

# LATE ROMAN AMPHORAE FROM THE TETRAGONOS-AGORA IN EPHEBUS\*

## Introduction

The amphorae used in Roman commerce have been found in significant numbers in Ephesus. Amphorae have been published<sup>1</sup> from the Terrace House 1 and 2, at the South Gate, in the Tetragonos Agora, in the well in the State Agora and at the port. These vessels make it possible to evaluate the most important commercial links, though it must be fully appreciated that this survey reflects only the number of recovered the objects in the stores. This brief survey will only mention the types of amphorae which have been unearthed during the new excavations<sup>2</sup> at the Tetragonos Agora in late Roman and post-Roman layers. The amphorae found are extremely fragmentary and it was not possible to re-create the complete amphorae. The various types will be discussed one by one using a number of characteristic pieces. This is a preliminary report of an ongoing investigation.

## The finds

The presence of the amphorae is continuous among the Hellenistic/Republican and the early Imperial period ceramic objects in the Agora. There are less amphorae among the objects originating from the end of the first century to middle of the second century AD and after this the different type of sherds were primarily found in mixed layers and in the sewer under the Agora. After a series of earthquakes, during the reconstruction under Theodosius I (379–395 AD), the commerce of amphorae became continuous again. One of the best-known local amphora types during the mid-Imperial period, the so-called Kapitän II, is not represented among the objects in the Agora. It is present, however, in significant numbers at other sites, e.g. at the Terrace House 1 and 2<sup>3</sup>. Three other local amphorae (Pl. 1–2) are among the Agora objects from the end of fourth century. These are small (height 50–60 cm), hardly thin-walled vessels with smoothish highly micaceous fabric. They are often described as two variations of the LR amphora 3 type (with one or two handles), and as another form that has been hardly studied<sup>4</sup>.

**1. One handle jar** = Athenian Agora M 275–276–277, M 279–280–281–282, M 315.

The one-handled storage jars were produced from the first century BC to the sixth century AD. The forms that come from different periods have been clearly distinguished by H. S. ROBINSON<sup>5</sup>.

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<sup>1</sup> OUTSCHAR 1993, 49–52; OUTSCHAR 1996, 27–63; LADSTÄTTER 2002, 22–23 and 36–37; GASSNER 1997, Amphoren; BEZECZKY 2001, 11–19; MERİÇ 2002, 86–96; ZABEHLICKY 1995, 201–215; ZABEHLICKY 1996, 67.

<sup>2</sup> See P. SCHERRER, Appendix 1, Notes about the stratigraphical and architectural contexts of selected amphora-findings from the Tetragonos Agora.

<sup>3</sup> OUTSCHAR 1993, 52; LADSTÄTTER 2002, 23 and 36.

<sup>4</sup> This form may occur in notes of H. Vettters but the drawings are not very definite: Type IIb, in LADSTÄTTER 2002, 168, Abb. 31; In this paper called Ephesus type 56.

<sup>5</sup> Cf. ROBINSON 1959, Pl. 41, about the development of the form, its variants: Agora F 65–66 first century BC; M 45 mid first to early second century AD; J 46–47, M 125–126 second to early third century; M 240, M 255–256–257, L 50–51 fourth century; M 275–276–277, M 279–280–281–282 late fourth century; M 315 sixth century; RILEY 1979, 183–186; LEMAÎTRE 1997, 311–319 also investigated the same problem.

The two-handled version<sup>6</sup> was produced from the end of the fourth century and called as LR 3 amphora. There are only a dozen one-handled jars from the fourth century variation among the objects of the Tetragonos Agora. The illustrated fragment is on the Pl. 1, no. 1 and Farbtafel XV, 1. They are characterized by a small, flat rim, a short curved neck, with a handle that is attached to the neck and the upper part of the body. The lower and upper parts of the body are conical. The middle is almost cylindrical. The lower part is tubular ending in a hollow foot. There is ribbing on the external surface. The vessels that come from the end of the fourth century were found in Eastern Mediterranean sites<sup>7</sup>.

**2. Late Roman Amphora 3** = British Biv (Thomas 1959); Kuzmanov VIII; Scorpan V; Zeest 95; British Biv (Thomas 1959); Kuzmanov VII; Carthage LR amphora 3; Benghazi LR amphora 10; Peacock – Williams 45; Keay LIVBis; Agora M.307, 335, 373; Caesarea 4.

This is one of the best-known small forms. The rim is small and flat. The slender neck is attached to a widening body with ribbing. The body is tapering in a curve to the foot. The circular, flat handles attach to the neck. The upper part of the handles reach each other. There are differences among the shapes of the sherds excavated in the Tetragonos Agora (nos. 5–10; Farbtafel XV, 2–4. 9). This form is dated<sup>8</sup> from the end of the fourth century to the end of the sixth. It had a widespread distribution in the Empire<sup>9</sup> from Britain to the Eastern Alps region, from Spain to Asia Minor and the Black Sea region.

**3. Ephesus type 56** = Carthago no. 8 (Fulford – Peacock 1984); Crypta Balbi: ‘Cypro-Siria’ amphora type.

The third type of Ephesian amphora (Pl. 2, nos. 11–20; Farbtafel XV, 13. 17–20) was only found in a few places<sup>10</sup>. It has a small, flat rim, short, curved neck, oval-shaped body. The circular handles are attached to the neck just below the rim and to the upper part of the body. The sections of the handles are oval. The amphora is small, the diameter of the rim is between 5 and 6 cms, its height is 50–60 cms. The only complete amphora is among the Crypta Balbi objects<sup>11</sup> in Rome. The fabric<sup>12</sup> of the pieces found in Carthage is identical with that of the LR 3 amphorae studied by D. PEACOCK. The dating<sup>13</sup> is also the same. They occur with LR 3 amphorae at most sites in Ephesus. They can be dated from the end of the fourth century to the end of the sixth/beginning of the seventh century AD.

<sup>6</sup> ROBINSON 1959, M 307, 335, 373.

<sup>7</sup> RAUTMAN 1995, 49 and 64; ROBINSON 1959, Pl. 29; RILEY 1979, 184; ABADIE-REYNAL 1989, 48–49; SCORPAN 1976, 159; SCORPAN 1977, 272; BASS – VAN DOORNINCK 1971, 35–36; GASSNER 1997, 183; TURNOVSKY 1992, 54; TOMBER 1999, 301 and 313. Dateable objects from the northern provinces have been published up to the third century: MARTIN-KILCHER 1994, 440–441; LEMAÎTRE 1997, 312; KELEMEN 1990, 185.

<sup>8</sup> ROBINSON 1959; M373; RILEY 1979, 229; PANELLA 1973, 460–462; FULFORD – PEACOCK 1984, 12; PEACOCK – WILLIAMS 1986, 188; LUND 1993, 125.

<sup>9</sup> TOMBER – WILLIAMS 1986, 49–50; KEAY 1984, type LIVBis, 287–289; PEACOCK – WILLIAMS 1986, 189; CARIGNANI – PACETTI 1989a, 10–11; BONIFAY – VILLEDIEU 1989, 27; BONIFAY – PIÉRI 1995, 111; LADSTÄTTER 2003, 843–844; ARTHUR 1985, 250; CARIGNANI – PACETTI 1989b, 614; VILLA 1994, 405; SAGUI 1998, 312–327; MARTIN 1998, 388–389; CASAVOLA 1998, 723–725; VIDRIH PERKO 1998, 100; VIDRIH PERKO – PAVLETIĆ 2000, 266; FULFORD – PEACOCK 1984, 121; SLANE 2000, 310; GASSNER 1997, 183; OUTSCHAR 1993, 51–52; MERIÇ 2002, 91, no. 603; RAUTMAN 1995, 66 and 75; ALPÖZEN – ÖZDAS – BERKAYA 1995, 68; LUND 1993, 126; EGLOFF 1977, 116; HAYES 1973, 116–117; RILEY 1979, 185; HAYES 1992, 63; ADAN-BAYEWITZ 1986, 101–102; JOHNSON 1988, 211; BARNEA 1966, 250; SCORPAN 1976, 158; SCORPAN 1977, 273; OPAIT 1996, 208; ZEEST, 1960, 118–119; ABADIE-REYNAL 1989, 48–50; ABADIE-REYNAL 1999, 263; BÜLOW 2000, 212.

<sup>10</sup> Carthago – FULFORD – PEACOCK 1984, 123, No. 8. Pl. 36, no.16 and 17; Rome – Crypta Balbi; Upper Moesia – BJELAJAC 1996, nos. 64, 66 and 67, these forms were identified as LR3.

<sup>11</sup> These are thought to be originating from Cyprus/Syria.

<sup>12</sup> FULFORD – PEACOCK 1984, 22.

<sup>13</sup> FULFORD – PEACOCK 1984, 123, one of them (no. 9) was dated to c. 450–475, the other (no. 8) to c. 500 AD.

Almost fifty percent of the Roman amphorae found at the Agora belong to these three types. The proportion of LR 3 amphorae (32%) is especially significant. The LR 3 amphorae found at the Terrace House were thought<sup>14</sup> to have been produced in the region of Ephesus. Recent petrological research established<sup>15</sup> that the one handle jar (F 65–66) found in first century BC and first century AD contexts were also produced locally. The objects suggest large-scale production, even if no kilns have been identified so far. The production seems to have been continuous between the first century BC and the sixth century AD. The relationship between the second-fourth century one-handled jars and the Kapitän II amphorae should be clarified<sup>16</sup>. The same type of investigation must be carried out in connection with the LR 3 and the Ephesus 56 amphorae. Since their forms are different, their content may have been different as well. It has already been suggested that these vessels with narrow rim and narrow neck were used for shipping wine, olive oil or perhaps some other valuable liquid. The answers to these questions will be provided by further research. The photomicrographs (Pl. 6–8) show that neither the fabric used, nor the firing was homogeneous. The Ephesian amphora types were distributed widespread in the Empire. However, these types were also produced elsewhere. The petrological analysis<sup>17</sup> of the LR 3 amphorae in Ephesus, Carthage, Berenice, and Tintagel which are rich in mica have not produced identical results. The LR 3 amphorae published<sup>18</sup> from Athens and Lyon have two types of fabric. One of them is micaceous, while the other is free from mica and contains limestone. Similarly, two types of fabric were found in Berenice<sup>19</sup>. Several centres of production have been supposed along the western shores of Asia Minor<sup>20</sup>. This is supported by the analysis of the fabric. The petrological analyses<sup>21</sup> make the Egyptian site of production somewhat unlikely. Nor has the content been identified. Some people suppose that they contained wine, oil or some variety of unguent<sup>22</sup>.

The proportion of other amphora types is relatively smaller among the finds found in the Agora. However, they should not be ignored because they refer to important commercial links. The pieces found at the various sites add up to a significant quantity. The LR 1, LR 2, the Samos Cistern type and the Aegean cylindrical type amphorae were produced in Asia Minor and the neighbouring islands.

**4. Late Roman Amphora 1** = British Bii (Thomas 1959); Kuzmanov XIII; Scorpan VIII-B; Carthage LR amphora 1; Keay LIII; Peacock – Williams Class 44; Benghazi LR amphora 1 (Riley 1979); Kellia form 164 (Egloff 1977).

A number of LR 1 amphorae were found in Ephesus (Pl. 3). About two dozen sherds come from the Agora. The following amphorae were produced in different places. The fabric is usually hard – very hard and sandy. Amphorae no. 21; Farbtafel XVI, 21 and no. 25 contain a lot of white

<sup>14</sup> OUTSCHAR 1993, 49, footnote 14; SAUER (1995) distinguished two types of fabric among the ones rich in mica. One of them came from the immediate vicinity of Ephesus (Kyastros valley), the other from the area south of Ephesus (Kusadaşı area). The most recent research (LADSTÄTTER 2000b) identified another fabric used near Miletos. See also (Rohstoffsurvey) S. LADSTÄTTER – B. PICHLER – R. SAUER <http://www.oeaw.ac.at/antike/ephesos/keramikforschung/rohstoff/rohstoff.html>.

<sup>15</sup> Sauer will publish the results of the petrological analyses (thin section and heavy mineral) in the volume Roman amphorae from Ephesus.

<sup>16</sup> LADSTÄTTER's paper at the Leuven conference in 2000b.

<sup>17</sup> SAUER 1995; WILLIAMS 1982, 107.

<sup>18</sup> LANG 1955, 277; LEMAÎTRE 1997, 317, footnote 46.

<sup>19</sup> RILEY 1979, 183: 'a dark buff non-micaceous clay, and a micaceous buff clay'.

<sup>20</sup> WILLIAMS 1982, 104; HAYES 1976, 117; FULFORD – PEACOCK 1984, 22; ARTHUR 1998, 165; PANELLA 1993, 663; VILLA 1994, 405; RAUTMAN 1995, 81; LADSTÄTTER 2000b, Ephesos, Kusadaşı, Miletos also supposes a production site near Pergamon.

<sup>21</sup> GRACE 1979, Pl. 67.

<sup>22</sup> PANELLA 1993, 663; ROTHSCHILD-BOROS 1981, 79–89; LEMAÎTRE (1997, 317–319); OUTSCHAR 1993, 52; MARTIN-KILCHER 1994, 441.

limestone, and gray and dark brownish inclusions. Amphora no. 22, Farbtafel XVI, 22 has very small grains and inclusions of limestone or white reaction rims. Amphorae no. 23, Farbtafel XVI, 23 and no. 24 there are only a few limestone grains, and there are more quartz, gray and black ingredients. There is a variety of opinions concerning the provenance of the LR 1 amphorae. The petrological analyses, especially the heavy mineral analyses<sup>23</sup> have established that they contain small pieces of ultra basic rocks as well as sedimentary rocks. In the main distribution area these are restricted to the Eastern Mediterranean and the Black Sea region<sup>24</sup>. The recent data suggest that they may have been produced in Cilicia, Antioch-on-the-Orontes and western Cyprus, but Rhodes and Ismeler (in Caria) cannot be excluded<sup>25</sup>. They could not have been produced in Egypt or in Ephesus<sup>26</sup>. The workshop discovered near Paphos<sup>27</sup> suggest that the amphorae may have been produced in Cyprus. However, it is also noteworthy that the amphorae produced<sup>28</sup> in Demirci (near Synope) on the Black Sea shore are also similar to the LR 1 type. These amphorae were produced from the beginning of the later fourth to the middle of the seventh century<sup>29</sup>. The pieces of the Paphos workshop were produced in three sizes<sup>30</sup>. They can be dated between the end of the sixth to the middle of the seventh century. The latest LR 1 amphora type (perhaps from the eighth century) is more slender than the earlier pieces and sometimes very small<sup>31</sup>. A number of these amphorae have red cursive script at their neck. The script on the amphora found at the Athenian agora mentions Cypriote modius<sup>32</sup>, which might contribute to the determination of the provenance. The amphorae probably contained wine, but some people suppose that they may have contained olive oil or even non-liquid goods<sup>33</sup>. This type is found in Britain, Italy, Brijuni Island, Moesia, and the Eastern Alps, they also occur in Egypt, Tunisia, Cyrenaica, Israel, Palestine, Cyprus, and in the Aegean and Black Sea regions<sup>34</sup>.

**5. Late Roman Amphora 2** = British Bi (Thomas, 1959); Kuzmanov XIX; Scorpan VII-A; Key LXV; Peacock – Williams Class 43; Benghazi Late Roman Amphora 2; Carthage LR amphora 2. Relatively few LR 2 amphora – mainly body fragments – were found in the Agora in Ephesus (no. 26, Pl. 3; Farbtafel XVI, 26). The upper part of the globular body is decorated with ‘stylus

<sup>23</sup> WILLIAMS 1982, 103–104.

<sup>24</sup> RILEY 1979, 212; FULFORD – PEACOCK 1984, 119; KEAY 1984, 271; TOMBER – WILLIAMS 1986, 48: Cyprus, Lesbos, Euboea, South-West coast of Asia Minor and Northern Syria, There is usually preference for the region of Antioch. Perhaps produced also in Gortin (Crete), PORTALE – ROMEO 2000, 422.

<sup>25</sup> EMPEREUR – PICON 1989, 236–243; PEACOCK – WILLIAMS 1986, 186; SCIALLANO – SIBELLA 1991; ARTHUR 1998, 164; latest WILLIAMS 2002, 111.

<sup>26</sup> WILLIAMS 1982, 99–110; FULFORD – PEACOCK 1984, 20; SAUER 1995; OUTSCHAR 1993, 51. OUTSCHAR supposed the production in Ephesus.

<sup>27</sup> DEMESTICHA 2000, 549–554.

<sup>28</sup> GARLAN – KASSAB TEZGÖR 1996, 331 and 334, Pl. 12; KASSAB TEZGÖR 1998, 445, Pl. 7, 8 and 10.

<sup>29</sup> KUZMANOV 1973, 18; SCORPAN 1977, 278; FULFORD – PEACOCK 1984, 119; KEAY 1984, 271–272; TOMBER – WILLIAMS 1986, 48; PEACOCK – WILLIAMS 1986, 187; new typology SAZANOV 1999, 265–279.

<sup>30</sup> DEMESTICHA 2000, 549.

<sup>31</sup> ARTHUR 1998, 165.

<sup>32</sup> LANG 1976, 81.

<sup>33</sup> PANELLA 1993, 655–666, note 220; ARTHUR 1998, 164.

<sup>34</sup> EGLOFF 1977, 112 and 113; RILEY 1979, 213–215; RILEY 1981; FULFORD – PEACOCK 1984, 119; KEAY 1989, 48; CARRERAS MONFORT 2000, 108; BONIFAY – PIÉRI 1995, 108; MARTIN 1999, 356–357; CARIGNANI – PACETTI 1989a, 12; CARIGNANI – PACETTI 1989b, 614; VILLA 1994, 402; SAGUI 1998, 312–327; CASAVOLA 1998, 723–725; BONIFAY – VILLEDIEU 1989, 23–25; MARTIN 1998, 388–389; ABADIE-REYNAL 1989, 52–54; VIDRIH PERKO 1998, 101; VIDRIH PERKO – PAVLETIĆ 2000, 266; CAMBI 1989, 335; LADSTÄTTER 2003, 844; ZEMER 1978, 78, nos. 63–65; ABADIE-REYNAL 1999, 264; SAZANOV 1999, 269–274; SCORPAN 1976, 163; SCORPAN 1977, 277; OPAIT 1996, 207; BJELAJAC 1996, 72–76; SLANE 2000, 310; ADAMSCHECK 1979, 117–118, RC 23; ALPÖZEN – ÖZDAS – BERKAYA 1995, 113; GASSNER 1997, 182; TURNOVSKY 1992, 49; SENOL – KEREM 2000, 93; RAUTMAN 1995, 66 and 73; STECKNER 1989, 57–71; LUND 1993, 131–132; TOMBER 1998, 178; TOMBER 1999, 300–301 and 313; DEMESTICHA 2000, 549; ARTHUR – OREN 1998, 201–203.

grooving' which may be straight or undulating<sup>35</sup>. The lower part has a small basal knob. It has a short neck with a high curved rim and short, bowed handles attached to the upper part of the body. The fabric of the body fragment of Ephesus amphora no. 26 is hard and very fine grained with a few limestone and voids. The production area of the classic LR 2 amphorae included the Aegean and the Black Sea regions<sup>36</sup>. P. ARTHUR suggests that the most important workshops were in the island of Chios, Porto Cheli and Kounoupi in the Argolid<sup>37</sup>. On the basis of petrological analyses, PEACOCK and WILLIAMS also suggest<sup>38</sup> the Aegean and the Black Sea regions. Quite a few globular amphorae were produced in the eastern Mediterranean. This may be the reason why 'The best-known type is the Late Roman 2, often confused by many archaeologists with similar globular vessels than can, however, be distinguished on morphological traits and fabric.'<sup>39</sup> The form dates from the fourth century to the late sixth century/early seventh century AD, but the dating for the end of production is more difficult<sup>40</sup>. The LR 2 amphora fragments of the Tetragonos Agora co-occur only with LR 3 and Ephesus 56 amphorae. They contained probably wine, but some archaeologists suppose that they may have been used for shipping oil, perhaps raisins and mastics<sup>41</sup>. The form is widespread in the Mediterranean<sup>42</sup> (Tunisia, Cyrenaica, Italy, Roumania, Greece, Turkey, Britain, Noricum, Upper Moesia and also in the Barbaricum (Great Hungarian Plain) bordering on Pannonia).

### 6. Samos Cistern Type

Since large quantities of the so-called Samos Cistern type amphorae were found in Samos, the region is regarded as one of the possible production centres<sup>43</sup>. However, it seems likely that the type was produced in several places in the eastern Mediterranean. Halicarnassus<sup>44</sup> is mentioned as a possible production centre because of its geological characteristics. The amphorae unearthed in the Agora (nos. 31 and 32, Pl. 4; Farbtafel XVI, 31) have hard, smoothish micaceous fabric with many tiny limestone and other, dark inclusions. Their fabric is similar to those of the amphorae I saw on the island of Samos<sup>45</sup>. The rim is small with a broad mouth. The neck is short and curved. It is widening where it meets the body. The upper part of the body is almost cylindrical, slightly curving to the base spike. The handles are attached to the neck below the rim and to the upper part of the body. There is groove on the handles. There is ribbing on the body below the handles.

<sup>35</sup> FULFORD – PEACOCK 1984, 119; ARTHUR 1998, 168.

<sup>36</sup> RILEY, 1979, 219; TOMBER – WILLIAMS 1986, 47. Perhaps produced also in Gortin (Crete), PORTALE – ROMEO 2000, 422.

<sup>37</sup> ARTHUR 1998, 168–169.

<sup>38</sup> WILLIAMS 1982, 101–102; FULFORD – PEACOCK 1984, 20; TOMBER – WILLIAMS, 1986, 47.

<sup>39</sup> ARTHUR 1998, 168; DYCZEK 2001, type 24, may have made this kind of mistake by adding a number of different types.

<sup>40</sup> ROBINSON 1959, type M 272; PANELLA 1983, 683, Pl. 3. dates it to the fifth century; RILEY 1981; FULFORD – PEACOCK 1984, 119; ARTHUR 1998, 168.

<sup>41</sup> RADULESCU 1973, 202–203; SCORPAN 1976, 162; ARTHUR 1998, 169; PANELLA 1993, 199; STECKNER 1989, 64–65; BJELAJAC 1996, 67–72.

<sup>42</sup> RILEY 1979, 218; FULFORD – PEACOCK 1984; HAYES 1973; KEAY 1989, 47; BONIFAY – PIÉRI 1995, 109–110; MACKENSEN 1987, 249–251; CARIGNANI – PACETTI 1989b, 614; VILLA 1994, 402–403; VILLA 1998, 281; SAGUI 1998, 312–327; BONIFAY – VILLEDIEU 1989, 25–26; ABADIE-REYNAL 1989, 51–52; VIDRIH PERKO 1998, 101; VIDRIH PERKO – PAVLETIĆ 2000, 266; CARIGNANI – PACETTI 1989a, 11; MARTIN 1998, 388–389; MARTIN 2000, 429; CASAVOLA 1998, 723–725; BARNEA 1966, 244 and 254; RADULESCU 1976, 107; SCORPAN 1976, 159 and 161–162; SCORPAN 1977, 275; OPAIT 1996, 208; ROBINSON 1959; HAYES 1968; SLANE 2000, 310; ADAMSHECK 1979, 114–115, RC 14 and 16; ALPÖZEN – ÖZDAS – BERKAYA 1995, 111; THOMAS 1981; STECKNER 1989, 57–71; ARTHUR – OREN 1998, 207; LADSTÄTTER 2000a, 165, T. 21/2; BJELAJAC 1996, nos. 123–132; TÓTH 1986, 51–54.

<sup>43</sup> ISLER 1969; ARTHUR 1985, 252–255; ARTHUR 1990, 288–289; ARTHUR 1998, 167.

<sup>44</sup> KEAY 1984, 359; WILLIAMS 1990, 296.

<sup>45</sup> I wish to express my thanks to Birgit Konnemann and Dr. Hermann Kienast for making it possible to see the DAI stores in Samos.

This type of amphorae is dated to the sixth/seventh centuries<sup>46</sup>. The content is not known. It was distributed<sup>47</sup> primarily in Samos, Italy, Eastern Alps, Scythia-Black Sea, Argos, Dranda near Sukhami in Georgia<sup>48</sup>.

### 7. Aegean cylindrical

This type has simple rim, short, curved neck, bulging oval body with ribbing, and a small spike at the base. The small handles are attached to the neck below the rim and to the upper part of the body. The cross-section of the handles is oval. These amphorae were probably produced in the eastern Mediterranean during the fourth century. They are rare in Ephesus. The Agora has, however, one small fragment (no. 38, Pl. 4). The fabric is light, rich in limestone with many voids and few quartz grains. Distributed<sup>49</sup> in Black Sea region and the Aegean.

The vessels of Palestine and Egypt were not shipped to Ephesus in large quantities.

**8. Late Roman Amphora 4** = Almagro 54; Kuzmanov XIV; Peacock – Williams Class 49; Keay LIV; Beltrán 54; Scorpan XIV; Caesarea 2; Benghazi Late Roman Amphora 3; Carthage Late Roman Amphora 4.

This type is cigar-shaped. Only a few typical handle fragments were found in the Tetragonos Agora. This type has a small everted rim with loop handles on the shoulders. ‘The body bears a series of grooves or ridges principally concentrated below the handles and around the base’<sup>50</sup>. The different versions of it have been studied extensively<sup>51</sup>. G. MAJCHEREK calls them the ‘Gaza amphora family’. On the basis of morphological and chronological data, he distinguished four groups within the family. The pieces in Ephesus Agora belong to the Majcherek Form 3 (Zemer 49–50; LR 4b amphora). Amphorae no. 27 and no. 28 (Pl. 3) have a hard, thick, sandy fabric with tiny inclusions. There are a few limestone and quartz grains as well. One of the most important production centres was in Gaza<sup>52</sup>. The other was in Askelon. Ashdod and El-Arish are also mentioned. It is supposed that the type was also produced in the delta of the river Nile. They were probably used for shipping wine between the fourth and sixth centuries. ‘This form should doubtless be considered an earlier morphological variant within the LR 4 class, a variant which apparently did not appear before the middle of the fifth century AD’<sup>53</sup>. One of the Tetragonos Agora pieces (no. 27) was found with LR 3 and African amphora fragments at the Western Gate in a late filling. The other (no. 28; Farbtafel XVI, 28) was found with LR 2, LR 3, and Ephesus 56 amphorae. Gaza amphorae were also found at the Terrace House 1<sup>54</sup> (Sondage 9/92 – e 1) in a fifth/sixth century layer with LR 1, LR 3 and Spatheion amphorae. This LR 4 form is well-known in the eastern Mediterranean but it reached the Red Sea and North Africa, western Europe, the Black Sea region and was also present in Eastern Alps, Southern Pannonia and Upper Moesia<sup>55</sup>.

<sup>46</sup> ARTHUR 1985, 252; ARTHUR 1998, 167; KEAY 1984, 359.

<sup>47</sup> ISLER 1969; KEAY 1984, 359; VILLA 1994, 408; ARTHUR 1998a, 167; VILLA 1998, 278; SAGUI 1998, 312–327; MARTIN 1998, 388–389; LADSTÄTTER 2003, 842–843; SENOL – KEREM 2000, 99; OPAIT 1996, 211–212.

<sup>48</sup> Aupert 1980, 440–441; SOTEEAZVILI – YAKOBSON 1984: 194–195.

<sup>49</sup> SCORPAN 1976, 158; BASS – VAN DOORNINCK 1971, Fig. 9; LADSTÄTTER 2002, 23.

<sup>50</sup> FULFORD – PEACOCK 1984, 121.

<sup>51</sup> ZEMER 1978, 61, nos. 49–53; RILEY 1975, 27–31; FULFORD – PEACOCK 1984, 24 and 121; KEAY 1984, 278–285; MAJCHEREK 1995, 163–178.

<sup>52</sup> ZEMER 1978, 61; RILEY 1975, 120; RILEY 1979, 220; FULFORD – PEACOCK 1984, 24

<sup>53</sup> MAJCHEREK 1995, 168.

<sup>54</sup> OUTSCHAR 1993, 12.

<sup>55</sup> PEACOCK – WILLIAMS 1986, 199; KEAY 1984, 280–281; HAYES 1978, 88; BONIFAY – PIÉRI 1995, 112; MACKENSEN 1987, 246; CARIGNANI – PACETTI 1989a, 11–12; VILLA 1994, 406; VILLA 1998, 281; CARIGNANI – PACETTI 1989b, 614; BONIFAY – VILLEDIEU 1989, 27–29; SAGUI 1998, 312–327; MARTIN 1998, 388–389; CASAVOLA 1998, 723–725; ABADIE-REYNAL 1989, 54; KUZMANOV 1973, 18; SCORPAN 1976, 165; SCORPAN 1977, 11–13; OPAIT 1996, 208–209; RILEY 1979, 220–222; VIDRIH PERKO 1998, 101; VIDRIH PERKO – PAVLETIĆ 2000, 266; MARTIN 2000, 429; LADSTÄTTER

**9. Late Roman Amphora 7** = Egloff 173–174; Peacock – Williams 52; Carthage Late Roman Amphora 7.

There are very few Egyptian amphorae in Ephesus. The handle fragment (no. 29, Pl. 3; Farbtafel XVI, 29) is among the late Hellenistic (Koan amphorae, ESB) and late Roman objects. The colour is ‘chocolate brown’. It has soft, fairly rough sandy micaceous fabric with visible imprints of plants. It is not easy to date the handle fragment in Ephesus. This channel area was partly excavated in 1907 by W. WILBERG. The Late Roman 7 amphora had a number of variants<sup>56</sup>. ‘These are characterized by an upright rim, sloping or carinated shoulder, loop or strap handles, a somewhat tapering body which frequently displays deep ridging and a solid spike’<sup>57</sup>. This type was used from the late fourth century to the sixth, perhaps the seventh century<sup>58</sup>. The content was probably wine<sup>59</sup>. It was produced at lake Mariout, Oxyrhynchus, Hermopolis Magna, Antinoopolis and Akôris<sup>60</sup>. It is frequent at Alexandria. However, it is not very usual outside Egypt, but it occurs in Britain, Spain, Southern France, Italy, Reatia, Carthage, Italy and the Black Sea region<sup>61</sup>.

**10. Carthage 44 similis**

Similar forms have been published by D. PEACOCK from the Carthage excavations and R. TOMBER from the objects found in Caesarea.<sup>62</sup> ‘Handles are attached on or just below the simple everted rim’. One such amphora was found in Ephesus (no. 47, Pl. 5). This has also ‘chocolate brown’ colour. It has soft, fairly rough sandy micaceous fabric with visible imprints of plants<sup>63</sup>. This type of amphora is dated to the late fifth/early sixth century in Carthage<sup>64</sup>. The Agora piece was found at the western Stoa (chamber M) near the surface.

Amphorae coming from the Black Sea region reached Ephesus as early as the Hellenistic period. They came from Synope and the Crimean peninsula. The import continued in the late Roman period.

**11. Knossos 39**

J. HAYES described this type of amphora<sup>65</sup> at Villa Dionysos in Knossos. According to him, the type has ‘short wide neck with heavy rolled rim, rather thick fabric. Heavy handles (round sectioned?) attached to the neck, indentations inside the neck at points of attachment.’ He referred to a similar form, dated to the third century, in Mirmeki. C. PANELLA<sup>66</sup> also mentioned this form among the vessels in Ostia. A few such amphorae found their way into Ephesus as well. The rim fragment in the Agora (no. 30, Pl. 4; Farbtafel XVI, 30) has a hard, rough fabric. There are many rough quartz grains, many voids and a few black inclusions. The rim fragment comes from a mixed layer

2003, 844–845; MAJCHEREK 1995, 168; ZEMER, 1978, 61; ALPÖZEN – ÖZDAS – BERKAYA 1995, 66–67; TURNOVSKY 1992, 43–48; SENOL – KEREM 2000, 89; EMPEREUR – PICON 1989, 243; ARTHUR 1998, 161–162; ARTHUR – OREN 1998, 205; SLANE 2000, 310; RAUTMAN 1995, 69; TOMBER 1999, 301 and 313; ABADIE-REYNAL 1999, 264; KINGSLEY 2002, 74–77; BRUKNER 1981, T 161, 56–58; KELEMEN 1993, 52, no.1–2, Pl. 1, 11–12; BJELAJAC 1996, nos. 68, 70, 71, 74 and 76.

<sup>56</sup> EGLOFF 1977, 115; PEACOCK – WILLIAMS 1986, 206–207, EMPEREUR – PICON 1989, 244–245; HAYES 1992, 66–67; PANELLA 1993, 666; TOMBER – WILLIAMS 2000, 45 and Pl. 2, 8–9.

<sup>57</sup> TOMBER – WILLIAMS 2000, 45.

<sup>58</sup> EGLOFF 1977, 115–116; RILEY 1979; RILEY 1981, 121; PEACOCK – WILLIAMS 1986, 206; PANELLA 1993, 683.

<sup>59</sup> RILEY 1979.

<sup>60</sup> TOMBER – WILLIAMS 2000, 45 see footnote 29.

<sup>61</sup> TOMBER – WILLIAMS 2000, 46, with new map of distribution; RILEY 1981, 121; PANELLA 1993, 666; VILLA 1994, 408; BONIFAY – VILLEDIEU 1989, 31–33; SAGUI 1998, 312–327; MARTIN 1998, 388–389; BONIFAY – PIÉRI 1995, 114; ARTHUR 1998, 163; ARTHUR – OREN 1998, 207. According to the new research, Emona belongs to Italy, PLESNIČAR GEC 1983, 148.

<sup>62</sup> FULFORD – PEACOCK 1984, 130; TOMBER 1999, 313, no. 91.

<sup>63</sup> Similar fabric e.g. DE PAEPE – GRATIEN 1995, 75, Pl. 4, (no. 7–587).

<sup>64</sup> FULFORD – PEACOCK 1984, 130, no. 44, Pl. 39.

<sup>65</sup> HAYES 1983, 155;

<sup>66</sup> PANELLA 1986, 628, Pl. 26, she thinks it is possible that this type is the same as the Zeest 68.

(97/024) in the western Stoa (chamber M). It was found with Dressel 1C, Agora M 45, Tripolitana I, Almagro 50, Zeest 84, LR 1, and Spatheion small amphorae. The provenance of the Knossos 39 amphorae is not known. PANELLA suggests<sup>67</sup> that they were produced in a workshop in the Black Sea region or in the lower Danube area. It is frequent at the Black Sea region and there are in Rome and Knossos<sup>68</sup>.

## 12. Kuzmanov IX

This type of amphora has not been uniformly defined. G. Kuzmanov and later A. ZEMER described it as a ‘carrot-shaped body’. J.-Y. EMPEREUR and M. PICON took this over. They called it<sup>69</sup> ‘Séleucie no. 1’. M. SCIALLANO and P. SIBELLA mention<sup>70</sup> this amphora as LR 7 and link it with the Kellia 177 amphora which was produced in Egypt. A. OPAIT mentions<sup>71</sup> two types of amphorae. The E-Id can be related to this group. On the basis of their form, the carrot-shaped amphorae which are supposed to have been produced near Synope (Dermici)<sup>72</sup> can also be regarded as belonging to this group. The neck is long and cylindrical. It has either a simple or a pulley-wheel rim. The handles are attached to the lower part of the neck and the upper part of the body. The upper part of the body is wide and is conically tapering to the base. The dating of the amphora is also not uniform. ZEMER, EMPEREUR and PICON date it to the third/fourth century, KUZMANOV to the fifth/sixth century, SCIALLANO and SIBELLA to the fourth/seventh centuries<sup>73</sup>, Y. GARLAN and D. KASSAB TEZGÖR to the second/fourth centuries. The content is not known. A few complete amphorae were found at the Terrace House 27<sup>4</sup>. The Agora has only a few small fragments (nos. 33 and 34, fig. 4; Farbtafel XVI, 33. 34). It has hard fabric with white and colourless grains. There are one or two larger black – probably volcanic – inclusions. EMPEREUR and PICON published the Séleucie de Piérie workshop in Syria. OPAIT also suggest the Syrian provenance<sup>75</sup>. The Demerci workshop near Synope was described by GARLAN and KASSAB TEZGÖR<sup>76</sup>. The vessel was found in Turkey, Lebanon, Egypt, Bulgaria and Roumania<sup>77</sup>.

## 13. Zeest 84 = Scorpan XD; Radulescu 4; Popilian VI.

This amphora has a cylindrical neck, small rim and oval body. The spike is separated from the body with a well-defined line. The rounded handles are attached to the neck below the rim and to the upper part of the body. The cross-section of the handle is either circular or oval. The height of the amphora is 1 m. The widest diameter of the body is 47 cms<sup>78</sup>. They were found in small quantities in a number of places in Ephesus. The Agora pieces (nos. 36 and 37, Pl. 4; Farbtafel XVII, 36) are rim and handle fragments. It has hard, rough fabric with a large number of white, colourless and opal inclusions. They also occur with occasional iron ore grains. I. B. ZEEST thinks they can be dated to the second/third centuries. The production site is supposed to be in the

<sup>67</sup> PANELLA 1986, 628.

<sup>68</sup> ABADIE-REYNAL 1999, 260; PANELLA 1986, 628; HAYES 1983, 155.

<sup>69</sup> KUZMANOV 1973, 17; ZEMER 1977, 49, no. 40; EMPEREUR – PICON 1989, 232; (TARSUS 1950, 278, no. 831, Figs. 166 and 209).

<sup>70</sup> SCIALLANO – SIBELLA 1991; EGLOFF 1977, 115–116; RILEY 1982, 117; PEACOCK – WILLIAMS 1986, 204–205, Class 52.

<sup>71</sup> OPAIT 1996, 210, Pl. 11, 1–3 ‘Conical amphora of Seleucia’ and page 217, ‘Opait EId/Kuzmanov 11 variant’ is clearly Kuzmanov IX, and on page 218 the Zeest 103/Kuzmanov IX is actually an other type (= Kuzmanov XI).

<sup>72</sup> GARLAN – KASSAB TEZGÖR 1996, 331, Pl. 11; KASSAB TEZGÖR and Tatlican 1998, 425.

<sup>73</sup> ZEMER 1977, 49, no. 40; EMPEREUR – PICON 1989, 232; KUZMANOV 1973, 17, Pl. 1; OPAIT 1996.

<sup>74</sup> LADSTÄTTER 2002, 23.

<sup>75</sup> EMPEREUR – PICON 1989, 232; OPAIT 1996, 210.

<sup>76</sup> GARLAN – KASSAB TEZGÖR 1996, 331, Pl. 11; KASSAB TEZGÖR 1999, 119.

<sup>77</sup> EMPEREUR – PICON 1989, 232, footnote 22; OPAIT 1996, 210; ALPÖZEN – ÖZDAS – BERKAYA 1995, 69; SENOL – KEREM 2000, 93.

<sup>78</sup> ZEEST 1960, 116. T 35.



European part of the Bosphorus<sup>79</sup>. It was found on the northern shores of the Black Sea (from the Bosphorus to the Crimean peninsula). It also occurs in Moesia, Dacia and Pannonia<sup>80</sup>.

African import

The African olive oil and fish sauce were shipped to Ephesus in various vessels.

**14. Dressel 30** = Ostia V; Keay I; Peacock – Williams Class 38.

The rim is thickened and everted. The amphora has a short neck and pear-shaped tapered body. The handles are curved and attached to the neck and the upper part of the body. The base is short. These amphorae were produced in the province of Mauretania Caesariensis<sup>81</sup>. This is confirmed both by the stamps and the petrological analyses<sup>82</sup>. They are dated to the third/fifth centuries<sup>83</sup>. There was a large olive oil producing centre near the city of Tubusuctu<sup>84</sup> which appears on the stamps as well. There are only a few such amphorae in Ephesus, but some of the almost complete amphorae were found in the area of the Terrace House. The Agora has only a few small fragments (Pl. 5). No. 45 handle fragment has buff fabric with very small pieces of limestone and brownish, brownish-grayish inclusions. No. 46, Farbtafel XVII, 46 base fragment has hard fabric with red, white and colourless inclusions. Such amphorae were primarily found in Algeria and Morocco, but some of them found their way into England, Switzerland, Ostia, Rome and Alexandria<sup>85</sup>.

**15. Africana II Grande** = Beltrán 56; Ostia III; Keay IV–VII; Peacock – Williams Class 34.

There are long, cylindrical amphorae in this group. The rim is slightly rounded. The neck is very short and curved. The circular handles are attached to the neck and the upper part of the body. The handles are rounded in profile. The base is also short. It has been divided into four subtypes<sup>86</sup>. Only Africana IIA and IID are significant<sup>87</sup> from our perspective. Group IIA has a thickened, slightly rounded rim, while IID has a vertical rim, thickened on the inside. They are dated to the third – fourth centuries, but the last pieces of group IID may have been produced as late as the end of the sixth century<sup>88</sup>. They were probably used for shipping olive oil or fish sauce and produced in Tunisia, Roman Byzacena<sup>89</sup>. There are two such fragments among the object of the Agora. The bigger piece (no. 40, Pl. 5) has hard rough fabric with very many rounded quartz, opal, gray and dark grains, fossils and a few limestone grains. The rim fragment (no. 41, Pl. 5; Farbtafel XVII, 41) has hard, rough fabric. Tiny grains of quartz and limestone or white reaction rims are visible. The two amphorae were produced at various sites. Their fabric is different. Such amphorae were widespread in the western Mediterranean but some of them reached the eastern Mediterranean as well<sup>90</sup>.

<sup>79</sup> ZEEST 1960, 116; OPAIT 1980, 308; DYCZEK 2001, 251.

<sup>80</sup> ZEEST 1960, 116; OPAIT 1980, 308; BENEÀ 2000, 435–436; DYCZEK 2001, 252; BJELAJAC 1996, 61–65; RADULESCU 1976, 103–104; SCORPAN 1976, 163–164; it is uncertain whether BRUKNER 1981, T 156, 9 belongs to this type. KELEMEN 1990, 172, fig. 5, 4 = BEZECZKY 1998, 332, Pl. XIIB, may belong to this type.

<sup>81</sup> PANELLA 1973, 602; MANACORDA 1977, 150; KEAY 1984, 96.

<sup>82</sup> PEACOCK 1977, 270–272.

<sup>83</sup> PANELLA 1973, 603, but the initial starting date may have been in the late second century AD; MANACORDA 1977, 150; KEAY 1984, 96 and 99; PEACOCK – WILLIAMS 1986, 172.

<sup>84</sup> PANELLA 1973, 601–605; MANACORDA 1977, 150–151.

<sup>85</sup> RILEY 1979, 196; PANELLA 1973, 602; MANACORDA 1977, 150; PEACOCK – WILLIAMS 1986, 171; CARIGNANI – PACETTI 1989b, 614; MARTIN 1999, 349; SENOL – KEREM 2000, 86.

<sup>86</sup> ZEVI – TCHERNIA 1969; PANELLA 1973, 580.

<sup>87</sup> KEAY 1994, 114–115 and 121–122.

<sup>88</sup> ZEVI – TCHERNIA 1969, 185; PANELLA 1973, 581–582; CARANDINI – PANELLA 1981, 499–500; KEAY 1984, 115 and 126; PEACOCK – WILLIAMS 1986, 157; SCIALLANO – SIBELLA 1991; MANACORDA 1977, 168–170; FREED 1995, 167.

<sup>89</sup> ZEVI – TCHERNIA 1969, 185; PANELLA 1973, 590; CARANDINI – PANELLA 1981, 499–500; MANACORDA 1977, 185–190; KEAY 1994, 108; PEACOCK – WILLIAMS 1986, 155–157; MATTINGLY 1988, 44–49; PEACOCK – BEJAOUÏ – BELAZREG 1990, 64; SCIALLANO – SIBELLA 1991; VILLA 1994, 389.

**16. Tripolitana I** = Ostia LXIV; Peacock – Williams Class 36.

This type has a thickened rim, a relatively high neck and a long cylindrical body which ends in a hollow conical spike. The short handles are attached to the neck. Such amphorae were produced between the first century and the fourth century AD<sup>91</sup>. They were used for shipping olive oil<sup>92</sup>. This type is represented by one rim fragment in the Tetragonos Agora (no 42, Pl. 5; Farbtafel XVII, 42). It has hard, rough fabric and contains numerous small inclusions of white limestone or white reaction rims. In addition, there are few grog, from reused ceramics. The fragment was found in a mixed layer (97/024) in the western Stoa (chamber M). A number of production sites are known in Tripolitana<sup>93</sup>. This amphora was widespread in the eastern Mediterranean, particularly in north Africa east of Tunisia, in Italy (especially Ostia), and in Switzerland<sup>94</sup>.

**17. Tripolitana III** = Dressel 41; Peacock – Williams 37; Keay XI; Ostia II.

This big amphora has an everted collar rim with a short, conical neck. The body is long and cylindrical. Some of them are a little narrower in the middle. It has a curved base and a characteristic conical foot. It is dated between the second and fifth centuries<sup>95</sup>. The Tetragonos Agora has a rim-neck fragment (no. 43, Pl. 5). It has hard, very fine grains in the fabric with the exception of a few bigger (0.5 mm) white limestone inclusions. Since the fragment was secondarily burnt, it has grayish colour. It was found at the site of an earlier excavation (Wilberg 1907) with a LR 7 (no. 29) and a Dressel 30 (no. 45) amphora and some late Hellenistic amphora (Koan) and Eastern Terra Sigillata (ESA). The inscriptions reveal that this type contained olive oil<sup>96</sup>. This amphora was produced in Tripolitana (modern Lybia), where several kiln sites are known at Gragaresh near Oea, Sidi as Sid, and Ain Scersiara<sup>97</sup>. The type was found in the western Mediterranean, particularly Tripolitana, Tunisia, Italy, Switzerland and Spain<sup>98</sup>.

**18. ‘Spatheion’** = Benghazi LR amphora 8; Peacock – Williams 51; Scorpan XVI; Keay XXVI; Beltrán 65B; Ostia IV, Pl. 162–165.

This group of amphorae is characterized by a long, narrow, cylindrical body with a long tapering spike. The rim is everted. There are two short handles on the relatively long neck. There are two variants: the long and the small ones<sup>99</sup>. The long variety of this form dates from the late fourth/early fifth to seventh centuries AD<sup>100</sup>. Because of the great variety of the fabric used, it is supposed that it was produced at several sites<sup>101</sup>. Both the long and the small types were found in Ephesus. The Agora has only a few fragments (nos. 48–50, Pl. 5; Farbtafel XVII, 49). The fabric of the long amphora (no. 50; Farbtafel XVII, 50) is hard and rough with tiny grains of limestone and voids. It has black and colourless grains. The fabric of the small amphorae differ both from the previous one and from one another. The colour of no. 49 is buff. The size of the grains is bigger

<sup>90</sup> PANELLA 1973, 580–592; MANACORDA 1977, 168–170; RILEY 1979, 201–202; PEACOCK – WILLIAMS 1986, 156–157; MACKENSEN 1987, 252; CIPRIANO – CARRE 1987, 487; CARIGNANI – PACETTI 1989, 614; MARTIN 1999, 350–351; VIDRIH PERKO 1998, 101; OPAIT 1996, 219–220; MARTIN-KILCHER 1994, 448; VILLA 1994, 389; FREED 1995, 176–178; ARTHUR – OREN 1998, 199.

<sup>91</sup> PANELLA 1973, 559; PEACOCK – WILLIAMS 1986, 167.

<sup>92</sup> PANELLA 1973, 562; MATTINGLY 1995, 153.

<sup>93</sup> PANELLA 1973, 562; ARTHUR 1982, 61–72; MATTINGLY 1995.

<sup>94</sup> PANELLA 1973, 560–562; PEACOCK – WILLIAMS 1986, 166–168; MARTIN 1999, 347–348; CIOTOLA ET AL. 1989, 605; MARTIN-KILCHER 1994, 447, an amphora from the first century.

<sup>95</sup> PANELLA 1973, 564–568; MANACORDA 1977, 155–156; KEAY 1984, 136 CARANDINI – PANELLA, 1981, 500.

<sup>96</sup> PANELLA, 1973, 568; CARANDINI – PANELLA, 1981, 500; KEAY 1984, 134

<sup>97</sup> PANELLA 1973, 569; ARTHUR 1982, 62.

<sup>98</sup> PANELLA 1973, 567–571; KEAY 1984, 136; PEACOCK – WILLIAMS 1986, 170; CIPRIANO – CARRE 1987, 486; MARTIN-KILCHER 1994, 447; ARTHUR – OREN 1998, 199.

<sup>99</sup> RILEY 1979, 226; Peacock & WILLIAMS 1986, 202.

<sup>100</sup> RILEY 1979, 228; PANELLA 1983, 178; KEAY 1984, 212–219; MARTIN-KILCHER 1994, 449; FREED 1995, 167.

<sup>101</sup> North Africa – PANELLA 1983, 179; MANACORDA 1977, 217; RILEY 1979, 228; Spain – KEAY 1984, 215; PEACOCK – WILLIAMS 1986, 203.

than those of the long amphora. Both the limestone, the black and colourless grains, and the voids are bigger. The colour of the other small amphora is light (buff). It has very small (0.005 mm) inclusions with some colourless and dark, somewhat bigger (0.05 mm) grains. These pieces were found in the sewer of the Agora. The Spatheion amphorae were widespread both in the western and in the eastern Mediterranean, in the northern provinces of the Empire and in the Black Sea region as well<sup>102</sup>.

The shipment coming from the Iberian peninsula had the longest journey to Ephesus. Although the links with the peninsula were continuous from the early Roman period, the number of the amphorae found does not exceed a few dozen.

**19. Almagro 50** = Ostia VII; Keay XXII; Peacock – Williams Class 22.

The Almagro 50 type came from the Iberian peninsula<sup>103</sup>. It probably contained fish products<sup>104</sup>. Two handles (circular in profile) are attached to the thick rim. It has a very short neck on a long, cylindrical body which tapers into a spike. It often has the form of a ring and semi-circular knob<sup>105</sup>. The amphorae produced in Baetica (50A) are distinguished from the one produced in Lusitania (50B). The Almagro 50A amphorae often have stamps on their handles<sup>106</sup>. The fabric of the rim and handle fragment (no. 44, Pl. 3; Farbtabel XVII, 44) found in the Agora is the same as that of some Baetican Dressel 20 amphorae. The fabric has colourless quartz, white limestone and dark inclusions. They were used between the third and fifth centuries<sup>107</sup>. The fragment was found in a mixed upper layer (97/024, chamber M of the western Stoa) in which there were also fragments (Dressel 1C, Agora M 45, Tripolitana I, Knossos 39, Zeest 84, LR 1, Spatheion small) from different periods. The Almagro 50 was mainly used in the western Mediterranean<sup>108</sup>.

There are two more types to be mentioned. We have no detailed information about them. Their fabric may make them identifiable.

No. 35. This amphora (Pl. 4; Farbtabel XVII, 35) has a slightly everted rim, long neck and handles which are circular or oval in profile. The fabric is similar to that of the Ephesian LR 3 amphora. It is hard, fine, rich in mica with limestone and red iron ore inclusions. It may have come from the Aegean region.

No. 39. This amphora (Pl. 4; Farbtabel XVII, 39) has an everted rim, slightly conical neck. The fabric is similar to that of the African amphorae. It has many limestone grains and voids and a number of black and colourless inclusions. Similar form published from Sabrata, Sub-type 34<sub>n</sub><sup>109</sup>.

<sup>102</sup> RILEY 1979, 227; KEAY 1984, 219; PEACOCK – WILLIAMS 1986, 203; MACKENSEN 1987, 253–258; CIPRIANO – CARRE 1987, 488; CARIGNANI – PACETTI 1989b, 614; VILLA 1998, 281; SAGUI 1998, 312–327; CASAVOLA 1998, 723–725; VIDRIH PERKO 1998, 101; BONIFAY – PIÉRI 1995, 97. Perhaps produced also in Gortin (Crete) PORTALE – ROMEO 2000, 426; VIDRIH PERKO – PAVLETIĆ 2000, 266; BJELAJAC 1996, 87–91; ALPÖZEN – ÖZDAS – BERKAYA 1995, 103; MARTIN 1999, 351–352; ABADIE-REYNAL 1999, 262; SENOL – KEREM 2000, 84; BRUKNER 1981, T 163.79; BEZECZKY 1987, No. 313, Pl. 12; LADSTÄTTER 2000a, 166–167; LADSTÄTTER 2003, 838 and 842; OPAIT 1996, 225.

<sup>103</sup> KEAY 1984, 169–172; PEACOCK – WILLIAMS 1986, Class 22; PARKER 1989, 39.

<sup>104</sup> CARANDINI – PANELLA 1981, 501; KEAY 1984, 170–172; PEACOCK – WILLIAMS 1986, 131.

<sup>105</sup> DUARTE 1990, 113 Pl. 18; ÉTIENNE – MAYET 2002, Fig. 39 and 40.

<sup>106</sup> ÉTIENNE – MAYET 2002, 138–139, no. 7. A stamped piece was found in the area of Terrace House 2, stamp: OLYN(T) no. 80/31; CALLENDER 1965, no. 1256; MANACORDA 1977, 121–122.

<sup>107</sup> PANELLA 1972, 100; PANELLA 1973, 606; BOST ET AL. 1992, 128–132, Caberra III shipreck; SCIALLANO – SIBELLA 1991; PEACOCK – WILLIAMS 1986, 131 and KEAY 1984, 172 early fourth to fifth century; ÉTIENNE – MAYET 2002, 138–139; PARKER 1989, 650–651.

<sup>108</sup> PANELLA 1973, 605–606; MANACORDA, 1977, 121–122; KEAY 1984, 170; REYNOLDS 1995, 83; VILLA 1994, 378; CARRERAS MONFORT 2000, 102–103; VIDRIH PERKO – PAVLETIĆ 2000, 266.

<sup>109</sup> KEAY 1989, 55, No. 254, Fig. 14.

### Summary

The late Roman and post-Roman amphorae found their way into all parts of the Mediterranean, as well as into the northern provinces from Britain to Pannonia. On the basis of the recent excavation publications, the chronology and distribution of most types are fairly well-known. The objects found in the major commercial centres (Athens, Carthage, Benghazi, Ostia, Naples, Rome, Aquileia, Corinth, Istanbul and Beirut) have been published. The late Roman and Byzantine conferences also provide valuable material. It is also very important that the petrological analysis of the individual amphora types has started. This will yield insights into the production centres<sup>110</sup>.

The majority of the late Roman amphorae found in Ephesus was produced locally. The content is not known. It seems reasonable to suppose that they contained wine, olive oil or other liquids. The extant ancient sources mentioned the Ephesian wine. Strabo says<sup>111</sup> it is the same quality as the best in the region, Pliny<sup>112</sup> mentions that it is mixed with seawater and *defrutum*. Later sources do not discuss this topic. There are only two inscriptions that can be related to the 'sacred' wine produced and sold by the staff of the temple of Artemis. S. LADSTÄTTER<sup>113</sup> described in detail the history of the economy of Ephesus in late Roman times at the Leuven conference, and in this book she added new data to his description.

Very little is known about the economic activities of the villas around Ephesus, but the enormous number of amphorae provides convincing evidence to support the continuation of the research. As I mentioned it earlier, the half of the amphorae come from local production. 20 to 25% of all the amphorae were imported from various parts of the Mediterranean. The rest of the amphorae have not been identified yet. They may have come from the vicinity or from the region of Ephesus. Finally, in addition to the sizeable local production, Ephesus had links with the major centres of production. Amphorae containing wine, olive oil and fish sauce were imported from Spain, North Africa, Egypt, Asia Minor and Palestine.

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<sup>110</sup> PEACOCK 1977, 262–275; WILLIAMS 1982, 100–104; RILEY 1979; FULFORD – PEACOCK 1984; PEACOCK – WILLIAMS 1986; EMPEREUR – PICON 1986 and 1989; SAUER 1995; etc.

<sup>111</sup> Strab. Geogr. 14, 1,15.

<sup>112</sup> Plin. nat. hist. 14, 75.

<sup>113</sup> LADSTÄTTER 2000b.

Catalogue<sup>114</sup>

1. <i>Name:</i> Rim, neck frgm., handle <i>BoxNo:</i> 99/027 (1707) <i>Colour:</i> reddish yellow (5YR 6/6) <i>Dim:</i> D = 4 cm, V = 0,5 cm, HD = 0,7 cm, DN = 3,5 cm, H = 9 cm, S = 1,3 × 2,9 cm	PLATE 1	9. <i>Name:</i> Base frgm. <i>BoxNo:</i> 99/010 (1682) <i>Colour:</i> red (2.5YR 4/8) <i>Dim:</i> BD = 4 cm, H = 6,5 cm	PLATE 1
2. <i>Name:</i> Rim, neck, body frgm., handles <i>BoxNo:</i> 97/014 (1705) <i>Colour:</i> buff (7.5YR 7/4); surface: light red (2.5YR 6/8) <i>Dim:</i> D = 3,9 cm, V = 0,6 cm, HD = 0,6 cm, DN = 3,4 cm, H = 11,8 cm, S = 1,3 × 2,8 cm	PLATE 1	10. <i>Name:</i> Base frgm. <i>BoxNo:</i> 99/011 (344) <i>Colour:</i> red (2.5YR 4/8) <i>Dim:</i> BD = 4,3 cm, H = 6,9 cm	PLATE 1
3. <i>Name:</i> Rim, neck, body frgm., handles <i>BoxNo:</i> 97/016 (1652) <i>Colour:</i> yellowish red (5YR 4/6) <i>Dim:</i> D = 3,9 cm, V = 0,8 cm, HD = 1,1 cm, DN = 3,3 cm, H = 13,8 cm, S = 1,5 × 2,7 cm	PLATE 1	11. <i>Name:</i> Rim, neck, handle frgm. <i>BoxNo:</i> 99/011 (1694) <i>Colour:</i> red (2.5YR 5/6) <i>Dim:</i> D = 5,2 cm, V = 0,6 cm, HD = 0,6 cm, DN = 4,6 cm, H = 7,8 cm, S = 1,1 × 2,1 cm	PLATE 2
4. <i>Name:</i> Rim, neck, body frgm., handle <i>BoxNo:</i> 97/016 (1703) <i>Colour:</i> red (2.5YR 5/6) <i>Dim:</i> D = 3,7 cm, V = 0,5 cm, HD = 1,1 cm, DN = 3,2 cm, H = 11,2 cm, S = 1 × 3 cm	PLATE 1	12. <i>Name:</i> Rim, neck, handle frgm. <i>BoxNo:</i> 99/011 (1693) <i>Colour:</i> red (2.5YR 5/6) <i>Dim:</i> D = 5,2 cm, V = 0,7 cm, HD = 0,6 cm, DN = 4,6 cm, H = 9,6 cm, S = 1,3 × 2,3 cm	PLATE 2
5. <i>Name:</i> Base frgm. <i>BoxNo:</i> 97/016 (1655) <i>Colour:</i> red (2.5YR 4/8) <i>Dim:</i> BD = 3,5 cm, H = 9,6 cm	PLATE 1	13. <i>Name:</i> Rim, neck, handle frgm. <i>BoxNo:</i> 99/011 (1691) <i>Colour:</i> red (2.5YR 4/8) <i>Dim:</i> D = 3,9 cm, V = 0,7 cm, HD = 0,5 cm, DN = 3,2 cm, H = 7,1 cm, S = 1 × 2,6 cm	PLATE 2
6. <i>Name:</i> Base frgm. <i>BoxNo:</i> 99/011 (341) <i>Colour:</i> yellowish red (5YR 4/6) <i>Dim:</i> BD = 4 cm, H = 5,2 cm	PLATE 1	14. <i>Name:</i> Rim, neck frgm., handle <i>BoxNo:</i> 99/011 (1692) <i>Colour:</i> red (2.5YR 4/6) <i>Dim:</i> D = 4,7 cm, V = 0,7 cm, HD = 0,3 cm, DN = 4,2 cm, H = 8 cm, S = 1,1 × 2,1 cm	PLATE 2
7. <i>Name:</i> Base frgm. <i>BoxNo:</i> 99/015 (343) <i>Colour:</i> red (10R 4/8), surface: red (10R 5/6) <i>Dim:</i> BD = 4,3 cm, H = 5,6 cm	PLATE 1	15. <i>Name:</i> Rim, neck frgm., handle <i>BoxNo:</i> 99/011 (1695) <i>Colour:</i> red (2.5YR 5/6) <i>Dim:</i> D = 5,6 cm, V = 0,7 cm, HD = 1,3 cm, DN = 5 cm, H = 10,2 cm, S = 1,1 × 2,2 cm	PLATE 2
8. <i>Name:</i> Base frgm. <i>BoxNo:</i> 99/015 (342) <i>Colour:</i> red (10R 4/8), surface: red (10R 5/6) <i>Dim:</i> BD = 4 cm, H = 10,3 cm	PLATE 1		

<sup>114</sup> Abbreviations: Name – simple name; BoxNo. – layer number; Colour – Munsell Colour; frgm. – fragment; Dim – dimension measured; D – diameter of the rim; V – thickness of the rim; HD – height of the rim; DN – minimum diameter of the neck; DB – diameter of the body; DF – diameter of the foot; H – height of the fragment; S – section of the handle; Inscr. – Inscription.

16.	PLATE 2	25.	PLATE 3
<i>Name:</i> Rim, neck, body, base, handle frgm.		<i>Name:</i> Handle frgm.	
<i>BoxNo:</i> 97/016 (1653–54)		<i>BoxNo:</i> 92/094 (1659)	
<i>Colour:</i> red (10R 4/8)		<i>Colour:</i> pink (5YR 7/4)	
<i>Dim:</i> D = 4,9 cm, V = 0,5 cm, HD = 0,6 cm,		<i>Dim:</i> H = 4,8 cm,	
DN = 4,8 cm, BD = 2,1 cm, H = 10 cm, S = 1 × 2 cm		S = 3,4 × 2,8 cm	
17.	PLATE 2	26.	PLATE 3
<i>Name:</i> Base frgm.		<i>Name:</i> Body frgm. (1704)	
<i>BoxNo:</i> 99/011 (1697)		<i>BoxNo:</i> 97/014	
<i>Colour:</i> light red (2.5YR 6/8); surface: coated pink		<i>Colour:</i> very pale brown (10YR 8/3)	
(7.5YR 8/4)		<i>Dim:</i> H = 5 cm	
<i>Dim:</i> H = 5,8 cm		27.	PLATE 3
18.	PLATE 2	<i>Name:</i> Handle frgm.	
<i>Name:</i> Base frgm		<i>BoxNo:</i> 87/164 (1662)	
<i>BoxNo:</i> 99/011 (1699)		<i>Colour:</i> yellowish red (5YR 5/8)	
<i>Colour:</i> yellowish red (5YR 4/6)		<i>Dim:</i> H = 8 cm, S = 1,6 × 3,2 cm	
<i>Dim:</i> BD = 3 cm, H = 6,6 cm		28.	PLATE 3
19.	PLATE 2	<i>Name:</i> Handle frgm.	
<i>Name:</i> Base frgm.		<i>BoxNo:</i> 99/035 (1688)	
<i>BoxNo:</i> 99/011 (1698)		<i>Colour:</i> reddish yellow (5YR 6/6)	
<i>Colour:</i> yellowish red (5YR 5/6)		<i>Dim:</i> H = 11,2 cm, S = 1,5 × 2,5 cm	
<i>Dim:</i> BD = 2,1 cm, H = 5,3 cm		29.	PLATE 3
20.	PLATE 2	<i>Name:</i> Handle frgm.	
<i>Name:</i> Neck frgm.		<i>BoxNo:</i> 99/023 (1683)	
<i>BoxNo:</i> 99/011 (1696)		<i>Colour:</i> reddish brown (5YR 5/4)	
<i>Inscr.:</i> M(...) graffiti cut after firing		<i>Dim:</i> H = 13,8 cm, S = 2,8 × 4,5 cm	
<i>Colour:</i> weak red (2.5YR 5/2),		30.	PLATE 4
surface: reddish yellow (5YR 6/6)		<i>Name:</i> Rim, neck, handle frgm.	
<i>Dim:</i> H = 6,1 cm		<i>BoxNo:</i> 97/024 (1642)	
21.	PLATE 3	<i>Colour:</i> reddish yellow (5YR 6/6),	
<i>Name:</i> Rim, neck, handle frgm.		surface: light red (2.5YR 6/6)	
<i>BoxNo:</i> 92/094 (1660)		<i>Dim:</i> D = 18 cm, V = 3,2 cm, HD = 1,9 cm,	
<i>Colour:</i> reddish yellow (5YR 7/6)		H = 10,4 cm	
<i>Dim:</i> D = 7 cm, V = 1 cm, HD = 2 cm,		31.	PLATE 4
H = 15 cm, S = 3 × 3,4 cm		<i>Name:</i> Rim, neck, handle frgm.	
22.	PLATE 3	<i>BoxNo:</i> 92/094 (1657)	
<i>Name:</i> Rim, neck, handle frgm.		<i>Colour:</i> light brown (7.5YR 6/4)	
<i>BoxNo:</i> 97/043 (1709)		<i>Dim:</i> D = 10,3 cm, V = 1,2 cm,	
<i>Colour:</i> reddish yellow (5YR 6/6)		HD = 1,6 cm, H = 11 cm, S = 1,7 × 2,8 cm	
<i>Dim:</i> D = 10 cm, V = 1,3 cm, H = 16,7 cm,		32.	PLATE 4
S = 2,1 × 2,2 cm		<i>Name:</i> Base frgm.	
23.	PLATE 3	<i>BoxNo:</i> 92/094 (1666)	
<i>Name:</i> Rim, neck, handle frgm.		<i>Colour:</i> light brown (7.5YR 6/4)	
<i>BoxNo:</i> 99/039 (1689)		<i>Dim:</i> H = 10,8 cm	
<i>Colour:</i> reddish yellow (5YR 6/6)		33.	PLATE 4
<i>Dim:</i> D = 10 cm, V = 1,5 cm, H = 11,5 cm,		<i>Name:</i> Base frgm.	
S = 2,6 × 3,8 cm		<i>BoxNo:</i> 87/058 (1680)	
24.	PLATE 3	<i>Colour:</i> yellowish red (5YR 5/6)	
<i>Name:</i> Rim, neck frgm.		<i>Dim:</i> H = 8,5 cm	
<i>BoxNo:</i> 99/011 (1701)		34.	PLATE 4
<i>Colour:</i> light red (2.5YR 6/6)		<i>Name:</i> Base frgm.	
<i>Dim:</i> D = 11 cm, V = 0,8 cm, H = 7,3 cm		<i>BoxNo:</i> 92/094 (1658)	
		<i>Colour:</i> light red (10YR 6/8)	
		<i>Dim:</i> H = 6,2 cm	

Late Roman Amphorae

- |  |         |   |         |
|--|---------|---|---------|
| 35.  | PLATE 4 | 43.   | PLATE 5 |
| <i>Name:</i> Rim, neck,<br>handle frgm.  |         | <i>Name:</i> Rim, neck, handle frgm.  |         |
| <i>BoxNo:</i> 87/058 (1690)  |         | <i>BoxNo:</i> 99/023 (1706)   |         |
| <i>Colour:</i> yellowish red (5YR 5/6)   |         | <i>Colour:</i> pale brown (10YR 6/3),<br>surface: white (2.5Y 8/2)                            |         |
| <i>Dim:</i> D = 9,5 cm, V = 1,6 cm,<br>HD = 6 cm, H = 14,9 cm, S = 2,2 × 2,9 cm    |         | <i>Dim:</i> D = 13,5 cm, V = 1.8 cm,<br>HD = 3,5 cm, H = 9,9 cm                               |         |
| 36.  | PLATE 4 | 44.   | PLATE 5 |
| <i>Name:</i> Rim, neck frgm.   |         | <i>Name:</i> Rim, neck, handle frgm.  |         |
| <i>BoxNo:</i> 99/024 (1712)  |         | <i>BoxNo:</i> 97/024 (1641)   |         |
| <i>Colour:</i> reddish yellow (5YR 6/6),<br>surface: light red (2.5YR 6/6)         |         | <i>Colour:</i> reddish yellow (7.5YR 7/6)<br>surface: pale yellow (2.5Y 8/4)                  |         |
| <i>Dim:</i> D = 18 cm, V = 3,2 cm, HD = 1,8 cm,<br>H = 9,7 cm                      |         | <i>Dim:</i> D = 14,6 cm,<br>V = 2,9 cm, H = 7,7 cm,<br>S = 3,2 × 6,5 cm                       |         |
| 37.  | PLATE 4 | 45.   | PLATE 5 |
| <i>Name:</i> Handle frgm.  |         | <i>Name:</i> Handle frgm.   |         |
| <i>BoxNo:</i> 97/024 (1645)  |         | <i>BoxNo:</i> 99/023 (1686)   |         |
| <i>Colour:</i> reddish yellow (5YR 6/6)  |         | <i>Colour:</i> buff (10YR 7/4)  |         |
| <i>Dim:</i> H = 10 cm  |         | <i>Dim:</i> H = 10,2 cm,<br>S = 2,3 × 5,1 cm  |         |
| 38.  | PLATE 4 | 46.   | PLATE 5 |
| <i>Name:</i> Base frgm.  |         | <i>Name:</i> Base frgm.   |         |
| <i>BoxNo:</i> 97/016 (1678)  |         | <i>BoxNo:</i> 99/019 (1685)   |         |
| <i>Colour:</i> very pale brown (10YR 7/3)  |         | <i>Colour:</i> reddish yellow (5YR 7/6),<br>surface: pale yellow (2.5Y 8/4)                   |         |
| <i>Dim:</i> BD = 2,3 cm, H = 6,2 cm  |         | <i>Dim:</i> BD = 4,5 cm, H = 8,1 cm   |         |
| 39.  | PLATE 4 | 47.   | PLATE 5 |
| <i>Name:</i> Rim, neck, handle frgm.   |         | <i>Name:</i> Rim, neck, handle frgm.  |         |
| <i>BoxNo:</i> 97/043 (1711)  |         | <i>BoxNo:</i> 97/034 (100)  |         |
| <i>Colour:</i> reddish yellow (5YR 6/6)  |         | <i>Colour:</i> red (2.5YR 4/6)  |         |
| <i>Dim:</i> D = 7,8 cm, V = 0,8 cm,<br>HD = 1,4 cm, H = 8 cm                       |         | <i>Dim:</i> D = 12 cm, V = 2 cm, H = 9,8 cm, S = 2,5 cm                                       |         |
| 40.  | PLATE 5 | 48.   | PLATE 5 |
| <i>Name:</i> Rim, neck, handle frgm.   |         | <i>Name:</i> Rim, neck, handle frgm.  |         |
| <i>BoxNo:</i> 97/029 (1656)  |         | <i>BoxNo:</i> 99/039 (1687)   |         |
| <i>Colour:</i> light red (2.5YR 6/8);<br>surface: pinkish white (5YR 8/2)          |         | <i>Colour:</i> buff (2.5Y 8/2)  |         |
| <i>Dim:</i> D = 14,1 cm, V = 2,4 cm,<br>HD = 2,6 cm, H = 15,3 cm, S = 2,3 × 3,8 cm |         | <i>Dim:</i> D = 6,2 cm, V = 1,3 cm, HD = 1,8 cm,<br>DN = 3,4 cm, H = 5,8 cm, S = 0,6 × 1,3 cm |         |
| 41.  | PLATE 5 | 49.   | PLATE 5 |
| <i>Name:</i> Rim, neck frgm.   |         | <i>Name:</i> Rim, neck, handle frgm.  |         |
| <i>BoxNo:</i> 97/062 (1684)  |         | <i>BoxNo:</i> 99/010 (1681)   |         |
| <i>Colour:</i> red (10R 5/8); surface: pink (7.5YR 8/4)                            |         | <i>Colour:</i> very pale brown (10YR 7/4)   |         |
| <i>Dim:</i> D = 19 cm, V = 2,2 cm, HD = 4 cm, H = 5,2 cm                           |         | <i>Dim:</i> D = 6,3 cm, V = 1,2 cm, HD = 1,4 cm,<br>H = 4,6 cm                                |         |
| 42.  | PLATE 5 | 50.   | PLATE 5 |
| <i>Name:</i> Rim, neck frgm.   |         | <i>Name:</i> Base frgm.   |         |
| <i>BoxNo:</i> 97/024 (1640)  |         | <i>BoxNo:</i> 97/016 (1679)   |         |
| <i>Colour:</i> light red (10R 6/8);<br>surface: pale yellow (5Y 8/4)               |         | <i>Colour:</i> yellowish red (5YR 5/6);<br>surface: very pale brown (10YR 8/4)                |         |
| <i>Dim:</i> D = 16,3 cm, V = 2 cm,<br>HD = 3,3 cm, H = 3,8 cm                      |         | <i>Dim:</i> BD = 4,2 cm, H = 8,2 cm   |         |

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## APPENDIX 1

NOTES ABOUT THE STRATIGRAPHICAL AND ARCHITECTURAL CONTEXT OF  
SELECTED AMPHORA-FINDINGS FROM THE TETRAGONOS AGORA

The excavations in the Tetragonos Agora conducted from 1977 to 2001 have shown in various places that the Augustan buildings were destroyed in an earthquake, most likely in 23 AD and immediately rebuilt till the early years of Nero. Another earthquake again struck down the agora so completely that more or less only the foundations could be used for a rebuilding in the very late 4<sup>th</sup> century<sup>115</sup>. Newest research has shown that again, most probably during the reign of Justinian I, around the middle of the 6<sup>th</sup> century AD, major repairs and reconstruction work had to be done<sup>116</sup>, especially the North stoa was newly constructed.

*The late antique West stoa:*

From 1982 to 1997 some portions of the West stoa (box n. 97/062) and the courtyard area close to it were excavated. The draining sewer in front of the colonnade, built during the renovation of the fourth century, was partly emptied (boxes n. 87/058, 92/094). Some of the chambers (*tabernae*) in the rear of the stoa, already partly excavated before, were re-examined to gain information about the late antique building phases and the duration of usage. All of these chambers mentioned here are situated south of the agora West gate (chamber Q: box n. 97/043; chamber P<sub>1</sub>: box n. 97/029; chamber O: box n. 97/014; chamber M: boxes n. 97/024, 97/034). Another trench was dug in the entrance area for carts (box n. 87/164). The youngest layer was cut through in chamber S<sub>1</sub>, situated immediately south of this passway, where we could collect material dating the end of use of the agora (97/016).

*The main sewer:*

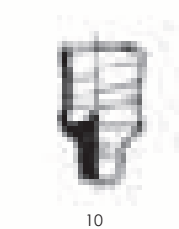
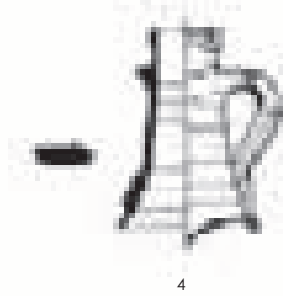
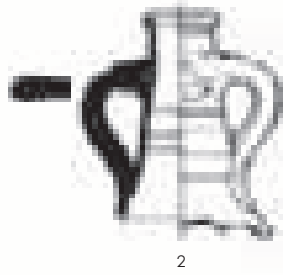
The main sewer of Ephesus, entering the agora below the South gate and crossing the courtyard diagonally<sup>117</sup> was widely excavated in 1999 and is now re-used for collecting water. It was originally built in the first half of the first century AD and partially cleaned during the reconstruction works in the reign of Theodosius I, when it got a new vaulted ceiling in its middle sector. The stratigraphy inside the channel (width 1.30 m; height: 0.90–2.20 m) is relatively constant in most parts: Above the floor of stone slabs and a thin loamy stratum a deposit of sand mixed with thousands of smallest fragments of pottery and other small finds takes a height of 0.60–0.70 m. This deposit seems to have settled down permanently from the middle of the 1<sup>st</sup> to at least the early fifth century as coins, pottery sherds and other findings demonstrate (boxes n. 99/015, 99/019, 99/035). Above this there is a layer of red loamy soil (boxes n. 99/010, 99/039) which filled the sewer up to the ceiling in the last phase, and probably even after it was not in use any longer. In the most upper part, especially where the vault has been broken, soil, stones, and other debris has fallen into the sewer (box n. 99/027). In the sector of meter 76 to meter 99 the sewer was destroyed by a big rectangular foundation and a new channel had to be built around it. By coin finds we can date the foundation in the late fifth century at the earliest, but more probably it belongs to the renovation of Justinian times. In the area below the foundation the upper filling with the reddish soil is much higher than in other sectors and inhomogenous as stones and debris are included (boxes n. 99/011, 99/024). The new channel was partly excavated in 1907 by W. WILBERG (debris filled in since then in box n. 99/023).

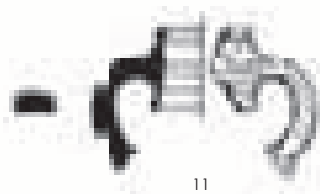
Peter SCHERRER

<sup>115</sup> P. SCHERRER, Der Neubau von Ephesos unter Kaiser Theodosius I, in: Actes XIV Congrès Intern. d'Arqueologia Clàssica, Tarragona 5.–11. 9. 1993 (1995) Vol. 2, 388 f.; IDEM, The City of Ephesus from the Roman Period to Late Antiquity, in: H. KOESTER (Hrsg.), Ephesos, Metropolis of Asia (Harvard Theological Studies 41) (1995) 19 f.

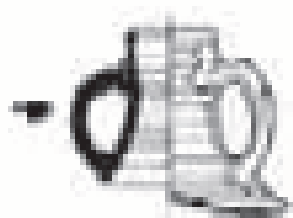
<sup>116</sup> See ST. KARWIESE – P. SCHERRER, Agora, in: ÖJh 67, 1998, Grabungen 1997, 7–12.

<sup>117</sup> M. AURENHAMMER, Drei neue römische Porträtköpfe von der Tetragonos Agora in Ephesos, ÖJh 69, 2000, 18 Abb. 1.

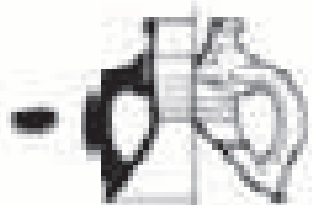




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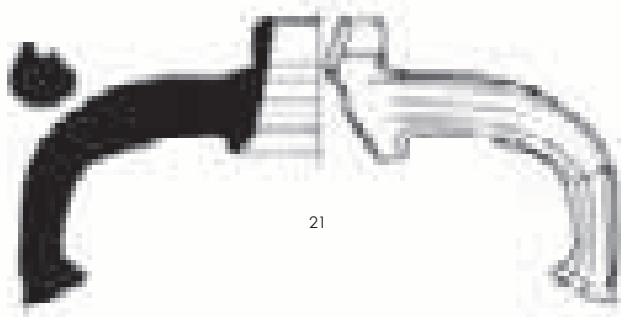


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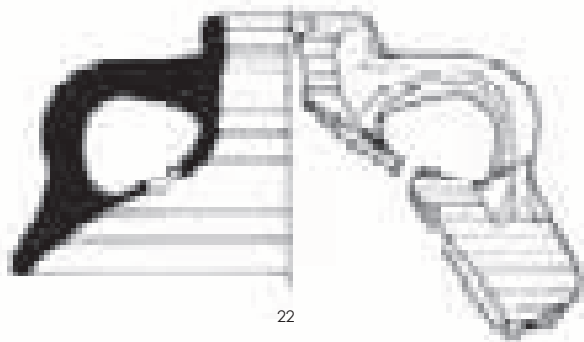




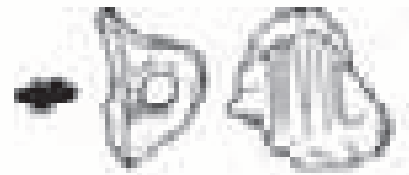
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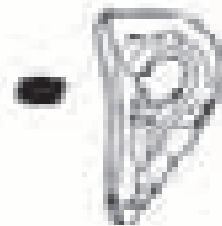
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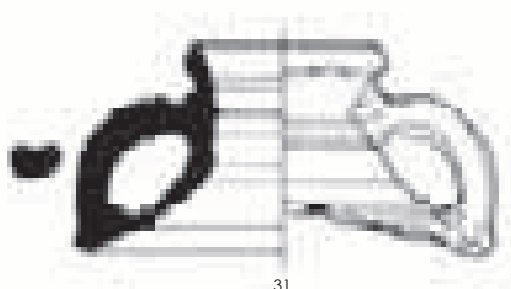
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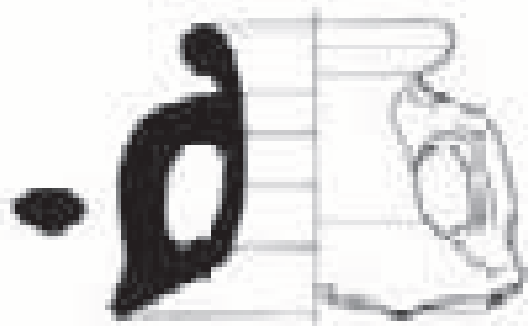
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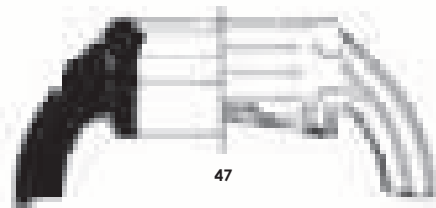
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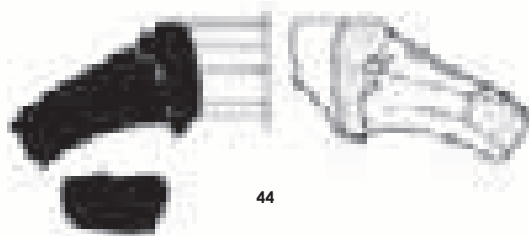
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