall of room 17, between the piers, two further walls were set. At least the lower parts of the doors between rooms 19 and 26,⁵¹ and 20 and 27 were blocked. The east part of the north wall of room 22 was given new masonry, with a small wall-niche.⁵² To the west of the niche is a thin brick pier, to the east, in the north-east corner of the room, is a reinforcing brick pier. Against the south side of the latter pier and against the north part of the east wall of the room thin, low walls were set, similar to those in room 13. Parts of the outer north wall of room 23 were given a new finish.

In the south-east corner of room 27 a pendant of the Antonine north-eastern pier was built. A wall was inserted between the two piers. Two piers against the west wall are modern. The piers supported two arches over room 27, that probably served the same purpose as those over Via dei Molini, that is, they helped stabilize the building.⁵³ The west wall of room 28 was rebuilt. It has a slit-window lighting a room in the Caseggiato di Diana. Against the northern part of the east wall of room 29 and against the west wall of room 23 thin walls were set.⁵⁴ They most likely supported the barrel-vaults. On either side of the doorway connecting rooms 29 and 23, is a hole, starting at floor level, running obliquely through the dividing wall. These must be draught-holes for an oven (see below).

Next the alterations dated to after c. 250 AD will be dealt with. The door between rooms 5 and 6 was blocked, but later partly reopened.⁵⁵ The same may have happened to the entrances to rooms 6 and 7 from Via dei Molini. A threshold for one door was fitted in the former entrance. In

⁴⁹ Hermansen 1982, 188-190. Hermansen explains this position by thinking of people who stayed outside and were served there. It may be noted that the counters are almost always to the left, as seen from the street. This is due to the fact that the actual doors in shop-entrances are always to the right, and should not be blocked.

⁵⁰ The lower part was filled in completely up to a height of at least 0.40. Cf. the floor-niche in the north wall, discussed in the previous section.

⁵¹ Heres 1988, fig. 32.

⁵² Cf. Bakker 1994, 66, Pl. 19.

⁵³ Heres 1988, fig. 14.

⁵⁴ Heres 1988, fig. 31.

⁵⁵ The east part of the filling is missing. The smooth east end of the remaining part indicates that a new door was hacked out.

the south part of the latter entrance is a small, smooth, travertine block. The door between rooms 7 and 8 was blocked. The main entrance of room 13 was blocked and later partly reopened.⁵⁶ In the south part of the narrow passage that was finally created is a small, smooth, travertine block. The passage between rooms 13 and 22 was narrowed (plate 19). Between rooms 14 and 23 a dividing wall was built, on a spot that had for some time been occupied by an oven.

The left jamb of the door in the west wall of room 18 was repaired. The east part of the north wall of room 23 was rebuilt and has the imprint of the upper part of an oven: in the western part the bricks bend inwards and create part of a sphere. Above is the lower part of a niche or chimney.

§ 4 Further alterations

Some masonry cannot be dated accurately, because of the state of preservation and modern restorations, and because the relative chronology is not helpful. The most important aspects of this masonry and some other features are discussed below.

One or two walls were set partly in front of the entrance to room 15 and partly against the Hadrianic wall to the right. A pendant can be seen across the street. Similar Antonine walls on the corner of Via di Diana and Via dei Molini have already been mentioned. The south wall of staircase 4 is completely modern. It may be noted that the west side of the Antonine pier on the south-east corner of the staircase is of latericium. A door between rooms 13 and 14, in the west part of the Hadrianic dividing wall, is indicated on an old plan and suggested by two grooves in

the modern cement on top of the scarce remains of the wall. A long basin was set against the Antonine west wall of room 26, another one against the west wall of room 28 (plate 26).

The thresholds of the main entrances of rooms 15 and 16 are resting on a latericium foundation. Their tops are c. 0.50 above the street level, a height corresponding with the floor level of the rooms. The south entrance to room 24 also has a high foundation. Apparently there was a sidewalk here, c. 0.45 high, the continuation of a sidewalk in front of the *Casggiato di Diana*.⁵⁷ The sidewalk was built after the two rooms, because originally the floors of these rooms were c. 0.45 lower, as can be deduced from the original starting height of the blocked doorway between rooms 24 and 16. In the rest of the south facade and in the east facade there are no thresholds at a high level,



Figure 16. Cas. dei Molini, relief of a carpenters' workshop in the east facade.

and some basalt blocks of Via dei Molini touch the facade.

In the east side of the brick pier on Via dei Molini, between the entrances to rooms 4 and 6, is a relief with carpenters' tools: two pairs of compasses, a saw, and a plummet (plates 4, 5; figure 16). It has not been inserted in the masonry as neatly as the Hadrianic and Antonine reliefs. It cannot be established whether it is contemporaneous with the pier or was inserted later.⁵⁸

⁵⁶ Heres 1988, fig. 21.

⁵⁷ On the latter sidewalk: Calza 1917(2), 313.

⁵⁸ Girri has suggested that it was transferred from the Hadrianic facade to the pier (Girri 1956, 10). It should be noted however that the measurements differ from those of the Hadrianic and Antonine reliefs (0.60 x 0.60 vs. 0.48 x

On Via dei Molini two small rooms were set against the Grandi Horrea (plates 1, 2). In the entrance to the north room a threshold for one door has been preserved. In the south-east part of this room is the lower part of a staircase: two treads and a landing, the latter to support a ladder. The lower part of a similar staircase is indicated in the north-east corner of the south room on the plan in SO I. The staircases presumably led to the first floor of the Grandi Horrea.⁵⁹

Water was piped into the building through a lead pipe, from the workshop of Iulia Aquilina, entering the building in room 7. A date in the later third century has been suggested for the pipe, on the basis of the shape of the letters of its inscription. A further lead pipe was found below rooms 24 and 25.

All walls in the building were at one time plastered (a total of seven layers is found in the building). On the east facade the excavators saw traces of red letters on a thin, white background. The white plaster there still has traces of red paint. The scanty remains of paint inside the building have traces of red paint as well. In some of the corners of rooms and along jambs the remains of red bands are found.

§ 5 The fire and the finds

The Caseggiato dei Molini was destroyed by a fire, traces of which can today still be seen on the north walls of rooms 21 and 22, and on the inside of the northern jamb of the entrance to room 12 from Via dei Molini. The excavators saw traces of fire on walls and floors, and found a thick destruction-layer, which they relate to the fire: objects found in this layer showed traces of fire, sometimes “materiale incendiato” is mentioned.

The fire can be dated fairly accurately. It has already been noted that no masonry in the building can be dated to the time of Diocletian or later. In 1870 “a large number” of coins was found, a series running from Augustus to Volusianus (251-253 AD), most coins from the years around 250 AD. Calza reports the find of a number of coins in rooms 17-18, affected by fire. Of these, 21 could be identified. The series starts under Claudius I and ends under Probus (276-282 AD). It has 10 third century coins.⁶⁰ It may therefore be assumed that the Caseggiato dei Molini was destroyed in the last quarter of the third century AD.⁶¹

Numerous objects were found in the building, both in 1870, when the east half of the building and the north part of the west half were excavated, and during the First World War, when the building was completely excavated. An overview of those finds of which the function is known is found in figure 17. Were all these finds, when the fire broke out, in use in the building, or were some of them made there, or meant for sale?

0.43, 0.44 x 0.44, and 0.43 x 0.45). Dated to the second century AD by Zimmer, on the basis of the likeness to other reliefs (Zimmer 1982, 164-165 nr. 87).

⁵⁹ The height of the first floor of that store building is not known (cf. Paribeni 1916(1), 326; Calza 1921; SO I, 221, fig. 33; Rickman 1971, 43-54; Hermansen 1982, 228-230).

⁶⁰ Both series are surprisingly long. Cf. a number of coins found on Via dei Balconi, Republican to fourth century (Vaglieri 1908(2), 331). According to Pavolini Calza has used the same coins to date both the Caseggiato di Diana and the Caseggiato dei Molini (Pavolini 1986(1), 464 n. 71). Calza is however very specific about the places of discovery, and different numbers of coins were found in the two buildings. In 1908 13 bronze coins may have been found below basalt blocks in the building. They range from Hadrian to Gordian.

⁶¹ Traces of fire were also seen on the facade of the Caseggiato del Mitreo di Menandro (?) by Vaglieri (Vaglieri 1908(1), 247; 1908(2), 329-330; 1909, 27. Cf. GdS 1908, June-July), but no such traces were found in the Caseggiato di Diana (Calza 1920, 414). Vaglieri's reports are rather confusing, because halfway he literally changes his point of view and assumes that north instead of south is up, so that what was so far “to the left” is now “to the right” and vice versa. In the Caseggiato di Diana a very large number of coins was found: 312 on the first floor, ranging from Gordian to Gallienus (253-268 AD), 94 on the ground floor, ranging from Gallienus to Probus (Calza 1914(2), 252-253; Calza 1917(2), 323).

Lanciani remarks, on the finds from 1870: “si rinvenne una quantità prodigiosa di sculture figurate ed ornamenti in bronzo quasi che una o più delle officine tornate in luce avessero appartenuto ad un fonditore di metalli”.⁶² Now in the rooms mentioned in figure 17 two specimens of fire-steel and one or two utensils for fire - a roasting-spit and a similar object - were found, but no melting-pots, fire-tongs, and slags. Such finds could of course have been made in the part of the building of which no detailed reports are available, excavated in 1870. However, the presence of millstones and kneading-machines in rooms 19 to 22 indicates that these four rooms ended their existence as part of a mill-bakery, either in operation or (partly) idle. The only rooms that could then have been used as metal workshop are 6, 7, 8 and 13. But the only remains of an oven that could have been in use when the building was destroyed are in room 23. This was not a smelting-furnace. The possibility that the building contained a metal workshop when the fire broke out may therefore be excluded.

At the time of its destruction the building had four shops. Shop 1, its backroom 3, and possibly its backroom 2 were emptied in 1870. Shops 14, 15 and 16 were excavated during the First World War. The exact places of discovery of the finds made in 1870 are not known, and therefore the possibility must be left open that some of the finds come from rooms 1-3 and were for sale. The objects found in room 14 may also have been for sale (15 and 16 were bars).

After the fire at least the lower part of the ruins was left undisturbed. The height of the destruction-layer resulting from fire is known in rooms 15 and 24 only: 1 to 1.5 and 3 metres respectively. The composition of the upper part of the fill is not known. On Via dei Molini parts of the walls of the building were found, and on top of these a thick layer of rammed earth: a path had been created at an average height of c. 2.20 above the Hadrianic street level.⁶³

<i>Finds/rooms</i>	<i>1/3</i>	<i>7</i>	<i>12</i>	<i>14a</i>	<i>15b</i>	<i>17-19e</i>	<i>24</i>	<i>25g</i>	<i>?i</i>
Inscriptions	1	1							
Fragments of friezes		1						1	1
Parts of doors or windows						2			
Keys, locks		1	2		1	9		5	
Parts of furniture				5	2	2			4
Lamps, candelabra				1	7+	12+		2	11+
Vessels, kitchen utensils		1	fr	fr	14+	14+		17+	
Tools		1			2	21		7	
Weapons		1				11+		1	
Rings			1						2
Coins				2	12	45	56	21	41+
Bells				1		2		1	
Related to animals						3			
Statuettes, small busts					1c	8f		1+h	15j
Larger statues					1d				

Figure 17. Main finds from the Cas. dei Molini.

Fr = fragments; + = plus an unknown number. **a**: also found: a *tessera* with the depiction of a man and a quadruped; **b**: also found: dowels for the attachment of marble slabs, fragments of marble slabs, a *strigilis*, a fork, a needle, three hairpins; **c**: snake; **d**: Venus; **e**: also found: a small octagonal column, seven rectangular sheets with signs of the Zodiac and a planet, a fishhook, sheets for attaching marble, a spoon, a *strigilis*, two specimens of fire-steel, an ink-well; **f**: Hercules, Jupiter-Serapis, scorpion, Lar Augusti, Dioscure, Minerva, herm, unidentified; **g**: also found: an ear-pick; **h**: Lar; **i**: including the 1870-excavations; also found: a balance; **j**: identified are: Mercurius, Apollo, Minerva, Mars, a Dioscure, Aesculapius, Jupiter-Serapis.

⁶² Already in 1870 the building was known to have accommodated a bakery: on the first published plan of the building (by Lanciani in 1880) Via dei Molini is called Strada delle Pistrine. The plural “officine” used by Lanciani may be due to the fact that until 1915 the kneading-machines were regarded as oil-presses.

⁶³ Cf. the stratigraphy of the neighbouring Caseggiato di Diana and the nearby Via dei Balconi and Insula I,IV (see Calza 1920, 414; Paroli 1993, 167-168; Pavolini 1986(1), 281-282).

§ 6 The furnishing and functions of the building

6A The masonry

The Hadrianic and Antonine building periods

In the Hadrianic period the east part of the building had a number of shops. The west half probably had a commercial function as well, in view of the wide passages between the two halves. The doors in the west wall were narrow, indicating that the general public did not enter the building from here. All rooms in the east half were connected through doors, which are however not in a straight line. There was presumably a staircase in the south-east part.

It is doubtful whether the building was erected for specific trades. Modifications for its users were probably expected. In the Antonine period the building was adapted in many places. The south-east part seems to have become fairly independent: the direct connection with the west part of the building was closed, and staircase 4 may well have served this part of the building only. A second staircase was built further to the north. The south and east facade were still largely taken up by shops, but room 8 had a different, unknown function. Shops 15 and 16 were independent and the mezzanine-floor above was reached along staircases inside these rooms. The west half of the building, of which the central part had no proper roof, was probably used as workshop or for storage. Rooms 24 to 29 formed a corridor or an alley.

The Severan alterations

The independent south part of the building was left unaltered. The remainder of the building was modified drastically. Rooms 6, 7 and 13 were no longer shops, new rooms and large, roofed halls were created, ceilings were removed and new ones installed, and a staircase was rebuilt. The alterations contain several kinds of masonry, which are however clearly related. Most of the ground floor was a functional entity, used for the same purpose.

The presence of large halls, the great height of some of the rooms (increasing ventilation and reducing noise), and the presence of a basin in the south-east corner of room 21 indicate that the building accommodated a workshop. There is a slight indication, that the central and northern part of the building had a new function in the Severan period: a Severan brick pier on the street hid the Hadrianic relief of a Genius and Genius Loci in the east facade.

The relief with carpenters' tools, inserted at an unknown point in time in a Severan brick pier on Via dei Molini, is related to a carpenters' workshop. In view of the position of the relief, it was situated in room 6 and possibly others.

The later third century alterations

After the Severan period the south-east part of the building (rooms 1-5) was for some time independent, given the blocking and reopening of the door in the north wall of room 5. Room 14 ended its existence as an independent shop. Before, the room had been occupied by an oven, which was largely removed, and over which a wall was built after c. 250 AD. Set against and on top of this wall is the east end of the north wall of room 23, also built after c. 250 AD, that has a hollow to receive the upper part of an oval oven on a base. Shops 15 and 16 ended their existence as wine-bars, given the presence of bar-counters (the one in 15 dated to the later third century, the one in 16 modern).

The large oven reduces the number of activities that may have taken place in the north part of the building. It was not a smelting-furnace. It rested on a podium, on top of which was a cupola, the lower rings of which are made of large tufa blocks.

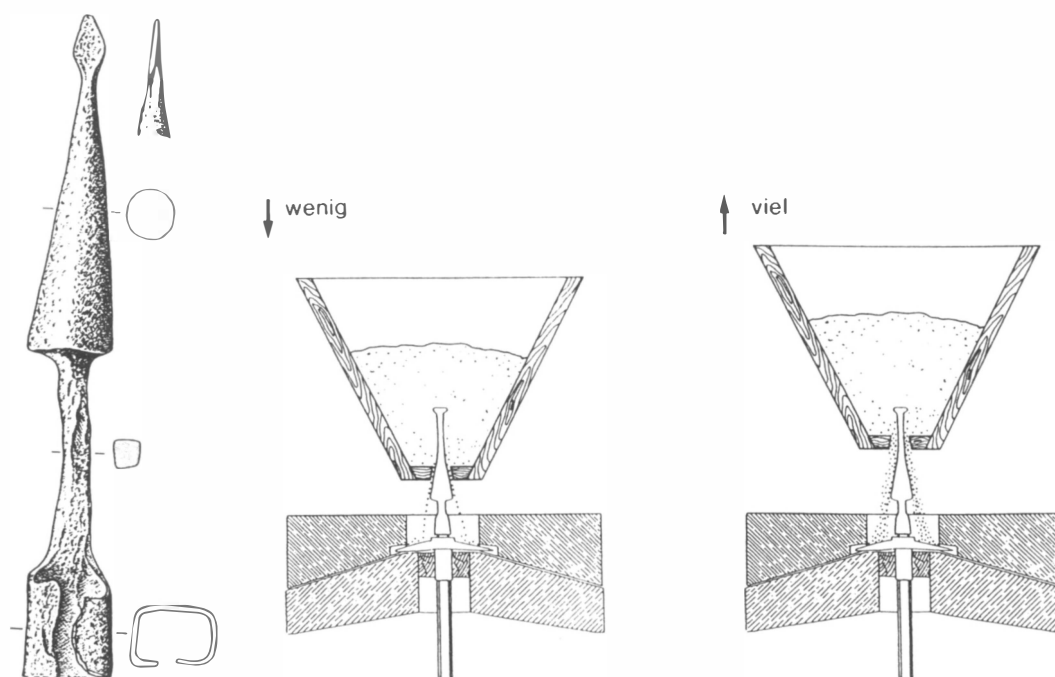


Figure 18. Drawing of a dosage cone (left) and of the use (right).

6B The finds

For some time the Caseggiato dei Molini contained a mill-bakery, as can be deduced from the presence of millstones, kneading-machines, ovens, basins and floors of basalt blocks. To this mill-bakery may well have belonged some objects, found in rooms 17-19, that were common in bakeries: two or perhaps three parts of horse-harnesses, a ring for tying up animals to a wall, and some bells.⁶⁴

It has already been mentioned that shops 15 and 16 were wine-bars at the time the building caught fire. In shop 15 a complete *amphora* and fragments of *amphorae* were found.

A fairly large number of weapons seems to have been present in the building: Finelli reports eleven or more lances, one sword, and one dagger. These could have been used for personal protection.⁶⁵ The identification of the lance heads is doubtful, however. Baatz has studied a number of iron objects, that bear a remarkable resemblance to lance heads, but were, most likely, parts of geared millstones (millstones of two more or less flat stones, driven by means of an axle and gears).⁶⁶ They were found in Germany and France, and have been dated to the second and third centuries. The top of these objects looks like the top of a flat screwdriver. Their length is approximately 0.30, whereas the length of lance heads varies between 0.10 and 0.40. They are usually quite heavy (between 0.83 and 1.38 kilograms), contrary to the weapons, which are much lighter. Clearly different from lance heads is the lower part of the shaft, which is rectangular and was possibly attached to the lower part of the mill. Grain flow-control was achieved by suspending a hopper over the conical end of these dosage cones (figure 18).

The presumed lance heads in the Molini were found in room 25 (a fragment) and rooms 17-19 (ten or more). One has a curve that is compared by Finelli to certain bayonets. Does this shape result from the collapse of the building? Another is described as “finiente a scalpello”, i.e. ending like a chisel. Their average length seems to have been 0.21. Unfortunately their weight and the

⁶⁴ See the introduction for the use of bells.

⁶⁵ For the use of lances for personal protection cf. Apuleius, *Metamorphoses* 4, 19, 3 and 9, 2, 4.

⁶⁶ Baatz 1994.

shape of the lower part is not reported. The present location of the objects is unknown.

It is of course most likely that the objects found in the Molini were dosage cones, and not weapons. As we shall see below, the *metae* in the Molini had a square hole in the top with remains of lead, in which they may have been inserted. How they controlled the flow of the grain cannot be said. On a number of reliefs a hopper can be seen that is suspended over the *catillus* (*inpendens infundibulum*).⁶⁷ It is possible that there was a second hopper inside the *catillus*, connected to a cone.

Many tools were found, most of these in rooms 17-19 (three hammers, two hatchets, one hatchet-hammer, four chisels, two carpenters' axes, one pick-axe, one shovel, two spades, three shovels or axes, two pruning-knives). In the next section I will discuss a possible relation with the carpenters' workshop.

A number of objects had fallen down from one or more surprisingly wealthy apartments on the upper floors. Parts of bronze revetment of furniture were found (sometimes with silver inlay), elaborate candelabra, fragments of marble and terracotta friezes with amorino's, parts of black-and-white mosaic floors with geometrical patterns and floral motifs, fragments of painted ceilings, parts of opus sectile, and *tesserae* of glass-paste. Finds like *strigiles*, cutlery, dinner service, and hairpins come from a habitation as well. A nice detail is that the inhabitants did some fishing, given the presence of a fishhook.⁶⁸

Many religious objects came to light. In 1870 thirteen statuettes and one small bust were found. During the same excavations a gold ring was found with an *aureus* of the Emperor Decius (249-251 AD), perhaps related to the cult of the Emperors, and lamps (some from the workshop of Annius Serapiodorus) with depictions of the Pastor Bonus.⁶⁹ The precise place of discovery of the 1870-finds is not known. In room 14 part of a vessel with the depiction of a bat (the mammal) was found. The bat may have had an apotropaic purpose.⁷⁰ In room 15 a small snake, possibly the Genius Loci, and an approximately 0.60 high marble statue of the armed Venus came to light. Perhaps in room 16 a statuette of Mercurius was found. Eight statuettes were encountered in rooms 17-19. One of these, a scorpion, is perhaps to be related to the cult of Mithras.⁷¹ A tiny octagonal column with base and capital, found in the same rooms, may have formed part of an *aedicula*. Also from these rooms come seven rectangular bronze sheets, with depictions of signs of the Zodiac and the symbol of a planet. They were attached to something by means of nails. According to Floriani Squarciapino they are to be related to magical practices or the cult of Mithras.⁷² In the same rooms a gorgon-mask, part of the handle of a vessel, was found.

From the religious objects can be deduced that besides the Sacello del Silvano (room 25) the building contained at least one more shrine.

6C The dates of the installation and abandoning of the mill-bakery and carpenters' workshop

The history of the mill-bakery is dealt with in this separate section, because it is not self-evident. The information concerning the Hadrianic and Antonine periods does not allow a specification of the commercial activities that took place in the Molini. It seems unlikely however that the building already contained a mill-bakery, in view of the absence of a large, roofed area for milling.

⁶⁷ Baatz 1994, 24-26, figs. 11 (= chapter 5, § 3, nr. 2), 12 and 13.

⁶⁸ Or was this a curved needle for repairing textiles?

⁶⁹ According to De Rossi the depiction of the Pastor Bonus indicates that Christians were present in the building (De Rossi 1870; cf. Leclercq 1907; Meiggs 1973, 270-271). Questioning the Christian interpretation: Himmelmann 1980, 138-156. The name Annius Serapiodorus is also found in the Ostian funeral inscription CIL XIV, 574.

⁷⁰ Plinius Senior, *Naturalis Historia* 29, 83; Ogle 1911, 255.

⁷¹ Floriani Squarciapino 1962(1), 57. Floriani Squarciapino assigns inv. nr. 3572 to the statuette, instead of 3568.

⁷² Floriani Squarciapino 1953 (dated to the third century on stylistic and typological grounds).

Elsewhere I have argued that from the paintings in the Sacello del Silvano can be deduced that a mill-bakery was in operation in the period c. 210-215 AD.⁷³ With one possible exception the date of the installation cannot be deduced from the masonry or the finds. The exception is that, in the words of Heres, “The need for a barrel-vault presumably led to the construction of the [late-Severan] west and south walls of 29”.⁷⁴ Barrel-vaults are encountered only here and in the adjacent oven-room 23. They were probably preferred over wooden ceilings, because a barrel-vault slows down the cooling of an oven and does not catch fire as easily as a ceiling resting on beams.⁷⁵

There can thus be little doubt that the various Severan alterations to the building are related to the installation of the mill-bakery, also because the building was from then on well-suited for the craft, as we will see in the next section. A rebuilding related to the oven in room 23 is documented after c. 250 AD. Was the mill still functioning when the building went up in flames? This is confirmed by the find of millstones, kneading-machines, parts of horse-harnesses, a ring for tying animals to a wall, some bells, and, presumably, dosage cones.

A carpenters’ workshop was present in room 6, illustrated by a relief inserted in the facade somewhere after c. 210 AD. Carpenters’ tools were found in rooms 17-19. It is unlikely however that these rooms belonged to the workshop: the blocked passages in the east walls of rooms 17 and 18 were not reopened, so that the carpenters would have had to enter the heart of the bakery, rooms 19 to 21, via room 7 (plate 16).

It should be noted that 6 was one of the rooms modified in the Severan period (the ceiling was raised). This opens up the possibility that the carpenters’ workshop was specialized in the maintenance of bakeries. The tools found in the west part of the building may well have been used for that purpose. In eighteenth-century France millstones were periodically maintained with foot-long bills, chisels, picks, and a proof-staff. This was the job of professional dressers or itinerant craftsmen.⁷⁶

6D The functioning of the mill-bakery

It is probably not a coincidence that opposite the Caseggiato dei Molini, across Via dei Molini, is one of Ostia’s largest depots for grain, the Grandi Horrea (II,IX,7), dating back to the reign of Claudius. There is however no exit related to the Molini in the west wall of these *horrea*.⁷⁷ The ladders in the two rooms on Via dei Molini cannot have been used for supplying grain. Ladders are not suited for porters carrying loads. Because there are two ladders, many people were expected to use them. Possibly this was a fire escape: after a rebuilding in the Severan period the Grandi Horrea had only one, narrow exit.

It is possible that the grain was supplied over Via dei Molini and fed to the millstones through pipes. In that case there must have been a solid roof over the street, in view of the movement of porters. Such a roof may have rested on north-south running tie beams inserted in the arches over the street, or on west-east running tie beams inserted in the outer walls of the Molini and Grandi Horrea. It may be doubted however whether the distances between the arches (c. 10 metres), or the width of the street (7.60 to 7.70) allowed a solid roof. The two small rooms on the street, set against the *horrea*, may also have supported a roof. In that case a distance of only 5.46 to 5.56 would have had to be spanned. It should be noted that the walls of the two rooms have the surprising thickness of two feet. The hypothesis that grain was supplied over the street is supported by the find in the Molini of parts of masonry covered by opus signinum, which

⁷³ Bakker 1994 chapter 9, esp. section 4F.

⁷⁴ See the contribution by Heres, section 5B, c.

⁷⁵ Mau 1912, 379-380.

⁷⁶ Kaplan 1984, 235-237.

⁷⁷ An opening opposite Via di Diana is probably modern, because it is not indicated on the first published plan of the building (Calza 1921, fig. 1) (now overgrown).

according to Calza had fallen down from the upper floors and possibly belonged to basins.

As to the interior of the mill-bakery, at least the rooms with a basalt floor and a high ceiling were used for the various steps in the bread making: 7, 8, 17 to 22, and 26 to 28.⁷⁸ Millstones, kneading-machines and ovens bear witness to these activities.

Basalt blocks with imprints of hooves are found in rooms 18, 19, and especially 7 (plate 8). They may indicate that the animals had horseshoes. The imprints do not form circles, so that apparently blocks were moved, which is understandable, because the ruts created by the animals rotating the millstones will eventually have made them stumble, necessitating the replacement of worn blocks by smooth ones.

It is most likely that at least rooms 19-21 were used for the milling (plates 14, 15).⁷⁹ This large hall has a floor of basalt blocks and a basin. Many millstones were found here. As we have seen the grain was probably fed to the millstones from the first floor. Millstones are now on Via dei Molini, in room 7, and in rooms 18 to 21.⁸⁰ There must have been at least ten.⁸¹ One has been repaired in antiquity. Two *metae* are hollow, all have a square hole in the top, nine with lead against the sides and on the bottom. On one *catillus* is the inscription *CHRY*. Inscriptions have also been found on millstones from Pompeii, Palestrina and Rome, and in the Ostian Molino I,XIII,4. They are initials or the beginnings of names, whose is not known.⁸² The volcanic stone the millstones are made of comes from Orvieto.⁸³

Five kneading-machines are found in room 22 (plate 18).⁸⁴ Blades were inserted in holes in the sides (plate 19). The grafting of the vertical spindle can still be seen in the bottom of the north-western one (iron and lead with a small, round hole in the centre; plate 20). The proximity of room 22 to the oven-rooms and the presence of kneading-machines leave no doubt that kneading took place here. The basin in room 28 must have supplied the large quantities of water necessary for this activity. Sieving took place during and after the grinding and before the kneading, possibly in room 21. The moulding of the bread was the first step after the kneading, and for this room 13 may have been used, where a wooden table may have rested on thin walls.

The remains of two ovens are reported. One was in room 23, the other in the east part of 23 and west part of 14. The oven in room 14 was abandoned after c. 250 AD. Rooms 29 and 23 had barrel-vaults, related to the oven in room 23, which was approached from the west.⁸⁵ The missing of large stretches of masonry on the north and south walls of room 23 are probably also related to the oven.⁸⁶ In the south wall the stretch is funnel-shaped and possibly the start of a chimney.⁸⁷ In the dividing wall of rooms 29 and 23 are two draught-holes (plate 25).

The oven in room 23 was uncovered once more in 1996 (plate 22). The floor in front of the oven is considerably below that of the other rooms (plate 24). The oven is made of a cupola of tufa stones on top of a brick podium. In the front of the podium is a deep niche (plate 24). The remains of a hinge may be in the entrance of the oven. Most interesting are four horizontal

⁷⁸ The basalt blocks in rooms 18 and 19 leave room for a threshold in the dividing wall. The north part of the floor of room 28 is made of opus spicatum, the south part of basalt blocks (plate 26). A spicatum-floor has also been found in the continuation of the alley to the north, and is there regarded as the original pavement by Becatti (Becatti 1954, 17). His view is confirmed in room 28. The spicatum can hardly be later than the basalt blocks. In that case a less resistant and slightly more expensive floor would have been installed in a curiously incomplete way.

⁷⁹ Calza 1915(1), fig. 2; Calza - Nash 1959, fig. 98.

⁸⁰ The excavators transferred one millstone from room 3 to rooms 18 to 21.

⁸¹ Five are now more or less complete. There are five more *metae* and fragments of *catilli*.

⁸² De Rossi 1857. Molino I,XIII,4; see the contribution by Meijlink, section 5B.

⁸³ Peacock 1981, 44-46. Cf. Peacock 1986 and 1989.

⁸⁴ Only four are indicated on the plans in Calza 1915(1) and SO I, the south-eastern one is missing. Calza 1915(1), fig. 3.

⁸⁵ It cannot be established whether room 14, that for some time had an oven, had a barrel-vault as well, because there the walls have not been preserved to a sufficient height.

⁸⁶ The north wall of 14 is slightly damaged in many places, but there no masonry is missing.

⁸⁷ Cf. Overbeck - Mau 1884, fig. 188.

grooves inside the oven, in the tufa blocks: two wide ones, and two narrow ones above (plates 22, 23). Possibly they testify to the presence of one or more revolving grates on which the bread was baked, an understandable device, because the oven has a depth of almost five metres.

The long basin in room 26 looks like a trough, suggesting that a stable was nearby, for which room 17 is the best candidate. The threshold leading to room 26 from room 18 is very heavily damaged, probably the result of the passage of animals. Perhaps the bakers also used the Caseggiato di Diana as a stable. In the room to the south of its courtyard a trough and a basalt floor were installed (plate 29), and there are also basalt blocks in a room to the east of the courtyard.⁸⁸

Rooms 17-22 were lit by large windows, that were probably also installed for ventilation. The various basins are not sunk into the ground, so that it may be assumed that the ground water was not used, and that water was piped in. Lead pipes were found below the pavement of Via dei Molini, branching off to room 7, and below rooms 24 and 25. The basins on the first floor must also have been served by Ostia's aqueduct.

An important, if not the main entrance was room 12, along staircase 9 and the tiny room 11. On the south wall of room 11 is a fragment of a stucco relief, a more expensive kind of decoration, indicating that the room was of special importance: an office, or, as the excavators have suggested, a shrine.⁸⁹

Little room was left for the sale of the bread. Room 14 was for some time occupied by an oven, so that only rooms 1, 2 and 3 may have been used as sales-area.

⁸⁸ Packer 1971, 130, 132.

⁸⁹ Calza 1915(1), 246; Finelli in GdS 1915, 89.

3

Molino I,XIII,4

Bernard Meijlink

§ 1 Introduction

In this chapter bakery Molino I,XIII,4 is studied (plates 30-53; figure 19). The aim of this study is to reach a description of the building history of this complex by trying to date every building period, and to determine the function of parts of the building and of the building as a whole throughout the building history. A catalogue has been added in which all data are mentioned that have been of importance in establishing the chronology of the masonry.

The complex has been measured accurately in order to produce a new plan, since the only other plan of the Molino is part of the general plan of Ostia published in Scavi di Ostia at a very large scale and therefore not very accurate. On the latter plan several sections are indicated that have not been preserved.

§ 2 General description of the building

The complex consists of a large workshop with shops, between the *Cardo Maximus* (plate 30) and *Semita dei Cippi*. Along the streets are four *tabernae*. The streets converge and meet c. 60 metres north of the *Porta Laurentina*. As a result the *tabernae* have a trapezoidal plan. The workshop is connected to the street by means of a wide corridor to *Semita dei Cippi* and a narrow corridor to the *Cardo Maximus*. Only the ground floor has been preserved. The preserved walls reach to an average height of c. 2.50, with on occasion sections reaching up to c. 3.25. Most of the walls preserved are too low to show beamholes or other traces of a roof or a ceiling.

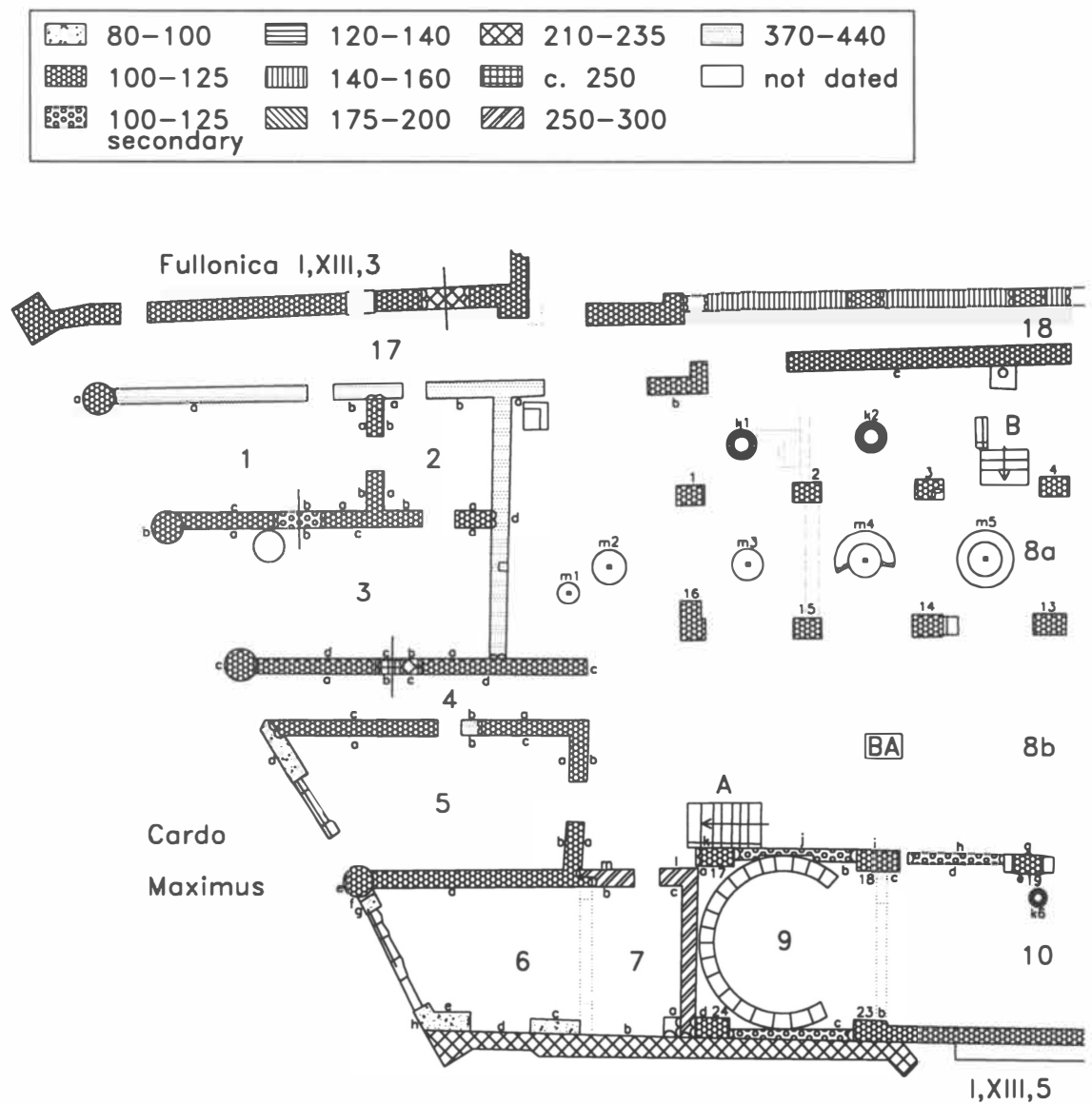
In the workshop seven donkey-mills and the lower part of a handmill have been preserved (plate 37). North of the series of mills was a row of five kneading-machines (plate 41). In the southern part (9/10) the remnants of a large oven are visible (plate 49). In the central part (8b) are two cisterns (plates 43, 48). On three places in the workshop the lower steps of staircases are preserved, and in the wide corridor (14) to *Semita dei Cippi* the lower part of yet another staircase is visible.

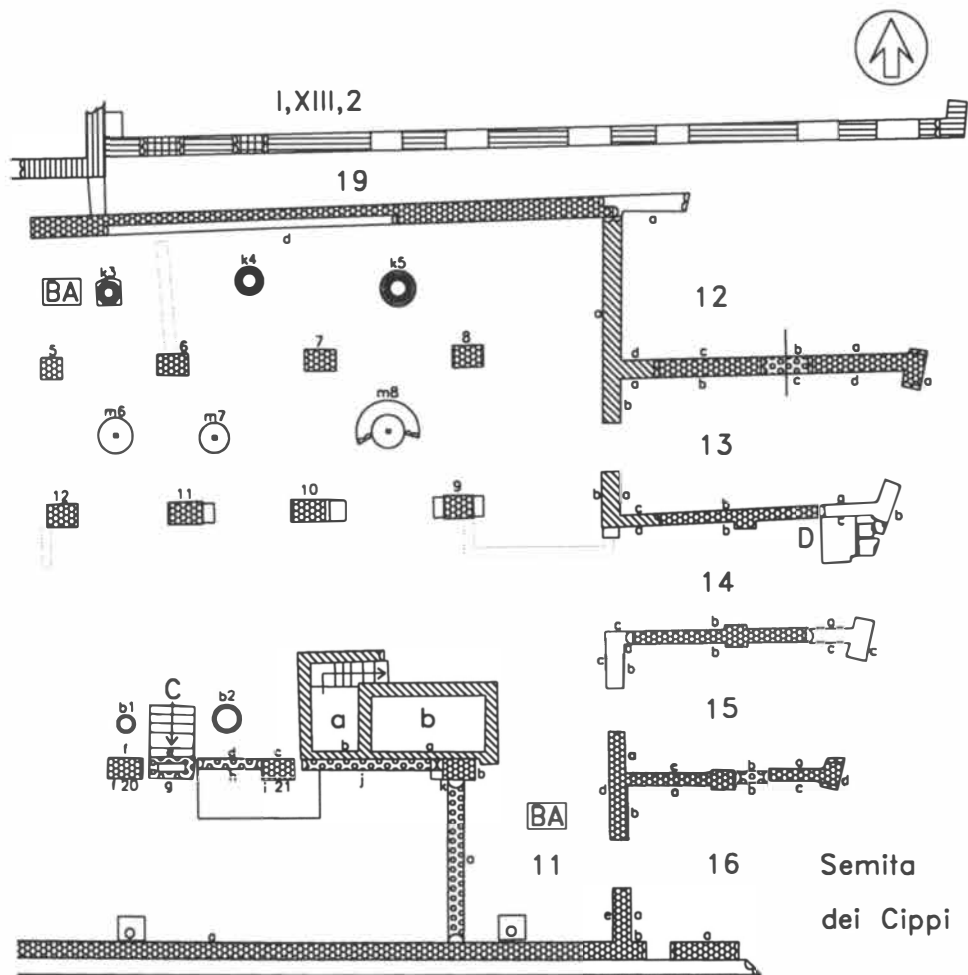
North of the bakery runs a narrow alley separating the complex from buildings I,XIII,2 and 3 (plate 53). I,XIII,3 is a building with *tabernae* of the period of Trajan or Hadrian. In the workshop adjoining these *tabernae* a *fullonica* was installed at the end of the second century AD.¹ I,XIII,2 was built in the period of Hadrian.² The function of this building is uncertain. To the south of the Molino is complex I,XIII,5. This building consists of a *caseggiato* with *tabernae*. The badly preserved eastern part has been described vaguely by Becatti as a “cortile”. In the period 210-235 AD it replaced a building from the first century BC.³

¹ Becatti in SO I, 134; SO VIII, 10; Blake 1973, 177.

² Blake 1973, 176-177.

³ Becatti in SO I, 153 and 237, fig. 34.





In Scavi di Ostia Guido Calza states that the south part of the *Cardo Maximus*, together with the adjoining buildings, was excavated between 1938 and 1942.⁴ In this epoch the larger part of Ostia Antica was excavated according to the wish of Mussolini, who wanted to have a large part of Ostia exposed on the “Esposizione Universale” planned for 1942, that, incidentally, was never held. Excavations therefore took place in great haste and it is for this reason that the excavation of most buildings, among which the Molino, was not documented.

Those who worked in Ostia after the war only mention the complex very briefly. In Scavi di Ostia Becatti spends only half a paragraph on the Molino,⁵ and Gismondi mentions the Molino as an example of the rare use of *bipediales* in *opus latericium* during the period of Trajan.⁶ The Molino is mentioned in the list of buildings from the period of Trajan.⁷ Blake offers us in half a paragraph a short description of the complex, while Meiggs omits a description and suggests a date in a footnote.⁸ Packer only mentions the Molino as a bakery and refers to Meiggs.⁹ Lugli gives an exact date of 110-112 AD for the erection of the Molino without offering any explanation.¹⁰ Girri discusses the *tabernae* of the Molino and dates them in the first half of the first century BC, except for the placement of columns, which according to her took place in the period of Trajan.¹¹

§ 3 The building periods

Seven building periods, one minor, six more important, could be distinguished. In the Molino no brickstamps were found that could help in establishing a date for the walls. However, by looking at the way in which a wall is built and the kind of material that is used, and by studying the composition of the mortar, it turned out to be possible to find parallels for these walls in Ostian buildings dated either by brickstamps or by inscriptions. Furthermore parallels were used that have been dated by Heres.¹²

The six more important building periods are: 1. 80-100 AD; 2. 100-125 AD; 3. 175-200 AD; 4. 210-235 AD; 5. 250-300 AD; 6. 370-440 AD.

3A Period 1: 80-100 AD

Of this earliest period only a few parts are still visible. They belong to a structure that preceded the main construction of the Molino. The main construction is erected at a higher level corresponding to the heightening of the street level, which supposedly was started during the reign of Domitian.¹³

To this period belong two of the three brick piers against the south wall of room 6/7 (plate 35). Both are in *latericium*. The bricks are dark pink-red, mainly fresh and rather wide. The mortar is reddish and rather badly sieved. It contains a large quantity of red *pozzolana* next to brown and grey *pozzolana*, little pebbles and a few small pieces of lime. The mortar is very hard. The masonry is fairly regular, although the courses are not always perfectly straight. The moduli

⁴ Calza in SO I, 38.

⁵ Becatti in SO I, 125.

⁶ Gismondi in SO I, 198.

⁷ SO I, 234.

⁸ Blake 1973, 157; Meiggs 1973, 274 and n. 13.

⁹ Packer 1971, 14 and n. 53.

¹⁰ Lugli 1957, 604.

¹¹ Girri 1956, 16-17.

¹² Heres 1982 and 1985.

¹³ Meiggs 1973, 64; Pavolini 1983, 29.

of the two piers differ.¹⁴ Unfortunately it could not be determined how deep below the present floor level the former floor level is situated.

The same masonry can be recognized in the west facade underneath the bases of two columns. The latericium is on line with the present facade of the complex, and with regard to the bricks and the masonry identical to the two piers. The travertine bases of the columns, consisting of a plinth, a torus and a drum, belong most probably to the main building phase, as has been suggested by Becatti, who thinks they may have been reused (plates 30, 31).¹⁵ The bonding mortar between the bases and the latericium is dark-grey to black and resembles that of the main construction.

Underneath the south walls of rooms 3 and 5 are sections in opus reticulatum. The mortar is similar to that of the latericium. The masonry is regular. The space that was needed to place the bases of columns in the reticulatum was cut away rather roughly. This also is an indication that the bases belong to a later phase.

The sections can be dated based upon comparison with the following masonry:

- Terme del Filosofo (V,II,6-7), rooms 11 and 12, north wall.¹⁶ Here too the bricks are rather wide and the masonry is reasonably regular. The bricks however are yellow and the mortar is not reddish, but dark-grey. The mortar is rather badly sieved and hard. The moduli here are larger, the joints wider. Although there are differences, the width of the bricks together with the aspect of these wall sections indicates that this masonry, dated by Heres to 80-100 AD, is a parallel.
- Domus della Fortuna Annonaria (V,II,8), rooms 13 and 16, south wall.¹⁷ Here again the bricks are wide and the masonry is regular. The bricks are yellow and the mortar is dark-grey. The mortar is hard. Here too the moduli are larger. The bricks here are a little wider, while the joints are a little thinner. Dated by Heres to 80-100 AD.

Becatti and Gismondi date this masonry of the Molino to c. 50 AD.¹⁸ It is not clear why.

3B Period 2: 100-125 AD

This is the main building period. Except for the brick piers in rooms 8 to 10 all masonry from this building period is mixtum. Even the outer north wall (south wall of corridors 18 and 19) is in mixtum, which is not very usual for outer walls.¹⁹ It is unlikely that this was ever an inner wall, in view of the plan of the complex and of the neighbouring buildings. The north and south wall of the building are c. 0.52 wide. The inner walls vary in width between 0.44 and 0.46. The walls between rooms 13 and 14 and between rooms 15 and 16 are 0.30 wide, like the secondary walls built in east-west direction.

The west rooms

The mixtum in rooms 1 to 3 has at the bottom a horizontal brick band of three courses and is intersected by brick bands of one course of sesquipedales higher up (plate 31). If the walls have been preserved high enough there is yet another band of sesquipedales.²⁰ The *tesserae* of the reticulatum in these walls are mainly yellow-brown and are often roughly shaped to fit instead of being hewn into perfect triangles. The diagonal lines are seldom in a perfect angle of 45 degrees. The width of the joints of the *tesserae* varies constantly. The bricks are mainly pink-red,

¹⁴ The smaller modulus of one of the piers may be due to the fact that it is part of the facade, in which the masonry often has thinner joints in order to create a more regular aspect, e.g. in the Horrea Epagathiana et Epaphroditiana (I,VIII,3).

¹⁵ Becatti in SO I, 118.

¹⁶ See also the description by Heres in Boersma 1985, 39, 4. Moduli in the Terme: 0.303, 0.321 (av. 0.312).

¹⁷ See also the description by Heres in Boersma 1985, 52, 15 and 16. Moduli in the Domus: 0.326, 0.335 (av. 0.331).

¹⁸ SO I, 234.

¹⁹ Heres 1988, 37 and n. 7.

²⁰ Distance between bands 1.18-1.22, possibly four Roman feet.

occasionally yellow or pink. Almost every brick is fresh. The latericium is fairly regular with reasonably narrow and regular joints. The mortar is dark- to bright-grey. It is rather badly sieved and contains many medium-sized and small granules of black and dark-grey pozzolana. Occasionally dark-brown pozzolana and larger granules can be seen. In the mortar a fair amount of small pieces of lime and pebbles is present. The mortar is rough and at places crumbly, but can be hard and compact at other places.

As mentioned before, column bases (diam. 0.85) were sunk into the ground (c. 1.00) in the facade during this phase.²¹ Only the lower part of the columns is preserved (travertine and modern concrete). Probably parts of different columns were reused.²² The reason for reusing these bases is not clear. Functionally columns of this size are certainly not required for a relatively simple building like the Molino.

The central rooms

The *tesserae* are mainly yellow-brown, occasionally orange-brown. They are rather carelessly hewn to fit underneath the brick bands and above, under and next to the teeth. The diagonal lines of the reticulatum are not precisely put into angles of 45 degrees and are not always straight. In one spot the *tesserae* are placed horizontally-vertically instead of diagonally. Sometimes smaller *tesserae* were inserted to correct the lines. The bricks are yellow, dark-yellow, light-pink and pink, occasionally some pink-red bricks like those in the west rooms can be seen. The bricks are mainly fresh. The average moduli of the latericium in the north wall of room 8 and of the south wall of room 11 are almost equal. The average modulus of the latericium in the south wall of room 10, that forms an entity with the south wall of room 11, is a little smaller, but the masonry is more regular.

The mortar in the north wall is light-grey, rather badly sieved and contains mainly dark- and light-brown pozzolana, next to a few small pieces of lime and pebbles. The mortar is hard. The masonry of the north wall is not very regular. The mortar in the south wall is light-grey, sieved rather badly, and contains at different places pozzolana of different colours (brown and reddish brown, dark-grey and black). Other granules are pebbles and small pieces of lime. The mortar is not very rough and in places hard. The latericium has in many places a nice and very well sieved daub in the joints. With a trowel a nick was made at the bottom of the joints. The masonry of the south wall is more regular than that of the north wall, but because some bricks are slightly convex it has as a whole a rather uneven aspect.

The L-shaped section in the north wall of room 8 is in latericium and resembles in mortar, modulus and kind of bricks the latericium in the murtum of the north wall of room 8.

In rooms 8 and 9 are 24 piers in latericium. The length of the piers in room 8 is either 0.88 / 0.89 or 1.03 (either 3 or 3.5 feet), the width 0.585 / 0.60 (2 feet). The one to the north-west of millstone m6 measures 0.60 x 0.595. The one to the south-west of m3 is L-shaped, measuring 1.20 at its longest point and 0.77 at its widest point. The four piers between rooms 8 and 10 are 1.02 / 1.03 long and 0.585 / 0.60 wide (3.5 x 2 feet). The length of the four brick piers in the corners of room 9 varies: 1.17 (4 feet, but broken off at the west end), 1.33 (4.5 feet), 1.02 (3.5 feet) 1.16 (4 feet). It is remarkable that the measurements of the brick piers are easily translated into Roman feet or half feet, but that the measurements of the spaces in between the piers are not.²³ It is not clear what determined the irregular positioning of the piers in the plan.

²¹ In Ostia only the columns of some temples have a larger diameter.

²² Perhaps a column drum found in room 3 belonged to one of the columns. This drum is fluted, the column parts of the facade are not. Of these, two are completely circular, one has at its front a 0.60 wide vertical strip, receding c. 0.03, while one has a similar strip at its front and back (0.80 and 0.82 wide).

²³ The foot used for the piers was c. 0.296. We may assume that the same foot was used for the spaces in between the piers. However, measurements like 2.79, 3.01, 2.86, 1.70, 2.89, 2.74 and 3.68 (the spaces between the northern line of piers) cannot be translated easily into the same foot.

Almost every pier has, at a varying height, two bipedales that overlap. This is repeated higher up in the northern line, but not in the line to the south. The south-east pier in room 9 has at a height of 2.31 a course with a sesquipedalis and a sawn bipedalis next to each other, with on top the base for arches towards the north and west. Bipedales were used in latericium to level the lower courses of brick to have a firm start for the courses that were to come on top. Gismondi mentions the Molino as an example for the rare use of bipedales in latericium from the period of Trajan.²⁴

The bricks in the piers are mainly yellow, light-pink and pink. The two piers in the north wall of room 9 and the one to the east have fewer yellow bricks and instead orange-pink bricks. The bricks are mainly fresh. The modulus of the piers of the two northernmost lines and of the south-east pier in room 9 does not vary much, the modulus of the other piers and of the one to the south-west of m3 is somewhat larger. The south-east pier in room 9 forms an entity with the south wall of room 10, given that the mortar is identical.

The mortar in all piers is light-grey, rather badly sieved, with light- and dark-brown pozzolana. The mortar in some piers contains grey and greenish-grey pozzolana. Other granules are small pieces of lime and some pebbles. The mortar is hard. The masonry in all piers is reasonably regular, except for the one in the north-east corner of 9. Some bricks are slightly convex.

The east rooms

The *tesserae* in the mixtum underneath the brick bands are shaped into triangles, often roughly. Also above, under and next to the teeth of the brick piers the *tesserae* are hewn into shape with the same carelessness. The *tesserae* are, like in the west rooms, mainly yellow-brown, although many orange-brown *tesserae* were also used. At some places the latter prevail. The bricks are mainly yellow, bright-, orange- and dark-pink. They are mainly fresh. The mortar is bright-grey, but can be somewhat reddish at places. This is caused by the use of mainly bright-brown, reddish-brown and red pozzolana, instead of black and dark-grey. The mortar contains a few pebbles and small pieces of lime. It is sometimes hard, sometimes reasonably soft. The masonry here looks even more irregular than in the west rooms. The reticulatum in the mixtum is at places very irregular.

Even though there are quite some differences between the masonry of the west rooms and that of the east rooms, it belongs to the same building period. Not only the similarity in general aspect of the walls leads to this conclusion, but also the examination of their connections. The east and south walls of room 11 form an entity. The long south wall of rooms 10 and 11 forms an entity with the south wall of room 9. In it a gradual transition can be detected in the use of pozzolana from dark-grey and black in the west part towards brown and red in the east part. There is no reason to suggest different dates because of the use of different kinds of pozzolana.

Date

Becatti, Gismondi and Blake date the Molino in the period of Trajan.²⁵ Lugli specifies the date to the years 110-112 AD, but does not explain why.²⁶ Meiggs thinks that the “framing walls” could be from the period of Trajan, but the inner walls associated with the bakery seem to him to be from the period of Hadrian or even later.²⁷ The present author has chosen to expand the period of the main construction to c. 100-125 AD, as the transition from the period of Trajan to that of Hadrian is very hard to establish.

²⁴ Gismondi in SO I, 198.

²⁵ Becatti in SO I, 125, 234; Gismondi in SO I, 198; Blake 1973, 157.

²⁶ Lugli 1957, 604.

²⁷ Meiggs 1973, 274 and n. 13.

The following parallels for the masonry of the main construction were found:

- V,II,3, corridor 1.²⁸ Heres dates this wall section to the period 100-125 AD, with caution, as the relatively wide bricks and the quality of the mortar do not represent the typical masonry of the period of Trajan elsewhere in block V,II. The aspect of the masonry strongly resembles the masonry of the Molino. In comparison to other buildings one may say that the quality of the masonry of the Molino is rather bad.
- Aula dei Mensores (I,XIX,1), brick pier in the facade of the temenos. This pier in latericium is built with bricks of the same colours as the piers in room 8. The Aula is dated by means of brickstamps around the year 112 AD.²⁹
- Casette Tipo (III,XII,1-2, III,XIII,1-2). All outer walls of this complex are in mixtum and strongly resemble the masonry of the Molino. Here too the quality of the masonry is rather bad. The masonry is rather irregular. The bricks used in the piers in the mixtum are mainly pink-red like the bricks used in the mixtum of the west rooms of the Molino. The mortar is similar to that in the Molino, even though we find red pozzolana used next to black. The Casette Tipo are dated to the period of Trajan by Becatti and Blake.³⁰

Two examples of the period of Hadrian can be mentioned: Caseggiato del Serapide (III,X,3), brick piers in central court; Aula del Buon Pastore (I,II,4), west wall.³¹

Secondary walls were placed between brick piers in the north, east and south wall of rooms 9/10 (plate 45). In the north wall they are in mixtum towards room 8 and in incertum at the side of rooms 9/10. This can also be seen in the Casette Tipo. The mortar of these sections resembles the mortar of the main construction so much, that the dates cannot be much apart. The secondary south wall of 9 is in incertum and reticulatum. The relative irregularity of the masonry and the composition of the mortar lead to the conclusion that this wall section cannot be dated later than 100-125 AD and needs to be seen as secondary, but belonging to the main construction.

The blockage in the wall between rooms 12 and 13 is in reticulatum and strangely enough its masonry and mortar are identical to that of the sections on either side (plate 50). A doorway was planned, as is shown by the presence of brick piers on either side. The blockage in the wall between rooms 15 and 16 is also peculiar, albeit for a different reason (plate 52). The north side of the blockage is in an irregular latericium, the other side in incertum in which large pieces of opus signinum were used. This is not a blocked doorway, but rather a repair, since there are no straight doorjambs. Nevertheless the mortar is identical to the mortar of the sections on either side and this repair therefore has to be dated to the main construction or only very little later.

The blockage of the doorway in the wall between rooms 1 and 3 may have taken place somewhat later than the main construction. The *tesserae* here are orange-brown, while the *tesserae* in the walls of these rooms are mainly yellowish-brown. The mortar of the blockage contains less pozzolana and rather large pieces of lime. The blockage is perhaps to be dated to the last quarter of the second century (see below).

The concrete beds around three mills were unfortunately plastered and/or restored in modern times. The staircases too are modern. In room 9 three layers of tufa blocks are preserved that belonged to a large oven. The oven seems to have a connection with the secondary walls north and south of it. The secondary wall north of it seems to be shaped to the circular form of the oven, which was already there or built simultaneously. The height of the three layers of tufa blocks corresponds precisely to the height of the lower part in opus incertum of the secondary wall south of the oven, as if from this point upwards the oven started to curve inwards. This therefore suggests that the installation of the oven and with this the installation of the bakery is contemporaneous with the main construction.

²⁸ Heres in Boersma 1985, 29 n. 1.

²⁹ Bloch in SO I, 219; Becatti in SO I, 125; SO I, 235; Blake 1973, 149-150.

³⁰ Becatti in SO I, 125-126; SO I, 235; Blake 1973, 154-155.

³¹ SO I, 233-234.

3C Period 3: 175-200 AD

The walls are all in latericium with almost exclusively yellow bricks. The bricks in the western part of rooms 12 and 13 are somewhat thinner than the bricks from the main construction (plate 51). The bricks used in the cisterns in room 8 are somewhat wider. The modulus in the cisterns is considerably larger than that in rooms 12 and 13, due to very wide joints. The mortar in rooms 12 and 13 is bright-grey, at places orange-rubiginous, and is rather badly sieved. It contains much orange-rubiginous pozzolana and at places also dark-, medium- and bright-brown pozzolana. Other granules are some pebbles and a few small pieces of lime. At a few spots the mortar is a bit more contaminated with larger pieces of lime and a little charcoal. The mortar is not very hard. The mortar of the cisterns is dark-grey and at places dark-brown, and is rather badly sieved. It contains dark-brown, black and dark-grey pozzolana, and furthermore some pebbles, a few small pieces of lime and at places small pieces of brick. The mortar is not very hard. All masonry is fairly regular. Some bricks are slightly convex. The brick pier to the north-west of m5 has at the top an ancient repair. The masonry strongly resembles the masonry of this alteration.

Despite some differences the masonry is contemporaneous, in view of the general aspect and the nature of the masonry. One parallel has been encountered, that has been dated to c. 180-192 AD: Caseggiato del Sacello (IV,V,4), south wall of hall in front of room with *sacellum*.³² Blake prefers to date this wall to the period of Hadrian and states that only the inner walls can be dated later. She questions the date of 180-192 AD and mentions that Gismondi prefers a date in the Severan period.³³ No brick stamps are mentioned. In comparison to other Hadrianic masonry in Ostia it does not seem very likely that this masonry belongs to the same period. This assumption is supported by the fact that in the western cistern in the Molino a red painted stripe can be seen on a course of fresh bricks, which is noted by Gismondi as one of the main characteristics of the buildings from the last quarter of the second century.³⁴ In his description of the masonry of the period 138-192 AD Lugli mentions that the bricks become a few millimetres thinner.³⁵ This is the case in the Molino but not in the Caseggiato del Sacello.

3D Period 4: 210-235 AD

All masonry of this phase is latericium. This phase can be divided into two sub-phases. The first is the narrowing of the doorway of room 5 to the *Cardo Maximus*, the second is formed by sections of walls in room 6/7.

The narrowing in room 5 is built with orange, yellow, bright-brown and pink bricks. They are mainly fresh. The bricks are thin as are the joints. The mortar is bright-pink and reasonably well sieved. It contains mainly black and bright- and dark-grey pozzolana, at places also red and bright-brown. Other granules are pebbles, small pieces of lime and small pieces of brick. The mortar is hard. The masonry is fairly regular, maybe also caused by the fact that it is part of the facade.

The nature of the masonry belonging to the second sub-phase is different. The south wall, that in fact is the north wall of I,XIII,5 set against the brick piers of the Flavian era, contains bricks of all kinds of colours and measurements, many of which are reused. Occasionally we find fresh bricks, mainly orange and reddish brown. The mortar is bright- and at places dark-grey. It is very badly sieved and contains black, red, brown and grey pozzolana. Other granules are larger pieces of lime, pebbles, charcoal, little sherds and little pieces of brick. The mortar is hard. The masonry

³² Pavolini 1983, 184; SO I, 237 (period of Commodus). The bricks are yellow. Av. l. 0.199, av. w. 0.039. Av. w. of joints 0.016. Modulus 0.29, 0.296 (av. 0.293).

³³ Blake 1973, 198 and 234.

³⁴ Gismondi in SO I, 205. According to Gismondi such a line was painted in order to guarantee a perfect horizontal course upon which the masonry could be continued. Thus the line took the place of the use of a course of bipedales.

³⁵ Lugli 1957, 610.

is very irregular. At some places a course of bricks just stops in the middle of the masonry, because the over- and underlying courses do not leave enough space for its continuation. A small section of the west wall resembles the south wall, as far as the mortar is concerned. The masonry is more regular though and contains more fresh bricks. Most likely this can be explained by the fact that this section belongs to the facade.

I,XIII,5 is dated by Becatti to the Severan period and more precisely to the period 210-235 AD.³⁶ There is no mention of any brickstamps. For both sub-phases the following parallel has been found: V,II,3, east wall of cortile 7.³⁷ The wall is built in latericium with orange, yellow, pink and brownish pink bricks. The mortar is light-grey, rather well sieved and hard. Heres dates this wall to 200-235 AD. For the first sub-phase this is a perfect parallel, for the second sub-phase it is only a parallel as far as the modulus and the mixed use of bricks are concerned.

Possibly during this building period the doorway between rooms 3 and 4 was narrowed with a section using vittatum A³⁸. It was built before the full closure in latericium next to it, which is dated to c. 250 AD (plate 32). The mortar used for the section of latericium is plastered on the narrowing in vittatum A. The mortar of the narrowing is in comparison to the mortar of other sections in vittatum only slightly contaminated. Along with pozzolana are found little pieces of lime, small pebbles and mosaic-*tesserae*. As Lugli and Heres conclude that opus vittatum was introduced in Rome and Ostia in the early third century it has been decided to ascribe this section to the period c. 210-235 AD.³⁹

3E Period 5: c. 250 AD

The lower part of the blocked doorway between 3 and 4 is in incertum, the upper part in latericium. The tufelli in the incertum are square and rectangular with different measurements. Although the mortar resembles the mortar of the latericium above, a separation seems to be present. The bricks in the latericium are orange, pink-red, yellow, yellowish pink and pink, mainly fresh, and often long and thin. The mortar is reddish grey and rather badly sieved. It contains many small and a few large granules of red, brown and black pozzolana. Other granules are small pieces of lime and pebbles. The mortar is hard. The masonry is reasonably regular.

The following comparable structures have been found:

- Domus del Protiro (V,II,4-5), west wall of corridor 27.⁴⁰ Here too the bricks have all kinds of colours, and are long and thin. The mortar is purple-grey and its composition bears a strong resemblance to that of the mortar in the blocked doorway. The courses of bricks are reasonably regular.

- Domus della Fortuna Annonaria (V,II,8), south wall of portico 11.⁴¹ Here too the masonry is fairly regular, although some of the courses are a little irregular. The mortar has a reddish colour and is hard. The bricks are long and thin. The width of the joints here is less regular than in the blocked doorway in the Molino. Yet based upon the nature of the mortar and the general aspect of the masonry this wall can be regarded as directly comparable. Heres dates both to c. 250 AD.⁴²

3F Period 6: 250-300 AD

All walls of this period are built in vittatum A, with a regular structure. The courses run

³⁶ Becatti in SO I, 153, 237 and fig. 34.

³⁷ Heres in Boersma 1985, 32 n. 15. Av. w. of bricks 0.035. Av. w. of joints 0.018. Modulus 0.25, 0.283 (av. 0.267).

³⁸ Vittatum A: tufa blocks and bricks in a regular alternation of 1:1. Vittatum B: tufa blocks and bricks in all other alternations (Heres 1982, 13).

³⁹ Lugli 1957, 645; Heres 1982, 29-30 and 169.

⁴⁰ Heres in Boersma 1985, 13 n. 8 (north wall of corridor 27), fig. 7. Av. l. of bricks 0.203, av. w. 0.03, av. w. of joints 0.021. Modulus 0.259, 0.276 (av. 0.269).

⁴¹ Heres in Boersma 1985, 51 n. 14. Modulus 0.283, 0.304.

⁴² Heres in Boersma 1985, 13 n. 8 and 51 n. 14.

straight and the tufelli are square (*reticulatum-tesserae*). The bricks have all kinds of colours and dimensions. The mortar is whitish grey, badly sieved and does not contain much pozzolana. The pozzolana is mainly black, brown and grey, sometimes red. Other granules are small pieces of lime, small pebbles, pottery, brick, glass, mosaic-*tesserae* and charcoal. In view of the regular masonry a date not long after 250 AD seems likely.⁴³

3G Period 7: 370-440 AD

The last building period in the Molino is represented by vittatum A and vittatum B (one course of bricks alternating with two courses of tufelli). The tufelli are hewn rather carelessly and vary considerably in size. The bricks are all kinds of colours and dimensions, and are both fresh and reused. The mortar is light-grey, badly sieved and contains varying quantities of brown, grey, black and occasionally red pozzolana. Other granules are small pieces of lime and marble, shells, small pieces of brick, pottery and glass, mosaic-*tesserae*, bone and charcoal. The masonry is in spite of the varying dimensions of the stones not very irregular. It has been decided to date these walls to c. 370-440 AD or perhaps a little bit earlier.⁴⁴

3H The corridor north of the Molino

The north wall of corridor 17-19 is the external wall of I,XIII,3 and I,XIII,2. Becatti dates both buildings to the period of Hadrian.⁴⁵ Blake dates I,XIII,3 to that period and mentions that in later times a *fullonica* was inserted.⁴⁶ Building I,XIII,2 is according to her a little later than the period of Hadrian.⁴⁷

The south wall of I,XIII,3 could also be from the period of Trajan, if we compare it to the masonry in the Molino. A doorway in this wall was blocked in the period 210-235 AD. The masonry of this blockage is almost identical to that of the south wall in room 6/7. The section east of the wide doorway can also be dated to the period of Trajan or Hadrian.

The north wall of corridor 18 is very complicated. At first only two piers (three feet long) seem to have been built here. In view of their general aspect and the nature of the mortar these piers can be dated to the period of Trajan or Hadrian. In view of the width of the bricks a Flavian date cannot be excluded. Later the spaces between the piers were filled up. The masonry of these sections, with mainly yellow bricks, looks Antonine and seems very similar to several walls of the Terme del Foro (I,XII,6).⁴⁸ A doorway was blocked later. This blockage is in very irregular and coarse rubble masonry. A date could not be established. In the wall that looks Antonine a restoration was carried out, very irregularly, with the aid of roof-tiles, bricks, *reticulatum-tesserae* and vittatum-tufelli. A bit higher in the wall this "opus incertum" becomes a fairly normal opus reticulatum. The mortar of this masonry seems to correspond to the mortar of the walls in vittatum A and B of the last building period of the Molino. At the west end a connection was made with the north wall of corridor 17. This section is in incertum and has been completely plastered in modern times. At the east end of corridor 18 a small wall blocking the corridor was built in rubble masonry. A date could not be established.

The north wall of corridor 19 is in mixtum and contained eight windows, two of which were blocked. The wall has been dated to the period of Hadrian (see above) and the blockage of the windows could, in view of the regular latericium and the purple colour of the mortar, be dated to c. 250 AD.

⁴³ Cf. Heres 1982, 92 and as an example from her catalogue no. 77, Santuario della Bona Dea (IV,VIII,3-4), room A east.

⁴⁴ Cf. Heres 1982, 129 ff.

⁴⁵ Becatti in SO I, 134.

⁴⁶ Blake 1973, 177.

⁴⁷ Blake 1973, 176-177.

⁴⁸ SO I, 142 and passim.

§ 4 Reconstruction

4A Period 1: 80-100 AD

It is impossible to determine the nature of this early building, but as the visible sections seem to follow the current plan of the complex the possibility of *tabernae* preceding the west rooms of the main construction cannot be excluded. The two brick piers against the south wall of room 6/7 may indicate that the south wall of the building, like the later Molino, had two doors up to the period 210-235 AD when the north wall of I,XIII,5 was built. It is also possible that the north wall of I,XIII,5 replaced an earlier wall.⁴⁹

4B Period 2: 100-125 AD

Rooms 1/2, 3, 5, 6/7, 12, 13, 15 and 16 are obviously *tabernae*, because of their large entrances from the street and the remnants of thresholds with a long groove in the doorway to rooms 5 and 6/7.

Taberna 1 has a back-room (2). Both rooms have doorways to corridor 17 and room 3. The doorway between rooms 1 and 3 was for some reason blocked at an unknown date. Both rooms received a new north and east wall in the period 370-440 AD, probably on the same spot as the original walls. This is suggested by the identical length of the two sections between rooms 1 and 2, and by the fact that the L-shaped section of the north wall of hall 8 stands in line with the later north wall. Rooms 1 and 2 are merely 3.62 and 3.69 wide, while *tabernae* 3, 5 and 6/7 are 4.24, 4.34 and 4.18 wide. If the north wall of hall 8, without the L-shaped section, was continued in a straight line towards the west, rooms 1 and 2 would have had a width of over 4.00. The reason why the north wall of hall 8 was not continued could be that corridor 17 needed to be wide enough for the passage of goods. In the wall between rooms 3 and 4 no traces can be seen of an earlier wall, which had been demolished.

Taberna 3 had a doorway to corridor 4. There are three beamholes in the south wall, east of the doorway, at a height of 1.53. The tops are at 1.70. A part of a beamhole in the north wall seems to correspond with the most easterly beamhole in the south wall. The presence of beamholes corresponding with the other two is made impossible by the presence of the doorway between rooms 2 and 3. Therefore and in view of the height of the holes we must think of a platform set against the south and east walls.

Corridor 4 is narrow and therefore not suited for the passage of wagons with grain and other products. It is noteworthy to see how far the north wall of corridor 4 protrudes towards the east. This may have to do with the presence of an upper floor over the *tabernae* (see below).

Taberna 5 has doorways to corridor 4 and room 8 (plate 34). The lower part of the east wall belongs to the main construction. In the south wall are five beamholes at an average height of 2.33. The first hole is placed against the east wall and the last hole about halfway across the wall. In the north wall three corresponding beamholes remain. Here too the beams may have supported a loft in the back of the *taberna*.

In room 6/7 the excavators have marked on the plan in Scavi di Ostia remnants of a wall that ran between the south and north wall, just east of the middle brick pier against the south wall. For this reason the numbers 6 and 7 are given to this *taberna*. The south wall of 6/7 is preserved up to a height of c. 3.00, but does not show any beamholes.

Tabernae 12 and 13 received a new west wall in a later period. *Taberna* 12 was connected to *taberna* 13 by means of a doorway.

Corridor 14 opens to *Semita dei Cippi*, a main artery of the city.⁵⁰ On this side of the Molino were horrea (I,XIII,1 and perhaps V,I,2). The corridor is wide enough for wagons, even after the

⁴⁹ Cf. Becatti in SO I, 153.

⁵⁰ Becatti in SO I, 120.

construction of a staircase (c. 2.10).⁵¹ The staircase cannot be dated. In the doorway to *Semita dei Cippi* is still part of a threshold with a pivot-hole. From corridor 14 the adjoining *tabernae* could not be reached.

Tabernae 15 and 16 both have a doorway to the workshop. In the wall between the *tabernae* is a restoration starting at ground level that can be dated to about the same time as the main construction. It looks like a blockage of a doorway, although it is only 1.08 wide and the wall east of it is not shaped like a doorjamb at all.

The central part of the complex can be interpreted as a workshop due to the spacious layout and the presence of mills (m1-m8), kneading-machines (k1-k5) and a large oven. Piers divide the northern part of hall 8 (room 8a) into two sections. In the northern section five kneading-machines were found.⁵² In the southern section are seven mills and the lower part of what might be a hand-mill.⁵³ It may be assumed that the kneading-machines and mills are preserved *in situ* in view of their orderly position and of course the mortar-beds around three of the mills. The kneading-machines and the mills were placed on a floor of basalt blocks. Noteworthy is the fact that the spacing between the four piers between m5 and m6 is smaller than that between the other piers. In the north wall of hall 8 is a doorway in line with these smaller gaps. The wide passageway in the north-west corner could be an entrance to the workshop for porters with goods.

The southern part (room 8b) is connected to the wide corridor 14, through which presumably most of the goods entered the workshop. In hall 8b are two cisterns that belong to a later building period. Nevertheless one may assume that the main construction the complex included a cistern, since a bakery of this size needed an abundant water supply (see §6A for the date of the installation of the bakery: 100-125 AD).⁵⁴

In the secondary wall behind the western cistern is a small niche (plate 48). A semicircular cavity was built with *reticulatum-tesserae*. The niche is 0.20 to the east of the cistern overflow. Because of this and because the niche has a solid floor it cannot be interpreted as a drain. Presumably it was a niche in which the statuette of a god was placed.⁵⁵

The southern part of the workshop consists of rooms 9, 10 and 11. Rooms 9 and 10 are separated from the rest of the workshop by secondary walls between piers. The northern row of brick piers is not positioned symmetrically to the piers in hall 8. Apparently a different use was planned for this part of the workshop during the construction. On the plan in Scavi di Ostia a wall has been drawn separating room 9 from room 10. Around the oven, in the four corners of room 9, brick piers were built, of which the northern ones are wider than any other brick pier. The south-east one has the base of two arches towards the west and north at 2.36. Presumably the ceiling of the room needed to be of concrete, in view of the risk of fire and to contain the heat.⁵⁶ Room 10 is separated from hall 8 and room 11 by means of secondary walls between brick piers. The latter wall is thicker than the others (0.46 instead of 0.30). On the plan in Scavi di Ostia a cistern is indicated.

4C Period 3: 175-200 AD

Two cisterns in hall 8b can be dated to the period 175-200 AD. In the east wall of the eastern cistern, at about 1.20 from the top, the end of a lead tube is visible, showing that the bakery was

⁵¹ The axles of a reconstructed wagon found in Stabia are 1.96 long (Miniero 1987, 185 fig. 13 and 17, 189). Wheel ruts in the eastern section of the Decumanus in Ostia are 1.40 apart (Fourniol 1998, 53; cf. Tsujimura 1991 on ruts in Pompeii).

⁵² For the identification as kneading-machines see Calza 1915(1), 244 and Blümner 1912, 65 and fig. 26.

⁵³ See among others Moritz 1958, 74 ff.; Blümner 1912, 27 ff.; Forbes 1965, 96.

⁵⁴ For the amount of water needed in the baking of bread see Moritz 1958, 195 ff.

⁵⁵ Not dealt with in Bakker 1994, because Bakker overlooked it due to vegetation (oral communication).

⁵⁶ Cf. Blümner 1912, 72 and fig. 32.

connected to the city water supply.⁵⁷ Because the cisterns lie below the floor level it is possible that at first ground water was used. The depth of the cisterns is at least 2.00. They are connected by means of a hole in the separating wall. The hole is situated fairly low at c. 1.60 from the top. In the south wall of the western cistern is an overflow-hole at 1.18 from the top of the wall. This means that there is a drain behind the south wall of the cistern. The reason why two separate basins were built may be that in times of scarcity the water could be stored in the eastern cistern by closing the connecting hole. In the western cistern a staircase descends to a landing at about the same level as the hole. The steps of the staircase are very worn.

Tabernae 12 and 13 obtained a new west wall in the period 175-200 AD. A very irregular vertical joint in the wall between the *tabernae* and in the wall between *taberna* 13 and corridor 14 suggests a restoration necessitated by collapse rather than a planned renovation. As the later wall stands in line with the west wall of *tabernae* 15 and 16 one may assume that it was rebuilt on the same place as an earlier wall.

4D Period 4: 210-235 AD

A doorway between *taberna* 3 and corridor 4 was narrowed. The sagging of the section above the doorway possibly caused this: the reticulatum above the doorway has subsided. *Taberna* 5 received in this period a narrowing in the opening to the *Cardo Maximus*. Possibly a column was removed here. The adjoining caseggiato I,XIII,5 was built. Its north wall became the new south wall of *taberna* 6/7. Finally the opening of *taberna* 6/7 to the *Cardo Maximus* was narrowed using a column.

4E Period 5: c. 250 AD

The doorway between corridor 4 and *taberna* 3 was blocked completely. In corridor 4 in the blocked doorway are two L-shaped holes. One is situated in the earlier narrowing, the other in the blockage (plate 33). There are two corresponding holes in the south wall of corridor 4. Most likely the holes received beams that could block the corridor, possibly to prevent the donkeys getting out of the bakery. In the Caseggiato dei Molini comparable F-shaped grooves are found in room 24 (plate 27).

4F Period 6: 250-300 AD

The upper part of the east wall of *taberna* 5 was rebuilt. This renovation is related to that of the east part of *taberna* 6/7. The masonry is identical. *Taberna* 6/7 received a new east wall and partly a new north wall. The vertical joint between the mixtum of the main construction and the opus vittatum in the north wall is very irregular. The reason for this restoration is unknown, but the irregular dividing-line and the presence of charcoal in the mortar of the vittatum could point to a fire. The charcoal might also be a residue of the ashes from the oven. Charcoal was found in the mortar of the east wall of *tabernae* 2 and 3 (dated 370-440 AD), in the mortar of the south wall of *taberna* 6/7 (dated 210-235 AD), and in the mortar of the west wall of *tabernae* 12 and 13 (dated 170-200 AD).

It is difficult to tell whether these sections were built on the same place as walls of the main construction. The excavators have indicated on their plan the remnants of a dividing wall just east of the middle pier against the south wall of *taberna* 6/7. It is not likely that this was the original east wall of the *taberna*, because it is not on line with the east wall of *taberna* 5. It is more likely that the later walls were built on the same place as walls of the main construction, also because the oven must always have had a supporting west wall.

⁵⁷ On lead tubes for water supply see Forbes 1965, 176.

4G Period 7: 370-440 AD

In the east side of the east wall of rooms 2 and 3 a vertical drainage channel was built with sesquipedales placed upright. The channel was probably used for the drainage of the rainwater coming from the roof over the western *tabernae*. South of this channel the wall is very rough and the *caementicium*-nucleus is visible. Apparently a wall was removed here (plate 36). The narrowing of the doorway between corridor 4 and *taberna* 5 can probably be dated to this period. Maybe the sagging of the masonry above the doorway led to this narrowing, because the latericium arch is blocked with the same masonry as that of the narrowing. In the south-east corner of *taberna* 6/7 an extra supporting pier was built.

4H Reconstruction of the upper floors and roof

The west rooms

In view of the width of the walls (av. 0.46) an upper floor could have been present above the western *tabernae*.⁵⁸ A second indication for an upper floor is of course the presence of a staircase in the south-west corner of hall 8 (plate 44). The staircase, that cannot be dated, has been preserved to a height of 1.37 and still has six steps with an angle of inclination of 36 degrees.⁵⁹ The staircase would reach the east wall of *taberna* 5 at a height of c. 4.20. The presence of an upper floor may also explain the protruding part of the north wall of corridor 4. More space would thus be gained for the upper floor.

It is difficult to be certain whether a second upper floor was built over the *tabernae*. In theory the walls are wide enough to carry yet another upper floor, if we compare them with the walls of rooms 2-6 and 20-23 in the Domus del Protiro (V,II,4-5).⁶⁰ These walls should have been able to carry two upper stories according to Boersma. They are however part of a more compact and therefore sturdier construction. In the Molino especially the wide openings to the street are a vulnerable point. Still there are enough examples in Ostia of *tabernae* with large openings to the street having more than one upper floor.

The central part

The brick piers in hall 8a must have carried a roof: grain and flour needed to be kept dry. The north wall has for the most part not been preserved high enough to show traces of a roof. One beamhole however can be seen at a height of 2.05. In the brick piers there are no beamholes. It is remarkable that in the northern piers two overlapping bipedales are found high up, contrary to the southern piers. The reason may be that the northern piers were erected to a greater height. Based upon this assumption a proposal can be made for the reconstruction of the roof over this part of the workshop.

The highest northern pier reaches 3.22. This is about 11 Roman feet.⁶¹ If we assume that the southern piers were 11 feet high and the northern ones 14 feet, a sloping roof supported by these piers would have met the north wall at a height of 17 feet.⁶² Such a roof would not have kept this part of the workshop free of wind and rain, which seems desirable for a product like flour. Against four of the southern piers travertine blocks were found. Some of these have a groove. It is likely that wooden panels were placed in these grooves.

⁵⁸ Cf. Boersma 1985, 94, 313-324, 347-349 and fig. 5.

⁵⁹ Cf. the reconstruction of staircases in Boersma 1985, 154 and fig. 152. Boersma mentions that for staircases in general in Ostia an angle of inclination of 45-47 degrees is quite normal. In the Domus del Protiro (V,II,4-5) there is a staircase with an angle of inclination of 35 degrees (Boersma 1985, 92).

⁶⁰ Boersma 1985, 94, 313-324, 347-354 and fig. 5.

⁶¹ One Roman foot is c. 0.296, see for instance Lugli 1957, 541.

⁶² With a height of 13 feet of the northern piers the roof would have met the north wall at a height of 15 feet.

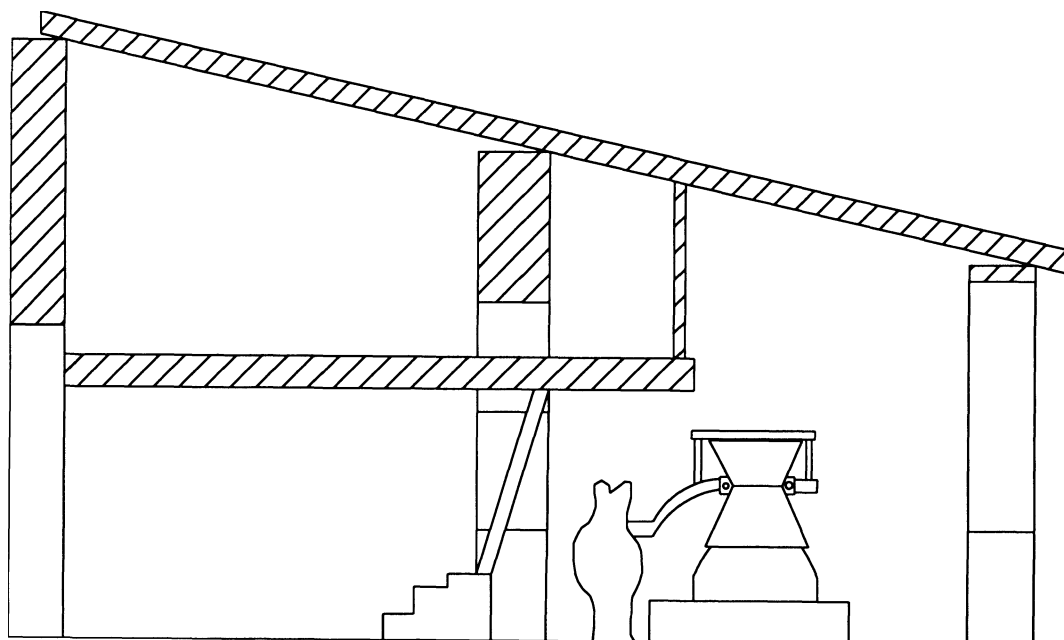


Figure 20. Molino I,XIII,4, reconstructed attic in hall 8a, seen from the west.

A staircase in 8a is in a strange place (plate 40). It cannot be dated. Continuation of this staircase towards the south is impossible because of the presence of the mill just south of it. It is unlikely that the staircase fell into disuse after the positioning of the mill. In that case it would have been removed to create more space. It seems more likely that this staircase was continued by a ladder and led to an attic. This attic would have been used for storage, and from it grain could be poured into the mills. A mill was about 1.65 high, too high to fill while standing on the floor. Moreover, if the mills were filled from the attic the donkeys turning the mills would not have to be stopped.⁶³

It is not clear how such a construction of an attic and roof was attached to the north wall and the piers. As mentioned before there are no holes in the piers that could point to such a construction. Maybe the attic hung from the beams of the roof (figure 20). The beamhole at a height of 2.05 could indicate the level of the attic.

There was probably no roof over part 8b of the workshop, because the piers on either side are not placed symmetrically. The south-east staircase suggests the presence of a floor over room 10 (plate 46). It has an angle of inclination of 42 degrees. If the staircase continued at the same angle it would have reached the south wall at a height of c. 6.50. The staircase may have led to a first floor at c. 3.20, which is a normal height of an upper floor, and continued to a second floor at c. 6.50.⁶⁴ Unfortunately the south wall of room 10 is not preserved high enough to give us an indication. However, the brick piers do not seem to be able to have carried a second floor. Therefore it is better to assume that the staircase reached up to a height of c. 3.20 and served an

⁶³ The donkeys had to be stopped each time the flour needed to be collected from the mortar-beds, but the refilling of the mills and the collecting of the flour do not need to have happened at the same pace.

⁶⁴ Boersma 1985, 93, 153 and 174.

attic. Most likely the staircase was continued by means of a wooden ladder firmly placed in the basin-like structure c (plate 47).

The reason why the staircase was not placed in room 10 but in room 8b could be that one did not want to lose any space in room 10. Moreover the staircase was in this way easily accessible to the porters bringing goods into the bakery from *Semita dei Cippi*. I have not been able to calculate the height of room 9, but the construction of its ceiling supported by arches was strong enough to carry an upper floor. The secondary wall separating rooms 10 and 11 is thicker (0.46) than the secondary walls in the north wall of 10 (0.30), so that an extra floor over room 11 is most likely in this part.

The east rooms

In all dividing walls, except for the one between rooms 12 and 13, (not preserved to a sufficient height) are beamholes at an average height of 1.95, with their tops at 2.15. The beamholes are in the western side of the walls, and pass through the wall. They suggest a system of crossbeams attached to each other over the complete width of the eastern *tabernae*. We should think of lofts at the back, halfway between the floor and the ceiling. The level corresponds approximately with the level of the lofts in *tabernae* 3 and 5.

In the west walls of *tabernae* 15 and 16, near the dividing wall, are large beamholes in which heavy beams must have rested, that were placed on top of the crossbeams. There are no holes at the north end of the west wall of *taberna* 15 (modern) and at the south end of the west wall of *taberna* 16 (not preserved to a sufficient height). In the west wall of *taberna* 13 beamholes can be found in similar places. The west wall of *taberna* 12 has not been preserved to a sufficient height.

Apart from the presence of a staircase in corridor 14 there are no indications of an upper floor. It is remarkable that the walls between 13 and 14, and between 15 and 16 are only 0.30 wide, which seems to be too small to carry an upper floor. Possibly the protruding piers in these walls helped to solve this problem. The upper floor was probably used for habitation. The staircase led directly to the street. The inhabitants had to pass through a door, given the presence of a threshold with a pivot-hole.

§ 5 Objects in the Molino

5A Various objects

In the north-west corner of hall 8a is a large tufa block with a broad raised edge along two sides (0.79 x 0.73 x 0.59). It does not seem to be *in situ* and its purpose is not clear. Kneading-machine 3 is on top of a square travertine slab with one curved side (0.67 x 0.67). In the upper side of the slab is a small circular gutter with a small drain. The gutter is 0.035 wide and c. 0.02 deep. The slab resembles part of an oil-press.⁶⁵ Against the north wall of 8a lies a drainage slab (plate 39). It is an almost square travertine slab with in the centre a round hole (0.80 x 0.76; diam. of hole 0.20). In the wall above is a groove, showing the core of the wall, presumably for a drainage pipe (width 0.29-0.16, starting at a height of 1.20). Another example of a groove for drainage can be seen in the west wall of 8a. Two similar slabs were found in rooms 10 and 11, but there is no corresponding groove here. In front of the staircase in 8a are two reused threshold-stones.

On either side of the staircase near the cisterns are two conical bowls (b1 and b2; plate 46). One is made of travertine, the other is of the same volcanic stone as the mills. They look like mortars. According to Moritz these instruments were related to the process of separating grain

⁶⁵ Cf. White 1984, 31-32 and fig. 21.

and chaff before milling.⁶⁶ In front of the staircase in corridor 14 are two travertine blocks that possibly belonged to these machines.

5B The mills and kneading-machines

In the south part of 8a are seven mills of the "Pompeian" type, shaped like an hourglass and powered by animals.⁶⁷ A little to the south-west of the most westerly mill is the lower part of what was probably a small handmill.⁶⁸ Mills m4, m5 and m8 have mortar-beds around them. In Pompeii too mortar-beds have been preserved.⁶⁹ They served as a firm foundation of the mill and were used to collect the flour.⁷⁰ The mortar-bed of mill 5 in the Molino slopes downward towards the mill and has been finished with plaster. The *catillus* of mill 3 is a good example of the extent to which a *catillus* could become worn before it was replaced.

Five complete kneading-machines and the remnants of a sixth were found. K1 to k5 are in the northern part of hall 8, parallel to the row of mills, k6 is in room 10. K1 to k5 are, like the mills, made of volcanic stone. K6 is of travertine. The outside of the machines widens towards the top, whereas the inside runs straight. As a result they have wide edges, on which the dough could be placed. In the bottom is a hole in which occasionally traces of lead are found. In this hole the spindle of the kneading-mechanism was placed. Wooden teeth were attached to the spindle, while in the side of the basin bars were fixed in holes (plate 42).

On mills m4, m7 and m8 and on kneading-machine k1 inscriptions were found. The inscriptions on the mills are on the *meta*, just above the floor. The one on m7 is placed a bit higher. The inscription on the kneading-machine is placed just above the floor.⁷¹ On m4: *S P C Y R* (plate 38); on m7: *P A R*; on m8: *M I V*; on k1: *G I A H*. Letters have also been found on mills in the Caseggiato dei Molini and in Pompeii. They have been explained as the initials of the makers of the mills.⁷²

§ 6 The bakery

6A The installation of the bakery and the alterations

It cannot be determined when the mills and kneading-machines were installed. The only dating-criteria are the mortar-beds around mills m4, m5 and m8. These however were completely plastered in modern times. The position of the mills in between the lines of brick piers belonging to the main construction looks rather natural and could be reason to date the installation of the bakery to the main construction or shortly afterwards. In any case no major alterations were necessary in order to install the bakery.

It seems that during the construction of the secondary walls in room 9, shortly after the main construction, allowance was made for the construction of a large oven. The secondary walls in the remainder of the north wall of room 9/10 might indicate a change in the planned use of the southern part of the workshop shortly after the main construction. However, travertine blocks are resting against pier 19 and against some of the northern piers. The possibility exists that, before

⁶⁶ Cf. Moritz 1958, 23-25.

⁶⁷ According to Peacock two different types are present in the Molino: one is dated by him to the period of Hadrian, the other to the second half of the first and to the second century (chronology based on the Caseggiato dei Molini) (Peacock 1989, 205-214).

⁶⁸ See Moritz 1958, 111 ff.

⁶⁹ Mayeske 1972, 11

⁷⁰ Moritz 1958, 76.

⁷¹ H. of letters c. 0.20-0.35. The inscriptions on m4 and m8 are in a place where part of the mortar-bed has been broken away.

⁷² Mayeske 1972, 13; Moritz 1958, 77; De Rossi 1857, 275-281. Because several inscriptions end with an H, De Rossi assumes that some of the makers were of Greek origin.

the construction of the secondary walls, here too wooden panels were used. In that case the construction of the secondary walls did not mean a change to the plan for this part of the building.

The oven was installed in room 9 during or shortly after the main construction, in a workshop in which the mills and kneading-machines are in quite a natural position. This is reason to assume that the building was meant to house a bakery almost from the beginning, if not from the very beginning.

In the last quarter of the second century AD two building activities took place: the construction of the cisterns and of the new west wall of *tabernae* 12 and 13. The rebuilding of the west wall of the *tabernae* is most likely the result of an accident rather than of a planned alteration in the plan of the main construction. It is possible that *taberna* 12 lost a passageway to the workshop during this rebuilding.

Later modifications are of a minor order. The last building period has been dated to 370-440 AD. One might assume that this alteration only involved the *tabernae* 1/2 and 3 and that the workshop had been abandoned. However, a wall was built and later broken away at the east side of the east wall of these *tabernae*, showing that there was activity in the workshop even after the last building period. This is also suggested by the orderly position of the mills and kneading-machines.

6B The functioning of the bakery

The grain and other goods were carried into the Molino through corridor 14 and maybe also corridor 17. The grain and firewood were probably stored on the attic over rooms 9 and 10, and perhaps 11. A possible attic over hall 8a may also have been used. Room 8b seems a good stable for the donkeys, but the building to the north of the Molino (I,XIII,3) is an alternative. As we saw above there was a doorway in the south wall of this building opposite the doorway in the north wall of hall 8.

The distance between the mills can best be measured between mills 4 and 5, both with a mortar-bed. It is c. 2.10, a lot more than the usual distance in Pompeian bakeries.⁷³ The flour was collected on the mortar-beds around the *metae*. It then needed to be sieved. After the kneading the dough was shaped into loaves of bread. It is to be expected that this took place near the kneading-machines. On the frieze of the funeral monument of the baker Eurysaces in Rome can be seen that the sieving and shaping took place over tables.⁷⁴ For this there is little room in hall 8a. Room 10, separated from the dusty open space 8b, where wagons and carriers left their cargo, is a much better candidate. In the oven in room 9 the bread was baked. The position of the kneading-machines north of the mills seems awkward: the dough needed to be carried from the kneading-machines past the mills to rooms 10 and 9. The narrow passageway between the central piers in hall 8a seems to have served this purpose. In view of the many *tabernae* on either side of the workshop all the bread produced was probably sold to the public.

⁷³ Moritz 1958, 82 and 96 n. 1.

⁷⁴ Rossetto 1973, 42-43, 48-51 and Tav. XXVII,1, XXX,2, XXXI,1 and XXXIV,1.

The Caseggiato delle Fornaci

Jan van Dalen - Jan Theo Bakker - Thea Heres

§ 1 Introduction

The building nowadays known as the Caseggiato delle Fornaci (II,VI,7) is situated between Via della Fontana and Via delle Corporazioni (plates 54-78; figure 21). To the north runs Via della Fullonica and to the south a roofed alley (plates 59-61), that divides it from its southern neighbour, the Caseggiato del Soffitto Dipinto (II, VI, 6).

During the excavation of the Caserma dei Vigili (II,V,1) by R. Lanciani in the years 1888 and 1889 the outer east wall of the Caseggiato delle Fornaci came to light, but no further investigations were made until 1907. The building was partially explored in that year when the Società Agricola Ravennate was digging west of Via della Fontana, for earth to be used in road-construction. The same year a plan of some rooms opening upon Via della Fontana was drawn by E. Gatti and published in the *Notizie degli Scavi* 1907 with a brief comment by D. Vaglieri.¹ The first room to be explored is called number 5 in this publication and contains a large basin.

The next exploration took place in August 1912 by R. Finelli. The ovens in room 1 were now unearthed.² The excavation of the entire building was, after a break of a few months, completed in February 1913. At this point Finelli wrote a description in the *Giornale degli Scavi*, parts of which were used by Vaglieri, writing in the *Notizie degli Scavi* of 1913.³

The building appears as an independent unit, completely detached apart from its indirect connection with the Caseggiato del Soffitto Dipinto, probably only by passages on the upper floor over alley 11 (plate 61). This alley was originally open to traffic, as is indicated by travertine buffers in the corners.⁴ The Fornaci is a rectangular building, with two long rows of rooms, divided by a central wall, running north-south.⁵ Along the west facade was a sidewalk, given the absence of basalt blocks on the street. All rooms on the ground floor are connected to each other, thus forming an entity interpreted by the excavators as an industrial complex. It opens upon Via delle Corporazioni by means of wide doorways (plates 54, 62), and on the other three sides by means of a few doorways, usually of more ordinary width. The total surface is c. 850 m².

§ 2 The Hadrianic period

2A General

Already at the time of the excavation it was clear that the original lay-out was part of the late-Hadrianic building program that took place in the area surrounded by the Decumanus, Via delle

¹ Vaglieri 1907, fig. 3, letter F.

² Vaglieri 1912, 388-389, fig. 2.

³ Vaglieri 1913(2), 124-127, plan on p. 122.

⁴ Vaglieri 1913(2), 125.

⁵ Meas. excl. alley 11: 53 x 150-152 Roman feet of 0.296.

Corporazioni, Via della Fullonica and Via dei Vigili, on account of the brickwork and the brickstamps.⁶ In other parts of this area some traces have been found of presumably Claudian building, but, probably owing to the fact that excavation stopped at the Hadrianic level, no such traces were reported by the excavators of the Fornaci.

The oldest visible remains in the building are thus datable to the reign of Hadrian, 117-138 AD. A vast amount of brickstamps was found, here and in the neighbourhood, both in the debris and in situ. These stamps point towards a date around the year 135 AD. Most principal loadbearing walls of the Caseggiato delle Fornaci date to this period (figure 22).

The entire original building was built in brick, like its contemporaries in this area. Walls of Hadrianic date are visible in all rooms. Both the inner and outer walls were built at the same time, with the exception of the outer wall of rooms 1 and 2, of which very little antique masonry is preserved. With some exceptions all walls of the Hadrianic phase have an average width of 0.60, the normal Roman standard of two feet for load-bearing walls. The most important exceptions are the outer north wall of room 17 and the south part of the outer west wall, with a width of c. 0.85, and the entire outer south wall, with a width of c. 0.75.

In spite of the sloping surface on which the building was erected,⁷ all walls above the foundation start at the same height. In order to achieve this, a terrace or system of foundation walls was constructed, on which all walls of the first, Hadrianic phase were built. All foundation walls running north-south had a width of approximately 0.90 (3 Roman feet), while those running west-east had a width of approximately 0.74 (2.5 Roman feet), with the exception of the outer north wall of room 17 which was 0.90 wide. These substructure walls were topped with bipedales and sesquipedales on which the proper walls were raised. Due to this method the entire building was raised above the level of the surrounding streets, from a minimum of 0.12 in the south to a maximum of 1.31 in the north. The original floor level within the building was level with the top of these foundation walls, so that, in a manner of speaking, the building was erected on a raised platform.

The foundation walls are recognizable not only by their top courses of bipedales, but also by their brickwork, that differs from that of the upper walls. The bricks are wider, the mortar-beds thinner and the brick-colour ranges from yellow to red. It is clear that the bricks used in the foundations came from another lot than the bricks used in the proper walls, which show a uniformity of salmon-pink bricks, like the Hadrianic walls of the other buildings in the neighbourhood.

2B Outer walls

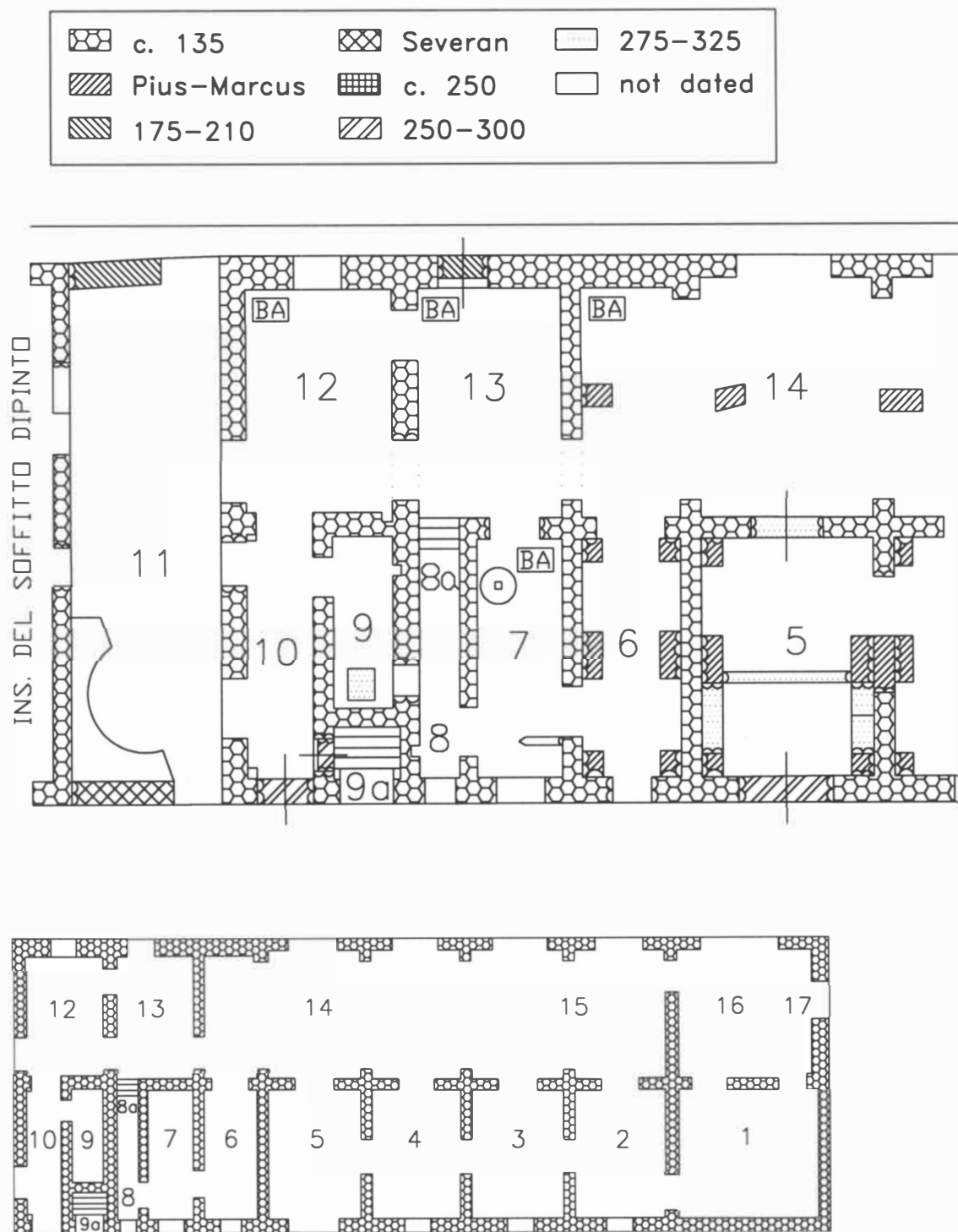
Like all Hadrianic walls in the building the outer walls of this date are faced with brick. The bricks are all fresh and well formed, and of a salmon-pink colour. The horizontal courses are well laid and the mortar-beds are narrow and regular and, where preserved, well filled-in. The mortar is very tenacious, containing red, black and brown pozzolana, and some lime-granules. The modulus of the brickwork is on average 0.25. In the outer east and south wall bonding courses of bipedales are visible at a height of approximately 1.54 above the lower bonding course topping the foundation. Putlog-holes are only visible in the outer south wall.

Windows are preserved only in the facade. Above the doorways in the east wall of rooms 9A, 10 and presumably 5 were segmental arches of sesquipedales or bricks set together to reach the length of sesquipedales. With one exception all other windows start at a height of c. 1.54 above the foundation level, i.e. right above the bonding course of bipedales for the facade, which simultaneously forms the sills.⁸ They were c. 1.16 to 1.18 wide and 1.70 high, and topped by

⁶ Cf. Blake 1973, 194.

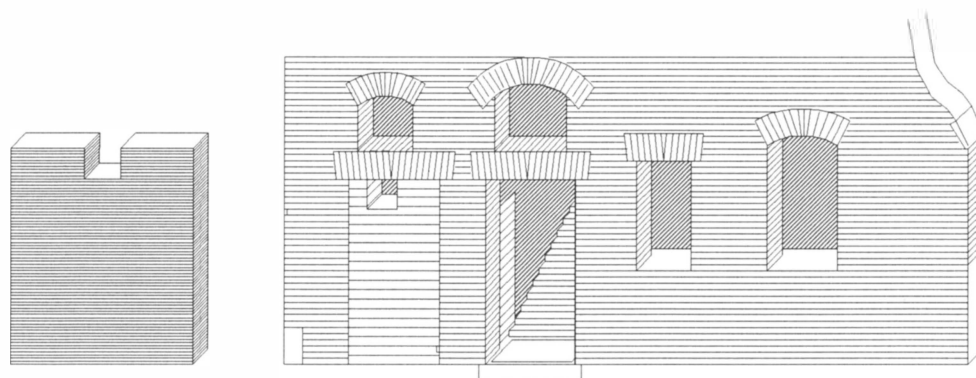
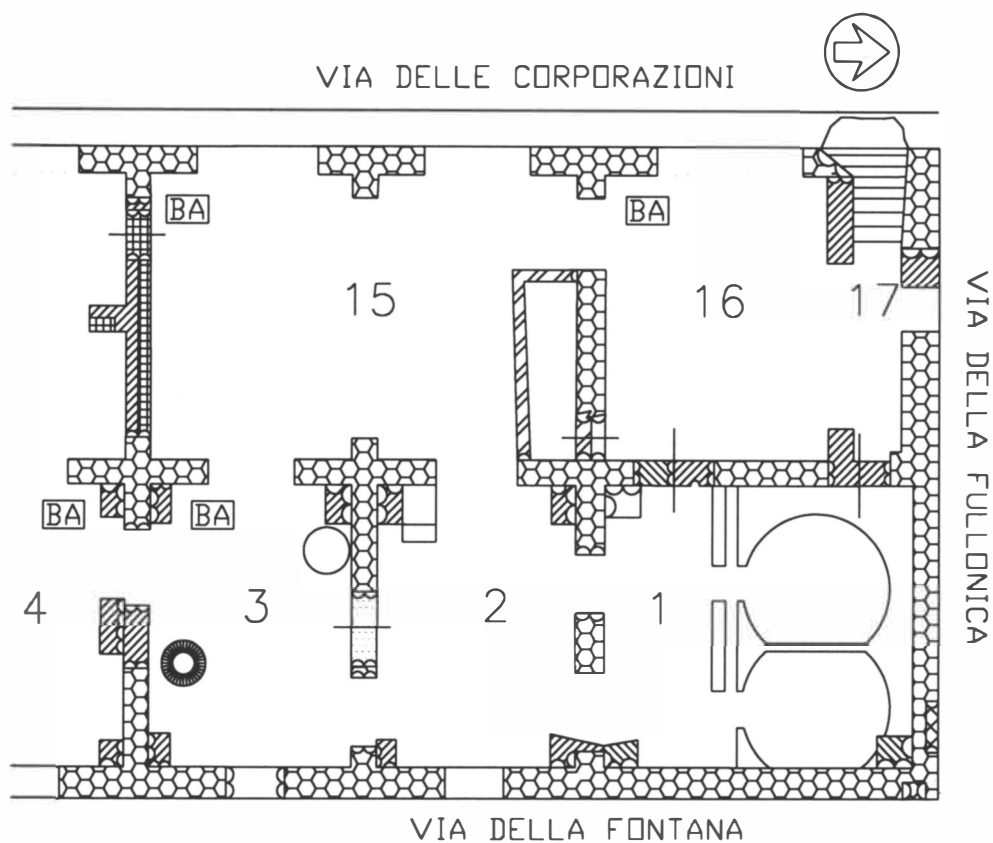
⁷ Sloping downwards towards the Tiber.

⁸ Opening onto Via delle Corporazioni was a window in the west wall of room 12, 1.33 wide, starting at 1.38 above the foundation.



Top. *Figure 21.* Plan of the Cas. delle Fornaci.

Bottom left. *Figure 22.* Cas. delle Fornaci, Hadrianic phase.



Bottom right. *Figure 23.* Cas. delle Fornaci, south part of the east facade (rooms 11-7).

straight or curved lintels of sesquipedales. Because of their large size they were probably shuttered, although no trace remains of any device.

2C Inner walls

The Hadrianic inner walls form an entity with the outer walls and are built in the same technique. There are no bonding courses. A segmental arch of sesquipedales or of smaller bricks set together to the same length covered the doorways. The arch was filled, so that a straight lintel resulted.

The central part of the building (rooms 2 to 5, 15 and the northern two-thirds of 14) has a clearly defined layout. In the outer west wall the doors are 9 feet wide, in the central north-south wall 7 feet, whereas the windows in the outer east wall are 5 feet wide. The door in the east wall of 5 is also 9 feet wide. The length of the flanking walls is respectively 4, 5 and 6 feet (4 feet in 5 east). The north-south measurement of these rooms is 17 feet, the depth 23 to 24 feet. The rooms to the west are connected by means of wide passages, those to the east by doors of 5 to 6 feet in the centre of the dividing walls. The brick piers in the western half are usually 2 x 2 feet.

The rooms to the north and south of this central unit have a completely different layout. The rooms to the north (16/17 and 1) are almost square. Unfortunately their original aspect is partly unknown, due to the state of preservation and modern restorations. There were two doorways between the rooms, two leading to the central part, and one leading to Via della Fullonica. There may have been a wide passage to Via delle Corporazioni,⁹ and a door to Via della Fortuna.

Room 6 and the south part of room 14 is fairly narrow. The area further to the south, with two staircases, is irregular. Wide passages to the street are not found here. Ordinary doorways were present in the west wall of 13, the south wall of 10 and 12, and the east wall of 10 and 9A. The absence of a door between 5 and 6 should be noted. There was a window in the west wall of room 12.

2D Ceilings, staircases and upper floors

The ceilings of rooms 5 and 6 and alley 11 can be reconstructed as having been made of wooden beams placed on protruding cornices of brick at a height of approximately 3.85. No holes were noted that could be interpreted beyond doubt as beamholes. Rooms where the walls have not been preserved to a sufficient height to determine the way in which they were covered may have been roofed in the same way. It is doubtful however whether rooms 14 and 15 had a ceiling, in view of the wide passages in the west-east walls.

At least two staircases were installed in the first phase of construction. These are an outer staircase, starting from Via della Fontana (9A; plate 57), and an inner staircase, starting from room 13 (8A). The thickness of the outer south wall and of the southern part of the outer west wall is probably related to the staircases. The great thickness of the north wall of 17 suggests that a further staircase was planned here. Rooms 7, 8, 9 and 10 were vaulted as a result of the staircases present there (plates 71, 74). The steps were supported by sloping barrel-vaults, the landings by cross vaults.

In both staircases the sidewalls show holes, probably putlog-holes. The steps have been restored extensively in modern times. The steps of the inner staircase are of brick.¹⁰ The first four steps of the outer staircase are of travertine, the remainder is made of modern bricks.¹¹ The latter stairway has a shallow vestibule enabling the doors to swing inwards. Damage to the sidewalls just above the steps suggests a different incline for the original stairs. This staircase continues up to the second floor after a landing. The steps leading to the second floor have not been preserved.

⁹ Both jambs are missing.

¹⁰ Twenty brick steps according to the excavators (Vaglieri 1913(1), 126).

¹¹ Eighteen steps of travertine according to the excavators (Vaglieri 1913(1), 126).

A ramp covered with modern mortar reflects their position.

Two rooms of the first floor have been preserved (over rooms 7 and 10), probably because they are the only rooms of the upper floor that form part of the staircase-unit in the south-east part of the building. This unit was built in vaulting-technique and therefore more resistant to decay than the rest of the building. Both rooms are landings. The landing reached by stairway 9A has two doorways opening on to what was once the first floor over alley 11. Brick thresholds are present, one of which gives access to the stairway to the second floor.

The landing reached by means of the inner staircase has no connections to further upper floors, but there are two doorways to the area above room 6. The travertine threshold of the eastern doorway is peculiar, because it is set in a way that forces the door to open on to the landing, instead of the other way round, which would be the normal situation.

The bricks used on the upper floors are a less uniform lot than the bricks used in the walls of the ground floor. The colours range from red to yellow, although the salmon-pink bricks used on the ground floor are also present. Nevertheless the walls were built simultaneously.

§ 3 Antoninus Pius to Marcus Aurelius

In this period the interior of the Caseggiato delle Fornaci underwent a radical change that affected many rooms in the north and central part of the building. All masonry is latericium. The average length of the bricks is 0.20-0.22, the average width 0.03-0.035. They are usually salmon-pink or yellow, sometimes dark-red. The width of the mortar varies from a little under 0.02 to 0.025. It is grey or white, usually with black, brown and rust-coloured pozzolana. The modulus varies from 0.24 to 0.30.¹² The Antonine masonry is not uniform throughout the building, which may indicate more than one alteration.

Piers were added to rooms 2 to 6: in the corners of rooms 2 and 3, and rows of three piers along the sidewalls of 4 to 6. The piers in rooms 2 and 3 differ from those in 4, 5 and 6, and may be later (plates 64, 66-69). The former possibly to be dated to the third quarter, the latter to the middle of the century.¹³

The piers in 2 and 3 seem to have been sustaining piers, whereas arches of sesquipedales or bricks set together to reach the same length connected those in 4 to 6. There is no evidence that these rooms were now vaulted, as is suggested by Vaglieri.¹⁴ The scarce remains of the arches that connected these piers from east to west suggest that they were full arches, made of bricks pasted together to equal the length of sesquipedales. The base of the arches is in most cases at a height between 2.35 and 2.40 above foundation level. The distance between them is c. 1.85, and the tops of the arches reached a height of c. 3.30. Adding the height of the sesquipedales we come to a total of c. 3.75, which is very close to the height of the cornices in room 6 and alley 11. Most probably the arches were to carry heavier beams.

Possibly in the early-Antonine period (c. 140 AD) the doorways between rooms 3 and 4, and 4 and 5 were blocked, before and quite possibly as preparation for the building of the piers. New doors were cut out to the west, possibly simultaneously.

The large hall 14/15 was divided in two rooms by means of a large (c. 140 AD?) dividing wall (plate 76), leaving a doorway of only 1.20. A north-south row of piers was presumably added in the centre of room 14 (plate 55). Their datable masonry is to a large extent later, but the most northern pier is Antonine, and there is Antonine or perhaps even Hadrianic masonry in the two

¹² Cf. the descriptions of Antonine masonry in Blake 1973, 208, 229, Meiggs 1973, 541-544, Heres 1985, 47ff. and Heres 1988, 43.

¹³ The northeast pier in room 2 seems to be an even later restoration (whitish mortar with grey and brown pozzolana; the bricks are longer and thicker; modulus 0.33).

¹⁴ Vaglieri 1913(1), 126.

southern piers. There may also have been a pier in the centre of room 15 of which there is no trace.¹⁵

In the north-west part of the building a staircase was added (17; c. 140 AD?), for which an entrance was cut in the facade. For the construction of this staircase a sustaining wall was added. The doorway in the north wall of room 16/17 was narrowed, and the northern doorway between room 16/17 and room 1 was blocked. The southern doorway in the latter wall was narrowed, possibly in the third quarter of the century.

§ 4 Commodus to Septimius Severus

Most of the walls added in this period are difficult to date. The bricks are to be dated in the second century AD, in some cases in the late second century. A large number seems to have been reused. The mortar is not conclusive for a more specific date than the last quarter of the second, or first decade of the third century. Furthermore different kinds of mortar have been used, so it is possible that the walls were constructed in different phases. Alterations do not join each other, so no relative chronology can be obtained within this group.

In the east corners of room 1 two sustaining piers were placed (the pier in the south-west corner of this room has entirely been restored). The remaining doorway between rooms 1 and 16 was blocked. Some parts of the masonry of the three southern piers in room 14 belong to this period, as does the narrowing of the western exit of alley 11.

The entrance to room 13 from Via delle Corporazioni was closed off. The outer west wall of room 13 was also repaired. The mortar visible at this point is the same as that used in the blockage of the entrance and no clear fissure can be noted. The bricks have a different appearance than the ones used in the rest of the Hadrianic walls, although they are all Hadrianic. They appear to be reused bricks. Apparently however, the mortar joints were chiseled away in this period and refilled, probably in order to adhere a layer of stucco to conceal the blockage of the doorway. This roughening of the wall caused the bricks to look as if they had been reused.

§ 5 The Severan Emperors

Two walls can be ascribed to this period with reasonable certainty. These are the outer walls at the north-east corner of the caseggiato, probably a rebuilding or repair of the Hadrianic original. Furthermore the narrowing of the roofed alley at its east side. Both brickwork and mortar differ too much to be ascribed to the same phase, although all is Severan, as is shown particularly by the presence of thin bricks (a little under 0.03) of a typical "Severan red".¹⁶ Thick bricks are also found (0.03 to 0.035). They vary in length from 0.18 to 0.25. The mortar is grey and white, containing brown, black and red pozzolana. The width of the mortar is 0.02 or less, the modulus varies from 0.24 to 0.27.

§ 6 The later third and fourth century

6A The middle of the third century

Around 250 AD the dividing wall between rooms 14 and 15 was repaired in latericium (the pier at the south side and the lower part of the masonry at the north side). In the same period the

¹⁵ A few piers in the east half of the building have also disappeared.

¹⁶ Cf. Heres 1982, 86.

remaining doorway between the two rooms was blocked in vittatum mixtum A (plate 75). A minor repair took place in the dividing wall between rooms 1 and 16. The masonry is characterized by fairly short (0.17 to 0.20) and very thin (0.02 to 0.025) yellow and red bricks. The mortar is grey and white, with black and red pozzolana. The width of the mortar is 0.02 to 0.03.¹⁷

6B The second half of the third century

In the second half of the third century some modifications took place in latericium. The bricks are 0.19 to 0.23 long and c. 0.035 thick. The width of the mortar varies from a little under 0.02 to 0.025. The average modulus is 0.30. The masonry has badly leveled courses of yellow and red bricks. The mortar is grey, containing heterogeneous material with red, grey, black and brown pozzolana.¹⁸

At an unknown point in time a doorway was opened between room 10 and stairway 9A. Later, probably somewhere in the second half of the third century, it was blocked (plate 72). Around the same time the entrance to room 10 from Via della Fontana was blocked (plates 56, 73; figure 23). The large passage from room 5 to Via della Fontana was also blocked (plate 58). This blockage has been consolidated with modern concrete at a modest height of c. 1.00 above threshold level. In room 15 an undated doorway was present in the east part of the north wall. In the second half of the third century it was blocked, and a basin was constructed in front of the north wall (plate 64). Possibly also in this period the two southern piers on the north-south axis of room 14 were repaired or rebuilt.

6C The later third and early fourth century

The last, sometimes coarse, modifications are in latericium and vittatum. The doorway between rooms 2 and 3 was blocked in vittatum mixtum A (plate 63). At an unknown point in time a doorway was opened to the east. Also in this period the large doorway between rooms 5 and 14 was blocked in latericium. At the western side masonry in *caementicium* is visible. A supporting pier in room 9 reinforced stairway 9A. It was built with a mixture of latericium and vittatum mixtum. The northern freestanding pier in room 14 was possibly rebuilt in this time. Perhaps in the fourth century a basin was added to room 5 in two phases.

§ 7 Interpretation

7A The Hadrianic building

The main facade of the Hadrianic building was the west wall, and a sidewalk ran only along this wall.¹⁹ The ground floor was to a large extent intended for commercial use. The wide entrances from the street leave no doubt that rooms 5, 14/15 and perhaps 16 were intended as shops. Rooms 1 to 4 could be used for storage, as workrooms or habitation. There is nothing to indicate which trades took place in the building.

The south part of the building contained two staircases: an inner one with brick steps, leading to the first floor, and an outer one with travertine steps, leading to the second floor. The more expensive steps of the latter staircase presumably reflect the quality of upper floor apartments.

7B The installation of the bakery

It is clear that a bakery was installed in the Caseggiato delle Fornaci. Remains of floors of

¹⁷ Cf. Heres 1982, 92.

¹⁸ Cf. Heres 1982, 443-453 and Heres 1988, 54.

¹⁹ The whole insula has a sidewalk along the west facade only.

basalt blocks are found in the entire western half and in rooms 3, 4 and 7. In the western half they are 0.35 to 0.71 below foundation level. Furthermore three basins were present, large ones in rooms 5 and 15, and a smaller, undated one in room 7 (plate 70).²⁰ Two ovens were installed in room 1, one in alley 11. The former were built of tufa blocks, with elevated floors of sesquipedales. The remains are very scanty. The latter one, built of rubble masonry, seems to have been a limekiln (related ashes were found in understairs 9).²¹ In room 2 a “pilastro (fornello)” was found.²² The excavators interpreted the remains of two machines of volcanic stone as olive-presses.²³ A closer examination shows that these were not olive-presses, but part of bakery-equipment. One machine (broken in six pieces, but complete) is found in room 3. It is a kneading-machine of the same kind as found in the Caseggiato dei Molini (plate 65). Of the other machine only a fragment (two complementary pieces) has been preserved. It is part of a small *catillus* of a mill.

The bakery cannot have been installed before hall 14/15 was given a roof. This took place in the period Pius-Marcus (plates 77, 78). The pier in the north-east corner of room 1 provides a terminus *ante quem non* for the ovens. It has to be dated somewhere in the years between 175 and 210 AD. The basin in room 15 belongs to the second half of the third century and the one in 5 may have been built as late as the fourth century. There is however a clear indication that the bakery was installed in the period Pius-Marcus. The ceiling of various rooms in the eastern half was reinforced in this period. Apparently they had to carry a weight that was greater than usual, presumably due to industrial activities. This and the striking resemblance to sustaining arches in the eastern half of the Caseggiato dei Molini leave little doubt that a bakery had been installed.

There is no basin that can be related to the building phase in which the bakery was installed. However, since bread making involves the use of large quantities of water, we must assume that there was at least one. We may think here of the undated basin in room 7, but it is rather small. A large basin may have been set against the south wall of room 15. The lower part of the eastern, Antonine section of this wall was repaired along a fairly straight line in the middle of the third century.

Hall 14/15 was divided into two smaller halls by an Antonine wall with a door 1.20 wide. In the western half of the Caseggiato dei Molini a remarkably similar layout is found. In the same period a stairway was added in the north-west corner of the caseggiato.

It should be noted that apparently the wide passages in the west and east wall were never blocked. Whereas room 5 may have been a shop, the floors of basalt blocks in the west half show that here there were no shops. Apart from the facilitation of transport, the reason for not blocking the passages may have been the need for ventilation. A row of very large windows in the west wall of the Caseggiato dei Molini seems to have served the same purpose.

7C Later repairs and modifications

In the middle of the third century the doorway between rooms 14 and 15 was blocked. This might indicate that hall 14 was no longer part of the bakery, but there is no blockage of the passage between 14 and room 4. In the second half of the third century a basin was built against the north wall of room 15, blocking a doorway in the east part of that wall. Also in this period the wide entrance from the street to room 5 was blocked. Later a very large basin was installed in the east half of this room. It was either built in two phases, close to one another in time, or repaired, since there is a joint in its north wall. Two benches were built inside the basin between the piers. At an unknown point in time a *dolium* was dug into the floor in the north-west corner of room 3.

²⁰ Vaglieri mentions a basin in the east part of room 6, but may well mean this one (Vaglieri 1913(1), 126).

²¹ Vaglieri 1913(1), 125.

²² Vaglieri 1913(1), 126, GdS 1913, 70. The accompanying plan suggests that it was in the south-west corner.

²³ Vaglieri 1913(1), 126.

7D The functioning of the bakery

What has been the function of the different rooms within the bakery? The most intense activities took place in the rooms with floors of basalt blocks (some have imprints of hooves). In the western half the height of these rooms was increased, by lowering the floor. The milling presumably took place in the large halls 14 and 15. Rooms 3 and 4 are ideally placed for kneading, and a kneading-machine was actually found in room 3. A *dolium defossum* in room 3 may have contained ingredients for the dough. Rooms 12, 13 and 16 may have been stables, the basin in room 7 a small trough.

Room 2, to the south of the ovens, is the obvious place for sieving and moulding the bread. The two ovens in room 1 point to a considerable production. The find of a small oven in room 2 indicates that pastry was also made in this bakery.

The addition of piers in rooms 2 to 6 points to a considerable strengthening of the first floor. The most probable reason for this is that the floor above these rooms was used for storage of grain and wood. This part of the first floor could be reached by the inner stairway 8A. On the first floor a threshold for two doors has been preserved between rooms 6 and 7. The doors opened towards room 7, which may well be related to the commercial use of the area above 6. There is no building for grain storage in the vicinity of the bakery. The easiest way to bring the grain to the first floor would have been via staircase 17. Presumably the grain was poured into the mills from the first floor.

The only room that might have been used as shop is 5. It is more likely however that bread was stored here, before being transported to customers or shops in town.

5

Further evidence

Jan Theo Bakker

§ 1 Further bakeries

1A Caseggiato del Balcone Ligneo and Caseggiato del Pantomimo Apolausto (I,II,2.6)

These two buildings are situated to the south-west of the Caseggiato di Diana (plates 79-83; figure 24). Originally it was one complex, dated to c. 120 AD.¹ In the south-east part a *nymphaeum* was installed in the first quarter of the fourth century.² In the *nymphaeum* an inscription was reused mentioning the pantomime Apolaustus, a freedman of Marcus Aurelius and Lucius Verus.³ He gave his name to the south part of the building, a separate unit from an unknown point in time. The north part of the building was named after a wooden balcony that adorned the facade.

Description

The complex was excavated during the First World War, but had already been searched in the 18th or 19th century. It was described in detail by Paribeni and inspected by me in October 1994. In 1996 the Soprintendenza was cleaning the building. The description uses the room numbers assigned by Paribeni (rooms 20-30 and 38-45).⁴ As to the original masonry, all outer walls and those of courtyard 27 are of opus latericium, for the remainder opus mixtum was used. A sidewalk ran only along the northern facade. On the facade are traces of thin plaster with traces of red paint. Remains of thin and thick plaster are found inside. Beamholes for a ceiling are found at 2.75/3.00 (bottom and top respectively) from the present floor level. The total area is roughly 730 square metres.

Room 20 Porticus along Decumanus Maximus. The floor has three basalt blocks.

Room 21 *Nymphaeum* I,II,1.

Room 22 Shop? Remains of staircase, accessible from Via dell'Ara dei Lari, in north-east corner.

Room 23 Shop?

Room 24 Corridor. In south entrance a threshold for one door.

Room 25 Secondary north wall in latericium. Secondary masonry in central part: latericium, rubble, vittatum of very bad quality. Floor of basalt blocks (not visible).

Room 26 Shop? Well in north-east corner.

Room 27 Courtyard.

North. Secondary wall at west end disappeared. Secondary wall to the west of door to room 45 latericium. East part of north wall is in opus mixtum.

East. Secondary walls (latericium) on either side of door to 28. In lower part of east part of

¹ Cf. Blake 1973, 170.

² Heres 1982, 369-371.

³ Calza 1914(1), 70.

⁴ Paribeni 1916(2), 411-413, 419-422, plan after p. 428.

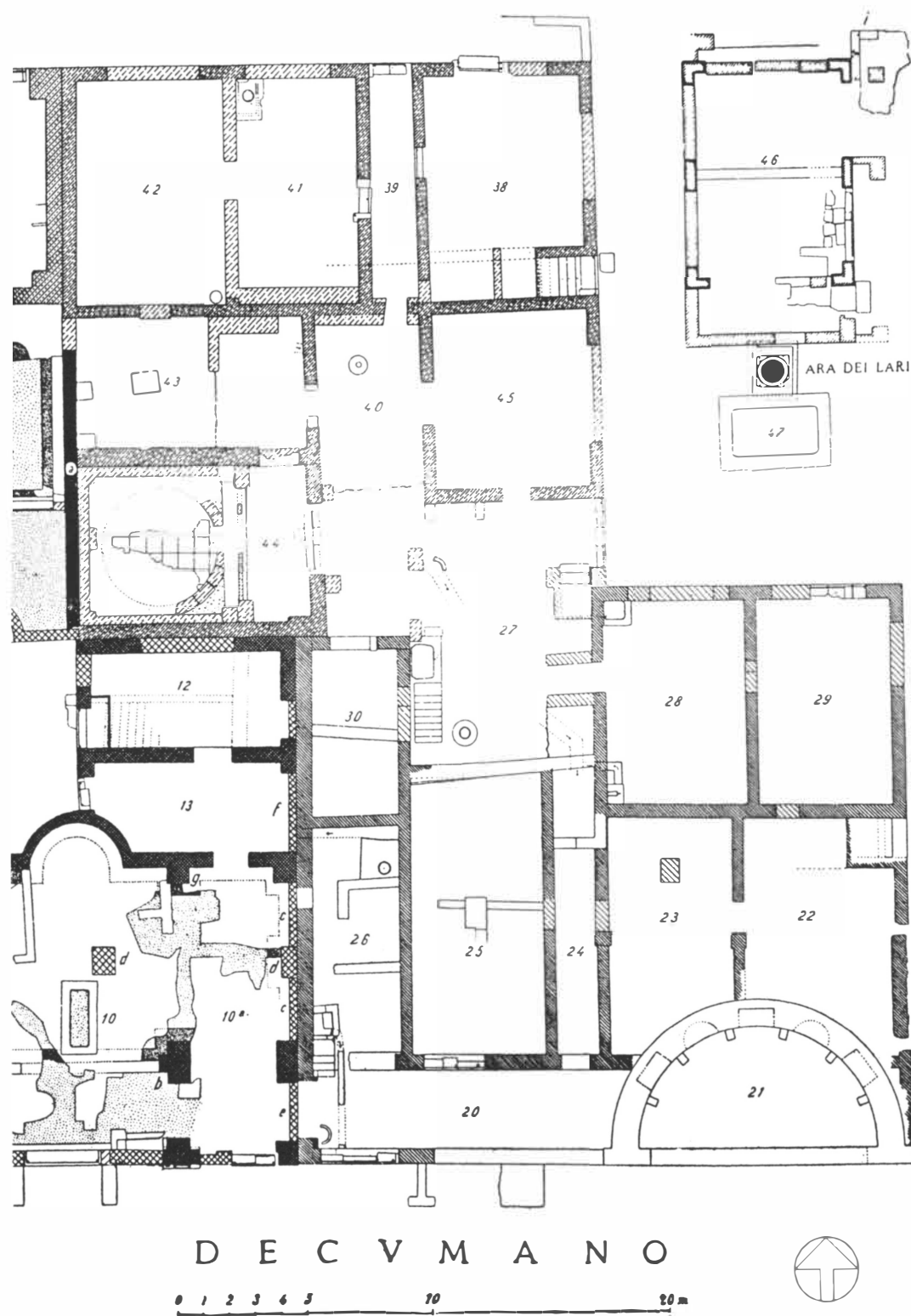


Figure 24. Plan of the Cas. del Balcone Ligneo.

southern one a small relieving arch. Structure to the south badly preserved. Remains of staircase set against east wall (two travertine steps and holes indicating incline of staircase in east wall). Secondary brick pier set against staircase. Threshold for two doors in passage to Piazza dei Lari. South. This wall is problematic. The east end (with a small relieving arch in the lower part) seems to be an entity with the east wall, but the masonry is very different. There may have been a window lighting corridor 24. A little to the west is a crack. The west end (l. 0.81) is separated from the central part by a vertical joint and seems to be an entity with the west wall.

West. Staircase (one travertine step and modern latericium) and basin (with opus signinum; inside meas. 0.75 x 1.40) set against west wall. Blockage to the west in vittatum 1:1. Two secondary brick piers in passage to room 40.

A structure indicated in the north-west corner on Paribeni's plan (dotted) has disappeared. In the south-west corner is a brick well with a tufa rim (diam. of rim inside 0.46, outside 0.98, h. 0.35). To the right of the well are three fragments of *catilli*, one with part of the contraption into which the horizontal beam for rotating the millstone was inserted. Floor of basalt blocks (not visible).

Room 28 Shop. Doorway in east wall blocked with vittatum 1:1 (south part), and small tufa blocks (north part). Shop-entrance in north wall narrowed with latericium, blocked with vittatum 1:1 (central part). On the floor in the south-west corner lie the remains of a latrine: next to a hole in the wall is a square travertine seat of a latrine (0.61 x 0.72, h. 0.24), with an opening shaped like a keyhole (0.40 x 0.20 (front) / 0.24 (max. w.)).⁵ In the north-west corner was a small basin. Floor of basalt blocks (not visible).

Room 29 Shop. Wide doorway in east wall blocked with vittatum (upper part; one layer of bricks, several layers of tufa) and latericium (lower part). In the shop-entrance in the north wall is a shop-threshold. Partially blocked with latericium. Door in south wall blocked with latericium. Door in west wall blocked with small tufa blocks (north part; south part damaged). Floor of basalt blocks.

Room 38 Shop. Staircase accessible from Piazza dei Lari in south-east part (sagging, with supporting wall).⁶ Shop-entrance in north wall narrowed with vittatum (two layers of brick, one layer of tufa) and in the remaining doorway a threshold with a pivot-hole. Shop-entrance in east wall blocked with vittatum (two layers of tufa, one layer of brick). In door in west wall a threshold for one door. Floor of basalt blocks.

Corridor 39 In the doorway towards Via di Diana a threshold for two doors, in the door in the west wall part of a threshold, with a square hole in the centre.

Courtyard 40 North part mixtum, south part latericium. Wall in latericium set against north wall. Two latericium piers set against west wall, on either side of passage to room 44. In the north-west corner lies a damaged, round, low object of volcanic stone, perhaps part of a *meta* (diam. 0.72, pres. h. 0.22). It has a shallow recess in the top, not in the centre. Beamholes in west wall (two at 1.98 / 2.40, two at 0.80 / 1.00). Floor of basalt blocks.

Room 41 Shop. West wall and wall set against south wall latericium. South end of west wall is of original mixtum. Shop-entrance in north wall blocked with vittatum (two layers of brick, one layer of tufa; plate 81). In this room are fragments of various objects, some of which may have been part of "machines". Floor of basalt blocks.

Room 42 Shop (plate 82). Shop-entrance in north wall on the inside blocked in vittatum 1:1 (middle part) and latericium (upper and lower part), on the outside in latericium. In east end of upper part of blockage a window, on the outside with a horizontal groove below. Blockage of doorway in south wall disappeared. East wall preserved to a great height (above mezzanine-window in north wall); no beamholes. In the south-east corner lies a round, travertine object. Floor of basalt blocks.

⁵ The latrine was uncovered in 1996.

⁶ Paribeni 1916(2), fig. 9 on p. 422.

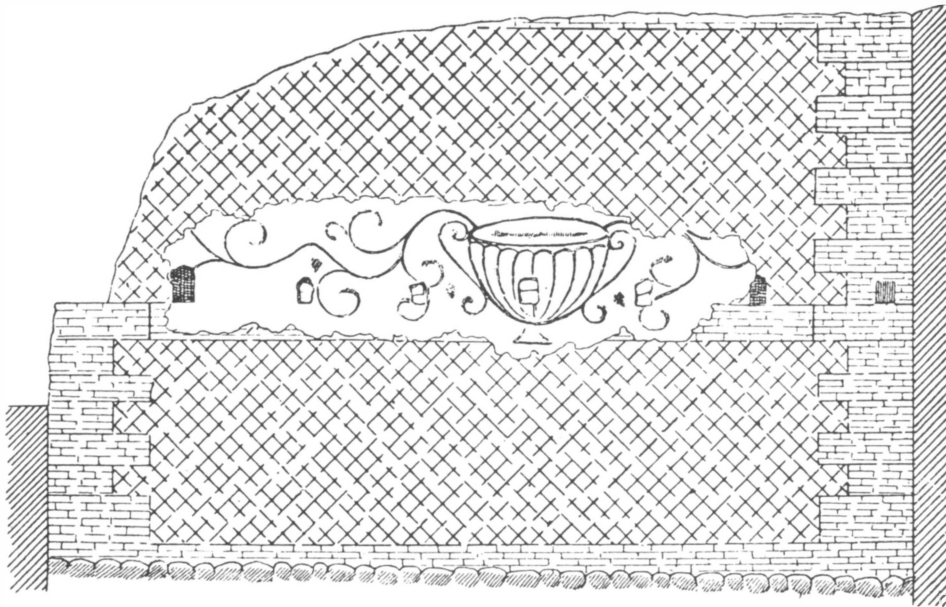


Figure 25. Cas. del Balcone Ligneo, wall-painting with *cantharus* from the east wall of room 42.

Clearly the wall between rooms 41 and 42 was rebuilt. Paribeni has noted that the level of the first floor was now changed, because there are no beamholes in the new wall at the height of the old beamholes. At the level of the old holes a painting was placed in room 42, depicting a *cantharus* and vegetative ornaments (figure 25).⁷

Room 43 Latericium pier in south-west corner. Two other secondary structures not found. Secondary walls in east part: latericium (north) and vittatum (many layers of tufa, one layer of bricks; west).

Room 44 In this room a large oven was installed (plate 83). The low podium (h. c. 0.50?) was made of latericium, set against the mixtum. During the excavation the lower part of the superstructure was found, a ring made of large tufa blocks (diam. of cupola, outside meas., c. 5.00 x 5.20). The floor of the oven was made of two layers of brick, with sand in between. The oven opened towards the east, and part of the brick arch of the opening was found. In a collapsed part of this arch brick stamps were found from the period of Hadrian and Marcus Aurelius (one from the years 125-134 AD, 26 from 161-176 AD). The north wall of this room (modern mixtum) is very thick (0.70 - 0.75; the av. th. of the primary walls is 0.51). In the south-east corner the wall is thick as well. High up in this corner the lower part of a chimney may be preserved: a deep hole, starting at h. 2.55, w. 0.40; running diagonally from south-east to north-west; latericium on the inside.

Room 45 Blockage of shop-entrance in east wall has disappeared. Floor of basalt blocks (plates 79, 80).

Interpretation

The floors of basalt blocks, basins, remains of milling machinery and the oven - of a type familiar by now - leave no doubt that a bakery was installed in the complex. It was built however as a group of shops around a courtyard (room 27 and the south part of room 40; plates 79, 80). From the width of the doorways can be deduced that customers did not access the shops from the

⁷ Paribeni 1916(2), 420 and fig. 8.

courtyard. The characteristic shop-entrances, with mezzanine-windows above, were along the north, east and perhaps south facade.

The bakery was installed later, possibly during the reign of Marcus, as is suggested by the brick stamps found amongst the ruins of the oven. Heres, after studying photographs, suggests a date in the third century for the vittatum of some of the blockages. This does not contradict the presence of a bakery in an earlier period: we have seen that the wide passages in the west wall of the Caseggiato delle Fornaci were never blocked. The latericium of the lower part of the blockage of room 42, north does not seem to be much later than the original construction. The separate pier between rooms 27 and 40 may be Severan.

As in the Caseggiato dei Molini and Caseggiato delle Fornaci ceilings were built and raised using piers in the courtyard. Further indications are the raised ceiling of rooms 41 / 42 and supplementary walls in rooms 40 and 43. With the exception of corridor 39, room 43 and oven 44 all rooms in the Caseggiato del Balcone Ligneo had a floor of basalt blocks. Room 25 had a similar floor and may have belonged to the bakery as well.

1B A bakery near the Caseggiato dei Dolii (I,IV,5)

The remains of a bakery near the Caseggiato dei Dolii (I,IV,5; to the south of the museum) seem to be mentioned in an excavation report from 1878. The excavation is described of a room containing the lower part of a *dolium*. A liquid had left rings inside. It was connected with a basin to the south by means of a terracotta pipe. “Nel vano seguente sono stati trovati alcuni catini, e frammenti di catini di macine da grano, restaurati ab antico con grappe di bronzo impiombate”.⁸ The room with the *dolium* was apparently to the south of the museum,⁹ and is perhaps to be identified with a room to the south-west of the large room with *dolia defossa* in the Caseggiato dei Dolii.¹⁰ The presence of millstones nearby is mentioned by Carcopino: “Je laisse naturellement de côté les matériaux rapportés, comme les restes d’une meule en lave qu’on voit au pied de la terrasse du casone [the museum]”;¹¹ “A l’entrée de B13 [the northernmost excavated room of I,V,2, to the north-west of the museum], un beau fragment de meule.”¹² These remains are perhaps to be identified as the three *catilli* in the garden in front of the museum (see below, § 2). The room to the south of the *dolia* had a pavement of basalt blocks.¹³

There are reasons to think that the building with the *dolia* was related to the bakery. The installation of the storage building is usually dated to the Severan period.¹⁴ Pasqui excavated the building in the first years of the 20th century.¹⁵ The depot held 35 *dolia defossa* (plate 84), that were later covered by a rough pavement. In the *dolia* the remains of at least 400 terracotta moulds were found. These have been discussed extensively by Pasqui, Floriani Squarciapino and Salomonson.¹⁶

⁸ Lanciani 1878, 37-38.

⁹ Carcopino 1910, 398, 401-406, 427.

¹⁰ Presumably a *dolium* is visible on Carcopino’s plan pl. XIII, near letter H, and there may be a basin near letter d.

¹¹ Carcopino 1910, 406, plan pl. XIII, letter p (on the north end of Via dei Dipinti, a little to the north-west of the Caseggiato dei Dolii). Further millstones may be depicted near letter a and number 2.

¹² Carcopino 1910, 415, visible on plan pl. XIII.

¹³ Pasqui 1906, 359, fig. 1 on p. 358, letter g. More information may be published in DeLaine’s forthcoming study of the Insula dei Dipinti. Cf. DeLaine 1995, 94 and n. 48: “Immediately to the south of the *dolia* was an area of basalt paving. A similar combination of coarse mosaic and basalt paving was found in the south garden associated with a number of rooms built in the garden space; other rooms exited against both sides of the dividing wall and against the north wall of the House of Jove and Ganymede”, with reference to GdS 1917, 58, 60-63, 69-70 and GdS 1919, 227-228, 255, 263-264.

¹⁴ See for example Pavolini 1983, 86.

¹⁵ Pasqui 1906, see also Gatti 1903.

¹⁶ Pasqui 1906, Floriani Squarciapino 1954, Salomonson 1972.

The moulds consisted of two parts, and with them semicircular objects were made approximately the size of a hand. The objects all had the same weight. A relief was stamped on either side of or around the objects. Depicted were animals, scenes in the theatre, amphitheatre and circus, erotic and mythological scenes, and still lives. Similar moulds have been found in the western half of North Africa, on the east coast of Spain, in the south and east of France, in Italy, perhaps in Austria, and in Greece.¹⁷ They are all remarkably similar, were possibly made in North Africa, and are to be dated to the late second and first half of the third century AD.

It is significant that the objects that were made with the moulds have never been found. Obviously they were of perishable material. Pasqui suggests that the Ostian moulds were used to make “dolciumi”, weighing one pound, in a nearby bakery “coi suoi forni, colle mole trusatili”.¹⁸ He points out that among the other finds in the building were many fragments of theatre masks, lamps, many *amphorae*, and small beakers. In his view we should think of the distribution of *crustulum et mulsum* at the occasion of *epula publica* and *ludi*.¹⁹ This interpretation was rejected by Floriani Squarciapino, who maintains that the reliefs are too detailed for pastry, points out that the moulds are not baked well, and that all known moulds for pastry are of a different nature. She thinks of terracotta or wax ex voto's or souvenirs.²⁰ Salomonson rightly criticizes the idea of ex voto's: amongst the reliefs no religious scenes or deities are found. The relief on a mould from Marseilles was found again on a coin struck for the Decennalia of Septimius Severus in 202 AD, which leads Salomonson to the suggestion that the objects were presents (*missilia*), possibly edible, related to these festivities.²¹

Thus the relation with the bakery is hypothetical, but attractive. It may be noted that one of the *catilli* near the museum was part of a *pistrilla*, a small pastry-mill.²²

1C Caseggiato I, IX, 2

This building is situated to the west of the Forum, on the north side of the Decumanus Maximus (plates 85-88; figure 26). The masonry in the original building has been dated to c. 120 AD.²³

Description

In the twenties a short description of the building was published by the excavator, Calza.²⁴ I inspected it in October 1994 (plates 85, 86). The original masonry is opus mixtum, with brick piers. There was a sidewalk along the western facade, and also perhaps along the northern facade. Traces of thin plaster can be found on the facade, inside are remains of thin and thick plaster. The floor level of the north-west part (floors with basalt blocks) is at the same height as the thresholds and the street. The floors of the remaining rooms (including the oven-room) are lower, up to 0.70. Top of beamholes at av. h. 2.50 above higher floor. The total area covers roughly 280 square metres.

Room 1. Shop. In shop-entrance in west wall, part of a threshold with a pivot hole, but without a groove (contrary to Calza's plan). South jamb of passage in east wall has rounded corners in lower part (cf. Caseggiato delle Fornaci, room 6).

¹⁷ Also in various places in Ostia, see e.g. NSc 1907, 121, NSc 1908, 332, NSc 1916, 426, and Salomonson 1972, 97.

¹⁸ By which Pasqui may also mean the Caseggiato dei Molini. His reference to NSc 1878, 334 seems erroneous.

¹⁹ Pasqui 1906, 372-373.

²⁰ Floriani Squarciapino 1954, 95-98.

²¹ Salomonson 1972, 109-112.

²² Cf. Moritz 1958, 111 and Mayeske 1979, 40. The small mills were operated by young or undersized animals, or human beings. They were probably used by pastry bakers.

²³ SO I, 235.

²⁴ Calza 1923, 182-183, plan Tav. II, fig. 1.

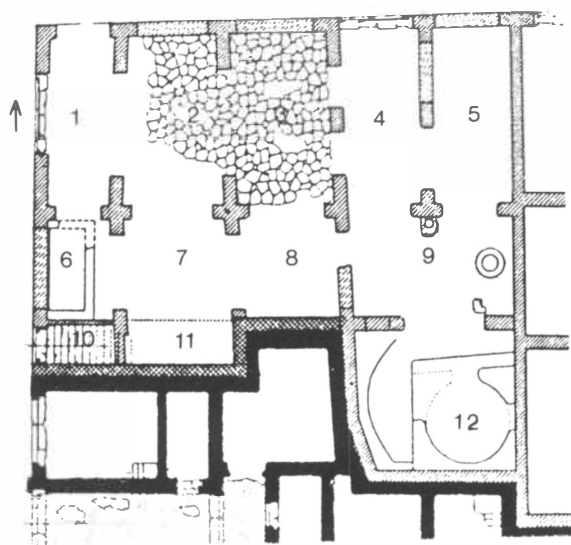


Figure 26. Plan of Cas. I, IX, 2.

Room 2 Shop. South jamb of passage in east wall has one rounded corner (west). Shop-entrance in north wall blocked with latericium, resting on a threshold. Floor of basalt blocks.

Room 3 Shop. Shop-entrance in north wall blocked with latericium. Floor of basalt blocks.

Room 4 Shop-threshold in passage in north wall.

Room 5 Shop. Shop-entrance in north wall blocked with vittatum, blockage of passage to room 4 not verified.

Room 6 Shop. In shop-entrance in west wall a shop-threshold, blockage not verified.²⁵ Large basin set against west wall has disappeared.

Room 8 Lower part of south wall made of large tufa blocks. Narrowing of east wall not verified.

Room 9 Large secondary hole in east wall. A well indicated on Calza's plan has disappeared. Vittatum pier, partly round, resting on a travertine slab, set against central part of north wall (plate 87). Inside the pier is a rectangular terracotta drainage pipe.

Room 10 Staircase, of which 19 travertine steps have been preserved (20 according to Calza; plate 86). Lower part of south wall of understairs made of large tufa blocks.

Room 11 Lower part of south wall made of large tufa blocks. There may have been a very large niche higher up in the wall.

Room 12 In this room an oven was installed (plate 88). Passage in north wall narrowed on west and east side with latericium (base of arch for new doorway visible on west side). Podium of oven and casing of cupola in vittatum 1:1. Meas. of podium: north-south 4.50, west-east 4.20, h. c. 1.20. In front of cupola a ledge, d. 0.44. Opening of oven on north side. Lower two rings of cupola preserved, made of large tufa blocks (inside diam. 3.35). Five low beamholes in west wall (av. h. 1.00 / 1.20) perhaps related to some structure indicated on Calza's plan.

Interpretation

Floors of basalt blocks, a basin and an oven of the kind found in bakeries strongly suggest that a bakery was installed here. Originally the building consisted of shops along the facade, connected by wide passages. It is difficult to tell what was the intended use of rooms 7, 8, 9 and 12. Room 4 was probably planned as a corridor (even though a shop-threshold is present), given the L-shaped north-west corner of the west wall, and the double doors in the west and east wall.

The masonry of the narrowing of the entrance to the oven-room is virtually identical to the Hadrianic masonry. Heres, after studying photographs, suggests a date in the late second century for the latericium-blockage in rooms 2 and 3. The vittatum in room 5, around the drainage pipe in room 9, and of the oven probably belongs to the late third or fourth century.²⁶ The date of the installation of the bakery is unknown. The blockages in rooms 2, 3 and 6 may well bear some relation to this. Shop 5 may have been used for retail, until the entrance was blocked.

²⁵ Clearly visible however on an old photograph: Calza 1923, Tav. V, fig. 1.

²⁶ The bricks are a mixed lot and reused, the tufelli are very mixed, and the mortar is very thick.

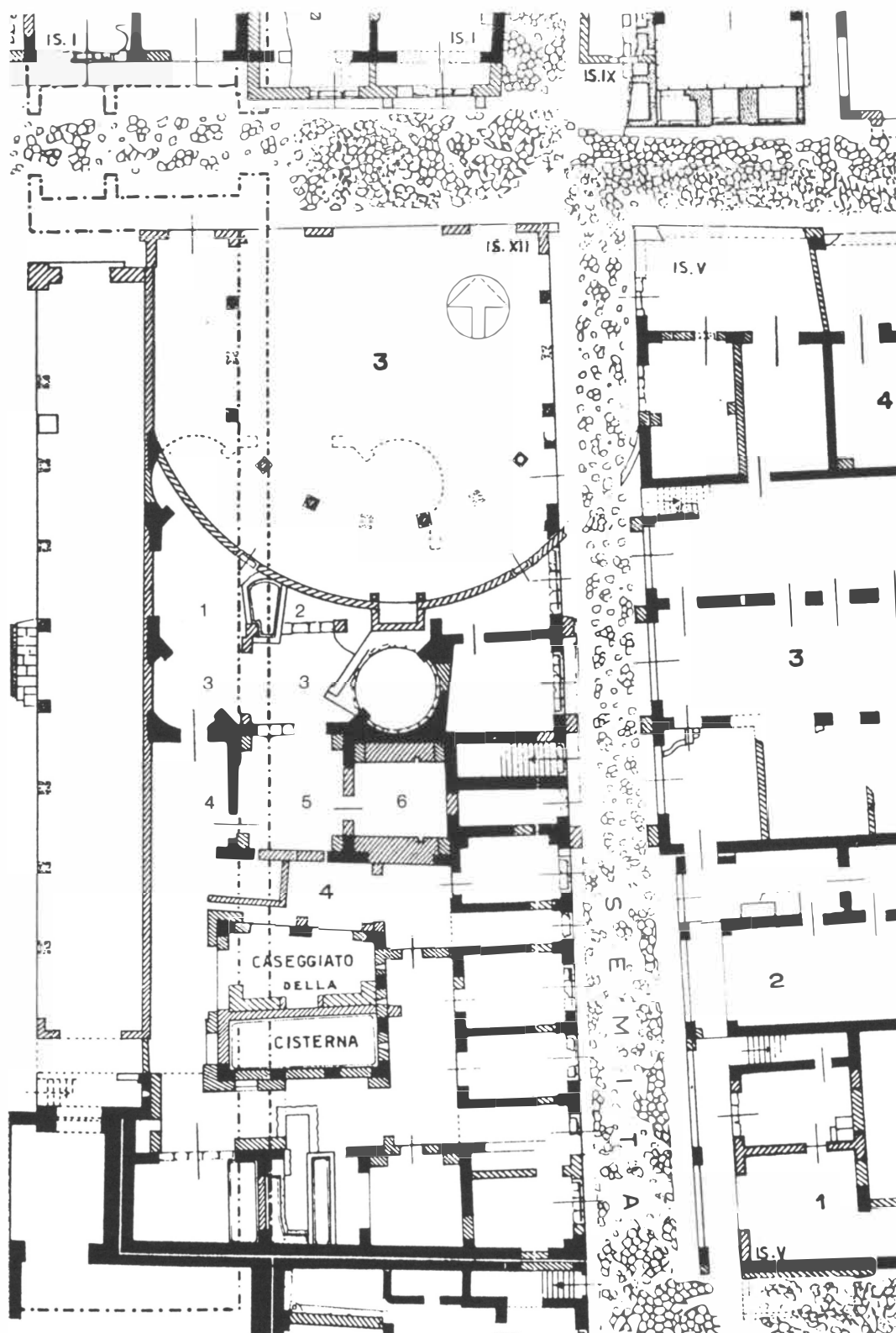


Figure 27. Plan of the Cas. della Cisterna.

ID Caseggiato della Cisterna (I,XII,4)

The Caseggiato della Cisterna is in the area to the east of the Forum: to the south of Exedra I,XII,3, to the east of the Foro della Statua Eroica (I,XII,2) and to the north-east of the Terme del Foro (I,XII,6) (plates 89-95; figure 27). The Exedra and the Foro della Statua Eroica are both late additions, from the middle and end of the fourth century.²⁷ Hardly anything has hitherto been written about this building. The oldest masonry in the Caseggiato della Cisterna is Hadrianic.²⁸ The masonry of the north part is of particular interest. The plan of a huge octagonal room emerges, possibly the vestibule of a large Hadrianic bathing establishment. It is dealt with in some more detail in an appendix. In this room and in a number of surrounding rooms a bakery was installed. A waterwheel in the south part of the building is discussed in the concluding chapter.

Description

Only short references have been made to this building so far. I inspected it in October 1994. The floor level of the octagonal room (rooms 1-3) was c. 0.40 above that of the present floor and of the surrounding rooms. Along the east facade is a row of shops. In the north-west corner of the shop to the east of room 3 is part of a kneading-machine, including part of a hole for the insertion of a blade (plate 92). All secondary masonry is latericium, unless indicated otherwise.

Room 1. Remains of a white mosaic floor in north part (in the Exedra, that could be reached from this room through a doorway, are remains of a similar floor). Some basalt blocks in south part.

Room 2. A small, but interesting room. In the west part a latericium basin, widening towards the north. Inside are remains of opus signinum. In the south entrance a travertine threshold. In the east part a structure looking like a tiny oven. On top of a podium (h. 0.35) a small cupola (inside diam. 0.60), made of pieces of brick and tufa, opening towards the north (w. of opening 0.38).

Room 3. In a very large, semicircular floor-niche in the east part a large oven was installed (plate 91). A door (or window?) in the east part of the apsis was blocked soon after its construction: the masonry is virtually identical (plate 90).²⁹ When the oven was built, two walls in the opening of the niche were partly removed. The brick podium of the oven (h.0.98) is protruding from the niche. In the front of the podium is a deep floor-niche or hole (lower part rectangular, upper part triangular; h. 0.75, max. w. 0.60, d. 1.00; plate 89). The opening of the oven was towards the west. The first ring of the cupola, made of large tufa blocks, has been preserved (inside diam. west-east 4.00, north-south 4.20). In front of the cupola is a ledge (d. 0.48).

Remains of a white mosaic floor, also in front of small oven in room 2 and large oven in east part (podiums of ovens placed on top of mosaic floor). Some basalt blocks in south-west corner.

Room 4. The central part of the east wall is in opus mixtum and thinner than the latericium to the north and south. Floor of basalt blocks.

Room 5. In the north passage is part of a smooth, travertine threshold. Central part of west wall opus mixtum. Four brick piers added in the corners. South passage blocked with latericium and rubble masonry (east part). The west end of this blockage is a parallel for the wall between rooms 2 and 3 in the Caseggiato dei Molini.³⁰ There is a narrow opening (w. 0.24), on the bottom of which is a travertine block; the west jamb is of bricks, the east jamb shows the core of the wall (it may have been set against a wooden structure). The floor of the room has some basalt blocks.

Room 6. West passage narrowed, east and south passages blocked. North and south secondary walls very thick. Vertical drainage channels (w. 0.27) in north and south wall. The floor has some basalt blocks. Many basalt blocks and parts of other objects piled up in room.

²⁷ Heres 1982, 386-392.

²⁸ SO I, 132, fig. 34; Blake 1973, 176.

²⁹ On the inside. The masonry on the outside (latericium and rectangular tufa blocks) is much later.

³⁰ See chapter 2, part III, § 1B.

Recent excavations In November 1996 the excavation had started of Exedra I,XII,3. Several rooms with floors of basalt blocks were found, some with the imprint of hooves (plate 93).

Interpretation

A basin, floors of basalt blocks, a familiar kind of oven, and part of a kneading-machine indicate that a bakery was installed here. Its size and history are obviously problematic. Heres, after studying photographs, suggests a date in the last quarter of the second century for the piers in room 5.³¹ Recent excavations have shown that it was a large bakery, that evidently stopped functioning after the building of Exedra I,XII,3, in the middle of the fourth century. The northern part of the building has a total area of roughly 640 square metres. Four pairs of piers on Semita dei Cippi suggest a connection with building V,V,3, that looks like a commercial building.

1E Building II,VIII,9

This building, excavated at the end of the 19th century, is directly to the east of the Grandi Horrea (figure 28). Paschetto supplies a short description.³² On the accompanying plan a large structure looking like an oven is seen in the centre of the building. According to Paschetto it was a basin. The scanty remains consist of a tufa circle, without podium. Two rooms to the north the plan seems to show a basin, a floor of basalt blocks and a round object. A number of rooms across the street (part of a row of rooms along the east side of the Grandi Horrea) also had floors of basalt blocks.³³ There is not enough evidence to think that this was a bakery, or to support Paschetto's suggestion that it was a *fullonica*. Excavation of the north part of the building will be helpful.

§ 2 Millstones and kneading-machines

I located the following scattered remains in July 1987 and October 1994:

- Three *metae* just outside the entrance to the excavations.
- *Meta* on Piazzale della Vittoria.
- Two fragments of one or two hollow *metae* on the south side of the Decumanus, slightly to the west of Piazzale della Vittoria.
- Three *catilli* - one of which was part of a *pistrilla* - in the garden next to the museum (lower part interred, diam. of larger ones 0.79 and 0.82; *pistrilla-catillus* almost complete, h. 0.45, circumference of rim 1.60).
- Lower part of a kneading-machine against the facade of a shop to the west of the north part of Via dei Balconi (between third and fourth shop from the north). Grafting of vertical spindle preserved and identical to grafting encountered in Caseggiato dei Molini. Rectangular slab of lead in centre of bottom (0.15 x 0.20), with a small square depression in the middle (0.025 x 0.025, d. a few mm.).

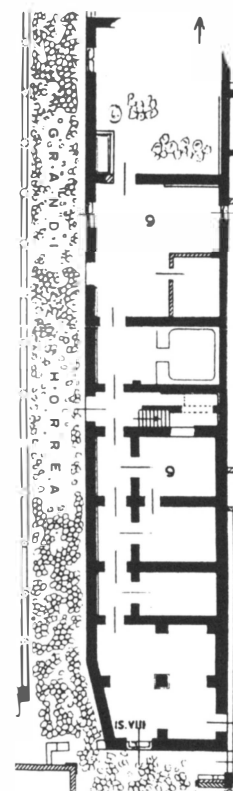


Figure 28. Plan of Building II,VIII,9.

³¹ The bricks are partly fresh, partly reused. The mortar layers are thinner than those in the Hadrianic masonry.

³² Paschetto 1912, 338, fig. 88. See also NSc 1886, 164-165.

³³ Calza 1921, fig. 1 on p. 361.

Upper part damaged (pres. h. 0.62, max. pres. diam. 0.72, inside diam. of bottom 0.45). In the shop to the south are fragments of one or more kneading-machines, perhaps this one.

- Fairly small *meta*, interred, in Caseggiato III,I,14, fourth room from the east along Via della Foce.
- Fragment of *catillus* on a wall in front of the Caseggiato di Bacco e Arianna (III,XVII,5).
- Upper part of *meta* in understairs of Caseggiato IV,II,12.
- Large part of *catillus* in room 5 of Caseggiato V,II,3.³⁴
- A millstone of peperino was found on Via dei Lari in 1914.³⁵
- Two *metae* were found next to the entrance of tomb 13 of the Porta Laurentina-necropolis.³⁶

§ 3 Reliefs

The following reliefs from Ostia and its satellite Portus show parts of bakeries:³⁷

1. Two reliefs on a marble block in which *ollae* were inserted, from Ostia, dated to the first century AD. On either side of the inscription are reliefs showing the interior of a bakery.³⁸
2. Terracotta relief from the facade of tomb 78 of the Isola Sacra-necropolis, late-Trajanic or Hadrianic. Depicted is part of a bakery.³⁹
3. Marble relief found in modern Ostia, a shop-sign or tomb-relief. Depicted is a man amongst breads; above him are a sieve and a bread-mould. Probably first century AD.⁴⁰

§ 4 Inscriptions and graffiti

Inscriptions

The inscriptions document an Ostian *corpus pistorum* from 140 to 249 AD. By the second half of the second century the *corpus* also included the bakers of Portus, at the time a district of Ostia.⁴¹

1. From tomb 1, Porta Laurentina-necropolis; c. 50-30 BC. The tomb belonged to D(ecimus) Numisiu(s) D(ecimi) l(ibertus) Antioc(hus), *pistor*.⁴²
2. Found in Ostia; on a marble block in which *ollae* were inserted; first century AD. The monument belonged to P. Nonius Zethus, *Aug(ustalis)* (see also § 3, nr. 1).
3. From tomb 78, Isola Sacra-necropolis; late-Trajanic or Hadrianic. The tomb belonged to Ti. Claudius Eutychus (see also § 3, nr. 2).

³⁴ Cf. Boersma 1985, 114, 383.

³⁵ Calza 1914(2), 246, fig. 1 on p. 245; Calza 1916(1), fig. 4a on p. 146.

³⁶ These may have indicated a cremation, or have been apotropaic objects (Floriani Squarciapino 1958, 79).

³⁷ In the facade of tomb 29 of the Isola Sacra-necropolis are two reliefs depicting people working over *catilli*. One holds a large object over the *catillus*, the other presses a shapeless object against the inside of the *catillus*. According to Zimmer they are sharpening the objects. It is also possible however, that they are repairing the *catilli*. Hadrianic-Antonine (Calza 1940, 251-253, figs. 151 and 152, 303-304; Floriani Squarciapino 1959, 186-189 nrs. 4, 5, Tavv. II, 2 and III, 1; Zimmer 1982, 183-184 nrs. 117 and 118).

³⁸ CIL XIV, 393; Moritz 1958, 76, Pl. 7a; Helbig 1963, 245 nr. 316; Zimmer 1982, 114-115 nr. 25, fig. 25.

³⁹ Calza 1931, 539-540; Calza 1940, 254, fig. 154, 336-337; Thylander 1952, nr. A 61, Pl. XX, 3; Floriani Squarciapino 1959, 190-191 nr. 7, Tav. IV, 2; Meiggs 1973, on Pl. 28b; Zimmer 1982, 113-114 nr. 24, fig. 24.

⁴⁰ Calza - Floriani Squarciapino 1962, 21 nr. 13; Zimmer 1982, 116-117 nr. 28, fig. 28; Pavolini 1986(2), fig. 18.

⁴¹ To the list are perhaps to be added CIL XIV S, 4676 (found on the Piazzale delle Corporazioni; fragmentary; mention of a *quinquennalis* of the *corpus*? of Ostia and Portus?) (see also infra, chapter 6, note 31) and CIL XIV, 4234 (referring to a baker - M. Caerellius Iazemis, *quinquennalis III et perpetuus* - from Rome or Ostia: Sirks 1984, 617 n. 5 and infra, chapter 6, n. 27).

⁴² Floriani Squarciapino 1958, 63, 143-144.

4. Found in Ostia; fragmentary; 140 AD. Set up in honour of Antoninus Pius by the *[c]orpus pist[orum]*.⁴³
5. Found in Civitavecchia; fragmentary; period of Marcus Aurelius. Erected in honour of Marcus Aurelius by the *corpus pisto[rum] coloniae O[stiens(ium) et] Portus Utriu[sque]*.⁴⁴
6. *Corpus | pistorum | Locus adsignatus a Papirio Dionysio tunc praef. ann. | decurionumque [6]su.*⁴⁵ Large marble slab, broken in five pieces (h. 0.77, w. 2.40, d. 0.08. h. of letters 0.17, 0.17, 0.06 and 0.055). The first letter of the last word is a C, G, O or Q; presumably the word is *concessu*.⁴⁶ Reused in the Basilica di Pianabella.⁴⁷ M. Aurelius Papirius Dionysius was *praefectus annonae* at the end of 189 and in 190 AD.⁴⁸ Discussed in more detail in chapter 7.
7. Found in Ostia; c. 198 AD (plate 96). Erected in honour of M. Licinius Privatus by the *fabri tignuarii*. Later *quaestori et q(uin)q(uennali) corporis pistorum Ostiens(ium) et Port(uensium)* was added, referring to Privatus.⁴⁹
8. Found in Ostia; March 1st 249. Erected in honour of P. Flavius Priscus, *patr(ono) corp(or)is pistorum*, by the *mensores frumentarii*.⁵⁰

Graffiti

1. *PANIIM A VIII | XVIGNA A V (or II).*
A: *asses*; *xuigna*: *axungia*? (axle-tree grease).⁵¹
2. *III BYTIRRI | OLEV M X FRUMII.*⁵²

⁴³ CIL XIV S, 4359.

⁴⁴ CIL XIV, 101.

⁴⁵ The inscription is mentioned by Paroli (1993, 159). It was published by Nuzzo (1996, 90-91, with a photograph). Inv. nr. 48092. Found in 1982.

⁴⁶ Nuzzo's completion *permissu* cannot be correct.

⁴⁷ The inscription had been removed during illegal excavations. The find spot was apparently the Basilica, but one fragment may come from the area near the church of S. Ercolano.

⁴⁸ Pavis d'Escurac 1974, 352-353.

⁴⁹ CIL XIV, 374. For the date: CIL XIV S II, p. 611 and Meiggs 1973, 210, 330-331.

⁵⁰ CIL XIV S, 4452.

⁵¹ Della-Corte - Ciprotti 1961, nr. 10, p. 327, Caseggiato degli Aurighi.

⁵² Della-Corte - Ciprotti 1961, nr. 64, p. 337; place of discovery unknown.

On the Emperor's service

The *corpus pistorum* of Ostia and Portus Uterque from the juridical perspective

Boudewijn Sirks

§ 1 Introduction

Ostia was not just any harbour. It was the port of entry of Rome and derived from this its significance. Much or all commercial activities of Ostia and Portus Uterque were related in one way or another to the importation for Rome. This in its turn influenced the social and economic structure of these two places. Therefore if we want to put the activities of the *pistores* of Ostia and Portus Uterque in the right context, we have to sketch first these activities and the legal measures, adopted in connection with them (particularly those concerning the *corpus pistorum* in Rome). We will then be able to examine the few references we have to the *pistores* of Ostia against the right background. We will first treat of the food importation, the Imperial organization set up for the distributions of grain and bread including the creation of corporations for this purpose, proceed to the references to the *corpus pistorum Ostiensium et Portuensium*, and then discuss the characteristics of this corporation.

§ 2 The free distributions of grain and bread

The surrounding region could not feed Rome's population and its supplies had to come from overseas provinces. Ostia was the major port for importation, to which Portus Uterque was added between 52 and 117 AD. In addition to the private demand for food there were the free distributions, beginning in 123 BC. An exact assessment of the number of people eligible for the Imperial distributions is, as yet, impossible, but they will have concerned less than half of the total population of Rome.¹ This all means that the distributions, although sizeable, were relatively small compared with total private imports. Beyond this there must have existed a large private trade in grain and other staples. Yet we can say that the people entitled to free distributions in Rome made up a considerable part of the total urban population.² "Considerable" here means that the distributions were of a size and a political importance that made the introduction and management of a separate system of levies and importation of grain

¹ It is impossible to give an exact estimate of the size of the distributions. On the basis of the few figures we possess for Constantinople and Oxyrhynchus we should not expect more than 30% of the total consumption. See Sirks 1984, Chapter 1, section d, and Sirks 1991(2), and now Kislinger 1995, with on 290-291 a (low) estimate of 20,212/32,340-142,335/160,948 for Constantinople, and also Müller 1993. Why would it have been different then for Rome, which Constantinople was to emulate?

² There were also people in Rome (and its harbours) who could buy *panis fiscalis* for a low price; see below, section 5.

advantageous. Political significance may have compensated for otherwise unimportant distributions. Further, this system made the Emperors independent of private imports.

2A The administration of the *Annona*

The Emperors, as *curatores annonae*, were in charge of the *annona*, i.e. the distributions, and bore responsibility for sufficient private importation.³ They had to ensure that the free distributions were constant and for that reason set up a system of levy (the *canon urbis*, sufficient for these distributions, with a surplus to provide for losses etc.),⁴ transportation, distribution and processing. It proved successful and reliable, taking into account the long time the distributions remained in existence (into the sixth century) and the adjustments made over this period. They appointed officials to take charge of the daily tasks of the *annona*, and in this way the administrative office of the *Annona* was created. At the head of this organization stood the Prefect of the *Annona*.⁵

2B The *corpus pistorum* in Rome

In the beginning the milling and baking of the gratuitously distributed grain was left to the beneficiaries. Perhaps they cooked it after milling and ate it as porridge (*puls*). Trajan encouraged Junian Latins to set up mills (*pistrina*) and mill grain for three consecutive years,⁶ granting them Roman citizenship as a reward.⁷ Since such a grant was a matter of public law, the milling must have been considered a matter of public importance.⁸ Besides this Trajan created a *collegium* of bakers, and granted its members an exemption from guardianship imposed by the authorities (*tutela dativa*) if they invested more than 100,000 sesterces in a mill-bakery, or managed a mill with the capacity of one hundred *modii* per day.⁹ Again the task of the *collegium*

³ *Annona* literally means "annual yield" and then "annual need", and ultimately signifies the daily need for food.

⁴ This *canon* was set higher than the actual need to compensate in case of crop failure or loss during transport, during storage or by deterioration, and - as far as we know only in Constantinople - to furnish cash for a reserve fund, through sales on the grain market. The *canon* as levied in the East could quite probably have fed more people than that part of the population of Constantinople entitled to the dole, if it were delivered and consumed there entirely, because the Emperors created a surplus; but this will have been marginal. Recently F. de Romanis (1996) has maintained that the *canon urbis* provided in the need of the entire urban population (and not merely a part of it, entitled to public distributions) and some surplus. His main argument is a proposed reading of CLXXV in stead of LXXV in SHA Sept. Sev. 23.2. However, on the basis of the manuscripts there is no reason for doubting LXXV. The parallel with the *congiarium* to 200,000 in 202 is not compelling: it may have included others for the occasion. And even De Romanis assumes that only part of the population received the grain for free. Does this mean, that an elaborate system of accounting was set up for the rest? Virlovvet (1995) does not mention this. Further, we should be careful not to assume too quickly that the ancient governments took up such wide responsibilities. For the political value of the *annona* it sufficed to provide distributions for just a small part of the urban population. This was, anyway, the case in Constantinople: see further Kislinger 1995 and Müller 1993 and note 1.

⁵ See for the size Sirks 1991(2). See for the organization of the *Annona* Pavis d'Escurac 1974 and 1976. In general on the *Annona* Sirks 1984 and 1991(1), Herz 1988, Virlovvet 1995, for the mechanisms of distribution, and now Höbenreich 1997, chapters 1 and 2.

⁶ Slaves of Romans who had been freed informally or by those who owned them *in bonis*, and who as a result attained the status of Latins in consequence of the Lex Junia of probably 17 BC (before they remained slaves who were unofficially free). They could attain Roman citizenship by the repetition of the enfranchisement, either in full accordance with the requirements (*iteratio*) or as a result of benefits like this. See Sirks 1981.

⁷ Gaius, *Institutiones* 1.34.

⁸ Cf. *Digesta* 50.6.6.6 (Callistratus, 1 cogn.).

⁹ *Fragmenta Vaticana* 233. The Junian Latins may have been members of this *collegium*. Since they might be summoned to perform the *tutela*, the privilege would have been of interest for them. It is also possible that someone was member without complying with the requirement of investment, for example Junian Latins who complied with the other requirement. Höbenreich 1997, 124-125 thinks, in line with other authors, that *centenarium pistrinum* refers to the milling capacity and not to the value of the mill-bakery. It is true that in Gai.1.34 reference is made to Latini who mill 100 *modii* of grain per day and that the stress is, in both cases, on managing (*exercere*) and not owning or investing. Yet an investment may be implied, as in Gai.1.33 (100,000 sesterces to attain citizenship), and

must have been of public interest because otherwise the exemption of a public duty (*munus*) would be inexplicable. It will therefore have concerned milling and baking bread for the distributions.

This *collegium* co-ordinated the fulfilment of the obligations to which its members had individually obliged themselves. Since the distributions concerned but a part of the total importation it affected only some of the bakers of Rome: the majority was working for the private market. The *collegium* was a public law institution that, among other things, could own property and could litigate independently of its members. In other words, it enjoyed a certain legal independence (what we would nowadays call legal personality) and for that reason it was called a *corpus* (a body or an entity, hence corporation).

At first membership of the *corpus* was voluntary, but it must have become a public law obligation (*munus*) in the beginning of the third century, probably under Caracalla. From then on someone might be summoned to become member of the *corpus* and fulfil the duties attached to this membership. An immunity of other public duties was generally the compensatory side of such a *munus*, depending on the weight of the burden, which makes the introduction of the *munus* not as dramatically oppressive as it may sound. The duty here was connected to the member's fortune, which meant that inheriting it made the heir liable for the summons. As with the town councils (*curiae*) and the overseas shipping corporations (the *corpora naviculariorum*) this system ensured a regular perpetuation of the service in question, without need for interference by the central authorities.¹⁰

The importance of the *corpus pistorum* was increased by the substitution under Aurelian (270-275) of bread for grain, since the Emperor now had to guarantee all the milling and baking necessary for the free distributions. This would remain the case.¹¹

More *corpora* of this kind, where investment was the main obligation, existed. The most important were the already mentioned shipping corporations, consisting of rich landowners who had to invest in ships. In these ships the grain for the distributions was transported overseas to Rome's harbours Ostia and Portus Uterque, and later to Constantinople.

2C The *collegia artificum*

There existed, however, already before the second century AD, another kind of *collegium* in many cities. These were associations composed of craftsmen (for example, *fabri*) who carried out night watch and fire brigade duties. These *collegia* (which we call here for convenience' sake *collegia artificum*)¹² were instituted by the Senate or the Emperor,¹³ or on private initiative and recognized. They had the *ius coeundi* (the right of assembly). Next to these there were other *collegia*, established by private initiative, often for religious purposes, which were allowed to exist provided they complied with the law.¹⁴ These might also be granted the *ius coeundi*. The authorities were particularly afraid that associations might become subversive. Generally

unless we assume that the Emperors did not care that capacity was withdrawn from the private sector (not impossible), the stimulus to increase milling capacity would be ineffective. And were these *pistores* paid? If so, how much? If not (and why otherwise the incentive?), would, if they did not own the *pistrinum* themselves, the owners have been happy with their decision?

¹⁰ See Sirks 1990, section 12.

¹¹ Coarelli (1987) has suggested that already under Alexander Severus bread was substituted for grain and watermills were introduced, but he bases himself on questionable sources for this otherwise stimulating thought.

¹² In the Roman sources we do not find the term *collegium artificum*, but merely circumlocutions, such as *collegia vel corpora in quibus artificii sui causa adsumitur ut fabrorum corpus est* ("corporations in which each member is enrolled on the basis of his craft, such as the corporation of builders").

¹³ Or the provincial governor, or the municipal authorities.

¹⁴ Such associations might provide for funeral services to its members, as the Collegium Aesculapii et Hygieiae of 153 AD did (FIRA III, no. 36). On the professional associations see Van Nijf 1997.

speaking the establishment of *collegia* came under strict governmental supervision.¹⁵ A *collegium* could remain a *collegium illicitum*, in which case it should be dissolved.¹⁶

The *collegia artificum* were established to provide a service considered necessary for the community (*ut necessariam operam publicis utilitatibus exhiberent*),¹⁷ and we might call them "public utility associations". Only professionals, who must be neither too young nor too old, could become members. The service they provided was that they occasionally exercised their profession for the public benefit or, as with the *fabri*, performed the activity in question as a sideline and only when required. In the period 169-180 Marcus Aurelius granted certain privileges to *collegia* possessing the *ius coeundi*. The practical consequences were that these *collegia* at least partly enjoyed the status of a *corpus*.¹⁸ These requirements show that these associations should not be identified with the private professional associations (see note 14).

As a reward for its services for the common good the members of this kind of *collegium-corpus* enjoyed, by virtue of their membership, an immunity from public duties (*munera municipalia, civitatum, publica*).¹⁹ This exemption was restricted. If one's fortunes increased to a degree that one could perform those duties that required fortune, the immunity was no longer available. It is made clear that the motive for the grant lay in the fact that most members were poor.²⁰ The immunity was also restricted in another sense. It did not include exemption from guardianship (*tutela*) over children of fellow-members or of outsiders, unless this had been specially granted.²¹ Moreover, the exemption with regard to children of outsiders was lifted if one's fortunes increased.²²

As with the *corpora* in the preceding section, membership of some of these corporations must also have become a public duty during the third century.

2D *Corpora pistorum* outside Rome

Rome was not the only city in antiquity where free distributions existed. In 332 AD similar distributions were set up in newly founded Constantinople. A *corpus pistorum* existed there as well. It consisted of mere managers (*mancipes*), who had to manage the bakeries of the State (the public bakeries, *pistrina publica*).

There were several other cities, beyond Rome and Constantinople, where distributions existed: such were Alexandria, Carthage and Antioch.²³ However, there were no *corpora pistorum* outside Rome and Constantinople as far as we know, with one exception: there was a *corpus pistorum* at Ostia and Portus Uterque.²⁴

¹⁵ Digesta 47.22.3.1 (Marcianus, 2 iud.publ.); Asconius in his commentary on Cicero, Pro Cornelio 75 [67]; Plinius Junior, Epistulae 10, 33; Panegyricus 54: *collegia fabrorum* that formed a fire brigade. The restraint also derived from the Lex Iulia de Collegiis.

¹⁶ See Digesta 47.22.

¹⁷ Digesta 50.6.6.12.

¹⁸ It is evident that they were considered *corpora*, i.e. that they were considered a group independent of the individual members. We cannot discuss here whether they had access to all procedural facilities of the *corpora* mentioned in Digesta 3.4.1, nor whether there was a difference in this respect between the *collegia artificum* and the other *collegia licita*.

¹⁹ Digesta 50.6.6.7, 12; 27.1.17.3. *Munera municipalia* in Digesta 27.1.17.3, *munera civitatum* in 50.6.6.12, and *munera publica* in 27.1.17.2. The difference is relative, but the stress is on duties, imposed by one's local government.

²⁰ Digesta 50.6.6.12; 27.1.17.3.

²¹ Digesta 27.1.41.3 respectively 27.1.17.3. Why these restrictions? Because there would be, otherwise, not enough suitable candidates available?

²² Digesta 27.1.17.2.

²³ Carrié 1975, 995-1101. Verified further for Oxyrhynchus (in Egypt): Rea 1973, 1ff.

²⁴ Visconti 1931 and 1935, Guerreri 1932 and Monti 1934 discuss whether there had existed outside Rome and Ostia *corpora pistorum*. With the exception of Constantinople there is no proof of such a *corpus* in the sense of an officially instituted corporation. Perhaps there existed some unofficial associations of bakers, but these are not of

§ 3 The *corpus pistorum* in Ostia

From several inscriptions we know of this *corpus* as the *corpus pistorum coloniae Ostiensium et Portus Utriusque*. It was in existence as early as 140 AD, as we can see from CIL XIV S, 4359,²⁵ and XIV, 101,²⁶ dedications to the Emperors Antoninus Pius and Marcus Aurelius. Marcus Caerellius Iazemis (second century AD) may have belonged to this *corpus*.²⁷ The *corpus* is further mentioned in a text dating from the last quarter of the second century (dedicated to a *quaestor* who was also *ensor* (*quinquennalis*) of the *corpus*),²⁸ in one from the beginning of the third century (FV 234),²⁹ and in an inscription from 249 (a dedication to a *patronus* of this body).³⁰ Another inscription is very questionable.³¹ CIL XIV S, 4975 of unknown date may concern a freedman of this *corpus*, which disposed of a separate fortune.³² Then there is an inscription, published not long ago, from the end of the second century, mentioning the *corpus pistorum*.³³ Nothing is known about the *corpus* for the later period, unless we can cite CTh 14.19.1 from 398 AD as evidence for its existence.³⁴ In that case the *corpus* would still have been in existence in the beginning of the fifth century, and have probably sunk into oblivion along with Ostia and Portus Uterque.

§ 4 The privilege of the *corpus*

How does this corporation fit into the picture we sketched above of the organization of the Annona? Presumably the *corpus* served the Emperor with regard to the *cura annonae* (the

interest here. CIL VIII, 8480 suggests that in Sitifis (in Mauretania) bakers were involved in the preparation of bread, evidently for the soldiers stationed there (cf. Codex Theodosianus 7.5). There is no indication that these bakers formed a body.

²⁵ CIL XIV S, 4359 (140 AD): [I]mp(eratori) Caes[ari], | divi Had[riani] | [filio], divi Trai[ani] | [Parthi]ci nepot[is], divi | [Ner]vae prone[poti], | [T(ito) Aeli]o Hadri[ano] | [An]tonino Au[g(usto) Pio], | [p(atri) p(atriciae) p(ontifici)] m(aximo) tr(ibunica) p(otestate) III, c[o(n)s(uli) III], | [c]orp(us) pist(or)um).

²⁶ CIL XIV, 101 (138-161 AD): [M(arco) Aelio Aurelio] | [Caesari] | [Imp(eratoris) Caesaris T(iti) Aeli] | Hadriani An[tonini] | Aug(usti) Pii, p(atri) p(atriciae) [filio], | corpus pisto[rum] | coloniae O[stiensium] et | Portus Utriu[sque].

²⁷ CIL XIV, 4234: M(arcus) Caerellius | Iazemis, q(uin)q(uennalis) | pistorum III | et perp(etuus), et | codicarius, item | mercator | frumentarius | invicto | Herculi | ex voto d(edit) d(edicavit); a dedication to Hercules. Although the stone was found in Tivoli, it probably concerns the *pistores* of the *corpus* in Ostia since there was another M. Caerellius at Ostia.

²⁸ CIL XIV, 374 (last quarter of the second century AD): Marco Licinio | Privato | (lines 3-5) | quaestori et q(uin)q(uennali) corporis pistorum Ostiensium et Portuensium | (...). No dating, but Meiggs 1973, 210 puts it at that time.

²⁹ See below, section 4.

³⁰ CIL XIV S, 4452 (249 AD): P(ublio) Flavio P(ublii) fil(io) (tribu) Pal(atina) | Prisco, e(gregio) v(iro) | equestris ordinis, | religiosa disciplina | ad centena provecto, | pontifici et dictatori | Albano, primo annos | viginti octo agenti, | q(uin)q(uennali) c(.....) p(.....) patr(ono) colon(iae) Ost(iensium), | sacerdoti Geni colon(iae), | patr(ono) corp(or)is pistorum, | corp(or)is mensorum | frum(entariorum) Ost(iensium) patron(o). At its side: dedicata Kale | ndis Martis | Aemiliano ite | rum et Aquilin | o co(n)s(ules).

³¹ CIL XIV S, 4676: a very fragmentary inscription, that may have included q(uin)q(uennali) c(orporis) pi[storum].

³² CIL XIV S, 4975, tombstone from the Isola Sacra near Portus, erected by Quintus Pistorius Ianuarius: D(is) M(anibus) | G(aio) Iulio Euplo, | vix(it) ann(os) XL H(ic) s(epultus) e(st) | a Q(uinto) Pistori(o) Ianuario. Cf. Meiggs 1973, 318. This Ianuarius may have originated from Pistoria or, more probably since it concerns his *nomen gentilicium*, may have been a freedman of the *corpus pistorum* in Rome or Ostia who derived his *nomen gentilicium* from this *corpus*.

³³ See Nuzzo 1996, 90-91. Found south of Ostia. It concerns the assignment of a place (*locus adsignatus*) by the Prefect of the Annona Papirius Dionysius at the end of the second century, with the permission of the decurions (*decurionumque c(on)s(ules)*). The *corpus pistorum* is mentioned. It consequently involved ground or a building belonging to the town that was adjudged or assigned by the Prefect, perhaps as the result of a settlement of a dispute between the bakers and others, decided by him. The *corpus* perhaps resided there.

³⁴ See below, section 5.

dedications to the Emperor and the mention of Portus Uterque in some inscriptions might indicate this). Both Ostia and Portus Uterque were important harbours for the importation of staple foods. Portus Uterque had expressly been built for this purpose. Other *corpora* at Ostia and Portus Uterque testify to the activity there in connection with import from overseas and some of these were certainly involved with the Annona.³⁵ The mention of and connection with these *corpora* in some other inscriptions are arguments to support a similar employment of the *pistores*.

Next to this epigraphic evidence there is a strong juridical argument for such a connection. It concerns the exemption from guardianship that the bakers of the *corpus* of Rome had obtained under Trajan, for which they had to fulfil several conditions (FV 233).³⁶ Later on, under Septimius Severus and Caracalla, this exemption was extended to guardianship over children of fellow-members (FV 235).³⁷ It appears that the *pistores*, i.e. the members of the *corpus*,³⁸ of Ostia demanded the same privilege (immunity from guardianship) as the bakers of Rome (FV 234).

Fragmenta Vaticana 234: *Ulpianus libro supra scripto. Sed Ostienses pistores non excusantur, ut Philumeniano imperator noster cum patre rescripsit*: "Ulpian in the above-mentioned book (= *De officio praetoris tutelaris*). Yet the bakers from Ostia are not exempted, as our Emperor together with his father had decreed by rescript to Philumenianus."³⁹

Waltzing concluded from this text that the bakers of Ostia's *collegium* were not involved in the *annona*; otherwise they would have enjoyed the privilege.⁴⁰ The situation may, however, have been different. Since Ulpian draws a parallel with the *corpus* of Rome, the text can only have concerned the *collegium* in Ostia, known from earlier and contemporary inscriptions. This *collegium* cannot have been of the same nature as that in Rome, or otherwise bestowal of the same privilege would have been obvious. Therefore it was a *corpus* of the other kind, a *collegium artificum*. Only in such a *collegium-corpus* could one expect to enjoy immunity from public charges. Moreover, such immunity could only have been granted because the *corpus* provided a public service. Normally this immunity did not include an exemption of guardianship (see section 2C). What the bakers had asked in FV 234 would therefore have been a special extension of their immunity: immunity from guardianship (see note 21). For this reason the author of the Fragmenta Vaticana put the text behind 233, where this exemption is treated. Their request was refused for unknown reasons. If the bakers of the Roman *corpus* had had to comply with rather heavy financial demands and those in Ostia not (since they formed a *collegium artificum*), the

³⁵ *Corpora* of *lenuncularii* (Tiber shippers who transported the fiscal grain over the Tiber to Rome), *mensores* (who measured the fiscal grain when unloaded or embarked), *saccarii* (who carried the sacks with grain off and on the ships), *saburrarii* (who collected the sand, needed as ballast for the return journey of the ships), *fabri navales* (ship carpenters), *stuppatores* (caulkers), *pelliones* (tanners, perhaps of the sacks used in the process). Of the first four a relation with the Annona is certain. The *lenuncularii*, *mensores* and *saccarii* received a privilege for their work for the Annona. See for these Sirks 1984, chapter 3 and Sirks 1991(1), chapters 8 and 9.

³⁶ As related above, they had to belong to the number and manage a bakery of 100,000 sesterces value.

³⁷ Fragmenta Vaticana 235 states that the *pistores* of Rome were also released from the *tutela* over sons of their colleagues; they therefore also enjoyed the special exemption embodied in Digesta 27.1.41.3: *Item. Urbici pistores a collegiarum quoque filiorum tutelis excusantur, quamvis neque decuriales neque qui in ceteris corporibus sunt excusentur*. (...). This was a considerable extension of the *excusatio*, as Digesta 27.1.17.1 (Callistratus, 4 cogn.) proves. Codex Theodosianus 3.31.1 (400, Rome) shows that a similar immunity was granted to the *caudicarii* in Rome not until 400 AD. Hermogenian stresses that an immunity of such an extent was only exceptionally granted as a favour (Digesta 27.1.41.3 (Hermogenianus, 2 iur.epit.)). The immunity is also recorded in Fragmenta Vaticana 237 and in Digesta 27.1.46.pr.-1 (Paulus, sing.cogn.).

³⁸ By *pistores* the members of the *corpus* are meant, as we may infer from the convention to designate by a plural a *corpus* (cf. *municipes* for *municipium*), and from the comparison with the *corpus* at Rome.

³⁹ Pavis d'Escurac 1976, 355 does not exclude the possibility that Philumenianus was Prefect of the Annona.

⁴⁰ Waltzing 1896, 80.

advantage for the former would have become unattractive in comparison.⁴¹ The request shows that the *collegium* in Ostia must have been involved in some way with the Annona, or else it would not have been made. Since there was a *panis Ostiensis adque fiscalis* in the late fourth century, it is possible that already in the early third century this bread was baked by the *collegium*. Or did the *collegium* bake bread for the workers of the Annona? Was cheap or free bread provided for these? If this were so, and if these bakers had had remuneration, this was perhaps the motive for the rejection.

§ 5 The functions of the *corpus*

The *corpus pistorum* of Ostia and Portus Uterque must have been a *collegium artificum* with the *ius coeundi*. The *corpus*, instituted as a public utility association, was designed to provide a service of public importance. Its members were professional miller-bakers in Ostia and Portus Uterque who occasionally or as a sideline rendered services for the public good.

The *corpus* was instituted in the common interest, but what was its task? In view of the mention of Portus Uterque in its name from early on, incorporation into the entire organisation of the *annona* of Rome seems obvious. Recent archaeological research indicates renewed activity under Septimius Severus. A bakery in Ostia (the Caseggiato dei Molini) that was, according to Bakker, exploited by a member of the *corpus* or by the *corpus* had been installed or changed radically under Septimius Severus and Caracalla.⁴² We know that Severus reorganized the *annona* around 197 AD, probably with his projected campaign in the East in mind, and that he extended the privileges of the *pistores* of the *corpus* in Rome (FV 235; see note 37).

As for the task of the *corpus*, it is likely, as we already observed under 4, that the *pistores* of the corporation, in parallel to the situation in Rome, provided those working for the fisc in Ostia and Portus Uterque with free bread or (if we may link this assumption with CTh 14.19.1 (398, Rome)) with low-cost bread, the *panis Ostiensis adque fiscalis*.⁴³ Perhaps they rendered services by working alternately in a bakery owned by the fisc or by the *corpus*.

We assume that the beneficiaries were persons working for the fisc, since we do not know of local, municipal distributions in Ostia. Neither is it probable that the Emperors set up distributions in Ostia as an extension of those in Rome; that would have been recorded. The only indication of any kind of distribution in Ostia is CTh 14.19.1. In this constitution the price of the cheap bread (the *panis Ostiensis adque fiscalis*) was fixed at one *nummus*. Was this a particular type of bread, like the *panis Ardiensis*, as Tengström proposes, rejecting other suggestions for good reasons?⁴⁴ In our view it was not. The distinguishing element is clear in the adjective *fiscalis*, i.e., that the fisc, which had *horrea* at Ostia and Portus, had the bread made; something to which Pharr has already drawn our attention.⁴⁵ There is also an important difference between *panis gradilis* and *fiscalis* (both of which derive from the fisc!) residing in the fact that the latter was sold at a low price and the first was given free of charge (already said by Tengström).⁴⁶ It thus seems likely that the *panis Ostiensis* was fiscal bread sold at a low price to persons who did

⁴¹ Herz's suggestion (Herz 1988, 170-171) that the property of the *pistores Ostienses* was tied and that they had to manage bakeries at Rome is to be rejected. If this were true, then the Ostian bakers would have been entitled to the privileges anyway, since they fulfilled all the requirements.

⁴² Bakker 1994, 165-166 and supra, chapter 2, part III, section 6C.

⁴³ The text is much later than the other texts. On the other hand, such institutions could have a long life.

⁴⁴ Tengström 1974, 96-97.

⁴⁵ Pharr 1952, 420.

⁴⁶ Tengström 1974, 96. He argues, however, that the *panis gradilis* was actually sold until 398, and that this would therefore not be a radical distinction. This would nevertheless imply that after 398 it could well have been such a distinction, and that here we are dealing with texts dating from after that time.

not benefit from the free distributions (also Herz).⁴⁷ Since the price was fixed, there must have been a limited group of beneficiaries (or a limited subsidy or quantity of grain, which results in the same). Consequently some selection criterion must have been used. The bread did cost something, there is a connection with Ostia and the fisc, and therefore we assume that a beneficiary was someone who worked for the fisc in Ostia or Portus Uterque. The fisc may have given the grain for free to the *pistores* of the *corpus*, who could consequently use the profits to reinforce their operations. Carrié assumes that the *panis fiscalis* was intended for this purpose.⁴⁸ Even if there were no profits, the low price will have indemnified the bakers in any case for some of the expenses they made for the public service they rendered.

The structure of the *collegium* may have been well suited for this task, since there must have been a fluctuation in the activities for the Annona, with a peak during spring and summer when the ships arrived.

§ 6 Conclusions

There existed in Ostia and Portus Uterque a *corpus pistorum* from the second quarter of the second century AD onwards. It was a *corpus* of the *collegium artificum* type and its members rendered occasional services to the fisc, in return for which they enjoyed the normal immunity from public duties. A request for an extension was rejected in the period 198-211 AD. Their duty was to mill and bake bread for those working for the fisc in these places. The bread was sold for a fixed price in 398 AD. Thus in short the situation as it is likely to have been.

The situation of the free distributions and the organization of the Annona set up for this as we described above, concerned the period till the beginning of the fourth century. Although the distributions in Rome remained intact, albeit probably reduced in size, the structure of the Roman *corpus pistorum* changed due to the measures taken during the fourth century with regard to the private fortune of its members, and in consequence of the introduction of members who merely managed (*mancipes*).⁴⁹ By the end of the fifth century the *corpus* owned or administered the bakeries and supporting lands, and consisted of *mancipes* only. The distributions remained in existence until the reconquest of Italy by Belisarius in 535, and also the *corpus pistorum*. Although Justinian pledged to maintain them, it is probable that they disappeared in the disturbances of that time. The *corpus* will have disappeared with them. The fate of the *corpus* in Ostia and Portus Uterque will have been connected with that of the distributions in Rome. We may consequently assume that it will have declined in similar fashion and had probably disappeared by the beginning of the sixth century. Bakeries working for the Annona may have had a better basis for subsistence, and consequently it is possible that these bakeries lasted longest and are the ones we see today. The town of Ostia itself, and Portus Uterque, became less and less important; the mouth of the Tiber silted up, and by the eighth century both places had been abandoned by their inhabitants.

⁴⁷ Herz 1988, 171. In this sense already Waltzing 1896, 84.

⁴⁸ Carrié 1975, 1066-1067, 1067 note 1: the bakers obtained the grain free of charge, and could retain a quarter of the bread baked with it for their own profit. The remainder had to be surrendered to the city. For *panis gradilis* and *panis fiscalis* see Chastagnol 1960, 312-313 and Carrié 1975, 1037-1047.

⁴⁹ Of which we cannot deal here; see Sirks 1988 and, more extensively, 1991(1), chapter 11, part 2.

Conclusions

Jan Theo Bakker

§ 1 The functioning of the mills-bakeries

Only a few bakeries in Pompeii have an industrial appearance. The Ostian mills-bakeries however are large to very large establishments. The smallest one is Caseggiato I,IX,2, with a total area of some 280 square metres. The caseggiati della Cisterna, del Balcone Ligneo, delle Fornaci and dei Molini have a total ground floor area of approximately 640, 730, 850 and 1065 square metres. Molino I,XIII,4 is by far the biggest bakery, with c. 1525 square metres. Not all of the ground floor was used for the manufacture of bread, because shops are found in several buildings. On the other hand, part of the first floor was often used for the storage of grain and of wood for the ovens.

The Ostian millstones are larger than those in Pompeii, perhaps an indication that stronger animals operated them. The average diameter and height of the *catilli* are 0.80 and 0.80, instead of 0.70 and 0.70. For the *metae* the figures are 0.95 and 1.15, compared to 0.75 and 0.60 in Pompeii. The average total height is a little over 1.50. Masonry bases, quite common in Pompeii, are found in Molino I,XIII,4 only. Apparently mere wooden receptacles for the flour were preferred in the other bakeries. In the Molino, the Molini and the Fornaci the grain was presumably poured into the *catillus* from an attic or the first floor. The Ostian millstones are at a great distance from each other and from walls, contrary to those in Pompeii.

The millstones were not powered by water. A number of waterwheels has been found in Ostia, but these were driven by slaves and lifted ground water, that was transported to baths and perhaps other buildings. They have been found in the south part of the Caseggiato della Cisterna, the Terme del Mithra (I,XVII,2), Terme della Trinacria (III,XVI,7), Terme dei Cisiarii (II,II,3), Terme dell'Invidioso (V,V,2), and possibly in a bath on the Isola Sacra, near Portus.¹ Unfortunately we do not have accurate dates for the installation of these wheels.

Machines were also used for the kneading. The sieving, kneading and moulding took place in special rooms or areas. Many basins provided the water, which was needed in large quantities. In the Molini water also reached the first floor.

The bread was baked in large to very large ovens (a few small ovens and millstones are found, so pastry was also made in the bakeries). The measurements of the tufa cupola are: I,IX,2, inside diam. 3.35; Cisterna, inside meas. 4.00 x 4.20; Balcone Ligneo, outside diam. 5.00 x 5.20; Fornaci, two ovens, inside meas. 3.25 x 3.80 and 3.25 x 3.50; Molini, inside meas. 4.59 x 4.92; Molino, inside diam. c. 4.50. The size of each oven is in accordance with the size of the bakery, with the exception of Molino I,XIII,4. This is the largest known bakery, but shops took up much

¹ Oleson 1984, 233-237, 349-350, 369-370. On the wheel in the Caseggiato della Cisterna see also Cicerchia-Marinucci 1992, 38-40. The wheel in the Terme dei Cisiarii was discovered in 1996 (reported during an informal Ostia-seminar in Rome, November 1996), after further excavation of a room identified by me, quite erroneously, as a cult room (Bakker 1994, 66-67).

of its area, and it has seven millstones, whereas the Molini had at least ten.²

The ovens are round or oval. A cupola was built of large tufa blocks. Unfortunately the upper part has not been preserved in any of the bakeries. In the Molini, in I,IX,2 and in the Molino the lower part of the cupola has a masonry casing, but it is not known whether the whole cupola was enveloped. The wood was burnt in the cupola, not below its floor.³ This floor is made of bricks or "terra battuta". Below the floors in the Fornaci and Balcone Ligneo sand was found, presumably for better insulation. Inside the cupola in the Molini may be traces of one or more revolving grates, on top of which the bread was placed. The cupola is usually on top of a masonry podium. In front of the cupola is a ledge, and in the front of the podium in the Molini and Cisterna is a deep floor niche, presumably used for the storage of ashes.⁴ There may be traces of chimneys in the Molini and Balcone Ligneo, and in the former bakery are two draught-holes.

The oven in the Molini was built a low level, and as a result the floor in front of the podium is at a much lower level than the floors in the surrounding rooms. Perhaps this was done to create space for the barrel vault that covered the oven room. The oven in the Molino has no podium.⁵ Further excavation may show whether here too the floor and oven were lowered, although there is no apparent need for this.

The architectural similarities between the bakeries in the Molini and the Fornaci should be stressed. In the east part of both buildings sustaining arches were set against sidewalls, capable of carrying a great weight. In the west part are two large halls, separated by a wall, one consisting of two, the other of three rooms.

Finally the output of the bakeries may be discussed. Most likely an Ostian millstone served more people than a Pompeian one. The Ostian bakeries may be called industrial establishments, in which surely every attempt was made to produce a maximum amount of bread. They must however have been less efficient than watermills. We have suggested that a Pompeian millstone served approximately 90 people, and a millstone powered by water between 320 and 690. Possibly an Ostian millstone produced two to three times more flour than a Pompeian one, thus serving perhaps some 225 people. In the second century Ostia may have had some 40.000 inhabitants.⁶ This would have required approximately 178 millstones. In the bakeries that have been identified (seven or eight) may have been 60 to 65 millstones, so that the city would have had at least 20 bakeries during its hey-day (or more, if small establishments also existed).

§ 2 The dates and distribution of the mills-bakeries

2A Dates

Molino I,XIII,4 is a Trajanic-Hadrianic structure, built as a bakery. Five other bakeries were installed in Hadrianic buildings, but only at a later point in time: in the Caseggiato delle Fornaci (in the period Antoninus Pius - Marcus Aurelius); in the Caseggiato del Balcone Ligneo (oven dated to the period of Marcus; some masonry is possibly from the Severan period and third century); in Caseggiato I,IX,2 (some masonry is possibly from the late second century and late third or fourth century); in the Caseggiato della Cisterna (some masonry is possibly from the late second century); in the Caseggiato dei Molini (Septimius Severus to late-Severan). As to the later history of the bakeries: the Caseggiato dei Molini was destroyed by a fire at the end of the third century; the last building activity in the Caseggiato delle Fornaci is dated to the fourth century;

² The figures seem to suggest that the two ovens in the Molini have not been in operation at the same time. However, this bakery is large enough to have accommodated many more millstones and kneading-machines.

³ In spite of an apparent void below one of the ovens in the Fornaci.

⁴ A niche in the Fornaci may be indicated on Vaglieri 1912, 389, fig. 2.

⁵ Like the possible oven in Caseggiato II,VIII,9.

⁶ Riemann 1975, 196. Cf. Meiggs 1973, Appendix VIII (50.000-60.000).

the bakery in the Caseggiato della Cisterna had stopped functioning in the middle of the fourth century; Molino I,XIII,4 may still have been functioning in the early fifth century.

It is most surprising that only one of the preserved bakeries was functioning in the period of Hadrian, whereas the five other bakeries for which dates are available were apparently installed during the remaining part of the second and early third century, all as modifications of Hadrianic buildings. During the reign of Hadrian Ostia was to a large extent rebuilt: more than 50% of the ruins belongs to this period.⁷ This rebuilding must have been a spectacular event. A city that, with its many *domus*, bore some resemblance to Pompeii was replaced by a modern looking commercial city, of large solidly built store buildings, apartment buildings, baths and so on. Within decades the architectural framework and infrastructure were created for a flourishing port. Nothing is known about measures by the Emperor to stimulate building activity. Surely however the Imperial administration was closely involved, in view of the enormous importance of the harbours for the metropolis they served. It is significant that Hadrian was twice *duovir* of Ostia.⁸ One would thus expect that more than 50% of a reasonable sample of Ostia's bakeries dates back to the Hadrianic period.⁹ This is clearly not the case.

Now why is it that, with one exception, many bakeries that must have been constructed *ex novo* in the Hadrianic period were cleared, whereas bakeries installed in Hadrianic buildings during the next one hundred years still preserve much of their equipment and can thus be recognized? One could argue that further Hadrianic bakeries are still to be excavated. That however is only a partial answer, because such a large part of the city has been unearthed. The puzzle can be perhaps be solved if we understand why the later bakeries were built, which is not self-evident.

The post-Hadrianic date of the other bakeries might point to a gradual increase of Ostia's population. Meiggs however has convincingly argued that "shortly after the middle of the [second] century Ostia had reached her peak in prosperity and population"; "the rebuilding of Ostia was not completed".¹⁰ We must assume then that the bakeries with a date after Hadrian, or at least after Antoninus Pius, were not additional bakeries, but replaced other, older bakeries as a result of rationalization or reorganization.¹¹ Even the only Antonine bakery of which we are aware, the Caseggiato delle Fornaci, does not seem to be related to a demographic development. The Caserma dei Vigili, that was supplied by this bakery (see chapter 1, § 1), was completely rebuilt in the last decade of Hadrian's reign.¹² The Caserma and the Fornaci are part of the same major rebuilding scheme in the north-east part of town. Nevertheless the bakery was installed at a later date. Another opportune moment for the installation would have been the Severan period: in 205 AD the number of *vigiles* was probably doubled (see section 3A). At this time however the bakery was already functioning. During the reign of Septimius Severus a bakery was installed in the Caseggiato dei Molini. The Severan period may be called a period of restoration and revival for Ostia.¹³ This bakery then might indeed be related to the arrival of new people in the harbour, but here too the possibility must be investigated that it is the result of a policy aimed at efficiency.

The number of bakeries that has been preserved is insufficient to have served the population of Ostia in the second century, but it presents no problems for the situation in later antiquity.

⁷ Meiggs 1973, 135-144.

⁸ Meiggs 1973, 75-76, 175-176.

⁹ Two-thirds of the city have been excavated.

¹⁰ Meiggs 1973, 78-80, 144-146.

¹¹ Some fairly large halls from the earlier second century, with rows of brick piers reminiscent of Molino I,XIII,4, might have accommodated bakeries. Examples are the Trajanic building III,II,4 and the Hadrianic building IV,V,14 (Blake 1973, 156, 198). There are no candidates as large as I,XIII,4.

¹² Blake 1973, 195. It replaced an older building, possibly built under Domitian (Rainbird 1986, 156-157).

¹³ Meiggs 1973, 80-81, 146.

Many bakeries must have been abandoned in the later third to fifth century, when the population shrunk and the city gradually changed from a commercial harbour to a wealthy, residential town.¹⁴ The floors of basalt blocks, basins, ovens, millstones and kneading-machines were removed, and the cleared premises were used for different purposes, or replaced by other buildings.

2B Distribution

We may note first of all that Molino I,XIII,4 is unique not only because of its Trajanic-Hadrianic date, but also because it is the only bakery that could be identified in the south part of Ostia, far away from the commercial districts along the Tiber. The grain that was processed here could at first sight have been stored in two nearby depots: to the south-east, across the street, in the fairly large Horrea V,I,2, that were built during the reign of Claudius,¹⁵ and to the north in the much smaller Horrea I,XIII,1, that are Trajanic or Hadrianic.¹⁶ It is not known which goods were stored in these buildings.¹⁷ But there is a third possibility.

The bakery could be reached easily from the Tiber, along Via dei Molini and Semita dei Cippi.¹⁸ The latter road received its modern name from two cippi to the west of Horrea V,I,2 (one has probably been moved in antiquity). They both carry the name of the road, *Semita Hor(reorum)*, and they are probably older than the Hadrianic period.¹⁹ The name “Cross-road of the Horrea” causes some surprise in a city full of depots. Clearly the name refers to one or more store buildings of special significance. The primary candidate are the very large Grandi Horrea (II,IX,7), dating back to the period of Claudius and used for the storage of grain at least from the period of Marcus and Commodus.²⁰ This depot is situated along the east side of Via dei Molini, the northern continuation of Semita dei Cippi. It is also possible that the name of the street referred to the two Claudian depots, Grandi Horrea and Horrea V,I,2.²¹

With one exception (the Caseggiato delle Fornaci) all other bakeries are located in the centre of town and the area to the north, fairly close to one another. There is a cluster to the east and north-east of the Forum, consisting of the caseggiati della Cisterna, del Balcone Ligneo, dei Molini, and the bakery near the museum, and perhaps also building II,VIII,9. In order to explain the location of these bakeries a look at the distribution map of confirmed grain depots, and of isolated millstones and kneading-machines is helpful (figure 29).

Three store buildings have been identified as grain depots. Work on the Grandi Horrea was begun during the reign of Claudius and finished under Nero or shortly afterwards. In the period of Marcus Aurelius and Commodus many rooms were rebuilt, with *suspensurae*, raised floors for the storage of grain. At least one floor was added. The north part of the building was rebuilt

¹⁴ Bakker 1994, 169.

¹⁵ SO I, 234; Rickman 1971, 72. C. 59 x 45 m. Partially excavated.

¹⁶ SO I, 235; Rickman 1971, 38-40; Blake 1973, 176.

¹⁷ On storage capacity and storage method see Hermansen 1982, 227-235.

¹⁸ It is not known whether the use of wagons during the day was forbidden in Ostia, as in Rome. A study of wheel-ruts in Ostia has not yet been made.

¹⁹ *Haec semita hor(reorum) P R I est* (Bakker 1994, 197-198). Contrary to what is stated by Palmer (Palmer 1996, 385) the letters *P R I* occur only once on each cippus. Palmer's interpretation *pri(vata)* cannot be accepted, because the letters are separated by wide blank areas. Coarelli (1994, 40) suggests *Haec semita hor(reorum) p(opuli) R(omani) i(ussu) est* (this would indicate that the road was an important transport route, reached from the Tiber). The problem remains that there are no parallels for the abbreviation *P R I*.

²⁰ On the dating see below. The original building measured c. 80 x 100 m.

²¹ The name *semita horreorum* may well be Claudian. It would be worthwhile to investigate the hypothesis that Claudius reorganized Ostia's urban structure. An Ostian *compitum* was dedicated in 51 AD and we hear of its *magistri anni primi* (Bakker 1994, 122-123). Furthermore the *compitum*-altar on Piazza dei Lari might be Claudian (Bakker 1994, 118-120).

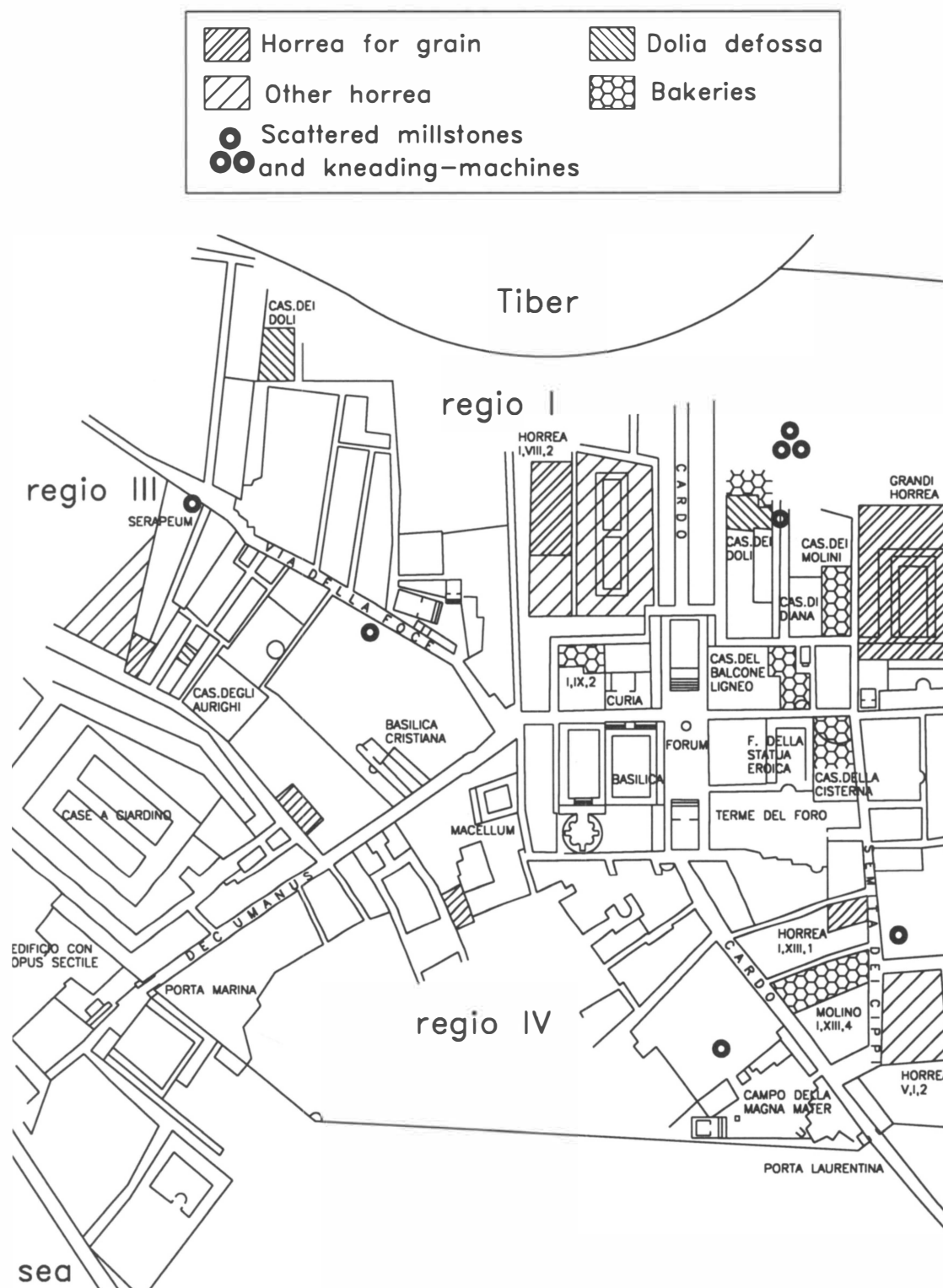
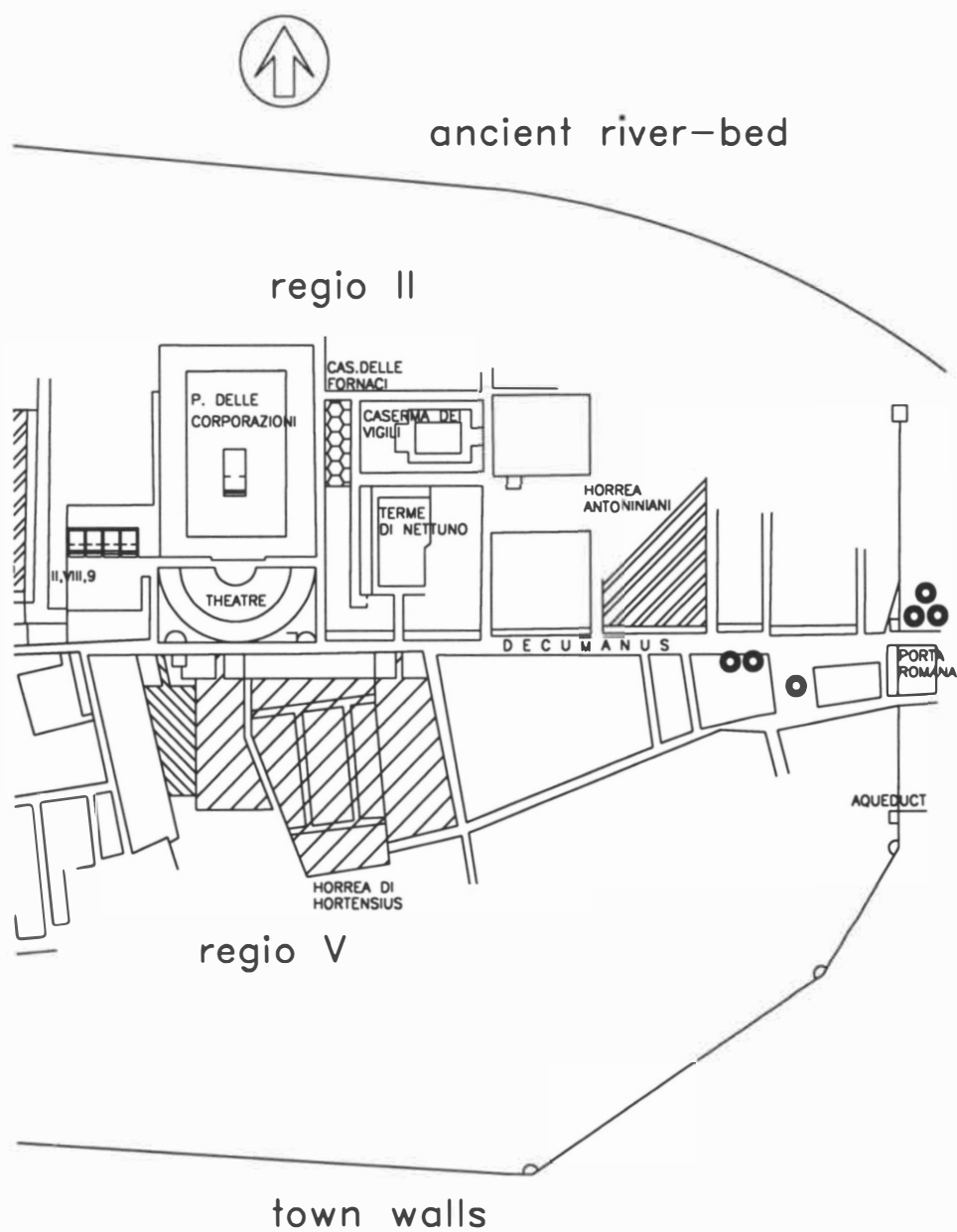


Figure 29. Plan of Ostia with horrea, bakeries and scattered millstones and kneading-machines.



under Septimius Severus and in the later Severan period.²² Horrea I,VIII,2 were built around 120 AD, and *suspensurae* were installed at an unknown point in time. The large Horrea Antoniniani (II,II,7) were built during the reign of Commodus, including *suspensurae*.²³

There is a clear correspondence between the distribution of the bakeries, objects from bakeries, and grain depots.²⁴ Two objects in the south part of town may belong to Molino I,XIII,4, four objects in the north part to the cluster of bakeries. Two objects in the west part and six near the Porta Romana may belong to unidentified or unexcavated bakeries. The proximity of the latter six objects to the Horrea Antoniniani should be noted; one or more bakeries may have been nearby.

A sensible explanation for the cluster of bakeries in the centre of town is the presence of the Grandi Horrea (I have already argued that the Caseggiato dei Molini received its grain from the Grandi Horrea over Via dei Molini). The bakery in Caseggiato I,IX,2 may have been supplied by Horrea I,VIII,2, a little to the north. The position of the bakery in the Caseggiato delle Fornaci was in our view determined by the Caserma dei Vigili. This Antonine bakery was presumably supplied by the Grandi Horrea, because the Horrea Antoniniani were built later.

A relation between the grain depots and bakeries is suggested not only by the distribution, but also by the dates of the depots. Most building activity in the grain depots did not take place in the Hadrianic period. The Grandi Horrea were begun under Claudius, like Horrea V,I,2. Much activity can be ascribed to the later second and early third century, especially to the reigns of Marcus Aurelius, Commodus, and the Severi, dates that we have also encountered in relation to the bakeries. The *suspensurae* in the two largest grain *horrea* are post-Hadrianic, and those in Horrea I,VIII,2 perhaps as well.

Summing up, the following pattern emerges. With the exception of Molino I,XIII,4 no Trajanic-Hadrianic bakeries have been found, and, with the possible exception of Horrea I,VIII,2, no Trajanic-Hadrianic grain depots. There can be no doubt however that many bakeries were built during the first decades of the second century. I have suggested that their disappearance is in part to be explained by their replacement as early as the later second and early third century, by new bakeries in buildings that had served a different purpose up to that moment. There may have been at least 20 bakeries in the city in the second century. Many of these are missing, because they were cleared at a later date. Some are perhaps to be excavated.

The installation and disappearance of bakeries will usually reflect fluctuations in the size of a city's population. In Ostia this is only partly true. Reorganization or rationalization seems to have taken place, and the contemporaneous installation or rebuilding of grain depots is apparently related.

²² CIL XV, 325; Calza 1921 (with NSc 1916, 326); SO I, 221, 237; Rickman 1971, 43-54; Blake 1973, 230-231. Coarelli has recently proposed a radically different dating of the early phases (1994, 41): phase 1, republican (second century or early first century BC); phase 2, Augustus-Tiberius; phase 3, Claudius-Nero. These datings cannot be accepted without a renewed and detailed investigation of the structure and masonry of the building. Cf. Calza's remark: 'Anzitutto non esiste più alcun dubbio che i muri esterni a parallelepipedo di tufo siano di epoca imperiale: essi non soltanto sono legati originariamente con cortina laterizia sia nel muro postico sia nei muri divisorii, ma sono a tuffi di carattere ben differente da quelli che risalgono ad epoca repubblicana' (Calza 1921, 380).

²³ Rickman 1971, 24-30, 41-43.

²⁴ Cf. the situation in Augsburg in the early 17th century. Bakeries and mills were separated. Bakers, millers and grain suppliers tended to cluster (cf. also a street called 'Baeckergasse'). Few bakeries (3.5%) are found in wealthy, residential areas (Roeck 1987, 171, 191-193 and Karte 3 on p. 190).

§ 3 The fisc and the millers-bakers in Ostia, Rome and Constantinople

3A Bread for the *vigiles*

In an earlier study I have concluded that two bakeries in Ostia, the Caseggiato delle Fornaci and the Caseggiato dei Molini, worked for the fisc (see chapter 1, § 1). The former is located directly to the west of the barracks of the fire-brigade (Caserma dei Vigili, II,V,1) and presumably produced bread for the *vigiles*.²⁵ Unfortunately it is not clear how many men were stationed in the Ostian barracks in the second century. Usually the number 400 is suggested, plus additional men in *castra* in Portus.²⁶ Rainbird suggests a much lower number: 160 in both Ostia and Portus, so a total of 320. However, a total of 640 seems more likely.²⁷ According to Rainbird, who analyzed the epigraphic evidence, the number of *vigiles* was doubled in 205 AD. The total in Ostia would from then on have been 320 (but, more likely, 640 or even 800). This means that perhaps two millstones in the Fornaci, later three or four, produced flour for the *vigiles*.²⁸

This leaves us with two questions. For which people was the output of the Molini and the remainder of the output of the Fornaci intended? And were these the only bakeries working for the fisc? Important clues are provided by the Grandi Horrea, near which so many bakeries were installed.

3B The Grandi Horrea

This very large depot has always attracted much attention. According to Hermansen the ground floor of the original building alone could hold 5.660 to 6.960 metric tons of grain.²⁹ If we assume that one person needed five *modii* of grain per month, then the building would have contained grain for one year for 14.000 to 17.300 persons. After the addition of an extra floor the number must have been much larger (but if the building contained reserves for one year, the number must be halved).

Citing Rickman: "Its size, complexity and solidity, and not least its position, all indicate that the Grandi Horrea was a publicly owned storehouse, and the presence of *suspensurae*, at least from the middle of the second century, would indicate that perishable foodstuff, probably grain, was stored in it."³⁰ The analysis of the Caseggiato dei Molini and Sacello del Silvano (see chapter 1, § 1), and the presumed direct connection between the *horrea* and the Molini, confirm Rickman's suggestion that the Grandi Horrea were fiscal *horrea*.³¹

In our view there can be little doubt that the cluster of bakeries near the Grandi Horrea was supplied by this depot: Cisterna, Balcone Ligneo, Molini, the bakery near the Caseggiato dei Dolii, and perhaps a bakery to the east of the depot. It seems logical to add to the list the Fornaci

²⁵ The earliest inscription referring to the free grain that the *vigiles* received is dated to 161/162 AD, the latest to 203 AD (Virlouvet 1995, 270, 273-274). Free grain was also given to the Praetorian Guard in Rome, for the first time by Nero (Virlouvet 1995, 119, 271-272).

²⁶ See e.g. Meiggs 1973, 307-308 (pointing out that there were four centurions).

²⁷ Rainbird 1986, 150-151 (based on his unpublished Ph.D. thesis). Rainbird suggests four vexillations of 80 men each, two in Ostia and two in Portus. It remains uncertain however whether Ostia and Portus each had four or two vexillations. Claudius had stationed a cohort (seven vexillations) at the harbours (Suetonius, Claudius 25,2). Therefore a total of four vexillations in the second century seems quite low.

²⁸ The west part of the Caserma originally did not belong to it. Later, probably in the period of Septimius Severus, it became part of the barracks. According to Rainbird the extra men were housed here and on the upper floors (Rainbird 1986, 156-164).

²⁹ Hermansen 1982, 228-231.

³⁰ Rickman 1971, 53. Cf. Virlouvet 1995, 94-95.

³¹ It has been suggested that the depot was built on public ground, delimited by the so-called Caninius-cippi, dated to c. 150-80 BC (Calza 1921, 380; Coarelli 1994, 40). The situation is complicated by the presence of a (later) cippus to the west of Ninfeo I, IX, 1, with the text *[pri]vatum [a]d Tiberim usque ad aquam*, referring to a strip of land or road (Meiggs 1973, 32, 471-472; Pavolini 1983, 43, 51, 74; Rasmus Brandt 1985, 47-48; Coarelli 1994, 46 (F. Zevi)). It is hazardous to draw conclusions about the Imperial period from these cippi.

(producing bread for the fisc, like the Molini) and the Molino (on the Semita Horreorum). In other words, I forward the hypothesis that the bakers that were active here were members of the *corpus pistorum*. On average there may have been 9 millstones in these bakeries, so a total of 54. These may have produced flour for approximately 12.150 people (54 times 225). What can we deduce from this figure? Was the output destined for the *vigiles* and other groups of people working for the Emperor, especially Imperial slaves? According to Hopkins there were 300.000 - 350.000 slaves in Augustan Rome, that had a population of 900.000 - 950.000. Pergamum had c. 40.000 slaves in the second century, also about one-third of the population.³² Ostia could then have had 13.000 - 14.000 slaves, Imperial and non-Imperial.

The figures may indicate that there were distributions of free grain in Ostia. In chapter 6 Sirks reaches the conclusion that Ostia did not know distributions. He also argues that they are not to be expected, because they have not been recorded.³³ However, in ancient literature the city is mentioned rarely anyway. More surprising would be the absence of inscriptions in which people mention their right to free grain. On the other hand, such inscriptions are not frequent in Rome, and are always about special cases.³⁴

The matter will be investigated in detail below. First the role of the millers-bakers in Rome in the *frumentationes* will be discussed.

3C The millers-bakers in Rome and the *frumentationes*

In the first chapter we have offered a summary of other studies, in which it has been suggested that the members of the *corpus pistorum* in Rome baked bread of grain that had been distributed by the Emperor. It was a logical step. Many of the people who received free grain must have lived in apartment buildings. Clearly they could not bake their own bread. The bakers of the *corpus* supplied them. The *incisi* did not have to pay for the grain. On the other hand, the processing of the grain will not have been free (otherwise the distribution of free grain could immediately have been replaced by distributions of free bread, which were introduced however in the third century). We may assume that some of the *incisi* were not (at times) able to pay for the processing. These people will not have used the services of the bakers, but eaten the grain as porridge (*puls*).

Trajan devised the *collegium* or *corpus pistorum*.³⁵ Earlier Emperors had to draw up contracts with individual bakers, but from now on the Imperial government could enter into contracts with the *collegium*, that was a body (*corpus*). Bakers who wanted to join the *corpus* had to exercise a *pistrinum centenarium*, a bakery of 100.000 sesterces or processing at least 100 *modii* a day. In return for their membership they were freed of *munera* (public duties). The first evidence for the *munus pistorium* (meaning that membership could be legally imposed) comes from the period of Caracalla.³⁶

The involvement of the bakers may shed new light on the *tessera frumentaria*, a document owned by the *incisi*. It is a much-discussed document. It could be allotted by ballot, but it could also be inherited or bought.³⁷ It is generally accepted that it was presented by the *incisi* at the Porticus Minucia Frumentaria. Two opinions prevail about what happened next. Many have

³² Hopkins 1978, followed by Madden 1996.

³³ Chapter 6, section 5.

³⁴ Virlouvet 1995, 1 n.3, 237 n. 227 (a little more than ten).

³⁵ Fragmenta Vaticana 233: *Ulpianus de officio praetoris tutelaris. Sed qui in collegio pistorum sunt a tutelis excusantur, si modo per semet ipsos pistrinum exerceant. Sed non alios puto excusandos, quam qui intra numerum constituti centenarium pistrinum secundum litteras divi Traiani ad Sulpicium Similem exerceant; quae omnia litteris praefecti annonae significanda sunt.* Gaius, Institutiones 1.34: *Denique Traianus constituit, ut si Latinus in urbe triennio pistrinum exercuerit, in quo in dies singulos non minus quam centenos modios frumenti pinseret, ad ius Quiritium perveniat.* Aurelius Victor, Liber de Caesaribus 13, 5: *reperito firmatoque pistorum collegio.*

³⁶ Sirks 1991(1), 311-325.

³⁷ See e.g. Rea 1973, 10-12; Carrié 1975, 1014-1021.

suggested that the *incisi* received another *tessera*, a lead ticket, with which they collected their grain in *horrea*. This idea has recently come under attack by Virlouvet, who suggests that the grain was distributed in the Porticus, and that there was only one *tessera*.³⁸

An important text is found in Suetonius,³⁹ referring to Augustus: “*Frumentum quoque in annonae difficultatibus saepe levissimo, interdum nullo pretio viritim admensus est tesserasque nummarias duplicavit*” (“In times of problems with the food supply he often sold grain for a low price, and sometimes supplied it for free, on an individual basis, and he doubled the number of money-tickets”). Clearly grain was sold or given to people who were not *incisi*, presumably when the grain-price soared. But what were these money-tickets, the *tesserae nummariae*? Many interpretations have been forwarded, discussed at great length by Virlouvet. She herself suggests that Augustus gave twice the amount of money to those who normally bought grain for the fisc: “L’expression pourrait qualifier ici un système de «coupons» à usage interne dans les organismes administratifs de l’Etat, pour le paiement de telle ou telle chose”.⁴⁰ This explanation is not convincing. It is doubtful whether Suetonius’ readers had much knowledge about coupons for internal use by the government.

In the present study the whole matter will not be taken up again. However, if, as I believe, the bakers of the *corpus pistorum* processed free grain, a new interpretation may be offered. Clearly the *incisi* had to identify themselves when they picked up their bread.⁴¹ A baker had to know whether or not he could charge someone for the grain, and the risk of fraud had to be excluded. For these purposes a handful of *tesserae nummariae* may have been used: an *incisus* would pay for his bread with a *tessera nummaria* (a free ticket representing the free grain) and with money (for the processing of the grain by the millers-bakers). This would mean that Augustus, when distributing extra grain or selling it at a low price, entered into special contracts with the bakers. It is an understandable measure, because the temporary recipients must have been at a loss about what to do with the grain.

Was it left to the *incisi* to carry the grain to a baker? If so, they probably did not receive both grain and *tesserae* in the Porticus (which would be an invitation to practise fraud), and we can entertain the possibility that the bakers distributed the *tesserae*, upon receiving the grain. One ancient text suggests that the *incisi* carried the grain to the bakers. Suetonius,⁴² when describing the death of Galba, says: “*Iugulatus est ad lacum Curti ac relictus ita uti erat, donec miles gregarius a frumentatione rediens abiecto onere caput ei amputavit*” (“He was murdered near the lacus Curtius and left as he was, until a common soldier, returning from the distribution of free grain, cut off his head after he had put down his burden”). However, the fact that a soldier carried grain does not necessarily mean that ordinary citizens did the same.⁴³ There was a risk that they would tamper with it. It may have been undesirable that it was sometimes transported in the rain. It would in any case have been quite inefficient if the grain reached the bakeries or *horrea* in small quantities throughout the day. Perhaps then the grain was transported by *saccarii*.

In the third century distributions of free bread replaced the distributions of free grain. The former are generally thought to have been initiated by Aurelian (but according to Coarelli Alexander Severus was responsible).⁴⁴ During the reign of Aurelian (and perhaps earlier) two

³⁸ Virlouvet 1995, 309-324.

³⁹ Suetonius, Augustus 41,5.

⁴⁰ Virlouvet 1995, 317-318.

⁴¹ Not daily. The bread will have remained edible for a considerable number of days. The presence of preservatives in modern bread may seem to suggest otherwise, but falsely, as I have been told by people who make their own bread.

⁴² Suetonius, Galba 20,5.

⁴³ The soldier may have belonged to the Praetorian Guard, which received free grain from the time of Nero. It is uncertain however whether this distribution was part of the regular *frumentationes* (Virlouvet 1995, 119, 271-272).

⁴⁴ Coarelli 1987, 446.

Roman pounds of bread were distributed, that is two times 327.5 grams.⁴⁵ With an average bread yield of 8.35 kilograms per *modius* it is the equivalent of 2.5 *modii*. From 369 AD three pounds were distributed.⁴⁶ The bread was transported from the bakeries to *gradus* ("steps") by carriers (*catabolenses*). There clerks (*scribae*) working for the Annona distributed it. The setting may have been an intentional display of the liberality of the Emperor.⁴⁷

The bread distributions must have had two major consequences. First of all, the Emperor, not the *incisi*, paid for the processing of the grain. Secondly, bread was now also eaten by those who previously could not afford the processing, and ate porridge. This would have necessitated some more bakeries, unless the rations were reduced to make this possible.

3D *Frumentationes in Ostia?*

Now what about Ostia and the involvement of the Emperor with the local bread supply? The date of the Grandi Horrea suggests, that the Imperial involvement with the bread supply dates back at least to Claudius. Claudius' concern for many aspects of the grain supply of Rome is well known. Citing Levick: "Claudius' attention was dominated by the problem of food supplies, especially for the free distributions to which about 200,000 citizens of Rome were entitled".⁴⁸ The building of the Porticus Minucia Frumentaria in Rome, where those who were entitled to free grain presented the *tessera frumentaria*, is generally ascribed to Claudius.⁴⁹

The oldest harbour installations in Portus, Ostia's satellite harbour district, are his work. The primary job of the inhabitants of Ostia was from now on the supply, especially food supply, of Rome. Citing once more Levick: "Claudius took a personal interest in the works, which is why he seems twice to have been at Ostia when a political crisis developed ..., and on another occasion took part in a whale-hunt in the harbour."⁵⁰ Presumably he visited Ostia on many other occasions that were not recorded. He sent an urban cohort to Ostia to fight fires.⁵¹ Little can be said about the appearance of Ostia during his reign, because of the later rebuilding of the city. The Grandi Horrea are an impressive remnant, and their significance is presumably reflected by the name of the road to the west: *Semita Horreorum*.

Here we find the first indications that this Emperor introduced (or perhaps continued) distributions of free grain in Ostia. The huge building was located directly outside the ancient *Castrum*, and it must have been a daily reminder for the inhabitants of Ostia of the concern of the Emperor. The name of the street to the west is a further indication of the importance of the building. The location has also been stressed by Coarelli ("posizione privilegiata all'interno dell'area delimitata da C. Caninius, immediatamente all'esterno del *Castrum*"). He adds that the Tempio Repubblicano (II,IX,4), to the south-west part of the building, dated to c. 80-50 BC, may have been dedicated to Neptunus. Near the shrine a dedication to Neptunus and the Dioscures was found, deities that protected ships.⁵² All this is hard to reconcile with a store-building containing grain for Imperial slaves and Imperial personnel only.

The harbour at Portus was extended and improved by Trajan. During the reign of his successor the city flourished as never before. There are indications that Hadrian showed personal concern for Ostia,⁵³ but nothing suggests that he had a particular interest in the storage of grain and the mills-bakeries (although the exemption from *munera* for certain members of the *corpus*

⁴⁵ SHA, Aurelianus 35, 1; 47; 48,1. See Rickman 1980, 207.

⁴⁶ CTh 14.17.5.

⁴⁷ Sirks 1991(1), 415; Viriouvét 1995, 31.

⁴⁸ Levick 1990, 109.

⁴⁹ Levick 1990, 110; Viriouvét 1995, 131-2, 154-6.

⁵⁰ Levick 1990, 110. Cf. Meiggs 1973, 62-63. For administrative reorganization by Claudius, related to Ostia and the grain supply: Levick 1990, 84-85, 110.

⁵¹ Suetonius, Claudius 25,2.

⁵² Coarelli 1994, 42; cf. Meiggs 1973, 346 and SO I, 233.

⁵³ Meiggs 1973, 74-75.

pistorum in Rome was extended by him).⁵⁴ Numerous bakeries must now have been built. Some of these are probably still to be excavated, others were cleared during later antiquity, and some were in our view replaced by other bakeries not long afterwards.

The oldest Ostian bakery that we know is the Trajanic-Hadrianic Molino I,XIII,4, the largest bakery that has been found, located in the south part of town. There are various reasons to think that it worked for the fisc and that it was a *pistrinum centenarium*. First of all there is the location, on the *Semita Horreorum*. Secondly the building is the result of a considerable investment and must have produced large amounts of bread. Finally it is noteworthy that valuable equipment, such as millstones and kneading-machines, was left behind when the bakery went out of business. A possible explanation is that it was by now a *pistrinum* belonging to the *corpus*, operated by bakers who were merely managers, with limited property rights. This situation could occur at the end of the fourth century.⁵⁵

If the assumption is correct that Molino I,XIII,4 was a *pistrinum centenarium*, supplied by the *Grandi Horrea* (or perhaps by a Claudian annex to the south-east of the bakery), we have another argument in favour of *frumentationes*: the bakery is located in the south part of town, at a great distance from the Tiber quays, where Imperial slaves and personnel were active. Furthermore it is quite possible that the *corpus pistorum* in Ostia, as in Rome, dates back to the period of Trajan.

The first inscription in which the *corpus pistorum* is documented was set up in 140 AD by the *corpus* in honour of Antoninus Pius. During his reign the rebuilding of Ostia was continued. He may have restored the lighthouse in Portus. Perhaps already in his time the Alexandrian grain fleet sailed to Ostia instead of Puteoli.⁵⁶ The installation of the bakery in the *Caseggiato delle Fornaci* began during his reign. It seems to have been one of the bakeries replacing a Hadrianic establishment, and it may even have been the earliest of these. Part of the bread presumably went to the *vigiles* across the street, who were supplied by another bakery in the Hadrianic period.

Why was the *Fornaci* installed later, in a building next to the barracks of the fire brigade, erected at the same time as the barracks, and not meant to house a bakery? It is possible that the baker working for the *vigiles* simply moved to a new, more convenient location, but this would have been very expensive and suggests financial support by the government. This seems unlikely in the second century, when government involvement with the *corpus* was limited. A more attractive idea is that he was a new member of the *corpus*. There is no reason to think that after the installation of the *corpus* by Trajan, it immediately had enough members. Possibly the Emperor was still forced to draw up contracts with individual bakers.

Around the middle of the second century the Ostian bakeries, affiliated to the *corpus* or not, were not located near the fiscal *Grandi Horrea*, but, apparently, spread out over the city. The situation is reminiscent of that in Pompeii; the bakeries were located near their customers. Apparently during the reign of Marcus Aurelius (also honoured by the *corpus* in an inscription) and of Commodus there was a change in policy.

Few Ostian buildings have been dated to the period of Marcus. Nevertheless his concern for the grain supply should not be underestimated. "*Italicis civitatibus famis tempore frumentum ex urbe donavit omnique frumentariae rei consuluit*" ("In times of famine he furnished the Italian

⁵⁴ Fragmenta Vaticana 235 with Sirks 1991(1), 320-321: *Item. Urbici pistorum a collegarum quoque filiorum tutelis excusantur, quamvis neque decuriales neque qui in ceteris corporibus sunt excusentur. Et ita divi Hadriani rescripto ad Cl. Iulianum praefectum annonae significatur. Quam epistulam quodam rescripto ad Vernam et Montanum pistorum imperator noster cum patre interpretatus est et ad pistorum pertinere, cum in eo negotio frumentum agentibus daretur a collegarum filiorum tutelis vacatio. Plus etiam imperator noster indulsit, ut a tutelis, quas susceperant antequam pistorum essent, excusarentur. Sed hoc ab ipso creatis pistoribus praestitit. Et ita Marco Diocae praefecto annonae rescripsit.*

⁵⁵ Sirks 1991(1), 333-339.

⁵⁶ Meiggs 1973, 59, 282, ad Pl. XVIII, c-d.

communities with food from the city; indeed he made careful provision for the whole matter of the grain-supply"). "*Rei frumentariae graviter providit*" ("As for the grain supply, for that he provided laboriously").⁵⁷ Commodus paid much attention to the grain supply and to Ostia. "*Classem Africanam instituit, quae subsidio esset si forte Alexandrina frumenta cessassent*" ("He did organize an African fleet, which would have been useful, in case the grain-supply from Alexandria were delayed").⁵⁸ He regularly visited an Imperial villa near Ostia, in Laurentum. He may have enlarged the capacity of the Theatre. The partially excavated Horrea Antoniniani (II,II,7), a large depot in the north-east part of Ostia, may well be Commodan. Citing Rickman: "... its position, size, date and raised floors make it a parallel to the Commodan form of the Grandi Horrea. Its size and position suggest a State-owned storehouse, and its raised floors suggest the storage of grain or similar perishable foodstuff".⁵⁹ Commodus named Ostia "*Colonia Felix Commodiana*".⁶⁰ He seems to have enjoyed popularity in Ostia and Portus. The *sodales Herculanii* may reflect his association of himself with Hercules. In Portus a dedication to Liber Pater Commodianus was found. The month Commodus (as he had called the month August) is mentioned in a graffito in the Domus di Giove e Ganimede (I,IV,2; to the west of the Caseggiato di Diana).⁶¹

Brickstamps from the period of Marcus Aurelius and Commodus were found in the masonry of a major rebuilding of the Grandi Horrea. The oven in the Caseggiato del Balcone Ligneo had brickstamps from the years 161-176. Thus, at a time when the government improved the Grandi Horrea, we see the installation of a *pistrinum centenarium* near the depot. Its owner was again probably a new member of the *corpus*. These enterprises testify to rationalization of the fiscal bread supply of Ostia. The *corpus* had presumably received directives by the government, stipulating that bakeries were from now on to be installed near the fiscal *horrea*. This part of town now changed into a bakers' district. It is not surprising that a luxury Hadrianic residence at the west end of this district changed into a hotel annex brothel.⁶² Three bars were nearby.⁶³

At the end of the reign of Commodus a building of great importance to the *corpus* was erected. During the construction of a Christian edifice (the Basilica di Pianabella, outside the Porta Laurentina) an inscription from this building was used, at the end of the fourth century. Reused "grandi elementi architettonici marmorei" might belong to the same building. The importance of the building can be deduced from the size of the inscription (a marble slab): it is 2.4 metres wide. The slab carries the text "*Corpus | pistorum | Locus adsignatus a Papirio Dionysio tunc praef. ann. | decurionumque [conces]su*" ("Bakers' guild. The plot was allocated by Papirius Dionysius, at the time Prefect of the Annona, with the permission of the city council"). Paroli suggests that it was removed from the guild-seat of the *corpus pistorum*.⁶⁴ M. Aurelius Papirius Dionysius was Praefectus Annonae at the end of 189 and in 190 AD.

The building was erected in an area that was controlled by both the Praefectus Annonae and the local city council. This must have been an area of vital economic importance to Rome, presumably along the Tiber (the Ostian *emporium*; but, due to the absence of a real harbour, the city never had a true harbour district). It is somewhat surprising that the *corpus* wanted to build its guild-seat here, because such buildings are always found on prestigious or quiet locations:

⁵⁷ SHA, Marcus Antoninus 11,3 and 11,5 (translation Loeb, D. Magie).

⁵⁸ SHA, Commodus 17,7 (translation Loeb, D. Magie) with Meiggs 173 ad Pl. XVIII,d. and Sirks 1991(1), 105-106.

⁵⁹ Rickman 1971, 41-43.

⁶⁰ The name was found on a lead pipe in Ostia. He also gave Carthage his name, and planned to do the same with Rome (SHA, Commodus 8,6-9 and 17,8).

⁶¹ On Commodus and Ostia: Meiggs 1973, 79-80, 423-424, 443.

⁶² The Domus di Giove and Ganimede (I,IV,2). The installation cannot be dated (Bakker 1994, 81, 83).

⁶³ Two in the south part of the Caseggiato dei Molini (rooms 15 and 16), and the Caseggiato del Termopolio (I,II,5) (in its present form from the third century) (Paribeni 1916, 413-419; Meiggs 1973, 428-429; Hermansen 1982, 130-132).

⁶⁴ Paroli 1993, 159.

usually on the main streets of the city (Decumanus, Via della Foce), sometimes on secondary thoroughfares to the south.⁶⁵ There may however have been comparable locations in the harbour area, for example to the north of the Piazzale delle Corporazioni (the famous square to the north of the Theatre) and near the northern Cardo (the majestic street, flanked by porticoes, which connected the Tiber and the Forum).

The involvement of the Praefectus Annonae in Rome, rather than the local Procurator Annonae, is a clear indication of the importance of the *corpus pistorum*. However, the allocation of the building-site may not have been a straightforward favour, bestowed by the government. Papirius Dionysius had formed a plot against Cleander, a favourite of Commodus. Whittaker has described this plot in great detail.⁶⁶ According to him Cleander had been buying up grain in 188-189, that he could distribute in case of a shortage, so that his popularity would grow. Such a shortage occurred in 190, and a food riot started in Rome. The people of Rome believed that Cleander was to blame. They marched to an Imperial estate outside Rome where Commodus stayed, and demanded Cleander's death. He was indeed executed by Commodus, the beginning of a "reign of terror". Papirius Dionysius was the man behind the accusations. Not only did he try to put the blame for the shortage on Cleander, he also spread the rumour that Cleander was plotting against Commodus. A party in the Senate supported him. The power of Dionysius was now such that he too lost his life: he was executed in 191, or perhaps 192. Commodus was murdered on December 31, 192.

Whittaker also suggests that guilds in Ostia were involved in the plot, but the evidence adduced by him is weak.⁶⁷ Nevertheless the inscription may testify to successful attempts by Dionysius to win the favour of the *corpus pistorum* in Ostia, as part of his struggle with Cleander: the *corpus* may have received a reward. The inscription was set up after the death of Dionysius, but of course not during the reign of Commodus. It may well be Severan.⁶⁸

The bakery in the Caseggiato della Cisterna was installed according to the new directives aimed at efficiency (and presumably the one near the Caseggiato dei Dolii as well). At a short distance from the Forum the Decumanus was now flanked by two bakeries: the Caseggiato della Cisterna and the Caseggiato del Balcone Ligneo. The result is a curious disfigurement of this representative part of town, and it is not surprising that in late antiquity the situation was corrected by the erection of an *exedra* in the north part of the Cisterna, and of a *nymphaeum* in the south part of the Balcone Ligneo. It is hard to believe that this defacement was tolerated for the bread-supply of Imperial slaves and personnel.

The best example of the new policy of efficiency however is the bakery in the Caseggiato dei Molini, installed during the reign of Septimius Severus and in the later Severan period. During the reign of Septimius Severus new buildings arose in Ostia, and others were restored. Severus seems to have doubled the number of *vigiles* and is called "*restitutor castrorum Ostiensium*" ("restorer of the barracks in Ostia").⁶⁹ "*Rei frumentariae, quam minimam reppererat, ita consuluit, ut excedens vita septem annorum canonem populo Romano relinqueret*" ("And finding the grain-supply at a very low ebb, he managed it so well that on departing this life he left the Roman people a surplus to the amount of seven years' tribute"). "*Moriens septem annorum canonem, ita ut cotidiana septuaginta quinque milia modium expendi possent, reliquit*" ("At his death he left a surplus of grain to the amount of seven years' tribute, or enough to distribute

⁶⁵ Bakker 1994, 172-173; Kockel 1992, 114.

⁶⁶ Whittaker 1964. Sources: Herodianus 1,12-1,13; Dio 73,12,5-73,14,4; SHA, Commodus 7 and 14.

⁶⁷ Possible involvement of C. Allius Fuscus (CIL XIV, 246; SHA, Commodus 7, 6).

⁶⁸ Nuzzo (1996, 91) also sees a connection with the revolt. She suggests that the structure to which the inscription belongs was on public ground. The *tunc* would indicate that this ground was prepared first, and that the inscription was erected shortly afterwards.

⁶⁹ On Septimius Severus and Ostia: Meiggs 1973, 80-81.

seventy-five thousand pecks a day").⁷⁰

Septimius Severus and his son Caracalla judged that a Hadrianic extension of the exemption from *munera*, so far restricted to certain members of the *corpus pistorum* in Rome, was valid for all members.⁷¹ They also ruled that the Ostian bakers would not be exempted from the *tutela* (guardianship), like their colleagues in Rome.⁷² According to Sirks this means that the Ostian guild was not of the same nature as that in Rome, but a *collegium artificum*, that provided a service considered necessary for the community as a sideline. This would suggest that there were no distributions of free grain in Ostia.⁷³

There is however another possibility. The situation in Rome was special, because there the *tutela* was the only *munus publicum*.⁷⁴ Therefore Sirks' insistence that "otherwise bestowal of the same privilege would have been obvious" is not justified. The Ostian bakers would "otherwise" (that is, if they processed the grain of free distributions) have received the same remuneration as the bakers in Rome, working however in a city where more *munera* had to be fulfilled. The two cities simply cannot be compared in this way.

Caracalla was honoured in Ostia in 216 AD by the erection of an arch in front of the Theatre. The senate and people of Ostia probably were responsible. In the inscription could be read "*ac super omnes*", elevating Caracalla above all previous Emperors.⁷⁵ He further extended the exemptions from *munera* for the *corpus pistorum* in Rome.⁷⁶

In 214 or 215 AD Caracalla played a central role in the Sacello del Silvano in the Caseggiato dei Molini. A new study by Dorcey is to be added to the literature about Silvanus mentioned in my 1994 study. From this study it becomes clear that there was no special relation between *pistores* and Silvanus, but, in the words of Dorcey: "Silvanus ranks third as guardian of stored grain"; "It is therefore perhaps no coincidence a fresco of Silvanus adorns a room adjacent to a grain mill in Ostia". From Rome comes a dedication to Silvanus by a *dispensator fisci frumentarii*, from Ostia by a *quinquennalis corporis mensorum frumentariorum*.⁷⁷ "...his collegia often honoured the emperor, and ... he was integrated into the worship of the imperial Lares and the domus Augusti. Many Silvanus devotees implore the good health of the emperor or empress"⁷⁸

The paintings in the Sacello are a further indication that *frumentationes* were taking place in Ostia. They do not refer to the *vigiles*, who were supplied by the Fornaci. It seems out of the question that Annona and her *tessera frumentaria* refer to Imperial slaves or to day-labourers, i.e. that the bakers linked the Emperor's generosity to the bread supply of these people, working in the harbour.

The Caseggiato dei Molini seems to have had a direct connection with the Grandi Horrea, over Via dei Molini. The remodelling of the building was a tremendous effort. Many of the floors in the building were removed and replaced by new ones, at a higher level. Following the example of the Fornaci - apparently regarded as a successful solution -, arches along the sidewalls of rooms supported new ceilings, and, as in the Fornaci, large halls were created. Two enormous arches in these halls are surprising: it will be difficult to find parallels in the more

⁷⁰ SHA, Septimius Severus 8,5 and 23,2 (translation Loeb, D. Magie). Cf. Sirks 1991(2), 220-222 and De Romanis 1996.

⁷¹ FV 235 with Sirks 1991(1), 321.

⁷² Fragmenta Vaticana 234: *Ulpianus libro supra scripto. Sed Ostienses pistores non excusantur, ut Philumeniano imperator noster cum patre rescripsit.*

⁷³ Sirks in this study.

⁷⁴ Sirks 1991(1), 321.

⁷⁵ Zevi-Pensabene 1971.

⁷⁶ FV 235 with Sirks 1991(1), 322.

⁷⁷ Dorcey 1992, 20, 89, 120 (the inscriptions: CIL VI, 634; CIL XIV, 309). Cf. Rickman 1971, 313-314 (Silvanus and *horrearii*).

⁷⁸ Dorcey 1992, 103 (cf. 88 on Commodus).

common architecture. We may suspect at least advice by Imperial architects. In our view the status of the *corpus pistorum* of Ostia will not have differed much, if at all, from that in Rome. This would mean that the *munus pistorium* was introduced in Ostia as well. Is the installation of the bakery in the Molini perhaps related? Did the Emperor provide financial support now? It is possible, especially if we remember that the installation took place at the same time that new interventions are documented in the Grandi Horrea.

It is interesting to note that the change in policy and the technological achievements in the Caseggiato dei Molini chronologically coincide with the breakthrough of the watermill, that, as we have seen in the introductory chapter, took place at the end of the second and in the third century. Watermills do not seem to have been used for milling in Ostia. The lifting of ground water for use in baths suggests that the aqueduct did not supply enough water to the city, so obviously none of its water would be used for mills.

The bakery near the museum was located next to a depot with *dolia defossa*. These “buried vessels” were used for the storage of goods that had to be kept cool, in this case a liquid (wine or olive oil), in view of rings inside the *dolia*.⁷⁹ The depot was installed in the Severan period. It may be noted that Septimius Severus introduced distributions of free olive oil in Rome: “*Ac populo Romano diurnum oleum gratuitum et fecundissimum in aeternum donavit*” (“And he bestowed upon the Roman people, without cost, a most generous daily allowance of oil in perpetuity”).⁸⁰ Ostia may have shared in his liberality. As we have seen, many objects found in the *dolia* point to distributions of some sort. However, their festive nature and the small size of the depot suggest incidental distributions, not a regular event.

At this point, now that we have found several indications that Ostia knew *frumentationes*, some further questions concerning the fiscal bread supply during Ostia’s hey-day may be discussed. How many fiscal bakeries were there in the city? What was the social status of the people involved with the *corpus*? Which government officials co-ordinated the distributions? Was there an Ostian equivalent of the Porticus Minucia Frumentaria? Where were the shops of the bakers?

The exact size of the distributions in Rome is unknown. It may have been in the order of 20-30% of the population.⁸¹ We have seen that there may have been some 178 millstones in Ostia in the second century. If a quarter of these, so some 45, were used for *frumentationes*, and an additional 45 for the visiting *vigiles* from Rome and for Imperial slaves, then the *corpus* in Ostia may have consisted of bakers running a total of some ten large establishments.

From Tivoli comes a dedication to Hercules by M. Caerellius Iazemis, *q(uin)q(uennalis) pistorum III et perp(etuus), et codicarius, item mercator frumentarius*.⁸² Meiggs assumes that he was an Ostian baker, presumably because of his other professions (owner of boats transporting goods to Rome and grain merchant).⁸³ It is interesting that two M. Caerellii, Hieronimus and [---]us, were priests of the Mithraic community in the Caseggiato di Diana.⁸⁴ This building, to the west of the Molini and to the north of the Balcone Ligneo, may from an unknown point in time have been used by the bakers, given floors of basalt blocks and a trough. Hieronimus was an ordinary member of the *fabri tignuarii* in 198 AD.⁸⁵ From Rome we have a dedication to Antoninus Pius by M. Caerellius Zmaragdus, curator of the *corpus pistorum*. Thus the Caerellii,

⁷⁹ Pavolini 1986(2), 109.

⁸⁰ SHA, Septimius Severus 18,3 (translation Loeb, D. Magie), with Sirks 1991(1), 389.

⁸¹ Sirks 1991(1), 20, 1991(2), 236.

⁸² See Sirks in this study.

⁸³ Meiggs 1973, 277, 321.

⁸⁴ Hieronimus: CIL XIV, 4313. Becatti 1954, 9-15; Bakker 1994, 116. Another name occurring here is M. Lollianus Callinicus (CIL XIV, 4310). He may have been the owner or caretaker of the brothel in the Domus di Giove a Ganimede, not far to the west (Bakker 1994, 83).

⁸⁵ CIL XIV, 4569.

a family of rich *equites*, may have had interests in bakeries both in Rome and in Ostia.⁸⁶

From the end of the second century we have a dedication to M. Licinius Privatus, *quaestor* and *quinquennalis* of the *corpus*. He was born as a slave, freed, and embarked upon an impressive career. He became president of the builders' guild. The *corpus mentorum frumentariorum* set up a dedication to P. Flavius Priscus, *patronus* of the *corpus pistorum*, in 249 AD. Priscus had been *duovir* of Ostia and was *patronus coloniae*.⁸⁷

Officials related to the Ostian distributions cannot be pinpointed. The main representative of the Praefectus Annonae in the harbours was the *procurator annonae Ostis*.⁸⁸ We hear of a *praepositus mensae nummul(ariae) f(isci) f(rumentarii) Ost(iensis)*, according to Meiggs a paymaster, responsible for payments to shipmasters, and for labour at the docks and in the warehouses.⁸⁹ The function *tabularius Ostis ad annonam* is documented. This was an official who kept certain records.⁹⁰ It is impossible to determine if and to what extent they worked in Ostia, or for Ostia.

It is most unlikely that the Ostian *incisi* ever carried grain on their shoulders, and took it to bakers. The grain would have come from the Grandi Horrea and would, in most cases, have been returned immediately to the same building, to be supplied to the nearby bakeries. The *incisi* may have received *tesserae nummariae*, in the Ostian equivalent of the Porticus Minucia Frumentaria.⁹¹ Unfortunately little can be said about the appearance and exact location of the Porticus Minucia Frumentaria in Rome, two hotly debated topics. The Porticus was somewhere near Largo Argentina, and it had 44 or 45 "entrances" (*ostia*). Each *incisus* went to a fixed "entrance".⁹² Its Ostian counterpart may have been in the neighbourhood of the Grandi Horrea, for example in the area to the south. It would not necessarily have been very large. At this point mention should also be made of the comparison made by Coarelli between part of the Campus Martius in Rome and the north-east part of Ostia. According to Coarelli the Porticus Minucia Frumentaria, the *praefectura vigilum*, a theatre, and a temple of Vulcanus in a *porticus post scaenam* were, in Rome, in close proximity. In Ostia, he notes, a very similar situation is found: the Grandi Horrea are not far to the west of the Theatre, behind which is the Piazzale delle Corporazioni, in the centre of which is a temple that may well have been dedicated to Vulcanus. To the north-east of the Theatre is the Caserma dei Vigili.⁹³

Most bakeries had little room for the sale of bread. Molino I,XIII,4 is once more an exception, because it has a considerable number of large shops. A few rooms in the south-east part of the Molini could have been used for selling products. There may have been shops in the south-east part of the Balcone Ligneo (later occupied by a *nymphaeum*), and there may have been a shop in the Fornaci. Most likely however, the bread produced in the latter three bakeries was sold elsewhere, for example in insula I,I, enclosed by the Molini, Balcone Ligneo, Cisterna, and the area to the south of the Grandi Horrea.

The later third century was a turning point in the history of Ostia, and from now on there was presumably little pressure on the bread supply. Portus took over the commercial role of Ostia, and Constantine made it an independent city. It is significant that, as Meiggs has suggested, the *vigiles* left Ostia in the third quarter of the century.⁹⁴ The southern districts of Ostia became ever more popular as a pleasant living environment. The area along the Tiber was more and more

⁸⁶ CIL VI, 1002 (=31222) (144 AD) (Sirks 1991(1), 276, 320-1).

⁸⁷ Meiggs 1973, 210.

⁸⁸ Fourniol 1998, chapter 5.

⁸⁹ CIL XIV, 2045 with Meiggs 1973, 300-301.

⁹⁰ CIL VI, 8450 with Meiggs 1973, 301.

⁹¹ Lead *tesserae* and moulds for *tesserae* have been found in Ostia: NSC 1907, 18, 121 with fig. 1; NSC 1909, 200; NSC 1913, 78, 132 with fig. 10, 133, 178, 216, 217, 396.

⁹² Viriouv 1995, 133-154; 373-380.

⁹³ Coarelli 1997, 223-225.

⁹⁴ Meiggs 1973, 308.

neglected. The last inscription in which the *corpus pistorum* is mentioned is dated to 249 AD.

At the end of the third century a fire destroyed the Molini. This will not have presented a big problem to the *corpus*. By this time the population of Ostia must have been much smaller than in the second century, and the number of *incisi* may have been reduced accordingly. Fewer slaves will have worked in the area along the Tiber. Therefore only part of the millstones in the fiscal bakeries would have been operated for the fisc. Other bakeries could take over the work of the Molini. In the middle of the fourth century the bakery in the Cisterna had stopped functioning, when an *exedra* replaced the northern part of the building. The guild-seat of the *corpus* seems to have been abandoned at the end of the fourth century, given the inscription that was reused in the Basilica di Pianabella.

This takes us to two final questions. Why is it that, with the possible exception of Caseggiato I,IX,2, only fiscal bakeries can be recognized today? When did the presumed *frumentationes* in Ostia come to an end? The almost complete disappearance of the bakeries working for the private sector may be due to the strong position of the fiscal bakeries. The sale of part of their output was assured. When the population and presumably the number of *incisi* decreased they may have compensated for this by selling bread to the private sector.

Constantine made Portus an independent city called Civitas Flavia Constantiniana. At this time the *corpus pistorum Ostiensium et Portensium*, still documented in 249 AD, may have been split up. Did Constantine put an end to the distributions of, by now, free bread in the old town? There is no need to think so. According to the Liber Pontificalis Constantine built a Basilica of Peter, Paul and John the Baptist in Ostia.⁹⁵ Ostia still enjoyed a special status, because it remained under the authority of the Praefectus Annonae until the late fourth or early fifth century.⁹⁶

The reused inscription from the guild-seat strongly suggests that the *corpus* had been dissolved, seemingly at the end of the fourth century.⁹⁷ The date brings to mind a law from 398 AD: “*Panem Ostiensem adque fiscalem uno nummo distrahi volumus. Sancimus autem, ut nullus per sacrum rescriptum audeat pretium ampliare; qui si obtulerit supplicationem, duarum librarum auri multa ferietur*”.⁹⁸ The law refers either to fiscal bread “of the Ostian kind”, eaten in Rome, or to fiscal bread eaten in Ostia. It should be sold for one *nummus*.⁹⁹ If the law refers to Ostia, then it is almost contemporaneous with the abandoning of the guild-seat.

The Ostian bakeries give us an idea of what their counterparts in Rome and Constantinople must have looked like. Many of the latter will have been quite similar to the ones that we have studied. Some may have been even larger. For 200.000 recipients in Rome there may have been approximately 100 bakeries. According to Sirks there were approximately 85.000 recipients in Rome in the early fifth century.¹⁰⁰ As we have seen above, the rations were reduced in late antiquity. Therefore this number of recipients may have required only some 20 bakeries (the situation was also different, because of the use of waterwheels, especially on the Ianiculum). We know that there was a total of between 250 and 275 bakeries in fourth-century Rome, including bakeries working for the private sector, working for perhaps 300.000 to 350.000 people.¹⁰¹ We also know that fourth-century Constantinople had 20 or 21 *pistrina publica* and between 113 and 120 *pistrina privata*, producing bread for between 200.000 and 500.000 people.¹⁰² The fiscal

⁹⁵ Meiggs 1973, 395-396.

⁹⁶ Meiggs 1973, 186-188, 401-402.

⁹⁷ The date of the Basilica di Pianabella has been suggested on the basis of pottery and coins (Spagnoli 1993, 150-151). There is a slight chance that the inscription had been replaced by a new one (Nuzzo 1996, 91).

⁹⁸ Codex Theodosianus 14.19.1.

⁹⁹ Bakker 1994, 140-141.

¹⁰⁰ Sirks 1991(2), 220.

¹⁰¹ Sirks 1991(2), 227.

¹⁰² Sirks 1991(2), 226-227.

bakeries in this city could have produced bread for over 40.000 people, assuming that one millstone produced flour for some 225 people. If the rations had been halved, the number of recipients would have been a little over 80.000, precisely the number mentioned by an ancient source.¹⁰³

The *panis* in Juvenalis' famous sneer "*Panem et circenses*" should not be regarded as a poetic description of *frumentum*.¹⁰⁴ In Rome the Emperor organized the baking of bread as well, even though, understandably, the distribution of free grain was regarded as his true *liberalitas*. The harbour of Rome seems, to a certain extent, to have been regarded as the city's "fifteenth district". There are even reasons to think that many of its inhabitants received free grain, which was processed by the Ostian millers-bakers. Thus we end this study, in the hope that others will take up our initiative and study the remaining bakeries in Ostia.

¹⁰³ Sirks 1991(1), 355; Sirks 1991(2), 225-228 (Socrates Scholasticus, *Historia Ecclesiastica*).

¹⁰⁴ Juvenalis, *Saturae* X, 81.

Appendix

The octagonal room in the Caseggiato della Cisterna

Jan Theo Bakker

The bakery in the Caseggiato della Cisterna (see chapter 5, § 1D) was installed in an octagonal room from the Hadrianic period, to which I would like to draw attention. The room contained four large semicircular niches, starting at floor level. The north-east one was obliterated by Exedra I,XII,3, the north-west one is badly preserved and overgrown.¹ The south-west niche - with the exception of the west part, the reconstruction of which is hypothetical - and especially the south-east one - in which an oven was installed - are preserved quite well, with a maximum height of a few meters (plates 90-92; figure 30).

The brick walls have a thickness of 0.60.² The lower part of the walls shows the core of the wall over a height of 0.40 (plate 94). In the surrounding rooms the Hadrianic facing continues up to the present floor level. The sides of the octagon measure a little over 20 feet of 0.296 (average length 6.02), created by the openings of the niches, wide passages between the niches, and walls 1.07 long on either end.³ The latter sections partially block the openings of the niches.⁴ The diameter of the room, from one corner between the short sections to another, must have been approximately 14.50. In the south part of the south-west niche is a doorway.⁵ The jambs show the core of the wall over a height of 0.92. Apparently this was originally a window, later changed into a doorway. In the east part of the south-east niche is an opening with a lintel arch.⁶ This opening was blocked, on the inside with brick masonry that is identical to the masonry of the niche, on the outside (in a shop) at a later date (bricks and small tufa blocks). The lower part of the latter blockage forms an entity with the lower part of the walls on either end (the upper part of the flanking walls is Hadrianic). This was either a doorway or a window. On the back wall of the south-east niche are the remains of a thick layer of painted plaster. In the corner between the two short sections on either end of the wide passage between the south-west and south-east niche is some rubble masonry, probably foundations for columns (cf. below).

Parallels for this kind of octagonal room can be found in Imperial buildings from the first to the third century AD. They are in the Domus Flavia on the Palatine,⁷ in the Piccole Terme and Piazza d'Oro in the Villa Hadriana,⁸ and again in Rome in the Baths of Caracalla and of Diocletian.⁹

¹ See the general plan in SO I.

² In the shop to the east of the south-east niche 0.45. This room and the one to the north have a shop-threshold.

³ W. of opening of south-east niche 3.94, of south-west niche 3.88, of passage in between 3.82. D. of niches, incl. protruding walls, 2.85.

⁴ Protruding 0.40. In the south-east niche partially removed for the installation of the oven and now protruding 0.25. The "jambs" of the walls in the opening of the south-west niche do not show the core of the wall.

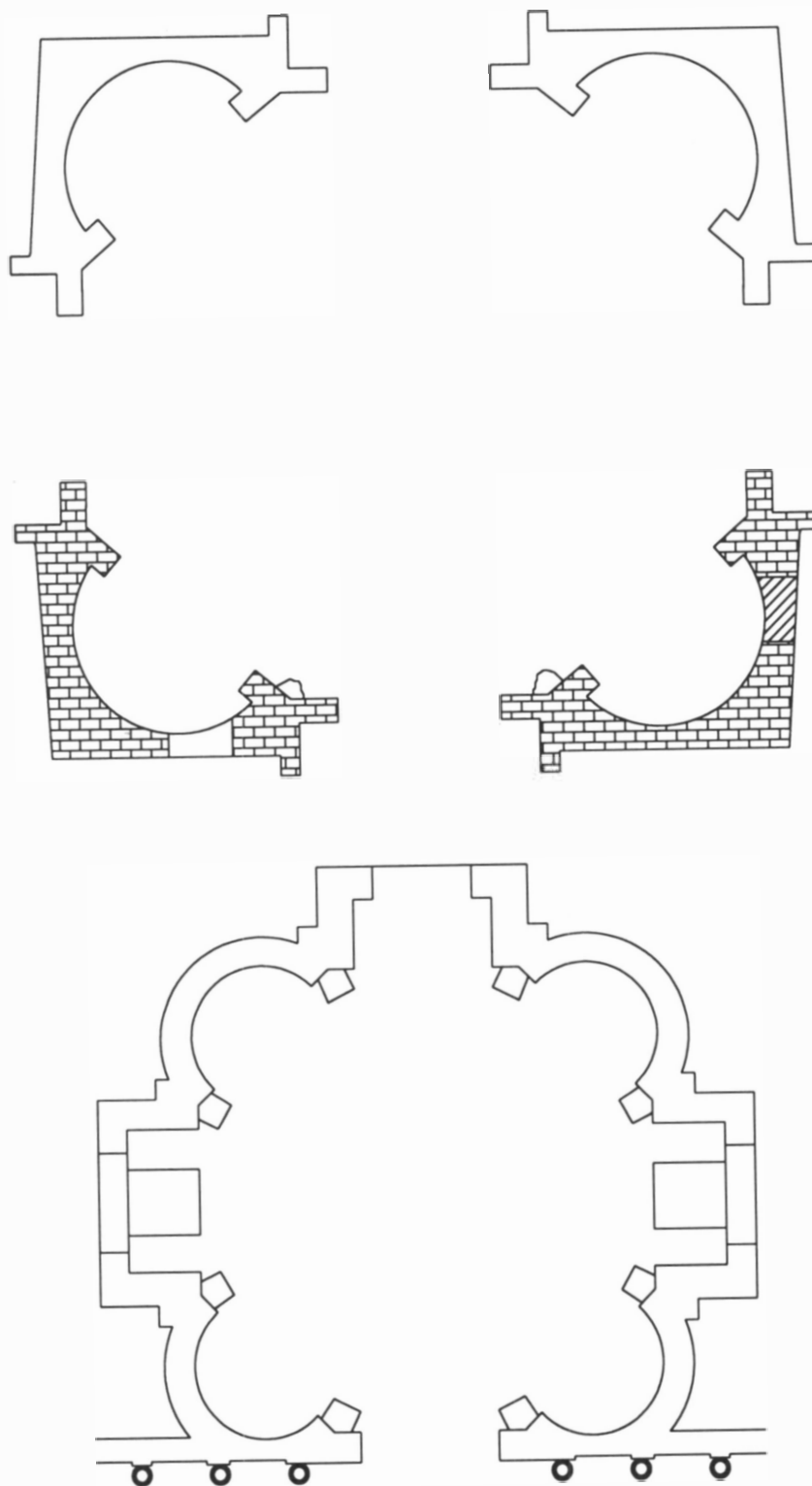
⁵ Starting at 0.60 from south-east corner of niche, w. 1.48.

⁶ Starting at 0.60 from north-east corner of niche, w. 1.50. H. from floor of shop to lintel c. 2.00.

⁷ Coarelli 1974, 148, entrance A.

⁸ Piccole Terme (*apodyterium*? with two curved passages): Aurigemma 1962, 88, Coarelli 1984, 66-67. Piazza d'Oro (vestibule): Aurigemma 1962, 155, plan fig. 162 on p. 160, Coarelli 1984, 60.

⁹ Baths of Caracalla: rooms next to *exedrae* flanking building. Baths of Diocletian: Coarelli 1974, 231, room 11 (at corner of building).



Top. *Figure 30.* Cas. della Cisterna, Hadrianic hall.

Bottom. *Figure 31.* Vestibule of the Piazza d' Oro, Villa Hadriana.

The vestibule of the Piazza d'Oro presents further similarities (plate 95; figure 31). It is a bit smaller, with a diameter of c. 10.35. The top of the cupola was at a height of c. 10.75. Between the semicircular niches are rectangular ones, one containing the entrance, two others with very large windows, in front of which were fountains. In the corners are rubble foundations for columns. The floor and walls were decorated with marble. The exterior of the vestibule copies the shape of the interior.

For the function of the room in the Caseggiato della Cisterna we have two clues. The missing facing of the lower end of the walls suggests a hypocaust. To the west, below the Foro della Statua Eroica, the remains of a Hadrianic bath have been found.¹⁰ Was the octagonal room perhaps the vestibule of the bath, slightly heated by the air that had passed through the actual bathing rooms?

¹⁰ SO I, 159 ("Terme adrianeae adiacenti a quelle del Foro all'angolo sud-est della antica via pomeriale interna, che viene in parte occupata e sbarrata dalla nuova abside aggiunta nel IV secolo al frigidarium di quest'ultimo edificio termale [Terme del Foro]. In questo si concentrano infatti le cure e i restauri, mentre si decide la distruzione di quello minore adrianeo, che fu rasato al suolo").

The Caseggiato dei Molini

Catalogue of the building material

Thea Heres

OUTER NORTH WALL

Room 14 L. 8.88, w. 0.60.

Brickfaced concrete, preserved until at least 3.50 high. No bonding courses of bipedales visible. Fresh and well-formed yellow to dark red bricks with a preponderance of pink and red. Well-levelled courses and narrow, regular mortar beds. Modulus averages 0.235. Tenacious and well-sifted greyish-white mortar, containing small granules of red and black pozzolana.

Rectangular window: sill at c. 2.52 above ground level, 0.75 high and 0.55 wide. Covered by a yellow bipedalis. Two series of putlogholes for scaffolding visible over the whole length of the wall at a height of c. 0.77-0.88 and c. 2.07-2.16.

Room 23 - east section L. 5.90.

Brickfaced concrete, preserved until at least 3.00 high. Divided from the adjacent outer wall of 14 by a slightly protruding and obliquely placed pier that occupies the whole height of the structure. Its east side was presumably broken off, it is now restored along an irregular line. The section was set against the outer north wall of 14. Rather long and thick bricks, sometimes reused, colour mixed red and yellow. Horizontal courses rather wide and irregular. Not too well sifted darkish-grey mortar, containing black and red pozzolana and an abundance of lime granules.

One series of putlogholes for scaffolding at c. 1.45-1.54 high.

Room 23 - west section L. 4.74.

Opus reticulatum mixtum intersected by a band six bricks high. Divided from the east section by an irregular fissure. Long and thick fresh yellow bricks, mixed with some red. The dark red-brown tufa blocks measure c. 0.08 x 0.08. They were not cut very well. Not too well sifted grey mortar containing black and red pozzolana and lime granules. In the upper side of the reticulate fields the blocks are cut through into a triangular shape.

One series of putlogholes for scaffolding at c. 1.00-1.11 high. High up a series of large beamholes that go through the whole width of the wall; they do not level with those in the adjacent wall sections.

Room 29 L. 3.25.

Brickfaced concrete. Almost straight dividing line between this and the preceding section. Rather well levelled and partially reused bricks, of a yellow pink colour. Not too well sifted mortar of a light colour and laid in rather wide beds, containing black and brown pozzolana and some lime granules. Below the putlogholes the mortar's colour is rather darkish-brown, this may, however, very well be a modern restoration.

Lower series of putlogholes for scaffolding at c. 0.63-0.73 high. Upper series at c. 2.20 high; it almost levels with beamholes in preceding section.

OUTER EAST WALL

Room 1 - south-east corner

Brickfaced concrete. Preserved for c. 2.00 high, although much restored. Long and thin red and fresh bricks. Rather light-coloured mortar containing red and black pozzolana.

Doorway to Via di Diana, 3.10 wide. Against the south section was set a thin north-south brick wall. This contains irregular long and occasionally thick bricks, partly reused material. Modulus c. 0.30-0.32. Greyish and badly sifted mortar, containing black pozzolana. Against the east section a heavy brick pier, south-west pier of two series of five placed on either side of Via dei Molini. Those placed against the facade of the Cas. dei Molini measure between 1.13-1.21 wide and 1.17-1.22 thick. Modulus 0.254-0.23. More or less regular masonry of red and yellow bricks, some reused Severan bricks. Mortar in many places recently restored. If antique: tenacious, pale-grey / dirty-white, containing much rather well sifted red and black pozzolana.

Rooms 3-4

Doorway in 3, 1.60 wide, restricted to 0.40. A high brick pier was placed between an adjacent thin south wall, 1.60 long and almost entirely a modern restoration, and an opening giving access to a staircase, 1.50 wide. Rather well levelled layers of mixed and mainly fresh bricks. Grey and not too well sifted mortar laid in wide beds, containing large red and black pozzolana and some lime granules.

Room 6

Original doorway 3.60 wide, now restricted to 1.50-1.48. Two thin brick piers, set against adjacent brick wall and placed on a base of tufa blocks with one course of large tiles (it could not be ascertained whether they are bipedales). Top of piers is a modern restoration.

Against the southern pier was set a short and not very high brick wall. Putloghole in dividing line with preceding section (brick pier) at c. 1.16-1.29 high. Threshold of preceding section seems partially demolished to make way for this wall. Bricks less uniform and somewhat thinner than in adjacent part to the east. Mortar of almost similar quality.

Room 7

Original doorway 4.15 wide, now restricted to 1.25. Restriction on north and south sides by means of two thin walls in opus vittatum A, and on north side also brick, divided by vertical joint. Almost entirely restored in two recent periods. Original masonry hardly visible. Light-coloured and well-sifted mortar laid in narrow beds, containing red and black pozzolana.

North part of doorway further restricted by wall set against preceding section. Inner facing in opus vittatum A is mainly a modern restoration. Outer facing in brickfaced concrete seems partially antique. Rather thick and mainly fresh red and yellow bricks. Dark and not very well sifted mortar laid in wide beds, containing red and occasionally black pozzolana and some rather large lime granules.

Room 8 L. 5.32, closed off at 0.48-5.32 from south-east corner.

South section at 0.00-0.48 from south-east corner. Brickfaced concrete. Modulus av. 0.23. Entity with 7, north and east.

North section at 0.48-5.32 from south-east corner. Brickfaced concrete. Set against south section. Modern restorations in central and upper part of wall. Modulus c. 0.25-0.27. Rather well levelled thick and occasionally long bricks, fresh material, of a red and yellow colour. Rather well sifted mortar, containing equal proportions of red and black pozzolana.

Two windows at 1.45 above brick plinth, at 1.48-2.21 and 3.09-4.09 from south-east corner. Vertical drainage channel min. w. 0.15 and max. w. 0.30 left open in dividing line with 7, east.

Rooms 9-10

Opening giving access to staircase 1.35 wide. North and south flanking brick piers similar to masonry of preceding section: regular courses of rather wide bricks, a mixed lot of yellow and red fresh material. Narrow mortar beds.

Room 12

Doorway 2.10 wide. Masonry similar to two

preceding sections. Modulus av. 0.26. Quite regular red and yellow bricks, mixed with some reused material. Light grey badly sifted mortar with much black and red pozzolana and many lime granules.

Room 13

Doorway originally 4.30 wide. North side restricted by two wall sections, 2.55 and 1.75 wide.

North section of blocking in brickfaced concrete. Irregular facing with wide mortar beds. Mixed red and yellow partially reused bricks. Rather well sifted mortar, containing mainly red and little black pozzolana.

South section of blocking in opus vittatum A, modern restoration in upper part, mortar in outer facing recent. Very irregular masonry with rather long and mixed yellow and red bricks. Irregular and mixed tufa blocks, occasionally heavily damaged. Some square blocks included.

OUTER SOUTH WALL**Rooms 1, 2, and 15 - east section**

Doorway to 1 3.20 wide, doorway to 15 3.35 wide. Brickfaced concrete. Doorway to 15 has on either side a modern restoration. Thin and long red bricks. Grey and not too well sifted mortar, containing much red and grey pozzolana.

Between doorways one series of putlogholes at a height of c. 1.22-1.33.

Rooms 15 - west section, 16, and 24

Doorway to 16 3.10 wide, doorway to 24 1.65 wide. Brickfaced concrete. Slightly curved lintel arch over doorway to 16 and upper part of wall are modern restorations. Long and rather thin yellow bricks. (Dark) grey and not too well sifted mortar, containing much black and grey pozzolana and some lime granules.

OUTER WEST WALL. See Corridor 24-29, east wall.

ROOM 1

North Doorway to 3. North and east are an entity.

East Doorway, 3.10 wide. East and north, and east and south are an entity.

South Doorway, 3.20 wide. South and east are an entity; west set against south.

West Short dividing wall, entirely modern. Set against south. North section of west wall entity with north wall of 2. Broken off at north jamb of doorway to 2.

ROOM 2 - meas. 4.35 x 3.40.

North Brickfaced concrete with reticulate on top. In many parts restored. In reticulate in north-west corner one appearance of a short band, six bricks high. West section broken off, leaving a c. 0.30 wide opening.

North, east section, and east are an entity. North, west section, and west are an entity. Long and mainly yellow bricks, Modulus from 0.28-0.30. Light-coloured mortar, containing mainly brownish and black pozzolana, and some lime granules. Not very carefully laid reticulate. Tufa blocks measure av. 0.075. Mortar similar quality as in brickwork.

East See 1, west. East set against south.

South See also Outer south wall. Brickfaced concrete. Widely restored. East set against south. South and west are an entity. Rather thin and long, red and yellow bricks, Modulus av. c. 0.25. Fresh material. Light grey and well sifted mortar containing red and black pozzolana.

West Entity with south wall and with west section of north wall.

ROOM 3 - meas. 9.00 x 8.90.

North Doorway to 5, 1.20 wide. East section almost entirely modern, in two phases. Set against brick pier in north-east corner. West section in brickfaced concrete is mainly a modern restoration. Small relieving arch in north-west corner near ground level. West section entity with west wall.

East See Outer east wall. Doorway 1.60 wide, now restricted to 0.40. Brickfaced concrete in two phases, entirely modern. South section entity with south wall. North section set between north and south walls.

South See also 2, north. East section in brickfaced concrete. Two large putlogholes in reticulate, at a height of 1.30-1.44 and 1.30-1.50. South and east, and south and west are an entity.

West Brickfaced concrete. Upper part of wall antique restoration. West, south section, entity with south. West, north section, entity with north. Long red fresh bricks, in lower part also yellow-orange bricks. Light grey well sifted mortar containing red and black pozzolana. Antique restoration in north-west corner, likewise in brick: irregular masonry with mixed red and yellow mainly thin bricks. Greyish well sifted mortar containing black and some red pozzolana and small lime granules.

ROOMS 4-5 - meas. 9.10 x 1.50.

North Reticulate intersected by bands five or six bricks high. North, west section, entity with west. Uniform and fresh pink-coloured bricks. Modulus av. 0.28. Tufa blocks not very regular, mixed colour. Diam. tufa 0.06-0.07. Grey and rather well sifted mortar, containing red, black, and brown pozzolana, with a preponderance of black, and some lime granules.

Traces of a secondary, now removed, staircase. Series of irregular and rather large holes at a height of 0.78-0.99. West jamb of doorway to 6 partially filled-in, w. 0.67-0.80. Filling executed with all kinds of materials. Series of putlogholes for scaffolding immediately above doorway, and at corresponding

height in west wall. In lower section of wall series of modern putlogholes.

East See Outer east wall of 4-5. Doorway 1.50 wide. South set against south-east brick pier.

South See also 3, north. South set against south-east brick pier. South, west section, and west are an entity.

West Masonry of north section: cf. 4-5, north. Entity with north wall. Masonry of south section: cf. 3, north. Entity with west section of south wall.

ROOM 6 - meas. 8.80 x 5.20.

North Opus reticulatum mixtum. In the modern restoration intersection by brick bands, in the upper part five and in the lower part six bricks high. North entity with east and west walls. Masonry similar to that in 4-5, north.

Partially restored doorway to 7, w. 1.50. In east part series of three putlogholes at a height of c. 0.80-0.98, in west part two holes at a height of c. 0.90-1.02. Another series of putlogholes at a height of at least 2.00. Beamholes at c. 3.40. Against north three heavy brick piers, meas. from west to east: w. 0.93 x d. 0.75, w. 1.37 x d. 0.80, w. 0.91 x d. 0.81, sustaining arches that spring at c. 3.40. Rather well levelled courses, consisting of very irregular material with a preponderance of thick and rather short yellow and red bricks. Light grey and rather well sifted mortar containing red and black pozzolana.

East See also Outer east wall. Doorway 3.60 wide, now restricted to 1.50. North section entity with north wall. South section entity with south wall.

South Brickfaced concrete with fields of reticulate. See also 4-5, north. South-east corner heavily restored in reticulate intersected by brick bands. Masonry similar to that in 6, north. South and east, and south and west are an entity.

West jamb of doorway to 5 narrowed. See 5, north. Filling consists of irregular brickwork (modulus c. 0.29) and equally irregular opus vittatum in which most of the tufa blocks are reused *tesserae* from a demolished reticulate wall. Higher up filling of mostly rubble masonry. Concrete basin, hardly preserved and mainly a modern restoration, in south-east corner. Beamholes at c. 3.40.

West Brickfaced concrete. Masonry similar to that in 6, north and south. West and north, and west and south are an entity. Upper part of wall over doorway with wide relieving arch entirely modern. Series of putlogholes at c. 1.08-1.20. Doorway to 18, 2.30 wide, lower part (h. 0.97) blocked with bricks, upper part blocked with irregular reticulate and rubble masonry (top). See also description of 18, west.

ROOM 7 - meas. 8.85 x 5.20.

North Brickfaced masonry and opus reticulatum mixtum. In lower part a few courses of brick and for the rest tufa blocks. West part of wall almost entirely demolished. North-east corner in fresh and uniform

red bricks. North entity with east and west walls. Masonry similar to that in 6.

In east section blocked opening, 1.51 wide, presumably doorway. Threshold at +0.10 (east) and +0.44 (west). Covered by arch of sesquipedales. Partly modern. Filled with somewhat irregular brickwork in thick and partly reused yellow bricks. Greyish-white and badly sifted mortar, containing black and some red pozzolana, lime granules, and heterogeneous material.

East See also Outer east wall. East entity with north and south. Doorway 4.10 wide, now restricted to c. 1.25. Inner facing of partially blocked doorway in opus vittatum A, almost entirely restored in 1965.

South Opus reticulatum mixtum. See also 6 north. South entity with east and west.

Doorway to 6, 1.50 m wide. Series of putlogholes at c. 2.18-2.30. Up high in wall beamholes, partially bricked in, at c. 3.40, surrounded by modern masonry. Three heavy brick piers set against wall, meas. from west to east: w. 0.90 x d. 0.73, w. 1.31 x d. 0.76, w. 0.94 x d. 0.75. Masonry cf. secondary brick piers 6, north. On top of western pier at 3.40 springing of wide sustaining arch along wall, of bipedales. Slightly irregular courses of mixed and partially reused pink and yellow bricks, Modulus 0.26-0.285. Whitish-grey mortar, rather wide joints, containing red, black and some brown pozzolana.

West Brickfaced concrete. West entity with north and south. Upper part of wall with brick arch and reticulate on top of it entirely modern, restoration 1965. Not possible to ascertain in how far this copies the ancient situation.

Doorway to 19, w. 2.30. Both jambs partly modern restoration.

ROOM 8 - meas. 8.70 x 5.20.

North Opus reticulatum mixtum intersected by bands of seven (below) and five bricks (above). North, east section, entity with east. North, west section, entity with west.

Two series of putlogholes: in lower part five partially blocked holes at a height of c. 1.10-1.23, in upper part at c. 2.70, c. 0.13 high. Beamholes at c. 3.40. Assumed secondary window at a height of 2.23-2.57, w. 0.32, oblique direction from south-east to north-west. Lintel irregularly shaped arch cut through reticulate. Inside plastered and painted. Blocked doorway to 11, 1.48 wide, covered with arch of sesquipedales. East jamb heavily restored. Blocking in reticulate (above) and brick (below). Rather long and thin orange and yellow, partly reused bricks. Modulus c. 0.22-0.24. Irregular tufa blocks, diam. c. 0.075, mortar-joints recently restored. Light grey to reddish and rather well sifted mortar containing red, black, and brown pozzolana, and some lime granules. Near north-east corner wide fissure, recently filled in. Masonry at east side of fissure, cf. Outer east wall of 8, north section.

East See also Outer east wall of 8. East, north section, and north are an entity. East, south section, and south are an entity.

South See also 7, north. South entity with east and west.

Blocked doorway, 1.60 wide, here reaching ground level. Blocking in irregular and partly reused thick, yellow bricks. Light grey and not too well sifted mortar containing black, brown and some red pozzolana, lime granules and some heterogeneous material.

West Brickfaced concrete. West entity with south and north. North section mainly modern, including upper part with arch of sesquipedales. In south section birth of arch possibly in five original bricks. Dark red, uniform and occasionally rather long bricks. Modulus 0.25-0.26. Whitish mortar containing red and black pozzolana. Traces of whitewash on wall surface.

ROOMS 9-10 - meas. 5.25 x 1.35.

North Brickfaced concrete. North set against outer east wall of 9-10 and 12. North and west are an entity. Uniform long and thin orange-yellow bricks, partially reused. Modulus 0.23-0.26, av. 0.24. Among bricks one sesquipedalis. Whitish-dirty grey and very tenacious mortar, containing coarse red, black and brownish pozzolana and many lime granules.

Doorway to 12, 0.87-0.85 wide, covered with irregular arch of bipedales partly cut off to make way for staircase. Holes for beams that carried second floor.

East Access to staircase 1.35 wide. North set against east.

South See also 8, north. Here too the wide fissure is visible, at 0.86-0.94-1.00 from south-east, with a diverse masonry at its east side. Series of holes that supported treads of staircase.

West Brickfaced concrete. West entity with north, set against south.

ROOM 11 - meas. 3.00 x 1.35.

North Brickfaced concrete. Opening to room 12. Brick pier, 0.82 x 0.60, set against west wall. It carried an arch of bipedales to the north wall of 9-10 and is an entity with this. Upper part of arch restored. Almost regular and mainly fresh yellow and orange bricks. Modulus 0.245-0.25. Very tenacious and rather well sifted mortar containing much red and black pozzolana and some lime granules. Narrow wall envelopes pier at west and north sides, now mainly modern. East end demolished.

East Brickfaced concrete. See also 9-10, west. East entity with north, set against south.

South Brickfaced concrete and reticulate. See also 8, west and 8, north, west section. East set against south, entity with west.

Beamholes at c. 3.40. Blocked doorway, 1.48 wide, here entirely in tufa blocks. For secondary

window see 8, north. Traces of plaster and painting on wall.

West Brickfaced concrete. West entity with south. North pier set against west.

ROOM 12 - meas. 8.80 x 5.15.

North Opus reticulatum mixtum intersected by bands of six (below) and five bricks (above). North, east section, entity with east. North, west section, entity with west.

Series of putlogholes directly beneath brick course at c. 1.08-1.20, repeated higher up in the wall. Beamholes at c. 3.40. Doorway to 13, 1.45 wide, covered by lintel of sesquipedales. In west section near north-west corner fissure and diverse material.

East Brickfaced concrete. See also 9-10, east, and Outer east wall, 12. North section entity with north wall. South wall set against south section. Doorway 2.10 wide.

South Brickfaced concrete. See also 9-10, north. South set against east. Rather well levelled yellow and pink bricks, partly reused material. Modulus 0.24-0.26. Greyish mortar laid in very wide beds, containing red, black, and brown pozzolana, and some lime granules.

West section is a thin, 0.30 wide wall. Upper part of wall modern. Near north-east corner of 11 traces of a demolished, 0.38 wide wall projecting into 12. Doorway to 9-10 0.85-0.87 wide.

West Brickfaced concrete. West, north section, entity with north. Regular masonry embedded in mortar containing red, black, and brown pozzolana, and lime granules.

Doorway to 21, 1.20 wide, jambs mainly modern. Opening covered by entirely modern arch of sesquipedales.

ROOM 13 - meas. 8.80 x 5.25.

North Reticulate enveloped by brickwork. Reticulate placed on top of four or five courses of brick, partly modern. Entity with east and west.

Narrow bench placed along west section of north wall and north section of west wall.

Blocked doorway to 14, 1.47 wide. Originally covered by arch of sesquipedales, of which now three in situ. Upper part of doorway is a modern restoration. Blocking in brick with rather irregular courses. Modulus c. 0.27. Heterogeneous and rather thick pink and yellow bricks, some possibly reused. Dark grey rather badly sifted mortar containing black pozzolana, lime granules and marble fragments.

East Brickfaced concrete. See also 13, Outer east wall. North section entity with north. South section entity with south.

Doorway originally 4.30 wide, restricted by two walls (l. 2.55 and 1.75). Entrance covered by slightly curved arch of sesquipedales, partly modern.

South Brickfaced concrete. See also 12, north. South, east section, entity with east. West section entity with

west. Masonry west of fissure entity with 13, west. Beamholes at c. 3.40. Doorway to 12, 1.45 wide.

West Brickfaced concrete. North section entity with north. South section entity with south. North section placed upon narrow bench, entirely a 1965 restoration. Traces of a fire seem visible on many bricks. South section: modulus 0.27-0.29; regular masonry with thick yellow and orange bricks; mortar hardly visible.

Doorway originally 2.12 wide, now restricted to 1.60 in opus vittatum A. South jamb of doorway 0.52 wide. Upper part of doorway restored, arch badly replaced. In upper part modern restoration in opus vittatum B. Modulus opus vittatum A: one brick + one block av. 0.15; two bricks enveloping one block c. 0.20-0.22. Well levelled courses with mixed and fresh yellow and orange bricks. Irregular oblong tufa blocks, occasional insertion of a square block. Much reused material among bricks and blocks. Very tenacious and light grey mortar containing black and brownish pozzolana, lime granules, and marble fragments.

ROOM 14 - meas. 8.70 x 5.05.

North Brickfaced masonry. See also 14, Outer north wall. Entity with east. West presumably set against north.

Rectangular window at c. 2.52 above floorlevel, 0.75 high and 0.55 wide. Covered by a yellow bipedalis. Series of putlogholes at 0.94-1.03 and immediately below window. Beamholes at c. 3.40.

East Brickfaced masonry. See also 14, Outer east wall. North section entity with north. South section entity with south. Doorway 3.60 wide.

South Brickfaced masonry enveloping reticulate fields. See also 13, north. Masonry adjoining doorway much restored, partially replaced in oblique position.

Blocked doorway to 13, 1.47 wide. Near west jamb irregular dividing line. Rather thin and long red bricks. Mortar not visible.

West Opus vittatum, almost entirely restored, partly in 1965. Only north part in opus vittatum A antique. West presumably set between north and south walls. Modulus: one brick + one block 0.125; two bricks enveloping one block av. 0.15. Rather well levelled courses of long red bricks, presumably fresh material. Occasionally long tufa blocks, all rather well cut. Mortar hardly distinguishable.

ROOM 15 - meas. 4.85 x 4.70.

North Opus reticulatum mixtum intersected by a band of five (above) and six bricks (below). In the lowest field the reticulate blocks were neatly cut into two triangles, in the upper part they were left whole. Entity with 15, west, presumably set against 15, east. Modulus 0.26-0.28, diam. of tufa blocks 0.065-0.08. Bricks mainly reddish and yellow. Dark grey and well sifted mortar, containing much black and

greyish pozzolana, in which the absence of the red variety is striking. Series of putlogholes for scaffolding at c. 2.00-2.13.

East Opus reticulatum mixtum intersected by brick bands not placed at the same height as those in 15, north: the central reticulate field has one more brick course, and the lower field one less. Entity with 15, south, 15 north presumably set against it: a wide fissure in the north-east corner was filled with modern mortar. Modulus of the bricks av. 0.26. Diam. of tufa blocks 0.07-0.075. Uniform pink and fresh bricks. Tufa blocks not regularly placed under a 45-degree angle. Tenacious and light grey well sifted mortar containing black, brownish and red pozzolana, with hardly any lime granules.

Two large beamholes at c. 2.60. In the south-east corner a brick pier was set, almost entirely modern. Modulus of the antique bricks av. 0.245. Rather uniform masonry with long and mainly orange bricks, almost entirely fresh material. Darkish-grey and badly sifted mortar containing red and black pozzolana and large lime granules. Low stairs of c. five steps preserved set against the wall, meas. 1.30 (north-south), 1.03-1.04 (east-west), h. 0.20, situated at 0.73 from north-east.

South Brickfaced masonry. See also 15, Outer south wall. East section entity with east wall. West section entity with west wall.

Doorway 3.35 wide. In south-west corner a bar counter, for the installation of which the reticulate west wall was partially cut off. Back of counter mainly modern, possibly only in front some original opus vittatum A, preserved for max. h. 0.95 in modern concrete.

West Opus reticulatum mixtum. Entity with north wall and with west section of south wall. High modulus of 0.255-0.32, caused by use of thick bricks, 0.04-0.045 wide. Dark grey badly sifted mortar containing black and grey pozzolana and some lime granules. Beamholes at c. 2.60.

ROOM 16 - meas. 4.85 x 4.40.

North Opus reticulatum mixtum intersected by a band of six (below), five (centre), and three bricks (above). Upper part of wall is a modern restoration. Entity with 16, west, and presumably with 16, east. Modulus 0.28-0.30, bricks 0.035-0.045 wide. Rather well laid, fresh yellow and red bricks. In north-west corner thick pale yellow bricks. Darkish grey rather badly sifted mortar containing black and grey pozzolana, and some lime granules. Diam. of tufa blocks 0.065-0.07. Putlogholes for scaffolding through the reticulate.

East Opus reticulatum mixtum intersected by brick bands. Bricks begin and end one course lower than in the north wall. North-east corner mainly modern restoration. Entity with south wall, south section, and presumably with north wall. Masonry cf. 16, north.

Beamholes at c. 2.70. Small base in opus

vittatum, meas. 0.93 x 0.35 x 0.60, set against wall, three courses antique, rest modern. On top brickwork, also much restored. Badly sifted mortar containing black and red pozzolana.

South Brickfaced masonry. See also 16, Outer south wall. East section entity with east. West section entity with west. Upper part of wall and wide arch over entrance entirely modern. East section extensively restored. Masonry cf. 16, east. In west section exclusively well shaped and uniform yellow bricks whose modulus varies between 0.23 and 0.245. Rather thin bricks, all 0.03 wide. Rather wide mortar beds (0.02-0.025). Pale grey and well sifted mortar containing black pozzolana.

Doorway 3.10 wide. Window above doorway at a height of c. 3.60.

West Opus reticulatum mixtum and brickwork. South section entity with south. North section entity with north.

Beamholes at c. 2.70. Blocked doorway to 24, 1.20 wide. Neat arch of sesquipedales over doorway, carefully set between both brickwork and reticulate. Some reticulate blocks were partly cut off to install the arch. Mortar of doorjamb contains exclusively black and grey pozzolana. Mortar in arch over doorway contains red and black pozzolana. Filling of doorway in rather bad and mixed material, and presumably in two phases: south part set against north part. Irregular fissure at c. 0.11-0.20 from south-west corner of wall, and restoration of entire south-west corner and south wall in yellow bricks. Modulus av. 0.24, bricks 0.03 wide, mortar beds av. 0.02 wide. Regular courses, uniform and fresh yellow bricks. Light grey and rather well sifted mortar containing brownish and black pozzolana.

ROOM 17 - meas. (incl. 18, cf. Gnade 1982, 36) 10.30 x 9.30.

North Brickfaced masonry. Wide opening flanked by two brick piers and a large central pier (1.45 x 1.18). West pier and 17, west are an entity. East pier was set against 17, east. Modulus av. 0.265, bricks av. 0.033 wide, mortar beds from 0.018 to 0.025 high. Rather well levelled courses. Mainly fresh yellow and some pink bricks, brickwork somewhat irregular. Light grey mortar containing red and black pozzolana.

East Brickwork and reticulate fields. 17, north, east pier, and presumably also 17, south were set against it. Modulus av. 0.26. Uniform and fresh bricks. Light grey mortar containing red and black, and some brownish pozzolana.

In north-east corner at c. 3.30, beside pier, one large beamhole, 0.38 wide. Corresponding hole in opposite west wall, same width. Wide filled-in doorway, see also 3-5 west. Heavy brick pier set against south-east corner, cf. 17, south. Putloghole for scaffolding at west side of pier. Masonry of pier: see south wall.

South Opus reticulatum mixtum intersected by bands

of six (below), five (centre), and at least three bricks (above). South presumably set against east and west. Modulus 0.30-0.31. Bricks 0.041-0.052 wide, av. 0.044. Mortar beds 0.018-0.022 high, av. 0.02. Diam. of tufa blocks 0.065-0.07. Rather well levelled courses. Fresh but mixed red and yellow thick bricks. Tufa courses almost regular. Light grey mortar containing exclusively black pozzolana.

Halfway up putlogholes for scaffolding occasionally surrounded with care by reticulate blocks. In upper part of wall two or three large beamholes (in east section) and three beamholes (in west section), placed on top of five brick courses at a height of c. 3.30.

In the south-east and south-west corner, and against the centre of the wall, were placed three high and heavy brick piers, meas. from east to west: w. 0.90, 1.30, 1.01, d. 1.11, 0.86, 0.89. In all piers appear putlogholes for scaffolding. Furthermore, in central and south-west pier in the opposite sides a square and a round hole, in the central pier at 0.35 above the putloghole, in the south-west pier at a slightly lower level. Brickwork south-east pier: modulus 0.25-0.27; not quite regular courses of pink-yellow and mainly fresh bricks; light grey mortar containing black and red pozzolana and many lime granules. Masonry central pier entirely similar to south-east pier. Brickwork south-west pier: almost similar to the preceding piers; mortar containing much red and less black pozzolana, and many small lime granules. Function of piers: sustaining brick arches lying flat against the south wall, much restored. Springing of arches of thin red bipedales at c. 3.00. Intrados of arches revetted with double series of bessales with concrete in between.

Between the piers and against the south wall a thin brick wall preserved over a height of at least 2.80. Modulus av. 0.29, bricks 0.03-0.033 wide, mortar beds 0.025-0.03 wide. Rather well levelled courses of yellow, pink and red reused bricks; light-coloured mortar, containing black and red pozzolana. Against this wall, and again between the piers, a low bench, upper part modern, consisting of c. five courses of tufa blocks upon a base of brick. South-west bench almost entirely modern.

West Opus reticulatum mixtum intersected by bands six bricks high and by quoins of five bricks each. North and west are an entity; south presumably set against west. Modulus 0.26-0.27, mortar beds 0.018-0.02 wide, diam. of tufa blocks 0.06-0.07. Mortar light grey containing red, black, and some brownish pozzolana.

Two series of putlogholes. Beamholes at c. 3.30. Filled-in doorway to room 25, 1.47 wide, covered by neat arch of red sesquipedales. Doorjamb up to h. 0.86 damaged and irregular. Filling of doorway in brick, lower part mainly modern. Modulus 0.27-0.28, bricks 0.028-0.035 wide, mortar beds 0.026-0.034 wide. Rather well levelled courses of mainly red, and

occasional yellow, reused bricks. Above doorway and upper series of putlogholes at a height of c. 3.40 an obliquely placed wide window, going from south-east to north-west, cut through the reticulate but resulting in a carefully laid window sash.

ROOM 18 - meas. cf. 17.

North East section brickfaced masonry; west section opus reticulatum on 9 brick courses, badly preserved and broken off at the east end. East section entity with east. West section entity with west. West section: modulus av. 0.29, bricks 0.035-0.045 wide, mortar beds 0.015-0.025 wide, diam. of tufa blocks 0.065-0.075. Rather well levelled courses of thick red and yellow, partially reused bricks. Irregular tufa blocks. Light brown mortar containing red and black pozzolana.

East Brickfaced masonry. See also 6, west. In lower part also modern restoration. Entity with north, east section. South, east section, pier set against and partially in the wall. Modulus 0.225-0.245, bricks 0.03-0.033 wide, mortar beds 0.022-0.027 wide. Rather well levelled and regular facing of pink and yellow bricks, presumably all fresh. Greyish mortar containing red, black, and brownish pozzolana.

Two series of putlogholes for scaffolding, resp. south and north of doorway at a height of 0.85-0.98 and 1.06-1.17. 2.30 wide doorway closed in various phases, covered by presumably entirely antique arch of sesquipedales. From ground level to a height of 0.52 rubble masonry with tufa blocks, fragments of basalt lava and irregular pieces of brick, partially covered with modern mortar. On top in south part filling in uniform and presumably fresh bricks, in north part thinner and reused bricks. On top of both, reticulate with brick intersections. In upper part of filling different masonry of thick bricks.

South Two brick piers. South pier seems entity with east. West pier entity with west. East pier, mainly yellow bricks, irregular but mainly fresh material, av. 0.033 wide, mortar beds 0.018-0.025 wide, cf. 17, north-east section. West pier, cf. 17, north-west section.

West Opus reticulatum mixtum intersected by brick bands, entirely cf. 17, west. Entity with 18, north wall, west section, and 18, south-west pier.

Doorway 1.29-1.30 wide, jambs and arch partly modern restoration. Originally possibly 1.45 wide and restricted at south side. Covered by arch of red sesquipedales. Cf. description of 26, east. In lower part of south jamb less regular antique restoration in brick, sometimes hardly visible, max. 0.65 wide and c. 1.18 high. Restored with long and thin bricks, modulus between 0.23-0.238, bricks 0.022-0.034 wide. Light-coloured mortar containing black pozzolana.

ROOM 19 - meas. (incl. 20-21, cf. Gnade 1982, 36) 16.15 x 9.35.

North Two brick piers set in north-east and north-west corners, subsequently enveloped by wider secondary brick piers. First piers both 0.61 wide, secondary piers 0.855 (east) and 0.95 wide (west). Modulus first piers: 0.265-0.27, bricks 0.035-0.038 wide, mortar beds 0.024-0.025 wide. Rather thick and mainly yellow fresh bricks. tenacious and rather badly sifted greyish mortar, containing grey and black pozzolana. Modulus secondary piers: av. 0.235, bricks av. 0.032 wide, mortar beds 0.022-0.025 wide. Rather well levelled courses of thin reused orange bricks. Light grey and badly sifted mortar, containing much red and brownish pozzolana with an almost complete absence of black, and many lime granules. Secondary piers sustain wide arches of red thin bipedales that span the room from north to south. At springing of arch a light reset, presumably for installation of wooden frame during construction. Intrados revetted with series of 3-3.5 bessales, some of which still in situ. In concrete of core mixed lot of *caementa*. Every c. 12 bipedales one tile continues through the whole width of the core, others all cut into half, thus creating a cassette-like partition.

East Opus reticulatum mixtum intersected by brick bands. See also 7, west. North-east pier of 19 set against it. Presumably entity with 19, south, east section, but entire facing of corner modern. Part of reticulate in upper wall restored. Doorway to room 7, 1.82 wide, covered by a not too good arch of sesquipedales. Cf. 7, west. Upper part of doorway possibly restored. Series of putlogholes, see also 18, east.

South Masonry entirely cf. 18, north. West section entity with west. East section presumably entity with east. Facing of east section heavily restored.

West Opus reticulatum mixtum. See also 17 and 18, west. North set against west. West entity with south wall, west section.

Doorway to corridor 26, 1.47 wide, covered by a not very good arch of red and yellow sesquipedales. Arch partially cut through brick quoining of reticulate field, but neatly done. Doorway blocked in brick until a height of 1.35. Bricks presumably identical to those in restored jambs of doorway 18, west. Mortar hardly visible, but certainly containing red pozzolana. Above doorway a window at a height of c. 3.40. Partly modern.

ROOM 20 - meas. cf. 19.

North In north-east and north-west two heavy brick piers enveloping two smaller ones. See also 19, north. North, west section set against west. East section set against east.

East See also 19, east. North and south, east sections, set against east. Doorway to 8, 2.30 wide.

South In south-east and south-west two heavy secondary brick piers. See also 19, north. Both piers set against resp. east and west walls.

West Reticulate intersected by brick bands. See also

19, west. Blocked doorway to 27, 1.45 wide. Window above doorway at a height of c. 3.40, see also 18, west. North and south, west sections, set against west.

ROOM 21 - meas. cf. 19.

North Brickfaced concrete and opus reticulatum simplex and mixtum. East section entity with east wall. West section entity with west wall. Secondary doorway to 22, 0.91 wide.

Masonry consists of seven different parts (including restored west jamb of doorway). They measure from the north-east corner: section 1) from 0.00-0.31; section 2) from 0.31-0.88; section 3) from 0.88-1.53; section 4) from 1.53-2.06; section 5) from 2.06 - east jamb of secondary doorway; section 6) from west jamb of secondary doorway until 0.13-0.735; section 7) from 0.13-0.735 of west jamb until north-west corner.

Section 1) Brickwork, 0.31 wide. Entity with east wall. Rather wide bricks (0.03-0.043), mortar beds av. 0.025, modulus 0.275-0.28. Fresh, red and yellow bricks, mainly broken tiles. Greyish and rather badly sifted mortar containing black pozzolana.

Section 2) Brickwork, 0.57 wide, east part of blocked doorway. Set against section 1. Lower part modern restoration. On top irregular masonry, mixed yellow and orange partly reused bricks. Some traces of a fire? Modulus 0.265-0.275, bricks 0.28-0.031 wide, mortar beds 0.02-0.023 high. Rather badly sifted mortar containing red and brownish pozzolana, and lime granules.

Section 3) Brickwork, 0.65 wide, west part of blocked doorway, orig. c. 1.22 wide. Set between sections 2 and 4. Not very regular masonry, although use of mainly orange bricks gives a uniform aspect. Most bricks reused. Their quality is not very good. Modulus 0.235-0.275, bricks 0.022-0.03 wide, mortar beds 0.02-0.027 wide. Brownish-grey and badly sifted mortar, containing red and black pozzolana. Section 3 set on top of a brick base, min. 0.37 and max. 0.50 high. It continues beneath sections 4-5, where it is 0.40-0.47 high.

Section 4) Brickwork, c. 0.53 wide. Section 3 set against it. Fissure at west side, sequence there not clear. Modulus av. 0.27, bricks 0.025-0.03 high, mortar beds av. 0.02 high. Rather well levelled masonry containing exclusively sawn pale yellow bricks, presumably mainly fresh material.

Section 5) Brickwork, continuing until secondary doorway. Fissure at 1.18 from east side, but continued in same masonry. Modulus 0.235-0.255, bricks 0.022-0.028 wide, mortar beds 0.021-0.027 high. Masonry similar to that of section 3. The wall is placed upon a low brick base with at least one thick broken bipedalis or sesquipedalis. The lower west part is heavily restored. Modulus c. 0.22-0.23.

Section 6) West jamb of secondary doorway, restored in brick, max. 0.735 and min. 0.13 wide. Ending at

west end in irregular fissure. Presumably set against section 7.

Section 7) Opus reticulatum mixtum intersected by two bands, six (below) and five bricks high (above). Entity with 21, west. In lower part antique restoration in opus vittatum B (c. 0.64 wide), and modern restoration in brick.

Hadrianic masonry is also visible at 0.14-1.13 east of the doorway and lying at min. 1.87 above the present floorlevel of the room, where it is "stuck" as two to three brick courses between the Severan masonry extending below and the Antonine reticulate above. The Hadrianic brickwork was broken off at the east end and repaired by the bad quality reticulate.

East North part entity with 21, north, section 1. Doorway and restoration of north jamb, see also description of 11, west. Against south part heavy secondary brick pier, cf. description of 19, north. Thin enveloping wall set against north end of east wall, cf. description of 11, north. Thin wall broken off at south jamb of doorway. Presumably installation of basin in south-east corner, meas. originally 2.10 x 1.74, preserved to a height of only 0.20, almost entirely modern concrete.

South In south-east and south-west two heavy secondary brick piers, see also 20, south, and 19, north. East pier somewhat larger than other piers (in 20 and 21). Both piers set against resp. east and west walls.

West See also 19 and 20, west. Doorway to 28, 1.45 wide. North section entity with 21, north. Heavy secondary brick pier set against south section

ROOM 22 - meas. 9.40 x 5.35.

North Opus reticulatum mixtum intersected by bands six bricks high, and brickwork. In north-east brick pier set in corner. North, west section, and west are an entity. In highest brick band of reticulate four large beamholes at c. 3.40. Masonry consists of five different parts. From north-east corner: section 1) brick pier placed in north-east corner; section 2) brickwork until c. 0.80 west of projecting pier, including small square niche at 1.03 east of this pier; section 3) opus reticulatum mixtum from c. 0.77 west of pier until c. 2.10 from north-west; section 4) brickwork from c. 2.10-0.60 from north-west; section 5) reticulate from c. 0.60 - north-west corner.

Section 1) Brick pier in north-west corner, 0.97 x 0.48. Modulus av. 0.26, bricks 0.034-0.037, mortar beds 0.018-0.024. Somewhat irregular masonry of mixed and partly reused material. Rather light-coloured mortar, containing red and black pozzolana, and lime granules.

Section 2) Brickwork from north-east corner until c. 0.77 west of projecting brick pier, meas. 0.45 x 0.30, until c. 2.50 high, antique restoration in brick. On top opus reticulatum mixtum, cf. descriptions of rooms 1-14. Modulus 0.235-0.25, bricks 0.026-0.031 wide,

mortar beds 0.022-0.03 wide. Rather long and uniform red and yellow bricks, partly reused. Darkish and rather badly sifted mortar, containing black, brownish and some red pozzolana.

Section 3) Rather well levelled courses of mainly fresh bricks. Av. modulus 0.26, bricks av. 0.03 wide, mortar beds 0.01-0.03 wide. Rather uniform and partly fresh bricks, mixed red and yellow.

Section 4) Meas. 2.10-0.60 from north-west corner. Presumably filled-in doorway, c. 2.00 high. Jambs not straight. Modulus 0.25-0.27, bricks 0.03-0.032 wide, mortar beds 0.02-0.025 high. Mainly long and uniform red and yellow bricks, almost exclusively fresh material. Light-coloured mortar, containing black, brownish and red pozzolana, and lime granules.

Section 5) Opus reticulatum mixtum, cf. description of rooms 1-14.

East Brickwork in north section, brickwork and vittatum in south section. Brick pier set against north section. South section and south wall are an entity. Masonry of north section, see also 13, west, north section. Low bench enveloping north section, min. h. 0.40, min. w. 0.10. Entity with wall. Doorway to 8, 2.13 wide. Restored south jamb, cf. 13, west. Among the bricks here more fresh material. Brickwork of south section: modulus 0.275-0.28, bricks 0.03-0.043 wide, mortar beds 0.024-0.026 wide. Very thick red and yellow bricks, all fresh, many broken tiles. Rather light mortar, not too well sifted, containing black and brownish pozzolana.

South See also sections of 21, north. Jambs of presumed filled-in doorway, 1.20 wide, here at 0.28-1.44 from south-east corner. Dividing line between two phases at 0.83 from south-east. Lower part mainly modern restoration. Doorway to 21, 0.90 wide. Beamholes at c. 3.40.

West Opus reticulatum mixtum intersected by brick bands. North part until max. h. 0.85 entirely a restoration in brick. North section entity with 22 north, section 5. South section entity with 21 north, section 7. Modulus 0.23-0.255, bricks 0.025-0.036 wide, mortar beds 0.02-0.023 high. Rather irregular courses with thin and mainly reused yellow and orange bricks. Light-coloured mortar with red, black and brownish pozzolana. Doorway to 29, 1.42 wide. Window above doorway, at c. 3.60. See also 18-21, west.

ROOM 23 - meas. 9.50 x 5.10.

North Opus reticulatum mixtum and brickwork. See also Outer north wall of 23. Floorlevel c. 1.00 higher than in other rooms.

Section 1) From north-east until c. centre of wall brickwork. Section 1 and east presumably an entity. Modulus 0.27-0.30, bricks 0.03-0.038 wide, mortar bed 0.031-0.038 high. Rather uniform courses of red and yellow mixed bricks, at least partly reused. Pale mortar, containing red and black pozzolana, and

some lime granules.

Section 2) Reticulate, facing partly removed and concrete core visible.

Section 3) From north-west corner reticulate, l. 2.30. Upper part modern restoration (1965). At 1.13 m from north-west a secondary opening in brick, 0.40 wide. Near north-west corner some yellow secondary bipedales. West set against section 3.

East See also 14, west. Only core of wall visible until max. h. 0.77, with on top restoration in opus vittatum A, rest modern. Modulus: one brick + one block av. 0.124; one block between two bricks av. 0.175. Irregular yellow bricks and oblong tufa blocks.

South Opus reticulatum mixtum and rubble masonry. See also 22, north. Situation in south-east corner not clear. South and west are an entity. In west part reticulate intersected by two bands six bricks high, quoinings five bricks high, cut off in east part and restored in rubble. Series of putlogholes above first course of brick bands.

In south-east corner a shallow brick pier, max. w. 0.095 and 0.86 high. Modulus av. 0.27, bricks av. 0.03 wide, mortar beds 0.01-0.03 high. Rather uniform and long red and yellow bricks, partially reused. In south-west corner bench set against south. At least four large beamholes in reticulate at c. 2.40 above floorlevel of room.

West Opus reticulatum mixtum. North presumably set against west. West and south, west section, are an entity.

Doorway to corridor 29, 1.45 wide. Around north and south sections thin enveloping brick walls. Against north section: 1.90 long, av. w. 0.095 with a maximum of 0.32. Against south section: 1.80 long, av. w. 0.25 with a maximum of 0.36. The north section rose originally 0.47 high, the south section 0.83 (both measured from Corridor 29). Masonry laid in irregular courses, thick reused bricks. Badly sifted mortar containing many lime granules.

ROOM 24 - meas. 3.50 x 2.06.

North Set between east and west. Blocked passage to corridor 25-29. West section 1.32 wide, east section 0.74, both filled in with bricks, east part also in rubble. Upper west part modern restoration. Masonry west part: modulus 0.29-0.30; thick, partially reused tiles; rather light, badly sifted mortar containing brownish and some black pozzolana. Masonry east part: below six to seven courses in modern brick until c. 0.50 high. At west side bricks laid in corner. Coarse material with part of a small arch in bessales and a stucco cornice. Greyish mortar containing red pozzolana.

Near west wall a plinth of bipedales, wall set upon it.

East Opus reticulatum mixtum. See also 16, west, and 25, east. North set against east. Bands of six bricks high and quoinings, in centre five bricks high. Modulus 0.26-0.28, bricks 0.035-0.045 wide, mortar

beds 0.015-0.02 wide, diam. tufa blocks 0.07-0.075. Regular and well levelled reticulate. Thick and sawn bricks. Lower course of bricks entirely modern.

In north part of wall some irregular holes, cf. also 24, west. Beamholes at c. 2.50. Doorway to room 16, 1.20 wide, blocked in two phases. North part 0.61-0.66 wide, blocked in opus vittatum, south part 0.54-0.58 wide, blocked in rubble. Covered by arch of sesquipedales, possible secondary, see also situation in 16, west. Niche 0.30 deep left open while blocking, visible from c. 0.39 high.

South Brickfaced concrete. Entity with west wall. West section 0.88 wide in facade, 0.44 wide inside room. Rest is 1.65 wide doorway. Above doorway window, at c. 3.75. Modulus 0.23-0.24 high. Well levelled masonry, yellow and uniform fresh bricks. Tenacious and grey mortar, containing black and brownish pozzolana.

West Brickfaced concrete. Entity with south wall. North set against west. Well levelled and regular courses. Fresh and partly cut-through, mainly yellow bricks. Greyish and badly sifted mortar, containing much black pozzolana. Set upon plinth of bipedales, d. c. 0.11, but all broken off.

In north-west corner irregular holes, cf. 24, east. Beamholes at c. 2.50.

ROOM 25 - meas. 6.81 x c. 2.00.

North Brickfaced concrete, 1.05 long and 0.37 wide. At east side doorway, 0.94 wide. North set against west. Modulus av. 0.245, bricks 0.025-0.03 wide, mortar beds 0.015-0.025 wide, av. 0.018. Mixed and partly reused red and yellow bricks. Rather tenacious mortar, quality not observable.

East Brickwork and opus reticulatum mixtum. See also 17, west. Large part of wall surface covered with plaster and painting. South presumably set against, or rather in, east.

Section 1) At 0.00-2.31 from north-east reticulate, intersected by one band of six bricks high, and by quoinings.

Section 2) At 2.31 and 3.76 from north-east two vertical joints, space in between (1.45) filled with brick. This is a blocked doorway to room 17, cf. description 17, west. In it, two slit- windows with wide opening onto 17, at 1.38-1.72 above floorlevel. Possibly two sesquipedales served as lintel. Windows 0.19 wide; min. visible depths 0.39 (north window) and 0.28 (south window).

Section 3) At 3.76-c. 5.66 north-east (c. 1.15 from south-east) reticulatum mixtum similar to section 1.

Section 4) At 5.66-6.81 from north-east (1.15-0.00 from south-east) another type of reticulate separated from section 3 by a vertical joint, sequence of walls here not certain. See also continuation of this wall as 24, east.

Masonry:

Section 1) Modulus 0.258-0.265, diam. of tufa blocks av. 0.07. Well levelled courses of brick and tufa.

Upper series of reticulate blocks cut into triangles.

Section 2) Modulus 0.25-0.27, bricks 0.025-0.035 wide, mortar beds 0.02-0.025 wide. Tenacious mortar, containing at least black pozzolana.

Section 3) Cf. section 1. Only lower part visible, rest modern restoration.

Section 4) Reticulate with visible quoining five bricks high. Modulus av. 0.28, bricks av. 0.04 wide. Rather thick and occasionally long bricks. Reticulate laid fairly well. Cf. description 24, east.

South Brickfaced concrete, c. 2.03 long. See also 24, north. Wall surface almost entirely covered by plaster and painting. South set between east and west. At 1.64-2.03 brickwork. Modulus in upper part c. 0.29.

At 0.00-1.24 from south-east blocked doorway. At 1.24-1.64 niche, 0.29 deep.

West Brickfaced concrete. Large parts covered with plaster and painting. North and south set against west.

Section 1) At 0.00-0.39 from south-west, set back 0.06. Cf. 24, west.

Section 2) At 0.39 and 1.28 m, two vertical joints to the left and right of brick.

Section 3) At 1.28-c. 6.28, brick. At 6.28 vertical joint.

Section 4) At c. 6.28-6.81 from south-west (0.00-0.525 north-west) brick.

Masonry:

Section 1) Covered almost entirely with plaster and painting. Continuation of 24, west. Set against section 2.

Section 2) A 0.89 wide brick pier. Sections 1 and 3 set against it. Modulus 0.24-0.26, av. 0.249. Regular and fresh, mainly yellow bricks. Well sifted mortar containing black and red pozzolana.

Section 3) An almost 5.00 long brick wall, set between sections 2 and 4. Putlogholes adjacent to vertical joints, at 0.45-av. 0.56 and at 0.45-0.57 above floorlevel. Modulus 0.235-0.25, bricks av. 0.03 wide, mortar beds av. 0.025 high. Quite regular and thin, mainly uniform bricks, red and yellow, fresh and well sawn.

Section 4) A 0.525 long wall, continued behind 25, north (0.37 wide), total length thus 0.895. Section 3 set against it.

Altar? in centre of room

Brickfaced masonry, in lower part one course of oblong tufa blocks, marble revetment. Set upon mosaic floor. Modulus 0.29-0.32, bricks av. 0.035 wide, mortar beds 0.022-0.03 high. Rather long and thin mainly red bricks, partly reused. Some modern restorations.

ROOM 26 - meas. 22.05 (incl. 27-28, cf. Gnade 1982, 35) x 2.65.

North Two brick piers. East pier against east wall. Junction of west pier and wall entirely modern. East pier 0.90 wide, 0.60-0.62 deep. Modulus av. 0.235, bricks 0.028-0.036 wide, mortar beds 0.016-0.019

high. Mixed red and yellow, partly reused bricks, most were sawn. Middle grey and well sifted mortar containing red and black pozzolana. West pier 0.90 wide, 0.60-0.65 deep. Mortar not visible.

East Opus reticulatum mixtum intersected by bands six and five bricks high, and quoins. See also 25, east. North, east pier, set against east.

In north part blocked doorway, 1.46 wide, to room 19. Filled-in to min. h. 1.17 with thick red and orange, partly reused bricks. Modulus 0.29-0.314, bricks 0.032-0.04 wide, mortar beds 0.018-0.032 high. In south part doorway, 1.29 wide, to room 18. South jamb restored to max. h. 0.65 in brick, cf. 18, west. Modulus 0.23-0.238, bricks 0.022-0.034 wide. Light mortar containing black and brownish pozzolana.

South Brickfaced concrete. South, west section, and west are an entity. From south-west corner 0.17 and 0.60 wide brick masonry, divided by vertical joint. Situation not clear, masonry similar. Thin, 1.05 long wall set against it, cf. 25, north. Doorway to 25, 0.94 wide.

West Brickfaced concrete, see also 24, west, and 25, west, sections, 1 2 and 4. Junction of north and west entirely modern; south and west are an entity. Wall set back 0.77 in respect to width of rooms 24-25. West is common wall with outer east wall of Cas. di Diana. Modulus 0.27-0.275, bricks 0.03-0.033 wide, mortar beds 0.026-0.028 high. Rather uniform red and yellow bricks.

Series of putlogholes at c. 1.16-1.34. Near south-west corner a 0.28 wide, vertical drainage channel, filled-in with brick. Two windows in outer east wall of Diana: rectangular window 0.59 high x 0.52 wide, sill at c. 1.47 above floorlevel of corridor; rectangular window 1.03 high x 0.75 wide, sill at c. 3.20 above floorlevel of corridor.

Long and narrow basin, or possibly trough, in brickfaced concrete, 5.00 long x 0.89 wide x c. 0.80 high, set against the wall. Heavily restored. Modulus c. 0.29. Yellow and mainly red reused bricks.

At c. 3.60 from north-west fissure through entire height of wall. North section restored in brick. Series of putlogholes here at c. 1.85-2.015. Modulus 0.235-0.245, bricks 0.03-0.035 wide, mortar beds 0.015-0.02 high. Dirty-white mortar, bad quality and badly sifted, containing black and red pozzolana and lime granules.

ROOM 27 - meas. cf. 26.

North Two brick piers, set against east and west. See also 26, north. Piers 0.90 wide and 0.60 deep. Masonry cf. 26, north-east pier.

East Opus reticulatum mixtum. See also 25 and 26, east. North and south piers set against east.

Doorway to room 20, 1.47 wide, partly blocked and transformed into a window. Against east, thin c. 0.25 wide brick wall, in north-east set against pier, in south-east presumably partly enveloping pier.

Masonry, cf. description of blocking in 26, east.

South Two brick piers. Set against east and west. See also 26, north. Heavily restored.

West Brickfaced concrete. South section antique restoration. See also 26, west, north section. North section mainly modern restoration. South and north piers presumably set against west.

and south are an entity.

West Brickfaced concrete. Entity with north and south. Masonry, cf. north and south walls.

ROOM 28 - meas. cf. 26.

North Two brick piers. Set against east and west. They are 0.60 wide and 0.76-0.80 deep, leaving a 1.51 wide doorway to 29, covered by a brick arch sustained by the piers. Junction with 28, west, is modern, presumably modern west wall set behind pier. East pier set against east. Masonry cf. description 29, north and west.

East Opus reticulatum mixtum. See also 25-27, east. North and south piers set against east. Doorway to room 21, 1.47 wide.

South Two brick piers. See also 26-27, north. East pier set against east. West pier and wall almost entirely modern.

West Brickfaced concrete.

At c. 0.55 from south-west irregular fissure, flanked on north and south by restorations, mainly recent. West presumably set behind north pier. Situation in south-west not clear but presumably mainly modern construction.

Slit-window in recently restored masonry, 0.85 high x 0.15 wide, at c. 2.80 above floorlevel of corridor. Series of putlogholes, at c. 1.95-2.15. Large basin, or possibly trough, in brickfaced concrete, 2.36 long x 1.23 wide x 0.80 high, set against the wall. Cf. 26, west.

ROOM 29 - meas. 11.20 x 2.40.

North Brickfaced concrete. North and west are an entity; east set against north. Modulus 0.255-0.26, bricks 0.03-0.038 wide, mortar beds 0.017-0.029 high. Quite uniform yellow and red, partly reused bricks. Two series of putlogholes.

East Brickfaced concrete. East, north section, set against north.

Thin wall enveloping loadbearing wall in opus reticulatum mixtum (visible in upper part), cf. situation in 23, west. Doorway to room 23, 1.50 wide. Doorway to room 22, 1.43 wide. At 1.43 south of doorway to 23, opening of furnace 0.59 wide, placed obliquely in direction south-west / north-east. Corridor covered by barrel vault, now demolished. Birth in south-east corner at c. 2.40.

Against east, south section, thin secondary brick wall. Entity with south-east pier. Modulus 0.23-0.251, bricks 0.025-0.036 wide, mortar beds 0.02-0.023 high. Rather thin, reused, yellow and red bricks laid in badly levelled courses. Rather light and badly sifted mortar, containing red and black pozzolana.

South Two brick piers. See also 28, north. Thin secondary east wall and south pier are an entity. West

Caseggiato dei Molini

General catalogue

Jan Theo Bakker

§ 1 INTRODUCTION

The description is modelled after Boersma's catalogue of the Ostian Insula V,II (Boersma 1985; instructions for use: p. 302-303). The description of each room is in this study made up of the following items:

- A. Measurements (north, east, south and west wall respectively).
- B. Walls.
- C. Floor.
- D. Ceiling.
- E. Data from the excavations; structures and objects in and from room.

Wall-sections have been distinguished. Different kinds of masonry (such as latericium, mixtum) are given different numbers, and so is similar masonry if separated by a joint. The masonry on either side of a doorway is given the same number only if a lintel is present. The blocking of a doorway or window is numbered separately. Antique repairs are not given a separate number if they are of a minor order. I have inserted the description of doorways and passages (Boersma's item c) into the description of the wall-sections, because I regard them as an integral part of the walls. Item C deals with the floor (Boersma's item d), item D with the ceiling (in Boersma under b).

Rooms 24 and 25 (the Sacello del Silvano) have been published in Bakker 1994 (chapter 9 and catalogue C). I was able to distinguish seven layers of plaster in the other rooms. The first four are only about one millimetre thick. The fifth is much thicker and has a smooth surface. On it can be found traces of a characteristic dark-red, almost purple paint. The sixth is again thin. The seventh has a very coarse structure and surface, but sometimes a thin, smooth layer is found covering it. Whenever possible I have distinguished thin, (thick and) smooth and (thick and) coarse plaster. Remains of coarse plaster of which no thickness is mentioned could be part of the nucleus of the fifth layer.

Of the finds a short description is offered. Some more information can be found in the *Giornale degli Scavi* and in the literature cited. The finds are presented with the same numbers as those used in the

Giornale degli Scavi.

In the description the building is assumed to be oriented north-south/east-west. Via di Diana is to the south. All measurements are in metres. Tops of all walls consolidated. Thickness of walls c. 0.59, unless indicated otherwise.

Abbreviations not found in Boersma 1985 are: st.-r.: store room; sh.: showcase; mus.: museum.

§ 2 DESCRIPTION (March 1986)

2A Outer walls; streets; walls and rooms on streets

OUTER NORTH WALL (= south wall of building 6). L. 23.40.

a Visible l. 8.81, total l. 9.40. Latericium, separated from building 6 by vertical joint. Remains of coarse plaster.

b L. 6.60. Latericium, separated irregularly from c. East end, over l. 0.44 and from h. 0.75 upwards, protruding a little (av. 0.045) into building 6. Remains of coarse plaster.

c L. 4.17. Mixtum, separated from d by partly irregular vertical joint.

d L. 3.23. Latericium.

OUTER EAST WALL. L. 46.38.

Street W. 7.60-7.70.

Pavement of basalt blocks, gently sloping downwards towards the north. Some blocks lying against facade between 1st and 2nd and between 3rd and 4th pier (as indicated on plan in SO I). In front of room 7, 1.95/2.30 from facade, a north-south running stretch of blocks is missing, probably where water-pipe was found.

This find (March 14th 1870) described by Lanciani (Lanciani 1880, 197-198, Tav. X, 4, 5, 7). Lead water-pipe, carrying number XVII, running along east facade (p. 265 nr. 388), connected with pipe under Decumanus (p. 264 nr. 382). Distributing-box in front of room 7, made of eight lead slabs, joined by lead nails. Water-flow into building controlled by metal cock (material not specified). East-west running lead pipe connected with box and

entering building, with inscription *[A]QUILINES* (p. 266 nr. 399; CIL XIV, 1985). According to Finelli pipe was not found below basalt blocks, but within several layers of rammed earth on top of blocks, believed in 1870 to be pavement of street (GdS 1914, 154-155).

In 1916 Finelli reports find of water-pipe on top of most northern pier set against facade and find of another part in earth a little below (GdS 1916, 97).

According to plan in Lanciani 1880 street in front of rooms 1-12 was excavated in 1870. Afterwards again covered with earth, removed in 1913 (GdS 1913, 112-113, 126, 130-131). In this earth were found in 1913:

7345 Iron. Part of small shovel. L. 0.27.

7346 Iron. Hoop (diam. 0.21) attached to tripod (h. 0.20) by pin.

7347 Iron. Foot of candelabrum (tripod), damaged.

7347 Iron. Nails. L. of longest one 0.235.

7348 Eight bronze coins.

7404 Red marble. Herm, head missing. Presumed total h. 0.073. (see also: Vaglieri 1913(2), 205).

7405 White marble. Fragment of inscription. *[---M]ACELL[VM---] | [---D]ECOR[AVIT---]*. Meas. 0.145 x 0.12 x 0.023. Dated to years 418-420 AD (see also: Vaglieri 1913(2), 205; CIL XIV S, 4719.b).

7406 Terracotta. Fragment of frieze with depiction of flying amorino and part of palmette. H. 0.14; w. 0.165. (see also: Vaglieri 1913(2), 205, fig. 5).

7407 Ten bronze coins.

- Brick-stamps, all showing traces of fire: CIL XV, 268 (c. 123-126 AD); 5 times CIL XV, 694 (c. 123 AD); CIL XV, 831 (c. 123-128 AD); CIL XV, 1348 (c. 120 AD); CIL XV, 1538 (Hadrianic) and a) *[---]ANDRI* | *[---]M*, b) *LVISELLI* (Vaglieri 1913(1), 184).

"To the east" of the building was found:

9503 White marble. Naked torso of statuette of male figure. H. 0.065 (GdS 1914, 249).

In 1914 western half of Via dei Molini in front of building was cleared. Parts of walls of building were found lying almost directly on top of pavement of street. Several layers of rammed earth found on Via dei Molini, av. h. 2.20, no finds reported (GdS 1914, 155; GdS 1915, 98-99; Calza 1915(1), 249). These layers also encountered on south part of street, max. h. over 3.00 (GdS 1916, 97). More finds from Via dei Molini reported in GdS 1916, 93-102, but unfortunately no distinction made between part in front of building (east part, left unexcavated in 1914) and remainder of street. Presence of drainage-channel under street reported in 1916 (Paribeni 1916, 329).

Outer east wall; walls on street

On outer east wall and on piers set against it were noted traces of red letters on white background (GdS 1913, 131; Vaglieri 1913(2), 204; Calza 1915(1), 245).

a Visible l. 0.28, total l. 1.48. Latericum.

Pier set against a. W. 1.20; th. 1.22. Latericum and two travertine blocks (buffers). Traces of thin plaster. Passage to room 1. W. 3.13. Travertine threshold of three blocks, worn, surface damaged. South end missing, third block lying against right jamb. Groove in east part of first and second block, ending in depression (l. 0.75) in north part of second and in third block. Raised edges to the east of depression. Pivot-hole in north-east part of depression, lying against raised edge. Northwest corner of first block forming a socket. Jambs latericum.

b L. 1.48. Latericum. Traces of thin plaster with faint traces of red paint.

c L. 0.90. Latericum. Slight traces of thin plaster with faint traces of red paint.

d L. 1.61. Latericum. Traces of thin plaster.

e L. 0.60. Latericum.

Doorway to room 4. W. 1.72. Complete travertine threshold of three blocks. Middle block broken. Depression (l. 1.27) extending over all three blocks. Raised edges to the north, east and south of depression. Two pivot-holes, in north-east and south-east corner of depression, lying against raised edges. East part of left jamb showing core of wall and slightly curved inwards, remainder and right jamb latericum.

f Visible l. 0.09/0.51, total l. 1.79. Latericum. Traces of thin plaster, two layers, with traces of red paint on first layer.

Pier set against f. W. 1.19; th. 1.19. Latericum. At the bottom, on north, east and south side, a brick plinth (h. 0.10). Traces of thin plaster, two layers, with traces of red paint on first layer. In east side irregular panel of red bricks (not secondary). In this panel terracotta relief (2.35/2.95 from street, 0.28/0.88 from south end, 0.91/0.31 from north end of pier). Central part of relief damaged. Depicted are carpenters' tools: a plummet, two pairs of compasses, a saw, and three elongated objects (inv. nr. 5928; GdS 1913, 131; Vaglieri 1913(2), 204-205, fig. 4; Calza 1915(1), 245; Girri 1956, 10; Floriani Squarciapino 1962(2), 112, fig. 1; Zimmer 1982, 164-165 nr. 87, fig. 87; Ostia neg. nr. B 2104).

g L. 0.59. Latericum. Traces of thin plaster, two layers, with traces of red paint on both layers.

h L. 0.88. Latericum. Traces of thin plaster.

Doorway to room 6. W. 1.48. Travertine threshold of one block. Broken, south end missing. Depression (l. 0.90), the north-east part of which is still deeper. Raised edge to the east of depression, at same level as north part of block. Broken-off pivot-hole in south-east end of depression, lying against raised edge. Left jamb showing core of wall, right jamb latericum.

j L. 0.60. Latericum. Considerable remains of thin plaster, two layers, with remains of red paint on first layer.

k L. 1.48. Latericum. Remains of thin plaster, with remains of red paint. Frame for relief, made of moulded bricks (hidden by tree).

l L. 0.85. Vittatum A. Traces of thin plaster, with faint traces of red paint.

Doorway to room 7. W. 1.32. One travertine block lying against left jamb, resting on foundation of vittatum. Flat surface, 0.48 above floor of room 7. Left jamb vittatum A, right jamb broken off and restored after excavation.

m L. 1.15. Latericium. Traces of thin plaster, with faint traces of red paint.

n L. 0.86. Vittatum A. Traces of thin plaster, with faint traces of red paint.

o Visible l. 0.13/0.18, total l. 1.52. Latericium. Remains of thin plaster, with faint traces of red paint. Remains of coarse plaster.

Pier set against o. W. 1.21; th. 1.18; preserved h. 3.15 (highest preserved pier). Latericium. Traces of thin plaster, two layers, with traces of red paint on both layers. Remains of coarse plaster.

Vertical channel in p. W. 0.13; d. 0.43. Left side latericium, right side (largely restored after excavation) and back showing core of wall.

p L. 5.30. Latericium. Traces of thin plaster, with traces of red paint. Two windows: see room 8. In north part frame for relief, made of moulded bricks, back showing core of wall (2.13/2.68 from street, 0.34/0.84 from north end of section; h. excl. bricks 0.48; w. excl. bricks 0.43; d. 0.07).

Doorway to room 9. W. 1.49. Travertine threshold of three blocks. First block lying against left jamb, small part of third block, next to right jamb and perhaps incl. pivot-hole, missing. Groove in east part of all three blocks, ending in depression in north part of third block (dist. from jamb to south end of depression 0.32). Raised edge to the east of depression. Socket in third block, opening onto groove. Jambs latericium.

q L. 1.15. Latericium.

Passage to room 12. W. 2.16. Complete travertine threshold of two blocks. Much worn and damaged. Part of depression in south part of second block, north part of block at higher level. In east part of depression pivot-hole, lying against higher northern part. To south-west of pivot-hole small groove running east-west. Another pivot-hole in higher northern part. Irregular depression in north part of first block. Jambs latericium. Remains of coarse plaster on right jamb, showing traces of fire.

r Visible l. 0.20/0.07, total l. 1.47. Latericium. Traces of thin plaster, two layers, with traces of red paint on both layers. Terracotta relief, framed by moulded bricks (partly modern) (2.43/2.95 from street; 0.48/1.00 from south end and 1.02/0.50 from north end of section; meas. excl. bricks 0.44 x 0.44; d. 0.04). Depicted is a Genius, lower part of body covered by mantle, in left hand *cornucopiae*, in right hand *patera*, to which snake - without crest or beard - stretches out. Because relief is not mentioned at the time of the 1913-1916-excavations Floriani Squarciapino thinks that at the time relief was

covered by brick pier standing in front of section (Floriani Squarciapino 1962(2), 112-114, fig. 2). Relief probably found during restorations. See also Bakker 1994, 96-97.

Pier set against s. W. 1.20; th. 1.17. Latericium. Traces of thin plaster, two layers. Traces of coarse plaster.

Small aperture W. 0.45. Left side latericium, right side broken off and restored after excavation. Remains of coarse plaster (th. 0.025) on left side. One travertine block lying against left side. Flat surface, 0.25 above street.

t L. 2.11. Vittatum A.

u L. 1.75. Latericium. Traces of thin plaster.

v L. 1.47. Latericium. Traces of thin and of coarse plaster.

Passage to room 14. W. 3.71. Complete travertine threshold of five blocks. Groove in east part of first to fourth block, ending in depression (l. 0.62) in fifth block. Raised edges to the east and north of depression. Pivot-hole in north-east corner of depression, lying against raised edges. Northern raised edge interrupted by groove running north-south, directly to the north of pivot-hole. Socket in north end of third block. Jambs latericium. Traces of coarse plaster on left jamb, traces of thin and of coarse plaster on right jamb.

z Visible l. 0.32, total l. 1.45. Latericium, separated from building 6 by vertical joint. Traces of thin plaster.

Pier set against z. W. 1.13; th. 1.18. Latericium. Traces of thin plaster.

Outer west wall of *Grandi Horrea*; walls and rooms on street

Five latericium piers, opposite those set against outer east wall, set against outer west wall of *Grandi Horrea* (north part latericium and separated from first pier by vertical joint, rest of wall made of opus quadratum rusticum). Preserved h. of highest pier 3.22. Two rooms set against outer west wall of *Grandi Horrea* between second and third pier, against west side of third pier.

First pier W. 1.18; th. 0.98 (north side)/1.13 (south side). Latericium. Remains of coarse plaster. At the bottom, on north, west and south side, a brick plinth (h. 0.10).

Second pier W. 1.18; th. 1.16. Latericium. Remains of coarse plaster. At the bottom, on north, west and south side, a brick plinth (h. 0.07).

Third pier W. 1.19; th. 1.26. Latericium. Not precisely opposite pier on west side of street, but a little to the south.

Fourth and fifth pier Latericium. Completely overgrown.

Catillus standing in front of second pier (h. 0.67, diam. 0.73).

Two adjoining rooms Latericium. Walls preserved to a low height and much restored after excavation.

Traces of plaster. Meas.:

Outer north wall L. 2.74, starting at 0.95 from second pier.

Outer west wall L. 10.50.

Outer south wall L. up to pier 1.56.

North room 2.18 x 3.88 x 2.14 x 1.65 - 0.45.

Doorway in west wall: w. 1.78.

Floor of irregular pieces of brick. Complete threshold of one travertine block, broken. Depression (l. 1.16), with raised edges on north, west and south side. Pivot-hole in south-west corner of depression, lying against raised edges. Surface (raised edge) 0.60 above street. In south-east corner of room two brick treads, leading to a podium to the south (restored after excavation). W. 1.04. First riser 0.23, first tread 0.26. Second riser 0.23, 0.62 from south wall.

South room 2.14 x 4.87 x 1.25 (pier) - 0.85 x 2.21 - 0.59.

Doorway in west wall: w. 2.07.

Floor of bipedales. Staircase, similar to the one in northern room, in north-east corner and leading to the north indicated on plan in SO I, but not confirmed.

OUTER SOUTH WALL. L. 22.58.

Street W. 5.78.

Pavement of basalt blocks, not reaching facade. Excavated in 1914, no finds reported (GdS 1914, 351-352).

Outer south wall; walls on street

a L. 0.89 - 1.20 - 1.86. Latericum, separated from Cas. di Diana by vertical joint. Slight traces of thin plaster, with faint traces of red paint.

Doorway to room 24. W. 1.67; h. 3.02. Restored foundation (for threshold?), latericum, with one large tufa block on which rests left jamb. Jambs latericum, facing of lower part of right jamb damaged. Spanned by slightly curved lintel arch, made of sesquipedales, modern. Above door lower part of rectangular window, jambs latericum, largely modern. W. 0.80; starting at 4.08 from street.

Passage to room 16. W. 3.06; h. 3.14. Threshold of five blocks, fifth block looking like granite, the others of travertine. Small part at west end missing. Groove in south part of first, second and fourth block. First block has second groove in north part. Surface of third block at same level as bottom of groove, raised edge at south end of this block. Groove ending in depression (l. 0.63) in east half of fourth and in fifth block. Raised edges to the east and south of depression. North part of eastern raised edge interrupted by a groove running east-west. Pivot-hole in south-east corner of depression, lying against raised edges. Resting on foundation of latericum. Surface of threshold 0.52 above street. Jambs latericum. Spanned by a slightly curved lintel arch, modern. Directly above lintel arch lower part of rectangular window, modern. Jambs latericum. On

either side of window springing of relieving arch, modern. Frame for relief in east part of section, made of moulded bricks, back showing core of wall. At 2.54/3.04 from street, at 0.70/1.22 from right jamb of passage to room 16, at 1.18/0.66 from east end of section. H. excl. bricks 0.43; w. excl. bricks 0.45; d. 0.09.

Passage to room 15. W. 3.39. One travertine threshold block lying against left jamb. Broken, partly covered by bar counter. Groove in south part. Resting on foundation of latericum. Surface of block 0.50 above street. Jambs latericum. Traces of plaster on left jamb. Above left jamb springing of lintel arch, modern.

b L. 5.45. Latericum.

Wall set against west part of b and partly in front of passage to room 15, running north-south. Preserved to a low height. Latericum. Possibly two walls as suggested by plan in SO I. Th. of west wall 0.65, th. of east wall 0.60. South end broken off, preserved l. 1.84. Covering 0.38 of b. A corresponding wall (broken off) on south side of street.

Passage to room 1. W. 3.26. One travertine threshold block lying against left jamb. In its southern part beginning of a groove. Jambs latericum.

c Visible l. 0.99/0.21, total l. 1.80. Latericum.

Wall set against east part of c, running north-south. East, south and west side latericum. Th. 0.60; l. 2.23. A corresponding wall, restored after excavation, on south side of street.

OUTER WEST WALL

a L. 6.15. Latericum, separated from Cas. di Diana by vertical joint.

Outer west wall of rooms 29 (south), 25 and 24 set against outer east wall of Cas. di Diana. Outer west wall of rooms 28, 27 and 26 forming part of Cas. di Diana (latericum).

2B Rooms 1-29

ROOM 1

A. 4.46 x 4.30 x 4.56 x 4.50; area c. 20 m².

B. North, passage to room 3. W. 3.62. One travertine block lying against left jamb, flat surface. Jambs latericum.

a L. 0.84. Latericum.

East, a L. 0.30. Latericum.

b L. 0.87. Latericum. Remains of coarse plaster.

South, a L. 1.15. Latericum. Remains of coarse plaster, forming an entity with those on east, b.

b L. 0.15. Latericum.

West, a L. 1.85. Preserved to a very low height and completely overgrown. Latericum.

Passage to room 2. Present w. 2.55. Left jamb latericum, right jamb missing.

b Broken off, preserved l. 0.10. Wall with vertical joint shown on plans in Calza 1915(1) and SO I not confirmed. Latericum.

C. A few basalt blocks shown on plan in Lanciani 1880. C. 0.30 above level of room 3, that seems to have the average floor-level of the east part of the building.

D. No data available.

E. Excavated in 1870. Re-excavated in 1913-1914, when traces of fire were seen along east wall of rooms 1 and/or 3. In this layer resulting from fire were found (GdS 1915, 173; descriptions GdS, December 1913 and January-February 1914 not clear):

- Marble inscription, damaged by fire.

- A few fragments of iron and bronze objects.

ROOM 2

A. 3.55 x 4.50 x 3.53 x 4.45; area c. 16 m².

B. North, a L. 0.49. Latericum. Remains of plaster. Small aperture W. 0.31. Left side latericum, with remains of plaster, right side showing core of wall.

b L. 2.75. Mixtum. Traces of plaster.

East, a Preserved l. 0.10, broken off at south end. Latericum.

b L. 1.85. Latericum.

South, a L. 3.53. Latericum. Remains of plaster.

West, a L. 4.45. Mixtum. Remains of plaster.

C. No data available.

D. One beamhole, modern, in south part of west wall, at a higher level than those in room 15, east.

E. Excavated in 1913-1914. No finds reported.

ROOM 3

A. 8.90 x 3.21 x 8.93 x 3.19; area c. 28.5 m².

B. North, a L. 2.13 Latericum. In lower west part a semicircular relieving arch, made of sesquipedales. Starting from floor, left end incorporated in west wall. H. to extrados 0.90.

Doorway to room 5. W. 1.21. Part of brick foundation of threshold lying against right jamb. Jambs latericum.

b L. 5.56. Latericum.

East, a L. 0.17. Latericum. Traces of thin plaster.

b L. 1.56, th. 0.49. Vittatum B.

c L. 0.89. Latericum. Traces of thin plaster.

d L. 0.59. Latericum. Slight traces of thin plaster.

South, a L. 0.84. Latericum.

b L. 3.25. Mixtum.

c L. 0.91. Latericum, not clear whether forming entity with west, a.

West, a L. 1.37. Latericum.

Passage to room 17. W. up to north, a 1.82. Left jamb latericum, springing of slightly curved lintel arch of sesquipedales, above it. Lower part of passage filled in by:

b H. 0.96 (antique masonry)/1.07 (incl. restoration). Latericum, with one row of small, tufa blocks, forming entity with north, a. C. No data available.

D. No data available.

E. Excavated in 1870, re-excavated in 1913-1914. In the south-east corner a millstone was found,

according to a plan in Calza 1914(2) (fig. 1 on p. 245). Other finds: see room 1. In this room are lying two rectangular, travertine blocks (parts of thresholds?), and one irregularly shaped, travertine block.

ROOMS 4-5

A. 9.46 x 1.72 x 9.49 (up to facade) x 1.53; area c. 15.5 m².

B. North, a L. 0.60 - 7.40 (up to facade). Mixtum. To the east of doorway band of facing missing, sloping downwards towards the east, showing where concrete vault below staircase was attached. Row of 13 round holes above, following the slope. Approached from Via dei Molini. Treads and risers disappeared. Av. diam. of holes 0.17. Av. dist. between holes (from centre to centre) 0.40. Av. dist. between holes (centre) and top of band of missing facing 0.50 (meas. perpendicular to floor). First hole (centre) at 0.70 from threshold and 0.40 from floor. Av. w. of band of missing facing 0.45. Top of band starting at 1.50 from threshold and 0.70 from floor. Top of band at 1.85, 2.80 and 3.35 (highest preserved point) from floor at resp. 3.00, 4.30 and 5.15 from threshold. Many holes and some grooves below band.

Doorway to room 6. W. 1.46, h. 2.05. Left jamb covered by b, right jamb latericum. Spanned by a slightly curved lintel arch of sesquipedales.

b L. 0.68. Vittatum B. East side showing core of wall.

South, a L. 5.54. Latericum, separated from facade by vertical joint. East part preserved to low height.

b L. 2.15. Latericum, forming an entity with west, a. In lower west part a semicircular, relieving arch of sesquipedales, starting from floor, right end incorporated in west wall.

West, passage to room 17. W. up to south, a 0.18. Right jamb latericum. Springing of lintel arch above, modern. Lower part of passage filled in, by west, a.

a L. 0.18. Latericum.

b L. 1.35. Latericum.

C. No data available.

D. Two beamholes in west part of north, a, passing through the wall: 3.40/3.76 and 3.34/3.70 from floor.

E. Excavated in 1870, re-excavated in 1914.

ROOM 6

A. 8.93 x 5.31 x 8.87 x 5.22; area c. 47 m².

B. North, a L. 0.63 (not visible) - 6.82. Mixtum.

Doorway to room 7. W. 1.40; h. 2.12. Part of brick foundation of threshold. Jambs latericum, right jamb restored after excavation. Spanned by a slightly curved lintel arch of sesquipedales.

Three piers, latericum, set against a. All with traces of thin plaster. First pier. W. 0.93; th. 0.75, partly covering doorway, north side showing core of wall. Second pier. W. 1.37; th. 0.80. Third pier. W. 0.91; th. 0.81. Springings of two arches spanning the piers, th. c. two-thirds of that of the piers, preserved on first

and second pier. Springings at 3.48.

East, a Not visible.

b Visible l. 0.32. Latericum.

c L. 0.85. Latericum, lower part vittatum (partly modern). Traces of thin and of coarse plaster.

d L. 0.59. Latericum. Traces of thin plaster.

e L. 1.26. Latericum. Considerable remains of coarse plaster (th. 0.04) on lower south part.

South, a L. 6.81 - 0.60. Mixtum. Traces of thin plaster. Considerable remains of coarse plaster (th. 0.035) on lower east part, forming an entity with those on east, e.

b L. 0.75. Latericum.

West, a L. 1.48 - 1.48. Latericum. Upper part (above passage) mixtum, restored after excavation. Remains of coarse plaster.

Passage to room 18. W. 2.26; h. 3.42. Spanned by a slightly curved lintel arch, modern. Completely filled in by b.

b Lower part mixtum, upper part modern rubble masonry.

C. No data available.

D. Beamholes in south wall: see rooms 4-5. Four beamholes in north, a, passing through the wall: 3.50/3.75, 3.38/3.62 (filled in), 3.37/3.63 (filled in) and 3.36/3.60 from floor.

E. Excavated in 1870, re-excavated in 1914. Basin in south-east corner. West wall missing. North wall latericum with some small tufa blocks, broken off at west end. Preserved h. of antique masonry c. 0.20; th. 0.40; preserved l. 1.85. Inner basin indicated on plan in Calza 1915(1), not confirmed (a few damaged bricks in south, e might be related). See also Scrinari - Ricciardi 1996, II, 21: h. of hydraulic mortar c. 0.80, possibly original height of basin; secondary hole for lead pipe in east part of south wall. Pier set against south wall indicated on plan in SO I, not confirmed. Part of a *meta* in room.

ROOM 7

A. 8.90 x 5.18 x 8.99 x 5.23; area c. 46.5 m².

B. North, a L. 6.81 - 0.59. Mixtum. Part west of doorway preserved to a very low height, but place of attachment to west wall visible (vertical band of missing facing).

Doorway to room 8. H. 2.05. Left jamb largely missing, lower part forming entity with b to h. 0.44 from floor. Right jamb starting at h. 0.10 from floor. Spanned by a slightly curved lintel arch of sesquipedales. Completely filled in by b.

b L. 1.50. Latericum.

East, a L. 0.49. Latericum. Traces of thin plaster. Vertical crack, not reaching floor.

b L. 2.05. Vittatum A. Heavily restored, probably due to find of water-pipe (see outer east wall, street). Vertical crack at 0.86 from a. Part to the north sagged and having traces of thin plaster, with faint traces of red paint.

c Visible l. 0.59. Vittatum A. Traces of thin plaster,

with faint traces of red paint. Traces of coarse plaster. d Not visible.

South, a L. 6.89 - 0.62. Mixtum. Traces of thin plaster, with slight traces of red paint.

Three piers, latericum, set against a. All with traces of thin plaster. First pier. W. 0.90; th. 0.73. Second pier. W. 1.31; th. 0.76. Third pier. W. 0.94; th. 0.75, partly covering doorway, south side showing core of wall. Springings of two arches spanning the piers, th. c. two-thirds of that of the piers, preserved on second and third pier. Springings at 3.38 from floor.

West, a L. 1.50 - 1.48. Latericum. Upper part (above passage) mixtum, restored after excavation. Some vittatum A in lower northern part. Traces of plaster.

Passage to room 19. W. 2.25; h. 2.97 (from raised edge of threshold). Complete threshold of three blocks, first and third one of travertine, middle one of basalt. Raised edge at west end of all blocks, surface of raised edge 0.33 above floor of room. Two pivot-holes, in south part of first and in north part of third block, lying against raised edge. Two sockets, in north part of first and in south part of third block. Jambs latericum. Spanned by a slightly curved lintel arch, modern.

C. Basalt blocks, some of them with the imprint of hoofs.

D. Beamholes in south wall: see room 6.

E. Excavated in 1870. Plan in Lanciani 1880 shows basalt blocks in east part only. Plan in Paschetto 1912 shows only west part. Finelli found one-fifth excavated (GdS 1914, 154-156). In 1914 were found in this room:

9203 Terracotta. Fragment of frieze, showing lower part of figure going to the left, wearing long mantle, with bare feet. Meas. 0.093 x 0.093; preserved h. of figure 0.065.

9204 White marble. Fragment of inscription, rather irregular letters. H. of first line 0.028, of second line 0.122. Meas. 0.17 x 0.18 x 0.03. [---]VER/[---] | [---]RC[---].

9205 Iron. Key. L. 0.33.

9206 Iron. Block. H. 0.10; w. x th. of lower part 0.52 x 0.52; w. x th. of upper part 0.78 x 0.78.

9207 Iron. Hatchet. L. 0.24.

9208 Iron. Sword, with part of iron scabbard. Preserved l. 0.48; av. th. 0.027.

9209 Iron. Two rings with projections, perhaps part of railings (trellis-work). Diam. 0.10 x 0.035.

9210 Iron. Handle and fragment of vessel. L. of handle 0.25, th. 0.03; l. of fragment 0.05.

9211 Iron. Roasting-spit or other utensil for fire. Preserved l. 0.24.

9212 Iron. Two nails. L. a little over 0.13 and a little over 0.30.

Rectangular tufa block lying against east part of north wall. Upper part of *meta* with large, square hole in the top lying in north-east corner.

ROOM 8

A. 8.96 x 5.37 x 8.89 x 5.33; area c. 47.5 m².

B. North, a L. 0.59 - 6.53. Mixtum, separated from c by crack. Traces of thin and of coarse plaster.

Doorway to room 9. W. 1.49; h. 2.25. Spanned by a slightly curved lintel arch of sesquipedales. Completely filled in by b.

Window looking out on room 11. At 2.25/2.60 from floor, 3.13/3.45 from west wall. Lower part rectangular, upper part curved. Plaster on the inside. Passing diagonally through wall, from south-east to north-west.

b Irregular mixtum. Traces of thin plaster.

c Av. l. 0.35. Latericum. Remains of coarse plaster.

East, a L. 4.88. Latericum. Traces of thin plaster. Traces of coarse plaster, forming an entity with those on north, a.

Lower part of two rectangular windows. At 1.45 from brick plinth, 1.23/2.21 and 3.12/3.86 from north wall. Sills modern, jambs latericum.

b L. 0.49. Latericum. Traces of thin plaster.

South, a L. 0.61 - 6.78. Mixtum.

a. Traces of thin plaster. Doorway to room 7 on this side starting from floor. Completely filled in by b.

b Latericum. Traces of thin plaster.

West, a L. 1.49 - 1.50. Latericum. Upper part (above passage) mixtum, restored after excavation.

Passage to room 20. W. 2.34; h. 3.10. Jambs latericum, both with traces of thin plaster. Spanned by a slightly curved lintel arch, modern.

C. No data available.

D. Three beamholes in north, a, passing through the wall: 3.50/3.68, 3.57/3.77 and 3.63/3.89 (filled in) from floor.

E. Excavated in 1870. Plan in Paschetto shows only west part excavated. Re-excavated in 1914. Part of staircase, pier set against east part of north, a, structure set against left jamb of passage in west wall, and threshold block in this passage indicated on plan in SO I, not confirmed.

ROOMS 9-10

A. 5.33 (up to facade) x 1.49 x 5.35 x 1.49; area c. 8 m².

B. North, a L. 0.40 - 3.47. Latericum. Slight traces of thin plaster. To the east of doorway band of facing missing, sloping downwards towards the east, showing where concrete vault below staircase was attached (cf. rooms 4-5, north; there however a concave space is visible, here the space is filled with mortar, tufa blocks and bricks). Row of 13 square holes directly above band, following the slope. Approached from Via dei Molini. Treads and risers disappeared. Av. meas. of holes 0.08 x 0.08. Av. dist. between centre of holes 0.35. Centre of first hole at 1.14 from threshold and c. 0.50 from floor. Av. w. of band of missing facing 0.20. Top of band starting at 1.14 from threshold and 0.47 from floor. Top of band at 1.25, 2.15 and 3.30 from floor at resp. 2.09, 3.24 and 4.59 from threshold.

Doorway to room 12. W. 0.87; reconstructed h. 1.90 (flat, wooden lintel, modern), h. to relieving arch of bipedales 2.10. Jambs latericum.

South, a Av. l. 0.90 (up to facade). Latericum, separated from b by crack.

b L. 4.45. Mixtum. Traces of mortar, sloping downwards towards the east and corresponding with missing facing of north wall. Row of 13 square holes above, following the slope. These holes are in the lower left corner of larger square holes, that are filled with mortar, small tufa blocks and pieces of bricks.

West, a L. 1.49. Latericum.

C. Height indicated by brick plinth in east part of north, a, between threshold and missing facing (0.27 above floor, 0.24 above threshold).

D. One beamhole in south wall: see room 8.

E. Rooms 9-12 excavated in 1870. Plan in Paschetto 1912 shows only west part of rooms 11 and 12 excavated. Re-excavation of room 12 started in 1914 (GdS 1914, 248), re-excavation of 9-12 was completed in 1915 (GdS 1915, 88-90).

ROOM 11

A. 3.65 x 2.08 x 3.68 x 1.47; area c. 5.5 m².

B. North, a L. 0.58. Latericum. Considerable remains of smooth plaster (th. 0.02). A dark-red vertical band (w. 0.02) follows the vertical joint separating north and west.

Passage to room 12. W. 3.07; h. 2.98. Jambs latericum, th. of left jamb 0.82. Spanned by a semicircular arch of bipedales. Considerable remains of smooth plaster (th. 0.02) on left jamb, forming an entity with those described above. Remains of dark-red paint. Traces of superimposed, thin plaster.

b (= end of wall on north side of left jamb of passage to 12) Preserved l. 0.15. Latericum. East end broken off and showing core of wall. On south side considerable remains of smooth plaster (th. 0.02), against which is set left jamb and plaster on it. Bell-shaped object visible, the outline grey-brown, the inside red with some white. Below it a few small objects, red and grey-brown. Slight traces of a superimposed, thin layer, with traces of dark-red paint.

East, a L. 2.08. Latericum.

South, a L. 1.60 - 0.61. Mixtum. Doorway to room 8 completely filled in by b.

b Mixtum.

West, a L. 1.47. Latericum. Separated from north, a by vertical joint, while the upper part is protruding a little to the south, as indicated on plan in Calza 1915(1). Springing (modern) of lintel arch, originally spanning passage 11-12/21, visible.

Extensive remains of plaster on south and west wall. Four superimposed layers of thin plaster, the second one with traces of red and yellow paint (on south, b a segment of three vertical bands is preserved, first one red (w. 0.02), second one yellow and touching first one (w. 0.015), third one red (w.

0.01) and separated from second one by narrow band left white (w. 3 mm.)). Superimposed on fourth layer remains of smooth plaster (th. 0.02) with traces of red and dark-red paint. On east part of south, a horizontal red band (w. 0.023). From this band a vertical band starts downwards (w. 0.013). Directly above horizontal red band a horizontal band of stucco: 1.85/1.93 from floor; preserved l. 0.37; preserved th. 8 mm. This stucco superimposed on dark-red band on smooth plaster. On bottom of stucco band traces of red paint, forming an entity with the horizontal red band below.

C. No data available.

D. Two beamholes in south wall: see room 8.

E. See rooms 9-10. Finelli mentions traces of plaster and stucco (GdS 1915, 89). In room are lying two travertine threshold blocks with groove, one travertine block (part of threshold?) and many basalt pavement blocks.

ROOM 12

A. 8.90 x 3.20 x 9.52 (incl. jamb of passage to room 21) x 2.67; area c. 28 m².

B. North, a L. c. 0.30 (upper part of wall). Latericium, separated from b by crack, that does not reach floor.

b L. 5.92 - 1.48. Mixtum. Traces of thin plaster.

Doorway to room 13. W. 1.50; h. 2.19. Jambs latericium, one rectangular bolt-hole in each jamb. Spanned by a slightly curved lintel arch of sesquipedales. On upper part of left jamb and on bottom of lintel arch remains of plaster (th. 0.02), with traces of dark-red paint.

East, a L. 0.51. Latericium. Traces of thin plaster.

b L. 0.53. Latericium.

South, a L. 3.45 - 0.95. Latericium. West end, next to passage to room 11, showing core of wall over l. 0.30.

b L. 1.33, th. 0.30. Latericium.

West, passage to room 21. W. 1.20. Jambs latericium. Above jambs springings of a slightly curved lintel arch, modern.

a L. 1.47. Latericium.

C. No data available.

D. Three beamholes in north, a, passing through the wall: 3.56/3.82, 3.55/3.80 and 3.63/3.84 from floor.

E. See rooms 9-10. In this room were found (GdS 1915, 88):

- Iron. Several bars. L. 0.50 to 0.70; diam. c. 0.16.

- Bronze. Several fragments of vessels.

9684 Bronze. Key. L. 0.035.

9685 Bronze. Ring, with a key attached to it. Diam. 0.02.

9685 Bronze. Ring.

Two basalt pavement blocks lying in north-east corner of room.

ROOM 13

A. 9.01 x 5.25 x 8.95 x 5.36; area c. 47.5 m².

B. North, a L. 6.83. Mixtum. Central part preserved to very low height. Plan in Calza 1915(1) shows west part rebuilt, including filled-in doorway. Not confirmed, place of jambs suggested by two lines in modern cement on top of wall. Lower part of west part thicker (largely modern). H. 0.45; preserved l. 1.43; th. 0.14. Latericium, with one row of small tufa stones, forming an entity with north wall. East end broken off. Plan in Calza 1915(1) shows thicker part along western two-thirds of north wall.

Doorway to room 14. W. 1.48. Springing of lintel arch, modern, above right jamb. Left jamb largely missing (south side of left jamb: lower part latericium, upper part reticulatum). Completely filled in by b.

b Latericium.

c L. 0.70. Latericium.

East, a L. 0.48. Latericium. Traces of plaster.

b L. 1.78. Latericium. Traces of plaster.

c L. 2.10. Vittatum A (upper part modern vittatum B).

d L. 0.44. Latericium. Considerable remains of plaster. Smooth plaster (th. 0.025) with traces of red and dark-red paint. A vertical dark-red band (w. 0.03) follows north end of section. Another vertical dark-red band follows the corner of south, a and east, d. Over a h. of 0.20 segments of six horizontal red and dark-red bands (w. 0.01) visible. Traces of a superimposed, thin layer with a vertical dark-red band following the corner of south, a and east, d. Remains of superimposed, coarse plaster.

South, a L. 1.50 - 5.65. Mixtum, separated from b by crack, that does not reach floor. Traces of thin plaster. Remains of smooth plaster (th. 0.025) with traces of dark-red paint, forming an entity with those on east, d. Traces of superimposed, coarse plaster.

b L. c. 0.30 (upper part of wall). Latericium. In lower part some vittatum A.

West, a L. 1.62 - 1.63. Latericium. Traces of thin plaster. Lower part of wall north of passage thicker. Preserved h. of antique masonry 0.70; th. 0.10. Latericium, forming entity with west wall.

Passage to room 22. W. incl. b 2.11; h. 3.14. Left jamb completely covered by b. Right jamb latericium over h. of thicker part of west wall, above showing core of wall. Spanned by a slightly curved lintel arch of sesquipedales. Secondary masonry covering right jamb shown on plans in Calza 1915(1) and SO I, not confirmed.

b L. 0.53. Vittatum B (north side as well). Traces of thin plaster on east and north side, with faint traces of red paint on east side.

C.. Floor of bipedales shown on plan in Calza 1915(1). Present level below that related to thresholds. Remains of a brick and tufa wall running north-south (starting at 0.12 from door in east wall, th. 0.45). Floor of irregular pieces of brick. Small part of floor related to thresholds preserved: black-and-white mosaic with a geometrical motif, as

reported by Finelli (GdS 1915, 90).

D. Beamholes in south wall: see room 12.

E. At least western three-quarters excavated in 1870. Plan in Paschetto 1912 shows only west end excavated. Re-excavated in 1915 (GdS 1915, 90-91). In 1915 were found in this room:

9686 White marble. Sleeping amorino, holding two poppies in right hand. Ornament or lid. H. 0.13.

9687 White marble. Upper part of amorino. On left shoulder hand belonging to other, larger figure. Preserved h. 0.055.

ROOM 14

A. 8.60 x 5.02 x 8.65 x 5.15; area c. 44 m².

B. North, a L. 8.60. Latericum. Facing damaged in many places. Traces of thin plaster. Rectangular window at c. 4.80/5.35 from west wall, 2.52/3.27 from floor. Jambs latericum, brick lintel. Lower part of three rectangular niches or vertical channels (modern) starting at av. h. 3.25 from floor. Middle one above window. W. c. 0.15; d. c. 0.20.

East, a L. 0.89. Latericum. Traces of thin plaster.

b L. 0.42. Latericum. Traces of thin and of coarse plaster.

South, a L. 0.66. Latericum. Traces of thin and of coarse plaster.

Doorway to room 13 completely filled in by b.

b Latericum. Traces of thin plaster.

c L. 6.52. Latericum. Preservation: see room 13, north, a. Traces of thin plaster.

West, a L. 5.15. Vittatum A. Almost completely modern, north end antique. Traces of thin plaster.

C. Not preserved. Finelli mentions find of pavement related to oven, on top of which west wall was set (GdS 1916, 93). Brick pavement uncovered in back part in 1996.

D. No data available.

E. Excavated in 1915-1916 (GdS 1915, 98-101; 1916, 93-94, 96; see also Calza 1915(1), 244). Traces of fire were seen. Room once contained an oven (part was uncovered in 1996 in room 23, now completely modern), that was later largely removed. In this room were found (bronze, unless indicated otherwise):

9730 Bust of winged child. H. 0.105.

9731 Foot of bed, lower part rectangular, upper part round. H. 0.052; w. 0.077 x 0.042.

9732 U-shaped sheet, possibly decoration for leg of chair or bed. Incised decoration, that probably had silver inlay.

9732 U-shaped sheet, possibly decoration for leg of chair or bed. Incised decoration imitating an opus quadratum-wall. Meas. 0.08 x 0.038.

9733 Bell with iron clapper. H. 0.027; diam. 0.043.

9733 Fragments of vessels and fragments of foot of candelabrum.

9734 Iron. Two bars. L. 0.83.

9735 Bat (the mammal). Part of vessel. H. 0.046.

9736 Two coins.

9737 Lead. *Tessera*, on one side figure, on the

other quadruped.

- Rectangular feet, narrowing towards the top. In the top of each one a round hole. Belonging to furniture.

- Fragments of round feet. In the top of each one a round hole.

- Fragments of revetment of furniture. Incised decoration with slight traces of silver inlay.

10674 Round piece of revetment of furniture, open work. Diam. a little over 0.105.

In the north-east corner of the room are lying a fragment of a *catillus* and a large damaged object of Luna marble, looking like some sort of capital.

ROOM 15

A. 4.86 x 4.56 x 4.83 x 4.62; area c. 22 m².

B. North, a L. 4.86. Mixtum. Horizontal band of facing missing in east part, starting from east wall: 1.20/1.37 from floor; l. 1.03. Traces of thin plaster with traces of red paint.

East, a Visible l. 3.95. Mixtum. Traces of thin plaster with traces of red paint. Latericum pier set against south end of a: w. 0.61; th. 0.64. Finelli reports that h. of pier is 3.48 after adding parts fallen to the ground, and that pier is thus 0.30 higher than ceiling (GdS 1915, 92).

South, a Visible l. 0.11. Latericum.

b L. 0.69. Latericum.

West, a L. 1.75 - 2.10. Latericum. Traces of thin plaster with traces of red paint. Considerable remains of coarse plaster (th. 0.03), partly covered by a thin, smooth layer.

Doorway? to room 16. W. 0.77, h. c. 1.70. Hacked out. Completely filled in by b and bar-counter.

b Rubble masonry (lower part). Shallow niche in lower part: h. 0.84; w. 0.31. Upper part covered by coarse plaster (th. 0.03).

C. Bipedales. Floor-level c. 0.65 above that of room 1.

D. Two beamholes in east, a, not passing through the wall: 2.74/3.00 and 2.60/2.87 from floor (at same height, difference in height due to uneven floor-level). Three beamholes in west, a, passing through the wall. At same height, only one measurable: 2.75/2.97 from floor.

E. Excavated in 1915 (GdS 1915, 91-98). Bar-counter in south-west corner, described by Hermansen (Hermansen 1982, 127-128, figs. 48-50). Largely modern. Latericum with two rows of small tufa blocks. East part of counter added later according to Hermansen, but no joint found. North end of west part (l. c. 0.76) and perhaps remainder set into west wall. Finelli found remains of marble revetment of basins in counter. Against east wall base of staircase. H. 0.28; north-south 1.30; east-west 1.04. Starting at 0.73 from north wall. Modern. Five latericum treads found by Finelli, now disappeared. Behind staircase, in north-east corner, Finelli reports traces of fire in room. "Almost all" of the following objects were found in a layer resulting from fire, h.

from floor 1.00 to 1.50 (bronze unless indicated otherwise):

9688 Lamp. Shape CIL XV, 11. Preserved l. 0.145.

9689 Lamp. Shape almost CIL XV, 6. L. 0.125.

9690 Lamp. Preserved l. 0.128.

These three lamps, together with nr. 9938 (see room 17), mentioned in Calza 1915(1) (252 and fig. 10; see also Calza - Floriani Squarciapino 1962, 93). I located three of them: nr. 4203, st.-r. VIII, sh. 4; nr. 4205bis, id.; nr. 4202, museum, sh. 6. The fourth one is nr. 4201.

9691 Rectangular base of statuette or other object. H. 0.035; w. 0.275 x 0.21. Calza regards it as a basin (Calza 1915(1), 253 and fig. 15), but Finelli's interpretation is right: on one end the imprint of a foot (0.095 x 0.055) is visible (a parallel from Pompeii: Dwyer 1982, Pl. L, fig. 203). St.-r. VIII, sh. 4, nr. 3631.

9692 Biconical vessel. H. 0.075.

9693 *Oinochoe* H. 0.145.

9694 Globular *unguentarium*. On the shoulder two small hooks, in each of which the beginning of a chainlet has been preserved. H. 0.075.

These three vessels mentioned in Calza 1915(1) (252 and fig. 11). I could not locate the first two, the *unguentarium* is nr. 3575, st.-r. VIII, sh. 4 (see also Calza - Floriani Squarciapino 1962, 94 and Calza 1915(2), 169 and fig. 42, 7).

9695 Cylindrical, hermetically shut vessel. H. 0.06 (see also Calza 1915(1), 253).

9696 Bust of young Negro, revetment for furniture. H. 0.098 (see also Calza 1915(1), 255, 257 and fig. 20; Calza 1915(2), 166-169 and fig. 41; Calza - Floriani Squarciapino 1962, 102; Helbig 1972, nr. 3169, 1 (dated to second century). St.-r. VIII, sh. 5, nr. 3558.

9697 Key. L. 0.04.

9698 *Strigilis*. Preserved l. 0.255.

9699 Bell-shaped foot of candelabrum or other piece of furniture. Preserved h. 0.094 (see also Calza 1915(1), 252).

9700 Handle of vessel, one end ending in female head. H. 0.121 (see also Calza 1915(1), 252 and fig. 9; Calza 1915(2), 169 and fig. 42, 5). Nr. 3604, stolen in 1959.

9701 Two fragments of sheets, revetment for furniture, both with incised decoration, that probably had silver inlay. Meas. of one of the fragments 0.15 x 0.04; th. 2 mm.

9702 Part of handle of vessel. Preserved h. 0.102.

9703 Part of handle of vessel. Preserved h. 0.13.

9704 Snake with crest. H. 0.06; w. 0.08 (see also Calza 1915(1), 252 and fig. 9; Calza 1915(2), 169 and fig. 42, 3; Calza - Floriani Squarciapino 1962, 96). St.-r. VIII, sh. 5, nr. 3567.

9705 Three parts of vertical bar of candelabrum. L. 0.275; diam. 0.022. L. 0.152; diam. 0.015. L. 0.15; diam. 0.013.

9706 Three parts of vertical bar of candelabrum,

perhaps belonging to 9705. L. 0.155; diam. 0.016. L. 0.08; diam. 0.016. L. 0.10; diam. 0.016.

9707 Handle of vessel. L. 0.057.

9708 Bell-shaped foot. H. 0.085.

9709 Part of handle of vessel. Preserved h. 0.165.

9710 Part of handle of vessel. Preserved l. 0.115.

9711 Handle of vessel. L. 0.10.

9712 Pipe. Diam. 0.052.

9712 Damaged vessel.

9712 Handle of vessel, one end ending in ram's head.

9712 Handles, nails, revetment, fragments of vessels, dowels for the attachment of marble plates.

9713 Twelve coins.

9714 Iron. Shovel. Preserved l. 0.335.

9715 Iron. Hatchet. Preserved l. 0.245.

9716 Terracotta. Two vessels. H. 0.095 and 0.09.

9717 Not entered.

9718 Terracotta. Lamp. Shape CIL XV, 25.

9719 Terracotta. Lamp. Shape CIL XV, 28. On the top a dolphin. L. 0.095.

9720 Terracotta. Lamp. Shape CIL XV, 28. On the top Diana with bow and dog. L. 0.085.

9721 Brick-stamp CIL XV, 496 (123-124 AD).

9722 Not entered.

9723 Leaf, ornament. H. 0.085.

9724 Fork with two teeth, made of a sheet. Preserved l. 0.04.

9725 Bone. Needle. Preserved l. 0.102.

9725 Bone. Three hair-pins.

9725 Glass. Fragments of several vessels, severely damaged by fire.

9725 Parts of burnt beams.

9725 An *amphora* and fragments of *amphorae*.

9725 Many fragments of marble plates.

9725 White marble. Statue of Venus, incomplete, with shield, helmet and cuirass lying on the ground. Total h. 0.585; h. of plinth 0.055 (see also Calza 1915(1), 250, 257-258 and figs. 22a-b).

Finelli found part of drainage channel, running east-west, but passing under north wall and running in the direction of room 2. Related by Finelli to latrine behind staircase. The latrine was uncovered in 1996: very deep square hole, 0.15 x 0.15, sides of bricks; around the hole bricks, to the west a bipedalis, sloping downwards towards the east; hole 0.32 from north wall, 0.20 from east wall, 0.25 from podium of staircase. A few years ago remains of a latericum basin against the north wall with opus signinum on the inside were excavated. Starting at 0.90 from east wall, th. of walls 0.24, inside meas. north-south 1.45, east-west 1.62. See also Scrinari - Ricciardi 1996, II, 21-22.

ROOM 16

A. 4.50 x 4.62 x 4.37 x 4.64; area c. 20.5 m².

B. North, a L. 4.50. Mixtum. Band of missing facing in east part, starting from east wall: 0.90/1.06 from floor; l. 1.03. Traces of thin plaster with traces of red paint.

East, a L. 2.10 - 1.81. Mixtum. Traces of thin plaster with traces of red paint. Considerable remains of coarse plaster (th. 0.025), partly covered by a thin, smooth layer.

Doorway? to room 15. W. for the most part 0.71; max. w. 0.93; h. 1.90. Hacked out. Completely filled in by b.

b Rubble masonry. Largely covered by coarse plaster (th. 0.025).

South. a L. 0.64 - 0.67. Latericum. Traces of thin plaster with traces of red paint.

Passage from street. Top of threshold 0.04 above floor of room.

West, a L. 0.58 - 2.87. Mixtum. Crack at 0.11/0.20 from south wall. Traces of thin plaster with traces of red paint. Remains of coarse plaster (th. 0.02), covered by a thin, smooth layer.

Doorway to room 24. W. 1.19; h. 1.81. Spanned by a slightly curved lintel arch of sesquipedales. Completely filled in by b.

b Latericum, with some tufa blocks. For the most part covered by coarse plaster (th. 0.03), but part of a slightly irregular vertical joint visible in upper left part.

C. Floor-level at same height as that of room 15. South part covered by bipedales, in south-east part a block looking like granite used for pavement.

D. Three beamholes in east, a: see room 15. Two beamholes in west, a, passing through the wall: 2.46/2.72 (visible in room 24); 2.76/3.00 (visible in room 25). A third beamhole (visible in room 24) in between, filled in very neatly on this side. Beamholes at same height, difference due to uneven floor-level.

E. Excavated in 1915? I did not find the excavation report of this room. Finelli reports traces of fire in room (GdS 1915, 92). Bar-structures described by Hermansen (Hermansen 1982, 129-130, figs. 51-52). Modern vittatum A. Remains of coarse plaster (th. 0.025) on low wall (th. 0.33) set against east, b. Some finds, mentioned by Calza, I could not trace in the excavation-report. They may come from room 16, which is mentioned by Calza as a room where objects were found (bronze unless indicated otherwise):

- Disc with horse's head and five holes for the attachment. Diam. 0.05 (Calza 1915(1), 252 and fig. 12a; cf. room 25, E, nr. 9246). St.-r. VIII, sh. 5, nr. 4163.

- Jupiter, with wreath of oak-leaves. Revetment for furniture. H. 0.075 (Calza 1915(1), 253; Calza - Floriani Squarciapino 1962, 102). St.-r. VIII, sh. 5, nr. 3552.

- Beam of a balance, with three hooks for the suspension of weights, and a chain to which a pan was attached. Rider scale indicated. L. 0.11 (Calza 1915(1), 253). St.-r. VIII, sh. 5, nr. 4221.

- Priapus-herm. Lower end broken off. Revetment for furniture. Preserved h. 0.045 (Calza 1915(1), 254 and fig. 17a; Calza 1915(2), 171 and fig. 43; Calza - Floriani Squarciapino 1962, 103; Helbig 1972, nr.

3170 (dated to second century)). St.-r. VIII, sh. 5, nr. 3542.

- Statuette of Mercurius, wearing *petasus*, *chlamys* and boots with wings. In his right hand a purse. H. 0.065 (Calza 1915(1), 255 and fig. 17b; Calza - Floriani Squarciapino 1962, 103). St.-r. VIII, sh. 5, nr. 3540.

- White marble. Sleeping Eros. H. 0.10 (Calza 1915(1), 257 and fig. 21).

ROOM 17

A. 9.43 x 5.15 x 9.39 x 5.20; area c. 48.5 m².

B. North, a L. 0.59, th. 0.52. Latericum. Slight traces of thin plaster.

Passage to room 18. W. 3.30. Floor of passage covered by basalt blocks. One travertine block lying against left jamb, flat surface, 0.08 above floor. Jambs latericum.

b L. 1.47; th. 1.17; h. of antique masonry 3.53. Latericum.

Passage to room 18. W. 3.46. Floor of passage covered by basalt blocks. Jambs latericum. Traces of thin and of coarse plaster on right jamb.

c L. 0.61; th. 0.52; h. 4.18. Latericum. Traces of thin plaster.

East, a L. 1.24. Latericum. Traces of thin plaster. Lower part of passage to rooms 3 and 5 filled in by b.

b L. 2.58; h. of antique masonry 0.98; h. incl. restoration 1.07. Latericum (south part restored after excavation). Traces of coarse plaster.

c Visible l. 0.22. Latericum.

South, a L. 9.39. Mixtum. Three latericum piers set against a. First one. W. 0.90; th. 1.11. Second one. W. 1.30; th. 0.86. Third one. W. 1.01; th. 0.89. On first and second pier springings of a semicircular arch spanning these piers, of bipedales (springing on first pier antique). Semicircular arch of bipedales spanning second and third pier. H. to top of intrados 4.57, total preserved h. over 5.00. Th. of springings c. two-thirds of that of the piers. Lower part of space between piers filled in by two benches. First one. Set against a. H. incl. restoration 1.91 (east) - 1.61 (west); th. 0.32 (east) - 0.30 (west). Latericum. Second one. Set against first one. H. incl. restoration 0.92 (east) - 0.56 (west); th. 0.28 (east) - 0.33 (west). Lower part of tufa blocks, upper part latericum. Remains of plaster on east part.

West, a Visible l. 0.98 - 1.85. Mixtum. Traces of thin plaster.

Doorway to room 25. W. 1.48; h. 2.22. Spanned by a slightly curved lintel arch of sesquipedales. Completely filled in by b.

Lower part of rectangular window above doorway, largely modern: at 2.29/4.09 from south, a, starting at 3.19 from floor. Jambs latericum, running diagonally from south-east to north-west. No sill preserved.

b Latericum (lower part restored after excavation). Traces of thin plaster with faint traces of red paint.

C. Basalt blocks.

D. One beamhole in north end of west, a, lying directly against north, a: 2.85/3.23 from floor. One beamhole in north end of east, a, lying directly against north, c: 3.31/3.69 from floor. Beamholes not passing through wall. Six beamholes in south, a, not passing through wall: av. h. from floor 3.30/3.58 (= c. at height of present bottom of window in west wall).

E. Trench in east half of room (filled with water). Date of excavation unknown. Here the north-east corner of the Castrum was expected. Part of the Castrum-wall was indeed found, the corner however had been removed when a reticulate wall was built (SO I, 67 and fig. 19, letter O). Room excavated in 1914-1915 (GdS 1914, 174, 228-230, 234; 1915, 173-188; rooms 17 and 18 treated as one). Finelli reports traces of fire and destruction-layer resulting from fire. In this layer in rooms 17-18 was found:

9264 Iron. Pick-axe-shaped hammer. L. 0.15.

In rooms 17-18 were found (iron unless indicated otherwise):

9431 Hatchet. L. 0.26.

9432 Lance-head, broken. L. 0.25.

9433 Cylindrical case, probably originally with bronze revetment on the outside. Diam. 0.075; h. 0.12.

9434 Chain. Av. diam. of links 0.05.

9435 Candelabrum. Preserved h. 0.61.

9436 Bronze. Pan. Diam. 0.19; h. 0.053.

9437 Bronze. Crushed, probably cylindrical, vessel.

9438 Bronze. Handle of vessel. L. 0.10; h. 0.06.

9439 Bronze. Pair of tweezers? L. 0.08.

9457 Pruning-knife, broken. L. 0.35.

9458 Four bars. L. of shortest one 0.22, of longest one 0.41; av. th. 0.09 x 0.007.

9459 Part of trident. L. 0.095.

9460 Two cylindrical vessels with a lid. To both part of an iron chain was found attached. H. and diam.: 0.062 x 0.067 and 0.052 x 0.074.

9460 Nails, part of revetment, fragments of cylindrical bars.

9461 Bronze. Part of chain. L. 0.161; diam. of links 0.017.

9461 Bronze. Many fragments of a vessel. Nails.

9462 Terracotta. Basin. Diam. 0.38.

According to Calza thirty-eight coins were found in rooms 17-18, damaged by fire (Calza 1915(1), 249). Twenty-one of these could be identified: coins of Claudius, Domitian, Hadrian, Marcus Aurelius (4), Faustina, Lucius Verus, Commodus, Iulia Domna, Gordian III (2), Philip (3), Traianus Decius, Gallienus (2), Quintillus, Probus. I found no mention of these coins in the excavation-report.

In the destruction-layer in rooms 17, 18 and 19 were found (bronze unless indicated otherwise):

9934 Statuette of youngish Hercules, wearing lion-skin, in left hand the apples of the Hesperides, in right hand he probably held club. H. 0.097 (see also Calza 1915(1), 255 and fig. 18a; Calza 1915(2), 169

and Pl. XI, 1; Calza - Floriani Squarciapino 1962, 102). St.-r. VIII, sh. 5, nr. 3538.

9935 Bust of Jupiter-Serapis, belonging to a base. H. 0.12 (see also Calza 1915(1), 252 and fig. 13a; Calza - Floriani Squarciapino 1962, 102). St.-r. VIII, sh. 5, nr. 3549.

9936 Scorpion. H. 0.025; l. 0.065 (see also Calza 1915(1), 252 and fig. 12; Calza 1915(2), 169 and fig. 42, 4; Calza - Floriani Squarciapino 1962, 96). St.-r. VIII, sh. 5, nr. 3568.

9937 Statuette of Lar, wearing *tunica* and sandals. *Patera* in right hand, object in left hand lost (left arm along body). Inlay of silver laurel-branches in the base identify Lar as Lar Augusti. H. incl. base 0.24 (see also Calza 1915(1), 254 and fig. 16; Calza 1915(2), 171-172 and fig. 44; Calza - Floriani Squarciapino 1962, 102; Helbig 1972, nr. 3168, 1). St.-r. VIII, sh. 5, nr. 3535.

9938 Lamp. Shape almost CIL XV, 16. L. 0.145 (see also room 15, nr. 9690).

9939 Statuette of Dioscure, wearing *chlamys*. Lance in left hand missing. H. 0.12 (see also Calza 1915(1), 255 and fig. 19; Calza 1915(2), 171 and Pl. XI, 3).

9940 Statuette of Minerva, wearing long mantle. On head helmet with diadem. On chest *aegis* with *gorgoneion*. H. 0.10 (see also Calza 1915(1), 255 and fig. 18b; Calza 1915(2), 169-171 and Pl. XI, 2; Calza - Floriani Squarciapino 1962, 102). Not located, location should be st.-r. VIII, sh. 4, nr. 3537.

9941 Rectangular foot, belonging to furniture. H. 0.07; 0.125 x 0.069.

9942 Gorgon-mask, belonging to handle of vessel. Meas. 0.052 x 0.058 (see also Calza 1915(1), 253 and fig. 14; Calza 1915(2), 169 and fig. 42, 6; Calza - Floriani Squarciapino 1962, 96). Mus. sh. 6, nr. 4166.

9943 Club. H. 0.10.

9944 Round base. H. 0.018; diam. 0.084.

9945 Dog, the hind-legs of which were attached to something. L. 0.04.

9946 Octagonal column, with moulded base and capital. H. 0.128; max. diam. 0.012.

9947 Rod for mixing substances. L. 0.144.

9948 Key. L. 0.04.

9949 Round base with three leaf-shaped feet, one of which is missing. H. 0.13; diam. 0.123.

9950 Seven rectangular sheets, each with incised figure (signs of Zodiac and symbol of a planet (Mars)). 1. Scorpion; 2. Lion; 3. Sagittarius or Orion? 4. Wagoner; 5. Virgo; 6. Mars; 7. Gemini. Av. h. 0.037/8; av. w. 0.022/3. Nail for attachment in centre of each, l. 0.03 (see also Floriani Squarciapino 1953 with Tav. CXIV). Mus. sh. 6, nrs. 4151-4157.

9951 Heart-shaped box for suspension, with lid and inlay of glass-paste (red, green and grey circles). L. 0.052.

9952 Wheel with six spokes, made of a sheet. Diam. 0.058.

9953 Foot or base. H. 0.042; diam. 0.073.

- 9954 Disc. Diam. 0.12.
 9955 Disc. Diam. 0.117.
 9956 Cylindrical vessel with lid. H. 0.063; max. diam. 0.043.
 9957 Part of lock of chest. Preserved l. 0.10.
 9958 Fish-hook. L. 0.06.
 9958 Ring, belonging to horse-harness. Diam. 0.037.
 9958 Coin.
 9959 A crescent-shaped sheet, with an iron object attached to it. Possibly ornament of furniture. Max. diam. 0.059.
 9960 Fragment of vessel. Original h. of vessel c. 0.30.
 9961 Fragments of vessel. Preserved h. 0.25 to 0.30.
 9962 Basin. H. c. 0.40.
 9963 Disc. Mirror or lid. Diam. 0.147.
 9964 Round moulded base. H. 0.016; diam. 0.057.
 9965 Round moulded base. H. 0.016; diam. 0.047.
 9966 Foot of candelabrum, consisting of three lion's paws and leaves. Lower part of vertical bar preserved, filled with iron. Nr. 9953 may belong to this part. Preserved h. 0.128 (see also Calza 1915(1), 251 and fig. 9; Calza 1915(2), 169 and fig. 42, 2). St.-r. VIII, sh. 4, nr. 4149.
 9967 Three parts of a cylindrical, hollow bar, filled with an iron bar, possibly belonging to nr. 9966. Total h. 1.21.
 9968 Part of a candelabrum, *patera* for lamp missing. Resting on three feet, consisting of lion's heads and goat's paws (l. of feet 0.19), attached to a disc (diam. 0.14). Iron vertical bar. Preserved h. 1.34 (see also Calza 1915(1), 251 and fig. 9; Calza 1915(2), 169 and fig. 42, 1). St.-r. VIII, sh. 4, nr. 4148.
 9969 Iron. Part of cylindrical bar, possibly belonging to nr. 9968. Preserved h. 0.64; max. diam. 0.18.
 9970 Foot or base, one end bell-shaped, the other globular. Possibly belonging to nr. 9968. Preserved h. 0.055; diam. of bell-shaped part c. 0.08.
 9971 Cylindrical vessel. Preserved h. 0.047; diam. 0.035.
 9972 Crushed pan. Total l. 0.287.
 9973 Spiral. H. 0.075; max. diam. 0.027.
 9974 Hinge.
 9975 Tool or stylus. L. 0.146.
 9976 Handle of vessel. L. 0.10.
 9977 Two square, curved bars, to the end of one of which a hinge with a nail is attached. Handles of doors or furniture. L. 0.057.
 9978 Cylindrical handle. Preserved l. 0.16.
 9979 Part of a hoop, made of a sheet. Possibly rim of mirror or other object. Diam. 0.145.
 9980 Bell. Diam. 0.026.
 9980 Fragments of sheets, handles of vessels in fragments, damaged leaves, nails, part of lock, sheets for the attachment of marble, part of a spoon, bell belonging to horse-harness.
 9981 Part of *strigilis*. Preserved l. (following the curve) 0.23.
 (iron unless indicated otherwise):
 9982 Square padlock (h. 0.047; 0.066 x 0.06), to which a chain is attached (diam. of links 0.04; l. of chain 0.25 to 0.27).
 9983 Lock. H. 0.04; 0.07 x 0.07.
 9984 Part of cylindrical padlock, to which part of a chain is attached. H. 0.055; diam. 0.064.
 9985 Lance-head. L. 0.165.
 9986 Carpenter's axe. L. 0.11.
 9987 Part of dagger. L. 0.255.
 9988 Hatchet-hammer. L. 0.225. Much used.
 9989 Spade. Meas. 0.205 x 0.115 x 0.115.
 9990 Part of carpenter's axe. Meas. 0.095 x a little over 0.13.
 9991 Two lance-heads. L. 0.232 and 0.235.
 9992 Chisel. L. 0.215.
 9993 Globular object. Possibly knob, belonging to furniture. H. 0.077; diam. 0.08.
 9994 Lance-head. L. 0.22.
 9995 Crescent-shaped knife. Preserved l. 0.175.
 9996 Spade. Preserved l. 0.24.
 9997 Small pruning-knife. Preserved l. 0.185.
 9998 Chisel. Preserved l. 0.145. Much used.
 9999 Curved knife. L. of blade 0.29.
 10000 Hatchet. Preserved l. 0.30.
 10001 Lance-head. Preserved l. 0.165.
 10002 Padlock, with a chain attached to it. Meas. 0.022 x 0.07 x 0.07.
 10003 Bell. H. a little over 0.05.
 10004 Three hinges, with nails attached to them. Meas. of largest one 0.095 x 0.026.
 10005 Lance-head. L. 0.177.
 10006 Pick-axe. L. 0.19.
 10007 Four objects, made of sheets, each with a nail for the attachment to wood. Possibly feet, belonging to furniture. Meas. of largest one (excl. nail) 0.10 x 0.045 x 0.02.
 10008 Piece of revetment or small hook. L. 0.135.
 10009 Two specimens of fire-steel (flint and steel). One damaged, l. of complete one 0.17.
 10010 Two tripods. Meas. of largest one 0.32 x 0.12.
 10011 Shovel. L. a little over 0.60.
 10012 Tripod. H. 0.035; diam. 0.11.
 10013 Handle of door or window, one end of which served as a hinge. L. excl. hinge 0.24.
 10014 Lance-head. L. 0.24.
 10015 Handle, originally with hinges on both ends, only one preserved. L. excl. hinge 0.107.
 10016 Two hammers. L. 0.135 and 0.095.
 10017 Three shovels or axes. Meas. of best preserved one 0.20 x 0.115.
 10018 Key. Preserved l. 0.10.
 10019 Iron and bronze. Lock. Meas. 0.027 x 0.065 x 0.065.
 10020 Candelabrum, resting on tripod, *patera* preserved. H. 1.10.
 10021 Tripod. Foot of candelabrum.
 10022 Handle. L. 1.35.
 10023 Five rings. Meas. of largest one 0.135 x 0.05.
 10024 Chisel. L. 0.26.

10025 Bar. L. 0.325.

10026 Chisel. L. 0.265.

10027 Spiral roasting-spit. Preserved l. 0.20.

10028 Ring, to which a bell is attached. To be attached to a wall. "Cosa molto commune presso le scuderie per attaccare le bestie". Diam. 0.08.

10029 Nails with large heads, for the attachment of additional walls to pre-existing ones. Specimens of this type of nail found *in situ* in outer north wall of Piccolo Mercato (I,VIII,1). L. of one of the smaller ones 0.205, l. of head 0.072.

10029 Several lance-heads, sheets (some of them with parts of nails), mouldings (sheets and mouldings forming part of wattle-work), nails, parts of square and cylindrical bars, fragments of hooks, fragments of hinges, many other fragments.

10030 Hoop, made of a sheet, possibly to be attached to the end of a beam. Diam. 0.29.

10031 Ten rings, made of sheets. Diam. 0.03 to 0.105.

10032 Two rings, perhaps belonging to horse-harness. Diam. 0.038.

10033 Bone. Lower part of statuette of figure wearing long mantle. Preserved h. 0.062.

10034 Bronze. Not entered.

10035 Bronze. Cylindrical ink-well with lid, the centre of which has a hole, that was covered by another lid. H. 0.07, diam. 0.044, diam. of lid 0.056.

10036 Bronze. Knob. Meas. 0.022 x 0.05.

10037 Bronze. Round lid. Diam. 0.084.

10038 Bronze. Handle of vessel. H. 0.105.

10039 Iron and bronze. Knob of door. H. 0.025; diam. 0.05.

(terracotta):

10040 Handle of *amphora*, with stamp *FACCSIC*.

10041 *Amphora*. Preserved h. 0.345.

10042 Lamp. Shape CIL XV, 19, with stamp *ANNISER* (= Annius Serapiodorus: CIL XV, 6296). L. 0.08.

10043 Lamp. Shape CIL XV, 28, with stamp *ANNISER*. L. 0.115.

10044 Lamp. Shape CIL XV, 28. On the top a quadruped. Preserved l. 0.11.

10045 Lamp. Shape CIL XV, 25. L. 0.096.

10046 Lamp for two wicks, with square base. L. 0.08.

10046 Fragment of lamp and fragment of Arretine vessel.

(white marble):

10047 Herm, with female head. H. 0.185.

10048 Square base with a hole in the centre. Meas. 0.14 x 0.18 x 0.18.

10049 Fragments of a rectangular base, resting on four feet. In the top a hollow. Meas. 0.13 x 0.29 x 0.27.

10050 Fragments of a base. H. 0.07.

In north-east corner of room is lying one travertine threshold block, with raised edge and part of pivot-hole lying against raised edge.

ROOM 18

A. 9.43 x 5.29 x 9.43 x 5.21; area c. 49.5 m².

B. North, a L. 6.65. Mixtum. East part preserved badly, broken off at east end. Slight traces of thin plaster.

Passage to room 19. Present w. 1.86. Original presence of threshold indicated by missing stretch of basalt blocks. Left jamb broken off. Right jamb latericium, with a bolt-hole and slight traces of thin plaster.

b L. 0.92. Latericium. Slight traces of thin plaster.

East, a L. 1.45 - 1.56. Latericium. Upper part (above passage) mixtum, restored after excavation. Slight traces of thin plaster. Passage to room 6 completely filled in by b.

b Lower part: bricks, small tufa blocks, two blocks of volcanic stone (perhaps originally part of mill-stone). Middle part: latericium. Upper part: mixtum. Partly restored after excavation. Traces of thin plaster. Central part of lintel arch has some bricks instead of sesquipedales.

South, a L. 0.60. Latericium. Traces of thin plaster.

b L. 1.47. Latericium. Traces of thin plaster.

c L. 0.60. Latericium. Traces of thin plaster.

West, a L. 2.08 - c. 1.80 (overgrown). Mixtum. Slight traces of thin plaster.

b Rebuilt south jamb of doorway to room 26. Max. l. 0.65, h. 1.18. Latericium. Separated from a by crack.

Doorway to room 26. W. 1.32; h. 2.06. Complete travertine threshold of one block, much worn and damaged. Three round holes in scuth part, one or more of which may have been meant for pivot. In centre of north part a hole, partly round, partly square, probably pivot-hole. Top of threshold 0.30 above floor of room 18. Jambs latericium. Bolt-hole in left jamb. Spanned by a slightly curved lintel arch of sesquipedales. Lower part of two rectangular windows above doorway, largely modern. Meas.: see room 26, east. Jambs latericium. No sills preserved.

C. Basalt blocks, some with the imprint of hoofs.

D. A number of holes in east wall, h. a little above lintel arch of doorway. Beamholes?

E. Excavation and finds: see room 17. In north part is lying an object looking like the top of a *meta*. It has, however, a flat top, and the square hole in the top is larger than usual in a *meta* (0.13 x 0.14) and furthermore passing through the stone (h. 0.17, diam. 0.77). Drs. G. Jansen has pointed out to me that this seems to be part of an olive-press (cf. Grant 1971, photo on p. 196). In west part a mill-stone. Present h. 1.58, 2.05 from west wall, 2.25 from north wall (meas. from the sides). Like all other mill-stones in building made of dark-grey, volcanic, porous material. Lower part of *meta* (circumference 3.31) damaged and standing on modern base. *Meta* is hollow and preserves the upper part of two letters, possibly a small and a large D. In the top a square hole with lead on all four sides and on bottom. Top

of *catillus* missing (pres. h. 0.77, circ. 3.02). On lower part of *catillus* are the letters *CHRY* (Moritz 1958, Pl. 7b).

ROOM 19

A. 9.39 x 5.22 x 9.41 x 5.30; area c. 49.5 m².

B. North, a L. 0.60. Latericum.

b L. 0.95; th. 1.19 - 1.0.84; th. 1.17. Latericum.

Passage to room 20. W. 6.39; h. 4.28. Floor covered by basalt blocks. Jambs latericum. Spanned by a semicircular arch of bipedales, largely modern. Some bessales on bottom.

c L. 0.61. Latericum. Traces of thin plaster.

East, a L. 1.48 - 1.49. Latericum. Upper part (above passage) mixtum, restored after excavation. Traces of thin plaster.

Passage to room 7. Top of threshold 0.10 above floor.

South, a L. 0.90. Latericum.

b L. 6.65. Mixtum. Preservation: see room 18, north. Remains of plaster.

West, a L. 1.94 - 1.85. Mixtum. Remains of plaster.

Doorway to room 26. W. 1.51; h. 2.55. Jambs latericum. Spanned by a slightly curved lintel arch of sesquipedales, modern. Three square holes in upper part of each jamb, in a diagonal line, sloping upwards from east to west. Middle hole in right jamb filled in. Lowest hole directly above b. Lower part filled in by b. Lower part of rectangular window above doorway, largely modern: 1.85/3.55 from south wall; starting at 3.61 from floor. Jambs latericum. No sill preserved.

b H. 1.40. Latericum. Upper part restored after excavation.

C. Basalt blocks, some with the imprint of hoofs.

D. A number of holes in east wall, h. a little above lintel arch of doorway. Beamholes?

E. Room 19 is shown excavated on Paschetto's plan. Finelli however states that he found part of rooms 19-21 unexcavated, by which he can only mean the south part, because it is mentioned together with 17-18 (GdS 1915, 87, 173). Excavation began in 1914 when, after excavation of room 7, Finelli started excavations to reach alley between Diana and Molini (GdS 1914, 157-158, 161). In the destruction-layer resulting from fire were then found:

9217 White marble. Lower part of table leg, consisting of a lion's paw, resting on a base. Preserved h. 0.348; 0.23 x 0.23.

9218 White marble. Base of acanthus-leaves. In the centre a hole. In this hole a smaller hole, passing through the base and closed off by a terracotta plug. Possibly part of a fountain. H. 0.15; 0.265 x 0.265.

9219 Bronze. Six coins.

Excavation finished in 1915 (see room 17).

Three mill-stones standing in room, south and north one as indicated on plan in Calza 1915(1). **South one**. Preserved h. 1.25; side 0.58 from south wall, 3.02 from west wall. Square hole in top of *meta* (circ. 3.03), with lead on all sides and on bottom. Top of

catillus (circ. 2.84) missing. **North-east one**. Complete, minor damage to *meta* (circ. 2.69) and *catillus* (h. 0.84, diam. 0.78). H. 1.43; side 2.50 from south wall, 3.09 from east wall. Square hole in top of *meta*, with lead on all sides and on bottom. **North one** (in passage). Side 1.33 from left jamb of passage. *Meta* (h. 1.35, circ. 3.28) with square hole in the top, with lead on bottom. Part of *catillus* attached to it after excavation.

ROOM 20

A. 9.37 x 4.55 x 9.36 x 4.68; area c. 43 m².

B. North, a L. 0.60, th. 0.59. Latericum. Above, core of wall visible.

b L. 0.74; th. 1.18. Latericum. Springing of semicircular arch spanning passage to room 21, modern.

Passage to room 21. W. 5.94. Floor covered by basalt blocks. Jambs latericum.

c L. 1.48; th. 1.19. Latericum. Springing of semicircular arch spanning passage to room 21, made of bipedales, partly restored after excavation.

d L. 0.61. Latericum. Traces of thin plaster.

East, a L. 1.48 - visible l. 0.73. Latericum. Traces of thin plaster.

South, a L. 1.45 - 1.52. Latericum. Traces of thin plaster with faint traces of red paint.

West, a Visible l. 1.22 - 1.96. Mixtum. Remains of plaster.

Doorway to room 27. W. 1.50; h. 2.42. Jambs latericum. Spanned by a slightly curved lintel arch, modern. Lower part filled in by b. Above doorway lower part of rectangular window, largely modern: 1.10/2.85 from south wall; starting at 3.53 from floor. Jambs latericum. No sill preserved.

b H. 1.40. Latericum. Upper part modern. Remains of plaster.

C. Basalt blocks.

D. ---

E. Excavated in 1870. In room are standing four parts of mill-stones (five indicated on plans in Calza 1915(1) and SO I, the position of three of which corresponds with present situation, while south-east one and north-west one closest to passage in north wall are missing). **West one**. Side 0.84 from west wall, 1.57 from north wall. *Meta* only (h. a little over 1.15, circ. 3.16). Top broken off. Repaired with lead clamp, probably antique because differing from numerous modern clamps in mill-stones. **Central one**. Side 3.68 from west wall. Part of *meta*, to which part of *catillus* has been attached after excavation. **Northeast one**. Side 0.84 from east wall, 0.84 from north wall. *Meta* only, hollow (h. a little over 1.10, diam. c. 1.00). Top broken off, but bottom of hole in top still visible. **South one**. Side 3.00 from east wall, 0.90 from south wall. Not indicated on plans. Top of *meta*, to which part of *catillus* has been attached after excavation. Square hole in top of *meta*, with lead on three sides and on bottom. In south-east corner a bell-

shaped basin, made of same material as mill-stones. H. 0.50; d. 0.33; diam. incl. rim 0.70, excl. 0.52. In this basin are two fragments of *catilli*.

ROOM 21

A. 9.38 x 4.43 x 9.38 x 4.53; area c. 42 m².

B. North, a L. 1.88 - 4.24. Mixtum, separated by irregular joints from b, d and e. Some vittatum B in lower west part. Traces of thin plaster, turned dark-grey as a result of fire.

Doorway to room 22. W. 0.91; h. 2.30. Jamb latericium, with remains of coarse plaster. Irregular top of doorway in a, left jamb part of b, right jamb part of c and d.

b (west of doorway) Max. l. 0.73. Latericium.

c (lower part of wall east of doorway, up to e) Max. h. 0.50. Latericium.

d (above c, below a) L. 4.24; h. 1.37. Latericium, separated from e by irregular vertical joint. Traces of dark-grey, thin plaster. Traces of fire on bricks.

e L. 0.59. Latericium. Slight traces of thin plaster. Traces of fire on mortar and bricks.

f L. 0.58. Latericium. Traces of dark-grey, thin plaster. Traces of fire on mortar and bricks.

g L. 0.58. Latericium. Traces of fire on mortar and bricks.

h L. 0.30. Latericium. Traces of dark-grey to black, thin plaster. Traces of coarse plaster. Traces of fire on bricks. Parts of a modern lintel arch suggest that f-g was doorway.

East, a L. 1.35. Latericium. Traces of dark-grey, thin plaster. East half of passage to room 12 filled in by b.

b L. 1.11. Latericium. Slight traces of plaster.

c Visible l. 0.73. Latericium.

South, a L. 2.07. Latericium. Considerable remains of smooth plaster (th. 0.025) with a coarse core.

b L. 1.37. Latericium.

West, a Visible l. 1.19 - 1.85. Mixtum. Traces of thin plaster, partly white, partly dark-grey.

Doorway to room 28. W. 1.49; h. 2.57. Jamb latericium. Spanned by a slightly curved lintel arch of sesquipedales. Above doorway lower part of rectangular window, largely modern: 1.10/2.80 from south wall; starting at 3.56 from floor. Jamb latericium. No sill preserved.

C. Basalt blocks.

D. One beamhole in south, a (= north side of large pier): 3.49/3.82 from floor.

E. Excavated in 1870. One mill-stone standing in room, as indicated on plans in Calza 1915(1) and SO I. Preserved h. 1.55; side 1.51 from east jamb of passage to room 20. Minor damage to *meta* (circ. 2.93). Square hole in top of *meta*, with lead on all sides and bottom. Top and part of lower part of *catillus* missing (h. a little over 0.80). Basin in south-east corner. Latericium, preserved to a very low height, restored after excavation. Floor of bipedales. Facing of east, b damaged over h. 1.55, showing where north wall was attached. L. of north wall 2.06.

West wall (l. 1.75) set against south, a. Line (vertical joint?) in west wall shown on plan in Calza 1915(1), not confirmed. Th. of walls 0.35. In north part of room are lying three fragments of *catilli* and a fragment of a travertine threshold block with groove.

ROOM 22

A. 9.42 x 5.47 x 9.38 x 5.40; area c. 51 m².

B. North, a (below west part of b) L. 0.60; h. c. 1.75. Mixtum. Separated by an irregular joint from c.

b L. 0.60 - 7.30. Mixtum. Separated by irregular joint from c and d. Traces of thin plaster. Traces of fire on tufa stones.

Doorway to room 23. W. c. 1.52; h. c. 2.00. Very irregular jambs, lower part of left jamb part of a, upper part of left jamb and right jamb part of b. No lintel. Completely filled in by c.

c Latericium. Traces of thin plaster. Traces of fire on bricks.

d West part (below b, starting from doorway): l. 2.85; h. 0.93. East part (below b): l. up to pier set in north-east corner of room 3.48; h. varying, but over 2.50. Latericium. Traces of thin plaster with faint traces of red paint. Traces of fire on bricks. Small pier, latericium, forming entity with d: 5.65/6.10 from west wall; th. 0.29. Rectangular niche in d, sides and back of upright bricks: 7.12/7.32 (incl. sides) from west wall; 1.80/2.02 from floor; w. incl. sides 0.20, excl. 0.14; d. 0.21. Large pier, latericium, set against north-east corner: w. 0.97; th. 0.47. Traces of thin plaster. Lower part of south side thicker (0.10 over h. 0.46).

East, a Visible l. 1.18 - 1.71. Latericium. Considerable remains of thin plaster, remains of coarse plaster. Lower part of north part thicker (0.10 over h. 0.46).

Passage to room 13. South jamb covered by b. Lintel arch lopsided, above south end part of an older springing of a lintel arch visible.

b L. 0.54. Vittatum B. Traces of thin plaster.

South wall Because of complexity of wall described from right to left, so that section numbers coincide with 21, north.

a L. 1.92 - 3.90. Mixtum, separated by irregular joints from b, d and e. Traces of thin plaster.

b (west of doorway) Max. l. 0.91. Latericium. Traces of plaster.

c (lower part of wall east of doorway, up to e) H. 0.33. Latericium.

d (above c, below a) L. 5.07. Latericium, separated from e by irregular vertical joint. Remains of plaster.

e Max. l. 0.80. Latericium. Considerable remains of thin plaster.

f L. 0.61. Latericium. Considerable remains of plaster. In lower part rectangular floor-niche, sides latericium, back showing core of wall: 0.84/1.46 from east wall; h. 0.88; w. 0.62; d. c. 0.25.

g L. 0.54. Latericium. Traces of thin plaster.

h L. 0.28. Latericium. Considerable remains of thin

plaster.

Parts of a slightly curved lintel arch of sesquipedales, east part antique, show that f-g is blocked doorway.

West, a L. 2.05 - 1.91. Mixtum, separated by irregular joint from b. Traces of thin plaster.

Doorway to room 29. W. 1.44; h. 2.50. Part of threshold lying against left jamb visible on fig. 3 in Calza 1915(1), now gone. Jambs latericium, with traces of coarse plaster. In left jamb irregular vertical joint. Spanned by a slightly curved lintel arch of sesquipedales, lopsided. Above doorway lower part of rectangular window, largely modern: 1.85/3.75 from south wall, starting at 3.56 from floor. Jambs latericium. No sill preserved. Blocked with small tufa blocks and some bricks (photograph B 2201).

b (lower part of wall south of doorway, up to h. of intrados of lintel arch) L. 2.05. Latericium. Traces of plaster.

C. Basalt blocks, one near doorway in south wall with imprint of hoof.

D. Five beamholes in north, b, passing through the wall: 3.40/3.64, 3.23/3.56, 3.16/3.59, 3.22/3.59 and 3.20/3.48 from floor. Five beamholes in west and central part of south, a, not passing through the wall: 3.04/3.28, 3.17/3.35, 3.08/3.26, 3.19/3.44 and 3.07/3.34 from floor. One beamhole in west, a: 3.46/3.70 from floor.

E. Excavated in 1870. Five kneading-machines standing in room, four as indicated on plans in Calza 1915(1) and SO I, where south-east one is not drawn. Except for south-west one slightly set in floor. Two square or rectangular holes in the side set on one angle, opposite each other, but never at the same height. Made of same material as mill-stones. **Northwest one.** Side 0.83 from north wall, 1.10 from west wall; h. 0.72; d. 0.43; diam. incl. rim 0.98, excl. rim 0.45. Part of side missing. One hole preserved, passing through the side (0.06 x 0.06, 0.35 below rim). According to Calza the grafting of the vertical spindles is not present or has disappeared (Calza 1915(1), 244), but in centre of bottom of this machine a square iron slab is fastened in a round depression (0.19 x 0.19). Remaining space in depression filled with lead. Small depression (0.02 x 0.02) in centre of slab. Bottoms of other basins could not be inspected. **Central north one.** Side 1.02 from north wall; h. 0.61; d. 0.42; diam. incl. rim 0.94, excl. rim 0.43. Two holes opposite each other, passing through the side (0.06 x 0.06 and 0.06 x 0.07, 0.23 and 0.32 below rim). **Northeast one.** Side 1.18 from north wall, 1.70 from east wall; h. 0.65; d. 0.42; diam. incl. rim 0.86, excl. rim 0.43. Two holes opposite each other, passing through the side (0.05 x 0.05, 0.24 and 0.31 below the rim). **Central south one.** Side 1.10 from south wall; h. 0.72; d. 0.43; diam. incl. rim 0.80, excl. 0.47. Two holes opposite each other, passing through the side (0.03 x 0.03 and 0.04 x 0.05, 0.13 and 0.23 below the rim). **Southeast one.** Side 0.90 from south wall, 1.70 from east wall;

h. 0.75; d. 0.33; diam. incl. rim 0.90, excl. 0.43. Two holes opposite each other, passing through the side (0.05 x 0.05 and 0.05 x 0.06, 0.24 and 0.34 below the rim).

ROOM 23

A. 9.70 x 4.98 x 9.75 x 5.25; area c. 49.5 m².

B. North, a L. 3.52. Mixtum. Facing of east part missing (from east upwards to west). In this part a horizontal row of three large holes passing through the wall (h. c. that of lintel arch of door in west wall) (Heres 1988, fig. 11).

b L. 6.18. Latericium, partly built over east, a. East side showing core of wall. Protruding c. 0.20 into room. In lower west part a hollow in the masonry with a latericium back, meant to receive part of upper half of oven. In west part lower part of rectangular niche or vertical channel: 4.68/5.08 from west wall; d. 0.44. Sides latericium, back made of a large brick. East, a L. 4.98. Some vittatum A in north part, but for the most part showing core of wall, protruding in front of the vittatum (Heres 1988, figs. 29 and 30).

South, a (lower east part of wall). Preserved l. 0.50. Latericium. Broken off. Core of wall visible above a. b L. 9.25. Mixtum. Facing of east part, up to 3.20 from west wall, partially, funnel-shaped, missing (from east upwards to west). Upper part of section showing core of wall over h. 0.55, starting at c. 0.10 above beamholes (see D).

Doorway to room 22. Irregular top only visible (cf. C).

West, a L. 1.89 - 1.90. Mixtum. Traces of thin and of coarse plaster.

Doorway to room 29. W. 1.46; h. 2.27. Jambs latericium, with remains of coarse plaster on right jamb. Spanned by a slightly curved lintel arch of sesquipedales. No window above doorway.

Wall, th. 0.37, latericium, set against lower part of a, south of doorway. Remains of plaster. North end broken off. At this end can be seen that lower part of a is 0.08 thicker, forming an entity with 0.09 thicker lower part of left jamb of doorway. Lower part of right jamb is 0.06 thicker and forming entity with wall, th. 0.30, latericium, set against lower part of a, north of doorway.

C. High floor-level, due to remains of oven, that are buried.

D. Five beamholes in south, b: see room 22. Horizontal band of missing facing above beamholes is place of attachment of barrel vault.

E. Excavated in 1915-1916. No finds reported (GdS 1915, 98-101; 1916, 93; see also Calza 1915(1), 244). Traces of fire were seen. Remains of oven found. Base of oven made of tufa blocks, small part of upper part preserved (see also Calza 1929, 130). In south-west corner of room are lying some basalt blocks and many fragments of mill-stones.

Oven uncovered in 1996, area in front of oven further excavated. A bipedalis in the north part and some

bricks in the south part are remains of original floor level (resp. 0.77 and 0.92 below that of room 29). Steps have disappeared. There is a slight indication of a basin in the west part.

Brick podium (h. 1.20 to 1.30; starting at 2.00 to 2.10 from west wall). In podium, below entrance to oven, a hole (starting at floor level, h. 0.50, w. 0.49, d. 0.88; top at c. 0.57 from top of podium (central part of which is sagging)). Sides and back of bricks.

Brick ledge in front of cupola (d. 0.52 to 0.55). In this ledge, in front of the centre of the entrance to the oven, a metal object (hinge?) (0.05 x 0.02; at 0.18 from front of podium). The jambs of the entrance to the oven are of bricks, against which several tufa uprights have been set (w. between brick jambs 1.85, preserved w. of narrowed opening 1.03).

Lower ring of cupola preserved, made of large tufa blocks. Not a true circle, long sides flattened. Floor made of 'terra battuta'. Three to four layers of tufa blocks preserved (max. preserved h. 1.08; inside meas. west-east 4.92, north-south 4.59. In the blocks are two horizontal grooves, at 0.29 / 0.33 and 0.42 / 0.46 from floor. Two narrow grooves above the latter.

ROOMS 24 and 25 (Sacello del Silvano): see Bakker 1994, catalogue C.

Part of the lead pipe in room 24, reported by Finelli, was uncovered in 1996, when the room was excavated for some 30-40 cm. I could not come close to it, so the following meas. are just a rough indication. It is sticking out of the north wall, some 20 cm. below the foundation level and 10 cm. from the east wall. Diam. c. 0.05.

ROOM 26

A. 2.75 x 11.09 x 2.58 x 11.00; area c. 29.5 m².

B. North, a L. 0.62; th. 0.89 - l. 0.65; th. up to crack 0.91. Latericum.

Passage to room 27. W. 1.48; h. 4.72. Floor covered by basalt blocks. Jambs latericum. Two irregular holes in left jamb. Traces of thin plaster with faint traces of red paint on right jamb. Spanned by a semicircular arch, modern. Springings of arch marked by triple brick cornice.

East, a L. 1.82 - 4.34 - 2.10. Mixtum. Traces of thin plaster, two layers, with traces of red paint on first layer. Lower part of doorway to room 19 filled in by b. Above doorway to room 18 lower part of two rectangular windows (see also room 18, west): 7.40/8.85 and 9.40/11.10 from north wall; starting at 3.00 from floor.

b Latericum. Upper part modern,

Door to room 18. Top of threshold flush with floor.

c See room 18, west, b.

South, a L. 1.04. Latericum. Remains of thin plaster, four layers, with traces of red paint on all layers.

b L. 0.43. Latericum. Remains of thin plaster, four layers, with traces of red paint on third layer.

c L. 0.17. Latericum. Slight traces of thin plaster.

West, a L. 0.47. Latericum.

b (blocked drainage channel) L. 0.27. Latericum. Remains of plaster. The water was drained off to a large latrine in the Caseggiato di Diana (hole visible in the latrine).

c L. 6.80. Latericum. Separated from c by irregular vertical joint. Traces of thin plaster. Rectangular window in south part. Jambs latericum. Spanned by a flat lintel (modern) and a lintel arch of sesquipedales. H. 0.53; 1.98/2.57 from south wall; starting at 1.48 from floor. Rectangular window in north part. Jambs latericum. Spanned by a flat lintel (modern) and a lintel arch of sesquipedales. H. 0.98; 5.68/6.42 from south wall; starting at 2.68 from floor.

d L. 3.46. Latericum. Traces of thin plaster, two layers, with traces of red paint on first layer.

C. Basalt blocks, gently sloping downwards towards the north.

D. No beamholes.

E. Excavated in 1915 (GdS 1915, 87). No finds reported. Basin set against west wall, latericum. Th. of walls 0.26; l. 5.00; w. 1.04; h. of antique masonry 0.63, present h. 0.76; d. 0.71; starting at 1.94 from south wall. Considerable remains of coarse plaster on the inside of all three walls and on west wall (to h. c. 0.70 from bottom). Round hole passing through north wall of basin, directly above floor. See also Scrinari - Ricciardi 1996, II, 22-23: water arrived through hole in west wall; may have shared water-supply with latrine in Cas. di Diana.

ROOM 27

A. 2.80 x 4.77 x 2.72 x 4.55; area c. 13 m².

B. North, a L. 0.61; th. 0.89 - l. 0.56; th. 0.89. Latericum.

Passage to room 28. W. 1.63; h. 4.67. Floor covered by basalt blocks. Jambs latericum. Spanned by a semicircular arch, modern. Springings of arch marked by triple brick cornice.

East, a L. 1.71 - 1.56. Mixtum. Lower part of section covered by wall. Th. 0.24, th. of south end (l. 0.30) 0.61. Latericum. Traces of thin plaster, two layers, with traces of red paint on first layer (traces on south end forming entity with those on east jamb of passage to room 26).

South, a L. 0.62 - 0.62. Latericum. Remains of plaster.

West, a L. 4.55. Latericum. Traces of thin plaster.

C. Basalt blocks.

D. No beamholes.

E. Excavated in 1915.

ROOM 28

A. 3.01 x 4.64 x 2.83 x 4.80; area c. 14 m².

B. North, a L. 0.74 - 0.78. Latericum. Traces of thin plaster.

Doorway to room 29. W. 1.49; h. 2.51; th. of jambs 0.59. One travertine threshold block, broken. West

end missing. Not touching jambs. Flat surface, 0.15 above floor. Jambs latericium. Spanned by a slightly curved lintel arch of sesquipedales, modern.

East, a L. 1.35 - 1.80. Mixtum. Traces of thin plaster, two layers, with faint traces of red paint on first layer. South, a L. 0.58 - 0.62. Latericium. Traces of thin plaster, two layers, with traces of red paint on first layer.

West, a L. 4.80. Latericium. Traces of thin plaster, two layers, with traces of red paint on first layer. Slit window in south part, giving light to Cas. di Diana, restored after excavation. H. 0.89; 0.59/0.76 from south wall; starting at 2.77 from floor. Jambs latericium. Spanned by a slightly curved brick lintel arch.

C. Basalt blocks (south part) and spicatum (to the east and north of basin) (as indicated on plan in Calza 1915(1)).

D. No beamholes.

E. Excavated in 1870. Basin set against west wall. Latericium, set on top of spicatum floor. Th. of walls 0.28; l. 2.36; w. 1.29; h. of antique masonry 0.66, present h. 0.82; d. 0.52; starting at 1.60 from south wall. Remains of coarse plaster on west wall and on inside of south wall (to h. c. 0.63 from bottom). See also Scrinari - Ricciardi 1996, II, 22.

ROOM 29

A. 2.72 x 11.62 x 2.38 x 11.60; area c. 29.5 m².

B. North, a L. 2.72. Latericium.

East, a L. 1.92 - 4.35 - 2.45. Mixtum. Wall, th. 0.32, latericium, set against lower part of section north of doorway to room 23. Forming entity with thicker part of north jamb of doorway. Wall, th. 0.30, latericium, set against north part of central part of section (l. 2.91). Forming entity with thicker part of south jamb of doorway to room 23. Hole, sides latericium, passing through north part of section diagonally, from north-west to south-east. Starting at floor level; h. c. 0.40-0.50; at 0.06 -0.66 from north wall. Hole, hacked out, passing through central part of section diagonally, from south-west to north-east. Starting at floor level; h. c. 0.43; 1.44/2.02 from (thicker part of) south jamb.

b (lower part of a, south of doorway to room 22) L. 2.45. Latericium.

South, a L. 0.73 - 0.16. Latericium.

West, a L. 11.60. Latericium. Upper part of facing missing.

C. No data available.

D. Over total l. of east wall core of wall visible, over h. 0.30 to 0.40, starting at av. h. 2.55 from floor (place of attachment of barrel vault). Modern place of attachment of barrel vault visible in south wall (top at 3.71). In east part of south wall, close to east wall, above this modern, curved place of attachment, a small hole passing through the wall with terracotta on the inside.

E. Excavated in 1870. In south-east corner is lying a

square, marble block.

2C Finds related to the upper floors; finds of which the exact place of discovery is unknown; length, width and area of building

Finelli believes the following finds to come from the upper floors (GdS 1915, 168):

- Parts of ceilings "a camera canna" (wattle-work), found in rooms 17, 18 and 19, "di arte buona e direi finamente affrescati".

- Fragments of black-and-white mosaics, made of small *tesserae*, with geometrical designs and floral decoration.

- Very thin marble plates, belonging to geometrical, polychrome opus sectile.

- Many *tesserae* of glass-paste, various colours.

Calza reports the find of large chunks of masonry covered by opus signinum, coming from the upper floors and possibly belonging to basins (Calza 1915(1), 245).

The exact place of discovery of the following finds is unknown.

During the 1870-excavations were found:

- Two gold rings, one with an *aureus* of Traianus Decius.

- Lead water-pipes without stamps. (bronze unless indicated otherwise):

- Statuette of Apollo Nomios.

- Statuette of Athena.

- Statuette of Mars.

- Statuette of a Dioscure.

- Statuette of a female figure.

- Six statuettes, "to be cleaned".

- Horse, in course.

- Two panthers, that had silver inlay; revetment for furniture.

- Candelabrum, broken.

- Balance, decorated with a figure.

- Lamp in the shape of a swan.

- Lamp.

- Large number of coins, ranging from Augustus and Hadrian to Valerian and Gallienus; coins of the two Philips, Trebonianus Gallus and Volusianus the most frequent.

(marble unless indicated otherwise):

- Fragments of statuette of Aesculapius.

- Damaged statuette, perhaps of Diana.

Next to these two entries in the *Giornale di Roma*, March 15th 1870, someone has written "Laterano, S. XV, vetrina".

- Small bust of Jupiter-Serapis, with traces of gilding. (terracotta unless indicated otherwise):

- Object with depiction of Jupiter-Sabazius or Bacchus-Pluvius.

- Lamps with stamp *ANNI SER* (cf. room 17, nrs. 10042-10043).

- Several lamps with stamp *ANNI SER*, with depiction of the Pastor Bonus amidst vine-tendrils

with grapes (De Rossi 1870, Tav. VI, 1.2).

- Lamp, stamp lost, with depiction of the Pastor Bonus between two sheep, one of which is entering some sort of hut, and two trees. In the handle part of an iron nail (De Rossi 1870, Tav. I, 2).

- Lamp with graffito *AUCENDI* (from workshop of Augendus: CIL XV, 6326). On the bottom a cross, both bars about the same length, in low relief. On the top globules, set out in a number of circles (De Rossi 1870, Tav. VI,3).

- One Trajanic brick-stamp (CIL XV, 23; 116 AD), Hadrianic brick-stamps (specified only CIL XV, 694; c. 123 AD) and one Antonine brick-stamp.

(material not specified):

- Many utensils and ornamental objects.

In 1879 C.L. Visconti reports this find from the Casa di Aquilina (Visconti 1879, 207):

- Brick-stamp CIL XIV, 4089, 27.

In 1908 this find is reported, made below basalt blocks inside the "locali dei molini", during restorations (Vaglieri 1908(1), 249):

- Thirteen bronze coins. A little further on coins of Hadrian (uncertain), Marcus Aurelius (uncertain) and Gordianus Pius are specified, found "presso i mulini" (Vaglieri 1908(2), 336). Finelli mentions the find of six bronze coins, below the pavement of basalt blocks, one of these of Gordianus (GdS 1908, 66 nr. 376 and 70 nr. 105).

It does not become clear, whether the Cas. dei Molini is meant, or a bakery excavated in 1878 near the Cas. dei Doli (I,IV,5).

In 1909 this find is reported, made in the "edificio dei molini", during excavations (Vaglieri 1909, 26; see also SO I, 216):

- Brick-stamp CIL XV, 693.

Again it is not clear, which bakery is meant.

In 1913 were found in the building, probably in the south-east part, to judge from the place of description in the GdS (GdS 1913, 131):

- Two large fragments of a *cippus* of white marble, one fragment with traces of letters.

In 1914 were found in the building, "on various spots" (GdS 1914, 174-176) (terracotta):

9265 Brick-stamp CIL XV, 804 (c. 123 AD).

9266 Brick-stamp CIL XV, 1058 (136 AD).

9267 Two fragments of imbrex with stamp CIL XV, 612 (second century).

9268 Brick-stamp CIL XV, 715 (139-161 AD).

9269 Brick-stamp CIL XV, 83 (123 AD).

9270 Fragment of imbrex with stamp CIL XV, 2199 (Hadrianic).

9271 Brick-stamp *EX PR DOMIT DOM | TAVENIATTIC* [---].

9272 Round brick-stamp with letters *CHILS* and a *C* in the centre.

9273 Brick-stamp CIL XV, 19 (114 AD).

9274 Fragment of *amphora*, with stamp *ILFFUSCI*.

9275 Fragment of frieze with part of a wing; meas. 0.16 x 0.09.

9276 Lamp, shape almost CIL XV, 31, with stamp CIL XV, 6296a. Damaged, preserved l. 0.097.

9277 Lamp, shape CIL XV, 27. L. 0.098.

9278 Lamp. Damaged. L. 0.114.

(bronze):

9279 Medallion, perhaps with head of Marcus Aurelius, *quadriga* on reverse. Diam. 0.038; th. 5 mm.

9279 Bronze coin. Diam. 0.037; th. 2 mm.

9280 Twenty-eight bronze coins.

In 1915 were found, in the spaces between basalt blocks inside the building (GdS 1915, 88):

- Eleven bronze coins.

Length, width and area of building:

Total l. of east wall: 46.38; total l. of central wall (north-south): 46.53; total l. of west wall of building: 46.64; total l. of west wall of alley: 46.41; av. total l. 46.49.

Total l. of north wall of building: 20.17; total l. of south wall of building: 20.02; av. w. of alley: 2.81.

Total area of building: c. 729.5 m² (excl. walls), c. 934 m² (incl. walls); total area incl. alley: c. 836 m² (excl. walls), c. 1065 m² (incl. walls).

Molino I,XIII,4

Catalogue

Bernard Meijlink

§ 1 INTRODUCTION

The description follows the model used in Boersma 1985 for buildings V,II,1-3 and 6-14, including the alternations to this model proposed by J.Th. Bakker. In numbering the rooms the complex is divided in three parts: the west *tabernae*, the central part and the east *tabernae*. In each part the rooms are numbered from north to south. The order of the description follows the numbers of the rooms, but is preceded by a description of the west and east facade. The description slightly deviates from the magnetic north to facilitate the description.

The description of each room in the Molino is presented clockwise regardless of the date, and is divided into the next parts:

A. Lengths of respectively the north, east, south and west wall.

B. Wall-descriptions. The walls are subdivided into different wall-parts when there is a difference in masonry, a restoration or a blocking. The different sections are indicated with a small letter. Doorways, passages and windows are also treated in this part. The sections on both sides of a doorway are always treated as two different wall-parts. Small antique repairs are not provided with a separate letter.

C. The floor.

D. The ceiling. In this part beamholes and other holes of any interest are described. Of the measurements of the holes the first two are horizontal measurements from the left end of the wall and the last two vertical measurements from the floor.

E. Features and objects attested in the room.

All measurements are in metres. The length of a brick or tufello is the horizontal measurement, the thickness the vertical measurement. The width of the latericum-piers in the opus mixtum is the horizontal measurement, while the thickness of the teeth of these piers is the vertical measurement. The thickness of the teeth is measured with the inclusion of one joint below the teeth. The teeth are numbered from the floor upwards. The measurements of the *tesserae* in the opus mixtum or opus reticulatum are taken along the diagonals.

The modulus in the opus latericum is the vertical measurement of five bricks and five joints. For the

vittatum A 1+1 stands for the vertical measurement of one brick, one tufello and two joints, 1+1+1 for the vertical measurement of one brick, one tufello, one brick and two joints. For the vittatum B 1+1+1 stands for the vertical measurement of one brick, two tufelli and three joints, 1+1+1+1 for the vertical measurement of one brick, two tufelli, one brick and three joints. "Fresh" bricks are new ones, on reused bricks traces can be seen of removed earlier mortar.

Unless mentioned otherwise the walls are preserved up to a height varying between 2.50 till 3.25.

§ 2 DESCRIPTION (fall 1989)

2A Outer walls

For the outer north wall see the descriptions of the south wall of corridor 17, 18 and 19. The outer south wall could not be studied because it abuts the north wall of I,XIII,5.

OUTER WEST WALL. L. 25.25.

Doorway to corridor 17, w. 2.15. Corner of north wall of corridor 17 contains four large tufa-blocks on top of each other (l. of each 1.20; from bottom to top h. resp. 0.17 (partly in the ground), 0.61, 0.565 and 0.60; w. resp. 0.64, 0.91, 0.63 and 0.675).

a Column, diam. 0.87, two drums of modern concrete, h. of lower one (partly under present floor-level) 0.40, of upper one 0.65.

Doorway to room 1, w. 3.66.

b Column, diam. 0.89/0.90, small part of travertine drum still visible above floor-level, h. 0.23, on top of this two drums of modern concrete h. resp. 0.665 and 0.675.

Doorway to room 3, w. 4.06.

c Column, diam. 0.83/0.815. Because excavators left a hole open around this column the lower travertine part of the column is visible and also part of the masonry underneath the base of the column. The lower part of the base is square (w. 1.17, h. 0.08). Above is an inwards sloping part, h. 0.075, with on top a round torus (diam. 1.10, h. 0.15). Next comes a decorative band (h. 0.06) and finally attached to it part of a drum (h. 0.51). H. of entire base including

the drum-part 0.875. On top of this part are two drums of modern concrete, h. of both 0.67. The column has at the front two vertical inward cuttings (w. 0.04/0.045) with a receding part in between (w. 0.60). The bottom of the base is about 1.00 below present floor-level.

Beneath the column-base a piece of opus latericium can be seen of dark-red to pink bricks, three courses at the front and seven at the back (l. 1.20, w. 0.50). Meas. of bricks: l. 0.18, 0.21, 0.26, 0.22, 0.16 (av. 0.206); th. 0.042, 0.04, 0.048, 0.041, 0.042 (av. 0.043); th. of joints 0.016, 0.019, 0.02, 0.028, 0.018 (av. 0.022). Modulus: 0.298. Mortar red by abundance of red pozzolana, rather well sieved. The mortar could not be studied in detail due to the presence of moss and decay. The mortar between the bottom of the column-base and the latericium is black/dark-grey and therefore does not belong to the same building period as the section in latericium.

Doorway to room 4, w. 1.64. The hole around column c continues in front of room 4, where rough opus caementicium below floor-level and the end of a drainage-channel can be seen.

d Latericium, l. 1.89, w. 0.52, h. 1.80. Bricks orange, yellow, dark-yellow and pink, mainly fresh. Meas. of bricks: l. 0.235, 0.245, 0.26, 0.23 (av. 0.242); th. 0.028, 0.028, 0.03, 0.034 (av. 0.03); th. of joints 0.017, 0.018, 0.019, 0.02, 0.021 (av. 0.019). Modulus: 0.242, 0.240, 0.235 (av. 0.239). Mortar light-pink, rather badly sieved, black and dark-grey pozzolana, some red and light-brown pozzolana. Other granules: small pieces of lime and brick, pebbles. The mortar is hard.

Doorway to room 5, w. 3.43. The doorway reaches till column e around which a hole has been left open. From d till the hole three threshold-stones are preserved, l. resp. 0.44, 1.29 and 0.44, w. 0.37, 0.25 and 0.25 wide. All three have a groove 0.035 wide at 0.09 from the front.

e Column, diam. 0.87/0.95. Base c. 1.00 below street-level: square base (w. 1.17, h. 0.125); torus (w. 1.17, h. 0.135); decorative band between torus and drum-part (h. 0.019); drum-part (h. 0.35). H. of entire base including drum-part 0.628. On top two drums of modern concrete, h. resp. 0.645 and 0.615. The column has at the front and the back two inward cuttings, w. 0.035, with a receding part in between, w. at the front 0.80, at the back 0.82.

The column-base rests on top of a wall-part in latericium of four courses (l. 1.20, w. 0.52). Bricks dark-reddish to pink, mainly fresh. Meas. of bricks: l. 0.31, 0.29, 0.245, 0.235 (av. 0.27); th. 0.042, 0.04, 0.047 (av. 0.043); th. of joints 0.015, 0.017, 0.02, 0.025 (av. 0.019). Modulus: 0.295. Mortar red, hard to study in detail due to moss and decay. Here too the mortar in between the bottom of the column and the wall-part is black/dark-grey. This wall-part and the wall-part beneath column c stand in a straight line on the same line as the present facade and are on

both sides crumbled so that the original length cannot be determined.

f Opus caementicium, l. 0.19, h. 1.24, w. 0.51. Perhaps completely modern (built in order to attach wall-part g to column e).

g Latericium, l. 0.41, h. 1.60, w. 0.52. Bricks orange, yellow and dark-yellow, mainly fresh, but many reused. Meas. of bricks: l. 0.201, 0.21, 0.223 (av. 0.211); l. 0.142, 0.154, 0.162 (av. 0.152); th. 0.032, 0.034, 0.037 (av. 0.034); th. of joints 0.015, 0.02, 0.023, 0.023 (av. 0.02). Modulus: 0.25/0.255. Mortar light-grey; very badly sieved. Large dark-grey and black pozzolana-granules and some brown pozzolana. Other granules: rather large pieces of lime and marble, a few small pieces of brick, and pebbles. The mortar is rather hard.

Doorway to room 6/7, w. 3.42. Threshold of five stones (l. resp. 0.59, 0.48, 0.74, 0.67, 0.94, w. 0.29, 0.34, 0.30, 0.29, 0.27). The stones have a groove (w. 0.035, 0.09 from the front), except for the last stone against h, that has a raised edge at the front (w. 0.09). The adjoining stone has a groove for only 0.30 in the stone and for 0.37 also a raised edge connected to the edge of the fifth stone.

h Latericium, l. 0.73, w. 0.52. Stands against the facade I,XIII,5. In between is a vertical joint which from 0.66 upwards becomes wider and is filled with vertically placed bricks. This wall-part is authentic up to h. 0.93. Bricks dark-reddish to pink and fresh. Meas. of bricks: l. 0.225, 0.30 (av. 0.263); th. 0.038, 0.046 (av. 0.042); th. of joints 0.008, 0.016 (av. 0.012). Modulus: 0.265, 0.275. Mortar reddish, rather badly sieved; much red pozzolana, also light-brown, dark-brown, dark-grey pozzolana. Other granules: a few small pieces of lime and a few pebbles. The mortar is very hard.

OUTER EAST WALL. Measurable l. 20.14.

Doorway to corridor 19, w. cannot be measured since the end of the wall between corridor 19 and room 12 is missing. At the end of the north wall of corridor 19 is a wall-part in north-south direction in latericium (l. 1.00, w. 0.73). It is difficult to tell whether the entire wall-part is modern or not.

Doorway to room 12, w. uncertain due to absence of end of north wall.

a Wall-part at the end of the wall between room 12 and 13, l. 1.14, crumbled at north end; w. 0.51, h. 0.52; on top of caementicium-foundation, 0.16 above present ground-level, is a bipedal; on top of bipedal wall-part is rebuilt in modern times except for five courses at the north side. The bipedal protrudes a little at each side.

Doorway to room 13, w. 3.20.

b Wall-part at the end of wall between room 13 and 14, l. 1.01, w. 0.51, h. 0.64. On top of caementicium-foundation is a bipedal, on top of which the wall-part was rebuilt in modern times. The bipedal protrudes at all sides.

Doorway to room 14, w. 3.00. Of the threshold remains a stone with pivot-hole against the north side of the doorway (l. 0.38, w. 0.29).

g Wall-part at the end of wall between room 14 and 15, l. 1.16, w. 0.51, h. 0.72. Rebuilt in modern times. Doorway to room 15, w. 2.97.

d Wall-part at the end of wall between room 15 and 16, l. c. 1.02, w. c. 0.51, h. 0.09.

Doorway to room 16. W. cannot be measured, because the end of the south wall of 16 has not been preserved.

2B Rooms 1-19

ROOM 1

A. 8.30; 3.62; 6.22; 3.995.

B. North a Vittatum A, l. 6.28, w. 0.45. Bricks red, yellow, orange and pink, fresh and reused. Meas. of bricks: l. 0.20, 0.229, 0.195 (av. 0.208); l. 0.16, 0.15, 0.179 (av. 0.163); th. 0.036, 0.042, 0.036, 0.034, 0.036, 0.048, 0.02 (av. 0.036). The tufelli are in all kind of colours and rather irregularly shaped. Meas. of tufelli: l. 0.178, 0.096, 0.17, 0.164, 0.201, 0.144 (av. 0.158); th. 0.07, 0.07, 0.078, 0.074, 0.076, 0.069 (av. 0.072); th. of joints: 0.025, 0.035, 0.021, 0.025, 0.025, 0.033 (av. 0.027); 1+1: 0.156, 0.154, 0.146, 0.162 (av. 0.154); 1+1+1: 0.189, 0.182, 0.187 (av. 0.186). Mortar light-grey, badly sieved. Mostly black and dark-grey pozzolana, also some red. Other granules: shell, small pieces of lime and marble, pottery. The mortar is hard. At places antique daubing: light-yellowish grey, very well sieved, almost no other granules. Masonry: though laid rather regularly a fairly irregular aspect due to the rough surface of the tufelli. At the bottom of the wall sesquipedales protruding 0.09/0.10; w. 0.035/0.04 wide, av. l. 0.44.

Doorway to corridor 17, w. 0.845, h. 1.98. Traces of a raised threshold. The vittatum continues along the bottom of the doorway. Lintel of modern concrete. Above an arch of bricks (l. 0.35, 0.33, 0.30, 0.31 (av. 0.322)). Arch filled up with modern vittatum.

b Vittatum A, l. 1.17, w. 0.45. Like a. Meas. of bricks: l. 0.18, 0.21 (av. 0.195); l. 0.164, 0.152, 0.13, 0.135 (av. 0.145); th. 0.04, 0.045, 0.042, 0.04, 0.03, 0.032 (av. 0.038). Meas. of tufelli: l. 0.176, 0.12, 0.216, 0.13, 0.232, 0.117 (av. 0.145); th. 0.075, 0.07, 0.067, 0.072, 0.075, 0.068 (av. 0.071); th. of joints: 0.025, 0.02, 0.03, 0.023, 0.036, 0.03 (av. 0.027); 1+1: 0.155, 0.15, 0.154 (av. 0.153); 1+1+1: 0.197, 0.19, 0.186 (av. 0.191).

East a Mixtum, l. 1.17, w. 0.44. The mixtum has been preserved to h. 1.20. Above this point is the beginning of vittatum. In the north wall there is a rough trace of the missing vittatum. The mixtum of the east wall is earlier than the north wall. *Tesserae* yellow-brown and shaped to fit above, beneath and next to the teeth of the latericium-pier. Meas. of *tesserae*: 0.095 x 0.097, 0.107 x 0.103; th. of joints:

0.012, 0.015 (av. 0.013). Latericium in the mixtum: a band of three courses along bottom of wall, a door-jamb with two teeth of each three courses. Distance between band and tooth 0.305, between the two teeth 0.285. W. of door-post 0.315, th. of teeth 0.175, 0.155, l. of teeth 0.285, 0.295. Bricks pink-red, a few yellow and orange, mainly fresh, a few reused (especially the yellow). Meas. of bricks: l. 0.20, 0.225 (av. 0.212); l. 0.09, 0.115 (av. 0.102); th. 0.04, 0.042 (av. 0.041); th. 0.033, 0.037 (av. 0.035); th. of joints 0.015, 0.015, 0.01 (av. 0.013). Modulus: 0.26. Mortar dark-grey, badly sieved, a lot of black, dark-grey and dark-brown pozzolana. Other granules: a few small pieces of lime. The mortar is rather soft. Masonry: the latericium is rather regular, the reticulatum is rather irregular.

Doorway to room 2, w. 1.18, h. cannot be measured. Threshold or substructure of threshold of sesquipedales.

b Mixtum, l. 1.27, w. 0.44, preserved to h. 1.06. This wall-part was almost completely daubed or rebuilt in modern times. At the bottom in the corner with the south wall an authentic part of masonry. Here can be observed that the east and the south wall are contemporary.

South a Mixtum, l. 1.49, w. 0.44, preserved to h. 1.20. *Tesserae* mainly yellow-brown and shaped to fit above, under and next to the teeth of the latericium-door-post. Meas. of *tesserae*: 0.095 x 0.088, 0.084 x 0.093; th. of joints: 0.011, 0.005, 0.015, 0.008 (av. 0.01). Latericium in the mixtum: band of three courses along the bottom of the wall, door-post at west end with only at the east side two teeth of three courses each. Distance between band and tooth 0.285, between the teeth 0.306. W. of door-post 0.295, l. of teeth 0.300, 0.306, th. of teeth 0.173, 0.168. Bricks pink-red, a few yellow, mainly fresh. Meas. of bricks: l. 0.215, 0.178 (av. 0.196); l. 0.072, 0.10 (av. 0.086); th. 0.036, 0.041 (av. 0.038); th. 0.032, 0.04 (av. 0.036); th. of joints: 0.015, 0.018, 0.017, 0.022 (av. 0.018). Modulus: 0.275. Mortar dark-grey, badly sieved, a lot of dark-grey and black pozzolana. Other granules: a few small pieces of lime, some small pieces of pottery. The mortar is soft. Masonry: latericium rather regular, reticulatum fairly irregular.

b Blocked doorway in reticulatum, l. 1.46, w. 0.44. Preserved up to 1.21. *Tesserae* mainly rubiginous-brown, a few yellow-brown. Meas. of *tesserae*: 0.094 x 0.092, 0.097 x 0.10; th. of joints 0.012, 0.02, 0.011, 0.008 (av. 0.013). Mortar light-grey, reasonably sieved, not much pozzolana, mainly rubiginous-brown and dark-brown and at places dark-grey. Other granules: rather large pieces of marble. The mortar is reasonably hard. Masonry rather irregular.

c Mixtum, l. 3.27, w. 0.46, preserved up to 1.25. *Tesserae* mainly yellow-brown and shaped to fit above, under and next to the teeth of the latericium-posts. Meas. of *tesserae*: 0.097 x 0.094, 0.09 x 0.09;

th. of joints: 0.011, 0.018, 0.019, 0.015 (av. 0.016). Latericum in the mixtum: band of three courses along the bottom of the wall, door-post with only at the west side two teeth of three courses each. Distance between band and tooth 0.285, between the teeth 0.295. W. of door-post 0.31, th. of teeth 0.183, l. 0.280, 0.314. Latericum-post against column b with a tooth of three courses. W. of post 0.492, th. of tooth 0.187, l. 0.294. Bricks in the door-post and band along the bottom of the wall pink-red; in the post against column b also orange and yellow, mainly fresh. This post was daubed in modern times and could be modern for a great part. Meas. of bricks: l. 0.21, 0.184 (av. 0.197); l. 0.092, 0.082 (av. 0.087); th. 0.044, 0.036, 0.04, 0.039 (av. 0.04); th. of joints 0.018, 0.02, 0.021, 0.016 (av. 0.019). Modulus: 0.285. Mortar and masonry: see a.

C. ---

D. One beamhole through the entire wall in north a, 3.12-3.25 x 1.10-1.24; beneath this beamhole there is some sort of niche hewn in the wall with at the bottom some extra vittatum put in later with brown, well sieved mortar, 3.12-3.56 x 0.76-1.20. In north a also a high putlog-hole, 5.00-5.14 x 2.15-2.27. E. In the north-east corner a remnant of plaster.

ROOM 2

A. 3.61; 3.69; 3.60; 3.62.

B. North a Vittatum A, l. 0.59, w. 0.44. Like room 1, north a and b. Meas. of tufelli: l. 0.225, 0.18, 0.23, 0.12 (av. 0.196); th. 0.08, 0.07, 0.075 (av. 0.075). Meas. of bricks: l. 0.232, 0.295, 0.143 (av. 0.223); th. 0.042, 0.038, 0.02 (av. 0.033); th. of joints: 0.042, 0.026, 0.02 (av. 0.029); 1+1: 0.132, 0.157 (av. 0.144). At h. 0.24 a double course of tufelli; upper side of lower course is at the level of the beginning of the raised threshold. At a height of 1.60 a double course of bricks; apparently this is the result of the irregular way the masonry was laid.

Doorway to corridor 17, w. 0.85, h. 1.87. Remnants of a raised threshold preserved up to 0.31 above the course of sesquipedales at the bottom of the wall. The vittatum seems to continue underneath the threshold. Above the doorway a lintel of modern concrete; above this an arch of bricks (l. 0.346, 0.40, 0.334 (av. 0.360)). The arch is filled up with modern vittatum. b Vittatum A, l. 2.17, w. 0.45. Like a. Meas. of tufelli: l. 0.22, 0.176, 0.16 (av. 0.185); th. 0.068, 0.072, 0.074 (av. 0.071). Meas. of bricks: l. 0.18, 0.173, 0.21 (av. 0.188); th. 0.04, 0.035, 0.035 (av. 0.036); th. of joints 0.048, 0.026, 0.024 (av. 0.033). At the bottom of the wall sesquipedales protruding 0.080/0.097; w. 0.041/0.05, av. l. 0.434.

East a Vittatum B (one course of bricks, two courses of tufelli, one course of bricks), l. 3.69, w. c. 0.45. Although the vittatum differs this wall is contemporary with the north wall. The mortar of both walls joins in the corner. The tufelli are of all kinds of colours. Meas. of tufelli: l. 0.195, 0.215, 0.155 (av.

0.188); th. 0.074, 0.08, 0.076 (av. 0.077). Bricks orange, brown-red, red, pink, light-pink, dark-yellow and yellow, fresh and reused. Meas. of bricks: l. 0.17, 0.123, 0.137 (av. 0.143); th. 0.037, 0.03, 0.027 (av. 0.031); th. of joints 0.023, 0.03, 0.032, 0.04 (av. 0.031); 1+1+1: 0.23, 0.233 (av. 0.232); 1+1+1+1: 0.289, 0.295 (av. 0.295). Mortar light-grey (at places yellowish grey), badly sieved, brown, grey, black, rubiginous-brown and a little bit of red pozzolana. Other granules: charcoal, glass, pottery, pieces of brick, marble and lime, mosaic-tesserae, bone. The mortar is tenacious and hard. At places pink-yellow grey daubing preserved, well sieved and almost without granules. Masonry: although the meas. of the stones can differ quite a lot the masonry looks rather regular. The courses lie quite straight.

South a Mixtum, l. 1.20, w. 0.44. Preserved up to 1.577, raising up to c. 2.00 against the east wall. This wall is earlier than the east wall in vittatum B. Tesserae mainly yellow-brown and made to fit next to, above and under the teeth of the latericum-posts and shaped into triangles beneath the sesquipedales. Meas. of tesserae: 0.10 x 0.098, 0.093 x 0.103, 0.10 x 0.10; th. of joints: 0.011, 0.015, 0.018, 0.02 (av. 0.016). Latericum in the mixtum: door-post at west end with two teeth and the remnants of a third just above the sesquipedales. Band of two or more courses of bricks along the bottom of the wall. Course of sesquipedales at 1.24 from the bottom. Distance between band and tooth 0.293, between both teeth 0.30, between tooth 2 and sesquipedales 0.287. W. of door-post 0.295, th. of teeth 1 and 2 (both of three courses) 0.18, 0.170, th. of tooth 3 (of five courses) 0.292, l. of teeth 0.278, 0.29, 0.30. Bricks pink-red, a few yellow and orange-red, mainly fresh. Meas. of bricks: l. 0.20, 0.154, 0.144, 0.275 (av. 0.193); th. 0.042, 0.035, 0.04, 0.04 (av. 0.039); th. of joints: 0.02, 0.025, 0.017, 0.015 (av. 0.019). Modulus: 0.284, 0.273 (av. 0.279). Mortar dark-grey, rather badly sieved, much dark-grey and black pozzolana, a little bit of dark-brown. Other granules: at places a pebble. The mortar is fairly soft, between the latericum harder. Masonry: latericum rather regular, reticulatum less regular.

Doorway to room 3, w. 1.17. Threshold or substructure of threshold of sesquipedales, that continue on both sides of the doorway beneath the wall and protrude 0.010 from the wall.

b Mixtum, l. 1.23, w. 0.46, preserved up to 1.12. Tesserae mainly yellow-brown and shaped to fit next to, under and above the teeth of the latericum post. Meas. of tesserae: 0.095 x 0.095, 0.093 x 0.091; th. of joints: 0.019, 0.017, 0.016, 0.022 (av. 0.019). Latericum in the mixtum: band of two or more courses along the bottom of the wall, door-post at east end with two teeth. Distance between band and first tooth 0.303, between the teeth 0.303. W. of door-post 0.32/0.30, th. of teeth 0.187, 0.165, l. of teeth 0.31, 0.295. Bricks pink-red, a few yellow and

orange, mainly fresh. Meas. of bricks: l. 0.175, 0.22, 0.182, 0.141 (av. 0.18); th. 0.041, 0.041, 0.043, 0.039 (av. 0.041); th. of joints: 0.02, 0.017, 0.025, 0.019 (av. 0.02). Modulus: 0.275. Mortar: like a, near the bottom of the door-post a lot of red pozzolana. Masonry: like a

West a Mixtum, l. 1.24, w. 0.44, preserved up to 1.06. See J, east b. Probably for a great deal rebuilt in modern times.

Doorway to room 1. See J, east.

b Mixtum, l. 1.20, w. 0.44. See J, east a. Modulus of latericium in mixtum: 0.277, 0.288.

C. ---

D. Large blocked hole in north wall, 2.77-3.02 x 2.09-2.51, five scaffolding-holes in east wall (av. h. 1.36-1.47).

E. Against north wall remnants of pink-grey plaster, not very well sieved, with granules of all kind of colours. Against west wall remnants of rather rough plaster with a lot of small pieces of brick.

ROOM 3

A. 10.00; 4.245; 7.91; 4.73.

B. North a Mixtum, l. 3.03, w. 0.46, preserved up to 1.25. Like J, south c. W. of latericium-post against column b 0.29. Modulus: 0.29, 0.30.

b Reticulatum, l. 1.46, w. 0.44, preserved up to 1.21. Like J, south b.

c Mixtum, l. 3.15, w. 0.44/0.46, preserved up to 1.20/1.12. Like J, south a and 2, south b. Modulus: 0.261, 0.275

Doorway to room 2, w. 1.17. See 2, south doorway.

d Mixtum, l. 1.19, w. 0.44, preserved up to 1.57, rising up to c. 2.00 against east wall. Like 2, south a. Modulus: 0.28.

East a Vittatum B, l. 4.245, w. c. 0.45. Entirely like 2, east. The mortar of this wall is smeared against the *tesserae* of the north wall in the north-east corner. The east wall is therefore later than the north wall. The wall is also put against the south wall and is therefore also later than the south wall.

South a Mixtum, l. 2.21, w. 0.46. *Tesserae* mainly yellow-brown and shaped to fit next to, above and beneath the teeth of the latericium-post and shaped to triangles beneath the sesquipedales. Meas. of *tesserae*: 0.10 x 0.094, 0.094 x 0.094, 0.080 x 0.088; th. of joints: 0.014, 0.012, 0.015, 0.02 (av. 0.015). Latericium in the mixtum: band of three courses of bricks along the bottom of the wall, door-post at west end with three teeth, courses of sesquipedales at 1.20 and 2.43 from the band along the bottom. Distance between both courses 1.191, distance between band and first tooth 0.305, between first and second tooth 0.284, between second tooth and sesquipedales 0.305, between sesquipedales and third tooth 0.333 and between third tooth and second course of sesquipedales 0.59. W. of door-post 0.325/0.30, th. of first and second tooth (three courses) 0.18, 0.183, th. of third tooth (five courses) 0.285, l. of teeth 0.29,

0.29, 0.30. Bricks mainly pink-red, a few light-pink, mainly fresh; sesquipedales yellow and pink, w. 0.037, 0.039. Meas. of bricks: l. 0.195, 0.194, 0.205 (av. 0.198); l. 0.095, 0.083, 0.107 (av. 0.095); th. 0.043, 0.035, 0.045, 0.038, 0.043, 0.044 (av. 0.041); th. of joints: 0.017, 0.019, 0.012 (av. 0.016). Modulus: 0.279, 0.276. Mortar: dark- to light-grey, rather badly sieved, a lot of dark-grey and black pozzolana, also dark-brown. Other granules: a few pebbles and a few small pieces of lime. The mortar is at places hard. Above the first course of sesquipedales finer daubing of the same nature as the mortar has been preserved. Masonry: latericium rather regular, reticulatum less regular; *tesserae* not always hewn and placed neatly. The diagonal lines of the reticulatum are not always in a perfect angle of 45 degrees.

b Vittatum A, l. 0.61, w. 0.46. Narrowing of doorway to room 4. The tufelli are brown, yellow-brown, orange-brown and dark-brown. Meas. vary considerably: l. 0.179, 0.255, 0.098 (av. 0.177); th. 0.09, 0.103, 0.070 (av. 0.088). Bricks orange-yellow, yellow, orange and pink, both fresh and reused, also tiles. Meas. of bricks: l. 0.183, 0.205, 0.152 (av. 0.18); th. 0.038, 0.032, 0.035, 0.028, 0.026 (av. 0.032); th. of joints: 0.019, 0.021, 0.023, 0.026 (av. 0.022); 1+1: 0.169, 0.135 (av. 0.152); 1+1+1: 0.207, 0.172 (av. 0.189). Mortar: light-grey, badly sieved, little pozzolana, brown, grey and black. Other granules: pebbles of different sizes and colours, mosaic-*tesserae*, pieces of marble. The mortar is not very hard. Masonry: at places very irregular, caused by placement and varying meas. of the stones.

c Latericium, l. 0.88, w. 0.46. Blocking of narrowed doorway to room 4. The mortar of c is smeared against b, so c is later than b. Bricks orange, pink-red, yellow, pink-yellow, pink, both fresh and reused. Meas. of bricks: l. 0.25, 0.267, 0.218, 0.20 (av. 0.234); th. 0.028, 0.028, 0.032, 0.038 (av. 0.032); th. of joints: 0.023, 0.022, 0.028 (av. 0.024). Modulus: 0.253, 0.262 (av. 0.258). Mortar: reddish grey, rather badly sieved, a lot of red, brown and black pozzolana (many small and a few large granules). Other granules: a lot of small pieces of marble and lime, at places pebbles. At many places a very smooth and well sieved daubing of which the colour varies between whitish and reddish grey. Masonry: the courses of bricks are laid regularly and run fairly horizontal.

From the ground till 0.46 c is in opus incertum with square and rectangular tufelli of varying sizes. The mortar seems to be the same as the mortar higher in the wall, yet a separation is not impossible.

Above b and c, probably caused by the removal of the lintel, the wall slightly sagged. To avoid further sagging the open space of the lintel (so also partly in a and d) was filled in with *tesserae* placed horizontally instead of diagonally. Partly over b and entirely over c two reused sesquipedales were placed

beneath the *tesserae*. The mortar of this part: light-grey, very badly sieved with hardly any pozzolana. Other granules: small pieces of marble, large pieces of pottery, small pieces of tufa, all kinds of pebbles. The mortar is reasonably hard.

d Mixtum, l. 3.93, w. 0.46. Like a. *Tesserae* mainly yellow-brown, above the sesquipedales also orange-brown; shaped to fit next to, above and underneath the teeth of the latericium-posts and shaped to triangles beneath the sesquipedales. Meas. of *tesserae*: 0.090 x 0.094, 0.091 x 0.092; th. of joints: 0.018, 0.015, 0.01, 0.01, 0.015 (av. 0.014). Latericium in the mixtum: band of three courses along the bottom of the wall (lowest course of sesquipedales), sesquipedales at 1.185 from the band along the bottom, traces of a second course of sesquipedales at 2.44 from the band. Distance between both courses 1.184. Door-post at east end with three teeth. Distance between band and first tooth 0.31, between first and second tooth 0.295, between second tooth and sesquipedales 0.283, between third tooth and sesquipedales 0.295. W. of door-post 0.30, th. of first and second tooth (three courses) 0.17, 0.159, th. of third tooth (five courses) 0.286. L. of teeth 0.296, 0.30, 0.30. Door-post at west end against column c: 0.38/0.40; w. of door-post against b: 0.29/0.30. Distance between band and first tooth 0.305, between first and second tooth 0.284, between second tooth and sesquipedales 0.297 and between sesquipedales and third tooth 0.32. W. of door-post 0.305, th. of first and second tooth (three courses) 0.18, 0.172, th. of third tooth (five courses) 0.31. L. of teeth 0.285, 0.30, 0.27. Bricks pink-red, a few yellow and orange, mainly fresh. Meas. of bricks: l. 0.195, 0.195, 0.21 (av. 0.20); l. 0.097, 0.087, 0.092 (av. 0.092); th. 0.035, 0.04, 0.038, 0.045 (av. 0.04); th. of joints: 0.017, 0.016, 0.014, 0.02 (av. 0.017). Modulus: 0.271, 0.275, 0.272 (av. 0.273). Mortar: like in a, at places also lighter grey and more brown pozzolana. Modern daubing against column c. Masonry: like a.

Below the latericium-band along the bottom of the wall in the hole around column c a stretch of opus incertum can be seen. The mortar resembles that of the mixtum above the band. H. of this stretch of incertum 0.71. Underneath the incertum a stretch of reticulatum (h. 0.395) can be seen. Between the incertum and the reticulatum is a course of bricks belonging to the period of the incertum. The colour of the reticulatum-*tesserae* is hard to determine due to moss and decay. Meas. of *tesserae*: 0.095 x 0.095, 0.102 x 0.10; th. of joints: 0.08, 0.08, 0.07, 0.09 (av. 0.08). Mortar: reddish; difficult to study into detail due to mould and decay. Masonry: regular diagonal lines.

C. One basalt-block can be seen, probably from room 8.

D. In north wall one beamhole: 9.37-9.55 x 1.50-1.72. In east wall three lower beamholes: 0.00-0.19 x 1.63-1.85, 1.98-2.20 x 1.57-1.74, 2.93-3.05 x 1.09-

1.27; two higher beamholes: 0.15-0.34 x 1.89-2.05, 1.025-1.185 x 1.87-2.01, line of six scaffolding-holes (five filled in, one through the wall) av. h. 1.47-1.58. In south wall three beamholes to the left of blocked doorway: 0.41-0.63 x 1.54-1.70, 1.18-1.36 x 1.53-1.70, 1.90-2.06 x 1.53-1.70; two to the right: 3.97-4.08 x 1.47-1.64, 4.78-4.92 x 1.48-1.65; one near column c: 6.94-7.10 x 1.50-1.69. In the narrowing of the doorway in vittatum is a larger hole: 2.36-3.51 x 1.86-2.00; in right door-post: 3.775-3.89 x 0.94-1.17. To the left of the doorway are two larger holes filled in with the same mortar as used for the sloppy restoration above the blocked doorway: 0.00-0.35 x 2.23-2.40, 0.99-1.19 x 2.15-2.38. Two rectangular holes against the east wall: 0.00-0.45 x 0.99-1.13, 0.00-0.42 x 0.67-0.75.

E. A basalt-block probably coming from the floor in room 8; a travertine column-drum with fluting, diam 0.87, h. 0.62.

ROOM 4

A. 10.084; 1.40; 10.25; 1.53.

B. North a Mixtum, l. 4.01, w. 0.46. Like 3, south d. Meas. of *tesserae*: 0.098 x 0.095, 0.105 x 0.103; th. of joints: 0.015, 0.013, 0.01, 0.018, 0.013, 0.008 (av. 0.013). W. of post against column c: 0.38/0.40; w. of door-post against b: 0.29/0.30. Modulus: 0.293, 0.299, 0.273, 0.285, 0.262 (av. 0.282). Mortar: like 3, south d, but at places some more brown pozzolana.

b Latericium, l. 0.88, w. 0.46. Like 3, south c. Th. of joints: 0.027, 0.024, 0.03 (av. 0.027). Modulus: 0.277, 0.256 (av. 0.267).

c Vittatum A, l. 0.60, w. 0.46. Like 3, south b. Th. of joints: 0.031, 0.025, 0.014 (av. 0.023); 1+1: 0.139, 0.146 (av. 0.143). Mortar: like 3, south b, but a little more pozzolana: light- and dark-brown and a little black.

d Mixtum, l. 5.35, w. 0.46/0.45. Like 3, south a. *Tesserae* mainly yellow-brown towards the west and orange-brown towards the east; carelessly shaped to fit beneath the sesquipedales and beneath and above the teeth of the latericium-posts. Meas. of *tesserae*: 0.10 x 0.094, 0.096 x 0.101, 0.098 x 0.10; th. of joints: 0.015, 0.018, 0.009, 0.019, 0.015, 0.016 (av. 0.015). Latericium in the mixtum: like 3, south a. Bricks mainly fresh, at places reused. W. of post against c: 0.295/0.30; w. of post at east end: 0.28/0.305. Both have teeth like 3, south a and c. Modulus: 0.329, 0.276, 0.297, 0.297 (av. 0.30). Mortar: towards the west like 3, south a; towards the east the mortar becomes lighter and contains more brown pozzolana. Below the sesquipedales at places also reddish grey mortar with red pozzolana, especially in the post at the east end. This reddish mortar contains fewer small pieces of lime. Masonry: like 3, south a. From 1.40 upwards in the latericium-post at the east end of the wall there is a restoration getting wider towards the top of the wall. The restoration is in latericium and contains fresh and

reused bricks and tiles of all kinds of colours and sizes. Modulus: 0.241, 0.291 (av. 0.266). The mortar is mainly light-grey with brown and black discolourations; relatively little pozzolana (brown, black and some red). Many other granules: pieces of brick, pieces of lime and pebbles. The mortar is reasonably hard.

East Opening to room 8, l. 1.40.

South a Mixtum, l. 3.42, w. 0.45. Entirely like north a and d. *Tesserae* mainly yellow-brown, at places orange-brown, carelessly shaped to fit beneath the sesquipedales and beneath and above the teeth. Meas. of *tesserae*: 0.097 x 0.10, 0.10 x 0.098; th. of joints: 0.018, 0.014, 0.008, 0.012, 0.015, 0.009 (av. 0.013). Latericum in the mixtum: band along the bottom of the wall not visible. Two courses of sesquipedales; distance between them 1.225. Post at east end with five teeth; distance between first and second tooth 0.265, between second tooth and sesquipedales 0.234, between sesquipedales and third tooth 0.313, between third and fourth tooth 0.302, between fourth tooth and second course of sesquipedales 0.035 (one thick joint), between sesquipedales and fifth tooth 0.335. W. of post 0.755/0.76, th. of first and second tooth (three courses) 0.165, 0.16, of third and fourth tooth (five courses) 0.295, 0.315, of fifth tooth only two courses of bricks preserved. L. of teeth: 0.29, 0.305, 0.295, 0.34, 0.305. Door-post against b with five teeth. Distance between first and second tooth 0.30, between second and third tooth 0.22, between third tooth and sesquipedales 0.133, between sesquipedales and fourth tooth 0.315, between fourth and fifth tooth 0.31, between fifth tooth and sesquipedales 0.23. W. of door-post 0.295/0.30. Th. of first, third and fifth tooth (two courses of bricks; fifth tooth is beneath the lintel of the doorway) 0.11, 0.105, 0.115; of second tooth (three courses) 0.175; of fourth tooth (five courses) 0.275. L. of teeth 0.265, 0.292, 0.285, 0.315, 0.305. Bricks pink-red, a few yellow, mainly fresh. Modulus: 0.298, 0.256, 0.282, 0.27 (av. 0.277). Mortar: below the lower course of sesquipedales like north a and d; above the sesquipedales the mortar is lighter with more and often exclusively red-, light- and dark-brown pozzolana. Other granules: small pieces of lime and pebbles. In the post at the east end mainly red and red-brown pozzolana and no small pieces of lime. Masonry: like north a and d

In the latericum-post at the east end at h. 1.10 a part of the restoration of the wall between rooms 5 and 8: till 2.11 latericum with bricks of all kinds of colours and sizes. Modulus: 0.265, 0.263. Above this vittatum A, which is identical to the vittatum of the restoration of the wall between rooms 5 and 8. For a description see 5, east. Above the latericum-door-post at the west end of a the arch of the lintel seems to be filled in with the same vittatum as b.

b Vittatum A, l. 0.62, w. 0.45. Narrowing of doorway. Tufelli of several colours, carelessly hewn.

Meas. of tufelli: l. 0.26, 0.185, 0.25, 0.16 (av. 0.214); th. 0.065, 0.075, 0.078 (av. 0.073). Bricks of all kinds of colours and sizes. The thin bricks seem to be fresh. Meas. of bricks: l. 0.215, 0.215, 0.18, 0.168, 0.12 (av. 0.179); th. of joints: 0.012, 0.016, 0.023 (av. 0.017); 1+1: 0.14, 0.143, 0.135 (av. 0.139); 1+1+1: 0.17, 0.168 (av. 0.169). Mortar: light-grey, at places yellowish grey and dark-grey, very badly sieved, relatively little pozzolana (black, brown and grey). Other granules: small pieces of marble, pebbles, mosaic-*tesserae*, small pieces of brick.

Masonry irregular.

Doorway, w. 0.83. Till top of door-post 2.09. Traces of rough opus caementicium at the place of the threshold.

c Mixtum, l. 4.42, w. 0.45. *Tesserae* mainly yellow-brown, also orange, carelessly shaped to fit below the sesquipedales and below and above the teeth. Meas. of *tesserae*: 0.093 x 0.092, 0.10 x 0.106; th. of joints: 0.01, 0.017, 0.013, 0.008 (av. 0.012). Latericum in the mixtum: band along the bottom of the wall not visible. Two courses of sesquipedales in the wall; distance between them 1.223. Door-post at east end with five teeth. Distance between first and second tooth 0.30, between second and third tooth 0.28, between third tooth and sesquipedales 0.147, between sesquipedales and fourth tooth 0.21, between fourth and fifth tooth 0.285, between fifth tooth and sesquipedales 0.605. Above the door-post no more teeth. W. of door-post 0.315; th. of first and third tooth (two courses) 0.105, 0.11, of second, fourth and fifth tooth (three courses) 0.168, 0.185, 0.158. L. of teeth 0.305, 0.30, 0.278, 0.292, 0.29. Post at west end with four teeth. Distance between first and second tooth 0.298, between second tooth and sesquipedales 0.282, between sesquipedales and third tooth 0.028 (one thick joint), between third and fourth tooth 0.315. W. of post 0.75, th. of teeth (three courses) 0.178, 0.158, 0.185, 0.182. L. of teeth 0.373, 0.378, 0.31, 0.285. Courses of sesquipedales continue into the posts. In the post at the west end at h. 0.69 part of the rebuilding of the facade (west facade d). Meas. of bricks: l. 0.21, 0.222, 0.195 (av. 0.209); l. 0.135, 0.13, 0.11 (av. 0.125); th. 0.041, 0.042, 0.043, 0.038, 0.038, 0.04 (av. 0.04); th. of joints: 0.017, 0.01, 0.015, 0.02, 0.023 (av. 0.017). Modulus: 0.252, 0.29, 0.265, 0.272 (av. 0.27). Mortar: dark-grey, badly sieved; black, grey and brown pozzolana. Other granules: small pieces of lime, at places a pebble. The mortar is reasonably hard. Masonry: not very regular; *tesserae* not always placed carefully. The diagonal lines are not always in an angle of 45 degrees. The latericum looks rather regular.

In the hole around column c and in front of the entrance of room 4 is visible that the latericum of this wall continues 0.58 downwards; below is opus incertum of the same period.

West, opening to Cardo Maximus, w. 1.53. The hole around column c continues along the width of the

opening of room 4, so that no threshold has been preserved.

C. ---

D. Above second course of sesquipedales in north a five holes with traces of filling-in: 5.03-5.13 x 2.62-2.69, 5.44-5.60 x 2.67-2.79, 6.05-6.24 x 2.67-2.80, 6.69-6.84 x 2.69-2.82, 7.61-7.76 x 2.69-2.83. Also in south a three holes: 1.33-1.54 x 2.66-2.78, 1.91-2.03 x 2.65-2.78, 2.40-2.62 x 2.65-2.78. In north wall above north c scaffolding-hole with little arch of *tesserae*: 4.78-4.96 x 2.52-2.66. Above north c₂ and d the place of the original lintel has been filled in with horizontally placed reticulatum-*tesserae* at a height of 2.52-2.66. In south c above the second course of sesquipedales two holes with traces of filling-in: 5.45-5.57 x 2.65-2.79, 5.96-6.11 x 2.64-2.75. In north b and c L-shaped holes for a beam to block the passage through the corridor: 3.25-3.54 x 1.12-1.39, 3.97-4.40 x 1.025-1.28; opposite these holes two corresponding holes in south d: 5.96-5.88 x 1.04-1.35, 6.58-6.84 x 1.04-1.35.

E. ---

ROOM 5

A. 9.29; 4.32; 6.19; 5.10.

B. North a Mixtum, l. 4.89, w. 0.45. Entirely like 4, south c including the latericum-posts. W. of post at west end 0.305, modulus 0.30, 0.278 (av. 0.289). W. of post at east end 0.295/0.285, modulus 0.28.

Doorway to room 4. See 4, south.

b Vittatum A, l. 0.61, w. 0.45. Entirely like 4, south b.

c Mixtum, l. 2.93, w. 0.45. Entirely like 4, south a. W. of latericum door-post at west end 0.305, modulus 0.275, 0.25 (av. 0.262). W. of post at east end 0.295/0.285, modulus 0.288, 0.262 (av. 0.275).

East a Till 1.30 mixtum, above vittatum A, l. 1.49, w. 0.44. Mixtum connected to and completely like north c. Meas. of *tesserae*: 0.098 x 0.097, 0.098 x 0.10; th. of joints: 0.015, 0.008, 0.01 (av. 0.011). W. of latericum-post at north end 0.30, modulus 0.265, 0.29 (av. 0.277). W. of door-post at south end 0.293/0.30, modulus 0.267, 0.275 (av. 0.271). Vittatum A. Tufelli are mainly square and are reused reticulatum-*tesserae*. Meas. of tufelli: l. 0.07, 0.075, 0.08 (av. 0.075); th. 0.07, 0.075, 0.08 (av. 0.075). Some rectangular: l. 0.155, 0.21 (av. 0.183); th. 0.075, 0.068 (av. 0.072); th. of joints: 0.03, 0.027, 0.035 (av. 0.031). Bricks of all kinds of colours and sizes, fresh and reused. 1+1: 0.155, 0.157, 0.16 (av. 0.157); 1+1+1: 0.181, 0.186, 0.185 (av. 0.184). Mortar: light- and dark-grey, badly sieved. Black, red, brown, dark-brown and grey pozzolana. Other granules: pebbles, pieces of pottery, glass, marble and brick, mosaic-*tesserae*. The mortar is hard. A daubing has been preserved: light-pink grey, very well sieved. Red, black, brown, dark-brown and grey pozzolana (very small granules). Masonry: although the sizes of the bricks vary the courses run straight

and the masonry looks regular.

Doorway to room 8, w. 1.33, h. 1.965. The lintel is of modern concrete with on top an arch of bricks. Bricks of varying colour and thickness. Between lintel and arch modern latericum.

b Till 1.30 mixtum, above vittatum A, l. 1.50, w. 0.44. Like a. Mixtum: *tesserae* mainly yellow-brown, carelessly shaped to fit above and below the teeth of the latericum-posts. Meas. of *tesserae*: 0.095 x 0.098, 0.088 x 0.092; th. of joints: 0.006, 0.017, 0.015 (av. 0.013). Latericum in the mixtum: band along the bottom of the wall not visible. Door-post at north end with three teeth. Distance between first and second tooth 0.286, between second and third tooth 0.26. W. of door-post 0.297. First and second tooth of three courses of brick, third tooth of four courses. No latericum-post at south end. Just below vittatum part of course of sesquipedales visible (not in a). Vittatum A: entirely like a.

South Mixtum, l. 6.19, w. 0.47. *Tesserae* mainly yellow-brown and carelessly shaped to fit below the sesquipedales and below and above the teeth of the latericum-posts. Meas. of *tesserae*: 0.101 x 0.103, 0.094 x 0.093; th. of joints: 0.016, 0.007, 0.014, 0.01, 0.007, 0.015 (av. 0.012). Latericum in the mixtum: band of three courses along the bottom of the wall. Two courses of sesquipedales in the wall. Distance between band along bottom and sesquipedales 1.40. Distance between courses of sesquipedales 1.18. At east end no latericum-post. Post at west end with four teeth. Distance between band and first tooth 0.27, between first and second tooth 0.272, between second tooth and sesquipedales 0.34, between sesquipedales and third tooth 0.322, between third and fourth tooth 0.26. W. of post 0.45/0.38 (above the first course of sesquipedales the post is even wider than 0.48). Th. of first and second tooth (three courses) 0.15, 0.16, of third tooth (five courses) 0.285. L. of teeth 0.31, 0.30, 0.31. Fourth tooth has partly crumbled. Bricks pink-red, at places yellow, fresh and at places reused. Bricks are like in 4, south a and c. Modulus: 0.30, 0.273 (av. 0.287). Mortar: light grey, rather badly sieved. Mainly dark-grey and black pozzolana, occasionally brown. Other granules: small pieces of lime, occasionally a pebble. The mortar is reasonably hard. Masonry: Rather irregular; *tesserae* hewn and placed rather carelessly. The diagonal lines are not in a perfect angle of 45 degrees. The latericum is rather regular.

The west end of the wall continues in the hole around column d. At the place where the antique floor-level could be expected we see yet another latericum-tooth or band, that disappears behind the wall of the hole. At 0.30 below this a latericum-band is visible consisting of two courses of bricks above one course of sesquipedales. The mortar of this band seems to correspond with the mortar in the overlying masonry. Beneath the latericum-band is reticulatum with red mortar, which cannot be studied into detail

due to moss and decay. Meas. of *tesserae*: 0.096 x 0.088, 0.095 x 0.089. The reticulatum continues underneath the column-base and abuts the wall-part in latericium, see west facade e. The reticulatum has been broken away rather roughly in order to make place for the column-base. Directly below the column-base the mortar is dark-grey/black, smeared on top of the red mortar of the latericium underneath. West, opening to Cardo Maximus with threshold-stones, see west facade.

a Latericium, l. 1.355, w. 0.52. See west facade d. This wall-part has been set against the north wall and is therefore later. Th. of joints: 0.02, 0.027, 0.022, 0.017 (av. 0.022). Modulus: 0.238, 0.247 (av. 0.243). C. ---

D. In north a one beamhole: 3.73-3.93 x 2.54-2.75; one filled-in scaffolding-hole: 1.23-1.34 x 2.38-2.50; one filled-in hole where the lintel must have been: 4.37-4.56 x 2.36-2.59; one fairly large but shallow hole: 2.62-3.25 x 0.98-1.35. In north b L-shaped hole: 6.16-6.34 x 2.05-2.21. In north c four scaffolding-holes with traces of filling in, two with arches of *tesserae*: 7.67-7.79 x 2.64-2.79, 7.85-7.98 x 2.60-2.78, 8.07-8.22 x 2.64-2.75, 8.32-8.43 x 2.64-2.77; two beamholes: 6.99-7.18 x 2.33-2.48, 7.70-7.88 x 2.33-2.57; one large hole that could have been two beamholes: 7.98-8.69 x 2.21-2.65. In east wall four scaffolding-holes in the vittatum: 0.14-0.25 x 2.46-2.57, 0.91-1.01 x 2.43-2.55, 3.16-3.28 x 2.34-2.53, 4.03-4.14 x 2.42-2.52; two of these have traces of filling in. In south wall four filled-in scaffolding-holes with an arch of *tesserae*: 0.18-0.36 x 2.61-2.74, 1.30-1.48 x 2.60-2.73, 2.17-2.30 x 2.60-2.73, 3.12-3.24 x 2.59-2.73; five beamholes (the fifth opposite the narrowing of the doorway in the north wall): 0.00-0.17 x 2.37-2.565, 0.65-0.83 x 2.40-2.58, 1.25-1.44 x 2.36-2.56, 1.99-2.20 x 2.33-2.55, 2.75-2.93 x 2.29-2.47; six holes that seem less important: 0.50-0.59 x 1.96-2.06, 1.45-1.545 x 2.01-2.12, 2.24-2.31 x 2.07-2.14, 2.67-2.80 x 1.88-2.05, 3.67-4.00 x 1.72-1.96, 4.97-5.19 x 1.72-1.90.

E. Some small remnants of plaster on the walls.

ROOM 6/7

A. 10.01; 4.18; 7.87; 4.31.

B. North a Mixtum, l. 6.43, w. 0.47. Entirely like 5, south, but mortar towards the east contains more brown pozzolana. Much fine daubing preserved: dark-, light- and yellowish grey. The daubing is hard. The separation-line between a and b is very irregular. b Vittatum A, l. 3.58, w. 0.47. Entirely like the vittatum in 5, east a and b. The tufelli are reused reticulatum-*tesserae*. Bricks of all kinds of colours, except pink-red, and sizes. Th. of joints: 0.027, 0.034, 0.019 (av. 0.027); 1+1: 0.135, 0.165 (av. 0.148); 1+1+1: 0.17, 0.19 (av. 0.18). Mortar: light-grey, whitish, sometimes yellowish, badly sieved, rather little pozzolana (black, light- and dark-brown, occasionally some red and grey). Other granules:

small pieces of marble, pottery and brick, shell, glass, charcoal and pebbles. The mortar is hard. The preserved daubing is whitish and yellowish grey, very well sieved. Masonry: despite the different sizes of the bricks the straight courses are laid with care. The first course of sesquipedales of the mixtum of a is continued in the later vittatum till the doorway.

Doorway to room 8, w. 0.88, h. 1.95. Arch of bricks above doorway. L. of bricks: 0.29, 0.265, 0.27, 0.28, 0.30 (av. 0.28).

c Vittatum A, l. 0.70, w. 0.47. Continuation of vittatum of b. Entirely identical.

East a Vittatum A, l. 4.18, w. 0.47. Forms an entity with north c and is entirely identical. Th. of joints: 0.036, 0.02, 0.026, 0.02 (av. 0.026). Mortar: like north b and c, at places darker grey and containing more pozzolana.

b Vittatum A with rectangular tufelli, l. 0.61, w. 0.45. This is a pier standing against the east and south wall. The tufelli are of all kinds of colours and carelessly hewn. Meas. of tufelli: l. 0.19, 0.15, 0.16, 0.155 (av. 0.164); th. 0.07, 0.052, 0.06, 0.068, 0.07 (av. 0.064); th. of joints: 0.027, 0.028, 0.02, 0.031 (av. 0.027). Bricks of all kinds of colours and sizes; 1+1: 0.154, 0.148 (av. 0.15); 1+1+1: 0.19, 0.18 (av. 0.185). Mortar: light-grey, occasionally darker, rather badly sieved. Rather much pozzolana, black, light- and dark-brown and green. Other granules: small pieces of brick, lime and plaster, shell, glass. The mortar is soft. Masonry: irregular.

South a Vittatum A, l. 0.45, w. 0.61. See east b.

b Latericium, l. 2.75, w. 0.60. This is the north wall of the neighbours to the south, I,XIII,5. Bricks of all kinds of colours and sizes, many reused. Meas. of bricks: l. 0.245, 0.22, 0.197, 0.152, 0.14, 0.207 (av. 0.194); th. 0.026, 0.03, 0.027, 0.025, 0.035, 0.028 (av. 0.029); th. of joints: 0.03, 0.035, 0.025, 0.026, 0.052, 0.023, 0.011 (av. 0.025). Modulus: 0.25, 0.28, 0.252, 0.255 (av. 0.259). Mortar: light-grey, very badly sieved. Large and small granules of black, red and brown pozzolana. Other granules: large pieces of marble, charcoal, pebbles, pottery, pieces of brick. Masonry: very irregular; courses of bricks sometimes simply stop because they do not fit in between the other courses.

c Latericium, l. 1.50, w. 0.47. Bricks dark red and rather thick, mainly fresh, occasionally a reused one. Meas. of bricks: l. 0.23, 0.235, 0.185, 0.24 (av. 0.223); th. 0.042, 0.037, 0.039, 0.048 (av. 0.042); th. of joints: 0.017, 0.019, 0.02, 0.012, 0.014 (av. 0.016). Modulus: 0.285, 0.309, 0.298 (av. 0.297). Mortar: red, rather badly sieved, with much red pozzolana, also light- and dark-brown and grey. Other granules: pebbles and a few small pieces of lime. The mortar is very hard. Masonry: fairly regular; the courses do not always run perfectly straight.

d Latericium, l. 2.01, w. 0.30 and 0.60. Entirely like b. Modulus: 0.263, 0.265 (av. 0.264). Mortar: higher up light-grey like in b, below the mortar becomes

dark-grey and purple with much red and brown pozzolana. Also black, grey and green pozzolana. Other granules: pieces of lime, pebbles. The mortar is very hard and compact.

e Latericum, l. 1.16, w. 0.57. Entirely like c and west facade h. Meas. of bricks: l. 0.225, 0.185, 0.19 (av. 0.20); th. 0.045, 0.039 (av. 0.042). Modulus: 0.255, 0.266 (av. 0.261). Mortar: red like in c, somewhat more light- and dark-brown pozzolana.

West a Latericum, l. 0.30, w. 0.52. Part of south e. Entirely like south c and e.

Opening to Cardo Maximus, w. 3.42. With threshold-stones, see west facade.

b Latericum, l. 0.57, w. 0.52. See west facade g. Modulus: 0.25, 0.252 (av. 0.251). Partly daubed in modern times. In north-west corner still a small part of the column visible.

C. ---

D. In north a three holes all filled in and two with a little arch: 3.05-3.15 x 2.39-2.52, 3.94-4.08 x 2.41-2.55, 4.24-4.68 x 2.41-2.56. Line of four lower holes of which three filled in: 1.18-1.31 x 1.22-1.34, 2.26-2.42 x 1.22-1.33, 5.11-5.31 x 1.22-1.34, 6.20-6.30 x 1.22-1.37. In north b two higher holes at the same height as in north a: 6.84-6.97 x 2.42-2.56, 7.92-8.02 x 2.44-2.54. Two lower holes at the same height as in north a: 6.88-6.97 x 1.23-1.32, 7.96-8.07 x 1.23-1.34. In east wall a line of three higher and five lower scaffolding-holes: 1.19-1.29 x 2.44-2.56, 2.07-2.19 x 2.46-2.56, 3.10-3.27 x 2.46-2.57 and 0.24-0.34 x 1.27-1.38, 1.09-1.19 x 1.26-1.36, 1.84-1.96 x 1.26-1.36, 2.65-2.78 x 1.26-1.35, 3.60-3.70 x 1.26-1.35. In south c one lower hole: 3.94-4.12 x 0.91-1.06 and an indentation at the east side: 3.20-3.17 x 0.96-1.30. At the west side from the ground an indentation 0.12 wide and 1.35 high. Both indentations are covered with a later plaster. South c has been preserved up to a height of c. 2.50, south e up to c. 3.00.

E. Against north a many remains of rough plaster.

ROOM 8

A. 36.88; c. 16.50; 34.73; 15.03.

B. North a Vittatum A, l. 1.08, w. 0.44. Entirely like J, north a and b and 2, north a and b; 1+1: 0.146, 0.152 (av. 0.149); 1+1+1: 0.178, 0.195 (av. 0.187). Mortar has many traces of yellowish grey daubing.

Doorway to corridor 17, h. cannot be measured, w. 3.40; original width is difficult to determine since b has crumbled at its west end.

b Latericum, l. 1.86, w. 0.45. Bricks yellow, light-pink and pink, mainly fresh, a few reused. Meas. of bricks: l. 0.285, 0.26 (av. 0.272); th. 0.037, 0.031, 0.04 (av. 0.036); th. of joints: 0.016, 0.012, 0.018, 0.02 (av. 0.017). Modulus: 0.27, 0.28 (av. 0.275). Mortar: light-grey (a little pink), rather badly sieved. Brown, light-brown and red pozzolana. Other granules: small pieces of lime, at places a pebble. The mortar is reasonably hard. Masonry: not very irregular; the courses run fairly straight but are

somewhat uneven. This wall-part is L-shaped. L. of north-south part: 0.99 (crumbled at north end).

Doorway to corridor 18. H. cannot be measured, w. 2.64. One protruding brick in c could be an indication of a threshold.

c Mixtum, l. 9.08, w. 0.52. *Tesserae* yellow-brown and orange-brown, carelessly hewn. Meas. of *tesserae*: 0.094 x 0.092, 0.093 x 0.093; th. of joints: 0.017, 0.015, 0.01, 0.022 (av. 0.016). Latericum in the mixtum: high latericum-band of twenty-one courses, h. 1.19, along the bottom of the wall. Latericum-band of five courses higher in the wall. Above this two modern courses. Distance between bands 0.93. Latericum-posts at the ends of the wall-part. At west end not preserved high enough to show teeth, w. 0.594. At east end still one tooth visible. Distance between band and tooth 0.35. W. of post 0.594, th. of tooth 0.297 (could be of five courses; the upper two courses are modern), l. of tooth 0.32. Bricks of all kinds of colours except red, mainly fresh. Meas. of bricks: l. 0.251, 0.22, 0.225, 0.195, 0.175 (av. 0.201) (lower band); l. 0.244, 0.21, 0.225 (av. 0.226) (upper band); th. 0.034, 0.035, 0.042, 0.032, 0.032 (av. 0.035) (lower band); th. 0.035, 0.035, 0.03 (av. 0.033) (upper band); th. of joints: 0.02, 0.015, 0.014, 0.023, 0.01 (av. 0.016) (lower band); 0.042, 0.038, 0.035, 0.028, 0.034 (av. 0.035) (upper band). Modulus: 0.261, 0.252, 0.263, 0.281 (av. 0.264) (lower band); 0.325 (upper band). Mortar: light-grey, a little pink, rather badly sieved. Mainly dark- and light-brown pozzolana. Other granules: small pieces of lime and at places a pebble. The mortar is hard. The mortar in the reticulatum seems a little more badly sieved, contains more black pozzolana and is softer. Masonry: irregular. The reticulatum is at places regular, but chiefly irregular with sometimes *tesserae* placed horizontally instead of diagonally. The latericum in the lower band is fairly regular; the latericum in the higher band is more irregular and has thicker joints.

Doorway to corridor 18. H. cannot be measured, w. 1.15. A bipedalis at the bottom of the wall continues into the doorway with on top some protruding bricks, that could have belonged to the threshold.

d Mixtum, l. 17.67, w. 0.52. Continuation of masonry of c. This wall-part has been preserved very poorly: from 13.24 till 24.42 only one course of modern bricks is visible at floor-level. The reticulatum is at the west end entirely daubed in modern times, at the east end partly. *Tesserae* like in c. Meas. of *tesserae*: 0.10 x 0.105, 0.098 x 0.097; th. of joints: 0.022, 0.012, 0.017, 0.013, 0.02 (av. 0.017). Latericum in the mixtum: like in c. Door-post at west end still has one tooth. Distance between band and tooth 0.295. W. of post 0.595, th. of tooth (five courses of bricks) 0.295, l. of tooth 0.305. Post at east end still has one tooth. Distance between band and tooth 0.30. Th. of tooth 0.35, l. of tooth 0.305. Bricks like in c. Meas. of bricks: l. 0.29, 0.28, 0.30, 0.275 (av. 0.286); l.

0.201, 0.105 (av. 0.157); th. 0.038, 0.033, 0.037, 0.035 (av. 0.036); th. 0.045, 0.039 (av. 0.042). Modulus: 0.287, 0.284 (av. 0.286) (at west end); 0.275, 0.257 (av. 0.266) (at east end). Mortar: like in c. In the east end more dark-brown and green pozzolana. Masonry: seems somewhat more irregular than c.

East a Latericum, l. 6.22, w. 0.46. Bricks exclusively yellow, mainly fresh; in the northern half shorter than in the southern half of the wall. Meas. of bricks: l. 0.203, 0.22, 0.225 (av. 0.216) (north part); l. 0.28, 0.282, 0.289, 0.265 (av. 0.275) (south part); th. 0.035, 0.03, 0.036 (av. 0.034) (north part); th. 0.03, 0.025, 0.031, 0.035 (av. 0.03) (south part); th. of joints: 0.025, 0.025, 0.017, 0.018, 0.015, 0.022, 0.015, 0.034 (av. 0.029) (north part); 0.021, 0.023, 0.021, 0.021, 0.021, 0.021, 0.03 (av. 0.022) (south part). Modulus: 0.266, 0.215 (av. 0.241) (north part); 0.286, 0.276, 0.266, 0.275 (av. 0.276) (south part). Mortar: light-grey, at places. Very much and exclusively orange pozzolana. In north part also some dark-, light- and beige-brown pozzolana. Other granules: a few small pieces of lime and pebbles. The mortar is not very hard. In south part a few larger pieces of lime. Masonry: rather regular, although the courses are rather uneven. The north part is more irregular than the south part. In the south part the joints are more regular.

Doorway to room 13, w. 1.49, h. 2.10. The lintel is of modern concrete, above which is a piece of modern latericum.

b Latericum, l. 1.62, w. 0.45. Continuation of masonry of a. Modulus: 0.281, 0.277 (av. 0.279). Mortar: like a.

Doorway to corridor 14, w. 3.19, h. cannot be measured.

c Mixtum, l. 1.69, w. 0.46. This wall-part is completely modern; in the door-post at the south end a small piece of authentic masonry can be seen. Here the bricks are yellow. Modulus: 0.282 Mortar: light-grey with light- and dark-brown pozzolana, rather badly sieved. Other granules: a few small pieces of lime. The mortar is hard.

Doorway to room 15, w. 1.465, h. 1.95. Lintel is of modern concrete, above which is a piece of modern latericum.

d is also the east wall of room 11. Mixtum, l. 3.185, w. 0.46. *Tesserae* mainly yellow-brown and carelessly shaped to fit below the latericum-band, and above and below the teeth. Meas. of *tesserae*: 0.098 x 0.09, 0.094 x 0.092; th. of joints: 0.015, 0.015, 0.008, 0.009, 0.019 (av. 0.013). Latericum in the mixtum: band of six courses of bricks along the bottom of the wall. Band of three courses higher in the wall. Distance between the bands 1.39. Door-post at north end with two teeth. Distance between band and first tooth 0.348, between first and second tooth 0.352, between second tooth and band 0.19. W. of post 0.31, th. of teeth (five courses) 0.265, 0.268, l.

of teeth 0.295, 0.29. Door-post at south end with two teeth. Distance between band and first tooth 0.35, between first and second tooth 0.351, between second tooth and band 0.18. W. of post 0.30, th. of teeth (five courses) 0.275, 0.265, l. of teeth 0.302, 0.285. Bricks mainly yellow, a few pink, mainly fresh. Meas. of bricks: l. 0.30, 0.29, 0.255, 0.285, 0.287, 0.258 (av. 0.279); th. 0.035, 0.03, 0.035, 0.04, 0.031, 0.037 (av. 0.035); th. of joints: 0.018, 0.019, 0.017, 0.02, 0.023, 0.017, 0.015, 0.018 (av. 0.018). Modulus: 0.27, 0.265, 0.275, 0.272, 0.281, 0.265 (av. 0.271). Mortar: light-grey, rather badly sieved, brown, light-brown and orange pozzolana, lower in the wall more black and dark-grey pozzolana. Other granules: small pieces of lime and pebbles. Masonry: rather irregular. The diagonal lines do not run in a perfect angle of 45 degrees; *tesserae* sometimes placed carelessly. Latericum fairly regular.

Doorway to room 16, l. 1.45, the door-post at the south end of d seems to be preserved up to the original height: 1.965.

e is the east wall of room 11. Mixtum, l. 1.45, w. 0.435. This wall-part is connected to the south wall of the complex and is therefore contemporary. *Tesserae* mainly yellow-brown and carelessly hewn. Meas. of *tesserae*: 0.094 x 0.087, 0.087 x 0.087, 0.095 x 0.096; th. of joints: 0.014, 0.011, 0.018, 0.012, 0.015, 0.005, 0.009 (av. 0.012). Latericum in the mixtum: band along the bottom of the wall, of which four courses are visible. Band of three courses higher in the wall. Distance between both bands 1.505. Door-post at north end with two teeth and a small remnant of a third. Distance between band and first tooth 0.34, between first and second tooth 0.345, between second tooth and band 0.314, between band and third tooth only one joint. W. of post 0.307/0.295, th. of first and second tooth (five courses) 0.268, 0.268, th. of third tooth (two remaining courses) 0.16, l. of teeth 0.305, 0.32; l. of third tooth cannot be measured. No latericum-post at south end against the south wall. More pink bricks higher in post, more yellow bricks lower in post. Mainly fresh. Meas. of bricks: l. 0.255, 0.192, 0.274, 0.21, 0.285 (av. 0.243); th. 0.037, 0.04, 0.037, 0.038, 0.034 (av. 0.037); th. of joints: 0.02, 0.021, 0.016, 0.017, 0.016, 0.018, 0.02 (av. 0.018). Modulus: 0.275, 0.272 (av. 0.274). Mortar: dark-grey, at places light-grey, black, dark-brown and dark-grey pozzolana. Other granules: small pieces of lime, pebbles and one small piece of pottery. The mortar is not very hard. Remnants of a fine daubing. Masonry: rather irregular. Reticulatum not always in straight lines; diagonal lines not in a perfect angle of 45 degrees. Latericum has rather uneven courses.

South, opening to room 11, w. 3.45.

a Pier 22, latericum, l. 1.02, w. 0.58. Bricks mainly pink and yellow, mainly fresh, some somewhat concave or convex. Meas. of bricks: l. 0.264, 0.23, 0.242, 0.21 (av. 0.237); th. 0.037, 0.034, 0.036, 0.04

(av. 0.037); th. of joints: 0.027, 0.017, 0.019, 0.018, 0.017 (av. 0.02). Modulus: 0.269, 0.263 (av. 0.266). Mortar: light-grey, rather well sieved, brown, light-brown and some red pozzolana. Other granules: little pebbles and small pieces of lime. Much fine daubing with red and brown pozzolana. Masonry: rather regular with straight courses, which sometimes seem uneven due to convex bricks. Bipedalis from east inwards at 1.245; one course above bipedalis from west inwards.

Between a and b is a hole that seems to be planned because three reticulatum-*tesserae* are placed horizontally instead of diagonally at the end of b. L. of hole: 0.25.

b Reticulatum (maybe mixtum, but cisterns a and b are placed in front of this wall-part so the lower part of it cannot be seen), l. 4.03, w. 0.30. *Tesserae* mainly yellow-brown and carelessly hewn. Meas. of *tesserae*: 0.086 x 0.088, 0.097 x 0.099, 0.091 x 0.093; th. of joints: 0.008, 0.014, 0.012, 0.013, 0.009 (av. 0.011). Mortar: light-grey, rather badly sieved, red, light- and dark-brown pozzolana. Other granules: small pieces of lime and pebbles. The mortar is fairly hard.

In the wall is a niche (w. 0.46; d. 0.15; preserved h. 0.45).

c Pier 21, latericum, l. 1.03, w. 0.595. Entirely like a (pier 22). Not preserved high enough to show bipedales. Th. of joints: 0.018, 0.015, 0.016, 0.019, 0.02 (av. 0.018). Modulus: 0.265, 0.27 (av. 0.268).

d Mixtum, l. 1.89, w. 0.30. This wall-part has crumbled for a large part. *Tesserae* mainly yellow-brown and carelessly hewn. Meas. of *tesserae*: 0.091 x 0.093, 0.092 x 0.086, 0.101 x 0.101. Latericum in the mixtum: rather high band along the bottom of the wall, h. c. 0.60. Bricks mainly pink, a few yellow, mainly fresh. Meas. of bricks: l. 0.259, 0.278, 0.215 (av. 0.251); th. 0.038, 0.036, 0.04 (av. 0.038); th. of joints: 0.016, 0.016, 0.021, 0.018, 0.019 (av. 0.018). Modulus: 0.274. Mortar: light-grey, rather badly sieved, brown, red and a little dark-grey pozzolana. Other granules: small pieces of lime and pebbles. The mortar is not very hard. Masonry: rather irregular; the reticulatum is irregular, the latericum is somewhat less irregular.

e Behind staircase C feature c, see 10. north g.

f Pier 20, latericum, l. 1.04, w. 0.595. Entirely like piers a and c. Th. of joints: 0.018, 0.02, 0.022, 0.019, 0.014, 0.022 (av. 0.02). Modulus: 0.275, 0.277, 0.278, 0.269 (av. 0.275). Two bipedales like in a, at 1.16-1.225.

Doorway to room 10, l. 4.18.

g Pier 19, latericum, l. 1.02, w. 0.59. Entirely like the preceding piers. More red-orange bricks. Meas. of bricks: l. 0.20, 0.196, 0.214 (av. 0.203); th. 0.045, 0.043 (av. 0.044). Modulus: 0.268, 0.269, 0.268 (av. 0.268). One bipedalis starting at 1.27. Mortar: like in preceding columns.

To the east of this pier is a travertine block (l. 0.55,

w. 0.24, h. 0.06 (disappears in the ground)). West of the pier is a travertine block (l. 0.62, w. 0.27, h. 0.23). Section h abuts the travertine block and has crumbled above it. Nevertheless it can be seen that h reached over the block.

h Mixtum, l. 3.22, w. 0.30. This wall-part has crumbled at both ends. *Tesserae* mainly yellow-brown, carelessly hewn and shaped to fit below the latericum-band. Meas. of *tesserae*: 0.106 x 0.106, 0.091 x 0.089, 0.092 x 0.096; th. of joints: 0.013, 0.012, 0.013, 0.006, 0.011, 0.014, 0.006 (av. 0.011). Latericum in the mixtum: band of eleven courses along the bottom of the wall (h. 0.59), below this band opus incertum over 0.17. Band higher in the wall of three courses. Distance between the bands 0.80. Bricks mainly light-pink and light-orange, a few yellow. Meas. of bricks: l. 0.284, 0.28, 0.29, 0.27 (av. 0.281); th. 0.041, 0.036, 0.04, 0.04 (av. 0.039); th. of joints: 0.018, 0.017, 0.012, 0.017, 0.02 (av. 0.017). Modulus: 0.268, 0.272, 0.261 (av. 0.267). Mortar: light-grey, rather badly sieved, red and brown pozzolana. Other granules: small pieces of lime and pebbles. The mortar is not very hard. In the reticulatum the mortar is at places also dark-grey with more black pozzolana. Remnants of a finer daubing. Masonry: rather irregular; *tesserae* carelessly placed, latericum somewhat more regular.

i Pier 18, latericum, l. 1.33, w. 0.60. This one is more irregular than the preceding piers. Bricks mainly light-orange and light-pink, a few yellow, mainly fresh, but also quite a few reused bricks. Meas. of bricks: l. 0.295, 0.29, 0.27, 0.28 (av. 0.281); th. 0.036, 0.038, 0.038, 0.04 (av. 0.038); th. of joints: 0.02, 0.019, 0.015, 0.013, 0.017 (av. 0.017). Modulus: 0.278, 0.273 (av. 0.276). From west inwards one complete bipedalis, from east a broken bipedalis, in between a brick. Bottom of course at 0.86. Mortar: light-grey, rather well sieved, mainly dark-brown pozzolana, at places black and dark-grey and a little red. Other granules: pebbles and small pieces of lime. The mortar is fairly hard. At places careless modern daubing.

j Mixtum, l. 4.035, w. 0.27, 0.17 and 0.54. This wall-part is at the south side (see 9/10, north b) divided into three parts, that each have a different width. The wall-part is completely daubed in modern times. Meas. of *tesserae*: 0.094 x 0.098. Latericum in the mixtum: band of fourteen courses along the bottom of the wall, h. 0.78. Band of three courses higher in the wall. Distance between the bands 0.465. Bricks light-orange and light-pink, a few yellow. Many are fresh, a few are reused. Meas. of bricks: l. 0.265, 0.295, 0.26 (av. 0.273); th. 0.038, 0.038, 0.035 (av. 0.037); th. of joints: 0.025, 0.026, 0.02, 0.021 (av. 0.023). Modulus: 0.29, 0.284 (av. 0.287). Mortar: not visible, completely covered by modern daubing. Masonry: the reticulatum rather irregular, the latericum rather regular. The connection between j and k is completely daubed in modern times.

k Pier 17, latericium, l. 1.175, w. 0.585. The pier has crumbled at the west end. Bricks light-orange, pink, light-pink and yellow, mainly fresh. Meas. of bricks: l. 0.19, 0.275 (av. 0.233); th. 0.035, 0.035 (av. 0.035); th. of joints: 0.017, 0.022, 0.021, 0.017 (av. 0.019). Modulus: 0.285, 0.272 (av. 0.279). Mortar: the pier has been completely daubed in modern times including the crumbled west end. Masonry: rather regular. No bipedales.

l Vittatum A, l. 1.155, w. 0.46. Entirely like 6/7, north c. Vittatum A with reused reticulatum-*tesserae*. A few rectangular tufelli: l. 0.13, 0.15 (av. 0.14); 1+1: 0.15, 0.153 (av. 0.152); 1+1+1: 0.189, 0.193 (av. 0.191).

Doorway to room 6/7, w. 0.885, h. 1.95. See 6/7, north doorway.

m Vittatum A, l. 1.72, w. 0.46. Entirely like 6/7, north b. In the corner at the bottom of the wall against the west wall a piece of mixtum is visible (see 6/7, north a).

West a Lower half mixtum, upper half vittatum A, l. 1.48, w. 0.44. Both types of masonry form an entity with the south wall (south m). Entirely like 5, east b.

Doorway to room 5, w. 1.33, h. 1.965. See 5, east doorway.

b Lower half mixtum, upper half vittatum, l. 1.97, w. 0.44. Vittatum A: see 5, east a. Against the corner with room 4 a stretch with only latericium above the mixtum (h. 1.00; max. w. 0.50). Mixtum: see 5, east a. Latericium-post against corner with room 4 with two teeth. Distance between band along bottom of wall and first tooth 0.294, distance between first and second tooth 0.283. W. of post 0.755, th. of teeth (three courses) 0.15, 0.155. L. of teeth 0.29, 0.295. This latericium is irregular with many broken thick bricks. Many are yellow, a few red. Meas. of bricks: th. 0.045, 0.041, 0.046 (av. 0.044). Modulus: 0.275, 0.27, 0.26, 0.268 (av. 0.268). Mortar: light-grey, rather badly sieved; at the south end grey and black pozzolana, towards the north more dark-, light-brown and red pozzolana. Other granules: pebbles and small pieces of lime. The mortar is fairly hard.

Doorway to room 4, w. 1.40.

c Latericium, l. 0.45. This is the end of the wall between rooms 4 and 3. See 4, north d. Modulus: 0.28, 0.278, 0.295 (av. 0.284). Mortar: reddish brown, rather badly sieved. Much light-, dark-brown and red pozzolana. Other granules: pebbles and small pieces of lime. From 1.42 a later restoration in latericium, see 4, north d. Th. of joints: 0.032, 0.024, 0.012, 0.017 (av. 0.021). Modulus: 0.317. Mortar: light-grey, rather badly sieved, less pozzolana, brown, red and green. Other granules: pebbles and small pieces of lime. The south wall of the north-west corner of room 8 is the backside of 4, north d and is entirely identical. The vittatum B wall 8, west d is put against the south wall.

d Vittatum B, l. 8.40, w. c. 0.45. Entirely like 2, east and 3, east; 1+1+1: 0.245, 0.257 (av. 0.251);

1+1+1+1: 0.276, 0.307 (av. 0.292). In this wall is a vertical drainage-channel (at 2.83-3.07; d. 0.26) with parts of sesquipedales against the back. Just south of this channel is a rough vertical stretch (2.27-2.78) where the caementicium-nucleus can be seen. Probably a wall started here towards the east. In the rough part is a scaffolding-hole through the wall. Apparently the construction of this disappeared wall was already planned during the construction of the west wall.

Sixteen piers, numbered clockwise.

Pier 1, l. 0.88, w. 0.59, preserved h. 2.93. Mainly yellow bricks, a few darker yellow and pink, mainly fresh. Two overlapping bipedales, starting at 1.11. Meas. of bricks: l. 0.275, 0.265, 0.287 (av. 0.276); th. 0.04, 0.038, 0.037 (av. 0.038); th. of joints: 0.024, 0.022, 0.017, 0.016, 0.016 (av. 0.019). Modulus: 0.283, 0.287 (av. 0.285). Mortar: light-grey, rather badly sieved, light- and dark-brown pozzolana, many small granules of pozzolana. Other granules: pebbles and small pieces of lime. The mortar is hard. Masonry: rather regular, the courses are at places somewhat uneven because some bricks are slightly convex.

Pier 2, l. 0.89, w. 0.595, preserved h. 2.20. Like pier 1. More pink than yellow bricks. Two overlapping bipedales, starting at 0.89. Meas. of bricks: l. 0.25, 0.29 (av. 0.27); th. 0.036, 0.037, 0.038 (av. 0.037); th. of joints: 0.015, 0.018, 0.017, 0.012, 0.015 (av. 0.015). Modulus: 0.263, 0.255, 0.256 (av. 0.258).

Pier 3, l. 0.88, w. 0.585, antique till 1.53. Like pier 2. One bipedalis, starting at 0.70. Higher up in pier a small restoration identical to 8, east a and b. Modulus: 0.242, 0.248 (av. 0.245). Mortar: like pier 2, seems to contain somewhat less pozzolana. Next to brown also green and grey pozzolana.

Pier 4, l. 0.88, w. 0.59, preserved h. 3.12. Like pier 3. Two overlapping bipedales, starting at 0.81; higher up in pier again two overlapping bipedales, starting at 2.07. Modulus: 0.251, 0.251, 0.245 (av. 0.249).

Pier 5, l. 0.60, w. 0.59, preserved h. 3.02. Like pier 3 and 4. The pier is thinner than the others and therefore only one bipedalis was enough for the length of the pier, starting at 0.83. Higher up in pier again a bipedalis, starting at 2.085. Modulus: 0.25, 0.251 (av. 0.251).

Pier 6, l. 0.885, w. 0.59, preserved h. 2.69. Like piers 3 and 4. Mainly pink bricks. Two overlapping bipedales, starting at 0.76. Higher up in pier again overlapping bipedales, starting at 1.996. Modulus: 0.252, 0.252 (av. 0.252). Mortar: like pier 4. Mainly light-, beige- and dark-brown pozzolana.

Pier 7, l. 0.885, w. 0.59, preserved h. 3.30. Like piers 3 and 4. Mainly light-pink bricks. Two overlapping bipedales, starting at 0.94. Higher up in pier again two bipedales, starting at 2.185. Modulus: 0.252, 0.258 (av. 0.255). Mortar: like pier 4, some more green pozzolana.

Pier 8, l. 0.89, w. 0.59, preserved h. 1.06. Like piers

3 and 4. The pier is preserved too low to show bipedales. Modulus: 0.258. Daubed in modern times from 0.40 upwards.

Pier 9, l. 0.88, w. 0.595, preserved h. 1.26. Like piers 3 and 4. Does not show bipedales. Modulus: 0.252, 0.246 (av. 0.249). Modern daubing in the middle. At both sides a travertine block: l. 0.32, 0.30, w. 0.59, 0.17, h. 0.17, 0.21.

Pier 10, l. 1.035, w. 0.59, preserved h. 3.22. Like piers 3 and 4. Some more dark-yellow and dark-pink bricks. Two overlapping bipedales, starting at 1.133. Higher up no bipedales. Modulus: 0.264, 0.263, 0.261 (av. 0.263). Mortar: like preceding piers, mainly brown and green pozzolana. Travertine block at east side of the pier, l. 0.47, w. 0.59, h. 0.12. Between travertine block and pier a few bricks, w. 0.12.

Pier 11, l. 1.03, w. 0.59, preserved h. 2.60. Like preceding piers. Two overlapping bipedales, starting at 1.20. Higher up no bipedales. Modulus: 0.257, 0.265 (av. 0.261). Travertine block at east side of pier, l. 0.37, w. 0.56, h. 0.18. At the west side at the bottom a bipedalis protrudes 0.09.

Pier 12, l. 0.98, w. 0.59, preserved h. 2.64. Like preceding piers. Two overlapping bipedales, starting at 1.15. Higher up no bipedales. At the west end at the bottom a bipedalis protrudes 0.09.

Pier 13, l. 1.03, w. 0.585, preserved h. 1.55. Like preceding piers. No bipedales. Modulus: 0.261, 0.256 (av. 0.259). At the west side at the bottom a bipedalis protrudes 0.12.

Pier 14, l. 1.03, w. 0.595, preserved h. 2.50. Like preceding piers. Two overlapping bipedales, starting at 1.28. Higher up no bipedales. Modulus: 0.269, 0.262 (av. 0.266). Travertine block at east side, l. 0.38, w. 0.59, h. difficult to determine. Between travertine block and pier a few bricks, w. 0.07. At the west side at the bottom a bipedalis protrudes 0.09.

Pier 15, l. 0.88, w. 0.60, preserved h. 1.63. Like preceding piers. Two overlapping bipedales, starting at 1.096. Higher up no bipedales. Modulus: 0.268, 0.261 (av. 0.265). Mortar: like preceding piers; very much brown pozzolana.

Pier 16, L-shaped, l. 0.77, w. 0.59, north-south part l. 0.61, w. 0.58. The indent in the pier is 0.15 deep and 0.58 wide. Preserved h. 2.21. Bricks like preceding piers. One bipedalis in east-west part, starting at 0.908; one bipedalis in north-south part at same level. Higher up no bipedalis. Modulus: 0.266, 0.267, 0.278, 0.274 (av. 0.271). Mortar and masonry: like preceding piers.

C. The floor consists of basalt blocks, that have not been preserved everywhere.

D. In north a one hole: 0.40-0.53 x 2.62-2.71. In north c one beamhole: 14.96-15.13 from west wall x 2.05-2.22. At other places the wall has not been preserved high enough. At 15.86-16.15 a drainage-channel roughly hewn in the wall, from 1.20 from the floor the channel is narrower: 0.16. In east a and b

five scaffolding-holes: 4.51-5.61 x 1.42-1.54, 5.39-5.46 x 1.49-1.56, 5.93-6.07 x 1.50-1.60, 8.18-8.29 x 1.60-1.74, 8.98-9.08 x 1.62-1.74. In east d a horizontal groove: 17.18-17.57 x 1.10-1.16. In south l and m three lower and three higher scaffolding-holes (measured from pier 17): 0.29-0.39 x 1.25-1.37, 0.89-1.00 x 1.25-1.37, 2.39-2.61 x 1.21-1.43 and 0.72-0.84 x 2.50-2.61, 2.14-2.48 x 2.44-2.72, 2.92-3.10 x 2.39-2.53. In west a and b five higher scaffolding-holes: 0.17-0.27 x 2.42-2.55, 1.10-1.21 x 2.40-2.47, 3.08-3.18 x 2.43-2.51, 3.43-3.52 x 2.40-2.56, 4.105-4.22 x 2.45-2.57. In south wall of north-west corner of room 8 (backside of 4, north d) three holes at same height: 0.14-0.23 x 1.39-1.45, 0.41-0.52 x 1.39-1.50, 1.62-1.75 x 1.39-1.51. Higher up one hole: 0.90-1.03 x 2.10-2.27 and two holes at the same height: 1.69-1.84 x 2.62-2.73, 2.42-2.52 x 2.62-2.73, this is at about the corresponding height of the high scaffolding-holes in 4, north d. In west d one hole: 0.095-0.21 x 2.78-2.90 and eleven scaffolding-holes corresponding with the scaffolding-holes in 2, east and 3, east and with the shared height 1.53-1.64.

Piers 1, 6 and 7 have a hole in the south side: in pier 1 at h. 2.46-2.56, in pier 6 at h. 1.94-2.11 and in pier 7 at h. 2.03-2.19.

E. Against south b in the ground two cisterns were constructed.

Cistern a: inside 1.49 x 2.80, outside 2.57 (wall along staircase) x 3.22, depth can not be measured; max. preserved h. 1.90. Latericium. W. of walls 0.29, 0.28 and 0.185 (south wall). Yellow bricks, occasionally a red one. Mainly fresh. Meas. of bricks: l. 0.27, 0.185, 0.278, 0.285 (av. 0.255); th. 0.04, 0.035, 0.042, 0.038 (av. 0.039); th. of joints: 0.028, 0.029, 0.026, 0.028, 0.025, 0.034 (av. 0.028). Modulus: 0.315 (north wall), 0.348 (east wall), 0.334, 0.264 (south wall), 0.33 (west wall). Mortar: dark-brown, rather badly sieved, dark-brown, black and dark-grey pozzolana. Other granules: pebbles and small pieces of lime and occasionally a small piece of brick. Masonry: rather regular, the courses run straight. On one course in the east wall a red stripe is painted.

A staircase descends into the cistern, l. 2.42, w. 0.75, h. c. 1.20. Five steps, from top to bottom: w. 0.40, 0.36, 0.37, 0.23, 0.25, h. 0.26, 0.26, 0.21, 0.11, 0.15. The steps are very worn. They end on a landing meas. 0.81 x 0.75.

In the east wall is a hole to cistern b at c. 1.40 from the top of the wall. In the south wall is a hole at c. 1.18 from the highest point of the wall. The latter hole goes through the south wall but not through wall-part 8, south b. In between the walls a channel goes downwards: possibly an overflow.

Cistern b: inside 3.67 x 1.76, outside 4.28 x 2.05 (at west side)/2.675 (at east side). The back wall of the cistern protrudes 0.765 past pier 22 and has at 0.22 from the pier a projection of 0.10, that has been daubed in modern times. Latericium. W. of walls

0.31 and 0.185 (south wall). D. could not be measured. Max. preserved h. 2.05. Masonry like in cistern a. Modulus: 0.326 (north wall), 0.345 (east wall), 0.30, 0.331 (av. 0.316) (south wall), 0.333 (west wall). Mortar: like in cistern a; also black and green pozzolana. In the east wall a hole with underneath the end of a lead tube at c. 1.25 from the top of the wall. In the south wall five scaffolding-holes and in the west wall a hole to cistern a. In the corners traces of plaster and cocciopesto with pieces of yellow brick.

Staircase A, l. 2.32, w. 1.41, h. 1.37, has six steps. W. of the steps, from bottom to top: 0.28, 0.28, 0.295, 0.295, 0.295, 0.40. Behind the upper step a landing, w. 0.42. H. of steps, from bottom to top: 0.28, 0.22, 0.21, 0.20, 0.21, 0.215.

Staircase B, l. 1.08, w. 1.22, h. 0.555, has three steps. W. of steps 0.44, 0.31, 0.33. H. of steps 0.09 (disappears into the ground), 0.22, 0.185.

Staircase C, l. 1.55, w. 1.36, h. 0.86, has four steps. W. of steps 0.21, 0.28, 0.28, 0.50. Behind the upper step a landing, w. 0.28. H. of steps 0.28, 0.24, 0.26, 0.21.

Eight mills or remains of mills (from west to east mills m1 till m8).

m1 Meta only: circumference 1.92, diam. 0.60, h. 0.59.

m2 Meta only: circumference 3.07, diam. 0.976, preserved h. 0.77. The meta is hollow. At the inside remnants of white mortar with pieces of yellow and pink bricks.

m3 Meta: circumference 2.85, diam. 0.906, h. 1.02. Catillus: largest diam. 0.62, start of shoulder at 0.72, highest point at 1.19.

m4 Meta in mortar-bed: circumference meta 2.95, diam. 0.938, h. 1.24; mortar-bed, diam. 1.798, h. 0.33. Mortar-bed in vittatum B, probably entirely daubed in modern times. Inscription on meta where mortar-bed has crumbled: *S P C Y R*, w. 0.63, h. 0.34/0.37. Catillus: largest diam. 0.96, start of shoulder at 0.85, highest point at 1.65.

m5 Meta in mortar-bed: circumference meta 3.10, diam. 0.985, h. 1.24; mortar-bed, circumference 5.51, diam. 1.75, h. 0.38. Mortar-bed in vittatum B, entirely daubed in modern times. Catillus: in pieces, lowest preserved point at 0.92, highest preserved point at 1.49.

m6 Meta: circumference 3.04, diam. 0.966, highest visible point 0.53. The meta is thin at the upper part and gets wider towards the bottom. Catillus: lowest point 0.38, highest point 1.10.

m7 Meta: circumference 2.16, diam. 0.829, highest visible point 0.84. Inscription on meta at north side: *P A R*, w. 0.22, h. 0.20. The letters are filled in with red. Catillus: largest diam. 0.67, lowest point 0.84, highest point 1.39.

m8 Meta in mortar-bed: circumference meta 2.78, diam. 0.883, highest preserved point 1.03; mortar-bed, diam. 1.643, h. 0.34. Mortar-bed in vittatum B,

daubed entirely in modern times. Inscription on meta where mortar-bed has crumbled: *M I V*, w. 0.60, h. 0.29. Catillus: only a quarter preserved, lowest point 0.65, highest point 1.33.

Four complete kneading-machines and the remnants of a fifth (k1 till k5).

k1 Largest diam. 0.98, inside diam. 0.44, h. 0.75. Holes opposite each other at 0.46-0.51 from the ground. Lead preserved in holes. Inscription: *G I A H*, w. 0.46, h. 0.22.

k2 Largest diam. 0.97, inside diam. 0.46, h. 0.64. Holes opposite each other at 0.57-0.66 from the ground.

k3 Largest diam. 0.59, inside diam. 0.42, h. 0.64. Holes opposite each other at 0.33-0.38 from the ground. Kneading-machine stands on a oil-press (0.67 x 0.71) with circular groove (w. 0.025) and drainage to one side.

k4 Largest diam. 0.79, inside diam. 0.475, h. 0.82. Holes opposite each other at 0.47-0.54 from the ground.

k5 Preserved partly, preserved height 0.47. Among the pieces of the kneading-machine is a piece of a heavy granite bowl, of which the inside is very smooth.

On both sides of staircase C are two "buckets" (b1 and b2), that could be mortars. Both narrow downwards.

b1 Made of rough volcanic rock, like the mills and the kneading-machines, circumference 1.57, diam. 0.50, inside diam. 0.35, h. 0.465. The bucket has two flat handles at the top.

b2 Made of travertine, circumference 2.50, diam. 0.794, inside diam. 0.64, h. 0.65.

Against north c lies a square travertine slab with in the centre a round hole, l. 0.805, w. 0.76. Diam. of hole 0.20. Above this slab is a rough drainage-channel in the wall (see D).

In the north-west corner of the room is a strange large worked block of tufa, l. 0.83, w. 0.73, h. 0.37 and 0.53. The block has on two sides a raised edge (w. at the bottom 0.30, at the top 0.26/0.22). The short sides of the block (one with and one without a raised edge) are smooth. The long sides are rough.

North of staircase B lie two pieces of a threshold-stone, l. 0.13 and 0.80, w. 0.34.

Traces of plaster in room 8: against north a, north d (a fine plaster with against it cocciopesto), against pier 1 0.13 thick (with large pieces of yellow, red and pink brick), against pier 2 (very smooth surface), against pier 4 (thinner and finer than against pier 1).

ROOM 9

A. 6.51; 4.76; 6.265; 5.275.

B. North a Pier 17, latericum, l. 1.17, w. 0.585. Entirely like 8, south k. Modulus: 0.274. Mortar: dark-grey, rather badly sieved, dark-grey and black pozzolana, also a little brown. Other granules: pebbles and small pieces of lime. Largely daubed in

modern times.

b Incertum mixtum, l. 4.005. This wall-part is divided into three different parts with different widths: l. resp. 0.85, 1.48, 1.675; w. resp. 0.545, 0.17, 0.27. The wall-part has been daubed completely in modern times. Where the authentic mortar can be seen: light- and dark-grey, rather badly sieved, dark-brown, dark-grey and black pozzolana. Other granules: large pieces of marble, occasionally a pebble. The connection between the wall-part and the piers has been daubed in modern times.

c Pier 18, latericium, l. 1.335, w. 0.60. Entirely like 8, south i. A course of bipedales: at the west side a broken bipedalis, at the east side a complete bipedalis, in between two bricks. Modulus: 0.278, 0.273 (av. 0.276). Mortar: light-grey, rather well sieved, dark-brown, dark-grey and black pozzolana. Other granules: small pieces of lime. Masonry: rather irregular.

East opening to room 10, w. 4.76. In the plan in SO a wall (?) has been indicated; not preserved.

South b (a is the south wall of room 10) wall-pier 23, latericium, l. 1.03, w. of pier c. 0.60. Bricks yellow, light- and dark-pink and orange-pink, mainly fresh, some slightly convex. Two overlapping bipedales, starting at 0.83. Meas. of bricks: l. 0.304, 0.30, 0.24, 0.264, 0.282 (av. 0.279); th. 0.035, 0.035, 0.037, 0.036, 0.035 (av. 0.036); th. of joints: 0.016, 0.019, 0.015, 0.012, 0.02 (av. 0.016). Modulus: 0.261, 0.255, 0.259 (av. 0.258). Mortar: light-grey, rather badly sieved, black, dark-grey and a little brown pozzolana. Other granules: pebbles and small pieces of lime. The mortar is very hard. Much is left of a very fine daubing. Masonry: rather regular; the courses run straight, but can look uneven due to convex bricks. At the top of the wall-pier is the springing of an arch to the west and an arch to the north. Below the springing is a sesquipedalis next to a bipedalis, at 2.31-2.36. The springing of the arch to the north contains bricks with av. l. 0.41 and av. th. 0.045. The front of the springing shows the caementicium-nucleus with pieces of brick and tile.

c till 0.575 incertum, from 0.575 reticulatum, l. 4.09, w. c. 0.30. *Tesserae* mainly yellow-brown, not always carefully hewn. Meas. of *tesserae*: 0.098 x 0.089, 0.092 x 0.090, 0.098 x 0.10; th. of joints: 0.015, 0.008, 0.012, 0.008, 0.007, 0.006, 0.017 (av. 0.011). Mortar: mortar of incertum and reticulatum identical. Light-grey, rather badly sieved, dark-brown, dark-grey and black pozzolana. Other granules: pebbles and small pieces of lime. The mortar is at places hard, and at places softer. Masonry: rather irregular; *tesserae* not always placed with care and the diagonal lines, although rather straight, are not in a perfect angle of 45 degrees. This wall-part has been put between piers 23 and 24, the mortar of b differs very little from the mortar of a.

d Pier 24, latericium, l. 1.165, w. 0.61. Bricks orange-pink, pink and yellow, mainly fresh. One

course of two bipedales next to each other. Meas. of bricks: l. 0.28, 0.263, 0.27 (av. 0.271); th. 0.034, 0.035, 0.034 (av. 0.034); th. of joints: 0.021, 0.016, 0.015, 0.03, 0.022 (av. 0.021). Modulus: 0.27, 0.278 (av. 0.274). Mortar: looks very dark and is very moist, cannot be studied due to moss and decay. Masonry: rather regular, the courses run straight and regular. Some courses are uneven due to convex bricks.

West Vittatum A, l. 5.275, w. c. 0.47. The vittatum has reused reticulatum-*tesserae*, with occasionally a rectangular tufello. Entirely like 6/7, east.

C. The entire floor was taken up by an oven. The floor of the oven has not been preserved.

D. The ceiling was supported by arches. Five scaffolding-holes in the west wall, average height 2.50-2.60.

E. Of the oven three courses of tufa blocks have been preserved, that form three-quarters of a circle. H. of the three courses c. 0.90. The lowest course lies at a lower level than the visible bottom of the surrounding walls. The top of the third course is at exactly the same level as the separation-line between the incertum and the reticulatum in south c. The tufa blocks are c. 0.30 long, w. 0.50/0.55, h. 0.30. The blocks are very worn. The courses touch the north, south and west wall. The corners between the oven and the walls are filled in.

ROOM 10

A. 19.46; 4.88; 19.83; 4.76.

B. North d (a, b and c form the north wall of room 9), incertum mixtum, l. 3.22, w. 0.30. See also 8, south h, there the wall is in reticulatum mixtum. The incertum has irregularly hewn yellow-brown tufa-pieces, occasionally a broken brick. At 1.40 from the ground a latericium-band (see 8, south h). Mortar: light-grey, badly sieved, dark- and light-brown pozzolana. Other granules: small pieces of marble. The mortar is hard. This wall-part has crumbled at the west and east end and touches at the east end a travertine block (see 8, south h).

e Pier 19, latericium, l. 1.02, w. 0.59. Entirely like 8, south g. Modulus: 0.267

Opening to room 8, w. 4.18. See 8, south opening.

f Pier 20, latericium, l. 1.02, w. 0.595. Entirely like 8, south f. Two overlapping bipedales, starting at 1.26. Modulus: 0.253, 0.274, 0.261 (av. 0.263). Mortar: light-grey, a little bit brownish due to abundance of brown pozzolana. Other granules: pebbles and small pieces of lime. The mortar is hard.

g Incertum, l. 1.24, w. 0.59, h. 0.80. This is some sort of a basin (c), that gets narrower towards the top. The incertum consists mainly of tufa-pieces, occasionally a piece of brick. The mortar has been daubed completely in modern times. The raised edge is c. 0.20 wide. D. cannot be measured, but does not seem to have been great. At the east side the basin touches a travertine block, l. 0.59, w. 0.30, h. 0.10.

h Incertum mixtum, l. 1.855, w. 0.30. Like 8, south d, there reticulatum mixtum. Preserved fragmentary. The tufa-pieces in the incertum are orange-brown. Mortar: light-grey, badly sieved, red-brown and red pozzolana. Other granules: a few small pieces of lime. The mortar is not very hard.

i Pier 21, latericum, l. 1.035, w. 0.595. Like 8, south c. Modulus: 0.272, 0.275 (av. 0.274). Mortar: light-grey, rather well sieved, much dark- and light-brown pozzolana, a little red-brown pozzolana. Other granules: small pieces of lime. The mortar is hard.

j Opus incertum, l. 4.28, w. 0.30. Like 8, south b, there reticulatum, against which the cisterns a and b were built. The incertum has mainly yellow-brown tufa-pieces. Mortar: light-grey, badly sieved, dark- and red-brown pozzolana. Other granules: large pieces of marble. The mortar is not very hard. This wall-part is connected to pier 22 by means of plaster with more red pozzolana. Underneath this connection is some sort of a niche, l. 0.25, d. 0.26, h. 0.50. On the bottom of the niche lies a broken bipedalis, w. 0.34. On top of this bipedalis is a hard, grey plaster smeared upwards against the pier.

k Part of pier 22, latericum, l. 0.23, w. of pier 0.60. Entirely like 8, south a. Modulus: 0.269, 0.276 (av. 0.273). Mortar: light-grey, rather well sieved, dark-, light- and red-brown pozzolana. Other granules: small pieces of lime. The mortar is hard.

East a Part of pier 22, latericum, l. 0.28. See south k.

b Reticulatum mixtum, l. 4.88, w. 0.46. This wall-part has been set against pier 22 and the south wall. *Tesserae* mainly yellow-brown, carelessly hewn and shaped to fit below the latericum-band. Meas. of *tesserae*: 0.096 x 0.091, 0.10 x 0.091, 0.092 x 0.084, 0.10 x 0.104; th. of joints: 0.014, 0.044, 0.006, 0.009, 0.02, 0.023, 0.017 (av. 0.015). Latericum in the mixtum: band of three courses higher in the wall. Distance between the ground and the band 1.33. Bricks mainly yellow, a few pink, mainly fresh. Meas. of bricks: l. 0.259, 0.257 (av. 0.258); th. 0.036, 0.037 (av. 0.037); th. of joints: 0.022, 0.019, 0.018, 0.019 (av. 0.02). Mortar: light-grey, towards the south darker, rather badly sieved. Mainly dark-brown pozzolana, towards the south more dark-grey and black pozzolana. Other granules: pebbles and small pieces of lime. Masonry: irregular, *tesserae* carelessly placed, below the latericum-band some placed horizontally. The diagonal lines are not straight and not in an angle of 45 degrees.

South a Mixtum, l. 1.983, w. 0.45/0.52. *Tesserae* mainly yellow-brown, also orange-brown. Partly hewn carefully, partly carelessly, shaped to fit below the latericum-band and above and below the teeth. Meas. of *tesserae*: 0.095 x 0.095, 0.096 x 0.094, 0.098 x 0.098, 0.098 x 0.101; th. of joints: 0.017, 0.009, 0.008, 0.018, 0.02, 0.012 (av. 0.014). Latericum in the mixtum: band of six courses along the bottom of the wall. A band of five courses higher in the wall. Distance between both bands 1.54. From

east to west: latericum-post with on both sides one tooth preserved. Distance between band and first tooth 0.315 (wall not preserved higher). W. of post 0.29 (one brick), th. of teeth (four courses) 0.294, 0.255, l. of teeth 0.31, 0.30. At a distance of ca. 8.00 a latericum-post with on both sides two teeth below the higher latericum-band and remnants of a third tooth above this band. Distance between lower band and first tooth 0.305 and 0.355, between first and second tooth 0.32 and 0.324, between second tooth and higher band 0.325 and 0.342, between higher band and third tooth 0.335 and 0.343. W. of post 0.29/0.30 (one brick), th. of teeth (five courses) 0.27, 0.27, 0.26, 0.28, 0.26. L. of teeth 0.30, 0.33, 0.31, 0.34, 0.295 (th. and l. of third tooth at east side of post can not be measured). At ca. 5.00 from this post a latericum-post against pier 23 with at one side two teeth below the higher band and one tooth above the higher band and the remnants of a fourth tooth. Distance between lower band and first tooth not visible, between first and second tooth 0.325, between second tooth and higher band 0.275, between band and third tooth 0.33, between third and fourth tooth 0.34. W. of post 0.27 (one brick), th. of teeth (five courses) 0.265, 0.27, 0.275. L. of teeth 0.31, 0.305, 0.31 (th. and l. of fourth tooth can not be measured). Bricks mainly dark-yellow, also yellow and light-pink, mainly fresh and most slightly convex. Meas. of bricks: l. 0.265, 0.28, 0.272, 0.285, 0.278, 0.28 (av. 0.277); th. 0.042, 0.038, 0.04, 0.04, 0.035, 0.032 (av. 0.038); th. of joints: 0.022, 0.015, 0.019, 0.019, 0.016, 0.023 (av. 0.019). Modulus: 0.265, 0.26, 0.26, 0.26 (av. 0.261). Mortar: light-grey, at second latericum-post reddish, rather well sieved. Pozzolana towards the east mainly brown and red-brown, at the bottom more black and dark-grey, more to the west only black and dark-grey, further to the west brown, red-brown and red, against pier 23 dark-grey, black and dark-brown. Other granules: pebbles and small pieces of lime. The latericum has at places a fine daubing with at the bottom of the joints an indent made by the trowel. Masonry: reticulatum at places regular with straight diagonal lines, at other places reticulatum more irregular and sometimes smaller *tesserae* are inserted to make it all fit. Latericum rather regular with straight and regular courses, although some courses look a little uneven due to the convex bricks. The mortar and the bricks of this wall-part form an entity with those of pier 23.

C. ---

D. In south wall three fairly large holes in the higher latericum-band: 0.00-0.16 x 1.83-2.02, 1.06-1.21 x 1.72-2.02, 2.19-2.41 x 1.56-2.00, at the west side where the wall is preserved higher seven scaffolding-holes at av. h. 2.64-2.73.

E. One travertine kneading-machine (k6): circumference 1.43, diam. 0.454, inside diam. 0.38, h. 0.55, holes opposite each other at 0.30 from the ground. In the bottom a hole filled in with lead.

Against the south wall lies a travertine drainage-slab with a hole in the centre (like in room 8 against the north wall), l. 0.78, w. 0.77, diam. of hole 0.21. Above the slab no trace of a drainage-channel.

On the plan in SO a large basin has been indicated, not preserved. There is however a small hill covered by grass on this spot.

ROOM 11

A. 4.21; c. 5.50; 4.68; 5.485.

B. North a Latericum, l. 0.765, w. 0.18, 0.28. This is the rear side of the back wall of cistern d (see 8, E).

Opening to room 8, w. 3.445.

East L. c. 5.5, see 8, east d and e.

South Mixtum, l. 4.68, w. 0.46/0.52. *Tesserae* mainly yellow-brown, and carelessly hewn and shaped to fit below the latericum-band and the teeth. Meas. of *tesserae*: 0.085 x 0.089, 0.095 x 0.093, 0.103 x 0.099, 0.10 x 0.095; th. of joints: 0.017, 0.009, 0.014, 0.021, 0.018, 0.004, 0.011 (av. 0.013). Latericum in the mixtum: band of six courses along the bottom of the wall. Upper part of wall overgrown. Latericum-post with two teeth at the east end. Distance between band and first tooth 0.357, between first and second tooth 0.41. W. of post 0.274/0.28/0.294. Th. of first tooth (five courses) 0.276, of second tooth only two courses preserved. L. of teeth 0.285, 0.30. Bricks yellow, dark-yellow, pink and dark-pink, mainly fresh. Meas. of bricks: l. 0.285, 0.272, 0.295, 0.25 (av. 0.276); th. 0.039, 0.036, 0.037, 0.037 (av. 0.037); th. of joints: 0.02, 0.021, 0.022, 0.017, 0.021 (av. 0.02). Modulus: 0.278, 0.276 (av. 0.277). Mortar: light- and dark-grey, rather badly sieved. Dark-grey and black pozzolana, occasionally brown. Other granules: small pieces of lime. The mortar is at places hard. Masonry: rather irregular, latericum more regular at places. This wall is a continuation of the south wall of room 10 against which the west wall has been put. This wall is put against the east wall, but the mortar of both forms an entity.

West a Mixtum, l. 4.90, w. 0.46. See 10, east b. The wall reclines a little bit towards the east.

b Pier 22, latericum, l. 0.585. See 8, south a and 10, north k. Bipedalis at 1.245 from the ground. Modulus: 0.269, 0.263 (av. 0.266).

C. In this room are some basalt blocks and in the south-east corner some travertine fragments.

D. ---

E. Travertine drainage-slab, l. 0.75, w. 0.75, diam. of central hole 0.24.

ROOM 12

A. North wall preserved till 2.10; east side can not be measured; 9.00; 4.525.

B. North L. 2.10. Very irregular masonry which has been daubed or rebuilt completely in modern times.

East, opening to Semita dei Cippi, w. cannot be determined. Only a part of the pier at the east end of the south wall has been preserved, l. 0.14. Here five

courses of bricks have been preserved on top of caementicium, that probably is the foundation of the former pier (see east facade a)

South a Mixtum, l. 3.04, w. 0.46. *Tesserae* yellow-brown and orange (many modern), carelessly hewn and shaped to fit below the latericum-band and below and above the teeth. Meas. of *tesserae*: 0.081 x 0.087, 0.09 x 0.088, 0.096 x 0.095. Latericum in the mixtum: band of three courses along the bottom of the wall. Higher in the wall a course of sesquipedales. Distance between both 1.35. Latericum-post at the east end, not preserved high enough to show teeth. W. of post 0.36. Door-post at west end with two teeth. Distance between band and first tooth 0.30, between first and second tooth 0.265, between second tooth and sesquipedales 0.304. W. of post 0.295/0.275. Th. of teeth (three courses) 0.16, 0.156. L. of teeth 0.285, 0.295. Bricks pink-red, orange-red and yellow, mainly fresh. Meas. of bricks: l. 0.197, 0.195, 0.21 (av. 0.201); th. 0.04, 0.04, 0.035 (av. 0.038); th. of joints: 0.016, 0.018, 0.023, 0.017 (av. 0.019). Modulus: 0.27, 0.262 (av. 0.266). Mortar: reddish and purplish grey, rather badly sieved, much light-brown, red-brown and red pozzolana. Other granules: pebbles. The mortar is at places hard, at places soft. Masonry: irregular.

b Mixtum, l. 1.48, w. 0.46. This is a blocked doorway, since the latericum-posts at both sides of this wall-part do not have teeth. *Tesserae* mainly orange and carelessly hewn. Meas. of *tesserae*: 0.097 x 0.10, 0.101 x 0.095. Latericum in the mixtum: the band along the bottom of wall-part a and the course of sesquipedales higher in a continue here. Here the bricks in the band are a little thinner: 0.026, 0.027, 0.03, 0.026 (av. 0.027). Mortar: pink light-grey, rather badly sieved, brown, light-brown and reddish brown pozzolana. Other granules: pebbles and small pieces of lime. The mortar is quite hard. Masonry: irregular. The door-posts do not continue above the sesquipedales, therefore a separation between the reticulatum of this wall-part and that of a is difficult to find and maybe did not exist. The blocking seems contemporary to the construction of a (so that the door-post was never continued upwards).

c Mixtum, l. 3.26, w. 0.46. This wall-part is much damaged and overgrown. *Tesserae* mainly orange and carelessly hewn, carelessly shaped to fit below the sesquipedales and above and below the teeth. Meas. of *tesserae*: 0.10 x 0.10, 0.095 x 0.097; th. of joints: 0.016, 0.018, 0.012, 0.014, 0.015 (av. 0.015). Latericum in the mixtum: band of six courses along the bottom of the wall. A course of sesquipedales higher in the wall, and higher in the wall a latericum-band of three courses. Distance between band along bottom and sesquipedales 1.35, distance between band higher in wall and sesquipedales 0.37. Door-post at east end of wall-part with two teeth. Distance between band and first tooth 0.175, between first and second tooth 0.25, between second tooth and

sesquipedales 0.20. W. of post 0.305, th. of first tooth (five courses) 0.275, of second tooth (three courses) 0.16. Bricks like in a. The joints are wider. Th. of joints: 0.022, 0.015, 0.025, 0.017 (av. 0.015). Modulus: 0.293, 0.273 (av. 0.283). Mortar: reddish grey, rather badly sieved, red and brown pozzolana. Other granules: a few small pieces of lime. The mortar is hard. Masonry: irregular.

d Latericium, l. 1.22, w. 0.46. Bricks yellow, mainly fresh. Meas. of bricks: l. 0.26, 0.26, 0.257, 0.264 (av. 0.26); th. 0.032, 0.027, 0.03, 0.027 (av. 0.029); th. of joints: 0.02, 0.018, 0.024, 0.017, 0.015 (av. 0.019). Modulus: 0.255, 0.271 (av. 0.263). Mortar: light-grey, at places rubiginous, rather badly sieved, rubiginous-brown and dark-brown pozzolana. Other granules: occasionally pebbles and rather large pieces of lime. Masonry: rather regular. This wall-part forms an entity with the west wall. The separation-line between this wall-part and c is irregular.

West Latericium, l. 4.525, w. 0.45. See g, east a. Modulus: 0.268

C. At the bottom of the walls a protruding ridge of caementicium is visible on top of which the floor must have been. The ridge is part of the foundation.

D/E. ---

ROOM 13

A. 8.91; 4.21; 8.08; 4.13.

B. North a Latericium, l. 1.16, w. 0.46. See j2, south d. Modulus: 0.255, 0.257 (av. 0.256). At the bottom a modern repair. It seems that the latericium-band along the bottom of b continued here.

b Mixtum, l. 3.32, w. 0.46. See j2, south c. Bricks of the latericium in the mixtum yellow and orange-pink. W. of door-post at east end 0.33; two teeth, lower of six and upper of three courses.

c Mixtum, l. 1.48, w. 0.46. See j2, south b. Below the sesquipedales much modern daubing.

d Mixtum, l. 2.95, w. 0.46. See j2, south a. The door-post at the west end contains more pink-red bricks.

East a Latericium, l. 0.57. See east facade a. A bipedalis rests on top of a caementicium-foundation, above the bipedalis the pier is modern.

Opening to Semita dei Cippi, w. 2.91.

b Latericium, l. 0.73. See east facade b. Here a bipedalis protrudes rather far on top of a caementicium-foundation. The rest of the pier is modern.

South a Mixtum, l. 1.43, w. 0.28. This wall-part is completely modern.

b Mixtum, l. 5.42, w. 0.28. *Tesserae* yellow-brown and orange, carelessly hewn and shaped to fit below the latericium-band and above and below the teeth. Meas. of *tesserae*: 0.097 x 0.08, 0.098 x 0.094, 0.101 x 0.093; th. of joints: 0.018, 0.017, 0.017, 0.014, 0.011, 0.009 (av. 0.014). Latericium in the mixtum: band of six courses along the bottom of the wall and a band of three courses higher in the wall. Distance between both 1.425. In the middle of the wall a

latericium-post with on both sides two teeth below the higher band and the remnants of a third above this band. Distance between band and first tooth 0.356 and 0.354, between first and second tooth 0.36 and 0.365, between second tooth and band 0.165 and 0.17. W. of post 0.655. Th. of teeth (five courses) 0.282, 0.295, 0.283, 0.278. L. of teeth 0.30, 0.30, 0.297, 0.28. Bricks mainly yellow and light-pink, mainly fresh. Meas. of bricks: l. 0.193, 0.198, 0.219 (av. 0.203); th. 0.032, 0.036, 0.036 (av. 0.035); th. of joints: 0.027, 0.025, 0.02, 0.018, 0.015 (av. 0.021). Modulus: 0.282, 0.28 (av. 0.281). Mortar: light-grey, at places the mortar takes the colour of the pozzolana, rather badly sieved. Brown, red and occasionally dark-grey and black pozzolana. At places preponderant red or black pozzolana. Other granules: pebbles and small pieces of lime. The mortar is hard. Masonry: irregular.

c Latericium, l. 1.23, w. 0.28. Bricks yellow and mainly fresh, like in g, east b. Modulus: 0.267, 0.276 (av. 0.272). Mortar: light-grey, at places rubiginous, rather badly sieved. Rubiginous-brown and dark-brown pozzolana. Other granules: pebbles and small pieces of lime, at places more heterogeneous (small pieces of brick and charcoal). The separation-line between b and c is very irregular. This wall-part forms an entity with the west wall.

West a Latericium, l. 1.31, w. 0.46. See g, east b. Modulus: 0.271, 0.272 (av. 0.272).

Doorway to room 8, w. 1.49, h. 2.10. See g, east doorway between a and b.

b Latericium, l. 1.33, w. 0.46. See g, east a. At places the mortar is more heterogeneous (small pieces of brick, charcoal, shells and some black and grey pozzolana).

C. At places at the bottom of the walls part of the caementicium-foundation is visible; on top of this the floor may have rested.

D. In south b one beamhole through the wall: 6.40-6.56 x 1.89-2.10. In west a one large beamhole against the south wall: 0.00-0.32 x 2.18-2.93. In west b one large beamhole against the north wall: 3.82-4.13 x 2.15-2.33.

ROOM 14

A. 8.345; 3.48; 7.65; 3.19.

B. North a Latericium, l. 1.80, w. partly 0.28. See j3, south c. Modulus: 0.269, 0.274 (av. 0.272). The mortar has not been sieved at places and contains large lumps of pozzolana.

b Mixtum, l. 4.905, w. 0.28. See j3, south b. Instead of a latericium-post in the middle of the wall the north wall has a protruding latericium-pier, w. 0.52. Bricks yellow, light- and dark-pink, mainly fresh. Meas. of bricks: l. 0.24, 0.215, 0.26, 0.215 (av. 0.233); th. 0.034, 0.036, 0.038, 0.038, 0.035 (av. 0.036); th. of joints: 0.016, 0.021, 0.015, 0.017, 0.016 (av. 0.017). Modulus: 0.277, 0.271 (av. 0.274). Mortar: light-grey, rather well sieved, mainly brown

pozzolana. Other granules: pebbles and small pieces of lime. The mortar is fairly hard. Masonry: reasonably regular.

g Mixtum, l. 1.64, w. 0.28. Modern.

East a Latericum, l. 1.017. See east facade b. Modern above the bipedalis resting on the caementicium-foundation.

Opening to Semita dei Cippi, w. 3.01. At the north side of the opening one stone with pivot-hole remains of the threshold, l. 0.38, w. 0.30.

b Latericum, l. 0.30. See east facade c.

South a Mixtum, l. 1.54, w. 0.45. Modern.

b Mixtum, l. 5.33, w. 0.45. *Tesserae* yellow-brown and orange, carelessly hewn. Meas. of *tesserae*: 0.104 x 0.103, 0.098 x 0.10; th. of joints: 0.015, 0.008, 0.015, 0.02 (av. 0.015). Latericum in the mixtum: band of five courses along the bottom of the wall, band of three courses higher in the wall. Distance between both 1.515. In the middle of the wall-part a protruding pier, w. 0.595. Bricks yellow, pink and orange-pink, mainly fresh. Meas. of bricks: l. 0.27, 0.29 (av. 0.28); th. 0.038, 0.041 (av. 0.04); th. of joints: 0.021, 0.017, 0.015 (av. 0.018). Modulus: 0.265, 0.269 (av. 0.267). Mortar: light-grey, rather badly sieved, mainly red and red-brown pozzolana, occasionally black. In the wall-pier more black pozzolana. Other granules: pebbles and small pieces of lime. The mortar is hard in the latericum, softer in the reticulatum. Masonry: rather irregular.

c Mixtum, l. 0.78, w. 0.45. Modern.

C. ---

D. In north a three scaffolding-holes at h. 1.63-1.72. In north b one beamhole through the wall: 2.15-2.30 x 1.86-2.07; two smaller holes: 2.30-2.40 x 1.59-1.67, 2.41-2.53 x 1.59-1.69. In south b one beamhole through the wall: 5.59-5.73 x 1.98-2.12; two scaffolding-holes: 6.00-6.14 x 2.52-2.65, 4.92-5.03 x 2.52-2.64; one filled-in beamhole (?): 3.945-4.06 x 1.95-2.13.

E. Remnants of staircase D, l. 1.02, w. 1.37, preserved h. a couple of centimetres. Covered by modern concrete. In front of the staircase two travertine stones, that could have belonged to it.

ROOM 15

A. 7.10; 3.92; 6.24; 4.035.

B. North a Mixtum, l. 0.36, w. 0.45. Modern.

b Mixtum, l. 5.295, w. 0.45. Like J4, south b. W. of protruding pier in the middle: 0.60.

c Mixtum, l. 1.445, w. 0.45. Modern.

East a Latericum, l. 0.525. See east facade c.

Opening to Semita dei Cippi, w. 3.035.

b Latericum, l. 0.37. See east facade d.

South a Mixtum, l. 1.80, w. 0.30. Completely identical to mixtum of north wall.

b Latericum, l. 1.08, w. 0.30. Bricks yellow, pink and light-pink, mainly fresh. Meas. of bricks: l. 0.23, 0.235, 0.27 (av. 0.245); th. 0.042, 0.04, 0.042 (av. 0.041); th. of joints: 0.027, 0.023, 0.018, 0.022 (av.

0.023). Modulus: 0.31, 0.31. Mortar: light-grey, rather badly sieved. Mainly brown pozzolana. Other granules: pebbles and small pieces of lime. The mortar is soft. This wall-part is a blocking, but not of a doorway. It seems to belong to the same period as the wall-parts on either side.

c Mixtum, l. 3.36, w. 0.30. *Tesserae* mainly yellow-brown, also many orange, carelessly hewn and shaped to fit below the latericum-band. Meas. of *tesserae*: 0.093 x 0.085, 0.096 x 0.094; th. of joints: 0.018, 0.017, 0.007, 0.029 (av. 0.018). Latericum in the mixtum: band of five courses along the bottom of the wall, band of three course higher in the wall. Distance between both 1.36. This wall-part contains a protruding pier in latericum, that corresponds to the protruding pier in the north wall. Data of the pier: modulus 0.269, 0.279 (av. 0.274); mortar: light-grey, rather badly sieved; brown and red-brown pozzolana; near the bottom also black and dark-grey pozzolana; other granules: small pieces of lime; the mortar is hard; masonry: irregular.

West a Mixtum, l. 1.16, w. 0.46. See 8, east d.

Doorway to room 8, w. 1.51, h. 1.95. See 8, east doorway between c and d.

b Mixtum, l. 1.365, w. 0.46. Modern. See 8, east c.

C. ---

D. In north b one beamhole through the wall: 1.46-1.62 x 1.96-2.08; one filled-in beamhole (?): 3.12-3.245 x 1.925-2.135; three scaffolding-holes of which two filled in: 1.02-1.15 x 2.43-2.61, 1.96-2.05 x 2.50-2.62, 2.19-2.26 x 2.47-2.57. In south c one beamhole through the wall: 4.78-4.93 x 1.82-1.965; one beamhole pointed towards west in protruding pier: 3.31-3.49 x 1.75-1.90; three scaffolding-holes: 5.91-6.02 x 2.34-2.45, 5.13-5.23 x 2.34-2.44, 4.41-4.52 x 2.33-2.43. In west a one large beamhole with a brick over the top: 0.005-0.23 x 1.90-2.05; one filled-in scaffolding-hole: 0.13-0.27 x 2.35-2.41.

E. ---

ROOM 16

A. 6.175; east can not be measured; south preserved till 3.30; 4.69.

B. North a Mixtum, l. 3.385, w. 0.30. See J5, south c.

b Upper half latericum, lower half incertum, l. 1.04, w. 0.30. See J5, south b. From the ground till 0.86 this wall-part is in incertum with among others large pieces of opus signinum used as bricks. Mortar: like in J5, south b.

c Mixtum, l. 1.75, w. 0.30. See J5, south a.

East a Latericum, l. 0.24. See east facade d.

Opening to the Semita dei Cippi. W. can not be measured.

South a Mixtum, l. 2.05, w. 0.41. Badly preserved part of fragmentary preserved south wall. The mixtum is identical to the mixtum in the north wall.

b Mixtum, l. 0.50, w. 0.52. Like a.

West a Mixtum, l. 1.515, w. 0.435. Entirely like 8, east e.

Doorway to room 11, w. 1.455. See 8, east doorway between d and e.

b Mixtum, l. 1.72, w. 0.46. Entirely like 8. east d.

C. ---

D. In north a one beamhole through the wall: 1.305-1.455 x 1.87-2.01; in protruding pier one beamhole pointed towards west: 2.78-2.94 x 1.88-2.01; three scaffolding-holes: 0.25-0.35 x 2.40-2.54, 1.01-1.13 x 2.37-2.53, 1.73-1.31 x 1.78-2.00. In west b one large beamhole against north wall: 4.40-4.69 x 1.94-2.10.

E. ---

CORRIDOR 17

A. 15.01; c. 1.81; 18.80; 2.15.

B. North a Opus quadratum, l. 0.91. See west facade.

b Latericum, l. 1.85, w. 0.59. Bricks yellow, light-pink, pink and orange-pink, mainly fresh. Th. of joints: 0.029, 0.02, 0.024, 0.018 (av. 0.023). Modulus: 0.289, 0.278 (av. 0.284). Mortar: light-grey, rather badly sieved. Mainly dark-brown and dark-grey pozzolana. Other granules: pebbles and small pieces of lime. The mortar is hard. Masonry: not very regular.

Doorway, w. 0.98.

c Mixtum, l. 6.39, w. 0.59. *Tesserae* mainly yellow-brown and rather carelessly hewn, made into triangles below the latericum-band. Meas. of *tesserae*: 0.092 x 0.095, 0.10 x 0.096; th. of joints: 0.008, 0.011, 0.015, 0.013, 0.017 (av. 0.013). Latericum in the mixtum: 0.815 high band along the bottom of the wall, band of six courses higher in the wall. Distance between both 1.21. Three wide latericum-posts (w. resp. 1.65, 1.52, 1.02), the two posts at the ends of this wall-part with two teeth at one side and the middle post with two teeth on either side. Teeth of all posts at same level. Distance between band and first tooth c. 0.35, between first and second tooth c. 0.36. Second tooth is directly beneath the higher band. Bricks mainly light-pink, and orange-pink and less yellow. Modulus: 0.285, 0.279 (av. 0.282). Mortar: like b. Masonry: rather regular, the latericum more so than the reticulatum. This wall-part contains a window, l. 0.93.

d Latericum, l. 1.475, w. 0.59. This is a blocking of a doorway. Rather complicated structure just above the blocking. At the west side there is a filled-in square continuing into wall-part c, while at the east side the door-post continues upwards and at a higher level a square continues to the west. Bricks of all kinds of colours and mainly fresh, thinner than in b and c. Meas. of bricks: l. 0.253, 0.239 (av. 0.246); th. 0.027, 0.03 (av. 0.029); th. of joints: 0.028, 0.026, 0.026, 0.028 (av. 0.027). Modulus: 0.272. Mortar: seems to correspond with the mortar of 6/7 south b and c. Masonry: rather irregular.

e Latericum, l. 1.93. L-shaped wall-part. Like the latericum in b and c. Meas. of bricks: l. 0.245, 0.24, 0.21 (av. 0.232); th. 0.036, 0.034, 0.037 (av. 0.036); th. of joints: 0.025, 0.018, 0.017, 0.026 (av. 0.022).

Modulus: 0.285. Mortar: like in b and c.

Opening W. 1.91. H. can not be measured but must have been considerable, since the wall at the west side has been preserved to a h. of c. 3.00 and does not show any trace of a lintel.

f Latericum, l. 3.10, w. 0.60. Bricks mainly yellow, also orange- and light-pink, mainly fresh. Meas. of bricks: l. 0.26, 0.215, 0.22, 0.23 (av. 0.231); th. 0.03, 0.035, 0.045, 0.03 (av. 0.035); th. of joints: 0.022, 0.02, 0.019, 0.015 (av. 0.019). Modulus: 0.242, 0.243, 0.244 (av. 0.243). Mortar: light-grey, rather badly sieved. Mainly black and dark-grey pozzolana, also some red and green. Other granules: pebbles and small pieces of lime and brick. The mortar is fairly soft. Masonry: More irregular than b, c and e. Bricks somewhat convex, but the courses still quite straight.

East, opening to corridor 18, w. 1.30.

a Latericum, l. 0.61, w. 0.45. Crumbled at north end. Entirely like 8, north b.

South a Latericum, l. 1.45, w. 0.45. Crumbled at west end. Entirely like 8, north b.

Opening to room 8, w. 3.37. See 8, north opening.

b Vittatum A, l. 3.70, w. 0.44. Entirely like 8, north a and 2, north b.

Doorway to room 2, w. 0.86. See 2, north.

c Vittatum A, l. 2.20, w. 0.46. Entirely like 2, north a and 1, north b.

Doorway to room 1, w. 0.86. See 1, north.

d Vittatum A, l. 6.36, w. 0.45. Entirely like 1, north a.

West, opening to Cardo Maximus, w. 2.15.

C. ---

D. In north c nine scaffolding-holes, of which five filled in, at av. h. 2.08-2.19, four beamholes (?): 3.39-3.50 x 1.65-1.85, 4.87-4.99 x 1.68-1.88, 6.22-6.37 x 1.69-1.91, 7.66-7.80 x 1.75-1.95. In north f two scaffolding-holes: 12.18-12.25 x 1.79-1.86, 12.945-13.085 x 1.78-1.86. In south b, c and d eight scaffolding-holes at av. h. 2.04-2.17.

E. ---

CORRIDOR 18

A. 15.43; 1.25; 15.21; c. 1.40.

B. North a Incertum, l. 0.75, w. 0.42. Daubed completely in modern times.

b Latericum, l. 4.71, w. 0.48. Bricks yellow, rather thick, also some thinner bricks, many are fresh. Preserved fragmentary and daubed completely in modern times. Masonry: irregular.

c Latericum, l. 0.90, w. 0.48. Thick pink-red bricks. Meas. of bricks: l. 0.20, 0.28 (av. 0.23); th. 0.043, 0.045 (av. 0.044). Yellow bricks of b and d set against this wall-part. Upper part of wall modern.

d Latericum, l. 4.30, w. 0.48. Like b. Bricks mainly yellow, some orange and pink, thick and thin at random. Meas. of bricks: l. 0.265, 0.27, 0.273 (av. 0.269); th. 0.042, 0.03 (av. 0.036); th. 0.026; th. of joints: 0.023, 0.012, 0.018 (av. 0.018). Modulus: 0.275, 0.278 (av. 0.277). Mortar: like 17. north f.

Brown, red and black pozzolana. Masonry: irregular due to the varying thickness of the bricks. At 1.36 from the ground a later restoration in very irregular incertum with tiles, bricks, tufelli and reticulatum-*tesserae*; higher up this incertum becomes a rather normal reticulatum. Mortar: yellowish grey, very badly sieved with large lumps of grey, dark-grey and brown pozzolana. Other granules: fairly large pebbles and pieces of marble, mosaic-*tesserae* and occasionally a small piece of brick. The mortar seems to resemble the mortar of the vittatum A and B of the north wall of rooms 1 and 2 and the east wall of rooms 2 and 3.

e Latericum, l. 0.875, w. 0.48. Like c. Bricks pink-red, mainly fresh. Meas. of bricks: l. 0.222, 0.167, 0.202, 0.23 (av. 0.205); th. 0.037, 0.037, 0.042 (av. 0.039); th. of joints: 0.017, 0.019, 0.014, 0.018 (av. 0.017). Modulus: 0.266, 0.275 (av. 0.271). Mortar: rather dark-grey, at places light-grey, rather badly sieved. Black and dark-grey pozzolana. Other granules: pebbles and small pieces of lime. The mortar is rather hard. Masonry: rather irregular. Above this wall-part too the later restoration with reused reticulatum-*tesserae*.

f Latericum, l. 0.815, w. 0.48. Like d. Modulus: 0.292, 0.284 (av. 0.288). Above this wall-part too the later restoration; here it is a very irregular reticulatum.

g Incertum, l. 1.06, w. 0.48. This is a blocking of a doorway. A very irregular incertum with large lumps of marble, broken tufelli and bricks. Everything is placed very carelessly. Mortar: grey, very badly sieved. Very large granules of black, brown and a little red pozzolana. Other granules: pebbles, pottery, pieces of brick. The mortar is soft.

h Latericum, l. 2.02, w. 0.48. Like d and f. Modulus: 0.32, 0.322 (av. 0.321). Above this wall-part the beginning of a careless later restoration and above that the very irregular reticulatum.

East Incertum, l. 1.25, w. 0.48/0.40. Preserved up to h. 1.12. In the incertum many pieces of tufelli, lumps of tufa and bricks. Mortar: greenish grey, very badly sieved. Mainly brown pozzolana, also black and occasionally grey. Other granules: pebbles and small pieces of lime and larger pieces of brick. The mortar is soft.

South a Mixtum, l. 1.91, w. 0.52. Entirely like g, north d.

Doorway to room 8, w. 1.17. See g, north.

b Mixtum, l. 9.04, w. 0.52. Entirely like g, north c.

Doorway to room 8, w. 2.64. See g, north.

c Crumbled north end of g, north b, l. 0.45.

West. opening to corridor 17, l. 1.30.

a Latericum, l. 0.38. Part of 17, north f.

C. ---

D. In north. f and h as well as in the wall-part above blocking g four beamholes (?) at a h. of 2.17-2.36. In south b three scaffolding-holes at a h. of 1.80-1.95.

E. ---

CORRIDOR 19

A. 26.54; ? ; 18.10; 1.79.

B. North a Latericum, l. 1.10, w. 0.455. Daubed completely in modern times. Bricks yellow, orange-pink and pink, mainly fresh.

b Latericum, l. 1.35, w. 0.455. This is a blocked window. Daubed completely in modern times.

c Latericum, l. 1.55, w. 0.455. Like a. Bricks mainly pink and orange-pink, mainly fresh. Meas. of bricks: l. 0.254, 0.258, 0.254 (av. 0.255); th. 0.038, 0.038, 0.04 (av. 0.039); th. of joints: 0.023, 0.022, 0.022, 0.018 (av. 0.021). Modulus: 0.304, 0.294 (av. 0.30). Mortar: light-grey, rather badly sieved. Black, dark- and light-brown pozzolana. Other granules: a few pebbles and small pieces of lime. The mortar is rather soft.

d Latericum, l. 1.02, w. 0.42. This is the blocking of a window (starting at 1.14 from the ground), with orange, pink and yellow bricks, mainly fresh. Meas. of bricks: l. 0.21, 0.235, 0.212 (av. 0.219); th. 0.036, 0.037, 0.042 (av. 0.038); th. of joints: 0.032, 0.03, 0.02, 0.03, 0.028 (av. 0.028). Modulus: 0.307, 0.31 (av. 0.309). Mortar: purplish light-grey, rather badly sieved, brown, light- and dark-brown, black and grey pozzolana. Other granules: a few pebbles and small pieces of lime. The mortar is hard. Masonry: rather regular.

e Mixtum, l. 21.52, w. 0.425/0.45. This long wall-part is entirely in mixtum and contains six windows. Between windows 3 and 4, 4 and 5, 6 and 7 and to the east of window 7 the wall is in latericum. W. of windows resp. 1.03, 1.30, 1.33, 1.025, 1.29, 1.29. Starting at 0.56, 0.62, 0.563, 0.57, 0.76, 0.78. *Tesserae* of all kinds of colours and of different sizes. Meas. of *tesserae*: 0.102 x 0.107, 0.09 x 0.089; th. of joints: 0.018, 0.017, 0.018, 0.021, 0.01 (av. 0.017). Latericum in the mixtum: band of eleven courses along the bottom of the wall. The wall has not been preserved high enough to show a band higher in the wall. Two latericum-posts (w. 0.60 and 0.61) with two teeth. L. of teeth c. 0.310, w. c. 0.29. Bricks like in c. Th. of joints: 0.028, 0.022, 0.024, 0.022 (av. 0.024). Modulus: 0.305, 0.304 (av. 0.305). Mortar: light-grey, rather badly sieved, black, brown and grey pozzolana. Other granules: pebbles and small pieces of lime. The mortar is rather soft. Masonry: rather irregular. Towards the east much of the masonry has been daubed in modern times.

f Latericum, l. 0.73. This is the side of the pier at the east end of the north wall. The pier belongs to the same period as the rest of the north wall.

East. opening to Semita dei Cippi. Opening can not be measured.

South a Mixtum, l. 3.00, w. 0.44/0.52. Daubed or even rebuilt completely in modern times. See also 12, north a.

b Mixtum, l. 15.10, w. 0.52. Entirely like g, north d.

West a Incertum, l. 1.25, w. 0.40/0.48. Entirely like

18 east.

g Latericium, l. 0.34. See 18. north h.

C/D/E. ---

Caseggiato delle Fornaci

Catalogue

Jan van Dalen

§ 1 INTRODUCTION

The method of description is similar to that used in the catalogue of the Cas. dei Molini. Unless reported otherwise all walls are built in latericium.

As the Cas. delle Fornaci was built on a foundation-terrace, the level of which can be observed clearly throughout the entire building, I related the measured heights to this level. Furthermore, since the floor-level of several rooms was lowered at some time during the history of the building, I also recorded the heights as related to the present-day floor-level. As a result, on several occasions two heights are given, one as related to the general foundation-level, the other one as related to the street-level or floor-level.

This same lowering of floor-levels has had the result that in some former plans of the building the widths of some walls have been exaggerated, since, as is normal in Roman building, the foundation-walls are wider than the upper walls. The wall-widths as given here are those of the narrower, true walls, even if the narrowing takes place at a higher level, as in the rooms in the south part of the building. The ridge which is the result of the narrowing has been called plinth.

In 1978 some observations were made on the masonry of the Cas. delle Fornaci by T.L. Heres. These unpublished descriptions are included in the catalogue.

Sometimes reference is made to the original plan as published in *Notizie degli Scavi* 1913, p. 122 and *Vaglieri* 1914, tavola IV (on a larger scale).

§ 2 DESCRIPTION (Fall 1989)

2A Outer walls

OUTER NORTH WALL. L. 15.69.

a L. 11.24. Almost entirely restored (sign: "restauro 1911 e 1963"). Bricks for the most part antique but reused, including a marble slab. An authentic part is found in the east, at 0.94 to 2.43 from north-east corner, h. 0.70. Meas. at 0.40: brick l. 0.182-0.259, av. 0.222; brick w. 0.025-0.029, av. 0.027; mortar w. 0.015-0.02, av. 0.017. Modulus: 0.236-0.251, av.

0.245. Bands of thick bricks alternate with bands of thin bricks. The thin bricks have the typical Severan red colour. Well-sifted, very hard mortar, dark-grey (possibly affected by moisture). Black and rust-coloured, sometimes quite large, pozzolana and some heterogeneous material. Some small lime-residues. Two holes, one rectangular at 7.04 from north-west corner (at 0.25 from street-level, w. 0.16, h. 0.30), the other triangular (9.90 from north-west corner, upper sides 0.44 each, base 0.30, in connection with vertical drain-channel).

Doorway to room 17, w. 1.18. No threshold preserved, eroded concrete and brick fragments. The plan in *Vaglieri* 1914 shows a blocking, not attested.

b L. 0.89, w. 0.90. Preserved until at least 1.16 above street-level, 0.04 above foundation-level.

Set against c. Heavily restored in modern times (sign: "restauro 1911 e 1963"). Very hard greyish mortar with dark-red and black pozzolana, but smaller than in section c, and more brownish pozzolana. A few lime-residues.

c L. 2.48, w. 0.90. Preserved until at least 1.63 above street-level, 0.53 above foundation-level. Heavily restored in modern times. Rather thick bricks, red and yellow, thin mortar-beds. Very hard, greyish mortar with large dark-red and black pozzolana, some grey and some brownish pozzolana. Some lime-residues, sometimes quite large.

Street (Via della Fullonica). W. c. 7.25. Pavement of basalt blocks, except for a c. 3.00 wide strip along the outer north wall of the Cas. delle Fornaci. L-shaped construction (room) at north end of outer north wall, built of eight large travertine blocks. Angle of construction in north-west corner, heading east and south. Long side parallel to outer north wall, l. 8.45, l. of short side 2.80. Distance between end of short side and facade 0.90. The west side projects 0.30 into Via delle Corporazioni. Av. h. 0.30. Long side consisting of six blocks (2.15x1.10; 0.90x1.20; 0.90x1.10; 1.00x1.10; 0.60x1.10; 1.80x1.10). Short side consisting of two blocks (1.40x1.10; 1.40x1.10).

OUTER EAST WALL. L. 48.78 (including alley 11).

a L. 2.98. A narrowing of alley 11. Set against *Insula del Soffitto Dipinto* (II, I, 6) to the south. Meas.: bricks l. 0.245-0.277, av. 0.264; bricks w. 0.025-

0.029, av. 0.027; mortar w. 0.020-0.027, av. 0.022. Modulus: 0.25-0.251, av. 0.25. Light- to dark-grey mortar, containing large red to rust-coloured and black pozzolana. Many large lime-granules and much heterogeneous material. Window at 2.98 above foundation (3.20 above street), w. c. 0.60. Four putlog holes at 1.48 above foundation (1.70 above street). Two putlog holes at 2.82 above foundation (3.04 above street).

Doorway to alley 11. Travertine threshold, consisting of three blocks; surface at h. 0.43 from street (0.31 above foundation). H. of blocks 0.30, d. 0.49, l. 0.20 (north), 0.73 (middle) and 0.50 (south). Two pivot holes, diam. 0.06 (north) and 0.07 (south). One rectangular hole in middle, w. 0.11, d. 0.04. The plan in Vaglieri 1914 shows a blocking, not attested.

h L. 1.04-0.75-6.44. Rectangular travertine block at south east corner on floor: l. 0.26, d. 0.59, h. 0.86; projecting 0.05 from outer south wall.

c Blocked doorway to room 10 with straight arch of sesquipedales forming sill of window above (w. c. 0.70, h. 0.59). Window covered by segmental arch, almost entirely or entirely restored (l. 1.54). Blocking of doorway in latericium with some incertum in lower part. Threshold probably represented by bonding course above foundation at h. 0.15 above street. H. to top of doorway 2.70 from foundation, 2.85 from street. A window was created in the blocking, just beneath the lintel, w. 1.12, h. 0.47. Hole through wall at threshold level: w. 0.16, h. 0.23.

The mortar used in the incertum is very tenacious, grey to dark-grey, containing many large particles, such as black and dark-brown pozzolana, some limestone, large lime-granules and heterogeneous material. My own meas.: bricks l. 0.198-0.275, av. 0.231; bricks w. 0.027-0.031, av. 0.029; mortar w. 0.022-0.031, av. 0.026. Modulus: 0.288-0.295, av. 0.292. In the brickwork in the upper part of the blocking the mortar is less tenacious and of worse quality, although of the same general character. The colour is somewhat lighter, sand-coloured to grey. Description by Heres, meas. at 1.40: bricks l. 0.171-0.251, av. 0.208; bricks w. 0.031-0.035, av. 0.033; mortar w. 0.030-0.034, av. 0.032. Modulus: 0.288-0.305, av. 0.295. Irregular brickwork. Different bricks from yellow to mulberry-red. Mortar not very tenacious, grey in colour with some chestnut-brownish powder. Contains many black and few red pozzolana and much heterogeneous material, up to 0.04 in size, including marble.

Doorway to stairway 9A, w. 1.45. Covered by straight arch of sesquipedales forming sill of window above. Top of doorway at 2.33 above threshold, at 2.77 above street. Travertine threshold in four pieces at 0.44 above street: l. 1.85 (two pieces, 1.23 and 0.64), d. 0.92 (two pieces, 0.58 and 0.34), h. 0.31; ridges round the four pieces, in front h. 0.08, d. 0.11; at the back h. 0.04, d. 0.07; at the sides h. 0.04. Two pivot holes, diam. 0.07. The threshold is very worn in

the middle.

Window above doorway, w. c. 1.15. Covered by segmental arch of sesquipedales. Almost entirely restored. Two windows, opening onto rooms 7 and 8 (sills at h. 1.71 (north) and 1.70 (south) above street, 1.53 and 1.54 above foundation). Two holes for water-supply or drainage to basin in room 7, at h. 0.95 above street.

Doorway to room 6. Originally a window, but enlarged to form an entrance. Wall continues underneath threshold. Travertine threshold: l. 1.20, d. 0.65, h. 0.28; upper surface at 0.71 above street, 0.42 above foundation. Two pivot holes, at north and south side, diam. 0.07 and 0.08, round hole in middle, diam. 0.04, d. 0.02; ridge, h. 0.04, d. 0.07; hole on front of threshold at northern half: l. c. 0.20, h. c. 0.10, possibly for drainage.

Sill of original window at 1.77 above street, 1.51 above foundation, 1.14 above threshold. Triangular hole in north doorjamb, just above level of original window-sill, h. 0.43, w. at base 0.20, d. 0.10. A possible corresponding hole in the south doorjamb is very worn. Of the original window-lintel three sesquipedales have been preserved, at h. 1.70 above the original window-sill.

c L. 2.62. Sequel to section b with same characteristics. The mortar contains a little more brownish pozzolana, and a little more lime-granules.

d L. 2.64. Doorway to room 5, filled in with latericium, h. 1.00 from foundation, 1.26 from street. One drainage hole: 1.30 - 1.63 from north; w. 0.36, h. 0.30 from street. Meas.: bricks l. 0.146-0.173, av. 0.160; bricks w. 0.03-0.035, av. 0.033; mortar w. 0.017-0.022, av. 0.02. Modulus: 0.279-0.29, av. 0.285. Hard to very hard whitish mortar with red pozzolana and some black, sometimes mixed turning the mortar-colour into purple.

e L. 14.92. Typical Hadrianic salmon red bricks, with yellow bonding courses, the lower one forming the top of the foundation. Very hard greyish mortar with dark-red, black and much grey pozzolana. Quite a few lime-residues and much heterogeneous material. Two windows above the second bonding course: sills at 2.07 (north, opening onto room 3) and 1.94 (south, opening onto room 4) above street, both at 1.54 from foundation. The northern one partly filled in (entirely modern restoration of the sixties).

f L. 11.70. Separated from e by irregular joint. To large extent modern restoration (1911/1912). Partly authentic, at 0.26 to 0.86 from north-east corner, h. 0.55. Meas. at 0.40: brick l. 0.098-0.231, av. 0.179; brick w. 0.029-0.032, av. 0.03; mortar w. 0.016-0.025, av. 0.02. Modulus: 0.239-0.25, av. 0.243. Same mortar as described in east part of outer north wall. The rest is modern.

Street (Via della Fontana). W. c. 4.50. Pavement of basalt blocks.

OUTER SOUTH WALL (ROOMS 10 AND 12). L.

15.72, th. 0.75.

a L. 5.28-0.97-2.82-1.76. H. 3.84 to projecting brick cornice. Cornice consisting of four courses of bricks, each projecting a few cm. from the one below. The projecting edges of the second and upper brick course have been cut obliquely. Traces of red paint, also on bricks below the cornice. Immediately above the cornice a horizontal groove. Ten putlog holes along the wall at 2.56 above foundation (nine in section b, one in section a). Traces of plaster. Sometimes thick, over 0.03.

a L. 5.28.

Meas. at 0.40: bricks l. 0.215-0.24, av. 0.228; bricks w. 0.038-0.040, av. 0.039; mortar w. 0.013-0.02, av. 0.017. Modulus: 0.255-0.258, av. 0.257. Meas. at 0.90: bricks l. 0.215-0.244, av. 0.227; bricks w. 0.032-0.039, av. 0.035; mortar w. 0.012-0.022, av. 0.017. Modulus: 0.253-0.261, av. 0.257. Meas. at 1.40: bricks l. 0.194-0.235, av. 0.216; bricks w. 0.029-0.036, av. 0.032; mortar w. 0.015-0.024, av. 0.020. Modulus: 0.231-0.253, av. 0.243. The mortar is very tenacious, whitish in colour, containing much very small and a some larger red, black and brown pozzolana. Some large lime-granules.

Four holes at 1.92 above foundation (largest c. 0.14x0.15), but probably not deep enough for use as putlog holes. Two small holes at 1.68 above foundation. Rectangular travertine block at south west corner: l. 0.23 (along outer south wall), d. 0.62 (along outer west wall), h. 0.92.

Doorway to room 12. L. 1.76, h. 2.79 above foundation, 2.65 above street. Covered by segmental arch of sesquipedales. Rectangular hole in east doorjamb at h. 2.19; h. 0.32, w. 0.13, d. 0.58.

b L. 8.67. Meas. at 0.40: bricks l. 0.189-0.282, av. 0.232; bricks w. 0.033-0.037, av. 0.035; mortar w. 0.015-0.021, av. 0.019. Modulus: 0.255-0.258, av. 0.256. Meas. at 0.90: bricks l. 0.218-0.247, av. 0.230; bricks w. 0.029-0.034, av. 0.031; mortar w. 0.017-0.023, av. 0.02. Modulus: 0.24-0.25, av. 0.247. The mortar is very tenacious, light-grey to somewhat darker, containing red (possibly ground pottery), black and brown pozzolana, and some lime-granules.

Two doorways to room 10: w. 1.78, h. 2.78 above foundation, 2.47 above street, cut through wall, and w. 1.34, h. 2.39 above foundation, 2.15 above street, covered by segmental arch of sesquipedales. Large irregular hole, crudely cut into the wall, between the doorways at 1.82 above foundation, 1.47 above floor; l. 0.37, h. 0.47. Above this hole an upright oblong hole in wall, possibly in connection with a cut-through in the cornice above.

OUTER WEST WALL L. 49.27 to north-west corner of the Insula del Soffitto Dipinto (l. of outer wall of Cas. delle Fornaci 44.88). Th. of south part 0.85.

a L. 0.98.

Doorway to stairway. Present w. 2.20. Both jambs missing. Cut out in outer wall, starting at 0.50 below

foundation, 0.54 from street. One more or less preserved step at foundation-level, consisting of a bipedalis. In front of stairway a hump of caementicium, probably meant to scale the difference in height between street and stairway-threshold. Preserved up to h. 0.32 from street, 0.22 below level of supposed stairway-threshold.

Doorway ? to room 16. No wall attested above foundation-level. W. to section b 4.15. Modern restoration and consolidation, up to foundation-level. H. 1.01 from street-level to foundation-level. The plan in Vaglieri 1914 does not show a doorway.

b L. 3.18. North part damaged and modern.

Doorway to room 15. Present w. 2.73. South jamb missing. Modern restoration and consolidation, up to foundation-level. H. 0.94 from street-level up to threshold level. The plan in Vaglieri 1914 shows a partial blocking, not attested.

c L. 2.59.

Doorway to room 15. Present w. 2.84. North jamb missing. Modern restoration and consolidation, up to foundation-level. H. 0.87 from street-level up to threshold level.

d L. 2.85.

Doorway to room 14. W. 2.68. Modern restoration and consolidation, up to foundation-level. H. 0.70 from street-level up to threshold level. The plan in Vaglieri 1914 shows a partial blocking, not attested.

e L. 2.87.

Doorway to room 14. W. 2.64. Modern restoration and consolidation, up to foundation-level. H. 0.63 from street-level up to threshold level.

f L. 7.31. The mortar is very tenacious, whitish to yellow-whitish in colour, containing much brown and black, and less red pozzolana. Some lime-granules. The bricks are salmon-pink and seem have been made rough along the edges.

g L. 1.48. Blocked doorway to room 13. Mortar more or less the same as in wall, even less red and much brown pozzolana. Threshold-level is foundation-level (at h. 0.40 above street). The blocking is antique up to 0.86 above foundation, the rest is restored (to h. 1.32; 1.72 from street). No clear dividing-line in the mortar used in this section and sections f and h.

h L. 10.72. The antique parts of the upper wall are separated from the foundation by a modern restoration, h. c. 0.65 (apparently only up to the window). The mortar is the same as in section f and blocked doorway g. The bricks are salmon-pink and seem to have been made rough along the edges. One window (6.59-7.92 from south); sill at 1.38 above foundation.

Doorway to alley 11, w. 1.85. Travertine threshold of two sections, each section of two superimposed blocks. Surface at 0.60 from street, 0.32 above foundation. Sections l. 1.47 (south) and 0.38 (north), d. 0.64, h. 0.28 (0.12 lower plate; 0.16 upper plate). The south section has a groove running parallel to the length, w. 0.03, at 0.10 from west. Two pivot holes:

north one circular, diam. 0.06; south one elliptic (long side running east-west), 0.06x0.08, at 0.26 from south jamb.

j L. 2.54. Narrowing of roofed alley 11. Set against *Insula del Soffitto Dipinto* (II, VI, 6) to the south.

Street (Via delle Corporazioni). W. c. 7.10. Pavement of basalt blocks, except for a strip along the outer west wall, w. c. 1.00 to 1.50.

2B Rooms 1-17

ROOM 1

A. 7.01 x 7.58 x 7.01 x 7.67.

B. North, a L. 7.01. Entirely covered with remains of ovens. In the top of the crumbled wall a drainage hole is visible, situated at 1.86 from west wall and 0.40 from outer north wall. (0.16 (west-east) x 0.18 (north-south)).

Pier in north-east angle, relation with a not clear. W. 0.73, th. 0.60. Meas.: bricks l. 0.169-0.206, av. 0.190; bricks w. 0.035-0.038, av. 0.036; mortar w. 0.019-0.026, av. 0.022. Modulus: 0.281-0.295, av. 0.289. Yellow to light-pink bricks. Very tenacious, whitish mortar. Brown and black to dark-grey pozzolana and small lime-granules. Towards wall-nucleus the mortar is darker and contains larger particles.

East, a L. 6.27. Latericum. Entirely modern.

Pier in south-east corner. W. 0.85, th. 0.71. For greater part restoration. Meas.: bricks l. 0.205-0.215, av. 0.210; bricks w. 0.030-0.035, av. 0.033; mortar w. 0.022-0.031, av. 0.027. Modulus: 0.325. Very tenacious, grey mortar. Brown and dark-grey pozzolana. Small lime-granules. One red bipedalis at h. c. 1.50. The rest of the bricks is predominantly yellow.

South, a L. 0.50.

Doorway to room 2. W. 1.52. Narrowed by pier in north-east corner of room 2.

b L. 1.52. Wall receding at foundation, d. 0.05, h. 0.35 from floor. The mortar is very hard, grey in colour, with black, red and less brown pozzolana and little lime-granules.

Doorway to room 2. W. 1.48. Cut through wall.

c L. 1.84. Wall receding at foundation, d. 0.06, h. 0.28 from floor. The mortar is somewhat darker in colour than the former, some more red pozzolana and the lime-granules are more conspicuous.

Pier set against c. W. 0.78, th. 0.88. Modern.

West, a L. 0.35.

b L. 0.94.

c L. 1.09. Vertical groove, 0.55 to 0.70 from b. w. 0.15, d. 0.10.

d L. 2.72.

e L. 1.47.

f L. 1.17.

C. Floors of furnaces reported as tiles laid on sand, with a space underneath the west furnace.

D. No data available.

E. The *Giornale degli Scavi* (1912, 241, August 31)

describes the finds made in this room as follows: "Two furnaces, built with parallelepipedic blocks of greenish tufa, with pavements of brick resting on sand. The pavement of the west furnace had fallen down demonstrating that a void had been down there. The mouths of the furnaces faced south and in front of them run two parallel thin walls, built of brick, w. 0.22, 0.31 apart from each other. The furnaces were covered with remains of construction material that showed traces of burning." Meas. of ovens: 3.25x3.80 and 3.25x3.50. Floor of sesquipedales, one with stamp CIL XV, 847.

Nowadays the remains of the ovens start at 1.93 to the north of the pier in the south-west corner of the room. An upright brick in front of the right oven, probably part of the thin wall in front of the ovens, is situated at 1.18 to the west of the east wall. The current state of preservation is bad, owing to vegetation and the relative softness of the tufa blocks.

ROOM 2

A. 6.85 x 5.00 x 7.12 x 5.02.

B. North, a L. 1.68. Wall receding at foundation, d. 0.07.

Pier set against a in north-west corner of room. Latericum on a foundation of caementicium; foundation projecting, forming a plinth. W. 0.92, th. 0.61. Meas.: bricks l. 0.198-0.239, av. 0.219; bricks w. 0.030-3.4, av. 0.032; mortar w. 0.019-0.025, av. 0.023. Modulus: 0.265-0.271, av. 0.267. The bricks are light-salmon-pink and yellow. The mortar is light-grey to whitish, very hard, containing grey and brown pozzolana and some lime-granules.

Doorway to room 1.

b L. 1.50. Wall receding at foundation, d. 0.07.

Doorway to room 1.

c L. 0.50.

Pier enveloping c. W. 0.91, th. 1.30. Nearby a travertine block. Meas.: bricks l. 0.218-0.345, av. 0.263; bricks w. 0.036-0.04, av. 0.038; mortar w. 0.019-0.032, av. 0.026. Modulus: 0.33 and 0.331. The mortar is whitish and contains grey and brown pozzolana.

East, a L. 5.00. Entirely modern. Wall receding at foundation, d. 0.30. A window in older descriptions and plans is missing, presumably due to the rebuilding in modern times.

Pier set against a in south-east corner. W. 0.44, th. 0.75. Entirely modern daubing and heavily grown-over. The original facings are missing.

South, a L. 0.64. Wall receding at foundation, d. 0.07.

Doorway to room 3, cut through. W. 1.70.

b L. 0.32. Wall receding at foundation, d. 0.07. The mortar is grey to dark-grey, very hard and containing black, grey, brown and red pozzolana, sometimes quite large. The lime-granules are very small.

c L. 1.80. Vittatum mixtum. Blocked doorway to room 3. Meas.: tufelli l. 0.175-0.258, av. 0.204,

tufelli w. 0.065-0.073, av. 0.069; bricks l. 0.18-0.277, av. 0.244; bricks w. 0.028-0.037, av. 0.033; mortar w. 0.02-0.028, av. 0.024. Modulus (1+1): 0.135-0.149, av. 0.142. The mortar is grey to dark-grey, containing black, dark-grey, brown, rust-coloured and some yellowish pozzolana, sometimes quite large, and small lime-granules and heterogeneous material, such as marble. The mortar-joints are daubed. Wall receding at foundation.

d L. 2.67. Wall receding at foundation, d. 0.07.

Pier set against d in south-west corner of room. W. 0.90, th. 0.61. Entirely modern.

West, a L. 1.51. Wall receding at foundation, d. 0.15.

Doorway to room 14. W. 2.02.

b L. 1.48. Wall receding at foundation, d. 0.15.

C. No data available.

D. No data available.

E. The material found in this room was reported to be much different from the material found in room 1, which was construction material. Among the finds was a piece of pavement with black-and-white mosaic, with crude tesserae, forming a geometrical pattern, from one of the upper floors. Besides this the following material was collected:

6123 Ordinary reddish terracotta. Five fragments of tiles with stamp CIL XV, 1057 (137 AD).

6124 Idem. Fragment of tile with stamp CIL XV, 692 (123 AD).

6125 Fragment of tile with moon-shaped stamp *N. LUCAPRILIS ATTILIANO*.

6126 Idem. Two fragments of roof-tiles with stamp CIL XV, 1435 (129 AD).

6127 Idem. Fragment of tile with stamp CIL XV, 1436 (130 AD).

6128 Idem. Two fragments of sesquipedales with stamp *MU[...]JSCI OPUS DOLLARE* (CIL XV, 1367 ?).

6129 Bronze. Two large coins.

ROOM 3

A. 7.14 x 4.91 x 7.22 x 4.88.

B. North, a L. 2.68. Wall receding at foundation, d. 0.07.

Pier set against a in north-west corner of room. W. 0.94, th. 0.60. Entirely modern.

b L. 1.80. Vittatum mixtum. Blocked doorway to room 2. A basalt block is incorporated at the foot of the wall.

c L. 0.32. Wall receding at foundation, d. 0.07.

Doorway to room 2.

d L. 0.64. Wall receding at foundation, d. 0.07.

East, a L. 4.91. No plinth visible because of pavement of basalt blocks. Partially blocked window at 1.73-2.21 from north, w. 1.48. Sill of bipedales that are part of bonding course. No lintel preserved.

Pier set against a in south-east corner of room. W. 0.62, th. 0.96. Entirely modern.

South, a L. 2.63. Wall receding at foundation, d. 0.07. The mortar is grey to dark-grey, containing

black, brown and rust-coloured pozzolana and some lime-granules.

b L. 1.45. Part of blocked doorway, cut off at west end. At east jamb springing of slightly curved lintel arch, made of sesquipedales. Meas.: bricks l. 0.145-0.265, av. 0.217; bricks w. 0.029-0.035, av. 0.031; mortar w. 0.013-0.023, av. 0.018. Modulus: 0.245-0.254, av. 0.248. The mortar is light-grey, with black, brown and rust-coloured pozzolana and very small lime-granules.

Doorway to room 4, cut through. W. 1.85.

c L. 1.16. Wall receding at foundation, d. 0.07. Two holes at 1.18 above floor.

Pier set against c in south-west corner of room. W. 0.92, th. 0.64. The bricks are salmon-pink. The mortar is very hard, greyish, containing grey, brown, some yellowish-brown and some red or rust-coloured pozzolana.

West, a L. 1.53. Wall receding at foundation, d. 0.15. Two holes at 1.18 above floor.

Doorway to room 13. W. 1.92. A hole in south doorjamb at 0.89 above foundation.

b L. 1.43.

C. Pavement of basalt blocks.

D. No data available.

E. In this room a kneading-machine was found, that is still there near the south wall. Although damaged, all parts lie around the main fragment and can be fitted into it, although the present state of vegetation prevents this. In GdS 1913, 70 and NSc 1913, 126, n. 1 it was reported as an olive-press. H. 0.72, th. of bottom 0.34. Diam. 0.75, w. of rim 0.16. The hole in the bottom in which a wooden bar was fitted has a diameter of 0.22. The holes in the sides could not be traced. In the north-west corner of this room a *dolium* was found, dug into the floor and still in situ: diam. 0.98, w. of rim 0.05 (GdS 1913, 70 and NSc 1913, 126).

ROOM 4

A. 7.06 x 4.89 x 7.22 x 4.88.

B. North, a L. 1.15. Wall receding at foundation, d. 0.07. Filled-in hole at 1.15 from floor.

Pier set against a in north-west corner of room. W. 0.73, th. 0.57. The mortar is grey, containing black and brown and some rust-coloured pozzolana; small lime-granules.

Doorway to room 3.

b L. 1.55. Blocked doorway.

Pier set against b. W. 1.33, th. 0.60. Projecting 0.13 from doorjamb. Regular, trapezium-shaped hole in middle of south facing at 2.09 above floor. W. 0.26, h. 0.30. Meas.: bricks l. 0.19-0.212, av. 0.20; bricks w. 0.032-0.039, av. 0.035; mortar w. 0.016-0.02, av. 0.018. Modulus: 0.259-0.264, av. 0.262. The mortar is generally the same as in the former pier, but contains also some yellowish pozzolana and some marble-like little stones.

c L. 2.60. Wall receding at foundation, d. 0.07.

Regular hole at 2.08 above floor. W. 0.25, h. 0.27.

Pier set against c in north-east corner of room. W. 0.76, th. 0.61. The joint between the pier and the outer east wall widens upwards, possibly a subsidence of the outer wall. The gap was filled with cement in modern times. The mortar is the same as in the former pier.

East, a L. 4.90. Window at 1.12 to 2.60 from pier to the north, w. 1.48. Sill of bipedales of bonding course. Seven holes at 0.95 above floor.

Pier set against a in south-east corner of room. W. 0.59, th. 0.73. Start of arch towards west at 2.35 above floor. The mortar is generally the same as in the former pier, but somewhat darker.

South, a L. 2.58. Wall receding at foundation, d. 0.07. Regular hole at 2.05 above floor. W. 0.24, h. 0.26. Two filled-in holes at h. c. 2.50.

b L. 1.62. Blocked doorway. Plinth of a continues, probably former threshold. Covered by segmental arch, filled in to get straight lintel. The mortar is light-greyish with much dark-grey and black pozzolana. Meas. by Heres: mortar w. av. c. 0.02. Modulus: av. c. 0.26. Description: all bricks are thick and dark- to mulberry-red.

Pier set against b. W. 1.33, th. 0.60. Start of two arches towards east and west at 2.34 above floor. One large hole (possibly niche) in north facing at 1.99 above floor. W. 0.23, h. 0.28. Hole at c. 0.95 above floor. Hole in west side at 0.70 above floor. Meas.: bricks l. 0.199-0.24, av. 0.216; bricks w. 0.03-0.035, av. 0.033; mortar w. 0.011-0.024, av. 0.017. Modulus: 0.23-0.245, av. 0.24. The mortar is light- to dark-grey, containing much dark-grey and less brown pozzolana.

Doorway to room 5. W. 1.76. Cut through wall. One very eroded hole in east doorjamb at 0.72 above floor.

c L. 1.09. Wall receding at foundation, d. 0.07.

Pier set against c in south-west corner of room. W. 0.76, th. 0.59. Start of arch towards east. One hole in east side at 0.69 above floor, possibly corresponding with hole in last pier. The mortar is the same as in the piers against the north wall of room 4.

West, a L. 1.46. Wall receding at foundation, d. 0.15.

Doorway to room 13. W. 2.04. One hole in south doorjamb at 1.16 above foundation.

b L. 1.47. Wall receding at foundation, d. 0.15. One hole, filled-in in antiquity, at 1.70 above foundation. One hole, filled-in in recently, at 0.91 above foundation.

C. Pavement of basalt blocks.

D. No data available for the original ceiling. The added piers support the springings of full arches running east-west. The piers are c. 1.85 apart, implying a reconstructed height of 2.35 (starting-height of arches) + 0.93 (radius of arch) + 0.44 (height of sesquipedales) = 3.72 for the reinforced ceiling.

E. No data available.

ROOM 5

A. 7.08 x 4.90 x 7.02 x 4.87.

B. North, a L. 1.10. Wall receding at foundation, d. 0.07. Hole at 0.20 from north-west corner, at 1.20 from floor; w. 0.09, h. 0.11, d. 0.07.

Doorway to room 4.

b L. 1.59. Blocked doorway. Hole at 1.08 above floor.

Pier set against b. W. 1.34, th. 0.59. Up to h. c. 1.00 the bricks are predominantly salmon-pink, above that yellow. The mortar is grey to dark-grey, containing dark-grey, black and brown pozzolana and very many small lime-granules. At floor-level two travertine blocks are incorporated in the south-west and south-east corner. South-west block: w. 0.56, h. 0.42, d. 0.22. South-east block: h. 0.42, w. and d. not measurable. Beginnings of arches towards west and east at 2.38 above foundation.

c L. 2.63. Two holes at 1.08 above floor, same height as the one in section b. Three holes at 2.43 above floor, filled in in antiquity.

Pier set against c in north-east corner of room. W. 0.77, th. 0.60. The same mortar as in the former pier. Here too the switch from salmon-pink to yellow at h. c. 1.00. Large hole in south facing at 1.90 above floor, 0.35 from south-west corner of pier. H. 0.24, w. 0.18. Very thin white plaster on south facing with a network of diagonal lines in red paint. A lot of nail-holes in the same facing. Beginning of arch towards west at 2.38 above foundation.

East, a L. 1.11.

b L. 2.63. Blocked doorway upon Via della Fontana. One drainage hole, with a terracotta pipe at floor-level, 1.47 from north; diam. 0.12.

c L. 1.16. One hole at 2.46 above foundation. H. 0.12, w. 0.13.

Pier set against c in south-east corner of room. W. 0.69, th. 0.77. Same mortar as used in former pier (here no switch in brick-colour). A minor antique restoration in the north side, l. 0.20, h. 0.30. The mortar is grey, containing black, brown and rust-coloured pozzolana and many small lime-granules. Hole in north side at 1.82 from foundation. H. 0.28, w. 0.20. Possibly eroded niche. Beginning of arch towards west at 2.39 above foundation.

South, a L. 7.01. Wall receding at h. 1.54 from foundation-level, d. 0.07. Seven holes at 2.55 above foundation. Hole at 1.28 above foundation, piercing the wall to room 6. Hole at 1.18 above foundation. Regular hole at 2.24 above foundation; h. 0.42, w. 0.28, d. 0.37.

Pier set against a in middle of wall, 2.87 to 4.20 from east; w. 1.33, th. 0.67. Meas.: bricks l. 0.172-0.239, av. 0.21; bricks w. 0.030-0.035, av. 0.032; mortar w. 0.015-0.019, av. 0.017. Modulus: 0.235-0.247, av. 0.241. Modulus measured by Heres in piers: 0.24-0.275, av. 0.258. Mortar is the same as used in the former pier. Rectangular hole in north side at h. 2.11.

H. 0.18, w. 0.22. Travertine block at north-east corner at foundation-level. Visible h. 0.60. Travertine block at north-west corner at foundation-level. H. 0.61, w. 0.42, d. 0.32. Beginning of arches towards east and west at h. 2.39.

Pier set against a in south-west corner of room. W. 0.74, th. 0.69. More or less the same mortar as in the former pier, but containing more blue-grey particles. Travertine block at north-east corner at foundation-level. H. 0.62, w. 0.15, d. 0.55. Beginning of arch towards east at 2.39 above foundation.

West, a L. 1.47. Wall receding at foundation, d. 0.15. Hole at 1.23 above foundation. H. 0.13, w. 0.08.

b L. 2.04. Blocked doorway. Meas. (combination of my own measurements and those of Heres): bricks l. 0.131-0.245, av. 0.186; bricks w. 0.03-0.035, av. 0.033; mortar w. 0.022-0.037, av. 0.029. Modulus: 0.308-0.397, av. 0.331. The mortar is light- to dark-grey, with black, brown, red and rust-coloured pozzolana; lime-granules. Heres: Hadrianic bricks or very similar. The blocking protrudes a little in damaged or cut away doorjambs.

c L. 1.36. Hole at 1.17 above foundation. H. 0.13, w. 0.18. Hole at h. 0.57 above foundation in the form of an hour-glass. H. 0.28, max. w. 0.14.

C. No data available.

D. Same as room 4.

E. Basin, covering east part of floor. North wall of basin, west part, meas.: bricks l. 0.112-0.194, av. 0.159; bricks w. 0.025-0.035, av. 0.03; mortar w. 0.021-0.028, av. 0.025. Modulus: 0.329 and 0.33. Light- to pale-grey mortar with black and brown pozzolana. Quite a coarse appearance. North wall of basin, east part, meas.: bricks l. 0.178-0.25, av. 0.211; bricks w. 0.031-0.04, av. 0.036; Mortar w. 0.025-0.027, av. 0.026. Modulus: 0.343 and 0.405. West wall of basin, meas.: bricks l. 0.161-0.215, av. 0.182; bricks w. 0.03-0.035, av. 0.033; mortar w. 0.025-0.029, av. 0.027. Modulus: 0.365 and 0.371. Modulus measured by Heres: c. 0.31. All bricks were reused.

ROOM 6

A. 6.94 x 3.00 x 6.93 x 2.99.

B. North, a L. 6.85. H. up to restored cornice 3.87 from foundation, 4.09 from floor. Wall receding at 1.54 above foundation (1.76 above floor), d. 0.07. Five holes at c. 1.18 above foundation (c. 1.40 above floor). Ten holes at 2.61 above foundation, 2.83 above floor. Remains of plaster (th. c. 0.04). At the foot of the wall a number of diagonal to vertical incised grooves, sloping from west upwards towards east, up to a h. of 0.88 above foundation, 1.04 above floor.

Pier set against a in north-west corner of room. W. 0.60, th. 0.59. Projecting 0.06 from doorjamb. Hole in south-east angle, at 1.04 above foundation, 1.37 above floor. H. 0.08, l. 0.12, d. 0.13. Travertine block in lower south-east corner: h. 0.53, l. 0.30, d. 0.20.

Traces of plaster at east and south side. Modern restoration in lower south-east angle (just above travertine block). Restoration on top. Since the pier was set against two walls (see for the west wall further on) with plinths, two vacant spaces appeared: the one in the north wall was filled as part of the pier itself, the one in the west was filled in later. Meas. by Heres, concerning all piers: modulus 0.268-0.288, av. 0.279 [probably taken from south piers]. Very wide bricks, rounded at the corners of the piers. The mortar varies: generally grey with red and black pozzolana, varying in size from small to quite large; occasionally heterogeneous material, including marble. All seems from the second century. My own description of this pier: very hard mortar, light- to dark-grey, containing black and brown pozzolana, mostly small but occasionally quite large.

Pier set against a in middle of wall, 2.72 to 4.04 from west; w. 1.32, th. 0.60. Travertine blocks in south-west and south-east angles. South-west: h. 0.70, l. 0.36, d. 0.31. South-east: h. 0.69, l. 0.35, d. 0.36. Traces of plaster at west, south and north sides. Modern restoration in south facing, central lower part, and at the south-west and south-east angles somewhat higher. Meas.: bricks l. 0.171-0.235, av. 0.205; bricks w. 0.03-0.035, av. 0.032; mortar w. 0.016-0.025, av. 0.019. Modulus: 0.242-0.267, av. 0.251. Same mortar as in the former pier.

Pier set against a in north-east corner of room. W. 0.72, th. 0.60. Travertine block at south-west angle; h. 0.50, l. 0.42, d. 0.30. Traces of plaster at west and south sides. Considerable amount of modern restoration. The vacant spaces created by the plinths were filled up as part of the pier. Same mortar as in the former pier.

East, a L. 0.92. Wall receding at 1.54 from foundation, 1.77 from floor, d. 0.30. Traces of plaster above plinth. Modern restoration below foundation, in the joint between wall and adjoining pier and in the upper part of wall.

Doorway onto Via della Fontana. W. 1.17. Cut through at place of original window. Threshold of travertine. Modern restoration below threshold.

b L. 0.93. Wall receding at 1.54 from foundation, d. 0.30. Traces of plaster.

Pier set against b in south-east corner of room. W. 0.60, th. 0.75. Two travertine blocks on top of each other in lower north-east angle. Lower block: h. 0.15, l. 0.40, d. 0.30. Upper block: h. 0.27, l. 0.40, d. 0.21. Traces of plaster at north and west side. Modern restoration beneath travertine blocks, in joints with adjoining walls and in upper part of wall. More or less the same mortar as in the former pier but less well-sifted and the brown pozzolana tends more to a rust-colour.

South, a L. 1.15. Wall receding at 1.54 from foundation, d. 0.07. H. up to cornice (of same type as in outer south wall), 3.92 above foundation. Hole just east of doorway-lintel at 2.60 above foundation.

Traces of plaster. Modern restoration in upper part of wall.

Doorway to room 7. W. 1.48. Lintel of straight arch of sesquipedales and shorter bricks. Top of doorway at h. 2.30. Traces of plaster on both doorjambs.

b L. 4.23. Wall receding at 1.52 above foundation, 1.84 above floor, d. 0.07. Two holes at 1.17 above foundation, 1.47 above floor. One hole at 2.41 above foundation, 2.73 above floor. Six holes at 2.55 above foundation, 2.87 above floor. Remains of plaster covering part of the plinth. Modern restoration beneath the foundation-level.

Pier set against b in middle of wall, 2.84 to 4.17 from east; w. 1.33, th. 0.62. Travertine blocks at the lower north-east and north-west angles. North-east: h. 0.59, l. 0.47, d. 0.24. North-west: h. 0.59, l. 0.47, d. 0.23. Traces of plaster at east, north and west facings. Modern restoration beneath the travertine blocks, at the joint between pier and wall, and in the upper part of the pier. Same mortar as in the former pier.

Pier set against a in south-west corner of room. W. 0.57, th. 0.60. Projecting 0.07 from doorjamb. Travertine block at lower north-east angle; h. 0.27, l. 0.29, d. 0.47. Like its counterpart in the north, the space created by the pier set against the plinth was filled in later. The lower part of the facings (up to 0.49 above foundation, 0.75 above floor) is considerably worse in quality. Same mortar as in the former pier. Modern restoration in the lower part of the facings, the joint of pier and wall, and in the upper part of the pier. The corners of all piers in this room have been rounded.

West, a L. 0.53. Wall receding at 1.54 from foundation, d. 0.15.

Doorway to room 14. W. 1.96. Two corresponding holes in the doorjambs, 0.37 beneath the plinth (1.48 above floor-level in the south, 1.59 in the north). Traces of plaster on both doorjambs. Beneath the foundation-levels in both doorjambs the core of the wall is visible.

b L. 0.53. Wall receding at 1.54 from foundation, d. 0.15.

C. No data available.

D. Modern restoration in upper part of wall, consolidation with reconstruction of ceiling-support in caementicium.

E. No data available.

ROOM 7

A. 6.96 x 2.47 x 6.89 x 2.50.

B. North, a L. 4.22. Wall receding at 1.54 above foundation, 1.45 above floor, d. 0.07. Two rows of six putlog holes, one at 1.19 above floor, the other at 2.56 above floor. Traces of plaster.

Doorway to room 6.

b L. 1.19. Wall receding at h. 1.54 above foundation-level, d. 0.07. One hole just east of doorway at 2.37 above foundation. Modern restorations in the west part of this section. Traces of plaster.

East, a L. 2.47. Wall receding at 1.54 above foundation, d. 0.30. Window, 0.64 to 1.81 from north; w. 1.17, h. 1.70. Sill of brick fragments. Covered by segmental arch of sesquipedales. Below two drainage holes of basin, 0.33 - 0.71 and 1.20 - 1.43 from north-east corner; h. 0.63 - 0.98 and 0.57 - 0.94 above foundation. Two holes, one at each side of window, at 0.96 above plinth. Traces of plaster.

South, a L. 6.89.

Doorway to room 8, 0.59 to 2.08 from east; w. 1.49, h. 2.31 above foundation-level. Covered by segmental arch of courses of sesquipedalis-length, with some sesquipedales but for the greater part of smaller bricks. In the east doorjamb two pieces of tufa in the brickwork. One row of seven putlog holes at 1.06 above floor, three of which are blocked. In upper part of wall a row of six putlog holes. Two holes above the springing of the doorway arch.

West, a L. 2.49.

Doorway to room 13, 0.37 to 1.83 from south; w. 1.46, h. 1.95 above the floor of room 7. Cut out through wall. Straight lintel. Traces of plaster on both jambs. Above the doorway is a window to room 13, stretching along the whole of the west wall, but this is an entirely modern restoration. Wall receding at 1.54 from foundation, d. 0.30. Traces of plaster.

C. Present h. at 0.09 above foundation-level. In GdS 1913 and NSc 1913 reported as being paved with basalt blocks. Not attested because of layer of modern debris.

D. The ceiling is barrel-vaulted with its peak at h. 4.22 above floor-level. To large extent modern restoration.

E. Against the east wall, beneath the window, scarce remains of a basin, originally consisting of thin wall at 0.89 from east wall (w. 0.18) covered with opus signinum (th. 0.04). Connection with outdoors by two holes through outer east wall. Basin attested up to 0.98 from north wall. Brick bottom, h. 0.11, covered with opus signinum, th. 0.05. Traces of signinum against north and east wall, th. 0.02.

ROOM 8 (understairs)

A. 6.86 x 1.18 x 6.86 x 1.18.

B. North, a L. 6.87. Wall receding at foundation at 0.42 above floor, d. 0.09. Row of three putlog holes at 1.20 above foundation. Relieving arch beneath foundation-level, visible l. c. 2.00, disappearing below floor-level. Traces of plaster.

Doorway to room 7, 4.79 to 6.28 from west; w. 1.49, h. 2.31 above foundation.

East, a L. 1.18. Wall receding at 1.54 above foundation, 1.83 above floor, d. 0.30, but cut out underneath window to a depth of 0.55. Window 0.15 to 1.03 from north; w. 0.88, h. 1.48. Covered by a straight arch of sesquipedales. Traces of plaster.

South, a L. 6.86. Hole for vertical drainage pipe 0.61 to 0.91 from east; w. 0.30, d. 0.30. Irregular hole cut through wall to room 9, 2.27 to 3.08 from east; w.

0.88, h. 0.87. One row of three putlog holes at 1.19 above foundation. Traces of plaster.

West, a L. 1.18. Back wall of stairway. H. up to vault-top 0.50 above floor. Up to foundation latericium, above foundation caementicium with large pieces of tufa.

C. The floor was lowered 0.29 - 0.42, to present level.

D. Sloping barrel-vaulted ceiling, of caementicium without facing, with large pieces of tufa. H. of vault from 0.12 above foundation in west (to top of vault: 0.50) to 3.49 above foundation in east.

E. No data available.

STAIRCASE 8A

A. 7.46 x 1.18 x 7.45 x 1.18 (landing at top: 1.48 x 1.18 x 1.48 x 1.18).

B. North, a L. 5.96.

Doorway to first floor of room 7. W. 1.48.

East, a L. 1.18. Entirely modern restoration.

South, a L. 7.46. Vertical drainage channel at 0.64 from south-east corner. W. 0.28, d. 0.30. One row of four holes at h. 0.13 above upper step.

West, doorway to room 13.

C. Steps paved with modern brick-tiles. Twenty steps of av. d. 0.298, av. h. 0.206 (not taking into account the first step of h. 0.60).

D. No data available.

E. No data available.

ROOM 9 (understairs)

A. 4.99 x 1.78 x 4.99 x 1.76.

B. North, a L. 4.99. Drainage pipe 0.72 to 1.00 from west; w. 0.28, d. 0.29. In the lower part the edges have been cut away. Three holes at 2.45 from foundation. Scattered holes of different and irregular form, some of them possibly corresponding to each other. Irregular hole through wall to room 8, 0.33 to 1.20 from east; w. 0.87, h. 0.87. Traces of plaster.

East, a L. 1.78. Three holes, one in north part at h. 0.49, two in south part at 0.08 and 0.63. Traces of plaster.

South, a L. 4.99. Wall receding at foundation, d. 0.07. Traces of plaster. Doorway to room 10, 2.90 to 4.37 from east wall; w. 1.47, h. 2.54 from foundation. At both doorjamb bipedales project at foundation-level, probably remains of threshold. Covered by segmental arch, of sesquipedalis-height, underneath covered by brick fragments. One hole in middle of arch. Two holes in each doorjamb, corresponding, at h. 1.35 and h. 2.17; lower ones diam 0.08, upper ones diam. 0.11. Traces of plaster.

West, a L. 1.76. Wall receding along entire wall at 1.54 from foundation, d. 0.30. One large hole right underneath plinth, possibly a damaged facing. In the upper part of the wall, in the middle a regular hole, w. 0.16, h. 0.24. Three irregular holes.

Pier in east part of room supporting stair-vault, vittatum mixtum (incertum in the foundation); 0.85 x

0.70 x 0.91 x 0.70. Connected with east wall by a brick arch. The upper part is funnel-shaped. The mortar is light-grey in colour, containing black and brown pozzolana, small and somewhat larger, and a number of lime-granules. Description by Heres: modulus latericium c. 26.0, modulus 1+1 14.5, modulus 1+1+1 = 18.7. The mortar is very different from the Hadrianic mortar used in the staircase. The pier has been built with reused bricks. It contains an entire bipedalis.

C. In east the floor-level is at same height with foundation-level, in west the floor-level is 0.28 beneath foundation-level.

D. Cross-vault in west part (below landing) and sloping barrel-vault. Caementicium without facing. Greatest h. in west: 3.40 above foundation, start of vault at this point at h. 3.04. Smallest h. in east: 1.00 above foundation (start of vault), h. at vault-top 1.23.

E. In this room ashes were found, probably deriving from the lime-kiln in alley 11.

STAIRCASE 9A

A. 7.24 x 1.76 x 7.25 x 1.79 (landing 0.99 x 1.79 x 0.99 x 1.79).

B. North, a L. 6.36. Three putlog holes at 2.57 and five at 3.59 from foundation.

East, a L. 0.15 - 0.15. Wall receding 0.29 at 1.50 above foundation.

South, a Blocked doorway to room 10, cut through wall and blocked. Meas.: bricks w. c. 0.03-0.04, av. c. 0.035; mortar w. c. 0.02-0.035, av. c. 0.025. Modulus: c. 0.30-0.32. Vertical drainage channel above doorway, w. 0.28, d. 0.27.

h L. 6.36. Three putlog holes at h. 2.57 and four at 3.59 from foundation.

West, a L. 1.79.

C. Seventeen steps. The first four steps are made of travertine, the rest of bricks (modern restoration); av. d. 0.304; av. h. 20.7. The floor of the landing upstairs is of modern brick-tiles.

D. Sloping segmental barrel-vault. Modern restoration.

E. No data available.

STAIRCASE 9B

A. 5.41 x 1.79 x 5.41 x 1.79 (landing + stairs) (landing: 1.98 x 1.53 x 2.00 x 1.79; h. 0.41 above level of landing 10A).

Divided from landing 10A by modern concrete slope replacing supposed threshold. In antique facing of north and south walls traces of eight steps.

ROOM 10

A. 7.14 x 1.83 x 7.14 x 1.89.

B. North, a L. 7.14.

Doorway to room 9, 1.20 to 2.67 from west; w. 1.47, h. 2.34 above floor.

Blocked doorway to staircase 9A: 0.30 to 1.16 from east; w. 0.86, h. 2.51 above floor. At this facing of

the blocking the wall shows caementicium, and is set back somewhat. The lintel of the door was cut in a sort of step gable-motive. The mortar tends to soften towards the centre of the wall. It is light- to pale-grey, containing dark-grey, black and brown pozzolana, ranging in size from very small to very large, and small lime-granules. Regular hole in the middle of the wall at 1.82 above floor, w. 0.16, h. 0.26, d. 0.18. West of doorway to room 9 a hole in the form of a plus-sign. West of same doorway one putlog hole, east of the doorway a row of eight putlog holes, all at 2.53 above floor. Furthermore some fifteen holes of different form scattered over the wall. Traces of plaster.

East, a L. 1.83.

Blocked doorway to Via della Fontana, 0.00 to 1.54 from north; w. 1.54, h. 2.70. Description by Heres, meas. at 0.90: bricks l. 0.174-0.221, av. 0.192; bricks w. 0.030-0.035, av. 0.033; mortar w. 0.018-0.026, av. 0.024. Modulus: 0.285-0.304, av. 0.294. Badly levelled courses. Bricks vary in quality and colour (yellow to mulberry-red). The mortar is quite tenacious but pulverizing towards the nucleus into a brown powder. Contains very much red and black pozzolana and heterogeneous material, sometimes in size up to 0.04, including marble. The doorway is covered by a straight arch of courses of bricks of sesquipedales-length. Above the doorway, following the curve of the barrel-vault covering room 10, is a window, covered by a segmental arch. W. 0.69, h. 0.58. The sill is formed by the sesquipedales-lintel of the doorway below. In the blocking another window was cut out later at the upper south angle of the original doorway; w. 1.10, h. 0.56. Just above the original threshold in the lower south angle a drainage hole was cut out. South from doorway a plinth at 1.54 from foundation, d. 0.30. Damaged. Traces of plaster.

South, a L. 7.14. Traces of plaster on all wall-parts. East of doorway four holes, two of which in a row in upper part of wall.

Doorway to passage 11, 1.18 to 2.94 from east; w. 1.76, h. 2.78 above floor. Covered by segmental arch of brick courses of sesquipedalis-length. Remains of bricks cemented below arch, in order to form a straight lintel. Regular hole at 0.86 above floor, w. 0.16, h. 0.22, d. 0.15. A rather large but irregular hole at 1.58 above floor, diam. 0.15. Row of eight putlog holes at 2.56 above floor, two of which above west doorway. Five holes scattered over the wall. Between the foundation course and the brick course just above it is a horizontal groove.

Doorway to passage 11, 5.67 to 7.07; w. 1.40, h. 2.39 above floor. Cut out in original wall, the lintel cut in the form of a segmental arch. In south-west corner of wall a plinth of the same kind as in the south-east corner, up to the height of the second bipedalis-course in the outer south wall (i.e. somewhat higher than in the south-east corner). L. 0.30, d. 0.29.

West, a L. 1.89.

Doorway to room 12, 0.29 to 1.89 from south; w. 1.60, h. 2.66 above foundation. Threshold probably partially preserved in bricks projecting from north doorjamb. Window above doorway, the sill formed by the lintel of the doorway, a straight arch of courses of sesquipedalis-length. The lintel of the window is a segmental arch, following the rounding of the vault of room 10, w. 0.70, h. 0.60. In south doorjamb a vertical oblong hole at 1.40 above foundation. In north doorjamb a hole at 1.29 above foundation. Plinth along the wall to the south of it, at 1.84 from foundation, d. 0.30. Traces of plaster.

C. Covered with modern debris.

D. Barrel-vaulted ceiling. Start of vault at h. 3.30, top of vault at 3.68 above foundation-level.

E. No data available.

ALLEY 11

A. 15.72 (including outer walls = south facade) x 4.46 x 14.16 x 4.39.

B. North, a L. 15.72.

Doorway to room 12, 5.28 to 7.05 from west; w. 1.77, h. 2.47 above floor, 2.78 above foundation.

Doorway to room 10, 8.02 to 9.36 from west; w. 1.34, h. 2.15 above floor, 2.39 above foundation.

Doorway to room 10, 12.18 to 13.96 from west; w. 1.78, h. 2.65 above floor, 2.79 above foundation.

East, a L. 4.46.

Doorway to Via della Fontana, 0.00 to 1.48 from north; w. 1.48. Narrowing of original alley-entrance. Set against Insula del Soffitto Dipinto (II, VI, 6). Window to Via della Fontana at 2.98 above foundation.

South, a L. 14.16. The mortar is more or less tenacious, light-grey, containing much black and some brown pozzolana, from large to small in size. Small lime-granules. Irregular hole through wall to Insula, 3.96 to 4.95 from east; w. 0.99, h. 0.90.

Doorway to Insula, 5.65 to 6.71 from east; w. 1.16. Cut through wall.

Blocked doorway, 9.44 to 10.62 from east, w. 1.18. Up to h. 1.50 vittatum mixtum A, above vittatum simplex consisting of irregular tufelli, intersected by one course of bricks. Very tenacious mortar, grey, containing much red, brown and black pozzolana. Much heterogeneous material of small size and many small lime-granules.

Narrowing of former doorway, 10.62 to 12.13 from east, w. 1.51. The mortar is not very tenacious, whitish, containing dark-red, black and brown pozzolana. Not much heterogeneous material and a few lime-granules. The original doorway had a threshold of travertine, still in situ beneath the narrowing wall and blocking.

West, a L. 4.39.

Narrowing of original alley-entrance. Set against Insula. Meas.: bricks l. 0.159-0.371, av. 0.256; bricks w. 0.034-0.036, av. 0.035; mortar w. 0.016-0.027, av.

0.02. Modulus 0.27-0.276, av. 0.274. Very tenacious, whitish to greyish mortar, containing brown, red and black pozzolana, and very few lime-granules. The mortar-joints are daubed.

Doorway to Via delle Corporazioni, 2.54 to 4.39 from south; w. 1.87.

C. No data available.

D. Projecting brick cornice on top of first floor in north indicates the former presence of a wooden ceiling.

E. Oven in south-east corner, originally covering entire east wall. Its walls at their thinnest are 0.60 wide (to east wall and to south wall). Built with demolition material, mostly brick, but with a caementicium-like appearance. The mortar is rather soft and whitish. Predominantly brown and some black pozzolana.

ROOM 12

A. 6.48 x 4.24 x 6.46 x 4.26.

B. North, a L. 0.59. Traces of plaster. Modern facing in lower and upper part.

Doorway to room 13, 0.59 to 2.07; w. 1.48. Hole in west doorjamb at 1.14 from floor. Traces of plaster on both doorjamb. Lower and upper part of jambs modern.

b L. 2.32. Row of two putlog holes at 1.54 from floor. Traces of plaster. Modern restored facing in lower and upper part.

Doorway to room 13; w. 1.79. Cut through wall or widened, in west doorjamb wall-core visible. Hole in east doorjamb at 1.22 from floor. Pavement of basalt-blocks continues between doorjamb, with shallow strip of irregular travertine blocks in between. Modern restored facing in both doorjamb. The plan in Vaglieri 1914 shows a blocking, not attested.

c L. 0.30. Modern restored facing in lower part.

East, a L. 3.97. Drainage hole cut out at extreme north part of wall. Rows of two putlog holes at 2.73 and 1.43 from floor. Traces of plaster. Modern restored facing at north and south parts, and upper part.

Doorway to room 10.

South, a L. 6.46. Modern restored facing in lower and upper part. Traces of plaster.

Doorway to alley 11. Covered by segmental arch of brick courses of sesquipedalis-length. Row of two putlog holes at 2.92 from floor. One hole at 1.86 from floor. Traces of plaster. Modern restored facing in lower and upper parts.

West, a L. 4.26. Traces of plaster. Modern restored facing in lower and upper parts. Window to Via delle Corporazioni at 1.90 from floor; w. 1.34. Sill of bricks.

C. Paved with basalt blocks. Floor-level down to 0.35 below foundation-level.

D. No data available.

E. No data available.

ROOM 13

A. 6.48 x 4.11 x 6.48 x 4.03.

B. North, a L. 4.42. Wall receding at 1.54 from foundation, d. 0.07. Row of four putlog holes at 1.20 from foundation, all filled-in. Cut out in wall, not forming part of original building-phase. In west part row of two putlog holes at 0.68 from foundation. Traces of plaster. Modern restored facing in lower and upper parts.

Doorway to room 14; w. 1.78. No threshold preserved, but some pieces of tufa are put in the ground, though not cemented. Holes in both doorjamb, west at 0.61 from foundation, east 0.59 from foundation. Traces of plaster on both doorjamb. Modern restored facing in lower and upper part of west doorjamb and lower part of east doorjamb. The plan Vaglieri 1914 shows a blocking, not attested.

b L. 0.29. Wall receding at 1.54 from foundation, d. 0.07. Traces of plaster. Modern restored facing in lower part.

East, a L. 2.93. One hole at 1.18 from foundation. Traces of plaster. Partially modern restored facing. Nail-holes scattered on wall between doorways.

Doorway to room 7, w. 1.44. Traces of plaster on both doorjamb. Modern restored facing in lower part of south doorjamb. Traces of plaster. Modern restored facing in lower part and possibly upper part.

Entrance to stairway to first floor; w. 1.18. High threshold of latericium, for greater part restored. Traces of plaster on north doorjamb.

South, a L. 0.30. Traces of plaster. Modern restored facing in lower part and possibly upper part.

Doorway to room 12; w. 1.73.

b L. 2.36. Traces of plaster. Modern restored facing in east part and lower and upper parts.

Doorway to room 12; w. 1.48. No threshold preserved, although some remains of mortar and brick-fragments survive. Traces of plaster on east doorjamb. Modern restored facing in lower and upper parts.

c L. 0.60. Traces of plaster. Modern restored facing in lower and upper parts.

West, a L. 0.60. Traces of plaster. Modern restored facing in lower and upper parts.

Blocked doorway to Via delle Corporazioni; w. 1.48. Meas.: bricks l. 0.235-0.265, av. 0.250; bricks w. 0.029-0.031, av. 0.03; mortar w. 0.011-0.026, av. 0.019. Modulus: 0.245-0.265, av. 0.258. Original threshold in brick at foundation-level. Blocking of doorway is 0.29 less wide than outer wall, thus creating a kind of large niche. Traces of plaster. Entirely modern restored facing below original threshold.

b L. 1.96. Traces of plaster. Modern restored facing in lower and upper parts.

C. Paved with basalt blocks. Level down to c. 0.37 below foundation-level.

D. No data available.

E. Two fitting fragments of a catillus are situated on the floor. Found in room 7 and interpreted as olive-press in GdS 1913, p. 70 and NSc 1913, 126, n. 1. Max. preserved l. 0.67, max. preserved w. 0.34. The height of the funnel-shaped upper part of the catillus is completely preserved. It measures 0.34, meaning that it was part of a small grinding-machine. The hole in which a wooden beam was fitted in order to turn measures 0.24. The hole below this, through which the grain travelled to be ground measures 0.10. At this point the catillus is 0.14 thick.

ROOM 14

A. 7.04 x 14.00 x 6.62 x 13.96.

B. North, a L. 0.60. Wall receding at foundation, d. 0.07. Traces of plaster. Modern restored facing in lower and upper part.

b L. 0.31. Set against a as a narrowing of doorway to room 15. Wall receding at foundation, d. 0.07. In the lower part vittatum mixtum A. Traces of plaster. Modern restored facing in upper west part and passim. The mortar is very tenacious, grey, containing black, brown and red pozzolana and small lime-granules.

Blocked doorway to room 15, in vittatum mixtum A; the lower part of the blocking, up to the foundation-level is in latericium; w. 1.22. Traces of plaster. Modern restored facing in lower and upper part. The mortar is very hard, whitish to greyish, containing predominantly black and dark-brown, and less yellowish and light-brown pozzolana, and a small number of lime-granules.

c L. 4.28, set against d. Wall receding at foundation, d. 0.07. Irregular crack from top to bottom with at the bottom a repaired hole. The plinth at this point has been broken away. Traces of plaster. Modern restored facing in lower (plinth) and upper part.

Pier at 1.24 to 1.86 from west; w. 0.62, d. 0.92. Traces of plaster on all three sides. Travertine blocks on the lower south-west and south-east corner. Modern restored facing in lower and upper part and in the joint of pilaster and wall. Mortar of original phase as in c. Mortar of antique repair: whitish to grey, sometimes abundance of brown and rust-coloured pozzolana changing colour to almost brown, some black pozzolana and even less yellowish, some lime-stone. East facing, meas. (Heres): bricks l. 0.186-0.21, av. 0.198; bricks w. 0.026-0.034, av. 0.03; mortar w. 0.013-0.025, av. 0.02. Modulus: 0.248-0.263, av. 0.256.

d L. 0.61. Wall receding at foundation, d. 0.07. Traces of plaster. Modern restored facing in lower (plinth) and upper part.

East, a L. 1.47. Wall receding at foundation, d. 0.15. Row of two putlog holes at 1.25 from foundation. Traces of plaster. Modern restored facing in lower and upper part and passim.

Doorway to room 4; w. 2.04. Basalt block, part of pavement of room 4, projecting between doorjamb.

Rectangular hole in south doorjamb at 1.31 from foundation. At the corner of south doorjamb and east wall a hole at 1.91 from foundation, h. 0.07, w. 0.21, d. 0.11. Traces of plaster. Modern restored facing in upper parts of both doorjamb.

b L. 3.41. Wall receding at foundation, d. 0.15. Two holes north of pilaster. Row of two holes south of pilaster. Traces of plaster. Modern restored facing in lower and upper part.

Pier projecting from 1.48 to 2.07; w. 0.59, north d. 0.58, south d. 0.60. Plinths at north and south sides at foundation, d. 0.07. Traces of plaster on all three sides. Modern restored facing in lower (plinth) and upper part.

c Blocked doorway to room 5; w. 2.06. Modern restored facing passim. Caementicium-like appearance with much heterogeneous material such as pot-sherds, roof-tiles, pebbles, a basalt block, mortar and plaster granules. The mortar is more or less the same as in the other face in room 5, but softer.

d L. 2.54. Plinth, north from projecting pier, at foundation, plinth south of projecting pier at 1.54 from foundation, both d. 0.15. One hole south of pier. Remains of plaster, th. c. 0.03. Modern restored facing in lower (south of pier) and upper part.

Pier projecting from 1.43 to 2.02; w. 0.59, north d. 0.60, south d. 0.62. Plinths at north and south sides, at 1.60 and 1.54 resp. from foundation, d. 0.07. Two shallow holes at west side. Traces of plaster on all sides. Remains of plaster at north side, th. c. 0.03. Modern restored facing in upper part.

Doorway to room 6; w. 1.96. Hole in each doorjamb, corresponding. Traces of plaster. Modern restored facing in upper parts of both doorjamb.

e L. 0.51. Plinth at 1.54 from foundation, d. 0.12. South, a L. 0.42. Plinth at 1.54 from foundation, d. 0.07. Traces of plaster. Modern restored facing in lower, middle and upper parts.

Doorway to room 13; w. 1.78. Traces of plaster on both doorjamb. Modern restored facing in both doorjamb, west doorjamb entirely restored.

b L. 4.44. Plinth at 1.54 from foundation, d. 0.07. Traces of plaster. Modern restored facing in upper part and east part.

Pier set against b, 1.08 to 1.71 from east; w. 0.63; east d. 0.84, west d. 0.85. Traces of plaster, but scarce. Some red paint on reused bricks. Pale-grey to darker mortar, but in some cases with light-grey daubing. Black and dark-brown, sometimes large, pozzolana. Not many lime-granules. North facing, meas. at 0.40 (Heres): bricks l. 0.220-0.227, av. 0.224; bricks w. 0.033-0.036, av. 0.034; mortar w. 0.024-0.033, av. 0.028. Modulus: 0.28. Meas. at 0.90: bricks l. 0.222-0.225, av. 0.224; bricks w. 0.034-0.036, av. 0.035; mortar w. 0.019-0.025, av. 0.022. Modulus: 0.293-0.297, av. 0.295. Quite regular brickwork with well-levelled courses. The bricks are predominantly yellow, mixed with red.

The mortar is tenacious and grey-whitish, containing much red and black pozzolana, and some heterogeneous material such as marble.

West, a L. 4.62. One hole. Traces of plaster. Modern restored facing in lower and upper part and passim.

Pier projecting; w. 0.76, south d. 0.29, north d. 0.58. Traces of plaster on all three sides. Modern restored facing in lower and upper part.

Doorway to Via delle Corporazioni; w. 2.64. Modern brickwork. Traces of plaster on both doorjamb.

b L. 2.86. Plinth at foundation, a continuation of the wall at threshold level, d. 0.30. Traces of plaster. Modern restored facing in lower and upper part.

Pier projecting; w. 0.59, d. 0.58. Plinth at south and north sides. Traces of plaster on all three sides. Modern restored facing in upper part.

Doorway to Via delle Corporazioni; w. 2.68. Same as said of last doorway.

c L. 1.16. Plinth at foundation, a continuation of the wall at threshold-level, d. 0.30. Traces of plaster with red paint. Modern restored facing in lower and upper part. Along the north-south axis of the room two piers.

Northern pier 0.58 x 1.18 x 0.60 x 1.20. Plinth on all four sides at floor-level. Depths: north, 0.09; east, 0.18; south, 0.10; west, 0.05. Travertine blocks at north and south sides. Traces of plaster on all four sides. Modern restored facing in middle part. A large crack runs through the middle part, the upper part had probably fallen down and was put in place during the modern restoration. Whitish to greyish mortar. Much black, brown and grey pozzolana, from small to large in size. Much heterogeneous material and many lime-granules. Meas. at 0.40 (Heres): bricks l. 0.20-0.235, av. 0.213; bricks w. 0.026-0.039, av. 0.031; mortar w. 0.015-0.026, av. 0.022. Modulus: 0.260-0.267, av. 0.263. Meas. at 0.90: bricks l. 0.14-0.168, av. 0.153; bricks w. 0.03-0.035, av. 0.033; mortar w. 0.022-0.035, av. 0.027. Modulus: 0.277-0.288, av. 0.283. Meas. at 1.40: bricks l. 0.17-0.25, av. 0.199; bricks w. 0.022-0.026, av. 0.024; mortar w. 0.02-0.029, av. 0.025. Modulus: 0.274-0.29, av. 0.283.

Above a height of 0.62 the facing seems to have underwent an antique repair. The brickwork is very dissimilar from the pier against the middle of the north wall. The facing is irregular, the mortar is of the same quality. Bricks of a reddish colour. It is clear that they are not reused. The colour ranges from yellow to red. The mortar is tenacious and abundant, dark-grey; towards the wall-nucleus more whitish and more powdery.

South pilaster Traces of plaster, but very scarce, on a few bricks. Modern restored facing in lower and upper part. Badly sifted mortar with well-sifted mortar-daubing. Pale-grey to greyish, containing black, dark-brown and yellowish-brown pozzolana. Many small lime-granules and much heterogeneous material. Meas. at 0.40 (Heres): bricks l. 0.074-0.228,

av. 0.169; bricks w. 0.033-0.040, av. 0.035; mortar w. 0.016-0.022, av. 0.019. Modulus: 0.281-0.301, av. 0.288. Meas. at 0.90: bricks l. 0.045-0.249, av. 0.168; bricks w. 0.034-0.037, av. 0.036; mortar w. 0.01-0.018, av. 0.014. Modulus: 0.26-0.275, av. 0.267. Badly levelled courses. Irregular bricks, ranging in colour between yellow and mulberry-red. The mortar is tenacious, containing red and black pozzolana and heterogeneous material such as marble.

C. Paved with basalt blocks. Floor-level down to 0.42 below foundation-level.

D. No data available.

E. No data available.

ROOM 15

A. 6.69 x 10.44 x 6.98 x 10.54.

B. North, a L. 0.57. Plinth at foundation, d. 0.09. Traces of plaster. Modern restored facing in lower and upper part.

Doorway to room 16; w. 1.85. Pavement of basalt blocks of rooms 15 and 16 continues. Traces of plaster on west doorjamb. Modern restored facing, east doorjamb almost entirely, west doorjamb in upper part.

b L. 3.34. Plinth entirely restored, at 0.10 below foundation-level, d. 0.07. Traces of signinum. Modern restoration in lower and upper part. The mortar is mostly dark-grey, sometimes light-grey. Red, black and rust-coloured, small to quite large, pozzolana. Few lime-granules.

c L. 1.20. Separated from b by an irregular joint (obscured by extensive modern restoration). Meas.: bricks l. 0.18-0.26, av. 0.221; bricks w. 0.034-0.038, av. 0.036; mortar w. 0.013-0.02, av. 0.017. Modulus: 0.27-0.298, av. 0.283.

East, a L. 1.47. Crack through wall just north of basin-wall. Traces of signinum. Modern restored facing in upper part.

Doorway to room 2; w. 2.02. Modern restored facing of almost entire doorjamb.

b L. 3.56. Plinth at foundation, d. 0.15. Traces of plaster. Modern restored facing in lower and upper part. Projecting pier, w. 0.59, d. 0.58. Plinths at north and south side at foundation, d. 0.09 (north) and 0.10 (south). Traces of plaster on all three sides. Modern restored facing in lower and upper part.

Doorway to room 3; w. 1.92.

c L. 1.46. Plinth at foundation, d. 0.15.

South, a L. 0.59. Plinth at foundation, d. 0.07.

b L. 4.27. Set against a. Plinth as above (h. 0.35 above street-level). Two superimposed kinds of masonry on plinth: one building period witness mortar. Lower up to h. 0.95 above plinth, mortar as in blocked doorway. Mortar in upper as in section d.

Description by Heres, meas. at plinth (0.40 above floor-level): bricks l. 0.143-0.221, av. 0.201; bricks w. 0.021-0.023, av. 0.022; mortar w. 0.025-0.031, av. 0.028. Modulus: 0.24-0.248, av. 0.244. The bricks are predominantly yellow and very thin. Meas. at

0.90 above floor-level: bricks l. 0.136-0.184, av. 0.159; bricks w. 0.029-0.036, av. 0.034; mortar w. 0.016-0.025, av. 0.022. Modulus: 0.26-0.289, av. 0.28. The bricks are predominantly salmon-pink.

c Blocked doorway to room 14 in vittatum mixtum; w. 1.20. Description by Heres, meas.: tufelli l. 0.129-0.211, av. 0.165; tufelli w. 0.065-0.073, av. 0.067; bricks l. 0.153-0.188, av. 0.172; bricks w. 0.022-0.03, av. 0.025; mortar w. 0.016-0.025, av. 0.023. Modulus (1+1): av. 0.121; (1+1+1) av. 0.163. Large tufelli, often crudely hewn, ranging in colour between yellow and chestnut. The bricks are often thin, ranging in colour between yellow and red. The mortar is tenacious and grey-whitish, containing much, quite small, black and red pozzolana and some heterogeneous material.

d L. 0.32. Set against e. Plinth as above.

e L. 0.60. Plinth as above.

West, a L. 1.10.

Doorway to Via delle Corporazioni; present w. 2.84. North jamb missing.

b L. 5.15.

Doorway to Via delle Corporazioni; present w. 2.72. South jamb missing. At 1.82 from south jamb th. of wall underneath threshold-level decreases from c. 0.90 to c. 0.60.

c L. 1.25

C. Floor of basalt blocks. Floor-level down to 0.40 below foundation-level.

D. No data available.

E. Basin against north wall. South wall of basin, meas.: bricks l. 0.195-0.288, av. 0.228; bricks w. 0.026-0.041, av. 0.033; mortar w. 0.02-0.025, av. 0.022. Modulus: 0.275-0.31, av. 0.296. North wall of basin, east part, meas.: bricks l. 0.18-0.26, av. 0.221; bricks w. 0.034-0.038, av. 0.036; mortar w. 0.013-0.02, av. 0.017. Modulus: 0.27-0.298, av. 0.283. Tenacious, dark-grey mortar. Much small black and brown pozzolana. Many lime-granules and heterogeneous material such as mosaic-tesserae.

ROOM 16

A. 6.94 x 7.42 x 7.00 x 7.40.

B. North, a L. 1.83. Entirely restored.

Passage to room 17; w. 4.44.

b L. 0.73.

East, a L. 2.73. Meas.: bricks l. 0.196-0.301, av. 0.245; bricks w. 0.032-0.039, av. 0.036; mortar w. 0.014-0.02, av. 0.017. Modulus: 0.246-0.255, av. 0.251. Salmon-pink bricks. Light-grey mortar containing dark-grey, brown, rust-coloured and some red and black pozzolana.

b L. 1.10. Meas.: bricks l. 0.18-0.236, av. 0.207; bricks w. 0.032-0.036, av. 0.034; mortar w. 0.022-0.025, av. 0.024. Modulus: 0.279-0.295, av. 0.289. Light-greyish to whitish mortar. Dark-grey, rust-coloured and red pozzolana. Some lime-granules.

c L. 0.97. Meas.: bricks l. 0.196-0.234, av. 0.212; bricks w. 0.033-0.036, av. 0.035; mortar w. 0.02-

0.029, av. 0.024. Modulus: 0.295-0.305, av. 0.30. At top: yellowish to whitish mortar; black and brown pozzolana, and lime-granules. At bottom: light-grey to grey mortar; rust-coloured and black pozzolana.

d L. 0.52

South, a L. 3.56. Possibly set against east wall, but entirely restored. Wall receding (entirely restored) at 0.10 beneath foundation-level, d. 0.07.

Doorway to room 15; w. 1.85.

b L. 0.59

West, a Present l. 1.35, north part missing.

Presumed doorway to Via delle Corporazioni. Both jambs missing. L. from preserved part of wall to north-west corner 4.24.

C. Floor of basalt blocks. At west side of room down to 0.71 below foundation-level.

D. No data available.

E. No data available.

ROOM 17

A. 5.39 x 1.16 x 5.39 x 1.21.

B. North, a L. 0.31.

b L. 0.88. Set against a.

Doorway to Via della Fullonica; w. 1.18.

c L. 3.02. With pier projecting in north-east corner; w. 0.12, d. 0.32.

East, a L. 0.32 (west side of pier).

b L. 0.84. Possibly set against a, forming an entity with south a. Meas.: bricks l. 0.141-0.256, av. 0.214; bricks w. 0.031-0.038, av. 0.034; mortar w. 0.017-0.02, av. 0.019. Modulus: 0.261-0.265, av. 0.264. Light-grey to whitish mortar. Dark-grey to black, rust-coloured and some red pozzolana. Some lime-granules.

South, a L. 0.72. Circular hole at h. 0.76 above floor; diam. 0.06.

Passage to room 16; w. 4.07.

b L. 0.60

West, a L. 1.21 (back wall of stairway). Entirely restored.

C. Paved with basalt blocks. Floor-level at lowest point c. 0.70 below foundation-level.

D. No data available.

E. No data available.

2C First floor

ROOM 7, FIRST FLOOR

A. 7.01 x 4.13 x 6.84 x 4.14.

B. North, a L. 0.40. Crumbled towards west. Modern restoration.

Doorway, w. 1.20.

b L. 3.61. Traces of plaster. Meas. at 0.90 above floor-level: brick l. 0.166-0.21, av. 0.187; brick w. 0.03-0.035, av. 0.032; mortar w. 0.019-0.022, av. 0.02. Modulus: 0.254-0.263, av. 0.258. Pink, yellow and red bricks, all fresh. Well-levelled layers. The mortar is mud-grey, not well-sifted but daubed with a better sifted quality of whitish mortar. Much

heterogeneous material, sometimes more than 0.015 in diameter. Black and brown pozzolana.

Doorway, w. 1.20. Travertine threshold with raised edge at north end. L. 1.20, d. 0.56, h. 0.10 at south end, 0.20 at north end. Raised edge h. 0.03, w. 0.10. Broken, but repaired with modern cement.

c L. 0.60.

East, a L. 4.13. Entirely modern restoration.

South, passage to landing of staircase 8A, w. 1.48.

a L. 5.36. Entirely modern consolidation.

West, a L. 4.14. Entirely modern consolidation.

C. Paved with modern brick-tiles.

D. No data available.

E. No data available.

ROOM 10, FIRST FLOOR

A. 7.20 x 1.90 x 7.19 x 1.90.

B. North, a L. 0.58. Entirely modern facing.

Doorway to 9A. W. 1.20.

b L. 3.62. Traces of plaster.

Doorway to stairway 9B, w. 1.79.

East, a L. 1.90. Entirely modern facing.

South (av. w. 0.73) a L. 0.60. Entirely modern facing.

b Blocked doorway to first floor above alley 11. W.

1.20. Threshold of bricks, 0.28 above floor.

c L. 3.74. Relatively much antique brickwork.

Doorway onto first floor of alley 11. W. 1.14. H. 0.22 above floor-level, h. 0.57 above cornice at other side of wall.

West, a L. 1.90. Entirely modern facing.

C. Modern brick-tiles.

D. No data available.

E. No data available.

2D Finds of which the exact place of discovery is unknown

Except for the finds in rooms 1 and 2, all finds were reported only as deriving from the building (in the *Giornale degli Scavi*). No specifications of room numbers were made. They are listed below.

Found from January 16 to 18, 1913:

6910 Ordinary reddish terracotta. Fragment of tile with stamp CIL XV, 1449a. Second half of first century AD.

6911 Idem. Fragment of tile with stamp.

6912 Idem. Fragment of tile with stamp CIL XV, 635c. Beginning of first century AD.

6913 Idem. Fragment of tile with stamp CIL XV, 71. 123 AD.

6914 Idem. Fragment of tile with stamp and incised letters CIL XV, 1430. 127 AD.

6915 Idem. Two fragments of tiles with stamp CIL XV, 79. 123 AD.

6916 Idem. Two fragments of tiles with stamp CIL XV, 985a. 123 AD.

6917 Idem. Fragment of tile with stamp CIL XV, 105d. 126 AD.

6918 Idem. Fragment of tile with stamp CIL XV,

1094i. Between 75 AD and 100 AD.

6919 Idem. Fragment of tile with stamp CIL XV, 361. Between 123 AD and 125 AD.

6920 Idem. Fragment of tile with stamp CIL XV, 1094h. End of first century AD.

6921 Idem. Fragment of tile with stamp CIL XV, 45.

6922 Idem. Fragment of tile with stamp CIL XV, 171. 138 AD.

6923 Idem. Two fragments of tiles with stamp CIL XV, 1068a. 123 AD.

6924 Idem. Antefix with palmettos and scrolls, fragmented. H. 0.11 x 0.105.

6925 Idem. Fragment of decorative tile with egg and dart moulding and scrolls. H. 0.11 x 0.11.

6926 Idem. Fragment of tile with stamp CIL XV, 648a. 123 AD.

6927 Idem. Nineteen fragments of tiles with stamp CIL XV, 1435. 129 AD.

6928 Idem. Ten fragments of roof-tiles with stamp CIL XV, 1436. 130 AD.

6929 Idem. Fragment of tile with stamp CIL XV, 1434. 128 AD.

6930 Idem. Fragment of tile with stamp CIL XV, 107. 123 AD.

6931 Idem. Fragment of tile with stamp CIL XV, 377. 126 AD.

6932 Idem. Fragment of tile with stamp CIL XV, 399.

6933 Idem. Fragment of tile with stamp CIL XV, 617. 145 to 155 AD.

6934 Idem. Fragment of tile with stamp CIL XV, 659a. First century AD.

6935 Idem. Fragment of tile with stamp CIL XV, 109. 126 AD.

6936 Idem. Fragment of tile with stamp CIL XV, 702.

6937 Idem. Fragment of tile with stamp CIL XV, 1262. First century AD.

6938 Idem. Fragment of tile with stamp and incised letters CIL XV, 954. First half of second century AD.

6939 Idem. Fragment of tile with stamp [...]*JERDONIS* (803).

6940 White marble. Body of quadruped animal, female with six pairs of nipples. Head and legs missing. L. 0.031.

6941 Idem. Fragment of inscription. H. 0.075 x 0.1 x 0.095. H. of letters c. 0.095. Two letters, only the letter *M* is clearly discernible.

6942 Idem. Fragment of inscription, possibly part of same inscription as 6941. H. 0.09 x 0.09 x 0.2. H. of letters 0.047. Only *ER* clearly readable, possibly followed by *V* (four letters).

6943 Travertine. Fragments of cornice with two letters: *LL*. H. 0.016 x 0.019 x 0.011. H. of letters 0.032.

6944 Bronze. Lower part of candelabrum with cylindrical shaft decorated with turned knots, with a foot formed by three animal feet alternated by leafs in the form of goose-heads. Total h. 0.38.

6945 Idem. Bronze sheet decorated with semicircular grooves at the two extremes. L. 0.015 x 0.045.

6946 Idem. Cover with vertical ridge on which a piece of iron is fixed.

6947 Idem. Twenty coins. Fourteen small ones and six medium-sized.

6948 White marble. Upper part of a small cippus with the following letters on the front: *US[...]*

[...]LE

6949 Bronze. Vase, hemispherical in the lower part but with a smooth bottom, vertical sides and the rim turned inwards. The sides and much of the rim fragmented. Diam. 0.35 x 0.195. The vase is "quite well preserved but infected by oxidation in all parts and will probably not have a long life"

Found from January 20 to 25, 1913:

6986 White marble. Fragment of an inscription:

[...]BEL[...]

[...]CUIUG[...]

H. 0.145 x 0.130 x 0.04. H. of letters of first line 0.025, of second line 0.02.

6987 Idem. Fragment of an inscription:

[...]M[...]

[...]PIUS[...]

[...]TURM (or TURN)[...]

[...]Q. AN[...]

H. 0.143 x 0.11 x 0.025. H. of the letters 0.025.

6988 Ordinary reddish terracotta. Fragment of decorative tile with part of a figure with "mando pieghettato". On its left the following inscription in relief:

[...]ANTON

[...]PHRA

H. 0.105 x 0.105.

6989 Idem. Ten fragments of tiles with stamp CIL XV, 1435. 129 AD.

6990 Idem. Two fragments of tiles with stamp CIL XV, 1430. 130 AD.

6991 Idem. Two sesquipedales and two fragments of tiles with stamp CIL XV, 1362.

6992 Idem. Fragment of tile with stamp CIL XV, 704a. 123 AD.

6993 Idem. Two fragments of tiles with stamp CIL XV, 71. 123 AD.

6994 Idem. Fragment of roof-tile with stamp CIL XV, 396. 125 AD.

6995 Idem. Fragment of tile with stamp CIL XV, 846. 123 AD.

6996 Idem. Fragment of tile with stamp CIL XV, 109. 126 AD.

6997 Idem. Fragment of tile with stamp CIL XV, 2189. Dated to Hadrianic period.

6998 Idem. Fragment of tile with stamp CIL XV, 1029a. 123 AD.

6999 Idem. Three sesquipedales with stamp CIL XV, 1057. 137 AD.

7000 Reddish fine-ware with red varnish. Bottom of Arretine vase with fabric-stamp in the form of a foot

("5407 CIL" added in handwriting in the report).

7001 Idem. Bottom of Arretine vase with fabric-stamp in the form of a foot ("CIL nr. 5297" added in handwriting in the report).

7002 Idem. Upper part of lamp, form CIL XV, 31 with a crater in the disc and two palms on the rim. L. 0.112.

7003 Ordinary reddish terracotta. Handle of an amphora with a stamp containing the letters *COLCIU*.

7004 Reddish fine-ware. Lamp in the form of fir-cone with ringed grip, fragmented, supported by three legs in the form of fir-cone-scales.

7005 Bronze. Small cast pedestal, quadrangular but only three sides were covered (the fourth was probably meant to stand against a wall). The side opposite the empty side is missing. The pedestal has a large roundel, ogees and a footing. In the upper part there is a hole for some kind of stem. L. 0.115 x 0.056.

7006 Idem. Hemispherical mounting with a long stem. Total l. 0.04.

7007 Idem. Plate with flat bottom or cover of a box. Diam. 0.059 x 0.005.

7008 Iron. Key with ringed grip but completely oxidized. L. 0.055.

7009 Bronze. Thirty-two coins. Four large ones, twenty-two medium-sized and five small ones. Also five small oxidized ones.

7010 Ordinary reddish terracotta. Fragment of decorative tile with egg and dart moulded cornice, parts of scrolls, in midst between these a column, above the cornice. L. 0.105 x 0.117.

Found from February 3 to 8, 1913:

7097 Ordinary reddish terracotta. Fragment of tile with stamp CIL XV, 1435. 129 AD.

7098 Idem. Fragments of tiles with stamp CIL XV, 958a. 123 AD.

7099 Idem. Fragment of tile with stamp CIL XV, 209. 157 AD.

7100 Idem. Fragment of tile with stamp CIL XV, 1006. 93 and 94 and 108.

7101 Idem. Fragment of tile with stamp CIL XV, 103. 123 AD.

7102 Idem. Fragment of tile with stamp CIL XV, 1112. 120 AD.

7103 Idem. Fragment of tile with stamp CIL XV, 811d. 123 AD.

7104 Idem. Fragment of roof-tile with stamp CIL XV, 658a. Middle of first century AD.

7105 Idem. Fragment of tile with stamp CIL XV, 1535.

7106 Idem. Fragment of tile with stamp CIL XV, 1430. 127 AD.

7107 Idem. Fragment of roof-tile with stamp CIL XV, 1407.

7108 Idem. Half a roof-tile with elliptical stamp having at one end a sort of five-pointed star; the rest

of the stamp is filled with double X-signs, alternated with stripes.

7109 Idem. Fragment of decorative tile with poorly preserved palmette-motive and scrolls; above these the remains of a cornice. H. 0.15 x 0.1 m.

7110 Neck and rim of amphora of fine reddish terracotta with a three-letter mark on the rim.

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Credits

Jan Theo Bakker: 6, 12a-b, 13-15, 17, 29-31.
Bernard Meijlink and Jan Theo Bakker: 19, 20.
Jan van Dalen and Jan Theo Bakker: 21-23.

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Caseggiato dei Molini

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- 6 Part of the east facade: room 8 and staircase 9. Between the rooms was once a relief.
- 7 Room 3, south wall, west part. A wooden structure may once have been in the opening.
- 8 Room 7, basalt block of the floor with the imprint of a hoof.
- 9 Room 8, north wall, west part. To the left is a blocked doorway, in the upper right part a small window.
- 10 Room 8, north-east corner. In the left wall is a wide fissure, in the right wall (the facade) a window.
- 11 Staircase 9, south wall, from the north-east. To the left is a fissure, to the right a row of holes, related to the staircase.
- 12 Bar 16. In the right part of the room the bar-counter can be seen. To the right of the room was once a relief.
- 13 Room 17, south wall, west part. Note the beamholes and putlogholes.
- 14 Rooms 18-21, from the south-east. These were milling rooms. In the upper part of the left wall are large windows.
- 15 Rooms 21-19, from the north-west. To the left are the remains of a large basin.
- 16 Rooms 19-18, from the north-west. To the left is room 7, to the right a blocked doorway to room 6.
- 17 Room 21, north wall, east part. Blocked doorway and many alterations.
- 18 Room 22, from the east, shortly after the excavation. This was a kneading room. The blocking of the window over the doorway has now disappeared.
- 19 Room 22, from the north-west. Note the holes in the side of the kneading-machines and the partial blocking of the passage to the left.
- 20 Room 22, bottom of a kneading-machine with metal remains for fastening the vertical spindle.
- 21 Room 22, south-east corner. Blocked doorway with floor-niche.
- 22 Room 23, looking through the opening of the oven. Note the grooves in the tufa blocks, possibly related to revolving grates on which the bread was baked.
- 23 Room 23, detail of the grooves in the tufa blocks (see also plate 22).
- 24 Room 23, opening of the oven, from the north-west. Note the niche below the opening. The floor in front of the oven is much lower than the rest of the building.
- 25 Room 23, west wall, north part. In the lower part is a draught-hole.
- 26 The alley or corridor in the west part of the building (rooms 29-24), from the north. Against the right wall two basins were set. In front of the basin in room 28 is a floor of opus spicatum.
- 27 Room 24, north-east corner. Detail of grooves and holes, meant to receive beams that blocked the alley.
- 28 Room 29, east wall, from the south-west. The place of attachment of a barrel vault can be seen.
- 29 Cas. di Diana. Room with floor of basalt blocks and trough. It may have been part of the bakery.

Molino I, XIII, 4

- 30 West facade along the Cardo Maximus, from the south. Note the travertine columns in front of rooms 1-5.
- 31 Shops 1-2 and 3, from the south-west. In front of the left wall is part of a travertine column.
- 32 Narrowing (left) and blocking of a doorway between rooms 3 and 4, from the north.
- 33 L-shaped holes in the north wall of room 4, meant to receive beams that blocked this entrance to the bakery. From the south-east.
- 34 Shop 5, from the south-west.
- 35 Brick pier c against the south wall of shop 6-7, from the north-west.
- 36 West wall of area 8a. To the right is a vertical drainage-channel, to the left of which are traces of a demolished wall. From the north-east.
- 37 The millstones in area 8a, from the north-west.
- 38 The inscription on millstone m4 (*S P C Y R*), from the south.
- 39 Area 8a. A drainage-slab below a vertical drainage-channel in the north wall, from the south.
- 40 Area 8a. Staircase B, from the north-west.
- 41 The kneading-machines in area 8a, from the north-west.
- 42 A hole with lead in the inner side of a kneading-machine. A wooden blade was attached in the hole.
- 43 The central part of the bakery (area 8b), from the west.
- 44 Area 8b. Staircase A, from the north-east.
- 45 Area 8b. Piers 19 and 18, and secondary walls, from the north. Behind the wall was the oven room.

- 46 Area 8b. Staircase C and objects b1 and b2, from the north-west.
- 47 Hollow structure behind staircase C, from the south-west (room 10).
- 48 Area 8b. Cisterns a and b, from the north-west. In the upper right part of the back wall is a curved wall-niche.
- 49 Room 9. Pier 23 and south wall, from the north. In this room the oven was located. In the lower right part some remains (tufa blocks) can be seen.
- 50 Blocked doorway between shops 12 and 13, from the south.
- 51 The west end of the north wall of entrance 14, from the south-west.
- 52 A blocking between shops 15 and 16, from the north.
- 53 The alley to the north of the bakery (rooms 17-19), from the west.

Caseggiato delle Fornaci

- 54 General view, from the south-west.
- 55 General view towards room 14, from the south-east.
- 56 Outer east wall, blocked doorway to room 10.
- 57 Outer east wall, staircase 9a.
- 58 Outer east wall, blocked entrance to room 5, from the south-east.
- 59 Outer south wall and alley 11, from the south-west.
- 60 Outer south wall, section between rooms 12 and 10, from the south. Note the remains of plaster.
- 61 Outer south wall, cornice supporting the first floor.
- 62 Outer west wall, from the south-west.
- 63 Room 2. Blocking in the central part of the south wall.
- 64 Room 2. Pier in the north-west corner. In the background is the basin set against the north wall of room 15.
- 65 Room 3. Remains of a kneading-machine in front of the south wall.
- 66 Room 4, south-east corner. In the corner a pier was set, to the right of which are extensive remains of plaster.
- 67 Room 4. Pier set against the central part of the south wall, from the north-west.
- 68 Room 6, north-west corner with a secondary pier to the right. From the south-west.
- 69 Room 6, from the west.
- 70 Room 7. Basin in front of the east wall.
- 71 Room 7, west wall.
- 72 Room 10, north-east corner with blocked doorway.
- 73 Room 10, east wall with blocked doorway to the street (cf. plate 56).
- 74 Room 12, south-east corner.
- 75 Room 14, north wall, west part.
- 76 Room 14, north wall, east part.
- 77 Room 14, from the south-east.
- 78 Room 14, from the north-east.

Caseggiato del Balcone Ligneo

- 79 Rooms 40 (right), 45 (left) and 27 (background), from the north-west.
- 80 Rooms 40 (left) and 45 (right), from the south.
- 81 Blocked entrance of shop 41, from the north-east.
- 82 Interior of the former shop 42, from the south.
- 83 Room 44, in which the oven was located. From the east.

Caseggiato dei Dolii

- 84 General view of the *dolia defossa*, from the north-east. A bakery was nearby.

Caseggiato I,IX,2

- 85 Rooms 4, 9 and 12, from the north.
- 86 Rooms 6-9 and, to the right, staircase 10, from the west.
- 87 Room 9. Pier resting on a travertine slab. Inside is a terracotta drainage pipe. From the south-east.
- 88 Oven in room 12, from the north-west.

Caseggiato della Cisterna

- 89 Opening of the oven in room 3. Note the floor-niche below the opening. From the south-west.
- 90 Blocked opening in the back wall of the oven (prior apsis), from the west.
- 91 Interior of the oven, from the west.
- 92 Shop to the east of oven room 3, from the south-east. To the left is a blocked opening in the back wall of the oven (see also plate 90), in the lower right part the remains of a kneading-machine can be seen.

93 Several rooms belonging to the bakery, below Exedra I,XII,3, discovered in 1996. Note the floors of basalt blocks. Not investigated by the authors. From the south-east.

94 Room 3, south-east corner. Note the absence of bricks in the lower part of the central section. From the north-west.

95 The vestibule of the Piazza d'Oro in the Villa Hadriana, Tivoli. Part of the bakery was installed in a similar structure.

Inscriptions

96 CIL XIV, 374. Erected in honour of M. Licinius Privatus by the *fabri tignuarii* (c. 198 AD). Later *quaestori et q(uin)q(uennali) corporis pistorum Ostiens(ium) et Port(ensium)* was added (line 7).

The team

97 Jan Theo Bakker and Thea Heres in the late 1980's.

98 Jan van Dalen and Jan Theo Bakker in the late 1980's.

99 Bernard Meijlink in the early 1990's.

100 Boudewijn Sirks.

Photographic credits

Jan Theo Bakker: 1-4, 6, 8, 12, 14-16, 19, 20, 22-26, 29, 79-96.

Thea Heres: 7, 9-11, 13, 17, 21, 27, 28.

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PLATES

CASEGGIATO DEI MOLINI

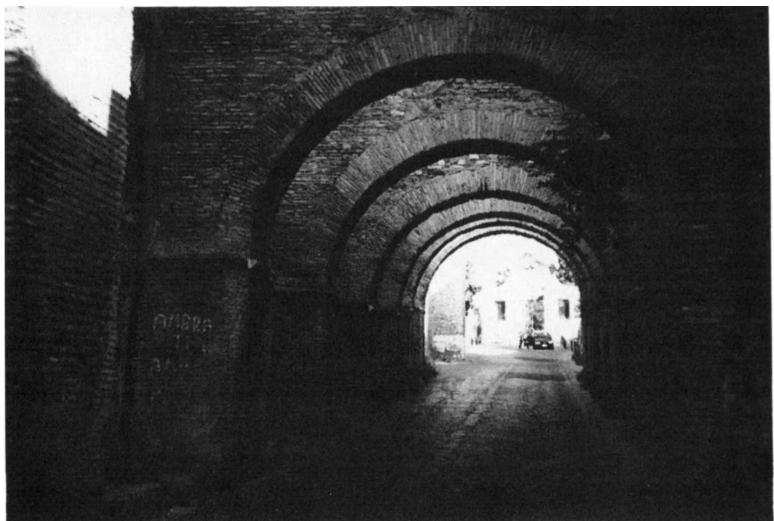
1. Via dei Molini, from the north. To the left, behind part of a millstone, are two small rooms set against the west facade of the Grandi Horrea. To the right is the east facade of the bakery.



2. Via dei Molini, from the south-west. To the right are two small rooms set against the west facade of the Grandi Horrea.



3. A road on the Caelius in Rome, giving a good idea of what Via dei Molini must have looked like.



CASEGGIATO DEI MOLINI

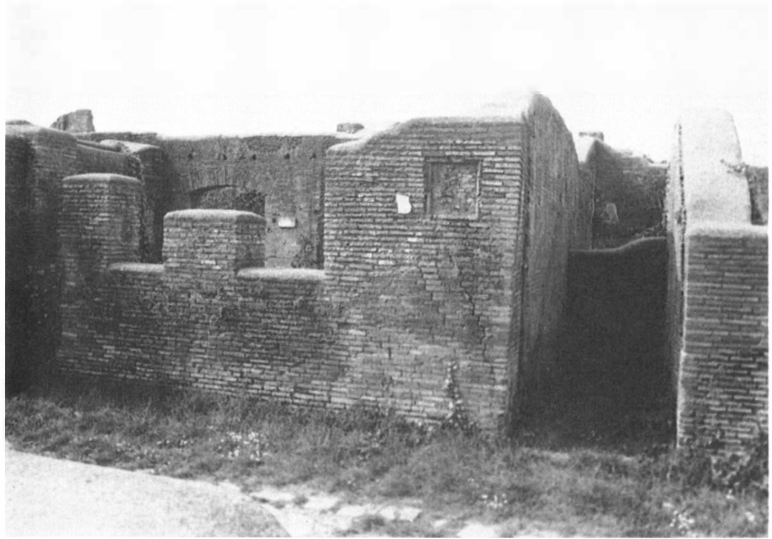


4. Part of the east facade: staircase 4 and a pier with a relief with carpenters' tools (from the south-east).



5. Relief with carpenters' tools in the facade, shortly after the excavation (see also plate 4).

CASEGGIATO DEI MOLINI



6. Part of the east facade: room 8 and staircase 9. Between the rooms was once a relief.

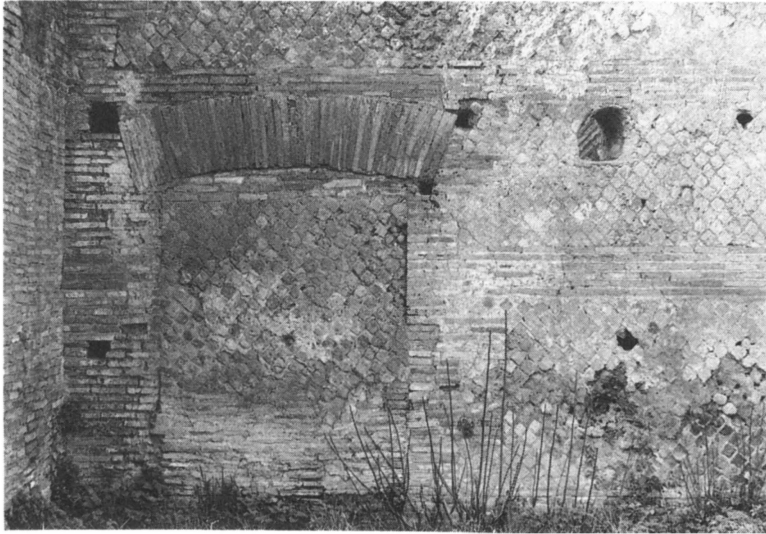


7. Room 3, south wall, west part. A wooden structure may once have been in the opening.

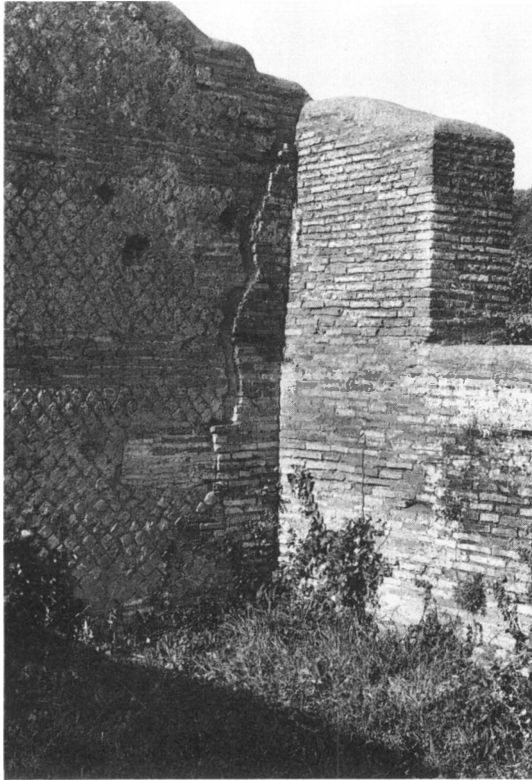


8. Room 7, basalt block of the floor with the imprint of a hoof.

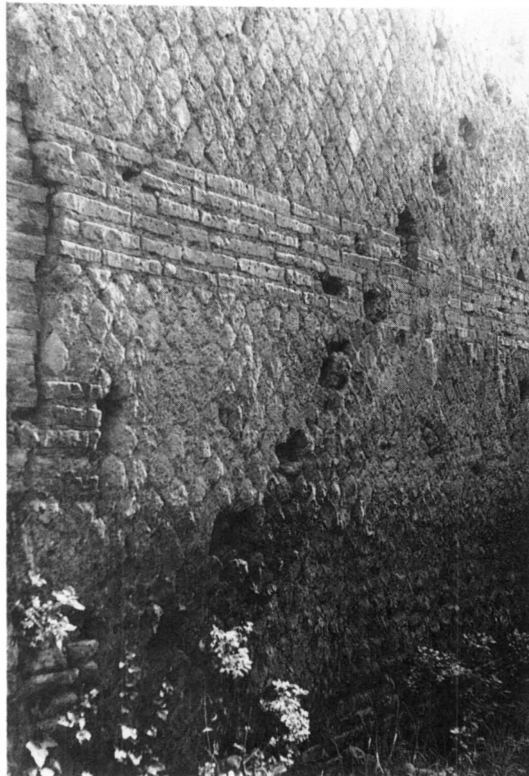
CASEGGIATO DEI MOLINI



9. Room 8, north wall, west part. To the left is a blocked doorway, in the upper right part a small window.



10. Room 8, north-east corner. In the left wall is a wide fissure, in the right wall (the facade) a window.

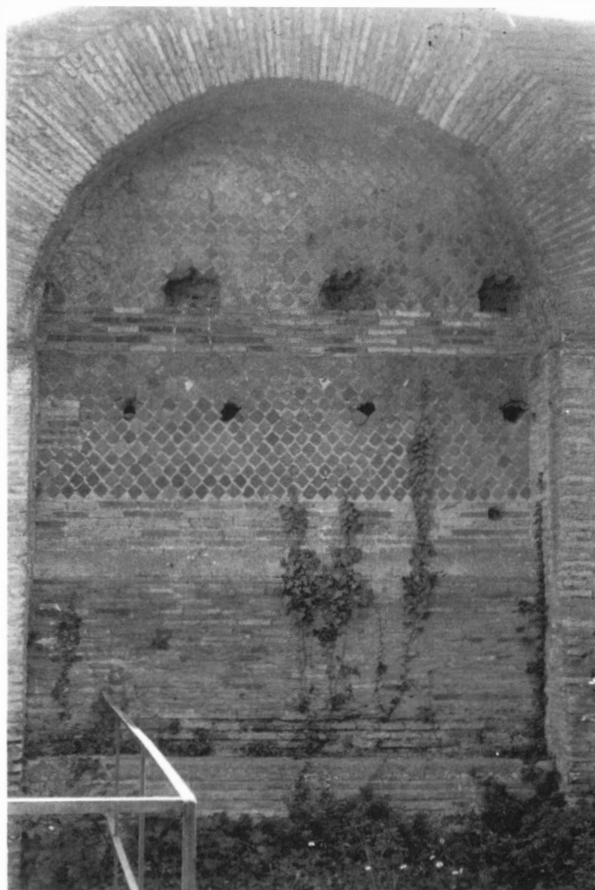


11. Staircase 9, south wall, from the north-east. To the left is a fissure, to the right a row of holes, related to the staircase.

CASEGGIATO DEI MOLINI



12. Bar 16. In the right part of the room the bar-counter can be seen. To the right of the room was once a relief.

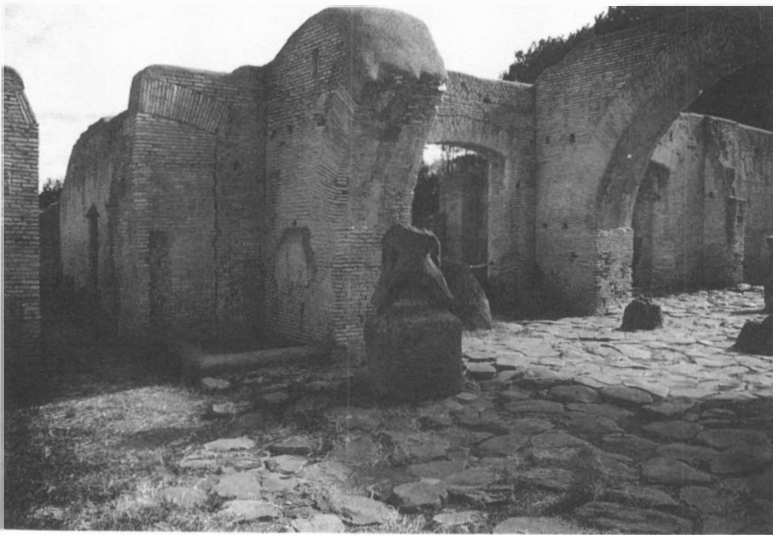


13. Room 17, south wall, west part. Note the beamholes and putlogholes.

CASEGGIATO DEI MOLINI



14. Rooms 18-21, from the south-east. These were milling rooms. In the upper part of the left wall are large windows.



15. Rooms 21-19, from the north-west. To the left are the remains of a large basin.



16. Rooms 19-18, from the north-west. To the left is room 7, to the right a blocked doorway to room 6.

CASEGGIATO DEI MOLINI



17. Room 21, north wall, east part. Blocked doorway and many alterations.



18. Room 22, from the east, shortly after the excavation. This was a kneading room. The blocking of the window over the doorway has now disappeared.

CASEGGIATO DEI MOLINI



19. Room 22, from the north-west. Note the holes in the side of the kneading-machines and the partial blocking of the passage to the left.



20. Room 22, bottom of a kneading-machine with metal remains for fastening the vertical spindle.



21. Room 22, south-east corner. Blocked doorway with floor-niche.

CASEGGIATO DEI MOLINI

22. Room 23, looking through the opening of the oven. Note the grooves in the tufa blocks, possibly related to revolving grates on which the bread was baked.



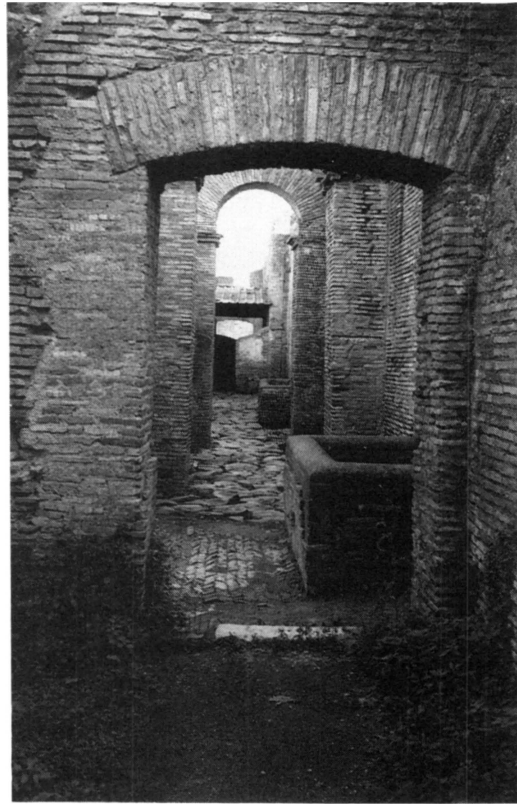
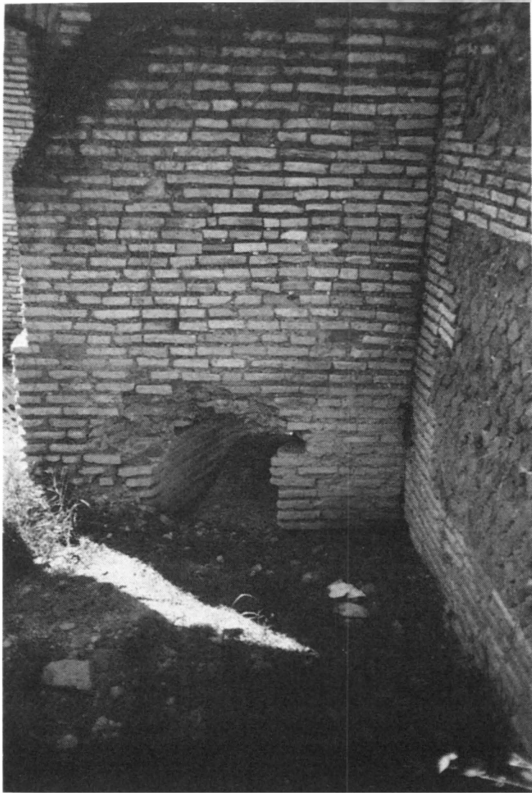
23. Room 23, detail of the grooves in the tufa blocks (see also plate 22).



24. Room 23, opening of the oven, from the north-west. Note the niche below the opening. The floor in front of the oven is much lower than the rest of the building.



CASEGGIATO DEI MOLINI

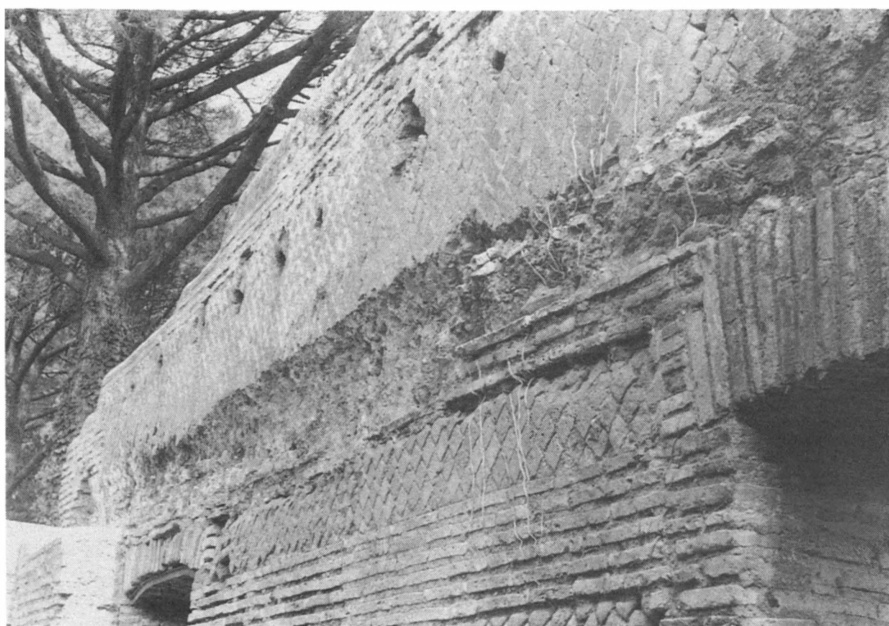


↖
25. Room 23, west wall, north part. In the lower part is a draught-hole.

↑
26. The alley or corridor in the west part of the building (rooms 29-24), from the north. Against the right wall two basins were set. In front of the basin in room 28 is a floor of opus spicatum.

27. Room 24, north-east corner. Detail of grooves and holes, meant to receive beams that blocked the alley.

CASEGGIATO DEI MOLINI



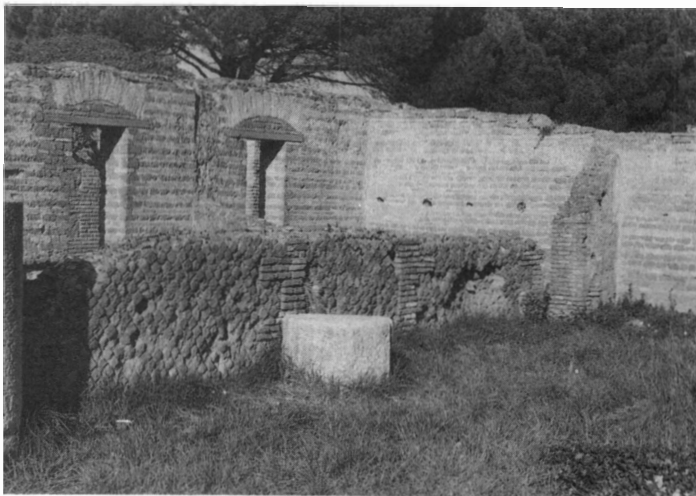
28. Room 29, east wall, from the south-west. The place of attachment of a barrel vault can be seen.



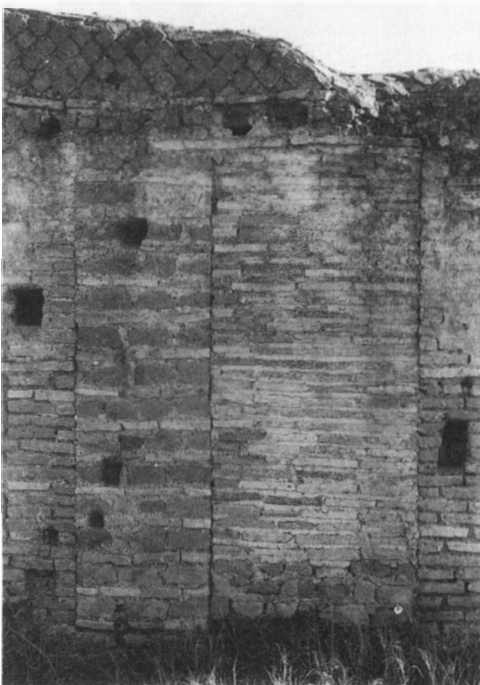
29. Cas. di Diana. Room with floor of basalt blocks and trough. It may have been part of the bakery.



30. West facade along the Cardo Maximus, from the south. Note the travertine columns in front of rooms 1-5.



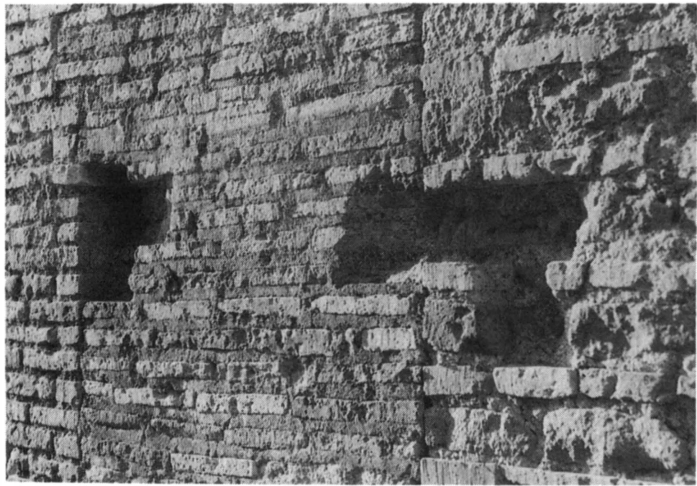
31. Shops 1-2 and 3, from the south-west. In front of the left wall is part of a travertine column.



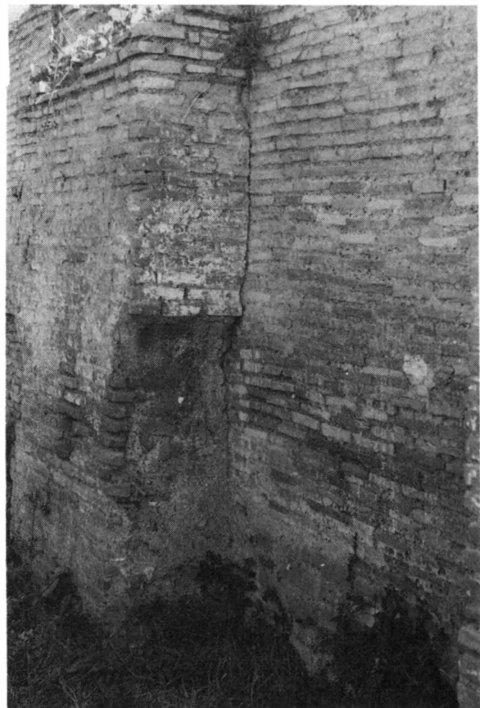
32. Narrowing (left) and blocking of a doorway between rooms 3 and 4, from the north.

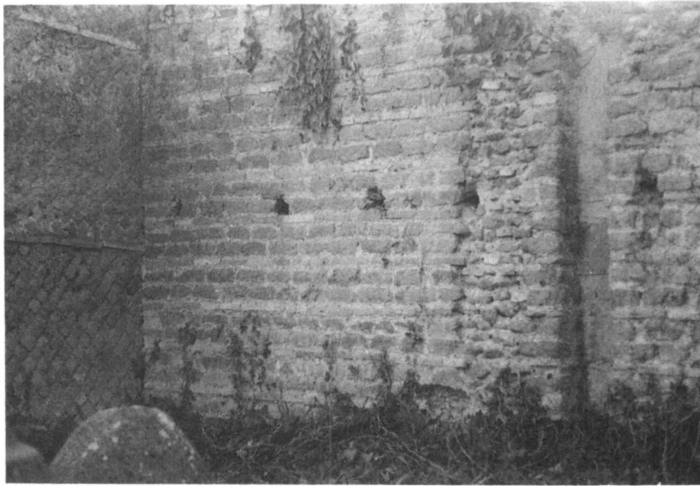
MOLINO I,XIII,4

33. L-shaped holes in the north wall of room 4, meant to receive beams that blocked this entrance to the bakery. From the south-east.

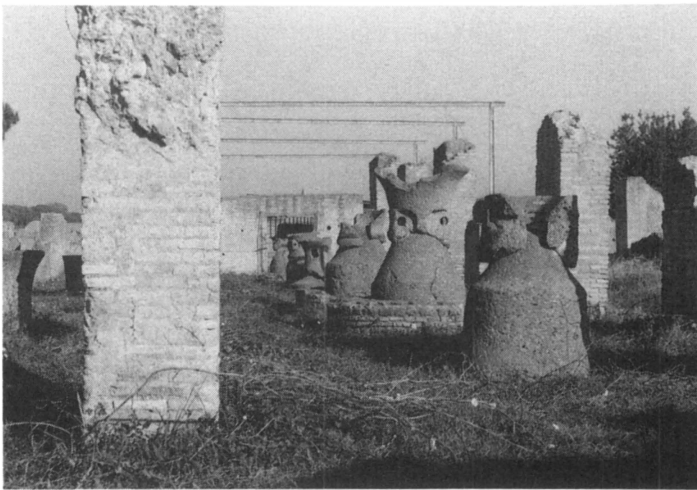


35. Brick pier c against the south wall of shop 6-7, from the north-west.





36. West wall of area 8a. To the right is a vertical drainage-channel, to the left of which are traces of a demolished wall. From the north-east.



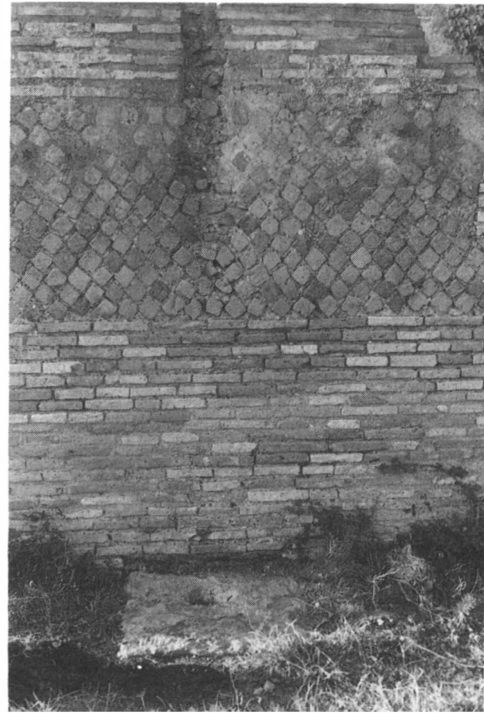
37. The millstones in area 8a, from the north-west.



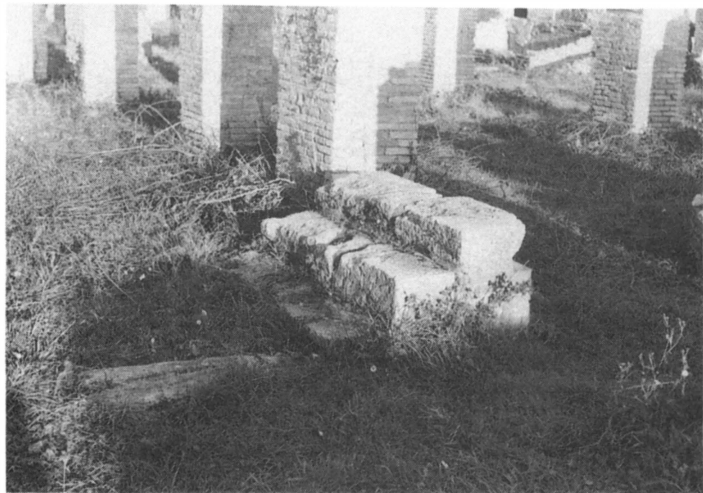
38. The inscription on millstone m4 (*S P C Y R*), from the south.

MOLINO I,XIII,4

39. Area 8a. A drainage-slab below a vertical drainage-channel in the north wall, from the south.



40. Area 8a. Staircase B, from the north-west.



41. The kneading-machines in area 8a, from the north-west.





42. A hole with lead in the inner side of a kneading-machine. A wooden blade was attached in the hole.



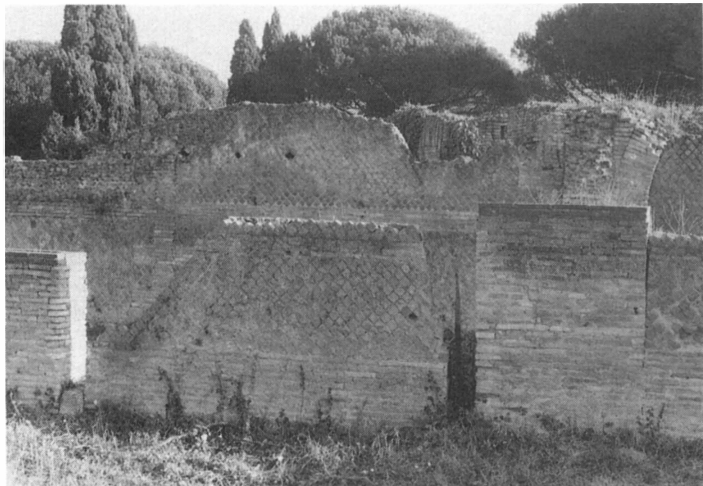
43. The central part of the bakery (area 8b), from the west.



44. Area 8b. Staircase A, from the north-east.

MOLINO I,XIII,4

45. Area 8b. Piers 19 and 18, and secondary walls, from the north. Behind the wall was the oven room.



46. Area 8b. Staircase C and objects b1 and b2, from the north-west.



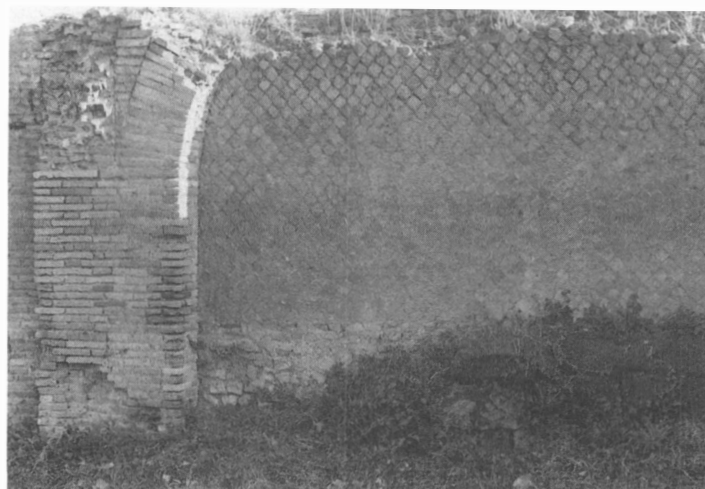
47. Hollow structure behind staircase C, from the south-west (room 10)



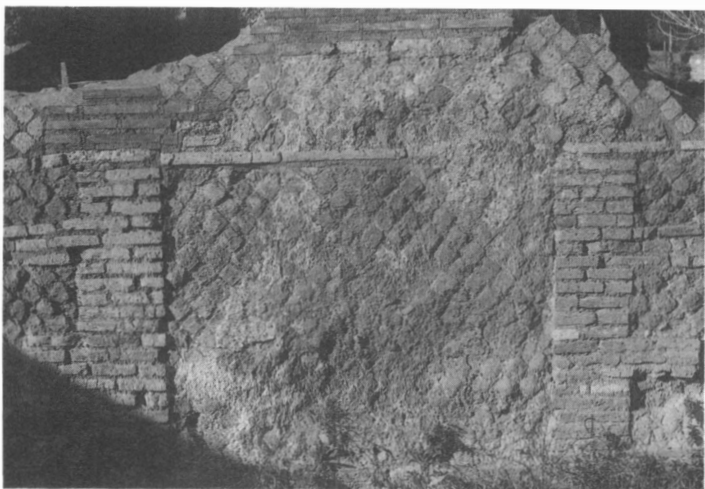
MOLINO I,XIII,4



48. Area 8b. Cisterns a and b, from the north-west. In the upper right part of the back wall is a curved wall-niche.



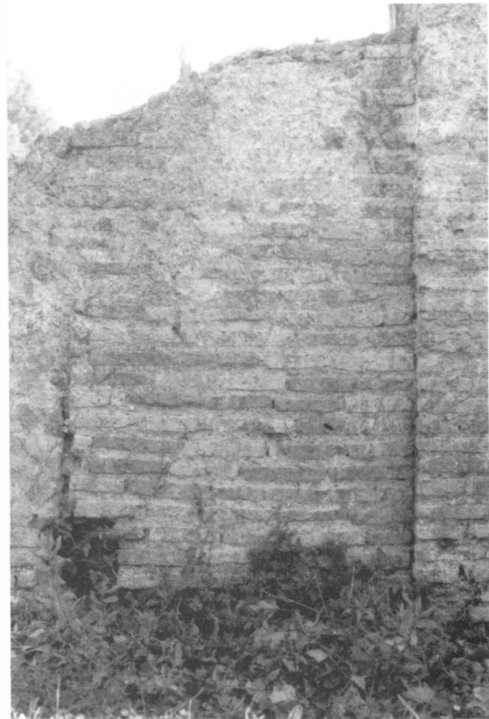
49. Room 9. Pier 23 and south wall, from the north. In this room the oven was located. In the lower right part some remains (tufa blocks) can be seen.



50. Blocked doorway between shops 12 and 13, from the south.



51. The west end of the north wall of entrance 14, from the south-west.



52. A blocking between shops 15 and 16, from the north.



53. The alley to the north of the bakery (rooms 17-19), from the west.

CASEGGIATO DELLE FORNACI



54. General view, from the south-west.



55. General view towards room 14, from the south-east.



56. Outer east wall, blocked doorway to room 10.

CASEGGIATO DELLE FORNACI



57. Outer east wall, staircase 9a.



58. Outer east wall, blocked entrance to room 5, from the south-east.



59. Outer south wall and alley 11, from the south-west.



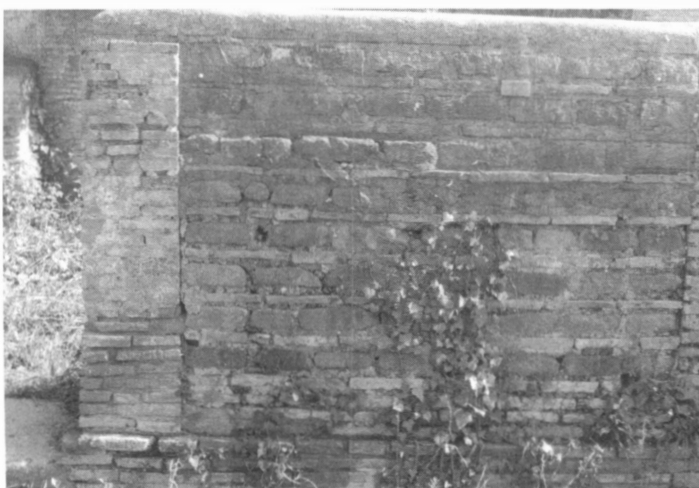
60. Outer south wall, section between rooms 12 and 10, from the south. Note the remains of plaster.



61. Outer south wall, cornice supporting the first floor.

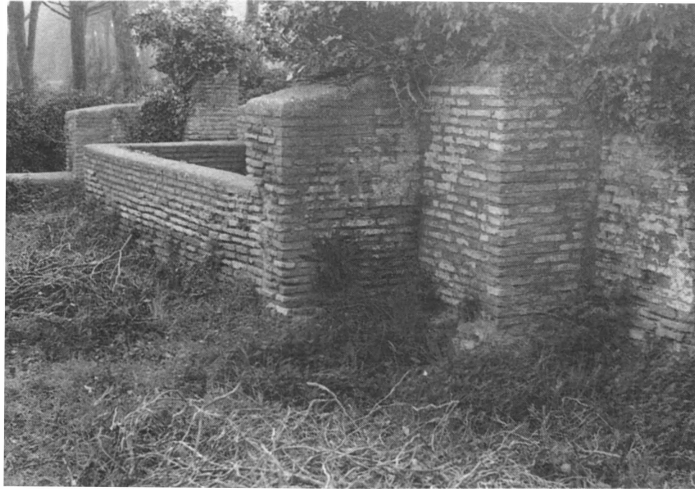


62. Outer west wall, from the southwest.



63. Room 2. Blocking in the central part of the south wall.

CASEGGIATO DELLE FORNACI



64. Room 2. Pier in the north-west corner. In the background is the basin set against the north wall of room 15.



65. Room 3. Remains of a kneading-machine in front of the south wall.



66. Room 4, south-east corner. In the corner a pier was set, to the right of which are extensive remains of plaster.

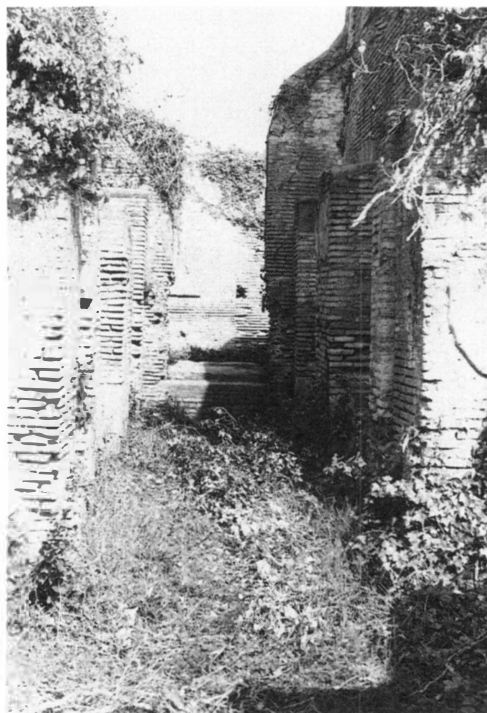
CASEGGIATO DELLE FORNACI



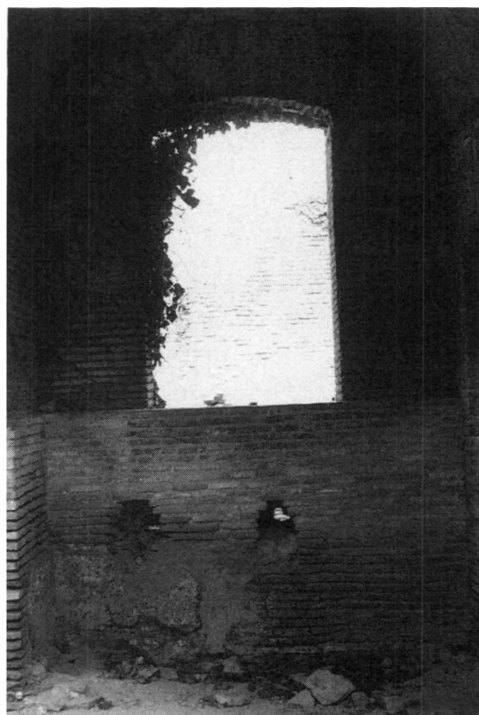
67. Room 4. Pier set against the central part of the south wall, from the north-west.



68. Room 6, north-west corner with a secondary pier to the right. From the south-west.

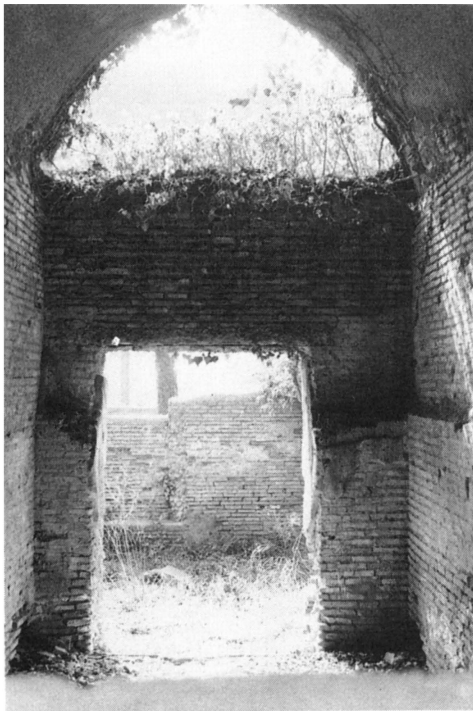


69. Room 6, from the west.

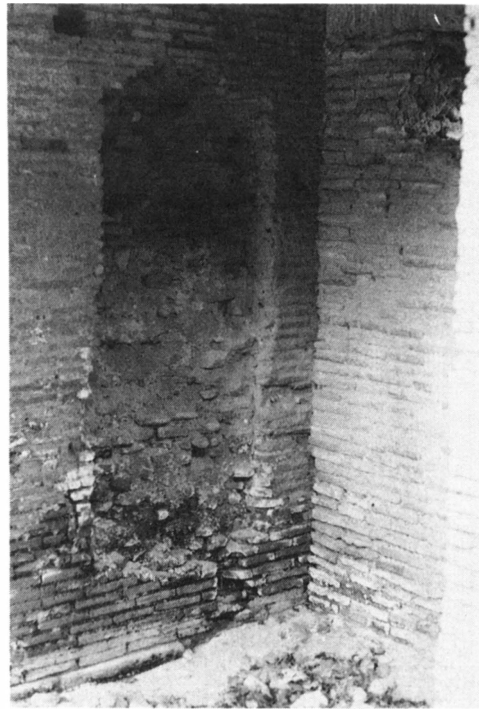


70. Room 7. Basin in front of the east wall.

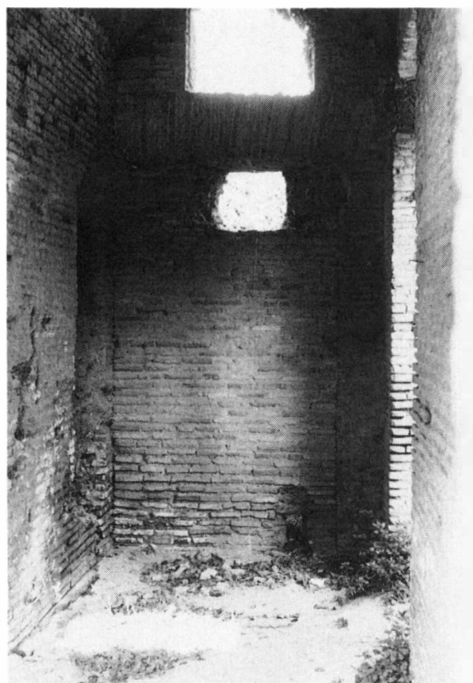
CASEGGIATO DELLE FORNACI



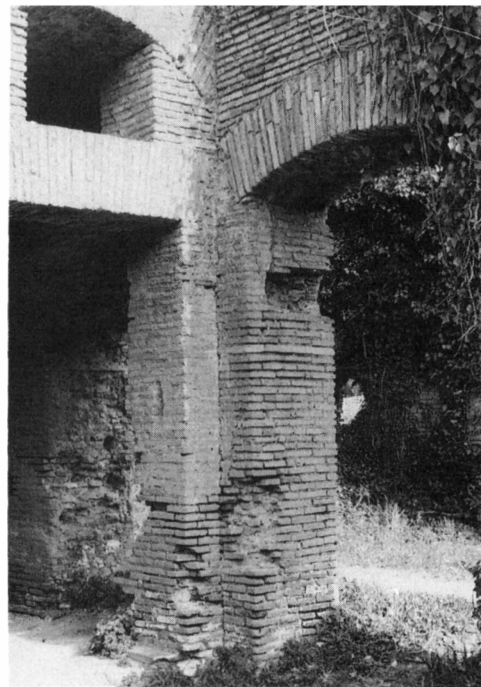
71. Room 7, west wall.



72. Room 10, north-east corner with blocked doorway.

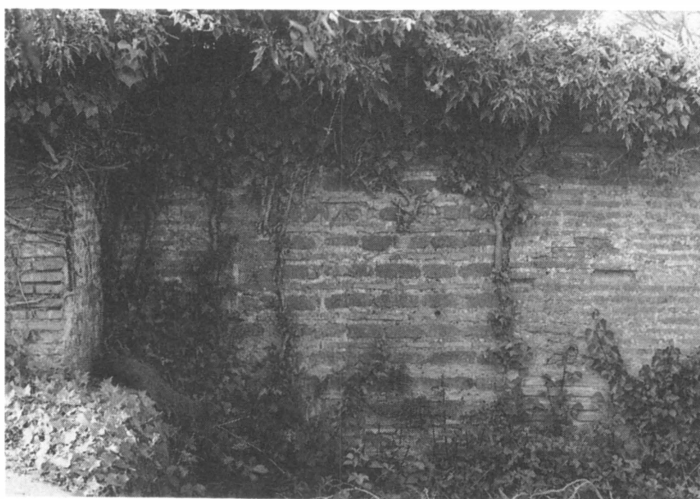


73. Room 10, east wall with blocked doorway to the street (cf. plate 56).

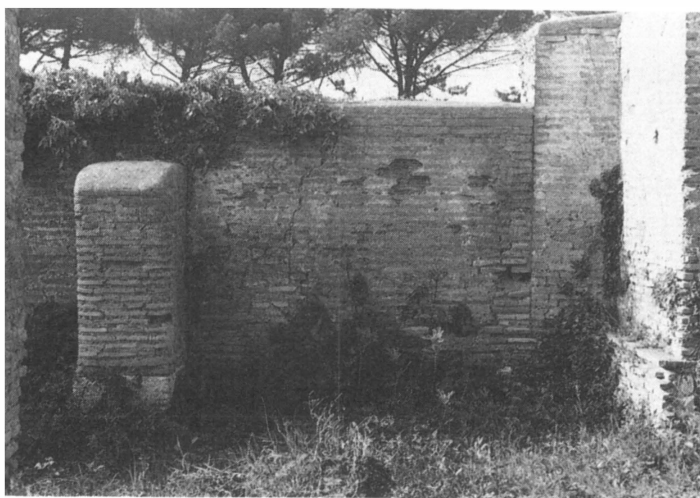


74. Room 12, south-east corner.

CASEGGIATO DELLE FORNACI



75. Room 14, north wall, west part.



76. Room 14, north wall, east part.



77. Room 14, from the south-east.

CASEGGIATO DELLE FORNACI

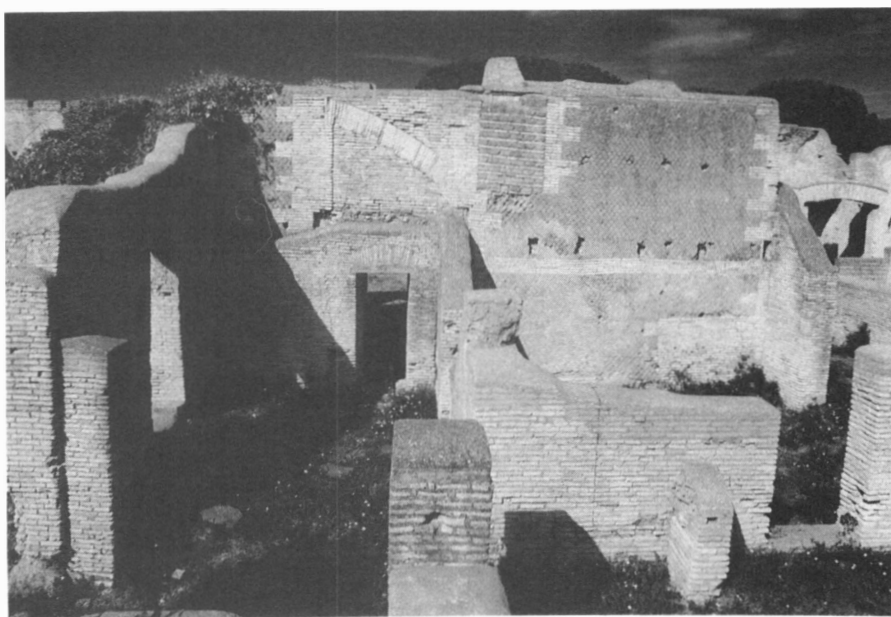


78. Room 14, from the north-east.

CASEGGIATO DEL BALCONE LIGNEO

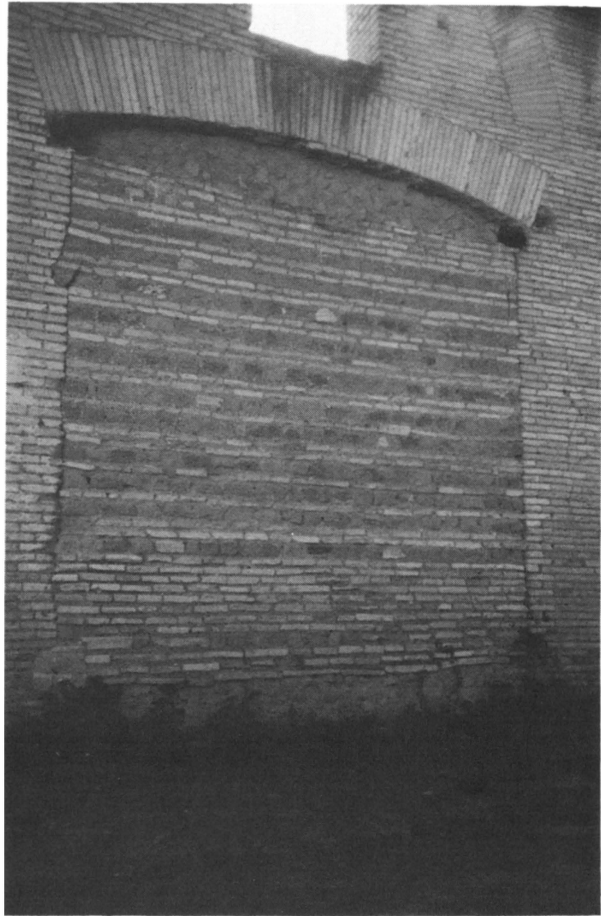


79. Rooms 40 (right), 45 (left) and 27 (background), from the north-west.



80. Rooms 40 (left) and 45 (right), from the south.

CASEGGIATO DEL BALCONE LIGNEO

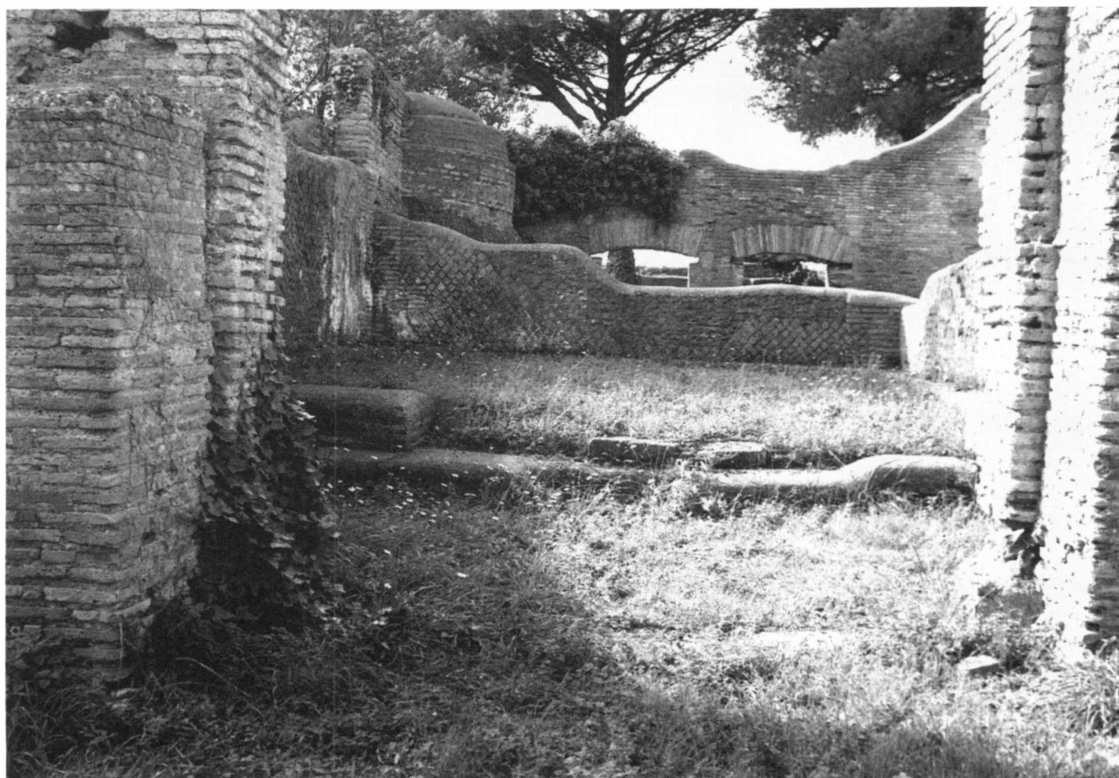


81. Blocked entrance of shop 41,
from the north-east.



82. Interior of the former shop 42, from the south.

CASEGGIATO DEL BALCONE LIGNEO



83. Room 44, in which the oven was located. From the east.

CASEGGIATO DEI DOLII



84. General view of the *dolia defossa*, from the north-east. A bakery was nearby.

CASEGGIATO I IX.2

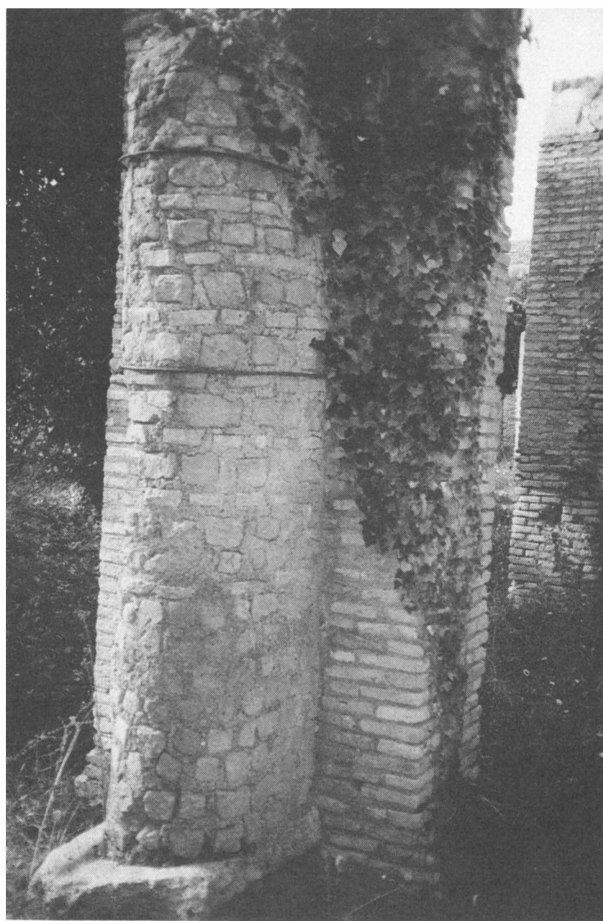


85. Rooms 4, 9 and 12, from the north.



86. Rooms 6-9 and, to the right, staircase 10, from the west.

CASEGGIATO I,IX,2



87. Room 9. Pier resting on a travertine slab. Inside is a terracotta drainage pipe. From the south-east.



88. Oven in room 12, from the north-west.

CASEGGIATO DELLA CISTERNA



89. Opening of the oven in room 3. Note the floor-niche below the opening. From the south-west.



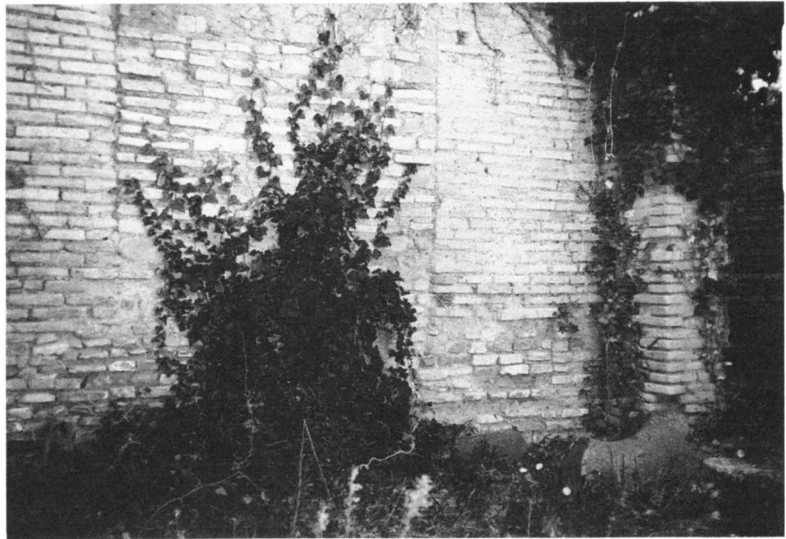
90. Blocked opening in the back wall of the oven (prior apsis), from the west.



91. Interior of the oven, from the west.

CASEGGIATO DELLA CISTERNA

92. Shop to the east of oven room 3, from the south-east. To the left is a blocked opening in the back wall of the oven (see also plate 90), in the lower right part the remains of a kneading-machine can be seen.



93. Several rooms belonging to the bakery, below Exedra I,XII,3, discovered in 1996. Note the floors of basalt blocks. Not investigated by the authors. From the south-east.



94. Room 3, south-east corner. Note the absence of bricks in the lower part of the central section. From the north-west.



CASEGGIATO DELLA CISTERNA



95. The vestibule of the Piazza d'Oro in the Villa Hadriana, Tivoli. Part of the bakery was installed in a similar structure.

INSCRIPTIONS



96. CIL XIV, 374. Erected in honour of M. Licinius Privatus by the *fabri tignuarii* (c. 198 AD). Later *quaestori et q(uin)q(uennali) corporis pistorum Ostiens(ium) et Port(ensium)* was added (line 7).

THE TEAM

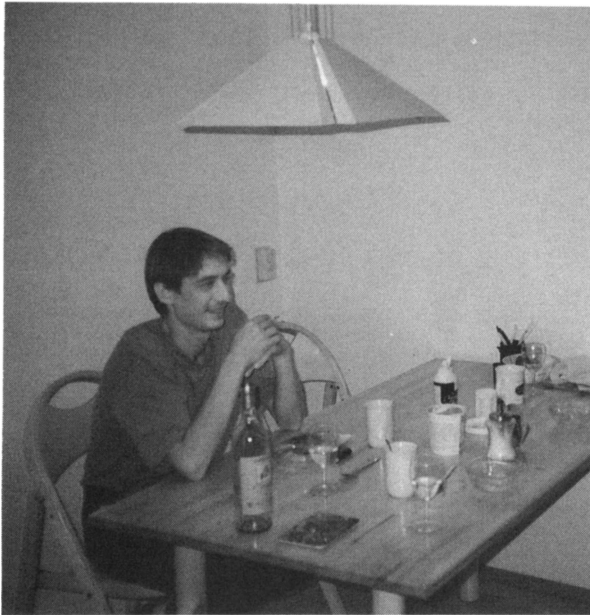


97. Jan Theo Bakker and Thea Heres in the late 1980's.



98. Jan van Dalen and Jan Theo Bakker in the late 1980's.

THE TEAM



99. Bernard Meijlink in the early 1990's.



100. Boudewijn Sirks.