EARLY ITALIAN SIGILLATA

The chronological framework and trade patterns
Proceedings of the First International ROCT-Congress
Leuven, May 7 and 8, 1999

Edited by

JEROEN POBLOME, PETER TALLOEN,
RAYMOND BRULET AND MARC WAELKENS

PEETERS
LEUVEN - PARIS - DUDLEY, MA
2004

Italian terra sigillata in Rome and the Rome area: production, distribution and laboratory analysis

Gloria Olcese (with a contribution from Maurice Picon)

The project on Lazio ceramics: aims and objectives

This paper presents some limited preliminary results on terra sigillata; the research is part of a wider archaeological and archaeometric project concerning the ceramic production in Rome and Lazio between the end of the Republican period and the beginning of the imperial period[1]. The general aims of this project are to deepen the understanding of some of the pottery from Rome and the Rome area (from the end of the Republic to the early imperial period), studying them with methods which include archaeometry; and also to better understand the distribution mechanisms of some regional productions in central Italy and the Mediterranean area[2]. Laboratory analysis has allowed the characterisation and grouping of ceramics on the basis of their chemical and mineralogical compositions, improving or correcting the archaeological classifications[3]. The chemical analyses were carried out in Berlin at the Arbeitsgruppe Archäometrie using wavelength- dispersion X-ray fluorescence.

Since this is one of the first projects aimed at studying the ceramic production of an entire region with the use of laboratory methods, the results are still preliminary and reflect the first phase of research which aimed to create a foundation for further work by creating an initial series of groupings.

The principal research objectives, with regards to terra sigillata, were limited to two points in particular:

1. to verify the origin of some of the terra sigillata production recorded in Rome (above all from the first century AD, and part of the second century AD);
2. to establish the existence of possible local/regional terra sigillata production.

The study of Italian sigillata: the main problems concerning production in the central/southern area

When the question of production and distribution of Italian terra sigillata is examined a series of obstacles are encountered: the main one being that the location of the workshops is unknown. Moreover, and more closely related to laboratory research, we have few reference groups[4] of terra sigillata produced between Arezzo and Naples[5]. Reference groups, held in databases, could facilitate the attribution of sigillata of unknown origin to a specific centre or, at least, to an area[6]. The chemical databases that currently exist for Italian terra sigillata, despite having been improved in recent years, do not always allow secure attributions, among other reasons because of the rather repetitive character of the composition of the clays used in Italy to make ceramics. Figure 1 shows the terra sigillata production centres currently known in central/southern Italy.

Chemical reference data is currently available for central/southern Italy from chemical analysis of terra sigillata from the following sites (both production and non production): Arezzo/Cincelli[7], Pisa and the *ager pisanus*[8], Torrita di Siena[9], Vasanello (Orte)[10], Rome[11], Ostia[12], Prima Porta[13], Scoppieto (Umbria)[14], the Naples area[15], Pozzuoli (?)[16], Cales[17], S. Giovanni in Ruoti[18], Ordona[19], Monte Iato[20], and Lilibeo in Sicily[21].

Even the most important production centres have not been completely investigated: for example, the composition is known of only a part of the ceramics produced in the numerous workshops active in Arezzo, even though Arezzo is one of the sites best studied in the laboratory. This could create ambiguity or uncertainty in the interpretation of data and in the procedure of attributing ceramics of unknown origin. Therefore, broadening the research could even modify some of the interpretations formulated in this article.

The laboratory study of the terra sigillata of Rome and Lazio

When this work began few archaeological studies existed on the sigillata of Rome and Lazio that offered a firm basis for laboratory research, and the first phase of research, that of sampling, presented several difficulties. Existing studies were considered for sampling, from which indications on the origin of some sigillata could then be obtained[22]. Furthermore, scholars carrying out research on terra sigillata of the Rome area were questioned and with their assistance an attempt to identify stamped ceramics of possible local or regional origin was made[23]. The first version of *OC*

contains a list of vessels, part B of which is called 'City of Rome or central Italy' (used for the selection of samples). It contains the signatures of those potters who the authors (without offering any explanation) considered as originating from that geographical area[24].
A complete laboratory control of the hypothesised origins of the terra sigillata found in Rome and its surroundings has not been possible, so a certain number of stamped ceramics by particular potters were chosen for an initial check.
Due to the way this research was organised – aimed at giving a general outline, rather than considering single classes of material – and also for economic reasons, a limited number of analyses were carried out on terra sigillata, 132, out of a total of 600 carried out for the whole project.
A large part of the terra sigillata analysed did not have a chronological context, either because it was material from a collection or from old excavations or dumps. The ceramics that have provided a secure chronological basis come from stratigraphic excavations recently carried out in Rome in the Forum area, the Palatine and the valley of the Colosseum; these are mainly contexts of the Julio-Claudian, Neronian and Flavian (*Meta Sudans*[25]) periods.
One secure point of reference for the Augustan production of terra sigillata (probably mid-Augustan period) is the Vasanello (Cesurli) workshop, in the Orte area[26]; the laboratory analysis of the ceramics of this site forms an important part of this work.

Production centres in Rome and the Rome area

As yet there are few definite dates on the possible production of terra sigillata in Rome and its surroundings. It has not yet been possible to trace the terra sigillata produced in the Prima Porta (Celsa) workshops on the via Flaminia (material which is mentioned in the work of G. Messineo and T. Peña)[27]. However, samples of other ceramic classes made in this workshop have been subjected to chemical and mineralogical analyses for the creation of reference groups[28].
Of considerable help to the research was the analysis of the ceramics from the few kilns that produced terra sigillata, these sites however are found out of Rome: Vasanello, near Orte, and Scoppieto in Umbria. These sites were taken into consideration (particularly the first one) despite their distance from Rome, both for the scarcity of data concerning kilns in the urban area and because the ceramics produced in the two workshops have also been well documented in Rome[29].

Fig. 1. Location of terra sigillata production centres currently known (update of the map published in Picon 1994).

Vasanello is an important terra sigillata production centre situated to the north of Rome, a few kilometres south-west of Orte, where kiln wasters have been discovered along with the remains of structures[30] (Fig. 1). The kiln activity can be placed in the Augustan period, and the owner of it was *Ancharius* of the *gens Ancharia* (Fig. 2). The production was principally composed of plain terra sigillata (Fig. 3). The production of relief decorated pottery is also of great interest, and it documented by about a hundred beautiful beaker or cup moulds (Fig. 4), sometimes signed (by *Buccio* and *Dardanus*). The decorative motifs were directly derived from the workshops of Arezzo, particularly from those of *M. Perennius, Cn. Ateius* and *Rasinius*.[31] Moulds for Aco beakers were also found, decorated with *Kommaregen* and signed by *Buccio* (this is one for the few finds of beaker moulds of the Aco type in the area of

Fig. 2. Stamped Vasanello sigillata (stamp ANC).

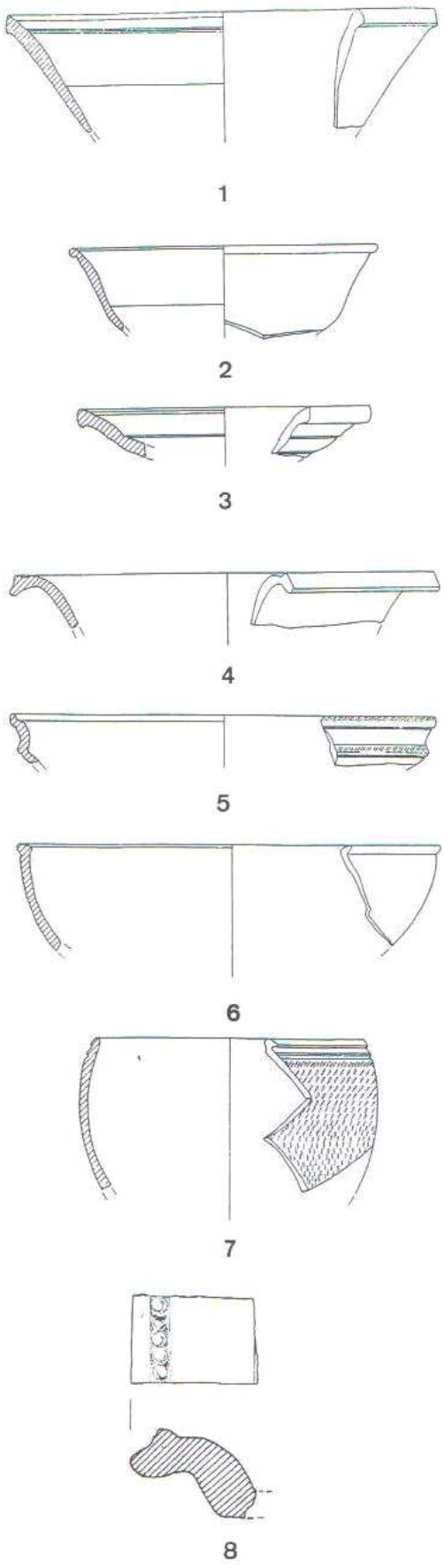

Fig. 3. Some types of Vasanello sigillata.

Fig. 4. Mould stamped DARDANVS (from Sforzini 1990).

a kiln)[32]. Numerous potters worked at Vasanello, among which, to give some examples, *Buccio, Caca, Dardanus, Eros, Felix, Primus, Secundus, Tertius* and *Quartio*. Some stamps found at Vasanello were not documented in *OC*, while they appear in *OCK: ABN, AR, L. Decimus, DIO/ANCA*[33] (Fig. 6).

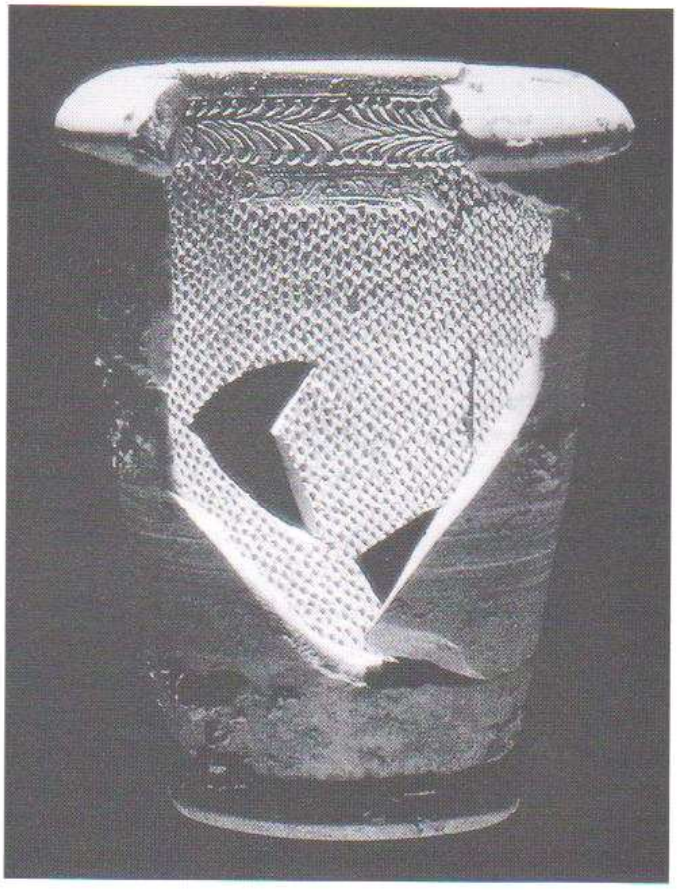

Fig. 5. Aco beaker mould of BVCCIO (from Sforzini 1990).

The Vasanello terra sigillata has been recorded in Rome and Lazio, Umbria, northern Italy, at Altino; but also beyond Italy, in Gaul, at Neuss and Vechten, in Switzerland, Spain, on the *limes* and in northern Africa[34].
The kilns also produced high quality kitchenware, the production of which continued in the area until modern times[35].
At Scoppieto, south of Todi (Fig. 1), on the left bank of the Tiber, in the Comune di Baschi recent surveys and excavations have allowed the location of ceramic wasters from the workshops of *Plotidius Zosimus* (*L.PL.Z, L.PLO.ZO, L.PLO.ZOS*) and *L. Plo(tidius) Por(phyrius?)*[36] that produced plain terra sigillata stamped in *planta pedis* between AD 50-75[37]. The terra sigillata produced at Scoppieto is mostly plain and the most frequently recorded forms (cups and plates[38] stamped in *planta pedis*) have been found in Rome and central Italy, as well as in northern Africa[39].

The analysed ceramics

The main core of the analysed terra sigillata comes from the city of Rome and, in particular, from the following sites:
1. *Palatine*, Boni's excavations, unpublished material. A large group of plain stamped terra sigillata found by Giacomo Boni during excavations of a Republican *domus* on the Palatine. The ceramic, without stratigraphic context, has been classified by Nicola Marletta[40];
2. *Tiber*. Ceramics found during the embankment of the Tiber or that came from the Museo Kircheriano or the Gorga Collection, currently unpublished; the materials are held at the Museo delle Terme[41];
3. *Dumps*. Ceramics found in city dumps by the Archeoclub Ardeatino-Laurentino[42];
4. *Meta Sudans*, excavations near the Colosseum[43], from the Neronian levels. Most of the sigillata is stamped by the *Clodii* and *Plotidius Zosimus*[44];
5. *Temple of Concordia*, unpublished material from an Augustan context[45];
6. *Vigna Barberini*, material from the *cryptoporticus* of a *domus* in the area of the ancient Vigna Barberini on the Palatine[46].

Outside the city, sigillata has been analysed from:
7. *Ostia*, 4 samples from the excavation by the Università di Roma at the *Terme del Nuotatore*. 3 samples from the Museo di Ostia are presumably kiln wasters, amongst which the famous pile of *Consp.* 14.2 cups of the Augustan period, with the stamp *Sextus*

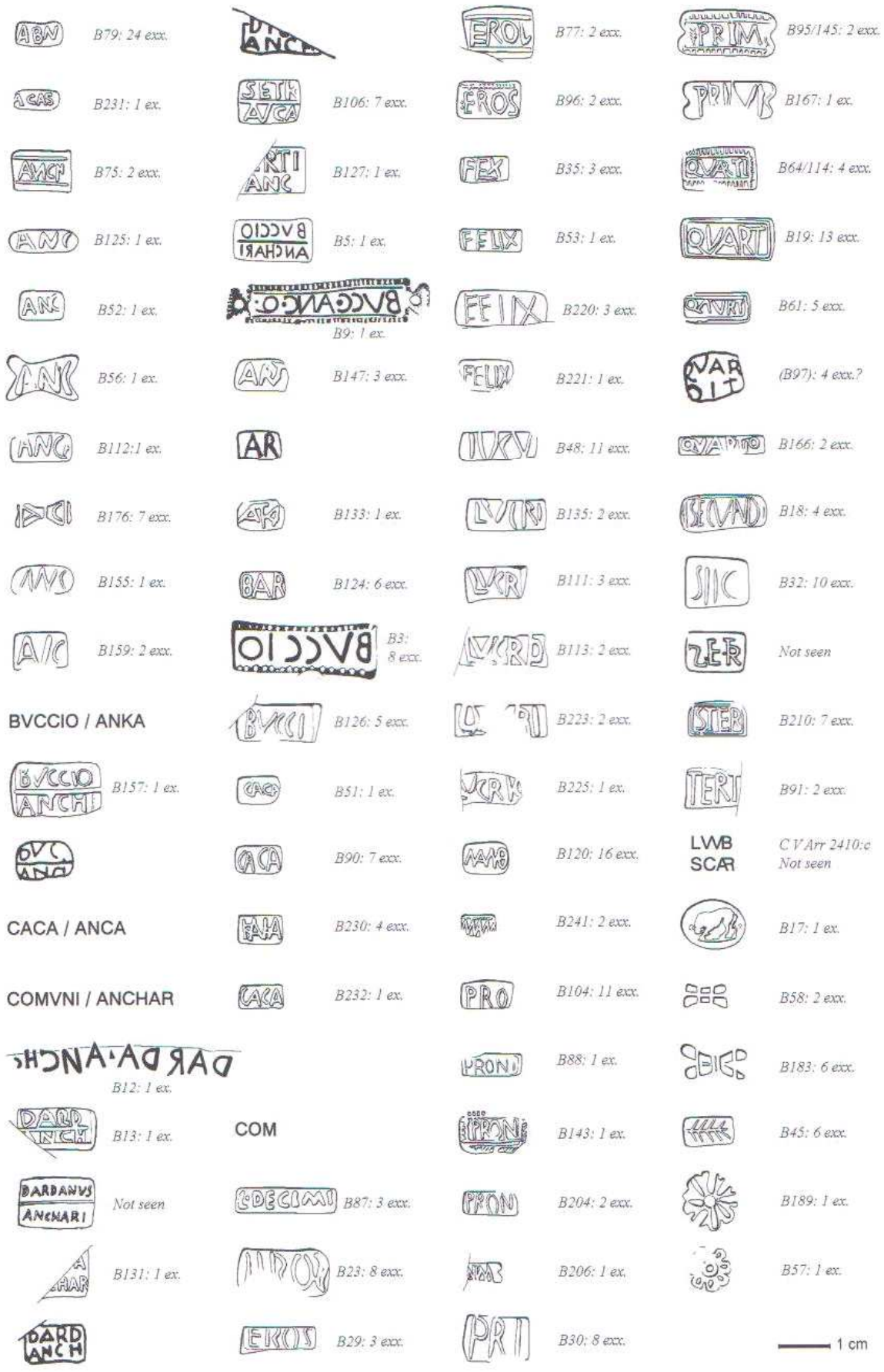

Fig. 6. Stamp-types from Vasanello (source OCK).

SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5
57.34	0.760	16.59	6.16	0.1029	2.91	11.89	1.09	2.91	0.24
±3.69	±0.044	±0.71	±0.44	±0.0203	±0.47	±4.00	±0.16	±0.28	±0.06

V	Cr	Ni	Zn	Rb	Sr	Zr	Ba	Ce	La
101	139	78	100	152	356	157	429	74	34
±17	±14	±9	±15	±18	±104	±19	±82	±13	±9

Fig. 7. Average concentrations and standard deviations of terra sigillata in the Rome/Lazio area (77 samples analysed. Major elements in weight percentage; trace elements expressed in ppm).

Annius (*OCK* 184) recently published by A. Martin[47];
8. *Tivoli*, 3 samples[48];
9. *Vasanello*, 35 samples from kiln debris, made up of moulds and both plain and decorated terra sigillata from this important centre in the Faliscan area[49];
10. *Scoppieto*, 4 samples (ceramics and wasters) from the area of the kiln[50].

The criteria with which the samples were selected for analysis were very simple: the terra sigillata had to have been stamped with some of the frequently recorded stamps from the urban area and that could have been produced either in the city or the region. Amongst the stamps of known arretine producers, some were selected who, for the frequency with which they had been found or for other reasons, could have been produced by local/regional branch workshops. In such cases it was necessary to check whether they were actually ceramics imported from Arezzo or material produced by these local/regional branch workshops.

To establish the origin of some of the sigillata their compositions were compared to those of the chemical reference groups of other urban produced fine wares (like the black-slipped wares or the table wares)[51].

The results of chemical analysis

The chemical analysis allowed 'average' compositions to be obtained for the terra sigillata generally defined as 'regional' (Fig. 7). Moreover, it allowed the creation of some groups (listed below) which were identified thanks to the occurrence of clusters, and correspond to an equal number of workshops or groups of workshops. Further investigation and analysis are necessary for some of the groups; for example it is possible that some of the samples in group 1 that diverge slightly from the group average, are the core of other groups, identifiable in the future only with increased sampling.

For the chemical values of the terra sigillata stamped by potters cited in this work (in particular from Vasanello, Scoppieto and from the *Oct-Pro/Oct-Sal* group) see Fig. 9.

Group 1: the ceramics from Arezzo and northern Etruria

Group 1 is always present in the processed clusters and its characteristic compositions allow it, in all probability, to be (largely) attributed to the workshops of Arezzo and northern Etruria (which, it has already been noted, have compositions different from those of Lazio)[52]. Membership to this group has been ascertained for some potters. More uncertain is the position of some stamped ceramics that, due to their slightly different compositions, could make new groups/subgroups in the case of increased sampling.

The group 1 samples subdivide into two groups, based on different quantities of CaO. This subdivision, already encountered in the analysis of terra sigillata from Arezzo, may derive from the use of different clays[53]. The stamps belonging to the group are included in Fig. 8[54].

Among this group's marginal samples, some are indicated that make up group 1a (Fig. 8); they are perhaps not arretine although they probably remain within the range of values known for northern Etruria.

Oxé proposed the attribution of many of the potters in group 1 to Arezzo, including the marginal results, as the chemical compositions are similar to those of Arezzo terra sigillata.

On the basis of some stamps being repeatedly found and the displacement of the finds, some archaeologists have tended to exclude an arretine origin for some of the stamps included in this group and instead propose a generically central Italian or Rome/Lazio origin. On the basis of the analyses carried out for this research, some of these stamps would instead seem to be of arretine, or at least northern Etruria, production. Amongst these there are stamps of:

- *C. Clo(dius) Sabi(nus)* and *P. Clod(ius) Proc(ulus)* (*OCK* 589; *OCK* 592), which pertain to productions of the Claudian and Neronian periods[55]. In *OC* and *OCK* they are included among the arretines, while some doubts have since been expressed by other scholars[56].

Group 1: Arezzo/northern Etruria

Stamp		Find spot	*OCK*	*Consp.*	Analysis reference
SEX. ANNIVS*	r	Ostia	184	14.1	82-83
SEX. ANNIVS	r	Ostia	184	18.1/18.2	84
A. AV( ) G( )	*p.p.*	Rome, Vigna Barberini	359	3.2	59
AVILLIVS PO( )	*p.p.*	Rome, Palatine, Boni excavations	393.2	B1.11	43
AVILLIVS	*p.p.*	Rome, Palatine, Boni excavations	371	Cup	44
L. AVILLIVS	*p.p.*	Rome, Palatine, Boni excavations	403.6	B2.6	45
CAMVRIVS	*p.p.*	Rome, Palatine, Boni excavations	514	B2.5	57
CAMVRIVS	*p.p.*	Rome, Palatine, Boni excavations	514	B3.12	58
CLOD(IVS) PROC(VLVS)	*p.p.*	Rome, Meta Sudans	587	Plate, not id.	62
C. CLO(DIVS) SABI(NVS)	*p.p.*	Ostia, Terme del Nuotatore	589.3	Not id.	19
C. CLOD(IVS) SABINVS	*p.p.*	Rome, Meta Sudans	589.3	B2.9	18
P. CLOD(IVS) PROC(VLVS)	*p.p.*	Rome, Meta Sudans	592	Not id.	63
P. CLOD(IVS) PROC(VLVS)	*p.p.*	Rome, Palatine, Boni excavations	592.7	Not id	64
P. CORNELIVS	oval	Rome, Palatine, Boni excavations	624.55	B4.13	67
P. CORNELI(VS) CLEME(N)S	r	Rome, Palatine, Boni excavations	637.1	B1.7	66
L. GELLIVS	*p.p.*	Rome, Palatine, Boni excavations	879.53	B2.4	56
L. GELLIVS	*p.p.*	Rome, Palatine, Boni excavations	879.79	6.3	55
L. GELIVS QVADRAVS	r	Rome, Palatine, Boni excavations	884.8	Cup	61
A. M(ANNEIVS?)	*p.p.*	Rome, Palatine, Boni excavations	1059.2	B3.13	53
C. M( ) R( )	*p.p.*	Rome, Palatine, Boni excavations	1067.1	B2.19	39
C. M( ) R( )	*p.p.*	Rome, Palatine, Boni excavations	1067.19	Cup	38
MARCI(VS)?	*p.p.*	Rome, Palatine, Boni excavations	1114.7?	B3.13	60
C. MARIVS	*p.p.*	Rome, Palatine, Boni excavations	1126.3	B3.12	54
C. ME( )	r	Rome, Palatine, Boni excavations	1132.4	B2.5	41
C. ME( )	*p.p.*	Rome, Palatine, Boni excavations	1132.19	B2.9	42
C. RASINIVS	*p.p.*	Rome, Palatine, Boni excavations	1686.7	B4.12	52
PRINCEPS TITI	r	Rome, Tiber	2162.1	Plate	36
L. T(ITI) HYLE?	*p.p.*	Rome, Villa Barberini	2585.193	B4.15	33

Group 1a: Arezzo/northern Etruria

Stamp		Find Spot	*OCK*	*Consp.*	Analysis reference
C. CLO(DIVS) SABI(NVS)	*p.p.*	Rome, Palatine, Boni excavations	589.3	Plate	65
C. CLO(DIVS) SABI(NVS)	*p.p.*	Rome, Museo Kircheriano	589,3	Not id.	22
C. CLO(DIVS) SABI(NVS)	*p.p.*	Ostia, Terme del Nuotatore	589,3	Not id.	20
P. CLOD(IVS) PROC(VLVS)	*p.p.*	Rome, Palatine, Boni excavations	592,7	Not id.	xx

Group 2: Workshops in Vasanello and surroundings

Stamp		Find Spot	*OCK*	*Consp.*	Analysis reference
ANC(HARIVS)	r	Vasanello	94	B3.13	31
BAR( ) / ANC(HARI)	r	Vasanello	-	Cup, not id.	70
CACA	r	Vasanello	472.1	Cup, not id.	68
KAKA	r	Vasanello	472.4	B4.8(?)	69
L. DECIMVS	r	Vasanello	728.1	Plate, not id.	74
EROS	r	Vasanello	778.7	B4.7? / B4.10	71
FELIX	r	Vasanello	820.1	B6.3	72
MALTH( )? (in Greek characters)	r	Vasanello	1090.1	Cup, not id.	73
PRO( )	r	Vasanello	1462.7	B4.13	75

Group 3: The Scoppieto workshop

Stamp		Find Spot	*OCK*	*Consp.*	Analysis reference
P. AV( ) GL( ) or CL( )		Scoppieto	362	Not id.	7 6
L. PLOTI(DIVS) POR( )		Scoppieto	1485	Not id.	2 7
L. PLOTI(DIVS) ZOS(IMVS)		Scoppieto	1488	Not id.	2 9
L. PLOTI(DIVS) ZOS(IMVS)	*p.p.*	Rome, Meta Sudans	1488	B3.13	2 5
L. PLOTI(DIVS) ZOS(IMVS)	*p.p.*	Rome, Meta Sudans	1488	B2.5	2 6

Group 4: Unlocated workshops

Stamp		Find Spot	*OCK*	*Consp.*	Analysis reference
ACA( )	r	Rome, Kircheriano	15.1	Plate	49
BACCIVS	r	Rome, Palatine, Boni excavations	426	33/34	77
EROS BASILI	sq	Rome, Tiber	430.1	Not id.	85
CELER	*p.p.*	Rome, Palatine, Boni excavations	531.13?	Plate	15-16
CELER	*p.p.*	Rome, dumps	531.13?	Not id.	17
DAPHNVS	r	Rome, Tiber	722.2	Not id.	50
FLAVIVS BASSVS	r	Rome, Tiber	838.1	Not id.	51
A. M(ANNEIVS) (?)	*p.p.*	Rome, Palatine, Boni excavations	1059	Not id.	79
C. MARIVS	sq	Rome, Palatine, Boni excavations	1126.1	Cup	78
NICOLAVS (SEX. AVILLI?)	r	Rome, Palatine, Boni excavations	1268.3	Cup, not id.	46
OPTATVS	r	Rome, Kircheriano	1328.1	Cup	47
OPTATVS FECIT	r	Rome, Tiber	1329.2	Cup	48
L. PLOT(IDIVS) ZOS(IMVS)	*p.p.*	Rome, Palatine, Boni excavations	1488.7	Cup	24

Group 5: Workshops of uncertain location

Stamp		Find Spot	*OCK*	*Consp.*	Analysis reference
FORT( ) C. TITI	r	Rome, Palatine, Boni excavations	2174.1	Fig. 6.6	3 4
CACA( ) C. TITI NEPOTIS	r	Rome, Tiber	2186	Not id.	8 0
HILARVS C. TITI NEPOTIS	r	Rome, Gorga Collection	2192.1	Not id.	3 7

Group 6: The OctPro-OctSal group

Stamp		Find Spot	*OCK*	*Consp.*	Analysis reference
ANCH(ARIVS)	r	Rome, Kircheriano	94.1	Not id.	30
C. CLO(DIVS) SABI(NVS)	*p.p.*	Rome, dumps	589.3	Not id.	21
C. NVM(ERIVS) FEL(IX)	*p.p.*	Rome, dumps	1301.8	Plate	1
C. NVM(ERIVS) RES(TITVTVS?)	*p.p.*	Rome, dumps	1304.3	Cup	4
C. NVM(ERIVS) RES(TITVTVS?)	*p.p.*	Rome, dumps	1304.5	B3.20	5
L. OCTAVIVS	*p.p.*	Rome, dumps	1313	Not id.	14
(L.) OCTA(VIVS) PROC(LVS)	*p.p.*	Rome, dumps Rome, dumps Rome, Kircheriano	1315.16 1315.5 1315.?	B3.19 3.2 Not id.	6 7 8
L. OCTA(VIVS) PROC(LVS)	*p.p.*	Ostia, Terme del Nuotatore	1315-16	34	9
L. O(CTAVIVS) SALVT(ARIS)	*p.p.*	Rome, dumps	1318.1	33.3	13
(L.) OCTA(VIVS) SALV(TARIS)	*p.p.*	Rome, dumps	1317	Not id.	11
(L.) OCTA(VIVS) SALV(TARIS)	*p.p.*	Rome, Kircheriano	1317	Not id.	12
(L.) OCTA(VIVS) SALV(TARIS)	*p.p.*	Rome, Meta Sudans	1317	Not id.	10
L. PLO(TIDIVS) POR( ) (et) L. PLO(TIDIVS) Z(OSIMVS)	*p.p.*	Rome, Palatine, Boni excavations	1487.2	Not id.	28
L. PLOT(IDIVS) ZOS(IMVS)	*p.p.*	Rome, Meta Sudans	1488.7	Cup, not id.	XY- XZ
VEIAN(VS)	*p.p.*	Rome, dumps	2336.2	3.2/33.3	23

*Fig. 8. The terra sigillata stamps of Rome and the Rome area grouped on the basis of the results of chemical analysis. p.p. = in planta pedis; p.m. = in planta manus; sq = squared; r = rectangular; not id. = form/type not identified; * = overfired material.*

- *C. M( )R( )* (*OCK* 1067) and *C.ME( )* (*OCK* 1132), recorded in Rome for the Julio-Claudian and Neronian periods. Examples of the same stamps found at Monte Iato and chemically analysed, form part of the group defined by Hedinger as Arezzo A[57].
- *Rasinius* (*OC* 1557), Oxé and Comfort suggest it is non-arretine. Among the material analysed from Monte Iato a stamp by *C. Rasinius* was included in the Arezzo A group[58]. It has been conjectured that the stamp of *C. Rasinius* from Carthage was of Pisan origin[59].

Among the stamps that, based on the results of chemical analysis, would seem to come from Arezzo or from the workshops of northern Etruria, there are those of:
- *Sex. Annius* (*OCK* 184) (see *infra* the observations on the analyses of the Ostia 'wasters' of the sigillata stamped by *Sex. Annius*).
- *Avillius* (*OCK* 371): the ceramics with this stamp have been dated at the Monte Iato site to the mid/late Augustan period. Based on finds concentrated at Rome, Hedinger has hypothesised that the production centre was actually in Rome, even if she did not exclude an arretine origin[60].
- *Avillius Po( )* (*OCK* 393.2).
- *L. Avillius* (*OCK* 403.6).
- *Camurius* (*OCK* 514): the workshop was documented in Rome in the Neronian period, but was functioning in the Augustan period. The analyses carried out on this potter's ceramics from Monte Iato also established an arretine origin[61].
- *Marcius(?)* (*OCK* 1114.7) or *Narcissus* (*OCK* 1252).
- *C. Marius* (OCK 1126.3).
- *L. T(iti) Hyle?* (*OCK* 2585.193): it is uncertain if the stamp was connected to production by *L. Titius*,

who operated between the mid-Augustan and early Tiberian periods.

Group 2: the workshops of Vasanello and surroundings

Group 2 includes terra sigillata (with rectangular stamps, plain and decorated), moulds for decorated sigillata and Aco ceramics, and kiln wasters from the Vasanello workshop (near Orte; active in the Augustan period and property of *Ancharius*) (Fig. 8).
Among the forms documented in the Vasanello workshop are *Consp.* 8, 9, 14.4, 15, 22.1, 23[62], 28, 30, 38 cups, and a cup base analogous to *Consp.* B3.16. *Consp.* 4.3 and 18.2 plates are present, as well as a type of large flat tray with decorated rim and a type of beaker. Of great interest also some moulds of Aco beakers.
The compositions of the Vasanello sigillata are different from those of Arezzo or other groups of central Italian terra sigillata currently known. Among the Vasanello materials at least two chemical groups exist, perhaps three, which could result from the presence of several workshops in the same area.
Vasanello enjoys a geological situation that allowed the potters of the area to develop their ceramic over the course of the centuries. It includes fine wares of calcareous clay (like the sigillata), particularly in the Roman period, but also kitchen wares, which were produced until recent times[63].
The Vasanello ceramics possess chemical compositions similar to, for example, the bricks of the *figlinae Subhortanae* that were analysed as a control and that, as the name says, probably came from the Orte area (*sub Horta*). The discovery that among the *officinatores* of the *Subhortanae* brick works there was an *Ancharius Anicetus* (CIL X.547) allows a vast ceramic and brick production system in the Orte area to be conjectured. The *gens Ancharia* would have been involved; this *nomen* was widely documented in southern Etruria, but also in Rome, throughout the Roman period[64].
It is probable that the whole Orte area, thanks to the numerous different clay deposits and to its position near the Tiber, was the site of several workshops that produced ceramics of similar compositions.
Most of the moulds analysed were also locally produced; some have a slightly different composition but is not yet possible to say if they are local or imported.
It is interesting to note that a ceramic with the rectangular stamp *Anch(arius)*, *OCK* 94.1, from the Museo Kircheriano (inv. 10735), has a composition different from that of the Vasanello ceramics and belongs to group 6.
Cooking pots with red-slip interior and the stamp *Nicephor/Anchari* from Magdalensberg, belonging to the Augustan period[65], have chemical compositions that differ from those of the reference groups currently available for Vasanello, and they seem rather similar to the compositions of ceramics of Campanian origin[66].

Group 3: the Scoppieto workshop

This group consists of five samples, including kiln wasters. Had they had not been found in the area of the kiln they would have been considered generically as part of the north Rome workshops. A close analysis of the data has shown slightly different values of MgO, K_2O and Rb (Fig. 9).
It is interesting to note that the same group also contains, alongside the Scoppieto specimens, ceramics found in Rome (*Meta Sudans*), which have very similar compositional characteristics (Fig. 8-9).
Two samples stamped by *L. Ploti(dius) Zos(imus)* (*OCK* 1488.7) and *L. Plo(tidius) Por( ) (et) L. Plo(tidius) Z(osimus)* (*OCK* 1487.2) would seem not to belong to the Scoppieto group, but rather to group 6. The *OCK* 1488.7 stamp belongs instead to group 4, even if, given the numerical scarcity of samples, it is difficult to say anything definitive.

Group 4: the unlocated workshops

This group contains various stamps (Fig. 8).
Comparison with the composition of other calcareous ceramics of Rome (black-slipped wares, ceramics from the Janiculum, the La Celsa kilns or the *Atelier des petites estampilles*) has allowed similarities with the ceramics of certain 'urban' workshops and with the composition of bricks produced in the *Sulpicianae* brick works to emerge[67]. We cannot affirm with certainty that these are productions of the city of Rome; however, it is probable that they are 'regional' ceramics.
The presence within the group of a stamp by *L. Plotidius Zosimus* suggests, as was previously noted, the possible existence of branch workshops of the Scoppieto workshop, a fact that should in any case be checked (Fig. 8).
The specimen stamped by *A. M(anneius?)* (*OCK* 1059) has a different chemical composition from the example with the same stamp documented in group 1, or that found in the Torrita di Siena workshop[68].

No.	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	V	Cr	Ni	(Cu)	Zn	Rb	Sr	Y	Zr	(Nb)	Ba	(Ce)	(Pb)	(Th)	Total
Group 1: AREZZO/NORTHERN ETRURIA																									
SEX. ANNIVS (Ostia – *OCK* 184)																									
82	55.989	0.900	19.521	7.532	0.134	3.223	8.483	0.904	3.145	0.169	159	151	87	67	103	147	247	27	121	19	358	83	40	30	100.97
83	56.460	0.733	16.504	6.442	0.139	2.847	12.917	0.917	2.792	0.248	88	124	68	20	90	189	433	50	167	4	486	80	1540	0	100.76
84	54.028	0.686	15.963	5.975	0.084	3.744	15.349	0.997	2.965	0.208	84	129	65	21	94	123	455	64	133	8	341	56	1963	0	101.30
AVILLI(VS) PO( ) (Rome, Palatine – *OCK* 393.2)																									
43	56.225	0.852	18.058	6.815	0.145	3.389	10.699	0.977	2.610	0.231	119.	162.	85.	50.	126.	123.	300.	28.	154.	25.	398.	73.	103.	28.	100.59
AVILL(IVS) (Rome, Palatine – *OCK* 371)																									
44	55.548	0.891	18.782	7.800	0.166	3.482	9.810	0.740	2.551	0.230	155.	177.	85.	58.	130.	129.	255.	28.	130.	24.	397.	94.	85.	16.	101.00
L. AVILL(IVS) (Rome, Palatine – *OCK* 403.6)																									
45	56.176	0.886	18.017	7.755	0.157	3.406	9.974	0.892	2.585	0.153	138.	171.	83.	49.	133.	125.	260.	23.	139.	24.	415.	66.	71.	14.	100.91
CAMVRIVS (Rome, Palatine – *OCK* 514)																									
57	55.123	0.881	18.484	7.741	0.175	3.478	10.528	0.760	2.601	0.231	146.	168.	83.	50.	130.	128.	278.	28.	134.	24.	413.	81.	75.	15.	100.93
58	54.159	0.827	17.519	7.249	0.155	3.181	13.280	0.802	2.597	0.231	116.	158.	80.	50.	118.	120.	385.	27.	139.	24.	420.	82.	64.	17.	98.88
C. CLO(DIVS) SABI(NVS) (Rome, Meta Sudans, Ostia – *OCK* 589.3)																									
18	54.705	0.822	17.804	6.901	0.136	3.496	12.117	1.136	2.626	0.258	127.	162.	81.	41.	114.	123.	287.	27.	148.	26.	413.	78.	52.	24.	100.89
19	49.457	0.720	15.579	6.055	0.150	3.141	18.980	0.888	2.170	2.861	119.	129.	72.	80.	121.	100.	410.	22.	143.	24.	334.	67.	51.	20.	99.48
P. CLOD(IVS) PRO(CVLVS?) (Rome, Meta Sudans, Palatine – *OCK* 587, 592 and 592.7)																									
62	56.321	0.893	19.058	7.470	0.144	3.504	9.123	0.713	2.548	0.225	132.	176.	86.	40.	129.	131.	240.	27.	133.	27.	380.	83.	62.	24.	100.80
63	55.705	0.877	18.854	7.326	0.168	3.507	9.768	0.764	2.699	0.332	140.	173.	86.	74.	133.	130.	262.	28.	136.	25.	375.	86.	75.	23.	100.08
P. CORNELI(VS) CLEME(N)S (Rome, Palatine – *OCK* 637.1)																									
66	55.050	0.893	18.837	7.830	0.200	3.603	9.712	0.814	2.809	0.253	138.	182.	91.	46.	122.	137.	270.	28.	141.	27.	467.	82.	92.	18.	101.03
L. GELLIVS (Rome, Palatine – *OCK* 879.79 and 879.53)																									
55	53.872	0.854	18.333	7.203	0.148	3.470	12.488	0.796	2.570	0.265	142.	159.	81.	46.	120.	124.	330.	27.	134.	25.	394.	68.	67.	15.	100.58
56	54.817	0.845	18.240	7.118	0.139	3.373	11.750	0.818	2.563	0.337	131.	160.	78.	99.	123.	122.	317.	26.	135.	25.	396.	86.	143.	13.	100.34
L. GELLIVS QVADRATVS (Rome, Palatine – *OCK* 884.8)																									
61	52.969	0.813	17.565	6.988	0.144	3.304	14.619	0.721	2.520	0.357	128.	153.	77.	51.	121.	117.	353.	26.	131.	24.	404.	57.	96.	15.	98.41
A. M(ANNEIVS?) (Rome, Palatine – *OCK* 1059.2)																									
53	56.641	0.834	17.882	6.989	0.144	3.439	10.085	1.024	2.710	0.253	126.	159.	82.	46.	123.	127.	305.	26.	148.	24.	421.	66.	69.	19.	100.13
C. M( ) R( ) (Rome, Palatine – *OCK* 1067.1 and 1067.19)																									
39	55.702	0.881	18.856	7.337	0.142	3.502	9.415	1.046	2.872	0.246	150.	172.	85.	51.	130.	134.	259.	28.	133.	26.	419.	76.	69.	22.	100.66
38	54.396	0.807	17.866	6.953	0.143	3.389	12.312	0.881	2.568	0.685	126.	149.	82.	87.	139.	128.	340.	33.	145.	12.	564.	92.	162.	0.	98.94

No.	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	V	Cr	Ni	(Cu)	Zn	Rb	Sr	Y	Zr	(Nb)	Ba	(Ce)	(Pb)	(Th)	Total
MARCI(VS)? (Rome, Palatine – *OCK* 1114.7?)																									
60	54.033	0.847	18.282	7.340	0.160	3.334	12.418	0.786	2.477	0.323	133.	160.	78.	56.	123.	119.	341.	27.	139.	24.	381.	74.	79.	14.	100.18
C. MARIVS (Rome, Palatine – *OCK* 1126.3)																									
54	54.491	0.845	18.071	7.097	0.149	3.411	11.314	0.874	2.486	0.261	134.	163.	80.	51.	126.	119.	290.	28.	141.	24.	401.	76.	100.	21.	100.56
C. ME( ) (Rome, Palatine – *OCK* 1132.4 and 1132.19)																									
41	55.768	0.854	18.217	7.100	0.152	3.317	11.037	0.814	2.509	0.230	135.	164.	79.	45.	122.	119.	284.	28.	142.	25.	395.	79.	82.	22.	100.68
42	55.601	0.875	18.780	7.362	0.158	3.475	10.230	0.780	2.499	0.240	145.	167.	82.	53.	129.	124.	269.	27.	131.	26.	354.	102.	59.	20.	99.05
C. RASI(NIVS) (Rome, Palatine – *OCK* 1686.7)																									
52	55.753	0.830	18.057	7.062	0.143	3.364	10.972	0.830	2.735	0.253	119.	158.	80.	59.	128.	137.	325.	29.	145.	17.	433.	60.	87.	0.	99.43
PRINCEPS TITI (Rome, Tiber – *OCK* 2103.2)																									
36	54.132	0.830	17.912	7.047	0.145	3.538	12.830	0.876	2.442	0.249	125.	161.	91.	49.	105.	120.	313.	27.	121.	25.	398.	72.	50.	23.	99.90
L. T(ITI) HYLE? (Rome, Villa Barberini – *OCK* 2585.193)																									
33	56.417	0.840	17.819	6.802	0.144	3.410	10.829	0.883	2.604	0.252	134.	161.	83.	49.	124.	121.	308.	27.	151.	27.	386.	73.	53.	22.	100.92

Group 1a: AREZZO/NORTHERN ETRURIA?

C. CLO(DIVS) SABI(NVS) (Ostia, Rome, Kircheriano, Palatine – *OCK* 589.3)																									
20	54.616	0.791	17.559	6.859	0.136	3.467	11.855	1.002	2.636	1.078	136.	145.	75.	55.	126.	137.	330.	31.	151.	15.	425.	76.	64.	0.	100.70
22	55.763	0.858	18.561	7.231	0.135	3.772	9.628	0.912	2.845	0.294	124.	160.	97.	90.	107.	137.	267.	29.	138.	27.	399.	59.	96.	28.	99.95
65	54.376	0.871	18.228	7.762	0.161	3.378	10.838	0.822	2.557	1.006	148.	169.	81.	52.	152.	121.	275.	27.	131.	24.	393.	78.	74.	16.	100.98

Group 2: Workshops in VASANELLO and surroundings

No.	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	V	Cr	Ni	(Cu)	Zn	Rb	Sr	Y	Zr	(Nb)	Ba	(Ce)	(Pb)	(Th)	Total
ANC(HARIVS) (*OCK* 94)																									
31	62.508	0.823	17.074	5.718	0.106	2.523	7.208	1.088	2.738	0.213	86	146	72	27	114	160	225	31	178	15	307	66	9	28	100.93
BAR( )/ANC(HARI) (*OCK* --)																									
70	61.604	0.800	16.996	5.433	0.091	2.486	8.716	1.089	2.613	0.171	132	146	68	64	113	160	223	27	175	19	352	70	50	0	99.34
CACA and KAKA (*OCK* 472.1 and 4)																									
68	57.809	0.746	16.556	5.999	0.082	3.504	10.782	1.254	3.087	0.180	98	156	67	22	105	160	291	27	157	15	392	58	19	19	100.91
69	61.494	0.748	16.412	5.936	0.091	2.969	7.487	1.348	3.276	0.239	78	156	71	29	97	170	282	31	167	14	409	77	21	21	101.08
L. DECIMVS (*OCK* 728.1)																									
74	55.884	0.713	15.811	5.707	0.084	3.461	13.789	1.289	3.026	0.236	87	148	64	25	101	148	369	28	166	15	403	78	8	24	100.97
FELIX (*OCK* 820.1)																									
72	63.153	0.832	17.274	5.763	0.083	2.401	6.528	1.058	2.696	0.213	105	163	73	27	139	159	213	32	177	17	323	82	19	18	101.06
MALTH( )? (*OCK* 1090.1)																									
73	56.369	0.760	16.869	6.199	0.092	3.615	11.405	1.233	3.117	0.341	107	154	71	26	104	168	311	27	156	15	393	69	18	19	100.94

No.	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	V	Cr	Ni	(Cu)	Zn	Rb	Sr	Y	Zr	(Nb)	Ba	(Ce)	(Pb)	(Th)	Total
PRO( ) (*OCK* 1462.7)																									
75	64.046	0.832	16.990	5.594	0.074	2.379	6.017	1.170	2.673	0.225	106	153	74	23	112	160	207	30	190	16	309	69	11	22	99.89
81	61.953	0.808	16.818	5.701	0.087	2.486	8.354	0.975	2.600	0.215	122	131	70	23	112	149	221	30	163	15	294	63	7	18	98.42
Terra sigillata moulds																									
88	60.372	0.781	17.053	6.725	0.090	2.595	8.080	0.906	3.243	0.157	117	147	94	32	99	168	331	27	144	16	381	70	18	23	100.57
89	60.893	0.848	18.460	6.877	0.104	3.111	5.177	1.052	3.262	0.219	146	171	94	43	123	189	227	30	146	19	396	72	20	23	100.54
90	52.981	0.804	18.088	6.781	0.087	3.501	12.617	1.665	3.302	0.177	131	174	87	39	128	310	324	26	124	17	376	75	17	21	100.45
91	60.252	0.783	17.185	6.350	0.094	2.940	7.518	1.303	3.385	0.191	107	151	81	33	107	181	269	27	154	17	413	78	15	22	100.67
92	59.267	0.765	17.048	5.829	0.076	2.683	9.966	0.952	3.220	0.194	120	149	83	32	110	175	284	28	143	17	358	71	18	24	99.66
93	63.708	0.800	17.510	6.449	0.096	2.925	3.378	1.405	3.557	0.175	115	155	91	46	115	196	219	27	158	18	432	71	20	21	97.18
94	58.080	0.807	17.954	6.747	0.097	3.175	8.310	1.130	3.512	0.190	103	134	89	43	118	192	291	27	147	18	403	80	18	20	100.09
95	59.055	0.751	16.484	6.161	0.097	2.958	9.713	1.278	3.305	0.200	123	146	77	35	100	177	279	29	152	17	392	83	17	19	99.46
96	62.955	0.830	17.219	5.696	0.078	2.351	6.934	1.096	2.641	0.203	102	151	82	31	111	159	219	29	166	19	328	83	16	20	99.98
97	56.502	0.713	15.814	5.638	0.080	2.714	14.152	1.063	3.122	0.203	118	135	77	35	97	156	360	27	141	16	408	68	16	19	100.31
98	55.230	0.754	16.564	5.990	0.081	3.118	13.975	1.133	3.101	0.237	86	151	79	36	100	160	312	28	142	17	367	67	18	19	100.32
100	64.684	0.782	16.960	6.556	0.085	3.576	2.594	1.302	3.273	0.189	114	135	87	45	139	191	177	34	157	17	387	70	62	0	100.26
101	55.685	0.786	18.201	6.771	0.092	3.480	10.281	1.028	3.417	0.260	101	161	72	43	125	186	334	28	135	18	399	71	47	0	99.41
Terra sigillata kiln wasters																									
108	61.865	0.804	16.727	5.582	0.080	2.343	8.710	1.111	2.586	0.196	136	146	78	31	107	153	225	31	169	18	316	84	18	19	99.89
109	61.887	0.805	16.744	5.526	0.077	2.347	8.783	1.099	2.543	0.192	138	152	76	22	103	149	219	30	162	20	312	81	15	17	100.64
110	56.038	0.759	16.912	6.222	0.084	3.486	11.968	1.170	3.185	0.177	137	158	82	32	100	177	294	26	137	19	390	64	21	21	99.98
111	57.355	0.683	14.806	5.486	0.092	3.559	13.301	1.448	3.093	0.176	105	131	62	13	79	145	282	28	166	13	361	62	2	25	98.20
112	62.063	0.799	16.604	5.476	0.080	2.442	8.735	1.073	2.535	0.192	132	149	68	19	112	149	220	32	174	16	322	83	7	20	99.37
Group 3: SCOPPIETO workshop																									
L. PLO(TIDIVS) POR( ) (Scoppieto – *OCK* 1485)																									
27	53.269	0.758	16.331	6.384	0.102	3.794	15.435	0.959	2.665	0.313	77	140	83	44	86	102	359	26	137	24	416	73	62	27	100.30
L. PLO(TIDIVS) ZOS(IMVS) (Scoppieto – *OCK* 1488)																									
29	56.417	0.782	16.980	6.572	0.089	4.019	10.788	1.116	2.949	0.288	80	137	83	35	82	127	311	24	139	23	425	67	49	27	100.90
Clay and wasters																									
86	53.322	0.707	15.929	5.975	0.087	3.810	15.970	0.997	2.995	0.207	116	132	80	34	96	132	407	23	122	20	340	71	42	19	100.39
87	54.341	0.710	15.887	5.948	0.086	3.646	15.376	0.994	2.820	0.192	75	128	78	29	83	131	323	25	125	22	437	77	40	27	100.52

No.	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	V	Cr	Ni	(Cu)	Zn	Rb	Sr	Y	Zr	(Nb)	Ba	(Ce)	(Pb)	(Th)	Total
Group 4: Unlocated workshops																									
ACA( ) (Rome, Kircheriano – *OCK* 15.1)																									
49	55.218	0.767	17.534	6.517	0.132	2.639	13.392	1.099	2.652	0.231	109	108	76	48	85	174	447	31	218	27	592	102	65	39	100.18
BACCIVS (Rome, Palatine – *OCK* 426)																									
77	53.569	0.778	17.085	7.060	0.140	2.713	14.892	0.843	2.688	0.231	116	139	77	44	108	146	405	28	171	23	550	113	68	23	100.35
EROS BASILI (Rome, Tiber – *OCK* 430.1)																									
85	53.810	0.728	16.722	6.330	0.137	2.589	15.790	0.917	2.756	0.219	103	119	80	52	85	154	439	27	155	21	570	87	49	29	100.34
CELER (Rome, Palatine (2), Unpublished material of the Archeoclub Ardeatino-Laurentino – *OCK* 531.13?)																									
15	52.548	0.766	16.367	6.918	0.146	2.851	16.604	0.925	2.646	0.227	93	130	69	52	105	140	521	27	173	23	498	81	142	19	99.99
16	53.798	0.792	16.931	7.123	0.151	2.684	14.677	0.908	2.644	0.293	103	136	70	65	104	140	407	29	175	23	600	100	134	21	100.56
17	56.743	0.823	18.281	7.102	0.125	2.969	10.040	0.936	2.714	0.269	106	137	84	52	97	169	346	28	171	23	541	83	55	29	99.79
DAPHNVS (Rome, Tiber – *OCK* 722.2)																									
50	54.195	0.763	17.193	7.356	0.128	2.744	13.769	1.014	2.530	0.307	121	123	76	62	97	149	430	29	182	25	547	98	60	38	100.60
FLAVIVS BASSVS (Rome, Tiber – *OCK* 838.1)																									
51	57.391	0.749	16.854	6.267	0.147	2.596	11.974	1.144	2.651	0.227	91	120	78	48	76	152	395	28	194	23	562	94	66	34	100.15
A. M(ANNEIVS) (?) (Rome, Palatine – *OCK* 1059)																									
79	53.120	0.764	16.724	6.634	0.147	2.943	15.910	0.891	2.628	0.237	102	131	75	49	111	137	426	28	166	23	545	88	64	24	98.65
C. MARIVS (Rome, Palatine – *OCK* 1126.1)																									
78	52.449	0.754	16.983	6.684	0.142	2.734	16.620	0.830	2.566	0.237	104	133	77	51	114	137	408	28	163	23	543	89	66	20	100.28
NICOLAVS (SEX. AVILLI?) (Rome, Palatine – *OCK* 1268.3)																									
46	55.286	0.786	17.179	7.130	0.143	2.499	12.958	0.822	2.906	0.291	106	139	78	50	108	150	403	29	171	24	617	110	92	18	100.51
OPTATVS (Rome, Kircheriano – *OCK* 1328.1)																									
47	54.733	0.742	16.267	6.244	0.127	2.948	14.880	1.045	2.767	0.248	100	117	83	52	86	147	560	29	168	24	663	73	67	25	100.03
OPTATVS FECIT (Rome, Tiber – *OCK* 1329.2)																									
48	55.368	0.730	16.541	6.524	0.128	2.840	14.140	1.091	2.431	0.208	97	120	77	47	96	137	417	27	171	25	511	86	54	30	100.23
L. PLOT(IDIVS) ZOS(IMVS) (Rome, Palatine – *OCK* 1488.7)																									
24	54.640	0.758	16.494	6.404	0.138	2.666	15.148	1.017	2.533	0.203	103	127	69	47	104	145	453	28	186	23	516	93	82	28	100.43
Group 5: Workshops of uncertain location																									
FORT( ) C. TITI (Rome, Palatine – *OCK* 2174.1)																									
34	58.677	0.791	17.337	6.590	0.112	3.459	7.979	1.351	3.300	0.404	92	164	99	125	122	155	326	27	166	24	461	56	130	20	100.40
CACA( ) C. TITI NEPOTIS (Rome, Tiber – *OCK* 2186)																									
80	57.429	0.788	17.238	6.710	0.122	3.484	9.378	1.430	3.211	0.209	88	152	100	46	83	151	327	25	158	23	451	67	250	26	100.40

No.	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	V	Cr	Ni	(Cu)	Zn	Rb	Sr	Y	Zr	(Nb)	Ba	(Ce)	(Pb)	(Th)	Total
HILARVS C. TITI NEPOTIS (Rome, Gorga Collection – *OCK* 2192)																									
37	56.012	0.760	16.862	6.315	0.097	3.363	11.839	1.336	3.176	0.240	99	152	97	47	89	152	364	25	150	21	494	67	53	28	100.37
Group 6: The OctPro-OctSal group																									
ANCH(ARIVS) (Rome, Kircheriano – *OCK* 94)																									
30	55.454	0.737	16.612	6.036	0.113	3.402	13.373	0.939	3.065	0.268	89	132	80	48	86	144	499	25	140	23	451	71	59	24	100.26
C. CLO(DIVS) SABI(NVS) (*Antiqua 8* no. 299 – *OCK* 589.3)																									
21	55.786	0.770	17.088	6.110	0.102	2.466	13.344	1.065	2.983	0.287	96	151	98	45	94	148	391	26	138	23	410	73	71	25	100.10
C. NVM(ERIVS) FEL(IX) (*Antiqua 8* no. 206 – *OCK* 1301.8)																									
1	51.918	0.685	15.354	5.870	0.100	2.895	19.349	0.907	2.716	0.207	80	121	75	44	74	124	529	23	131	21	397	62	63	25	100.14
C. NVM(ERIVS) RES(TITVTVS?) (*Antiqua 8* no. 211 and 272 – *OCK* 1304.3 and 5)																									
4	58.428	0.766	17.041	6.569	0.122	2.272	10.081	1.381	3.112	0.230	93	143	92	55	87	165	377	22	147	24	532	74	188	24	100.01
5	54.597	0.718	16.048	6.188	0.108	3.138	14.978	0.924	2.927	0.374	88	119	78	2	91	144	489	24	139	22	476	78	73	23	100.00
L. OCTAVIVS (Rome, Unpublished material of the Archeoclub ardeatino-laurentino – *OCK* 1310.1)																									
14	57.888	0.787	17.487	5.897	0.103	2.056	11.490	0.989	3.084	0.220	93	142	101	55	85	155	349	27	137	24	457	73	107	27	99.62
(L.) OCTA(VIVS) PROCLVS (*Antiqua 8* no. 307 and 261, Kircheriano 10729 – *OCK* 1315.5 and 16)																									
6	55.964	0.725	16.186	5.949	0.100	2.896	13.519	0.945	3.155	0.561	83	124	82	54	89	145	468	24	144	21	464	69	84	27	98.53
7	55.853	0.697	15.736	5.982	0.098	2.581	15.041	0.970	2.835	0.206	68	121	69	34	87	139	457	24	134	21	437	53	64	23	100.26
8	52.772	0.687	15.376	5.796	0.095	3.019	18.278	0.931	2.795	0.250	85	121	73	52	79	144	498	24	129	21	433	71	63	26	100.29
(L.) OCTA(VIVS) PROC(LVS) – (Ostia – *OCK* 1315-16)																									
9	57.069	0.727	16.083	6.131	0.108	2.596	13.161	0.867	3.003	0.254	90	123	70	42	99	136	449	24	158	22	438	65	49	14	100.06
(L.) OCTA(VIVS) SALV(TARIS) and L. O(CTAVIVS) SALVT(ARIS) (Rome, Meta Sudans, Unpublished material of the Archeoclub Ardeatino-Laurentino, Kircheriano, *Antiqua 8* no. 345 – *OCK* 1317 and 1318.1)																									
10	56.611	0.765	16.861	6.431	0.105	2.359	12.498	1.092	3.060	0.218	102	151	87	46	97	149	413	24	150	24	423	79	87	22	100.69
11	54.070	0.683	15.358	5.907	0.103	2.878	16.796	0.917	2.852	0.437	81	120	69	52	82	140	496	23	138	21	511	60	49	22	99.88
12	57.015	0.769	17.036	6.356	0.104	2.320	11.995	1.115	3.063	0.226	86	143	96	52	87	151	382	27	141	24	471	59	58	22	99.99
13	55.325	0.684	15.424	5.855	0.116	2.959	15.473	0.957	2.862	0.344	93	120	75	46	91	133	449	24	133	21	443	60	80	22	100.03
L. PLO(TIDIVS) POR( ) (et) L. P(LOTIDIVS) Z(OSIMVS) (Rome, Palatine – *OCK* 1487.2)																									
28	55.502	0.743	16.158	6.160	0.087	3.300	13.687	1.026	3.092	0.247	102	134	67	40	95	140	387	22	146	22	460	71	755	28	100.17
L. PLOT(IDIVS) ZOS(IMVS) (Rome, Palatine, Meta Sudans – *OCK* 1488.7)																									
XY	50.286	0.667	14.934	5.752	0.112	3.034	21.521	0.907	2.587	0.201	91	122	67	30	101	110	522	23	147	22	353	55	43	18	100.18
XZ	53.443	0.698	15.334	5.806	0.116	2.777	17.715	1.001	2.896	0.214	92	126	73	56	88	123	495	26	161	23	429	55	49	17	100.02
VEIAN(VS) (*Antiqua 8* no. 264 – *OCK* 2336.2)																									
23	54.656	0.695	15.581	5.934	0.099	2.781	16.118	0.912	2.959	0.266	77	122	77	65	148	138	483	23	138	21	431	54	49	26	100.08

Fig. 9. Table of chemical values relative to some potters that stamped terra sigillata found in Rome and the Rome area (from Olcese 1997. Major elements in weight percentage; trace elements expressed in ppm).

Another stamp by *C. Marius* (*OCK* 1126.3) was also found in group 1, of probable arretine origin.
A fragment of terra sigillata stamped by *Daphnus*, from the *Meta Sudans* excavations, has a chemical composition that is incompatible with this group, even though it is marginal to it.
It is not presently possible to say much on the presence within this group of the stamp *Celer*; the name, indicating a slave, is quite common. Examples of it are also found in the sigillata from Pozzuoli[69] and the Po valley.

Group 5: workshops of uncertain location

After having processed the chemical data, some samples formed a small group that was found in various clusters and that consisted of three workers of *C. Titius* (Fig. 8).
The sigillata from the workshop of *C. Titius Nepos* and his workers, known more in the Rome area than at Arezzo, is well documented at Carthage (above all the stamps of *Hilarus*)[70].
The composition of ceramics belonging to this small group are similar to those of Vasanello, even if other origins cannot be excluded, especially when considering the 'regional' similarities in composition encountered when analysing the Lazio ceramics.
Archaeometric study has drawn attention to the probable links that existed between the two groups of terra sigillata and has provided a starting point for future research.
Taking into consideration the names of the workers of *Ancharius* at Vasanello, it is noted that at least some of them coincide with those of *C. Titius Nepos*: *Caca( ), Epap(hra), Nasta, Tertius*, and two of them coincide with the workers of *C. Titius*: *Acastus, Fort( )*:
– *Acastus* (*OCK* 18 + 2171, 2178)
– *Caca( )* (*OCK* 97 + 2186)
– *Epap(hra)* (*OCK* 22 [?] + 2188)
– *Fort( )* (* + *OCK* 2174)
– *Nasta* (*OCK* 104 + 2193)
– *Tertius* (*OCK* 2073 + 2201)
* *stamp identified at Vasanello that is not included in OCK*

Group 6: the OctPro-OctSal group

The analyses carried out allowed the isolation of a further group, its composition is quite heterogeneous and it is notable for containing names of some of the more well-known potters, *(L.) Octa(vius) Proculus* and *(L.) Octa(vius) Salu(taris)*[71].
The group also contains stamps by other potters, specimens whose chemical composition is similar and that perhaps pertain to the same workshop or to the same group of workshops (Fig. 8-9). Among the other stamps there is one of *L. Octavius*; and stamps of *C. Num(erius) Res(titutus?)* and *C. Num(erius) Fel(ix)*.
The *OctPro-OctSal* group sigillata is well documented in Rome and central Italy until the middle of the second century AD. It is also attested in huge quantities in Corinth[72]; and based on these Corinthian finds, Slane isolated the group of potters *L. Octavius Proculus* and *L. Octavius Salutaris*, and with good intuition, attributed it to a centre in northern Lazio or Umbria.
That the ceramics stamped by *C. Numerius Felix* and *C. Numerius Restitutus* probably belong to this group, was established by this project thanks to laboratory analysis, and was confirmed by finds in Corinth. In this Greek city the sigillata stamped by the two potters forms one of the most documented groups from the middle to the third quarter of the second century AD; along with other sigillata of similar morphological characteristics and clays (some of which are stamped *L. Octavi* and *Veiani*),
We also know from the Corinthian finds that the most common forms stamped by the potters in question are the *Consp.* 3 plate and the *Consp.* 34 cup.
We do not yet have material that can give a location to this group although, thanks to comparison with the chemical compositions of other groups, it is possible to define it as 'central Italian'. Its composition is reminiscent of the Scoppieto potters, but with some compositional diversity that necessitates the creation of a separate group[73]. The chemical composition of these ceramics, moreover, is different from that of the fine wares which are considered as originating in the urban area (for example, the black-slipped wares).

LABORATORY ANALYSIS AND ORIGINS OF THE CENTRAL ITALIAN TERRA SIGILLATA: SOME OBSERVATIONS (M. PICON)[74]

The compositional uniformity encountered in the ceramics comes from the fact that the potters exploited the same sedimentary formation – even if in different locations – for the manufacture of different classes of calcareous clay (such as the black-slips, the sigillata and most of the table wares). Such formation corresponds essentially to the clayey layers of the Marine Pliocene (and of the Lower Pleistocene) which appear at Rome, for example in the Monte Mario area, as they do in the Tiber Valley, beyond Rome. These layers are also particularly found in large quantities on the volcanic massif of Monte Vico, around

which the Tiber turns north, between Capena and Orte, and they extend out towards Orvieto, Chiusi and the Val di Chiana. They also reappear further east, towards Terni and Perugia. To the west of Rome such formations disappear under the volcanic sequence, to reappear along the Tyrrhenian coast near Cerveteri and further north towards Tarquinia. ... Through survey, archaeological/typological and laboratory study the area north-east of Rome, and in particular the area near the Tiber, has been revealed as the principal area supplying both calcareous and non calcareous ceramics to the Roman market. The intense river traffic along the Tiber also allowed the increased establishment of ceramic workshops.

Concluding observations

The areas supplying the terra sigillata found in Rome

On the basis of the data gathered, the analysed sigillata from the urban area was largely assigned to two broad origins:

1. Arezzo/northern Etruria (group 1; group 1a):

The limited number of analysed samples does not allow precise quantitative and/or chronological remarks to be made for now. It is, however, possible to note that an important part of the analysed terra sigillata samples belong to the group from Arezzo and northern Etruria, a fact that confirms the importance of this area for supplying the *Urbs* with fine wares, a supply route particularly facilitated by the presence of the Tiber.
The data from recent urban excavations added to the archaeometric results show that the Arezzo workshops were active and provided Rome with terra sigillata not only during the Augustan period but also through the Neronian and Flavian periods[75]. Considering the data currently available to us, these arretine workshops could be considered the most important sources of terra sigillata supplying the urban market.
Caution is necessary due to the early stage of research and the limited number of analysed samples, however, based on the analyses carried out, it can be seen that material from the Pisan workshops is present in small quantities. This phenomenon has already been noted at Bolsena[76]. This would again demonstrate that the Pisan ceramics, mainly intended for maritime exportation, are found with less frequency further away from the coast.
Despite being preliminary data, it would seem that this situation differs from that of the Vesuvius towns, where in the same period terra sigillata is found produced by local or regional workshops, or by workshops of northern coastal Etruria[77].

2. Central Italy (southern Etruria, northern Lazio/mid Tiber Valley, Rome?) (groups 2-6):

An important part of the regional production seems concentrated in southern Etruria/northern Lazio, in the Tiber Valley, perhaps extending into Umbria.
A series of workshops have been documented from the Augustan to the Flavian periods (in some cases until the second century AD) which played a role in urban supply. For the moment it is difficult to precisely locate or quantify the productions of such workshops.
It has been possible to isolate the production of the Vasanello workshop from within these productions, thanks to the presence of kiln wasters and with the help of archaeometry. This workshop was situated in a very important production area for supplying ceramics and bricks to the city in the Augustan and early imperial period.
The terra sigillata of the Scoppieto workshop in Umbria has also been separated from the other productions, its ceramics have a particular compositional make-up; as do the ceramics of the *OctPro- OctSal* group, for which the exact production site is unknown.
These preliminary results, even if they require further checks, lead to some observations and hypotheses for future research:

- The Arezzo and northern Etruria ceramics occupied an important part in supplying Rome with fine wares. For some arretine potters the possible existence of a central Italian branch workshop has been noted (same name – different chemical composition). To clarify this point the research needs to be continued by increased sampling.
- The analyses carried out – even though numerically few and referring to heterogeneous material from restricted chronological periods – have not yet allowed the isolation of a definite 'urban' production. However, the presence of potters has emerged in various workshops situated in southern Etruria/northern Lazio, along the Tiber Valley, in the area most geologically favourable and served by the Tiber. Except for some cases, such as that of the ceramic stamped by *Ancharius* or *C. Titius Nepos*, the terra sigillata of the identified central Italian workshops would not seem to have had a distribution comparable to that of the arretine producers.

– An important part of the terra sigillata recorded in Rome and Lazio seems to originate in southern Etruria/northern Lazio, and in the Tiber Valley (as far as Umbria?), where perhaps the *OctPro-OctSal* group workshops are to be found, and where some production sites have already been identified. Among these sites, Vasanello is definitely the most important at present. The *Ancharius* workshop was situated there, which is currently considered to be one of the most significant centres in the central Italian area for the production of terra sigillata[78]. In fact the existence of both calcareous and siliceous clays throughout the whole area between Orte and Vasanello, favoured the establishment of kilns and workshops which were still active in the modern period; as has been shown by various finds and as seems to emerge from the laboratory analyses.

The question of branch workshops: some data from the laboratory analyses

One of the aims of this work was start checking the possible existence of arretine branch workshops in the Rome/Lazio area, branches that only laboratory analysis could identify with any certainty. A brief outline follows of some preliminary results that have emerged in the course of this study.

1. The terra sigillata of *Sex. Annius* at Ostia

The presumed terra sigillata kiln wasters stamped by *Sex. Annius* found at Ostia have allowed the hypothesis, even if with some caution, of the possible existence of a local branch of this arretine potter[79]; they fall into chemical group 1 (Fig. 9). Therefore this was a ceramic imported to Ostia, very probably from northern Etruria, perhaps from Arezzo. The finds in question are not proper kiln wasters, but overfired materials. The hypothesis of a branch workshop of *Sex. Annius* at Ostia is therefore not confirmed.

2. Terra sigillata with the same stamp but having different chemical compositions

If the chemical analysis of the Ostia ceramics has not confirmed the existence of an Ostia branch workshop of *Sex. Annius*, the phenomenon of the duplicate presence of the same name in different groups has emerged[80], even if only occasionally:
– *Ancharius* (*OCK* 94): groups 2 and 6.
– *C. Clo(dius) Sabi(nus)* (*OCK* 589): groups 1, 1a and 6.
– *A. M(anneius?)* (*OCK* 1059): groups 1 and 4.
– *C. Marius* (*OCK* 1126): groups 1 and 4.
– *L. Plo(tidius) Zos(imus)* (*OCK* 1488): groups 3, 4 and 6.

There could be multiple explanations for this fact and unfortunately, with the current state of the research, it is not possible to identify the definitive answer. It is possible that we find ourselves in the presence of several people with the same name; or a single potter at branch workshops in different geographical areas. Only the continuation of this research and an increase in sampling will allow the acquisition of further data on this and above all verification of the hypotheses formulated.

ACKNOWLEDGMENTS

This work and the entire project were made possible thanks to funding by the Deutsche Forschungsgemeinschaft (DFG). I am also grateful for the help and assistance of other bodies and scholars that have made material available for laboratory analysis and have discussed with me the problems on the subject of central Italian sigillata production. For reasons of space I have limited myself to listing them below.
Arbeitsgruppe Archäometrie (Freie Universität Berlin); Archeoclub Ardeatino-Laurentino, for the samples from the dumps of Rome (*Antiqua 8*); M.R. Barbera (Museo Nazionale Romano) for the terra sigillata held in the Museo delle Terme; M. Bergamini (Università di Perugia) for the Scoppieto material; A. Gallina Zevi (Soprintendenza Archeologica di Ostia) for the Ostia material; W.D. Heilmeyer (Institut für Klassische Archäologie, Freie Universität Berlin) for hospitality during the writing up of the *Habilitation* and for advice; P.M. Kenrick (Appleton) for having re-read and corrected the draft text and for having provided me with a preview of the *OCK*; I. Iacopi, I. Sciortino and E. Segala (Soprintendenza Archeologica di Roma) for the terra sigillata from the Republican house on the Palatine, excavated by G. Boni; C. Leotta (Roma) for the Tivoli material; N. Marletta (Roma) for providing all the data relating to the study of the terra sigillata from the Republican house on the Palatine, excavated by G. Boni; A. Martin (American Academy in Rome) and E.J. Shepherd (Soprintendenza Archeologica di Ostia) for the samples of Ostia terra sigillata; G. Messineo (Soprintendenza Archeologica di Roma) for the materials from the Prima Porta workshop, on the via Flaminia; C. Sforzini (Soprintendenza Archeologica dell'Etruria Meridionale) for the Vasanello material; C. Panella (Università di Roma 'La Sapienza') for the *Meta Sudans* material; M. Picon (CNRS, Lyon) for his continual assistance and expertise; G. Rizzo (Università di Roma 'La Sapienza') for the samples from the *Meta Sudans* and the Vigna Barberini, as well as comments on the terra sigillata of Rome; S. Zabehlicky-Scheffenegger (Wien) for the Magdalensberg samples and for patient and very helpful revision work. Finally, special thanks to J. Poblome for giving me the possibility of participating in the Congress and for publishing this work.

NOTES

[1] This study forms part of my *Habilitation* in Classical Archaeology/Archaeometry at the Freie Universität Berlin, with the title 'Aspetti della produzione ceramica a Roma e in area romana tra il II secolo a.C. e il I d.C. alla luce della ricerca archeologica e archeometria'. It was submitted in 1997, with the discussion at the FU Berlin in 1998, and is currently being published by various institutes. For some preliminary notes on the project, financed by the Deutsche Forschungsgemeinschaft, see Olcese 1995 or, most recently, the publication of the coarse wares, Olcese 2003. Maurice Picon greatly helped me with this project, he has overseen the phases of planning, processing and interpreting the analyses, after having visited the most important sites with me where surveying and sampling of ceramics and clays have been carried out. The translation from Italian was kindly provided by Sarah Court.

[2] The black-slipped wares have already been the subject of a previous publication, Olcese 1998.

[3] On this subject see Picon 1984 and Olcese and Picon 1995.

[4] Ceramics of a secure origin that have been analysed and for which the chemical and mineralogical composition is known.

[5] Picon 1994.

[6] Olcese and Picon 2002.

[7] Schneider and Hoffman 1990 (XRF); Hedinger 1999 (XRF); Picon, Meille, Vichy and Garmier 1972-1973 (XRF); Picon 1994 (XRF); Picon, unpublished data (XRF); Joron, Treuil and Jafrezic 1977 (NAA); Banterla, Stenico, Terrani and Villani 1973 (NAA).

[8] Picon, Meille, Vichy and Garmier 1972-1973 (XRF); Lasfargues and Picon 1982 (XRF); Cherubini and Del Rio 1995 (mineralogical analysis).

[9] Schneider 1992 (XRF).

[10] Olcese 1997a (XRF).

[11] Olcese 1997a (XRF).

[12] Olcese 1997a (XRF).

[13] Olcese 1997a (XRF).

[14] Olcese 1997a (XRF).

[15] Schneider and Hoffman 1990 (XRF); Hedinger, Soricelli and Schneider 1994, 67-88 (XRF); Hedinger 1999 (XRF); Picon, unpublished data (XRF).

[16] Lasfargues and Picon 1982 (XRF); Picon 1994 (XRF).

[17] Picon 1994 (XRF).

[18] B.G. Ackroyd, unpublished data (NAA and mineralogical analysis).

[19] Picon 1988 (XRF).

[20] Hedinger 1999 (XRF).

[21] Cesana *et al.* 1983 (NAA).

[22] In particular *OC*, list of central Italian producers; Guagliumi and Petriccione 1978; Hedinger 1999; Hedinger, von Schnurbein and Schneider 1999; Rizzo 1994; Rizzo 1998; Schindler Kaudelka 1984; Slane 1987; Wetter 1993.

[23] The assistance of colleagues Giorgio Rizzo (Rizzo 1998) and Nicola Marletta was of great help.

[24] When this paper was submitted the new version of the *OCK* was not yet published. Thanks to the Philip Kenrick's courtesy I was able to have all the necessary information anyway for those potters that had stamped the terra sigillata taken into consideration in this article.

[25] Rizzo 1998, with preceding bibliography.

[26] Sforzini 1990.

[27] Messineo and Carbonara 1991-1992; Peña 1993.

[28] Olcese 1995 and Olcese 2003.

[29] The information obtained from the study of these two production centres adds to that acquired in the study of kilns in Torrita di Siena (Schneider 1992).

[30] The kilns and the wasters were situated between Poggio della Mentuccia and the Cesurli hill in a wooded area (Sforzini 1990, tav. I,a).

[31] Sforzini 1990; Porten Palange 1992.

[32] It is interesting to note that, while the area of the origin of the Aco beakers is considered to be northern Italy (Lavizzari Pedrazzini 1987), the only finds of Aco beaker moulds in the area of a kiln have come from central Italy (as well as Vasanello, see the material from Cosa, Moevs 1980, 235-280).

[33] ABN (*OCK* 12); AR ( ) (*OCK* 237=247, ART( )?), DIO[ ]/ANCA (*OCK* 101), L. DECIMVS (*OCK* 728).

[34] In addition to the finds published in Sforzini 1990, 268 and in *OCK*, see Haldimann, Curdy, Gillioz, Kaenel and Wiblé, 1991, 161 n. 129 tav. 11, 129.

[35] Peña 1992. For some preliminary information on the coarse wares of Vasanello see Olcese 2003.

[36] On this stamp and possible interpretations, Rizzo 1998, 820 note 56; *OCK*; most recently, Nicoletta 2000, 505 note 1, with the news of the find of a stamp with the complete *nomen* in the genitive (PLOTIDI).

[37] Bergamini 1993; Rizzo 1994; Nicoletta 2000.

[38] These are Goudineau forms 21, 26, 28, 33, 37, 38, 39, 43, the latter is most common, Bergamini 1993, 190-192.

[39] Bergamini 1993; N. Marletta, unpublished data on Boni's excavations on the Palatine; Rizzo 1994.

[40] 34 samples. I am grateful to N. Marletta who gave me access to unpublished data.

[41] Unpublished material, 15 samples.

[42] Guagliumi and Petriccione 1978, 13 samples.

[43] Panella 1990.

[44] 9 samples. Rizzo 1994; Rizzo 1998.

[45] A single sample. For the context of the find see Ferroni 1993.

[46] For the excavation of the Vigna Barberini: Morel 1987; a single analysed sample.

[47] In *OCK*, which could not take the results of this work into consideration, *Sex. Annius* of Ostia (*OCK* 183) is considered separately from *Sex. Annius* of Arezzo (*OCK* 183); Martin 1997a.

[48] Leotta 1993.

[49] Sforzini 1990. Recovered by Sforzini on behalf of the Soprintendenza Archeologica dell'Etruria Meridionale; the material is mostly unpublished. Some analyses were done on the Vasanello ceramics with neutron activation by Peña 1990. The data obtained are only partly comparable with those obtained through XRF (X –ray fluorescence).

[50] Bergamini 1993

[51] For these data Olcese 1995; Olcese 1998. To isolate the imported ceramics existing reference groups were used that relate to the Arezzo and Pisa terra sigillata (Schneider and Hoff-

mann 1990; Lyon database), Chiusi (Lyon database), Torrita di Siena (Schneider 1992) and Pozzuoli (Lyon database).

[52] The chemical characteristic most evident in the ceramics of northern Etruria is an elevated concentration of MgO (about 3.5%), associated with values of MnO around 0.15%; Picon 1994 with preceding bibliography.

[53] This phenomenon has already been verified by various scholars; most recently Hedinger 1999, 203.

[54] For the groups shown in Fig. 8 *Conspectus* was used, where possible, to indicate the types.

[55] Hayes 1973; Slane 1990, 43; Rizzo 1998, 819.

[56] On this point see the observations on *C. Clodius Sabinus* and *P. Clodius Proculus* by Pucci 1977, 10 tab. II, taken up in Rizzo 1994, 261.

[57] Hedinger 1999, 619, Berlin Analysis 5092, 5119.

[58] Hedinger 1999, 619, Berlin Analysis 5123 (Monte Iato).

[59] Hedinger, von Schnurbein and Schneider 1999, 329, Berlin Analysis 5213 (Carthage).

[60] Hedinger 1999, 15, Berlin Analysis 5112 (Monte Iato).

[61] Berlin Analysis 5063, Arezzo A group. A production by *Camurius* has also been conjectured for Torrita di Siena, at the Umbricio Cordo kiln: Schneider 1992, 149-154.

[62] This type is sometimes stamped *BVCCIO/ANCHARI*.

[63] Peña 1992; Picon in Olcese 2003, 52-55.

[64] Regarding the *nomen Ancharius*, see Rix 1963 [1964], 252; Solin and Salomies 1994, 15; Sforzini 1990, 259 and 260, note 27: Sforzini mentions the *gens Ancharia* of Rome, to which *Q. Ancharius Primus* belonged, who was killed by Marius in 87/86 BC. For the study on the urban *figlinae* and for unpublished chemical data on the *figlinae Subhortanae*, also see note 67.

[65] Schindler Kaudelka 1986, 298 tav. 3, 7-8.

[66] At Vasanello various ceramic classes have been analysed, including the kitchen ware; for the results see Olcese *et al.* 2003. The finds from Vasanello seem to have resolved the problem of the location of the workshop of *Ancharius*, initially located by Oxé at Pozzuoli on the basis of stamps found in the excavation of the kiln debris of *N. Naevius Hilarus*, even if some doubt remains (*OC* 66-73).

[67] Only partially published data: Olcese 1993, 121-128.

[68] Schneider 1992, 153.

[69] In the *OCK Celer* (*OCK* 531) is attributed with reservation to Pozzuoli. We do not have sufficient material to establish if it is the same person or different people.

[70] Hedinger, von Schnurbein and Schneider 1999, 330.

[71] Unfortunately, we do not possess information on the form or type of most of the samples in question, which were published by the Archeoclub Ardeatino-Laurentino.

[72] Slane 1987, 195-197.

[73] It is interesting to note that this group seems to contain a mould and a kiln waster from Vasanello, however they do not come from very clear contexts and it is not currently possible to better clarify them.

[74] This section is part of a text written by M. Picon, *Dati geologici e analisi chimiche delle ceramiche de Roma e del Lazio: qualche osservazione conclusiva*; the entire published version can be found in Olcese 2003, 52.

[75] Rizzo 1998, 822ff.

[76] Picon 1994 and personal comment.

[77] This therefore confirms the observations formulated in Rizzo 1998.

[78] For Scoppieto, which has been given less space here because it was an area only marginally considered in this research.

[79] The Ostia wasters have been published by Archer Martin: Martin 1997a. Previously they were discussed by Pucci 1985, 366. This branch has nevertheless been included by Philip Kenrick in the new version of the Corpus (*OCK* 184); the laboratory data were not available when this paper went to print.

[80] An analogous situation has been encountered for the terra sigillata stamped by *Camurius* (*OCK* 514), recorded at Monte Iato and at Torrita di Siena, Schneider 1992, 149-154.