Wine for the Christians in Early Islamic Susita
(Hippos of the Decapolis)
Within the framework of the international Hippos Project, from 2000 to 2009, the Polish team carried out exploration of the so-called North-west Church and its annexes. This work yielded scores of objects dated to the Byzantine and early Islamic periods, with ceramics in the first place. The bulk of the pottery finds consisted of various categories of domestic wares, mostly cooking pots, casseroles and storage jars. Abundance of the jars was clearly in connection with the activity of two wine presses which flanked the church compound on the south and on the north.

Local/regional wine jars of the type used in Hippos/Susita pertain to the well known family of the Palestinian ‘bag-shaped’ jars of the Peacock and Williams Class 46, dated by the authors of the classification to the fifth-sixth centuries AD. As a matter of fact, however, this type of jar continued to be manufactured through the end of the Umayyad period (mid-eighth century) and even beyond. As to the origins of the jars in question, they go back to an Iron Age II form and, despite a distinct chronological development of the shape throughout the centuries of its usage, the basic morphological features of the vessels have remained unchanged. During the Byzantine period, the jars manufactured and used in the province of Palaestina Secunda (to which Hippos belonged) and in the southern part of Phoenicia Maritima are traditionally described as the ‘Beisan’ jars after the Arabic name.

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1 The Hippos Project was lead by Prof. Arthur Segal (Zinman Institute, University of Haifa). The Polish team was directed by the author (on behalf of the Research Centre of Mediterranean Archaeology, Polish Academy of Sciences, and the Institute of Archaeology, University of Warsaw) and by Mariusz Burdażewicz (on behalf of the National Museum in Warsaw). Our research on one of the aspects of the North-west Church, specifically, its liturgical functioning, was financed by Grant No 1H01 B009 29 of the Ministry of Science and Higher Education of Poland for the years 2005–2007. Cf. J. Młynarczyk, Architectural and Functional/Liturgical Development of the North-West Church in Hippos (Susita), EtudTrav XXII, 2008, pp. 147–170; EAD., Churches and Society in Byzantine and Umayyad-period Hippos, ARAM 23, 2011, pp. 253–284; J. Młynarczyk, M. Burdażewicz, The North-west Church Complex, Interim Report, Zinman Institute of Archaeology, University of Haifa, in press.


4 Cf. A. Uscatescu, Report on the Levant Pottery (5th–9th century AD), [in:] 7th Διεθνές Συνέδριο Μεσαιωνικής Κεραμικής της Μεσογείου, θεσσαλονική, 11–16 Οκτωβρίου 1999, Πρακτικά, Αθήνα 2003, pp. 547–549, Fig. 2:9-12.

for Bet Shean (ancient Scythopolis), the capital of Palaestina Secunda from AD 400 till the Islamic conquest. They were common at Tell Keisan (southern Phoenicia/western Galilee) where they occurred in ‘black’ and ‘red’ versions of the surface firing (the latter group said to be manufactured at neighbouring Aiyadiya); they correspond to Riley Type 1Y among the material from Caesarea Maritima, and are very popular around the Sea of Galilee, e.g. in Capernaum. The main characteristic of the treatment of their surface, which may assume a variety of hues (orange-red, reddish brown, greyish brown and grey, ranging from light to dark grey), are vertically arranged linear ornaments painted on the belly (often also on the shoulder) in very pale yellow to white, interlacing with a couple of horizontal lines. These ornaments may be well-preserved, but sometimes are rather illegible (cf. Fig. 1).

The ‘Beisan’ jars of local/regional manufacture found in the North-west Church compound have, of course, numerous parallels in most of other areas excavated at Susita; a number of relevant examples have been published by the present author in her annual reports on the pottery discovered at Hippos in 2000–2009. However, it is the North-west Church, known to have functioned as a place of the Christian worship until the earthquake of AD 749, that yielded the biggest amount of restorable jars of the discussed class. Specifically, the compound in question contained the following jar deposits:

I. Jars found in a two-room diakonikon unit located in the southern annexe of the church (at least nine broken jars) as well as in the adjacent part of the basilica (specifically, in the southern aisle outside the entrance to the diakonikon and in the west end of the nave). They were surely brought there as gifts from the faithful and doubtlessly contained offerings in kind such as wine or perhaps olive oil (Figs 1–4 and 6). To the diakonikon assemblage there also belonged no less than 24 jar lids of standardized shape, size and ware, in all probability, of local manufacture (Fig. 5).

II. Jars found in the atrium of the church (Figs 7–9), mainly in its southern portico, on both sides of a makeshift wall (W752); their presence might have been connected to distribution

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7 J. MŁYNARCZYK, Pottery Report, [in:] A. SEGAL, J. MŁYNARCZYK, M. BURDAJEWICZ, Hippos (Sussita), First Season of Excavations, July 2000, Haifa 2000, p. 3, Fig. 1; EAD., Pottery Report Sussita 2001, [in:] Hippos 2001, p. 22, Fig. 4.3; EAD., Pottery Report Sussita 2002, Haifa 2002, p. 3, Fig. 2.3; EAD., Pottery Report, [in:] A. SEGAL et al., Hippos-Sussita. Fourth Season of Excavations June-July 2003, Haifa 2003 [= Pottery Report 2003], p. 56, Fig. 11:3 and 5; EAD., Hippos 2004, pp. 144–145. For the distribution of finds in the diakonikon, see EAD., EtudTrav XXII, 2008, p. 167, Fig. 4.


of wine from the nearby winery, as suggested by the find of a large ceramic funnel in the south-west corner of the atrium (Fig. 10).\textsuperscript{10}

III. Jars found in the fill of the cellar located under the western half of the northern portico of the atrium (Figs 11–14);\textsuperscript{11} in all probability, they contained wine from the winery installed in the northern annex.\textsuperscript{12}

IV. Jars found in one of the twin cist tombs (Figs 15–20) constructed under the floor level of a small room (209 W) in the west part of the southern annexe of the church, probably during its original building period in the first half of the sixth century AD.\textsuperscript{13} This room, isolated from the basilica (as it was accessible only from the atrium), must have been designed as a mortuary chamber to receive the earthly remains of the church founders or benefactors. One of them was presumably Antonia the deaconess, mentioned in a mosaic inscription placed in the mid-length of the southern portico.\textsuperscript{14} However, at a certain time the skeletons of the deceased must have been transferred to another resting place, as proved by the fact that one of the tombs was found filled with earth, while the other one, Loc. 295, contained sherds of 15 restorable jars and a nearly complete Late Roman C (LRC) ware dish of form 10A, the latter dated to between AD 500 and early seventh century.\textsuperscript{15} Since on the other side of the southern wall of the room in question there was a wine press complex, the logical assumption was that the jars found in the tomb had contained wine made in that very winery.

All of the four above-mentioned assemblages of jars share not only the general baggy shape with a carinated shoulder and an upright rim, but also the white-painted (pale yellowish white) decoration characteristic of the ‘Beisan’ category. However, according to the height and profile of their rims, as well as to the surface colour, they can be divided into two distinct groups. To one group there pertain the jars of assemblages Nos I, II and III, while the other group is represented by assemblage No IV.

The first group (assemblages I–III) can fairly closely be dated to AD 749 as it comes from destruction deposits of the church compound. These Umayyad period jars are of fabric which is fired hard to very hard, orange or light red in section (occasionally pale orange with grey core), usually containing some oblong voids and whitish grits, sometimes also a few dark-coloured ones. In most cases, their surface firing does not allow to divide the vessels into ‘black amphorae’ and ‘red amphorae’ as distinguished in Tell Keisan.\textsuperscript{16} It is only rarely that the exterior surface is fired to just one colour (e.g., jar Fig. 14, fired grey to dark grey on the surface); more often, it is difficult to tell if the vessel stands closer to the ‘black’ or to the ‘red’ version (e.g., jar Fig. 11 which is fired from brick-red to dark grey). As a rule, the surface colour of different parts (the base, mid-belly and rim) varies


\textsuperscript{11} Cf. ibid., p. 96 (no illustrations).

\textsuperscript{12} For the winery, see n. 2 supra.

\textsuperscript{13} On the construction period of the North-west Church, see EAD., EtudTrav XXII, 2008, p. 149.

\textsuperscript{14} Ibid., pp. 152–153.

\textsuperscript{15} J. Młynarczyk, Pottery Report, [in:] Hippos 2004, p. 144, Fig. 4:1–7 (LRC bowl) and 1–3 (storage jar rims).

\textsuperscript{16} See supra, n. 6.
depending on the vessel’s position in the kiln. The usual range of colours includes the shades of brick-red (often with a brownish tint), grey-brown, grey, chestnut brown, dark brown to dark reddish brown. This Umayyad period type, distinguished by S. Loffreda as ANF 21 in Capernaum, has been very widely distributed in the region.17

Jars in assemblage No IV differ from the previous group by the height and profile of their rims as well as by the colour of their surface. Specifically, the rims are shorter than those of the jars in assemblages I–III and ‘collared’ in section (that is, provided with a kind of a flattened ring on the exterior). Their fabric is also ‘metallic hard’, light red to orange-red, containing some white grits and sometimes oblong voids. However, the surface firing is more uniform and paler-coloured than in the previous group; here, the standard colour is in hues of grey, such as pale grey shading into pale green with dark brownish pink spots (Fig. 18), light grey to dark grey with brick-red spots (Fig. 20), dark grey, light brownish grey to dark grey spots etc. An unusual feature of this assemblage is occasional occurrence of inscriptions in Greek, carefully painted with red paint on the body below the shoulder. Unfortunately, two body sherds of two different inscribed jars found in assemblage IV preserve only insignificant portions of inscriptions.18 Their lettering closely resembles that of an inscription reading Klaudi (as abbreviation ‘of Klaudios’? ‘for Klaudios’?) painted on a jar from the church complex at Khirbat Karak.19

Upon the discovery of this deposit, it was assumed that the re-use of tomb Loc. 295 as a cellar to accommodate the wine jars should be dated to the last period of the church’s existence,20 that is, to around the mid-eight century AD; that would mean that the accompanying LRC dish should be considered as a residual, not contemporaneous, object. However, while the jars in assemblages I–III, all of them clearly deposited during the final year of the church’s activity (AD 748/749), represent a uniform vessel type, those from deposit IV are entirely different in terms of rim profile and variety of ware. This may be explained perhaps by a different manufacturing source of each group of the jars, but not only; as a matter of fact, the distribution of jar examples comparable to assemblage IV in other contexts at Susita and elsewhere seems to prove that this dissimilarity results from different chronology of both groups. Especially eloquent are the contexts of Capernaum, re-examined recently by S. Loffreda, where jars with a short rim of ‘collared’ profile (Loffreda’s ANF 22) are dated to the Byzantine period and beginnings of the Islamic period, which means not later

17 See, for example, P. DELougaz, R.C. Haines, A Byzantine Church at Khirbat al-Karak, Chicago 1960 [= Khirbat al-Karak], Pl. 55:2-3; R.H. Smith, Pella of the Decapolis I, Wooster, Ohio 1973, Pl. 31.284 (Umayyad-period stratum); V. Tzaferis, The Excavations at Kursi-Gergesa, Atigor XVI, 1983, p. 33, Fig. 7.1 (their context roughly dated to between AD 614 and seventh/eighth century); M.J. Fuller, Abila of the Decapolis. A Roman-Byzantine City in Transjordan, Ann Arbor 1987, Figs 43–47 (described as ‘Umayyad White-on-Black ceramics’); R. Peleg, Domestic Pottery, V. Tzaferis, Excavations at Capernaum I 1978–1982, Winona Lake 1989, pp. 73 and 81, Fig. 60:1-9 (some rims of ‘Red Ware Jars’, said to have appeared throughout all strata on the site); LOFFREDA, Cafarnao VI, pp. 134–135, type ANF 21; Id., Cafarnao VII, pp. 94–95, Nos 22–26, type ANF 21.

18 Field reg. Nos 1100.9 with the end of a word ---- εω (Dative?) and 1100.10 with just a part of an initial ε (?) or ϑ (?), the latter most probably pertaining to jar inv. No. 1100.8 (Fig. 18).

19 DELougaz, HAINES, Khirbat al-Karak, p. 34, Pl. 35:5.

than the seventh century AD. A parallel from Pella in Jordan is narrowly dated to the first quarter of the sixth century, while another parallel, from Shelomi in western Galilee, pertains to a level of destruction in AD 614–617. The jars with comparable rim profiles from Tell Keisan (even if their bodies are much more spherical, perhaps as a local peculiarity) were found in a Byzantine assemblage dated by C. Florimont on the basis of co-occurring Late Roman fine wares to between the mid-fifth and mid-sixth century. In the opinion of the present author, this date should be pushed down to the turn of the sixth century at least, but not beyond c. AD 640.

Another related question is that of interpretation of the decoration motives painted on jars of all the NWC assemblages as well as at other sites: are they indicative of a chronological development or rather of a manufacturing region? Of course, only the jars with a legible decoration can be taken into consideration. Thus, in NWC assemblage IV, there seem to be three kinds of body decoration: a) zone of a net pattern, open at the top and forming a row of loops in its lower part, with un-linked large spirals below (Figs 15 and probably 16); b) zone of x-like motifs separated by vertical bands, all of them painted with five parallel strokes, their upper ends sometimes reaching the mid-shoulder (Figs 17–19); finally, the pattern of a fragmentary jar Fig. 20 seems to be related to (b), but its details cannot be restored.

In the later, Ummayad period NWC jars (assemblages I–III), the decoration is, with few exceptions, less legible. However, in one case (Fig. 11) a pattern similar (less well preserved?) to (a) of assemblage IV is recognizable; another jar (Fig. 9) is decorated with a pattern recalling (although not identical to) pattern (b) above. Finally, as many as five jars (Figs 2, 4 and most probably also 12–14) represent a ‘new’ pattern (c): two sets of three or four interlacing circles, painted with multiple lines, flanked by wavy lines and separated from each other by groups of straight lines, all of these motives having been arranged vertically; this very pattern occurs in the same period at the nearby sites of Kursi and Capernaum. Still other combinations of the multiple x-like lines with or without vertical lines and with spirals occur on jars from other sites both in the late Byzantine (Jerusalem, imported from Scythopolis/Beisan) and early Islamic (Capernaum) periods.

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21 LOFFREDA, Cafarnao VI, p. 135, type ANF 22; Id., Cafarnao VII, pp. 96–97, Nos 1–49, type ANF 22.
22 A.W. McNICOLL et al., Pella in Jordan 2, Sidney 1992, p. 173, Pl. 110.10; for another parallel from Pella see A. McNICOLL, R.H. SMITH, B. HENNESSY, Pella in Jordan I, Canberra 1982, Pl. 139. For Shelomi, see C. DAUPHIN, S.A. KINGSLEY, Ceramic Evidence for the Rise and Fall of a Late Antique Ecclesiastical Estate at Shelomi in Phoenicia Maritima, [in:] G.C. Bottini, L. Di Segni, L.D. Chrupcała (Eds), One Land – Many Cultures. Archaeological Studies in Honour of S. Loffreda, Jerusalem 2003, p. 70, Fig. 8. The body of the Shelomi jar is definitely more spherical than the Hippos jars from assemblage IV and recall the jars from Tell Keisan; this is probably a regional feature. See also a parallel from Hammat Gader, not far from Hippos: R. BEN-ARIEH, The Roman, Byzantine and Umayyad Pottery, [in:] Y. Hirschfeld (Ed.), The Roman Baths of Hammat Gader, Jerusalem 1997, pp. 374–375, Fig. XIII.6.
23 FLORIMONT, Fascie byzantine, p. 67; the rim form comparable to that in NWC assemblage IV occurs at Keisan with both amphières noires (Pl. 6.2-2n) and amphières rouges (Pl. 7.1a and 4).
24 According to LANDGRAF, Byzantine pottery, p. 61, the Byzantine settlement at Tell Keisan was brought to an end in AD 638 if not earlier.
25 TZAFERIS, Atiqot XVI, 1983, p. 33, Fig. 7.1 (n. 17 supra); LOFFREDA, Cafarnao VII, type ANF 21, No. 22.
Without denying any probable chronological development of the decoration, the choice of the patterns seems to have been primarily connected with an individual jar-making centre. For instance, decorative pattern (a) of the pre-Umayyad NWC assemblage IV (Fig. 15) is closely paralleled by that attested on amphores noires in Tell Keisan (pre-AD 638),²⁷ probably imported there from Jordan Valley. Related pattern occurs in Capernaum, in a ceramic group dated to between the Byzantine and beginnings of the Islamic period,²⁸ but also on jar Fig. 11 in NWC assemblage III, pertaining to the Umayyad period. Similarly, the pattern of jars Figs 17–19 (NWC assemblage IV) is paralleled by that occurring with two chronologically successive types in Capernaum.²⁹ Such persistence of basically the same patterns throughout almost two centuries suggests that each group of jars in question comes from one workshop and that the motives employed may have served as a kind of workshop marks.

Since, in all probability, the pre-Umayyad period jars found in tomb Loc. 295 come from the winery on the southern side of the church, it may be interesting to discuss the utilization period of this industrial installation. The central part of the winery consisted of a pair of collecting vats, almost 2m deep, flanked by basalt-paved treading floors roughly square in outline. The excavation of the winery was started in 2001–2002 by the Polish team who explored the eastern treading platform and a part of the adjacent collecting vat, as well as a small oil press on the southern side of the treading platform.³⁰ The winery was entirely exposed in 2003–2005 by the Israeli team, who unearthed the western treading platform together with a vast area for the storage of grapes on its western side and another (western) collecting vat on the eastern side.³¹ The whole industrial complex abutted the southern wall of the North-west Church compound, and the two collecting vats were adapted from the twin vaults which used to support the pronaos or the entrance porch of a Roman period temple. The date of the installation of this winery, obviously following abandonment of the temple, remains unknown; logically, it should have been contemporaneous with the construction of the North-west Church compound, which took place in the first half of the sixth century AD.³²

The northern winery, discovered by the Polish team in 2005, is a modest version of the southern one in terms of all the elements but a unique fermentation room.³³ This winery was installed in the northern annexe of the North-west Church. Blocked entrances, originally connecting this wing with the northern aisle of the basilica and the north-east corner

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²⁷ Cf. Florimont, Fosse byzantine, Pl. 6.1 and 6 (rim profile different than in NWC), possibly also incomplete Nos 2 and 2c.
²⁹ Ibid., type ANF 22, No. 47 (earlier) and type ANF 21, No. 23 (later). The X-like motives alone occur also on amphores rouges from Tell Keisan: Florimont, Fosse byzantine, Pls 7.4d-4e and 5-5a.
³⁰ See supra, n. 2.
³¹ They completed also the exploration of the eastern collecting vat: see supra, n. 2.
³² For the dating of the construction of the temple and that of the church, see Mlynarczyk, EtudTrav XXII, 2008, pp. 148–149, nn. 5–7.
³³ See supra, n. 2.
of the atrium respectively, as well as a mosaic floor found below the eastern half of the wing in question, prove that the establishing of this winery post-dated the original use of the northern wing as an integral part of the church compound. However, it is virtually impossible to tell if this change of function took place within the seventh century or only in the first half of the eighth century.34

It has been assumed at the early stage of the exploration that both wineries were destroyed at the same time, specifically, by the earthquake of AD 749. Neither of them yielded any restorable wine jars, probably because the earthquake happened on the 18th of January, that is, not only well after the vintage period falling in August–September, but also after the fermentation process, when the wine had already been transferred to its storage place. However, while all the rooms in the northern winery were filled with blocks collapsed from the walls as a result of the catastrophe in question, in the southern winery the situation looked rather different. There, only the eastern must collecting vat contained debris of large stones collapsed from the southern wall of the church compound, while the western vat was filled with clean soft earth. This fact strongly suggests that at the moment of the final destruction of the site only the eastern collecting vat was still in use, while the western one had already been filled with soil. In other words, the western part of the southern winery would (for a reason unknown to us) have gone out of use at some earlier date, and by AD 749 only the eastern vat with its treading floor remained active, alongside the winery in the northern wing.

Indeed, the few ceramics collected during the exploration of the western collecting vat in the south winery include jar rims (Figs 24, 25) of the same type as those found in the North-west Church deposit IV.35 In all probability, connected with the final phase of the use of this vat, they were accompanied by a fragment of a large bowl in CRS ware of form K4A dated to c. AD 540–660.36 Another jar rim of the same type (Fig. 23) was found within the industrial area under the uppermost floor dated to the Umayyad period. Similar jar rims (Figs 21–22) were discovered in the fill of Loc. 705, a subsidiary room outside the northern wall of the church’s atrium; the contents of this fill seem to antedate the final phase of the church, as confirmed also by an accompanying Byzantine-type lamp fragment.37

Destruction deposits of a building located on the northern side of the so-called decumanus, in the area marked as HLC, yielded a large collection of ceramics, mostly of domestic wares, the abundance of which suggests that the building in question, situated in proximity to two important churches (the North-west Church and the North-east Church respectively) may have functioned as a xenodocheion receiving pilgrims. Among these ceramics, which

34 For a few potsherds found in the northern winery, see Młynarczyk, Pottery Report, [in:] Hippos 2005, pp. 127–128, Fig. 4.
35 EAD., Pottery Report, [in:] Hippos 2004, pp. 143–144, Fig. 3.15-16. It seems that at the bottom of the eastern collecting vat no jar fragments have been found.
37 Cf. J. Młynarczyk, Pottery Report, [in:] A. Segal et al., Hippos – Sussita, Ninth Season of Excavations (June – July 2008), Haifa 2008, p. 89, Fig. 9: jar rims Nos 164, 166 and 167 and lamp fragment No. 170 of the sixth-seventh century AD.
do not seem to include anything later than the seventh century AD, there are jar rims of the shape corresponding to those from NWC assemblage IV (Figs 27–29). Other examples of the same type were found in the compound of the North-east Church (Figs 26, 32) in contexts that, again, seem to be pre-Umayyad (early Umayyad?) in date, as well as at the border of the so-called Forum, also in a Byzantine period context (Figs 30–31). The proposed dating of the jar type represented by NWC assemblage IV to the very end of the Byzantine and beginnings of the early Islamic periods is confirmed, as we have seen, by dated finds from elsewhere.

To sum up the discussion on the ‘Beisan’ jars from Hippos in the period between the sixth and eighth centuries AD, we are able now to distinguish two distinct types of them, in all probability illustrating a chronological development: jars of the sixth-to-seventh centuries (NWC assemblage IV) and those of the Umayyad period (NWC assemblages I–III). Their study also sheds light on the chronology of the usage of the two wineries in Hippos. The southern winery, probably established in the sixth century, had its floruit in the seventh century AD, after which one of its collecting vats would have gone out of use (obviously alongside its neighbouring treading floor) and the working area would become restricted to its eastern half. The northern winery, whose date of installation remains unknown (seventh century? early eighth century?) was active till the destruction in AD 749 of what has remained of once proud Decapolis city of Hippos.

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38 MŁYNARCZYK, Pottery Report, [in:] A. SEGAL et al., Hippos – Sussita, Tenth Season of Excavations, July and September 2009, Haifa 2009 [= Hippos 2009], pp. 109, 111, Fig. 3, Nos 42–44.
39 EAD., Pottery Report, [in:] Hippos 2004, p. 146, Fig. 6:1; EAD., [in:] Hippos 2009, No. 240.
40 Ibid., p. 112, Nos 102–103.
41 See nn. 21–22 supra.
1.–6. NWC assemblage I: jars and a jar lid from the diakonikon:
(1) jar 1005.1 – from the west part of the nave; (2) jar 1039.4 and (3) upper half of jar P02.05 – both from the southern nave, by the entrance to the diakonikon; (4) jar P04.05, (5) jar lid P03.03 and (6) jar fragment P03.29 – all three from the diakonikon (Drawings and digitizing M. Burdajewicz).
7.–10. NWC assemblage II: fragmentary jars (7) 1120.1; (8) 1100.20; (9) 1136.19 and a funnel P 06.01 from the atrium (Drawings and digitizing M. Burdajewicz).

11.–14. NWC assemblage III: jars and fragmentary jars from the cellar: (11) 1189.5; (12) 1189.9; (13) 1189.11; (14) 1189.22 (Drawings and digitizing M. Burdajewicz).
15–20. NWC assemblage IV: jars and fragmentary jars from the re-use of tomb Loc. 295: (15) 1100.6; (16) 1100.x; (17) 1100.11; (18) 1100.8; (19) 1100.7; (20) 1100.12 (Drawings and digitizing M. Burdajewicz).
21.–32. Rims of jars comparable to those of NWC assemblage IV, jar fragments (21) 3294.1 – NWC, Loc. 705; (22) 3293.8 – NWC, Loc. 705; (23) 1211.5 – OPB/HLC; (24) 4206.1 – HLC; (25) 4206.2 – HLC; (26) 1913B – NEC; (27) 6339.3 – HLC; (28) 6375.2 – HLC; (29) 6372.1 – HLC; (30) 3716.1 – FRM; (31) 3709.2 – FRM; (32) 2265.2 – NEC (Drawings and digitizing M. Burdajewicz).