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CHRONOLOGY AND PERIODIZATION OF THE GLOBULAR AMPHORA CULTURE EAST LUBLIN SUBGROUP

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ABSTRACT

The Globular Amphora culture East Lublin subgroup was distinguished in the 1950s by Stefan Nosek. The key argument in favour of the distinction involved stone cist graves, having south-eastern affinities. The newly-distinguished taxonomic unit boasted both western and eastern traits. Since 1996, 13 radiocarbon dates have been obtained for nine features: 1 settlement pit, 5 cist graves and 3 pit graves. The dates helped distinguish three chronological sequences and describe inventories of grave finds from particular development phases. By comparing inventories from graves for which radiocarbon dates were available with grave goods from features without such determinations, it was possible to supplement the sets of cultural elements characteristic of successive time intervals with traits to be found solely in the latter. Ultimately, the proposed periodization of Globular Amphora settlement in the eastern Lublin province is made up of three phases: I ('general Globular Amphora' horizon – preceding the formation of the East Lublin subgroup) – 3000/2950–2900/2850 BC; II ('classical' phase of the East Lublin subgroup) – 2900/2850–2650/2600 BC; III ('late' phase of the East Lublin subgroup) – 2650/2600–ca 2400 BC.

Keywords: Globular Amphora culture, East Lublin subgroup, radiocarbon dates, absolute chronology, periodization

INTRODUCTION

The article discusses the remains of settlement by Globular Amphora culture (GAC) populations on the eastern Lublin Upland (Fig. 1), i.e. covering the Dorohusk Depression (*Obniżenie Dorohuckie*), Chełm Heights (*Pagóry Chełmskie*), Dubienka Depression (*Obniżenie Dubienki*), Horodło Bar (*Grzęda Horodelska*) and Hrubieszów Basin (*Kotlina Hrubieszowska*) [Jarosz *et al.* 2016: 9–10].

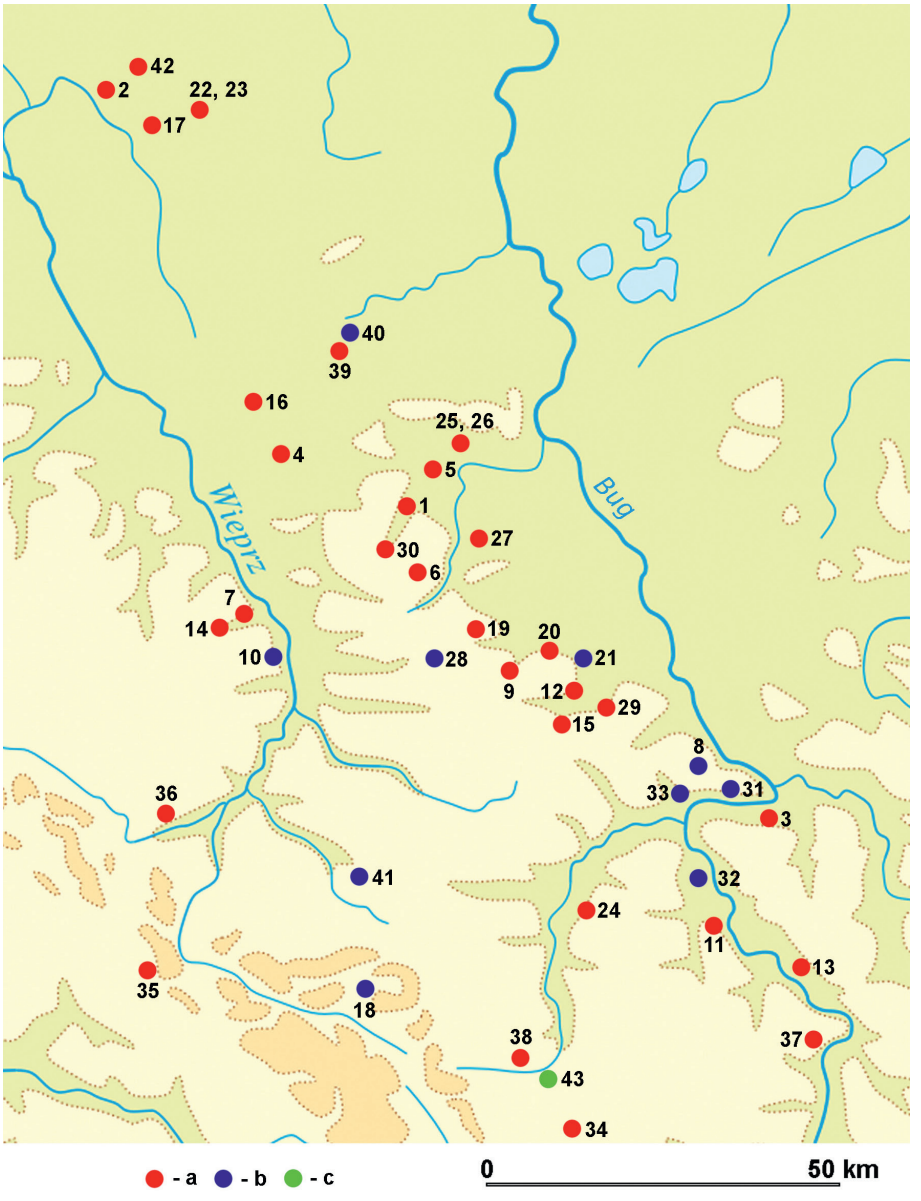
In the last four decades, the state of research into local GAC sites has greatly improved. Today, we know of 42 grave sites – 32 graves with stone cist and 10 graves without any stone structure (i.e. pit graves) – and a single, partially explored, settlement site. Since the mid-1960s, therefore, when there were known 22 GAC sites in total [Nosek 1967: 199–213, 241–247], the source pool has doubled. Most newly discovered features have been exhaustively published [Ścibior 1986; Ścibior *et al.* 1991; Gołub 1996; Panasiewicz 1996; Bagińska, Taras 1997; Zakościelna 2000; Bronicki 2000; 2007; 2010; Błędowska, Gałan 2006], with the publications being enhanced by specialist expert opinions in many instances. Some graves have been processed anew [Gołub 1996a; Polańska 2016]. All sepulchral features have found their way into the latest publication on the funerary rite of GAC communities on the Lublin Upland [Bronicki 2016a][1]. Since the mid-1990s radiocarbon age determinations have been made.

HISTORY OF RESEARCH

The East Lublin subgroup was distinguished in the 1950s by Stefan Nosek. The chief distinguishing trait was the presence of cist graves built of large monolithic stone slabs and resembling tombs built by GAC populations in Podolia and Volhynia. Nosek claimed that the compact range of such structures extended between the middle Bug and Wieprz rivers [Nosek 1954-1955: 124].

Tadeusz Wiślański, accepting the distinguishing of the East Lublin subgroup (it is to him that we owe the introduction of this designation to academic circulation) and listing its peculiar traits, drew attention to the flint raw-material used for making axes (other than striped flint) and the more frequent occurrence of arc impressions in pottery ornamentation in comparison to that practised in the Małopolska group (in which he included the 'Puławy-Garwolin complex', or the West Lublin group according to Nosek). He specified its territorial range as covering 'eastern Lublin province: from the Radzyń district to Tomaszów district' [Wiślański 1966: 89].

[1] A few years later, a monograph of the GAC East Lublin subgroup was published [Bronicki 2021].



F i g . 1. Location of Globular Amphora graves in the East Lublin region. Based on a map of Gabrysiak 2004. Key: a – cist grave; b – pit grave; c – settlement. Prep. by A. Bronicki, G. Zabłocki

List of sites: 1. Bezek, site 5; 2. Branica Suchowolska, site 1; 3. Khotiachiv (Ukraine); 4. Cyców, site 14; 5. Czułczyce-Kolonia, site 6; 6. Depułtycze Nowe-Kolonia, site 12; 7. Dobryniów-Kolonia, site 15; 8. Husynne-Kolonia, site 6; 9. Huta, site 2; 10. Krasnystaw, site 8; 11. Kryłów, site 2; 12. Kułakowice Trzecie, site 45; 13. Litovizh (Ukraine); 14. Łopiennik Dolny-Kolonia, site 1; 15. Miedniki, site 2; 16. Nadrybie – Dwór, site 3; 17. Okalew, site 1; 18. Partyzantów-Kolonia, site 9; 19. Poniatówka, site 1; 20. Putnowice-Kolonia, site 4; 21. Raciborowice-Kolonia, site 2; 22. Rudno, site 1; 23. Rudno, site 2; 24. Sahryń, site 1; 25. Sajczyce, site 18; 26. Sajczyce, site 66; 27. Srebrzyszcze, site 23; 28. Stadarnia, site 2; 29. Stefankowice-Kolonia, site 33; 30. Stołpie, site 5; 31. Strzyżów, site 6; 32. Ślipcze, site 14; 33. Świerszczów, site 5; 34. Tarnoszyn, site 42; 35. Tereszpol, site 11; 36. Tworyczów, site 43; 37. Ulvivok (Ukraine); 38. Wola Gródecka, site 2; 39. Wytyczno, site 2; 40. Wytyczno, site 4; 41. Zamość, site 4; 42. Zbulitów Mały, site 7; 43. Podlodów, site 2

Another researcher who studied the GAC in the Lublin province was Józef Ścibior. In the East Lublin subgroup, he noticed a clear quantitative domination of cist graves over pit ones and distinguished two subtypes of stone grave structures: the first – built of erratic monoliths (sometimes on an elliptical plan, e.g. Stefankowice-Kolonia) and oriented E-W, and the second – built of broken slabs of sandstone in most cases (on a rectangular, square or high trapezium plan) and oriented N-S. He defined the geographical range of the subgroup as the area 'between the Wieprz and Bug rivers, and between Roztocze and the Łęczyca-Włodawa Lake District' [Ścibior 1991: 55–56], with the 'Radzyń-Parczew grave complex' (Rudno but Branica Suchowolska, Okalew, Zbulitów Mały no doubt, too) being included in the adjacent Mazowsze-Podlasie group [Ścibior 1986: 119].

The set of eastern (Volhynia-Podolia) cultural components in the East Lublin subgroup, key to its distinction, was described by three archaeologists based in the Lublin province: Józef Ścibior, Andrzej Kokowski and Wiesław Koman in connection with the publication of the newly discovered graves in the Hrubieszów Basin and Zamość [Ścibior *et al*. 1991]. Besides the obvious idea of a stone cist, they drew attention to a 'movable door' in the tomb from Sahryń and above all to pottery traits. In this respect, the researchers noticed that the admixture of grog added to potting clay was practically missing in other local GAC groups in Poland. More Volhynia-Podolia traits, however, were found in pottery ornamentation. They included above all the custom of inlaying impressed ornaments with a white chalk paste, application of elaborate triangle motifs ('chevrons') as well as loops, broken lines, vertical stanchions and cord impressions. A frequent motif was one consisting of the impressions of small arc stamps, forming a 'fish scale' ornament. The traits of the eastern GAC group were observable in the morphology of many vessels, too. These were slightly different proportions of amphorae, vases or bowls when compared with the containers of the Polish group. Differences were also found in vessel micromorphology as exemplified by the shape of some amphora handles. Furthermore, it was found that among axes and other flint goods, Volhynia flint was more prevalent than, for instance, striped flint [Ścibior *et al.* 1991: 100-102].

Recently, the funerary rite of the East Lublin subgroup was described in a comprehensive publication on GAC funerary rites on the Lublin Upland [Bronicki 2016a: 45–256].

Practically all researchers concurred that the east of the Lublin province was a transitional area, displaying both occidental and oriental characteristics [e.g. Sveshnikov 1983: 10; Szmyt 1999: 50–51]. According to Marzena Szmyt, its western limit would be the line joining Sahryń and Łopiennik Dolny-Kolonia (the range of Podolia type graves), while its eastern limit cannot be determined due to the state of research along the Volhynia borderline [Szmyt 1999: 44, 49].

ABSOLUTE DATING: THE FIRST ATTEMPT AT PERIODIZATION

Initially, the question of the chronology of the East Lublin subgroup was raised while discussing new grave discoveries [Ścibior 1986: 119; Ścibior *et al.* 1991: 104–105; Bronicki 2000: 190–191; 2007: 200, 211; 2010: 150]. The discussions were rather general in nature especially as in most cases no radiocarbon dates were available (one exception being the determinations of samples from Czułczyce-Kolonia) [Borowska *et al.* 2000]. With time, however, the situation began to improve, favouring detailed studies.

Since 1996, 13 radiocarbon determinations have been made for nine features (Table 1)[2]. One determination was obtained for a settlement pit (Podlodów), while of the others six were obtained for cist graves (Depułtycze Nowe-Kolonia, Sajczyce, Łopiennik Dolny-Kolonia, Serebryszcze and Czułczyce-Kolonia) and three for pit ones (Raciborowice-Kolonia, Świerszczów, Krasnystaw).

The first absolute dates were procured and published in connection with the programme of research into the GAC eastern group, coordinated by the Adam Mickiewicz University, Poznań, Poland [Kadrow, Szmyt 1996; Szmyt 1999: 271]. In the Kiev Laboratory, next to a series of ^{14}C determinations for eastern group features, dates were obtained for three grave features excavated in the east of the Lublin province: in Świerszczów, Krasnystaw and Łopiennik Dolny-Kolonia and for a settlement pit from Podlodów. Another three determinations were made while processing newly discovered cist structures by archaeologists from the Chełm Museum [Bronicki 2000; 2007; 2010]. These were tombs located at Czułczyce-Kolonia,[3] Depułtycze Nowe Kolonia and Sajczyce.[4] It was possible now to compare a larger number of 'East Lublin' dates with 'Volhynia-Podolia' and 'Nałęczów' ones. Such an attempt was made in connection with the publication of flints from GAC graves in the Chełm Land [Bronicki 2011: 20–22; 2016: 348–351]. The author of the publication proposed to distinguish two time phases divided at 2700 BC by (1) relying on the age determinations of the oldest sojourn traces of GAC communities in the west of the Lublin province [Szmyt 1996: 224; 1999: 271], (2) as well as in Volhynia and Podolia [Szmyt 1999: 68, 203], (3) taking into account radiocarbon dates obtained for 'East Lublin' graves, and (4) considering some grave goods (showing 'eastern' and 'western' traits). The dividing line of 2700 BC represented a threshold in the intensity of contacts between the

[2] After the article was submitted to print, a grave in Tarnoszyn was radiocarbon dated [Bronicki 2021: 186]. This fact could not be taken into account in this study.

[3] The dating was performed in the Kiev Laboratory and was financed with funds at the disposal of Prof. Janusz Czebreszuk, Ph. D. of the then Institute of Prehistory, Adam Mickiewicz University, Poznań, Poland.

[4] Another two dates were produced in the Oxford Laboratory courtesy of Professor Elke Kaiser, Ph.D., of the Institute of Prehistoric Archaeology, Freie Universität Berlin.

Table 1

Radiocarbon age determinations of graves related to the Globular Amphora culture, East Lublin subgroup. Calibration in OxCal v4.3.2 [Bronk Ramsey 2017], IntCal13 calibration curve [Reimer *et al*. 2013]

No.	Site	Feature	Lab. no.	^{14}C BP	cal BC	
					95,4 %	68,2 %
1	Raciborowice-Kolonia, site 2	pit grave	Poz-58109	4335±35	**3081-2891** 3081-3069 (2,2 %) 3026-2891 (93,2 %)	**3010-2902** 3010-2978 (24,7 %) 2960-2951 (5,9 %) 2942-2902 (37,6 %)
2	Świerszczów, site 27	pit grave	Kiev-5433	4170±35	**2885-2631** 2885-2831 (20,3 %) 2821-2631 (75,1 %)	**2876-2694** 2876-2851 (13,0 %) 2812-2742 (37,6 %) 2728-2694 (17,6 %)
3	Podlodów, site 2	settlement pit	Kiev-6545	4160±45	**2885-2620** (95,4 %)	**2872-2678** 2872-2840 (12,8 %) 2813-2678 (55,4 %)
4	Depułtycze Nowe-Kolonia, site 12	cist grave	OxA-23438	4136±28	**2873-2620** (95,4 %)	**2861-2634** 2861-2832 (13,9 %) 2820-2808 (5,4 %) 2757-2718 (18,4 %) 2706-2658 (22,7 %) 2652-2634 (7,8 %)
5	Krasnystaw, site 8	pit grave	Kiev-5841	4120±30	**2866-2579** 2866-2804 (25,1 %) 2777-2579 (70,3 %)	**2856-2624** 2856-2811 (21,3 %) 2747-2724 (10,2 %) 2698-2624 (36,7%)
6	Sajczyce, site 66	cist grave	OxA-23437	4115±28	**2865-2577** 2865-2804 (25,1 %) 2762-2577 (70,3 %)	**2853-2620** 2853-2812 (20,7 %) 2744-2726 (7,9 %) 2696-2620 (39,6 %)

No.	Site	Feature		Lab. no.		^{14}C BP	cal BC	
							95,4 %	68,2 %
7	Łopiennik Dolny-Kolonia, site 1	cist grave		Poz-58148		4110±30	**2865-2574** 2865-2804 (24,1 %) 2762-2574 (74,3 %)	**2850-2586** 2850-2813 (18,5 %) 2742-2729 (5,0 %) 2694-2618 (37,6 %) 2600-2598 (3,7 %) 2594-2586 (3,3 %)
8				Kiev-5434		4010±30	**2617-2468** 2617-2611 (0,9 %) 2581-2468 (94,5 %)	**2569-2486** 2569-2515 (54,1 %) 2501-2486 (14,1 %)
9	Serebryszcze, site 23	cist grave		Poz-61738		4045±35	**2836-2473** 2836-2816 (4,4 %) 2670-2473 (91,0 %)	**2620-2491** 2620-2558 (36,8 %) 2536-2491 (31,4 %)
10	Czułczyce-Kolonia, site 6	cist grave	chamber N	individual W	Kiev-7831	4035±90	**2877-2342** (95,4 %)	**2851-2466** 2851-2812 (7,7 %) 2742-2728 (2,2 %) 2694-2466 (58,3 %)
11				individual E	Kiev-7830	4020±90	**2872-2300** 2872-2333 (93,6 %) 2325-2300 (1,8 %)	**2851-2458** 2851-2812 (6,7 %) 2742-2728 (2,0 %) 2694-2458 (59,4 %)
12			chamber S	individual E	Poz-61739	3995±35	**2619-2459** 2619-2607 (1,2 %) 2599-2594 (0,4 %) 2586-2459 (93,6 %)	**2566-2474** 2566-2522 (45,3 %) 2497-2474 (22,9 %)
13				individual W	Kiev-7829	3940±85	**2838-2147** 2838-2815 (1,2 %) 2673-2196 (93,2 %) 2171-2147 (1,0 %)	**2568-2299** 2568-2519 (12,5 %) 2498-2299 (55,7 %)

Polish and eastern groups [Szmyt 1999: 305]. The older phase, therefore, would have relatively more western traces (presence of a clay drum, pit graves), while the younger phase would witness a domination of eastern elements (inlaying, ornamentation on vessels, cist graves).

The latest radiocarbon tests have been done as part of a project financed with the grant from the National Science Centre *Decline of the Neolithic in the North of the Lublin Upland,* headed by Prof. Piotr Włodarczak, Ph.D., of the Institute of Archaeology and Ethnology, Polish Academy of Sciences. In the Poznań Radiocarbon Laboratory samples from another two graves were examined (Raciborowice Kolonia and Srebrzyszcze) and a dating procedure was repeated for graves discovered in Łopiennik Dolny-Kolonia and Czułczyce-Kolonia. In the former case, there was a hundred-year discrepancy between Poznań and Kiev results, while in the latter we can speak of complete concurrence. The results of age determinations of graves (and of the utility pit) from the east of the Lublin province, in the context of other findings concerning the GAC, Corded Ware culture and Early Bronze Age units, have been discussed in detail in 2016 [Włodarczak 2016].

INTERPRETATION OF RADIOCARBON DATA: A PROPOSAL FOR A NEW PERIODIZATION

The shape of the calibration curve for the first half of the 3rd millennium BC is exceptionally troublesome due to plateaus and peaks, which makes it difficult or even impossible to reach necessary time precision during calibration. In the case at hand, at a probability of 68.2% only two dates fit into intervals of less than 100 years. One was obtained for a grave in Łopiennik Dolny-Kolonia (83 years) and the other for a grave in Czułczyce-Kolonia (92 years). The two least precise determinations (both from Czułczyce-Kolonia) fit into intervals of 393 and 385 years. In the other cases, these are 'medium' values – from 108 to 269 years (Raciborowice-Kolonia, Serebryszcze, Świerszczów, Podlodów, Krasnystaw, Sajczyce, Łopiennik Dolny-Kolonia and Czułczyce-Kolonia). At a probability of 94.5%, the intervals are still longer: from 149 years (Łopiennik Dolny-Kolonia) to 691 years (Czułczyce-Kolonia). The most precise dates include one determined in the Kiev Laboratory (Łopiennik Dolny-Kolonia) and one in the Poznań Laboratory (Czułczyce-Kolonia). The two least precise dates were determined in Kiev (Czułczyce-Kolonia). The age of samples that reached 'medium' values was determined in Kiev (Świerszczów, Podlodów, Krasnystaw, Czułczyce-Kolonia), Oxford (Sajczyce, Depułtycze Nowe-Kolonia) and Poznań (Raciborowice-Kolonia, Łopiennik Dolny-Kolonia).

Altogether, for the East Lublin subgroup, there are available 13 radiocarbon determinations (Table 1; Figs. 2 and 3). Of them, nine were obtained for cist

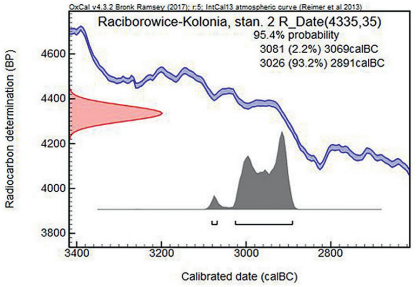
graves (Depułtycze Nowe-Kolonia, site 12; Sajczyce, site 66; Łopiennik Dolny-Kolonia, site 1; Srebrzyszcze, site 23; Czułczyce-Kolonia, site 6), three – for pit graves (Raciborowice-Kolonia, site 2; Świerszczów, site 27; Krasnystaw, site 8) and only one – for a settlement feature (pit from Podlodów, site 2). The dates were calibrated using the OxCal v4.3.2 software [Bronk Ramsey 2017] and the IntCal13 calibration curve [Reimer *et al.* 2013].

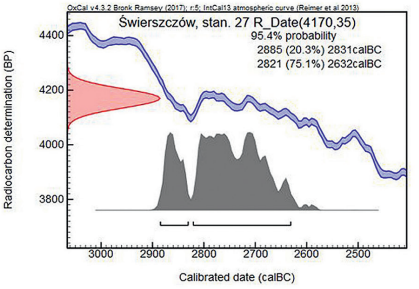
The earliest date comes from the pit grave in Raciborowice-Kolonia. The feature cannot be older than 3081 BC (at a probability of 95.4%) or 3010 BC (at a probability of 68.2%). Whereas, the youngest grave is the double-chambered structure from Czułczyce-Kolonia, built prior to 2147 BC (95.4%) or 2299 BC (68.2%). Hence, the arithmetic difference between the age of the oldest and the youngest grave is 934 or 711 years (Table 1).

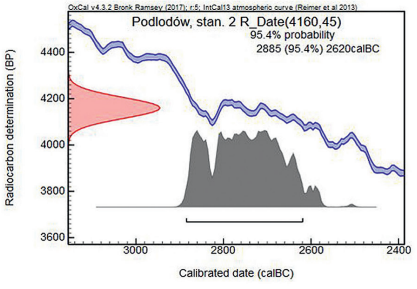
In a diagram (Fig. 4), all calibrated dates form three successive sequences [Bronicki 2019].

The first and oldest (I) is represented by a single pit grave from Raciborowice-Kolonia: Poz-58109 4335±35 BP, 3081–2891 BC (at a probability of 95.4%), 3010–2902 BC (at a probability of 68.2%). While the dating of this feature differs quite significantly from the sequence of the other 'East Lublin' dates, it is entirely coincidental with the determination for the oldest grave from the Nałęczów Plateau: Klementowice, Cemetery IV (D), Grave 7 – KN-1255 4300±40 BP and GrN-5046 4175±30 BP (after calibration both values mark the same time interval: 3023–2876 BC at a probability of 95.4% and 3006–2882 BC at a probability of 68.2%). The Raciborowice determination slightly precedes two successive almost identical dates from other features from the Nałęczów Plateau: Klementowice, Cemetery I (= A), Grave 1 – Poz-61735 4235±35 BP, 2914–2696 BC (95.4%) and 2904–2764 BC (68.2%) and Parchatka, Cemetery A – Poz-61733 4230±35 BP, 2912–2694 BC (95.4%) and 2901–2762 BC (68.2%).

The beginnings of GAC settlement in the Lublin province are no doubt older than the earlier date from Klementowice. In the opinion of Marzena Szmyt, the period to be considered is ca 3250/3100 BC, which corresponds to the beginning of Phase IIb in Kujawy [Szmyt 1996: 224]. Piotr Włodarczak, in turn, relying on a much larger sequence of dates, suggests that the oldest GAC graves appeared in the Lublin province slightly later: 3000–2900 BC or 3050/2950 BC [Włodarczak 2016: 541, 545]. The grave from Raciborowice-Kolonia (next to the Klementowice feature) would mark this very time horizon. The first (I) phase of settlement by GAC populations in the east of the Lublin province would fall, therefore, on 3000/2950–2900/2850 BC, while the rise of the eastern (Volhynia-Podolia) group is witnessed since ca 3000/2950 BC [Szmyt 1999: 68, 203; 2001: 172], which would make it coincident with Phase I of GAC settlement. Making a quite obvious assumption that the East Lublin subgroup was a syncretic taxonomic unit (Polish-eastern), it must be concluded that its beginning came later than the rise of the eastern group.


OxCal v4.3.2 Bronk Ramsey (2017); r:5; IntCal13 atmospheric curve (Reimer et al 2013)
Raciborowice-Kolonia, stan. 2 R_Date(4335,35)
95.4% probability
3081 (2.2%) 3069calBC
3026 (93.2%) 2891calBC
Radiocarbon determination (BP)
Calibrated date (calBC)


OxCal v4.3.2 Bronk Ramsey (2017); r:5; IntCal13 atmospheric curve (Reimer et al 2013)
Świerszczów, stan. 27 R_Date(4170,35)
95.4% probability
2885 (20.3%) 2831calBC
2821 (75.1%) 2632calBC
Radiocarbon determination (BP)
Calibrated date (calBC)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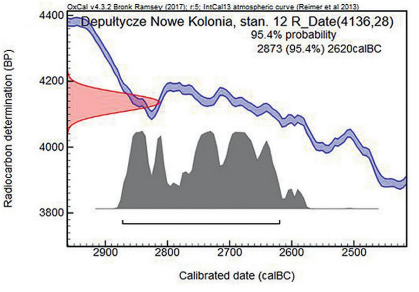
Podlodów, stan. 2 R_Date(4160,45)
95.4% probability
2885 (95.4%) 2620calBC
Radiocarbon determination (BP)
Calibrated date (calBC)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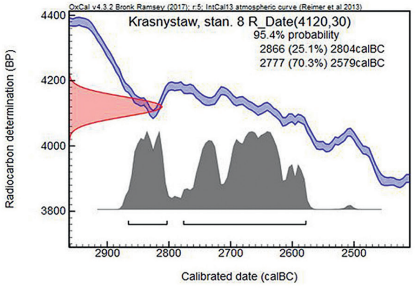
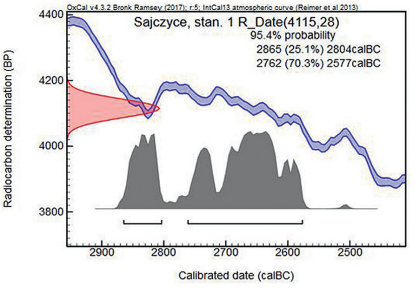
Depultycze Nowe Kolonia, stan. 12 R_Date(4136,28)
95.4% probability
2873 (95.4%) 2620calBC
Radiocarbon determination (BP)
Calibrated date (calBC)


OxCal v4.3.2 Bronk Ramsey (2017); r:5; IntCal13 atmospheric curve (Reimer et al 2013)
Krasnystaw, stan. 8 R_Date(4120,30)
95.4% probability
2866 (25.1%) 2804calBC
2777 (70.3%) 2579calBC
Radiocarbon determination (BP)
Calibrated date (calBC)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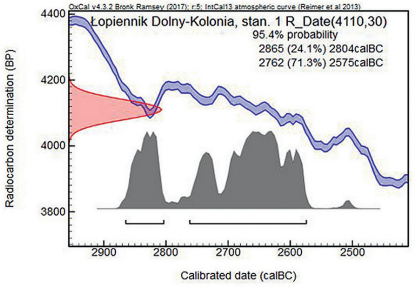
Sajczyce, stan. 1 R_Date(4115,28)
95.4% probability
2865 (25.1%) 2804calBC
2762 (70.3%) 2577calBC
Radiocarbon determination (BP)
Calibrated date (calBC)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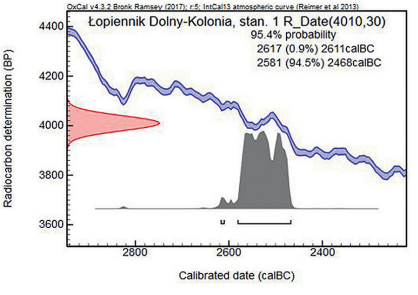
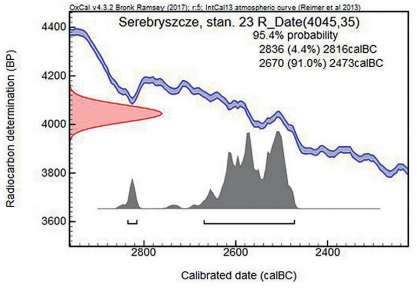
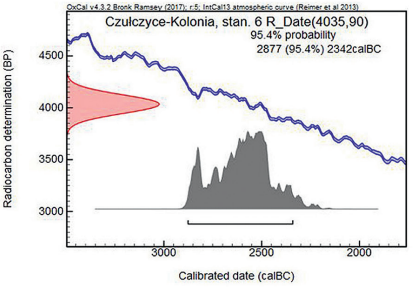
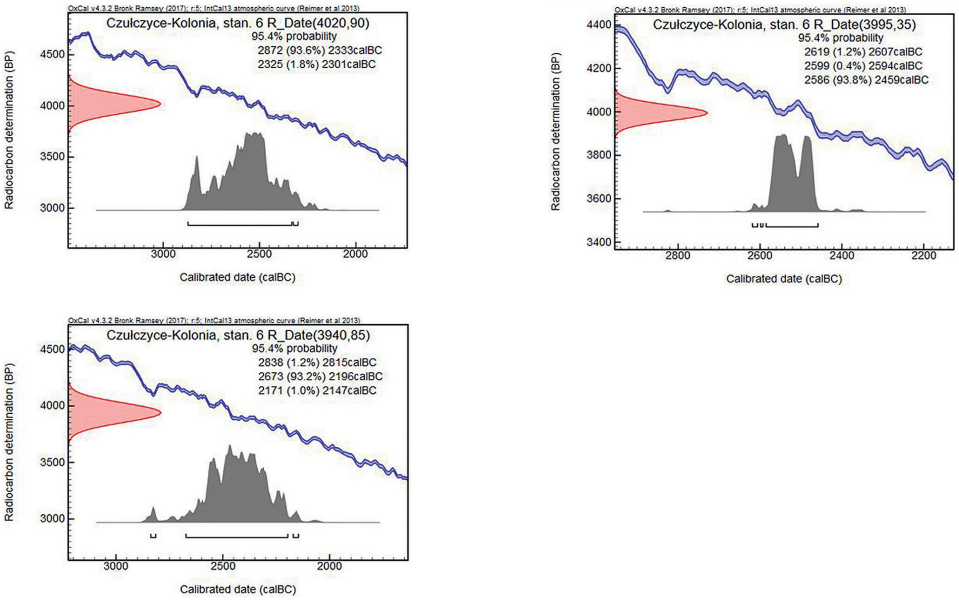
Łopiennik Dolny-Kolonia, stan. 1 R_Date(4110,30)
95.4% probability
2865 (24.1%) 2804calBC
2762 (71.3%) 2575calBC
Radiocarbon determination (BP)
Calibrated date (calBC)


OxCal v4.3.2 Bronk Ramsey (2017); r:5; IntCal13 atmospheric curve (Reimer et al 2013)
Łopiennik Dolny-Kolonia, stan. 1 R_Date(4010,30)
95.4% probability
2617 (0.9%) 2611calBC
2581 (94.5%) 2468calBC
Radiocarbon determination (BP)
Calibrated date (calBC)


OxCal v4.3.2 Bronk Ramsey (2017); r:5; IntCal13 atmospheric curve (Reimer et al 2013)
Serebryszcze, stan. 23 R_Date(4045,35)
95.4% probability
2836 (4.4%) 2816calBC
2670 (91.0%) 2473calBC
Radiocarbon determination (BP)
Calibrated date (calBC)


OxCal v4.3.2 Bronk Ramsey (2017); r:5; IntCal13 atmospheric curve (Reimer et al 2013)
Czulczyce-Kolonia, stan. 6 R_Date(4035,90)
95.4% probability
2877 (95.4%) 2342calBC
Radiocarbon determination (BP)
Calibrated date (calBC)

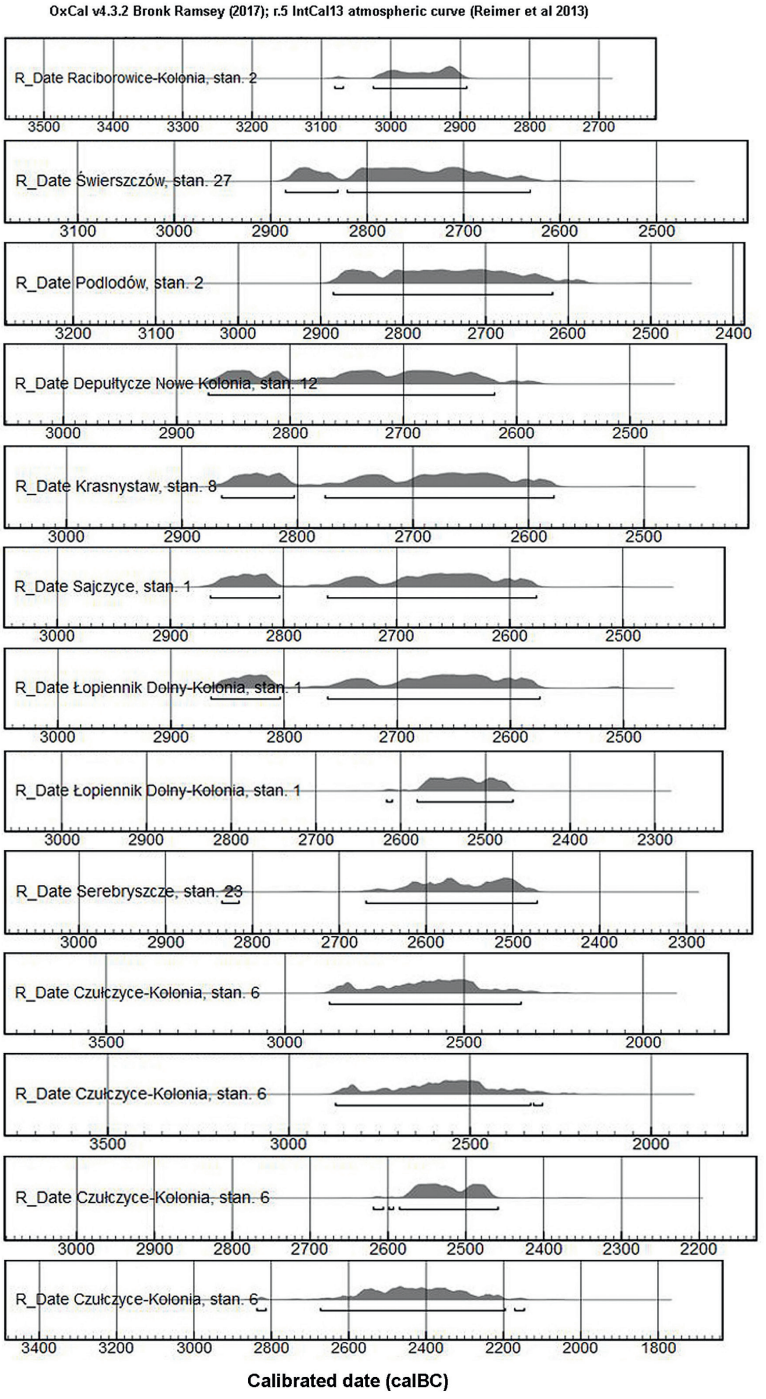


F i g . 2. Radiocarbon age determinations of graves related to the Globular Amphora culture, East Lublin subgroup. Calibration in OxCal v4.3.2 [Bronk Ramsey 2017], IntCal13 calibration curve [Reimer *et al.* 2013]

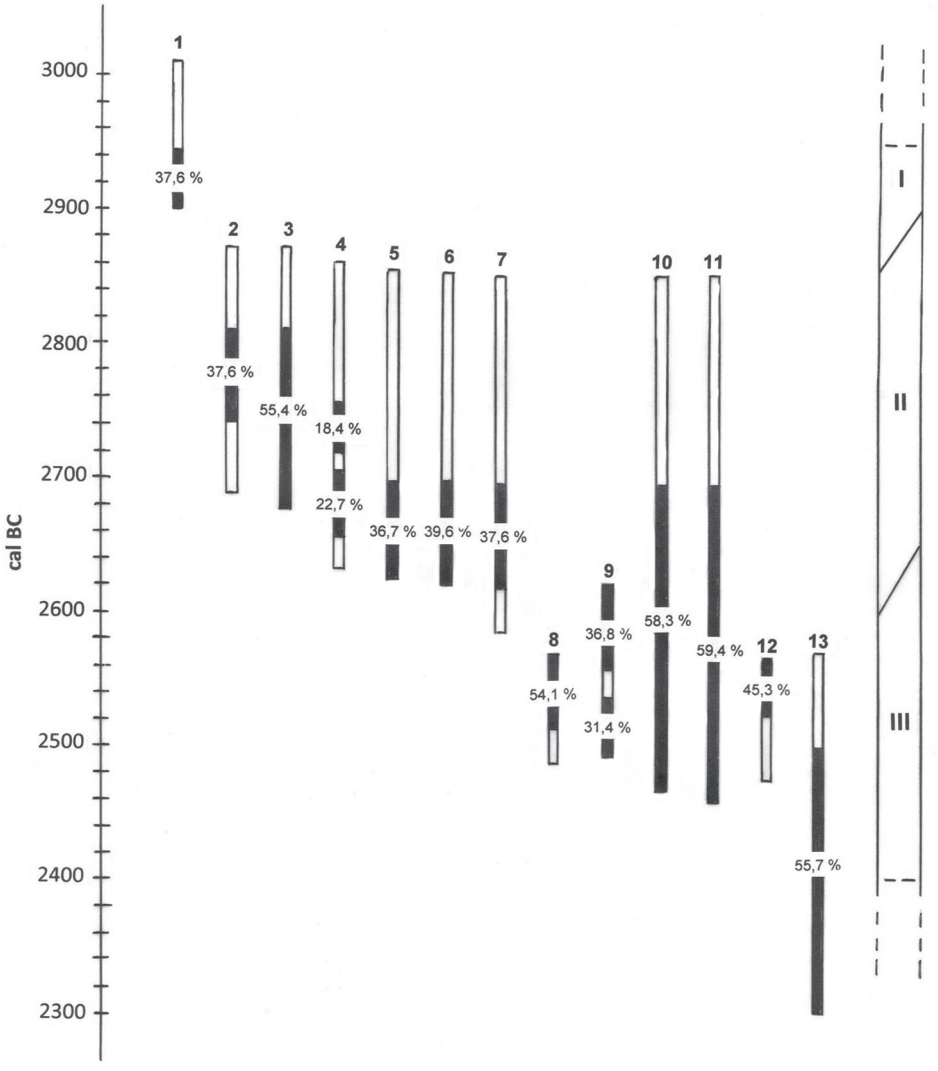
Therefore, the Raciborowice-Kolonia grave would represent a stage preceding the rise of a definite East Lublin subgroup when lands in Volhynia were being occupied by GAC communities arriving from the Polish lands. Another possibility is that the east of the Lublin province was the native land of the eastern group (next to the lands across the Bug river), while the East Lublin subgroup was a territorial variety of the Volhynia-Podolia (and not Polish) group.[5] In such a case, 'eastern' elements would be equally local on the western and eastern sides of the Bug River. Finally, the third possible interpretation maintains that the dating of the beginning of GAC settlement in Volhynia adopted now should be made slightly younger. An argument in its favour is offered by the oldest known dates for the eastern group from the Tovpyzhyn site – Kiev-5011 4310±45 BP and Kiev-5010 4270±50 BP [Szmyt 1999: 268] – that after calibration fit into the interval of 3086–2876 BC (95.4%) or 3010–2887 BC (68.2%). This, in turn, justifies moving the beginnings of the eastern group to ca 2900 BC.

Between sequence I and sequence II, there is a small chronological gap of perhaps at least 26 years (at a probability of 68.2%). This, however, has little impact on the GAC periodization in the east of the Lublin province.

[5] In the division into geographic regions, lands occupied by the GAC East Lublin subgroup are for the most part considered as belonging to eastern Europe (Polissya, Volhynia-Podolia Upland, East Roztocze).



F i g . 3. Radiocarbon age determinations of graves related to the Globular Amphora culture, East Lublin subgroup. Calibration in OxCal v4.3.2 [Bronk Ramsey 2017], IntCal13 calibration curve [Reimer *et al.* 2013]



F i g . 4. Radiocarbon chronology of graves related to the Globular Amphora culture, East Lublin subgroup, with a periodization. Calibration in OxCal v4.3.2 [Bronk Ramsey 2017], IntCal13 calibration curve [Reimer *et al.* 2013]. Time intervals of the highest probability of 62.8% are marked in black; date numbering corresponds to item numbering in Table 1

The second sequence (II) of dates relates to the already developed East Lublin subgroup and determines the age of five or six graves (including two pit and three or four cist ones) and a single settlement pit. The age fits into the interval of 2885–2575 BC (at a probability of 95.4%) or 2876–2586 BC (at a probability of 68.2%), which corresponds to the older section of Phase IIIa in Kujawy [Szmyt 1996: 75]. One of the newly obtained dates comes from a cist grave in Łopiennik Dolny-Kolonia (Poz-58148 4110±30 BP). This is a second determination for this grave made from identical material (human bones), but giving an age 100 years older than the dating produced in Kiev in the 1990s (Kiev-5434 4010±30 BP). This is a fact of far-reaching consequences because depending on which date is accepted as more credible, the feature from Łopiennik Dolny-Kolonia will be assigned to sequence II or III. This, in turn, may mean that its grave goods may be characteristic of the production of the middle (classic) or late phase. If it were assumed that the younger (Kiev) date is more credible, the lower limit of sequence II would be marked by chronological findings for the Sajczyce tomb: 2577 BC (95.4%) or 2620 BC (68.2%). A quite strong argument that it is actually so is offered by a rich ornament on one of the amphorae – a trait of the late phase. A similar 'baroque' ornament was found on vessels from radiocarbon-dated graves in Czułczyce-Kolonia and Srebrzyszcze assigned to sequence III (late). To conclude, it is most likely now that the second phase of settlement of the east of the Lublin province by GAC populations fell on 2900/2850–2650/2600 BC.

The third (III) time sequence is the least cohesive chronologically. It is marked by six dates related to three cist graves, with the tomb from Łopiennik Dolny-Kolonia being included on a condition only – the acceptance of the Kiev date rather than the Poznań one. Certain interpretation doubts are raised by chronological findings for the Srebrzyszcze feature. At a probability of 95.4%, it is a broad time interval of as many as 363 years (2836–2473 BC) but at a probability of 68.2% the interval shrinks to 'only' 129 years (2620–2491 BC) and fits perfectly into sequence III. Three Kiev dates obtained for the Czułczyce-Kolonia tomb are very imprecise after being calibrated. They have been positively verified in the Poznań Laboratory that successfully dated a fourth sample. The new determination fits into the time intervals described earlier but is far more precise. The following limiting dates have been obtained: 2616–2459 BC (95.4%) and 2566–2474 BC (68.2%). They are coincident with the younger (Kiev) date for Łopiennik Dolny-Kolonia and similar to the date for Srebrzyszcze, calibrated with a probability of 68.2% to 2536–2491 BC.

Interestingly, the latest date for the GAC eastern group comes from a settlement in Peresopnitsa. The dated sample consisted of animal bones found in a settlement pit. Their age was given as Kiev-5075 3910±50 BP [Kadrow, Szmyt 1996: 104, Table 1], i.e. 2564–2209 BC (at a probability of 95.4%) or 2470–2310 BC (at a probability of 68.2%). GAC settlement in the east came to an end about 2400/2350 [Szmyt 1999: 82; 2002: 172]. There is no evidence whatsoever that it continued any longer in the east of the Lublin province. On the contrary, it must have ended prior to 2400 BC.

The end could have been brought about in part by the arrival of Corded Ware culture (CWC) communities as evidenced by two graves in Lublin-Sławinek dated to ca 2450–2300 BC [Włodarczak 2016: 543] and the fact that most 'corded' cemeteries between the Vistula and Bug rivers should be dated to 2500–2300 BC [Jarosz, Włodarczak 2007: 89, Fig. 11]. Thus, the third phase of GAC settlement in the east of the Lublin province coincided with the period from 2650/2600 to ca 2400 BC, corresponding to the younger section of Phase IIIa in Kujawy [Szmyt 1996: 75].

DESCRIPTION OF DEVELOPMENT PHASES

The description of the three phases of the GAC in the east of the Lublin province given below is supplemented with data in Tables 2 and 3.

Phase I (3000/2950–2900/2850 BC)

This is the oldest phase represented by merely one grave (Raciborowice-Kolonia): a pit one, most likely double-chambered with animal remains in the western chamber [Polańska 2016: 17, 20]. Inside, three vessels were found.

1. *Large, bulbous, wide-orifice Kujawy amphora of Type IIA1* [Wiślański 1966: 28–29], bearing a vertical-stanchion and broken-line ornament (Fig. 5A: 1). This vessel type is common in north-western Poland, Mazowsze, Podlasie, Lublin province, Volhynia, Podolia and Romania but rare in Mazury, Bohemia and Germany, while in Silesia it has peculiar traits [Wiślański 1966: 28–29].
2. *Small biconical amphora* with handles on the greatest protrusion of the belly and no ornament (Fig. 5A: 2). It is difficult to find close analogies to this vessel but the most similar one comes from Frygnowo, Mazury [Nosek 1967: 54, Fig. 9: 1].
3. *Deep bowl* with a short cylindrical neck of a type that is intermediate between IVA2 and beaker VIB [Wiślański 1966: 30] ornamented with a row of small conical appliqué knobs (Fig. 5A: 3). Similar vessels (Type IVA2) are known from Western Pomerania and Wielkopolska, while slightly different ones – from Mazury, Lublin province, Bohemia and Saxony [Wiślański 1966: 30]. Type VIB beakers, in turn, occurred in western and northern Wielkopolska and similar ones – in Brandenburg and Vorpommern [Wiślański 1966: 33].

Pit graves match graves with stone structures in terms of number in the area occupied by the western group – between the middle Elbe and Saale rivers, and in Brandenburg, while in Bohemia they clearly dominate [Szmyt 2004: 120]. In the eastern group, we know of only three such features of which one was presumably covered by a barrow. All the others (there are over 100 of them) had stone structures of various kinds inside them [Sveshnikov 1983: 12]. All this suggests that the idea of a pit grave is no doubt of western origin [Wiślański 1966: 87].

Table 2

Co-occurrence of selected cultural traits in radiocarbon dated graves of the Globular Amphora culture, East Lublin subgroup

Traits	Raciborowice--Kolonia	Świerszczów	Podlodów	Depultycze Nowe-Kolonia	Krasnystaw	Sajczyce	Łopiennik Dolny-Kolonia	Srebrzyszcze	Czulczyce--Kolonia
Settlement pit			X						
Pit grave	X	X			X				
Stone cist grave				X		X	X	X	X
Kujawy amphora of Type IIA1 (with short neck)	X	X			X	X			
Kujawy amphora of Type IIA1 (with high neck)							X	X	X
Biconical amphora	X								
Amphora with funnel-shaped neck and long handles								X	
Bowl of Type IVA2/Beaker of Type VIB	X								
Appliqué conical knobs	X								
Globular amphora of Type IA1 (with short neck)		X							
Globular amphora of Type IA1 (with high neck)								X	X
Amphora of Type IA1/IA3		X							
Ovoid-belly amphora of Type IA2			X		X				
Small amphora of Type IB3							X		
Barrel-shaped vessel of Type VIIIB3					X				
Bowl of Type IVA2								X	
Bowl of Type IVA3		X							
Vase of Type VB1		X	X						
Vase of Type VB3					X				
Vase-goblet (beaker) of Type VIA1							X		

Traits	Raciborowice--Kolonia		Świerszczów	Podlodów	Depultycze Nowe-Kolonia	Krasnystaw	Sajczyce		Łopiennik Dolny-Kolonia	Srebrzyszcze	Czulczyce--Kolonia
Clay drum of Type IX											
Pot of Type VIIIB2				X							
Cord ornamentation			X	X		X	X				
Ornamentation of arc impressions (fish scale)									X	X	X
Ornamentation of broken line, herringbone			X	X		X	X		X		X
White paste inlays							XX		X		X
Chevron ornamentation									X	X	X
Slender flint axe with wide butt			X								
Slender flint axe with narrow butt											
Chunky flint axe with flat butt											X
Flint axe with a rounded butt										X	
Flint chisel									X		
Mediolithic blade					X						
Small blades			X				X				
Flakes							X			X	X
Boar's tusk					X				X		
Tubular amber beads			X		X		X				X
Knob-shaped amber beads, V-perforated			X		X		X				
Bone chisel											X
Bone point-perforator											X
Bone double-edged point										X	

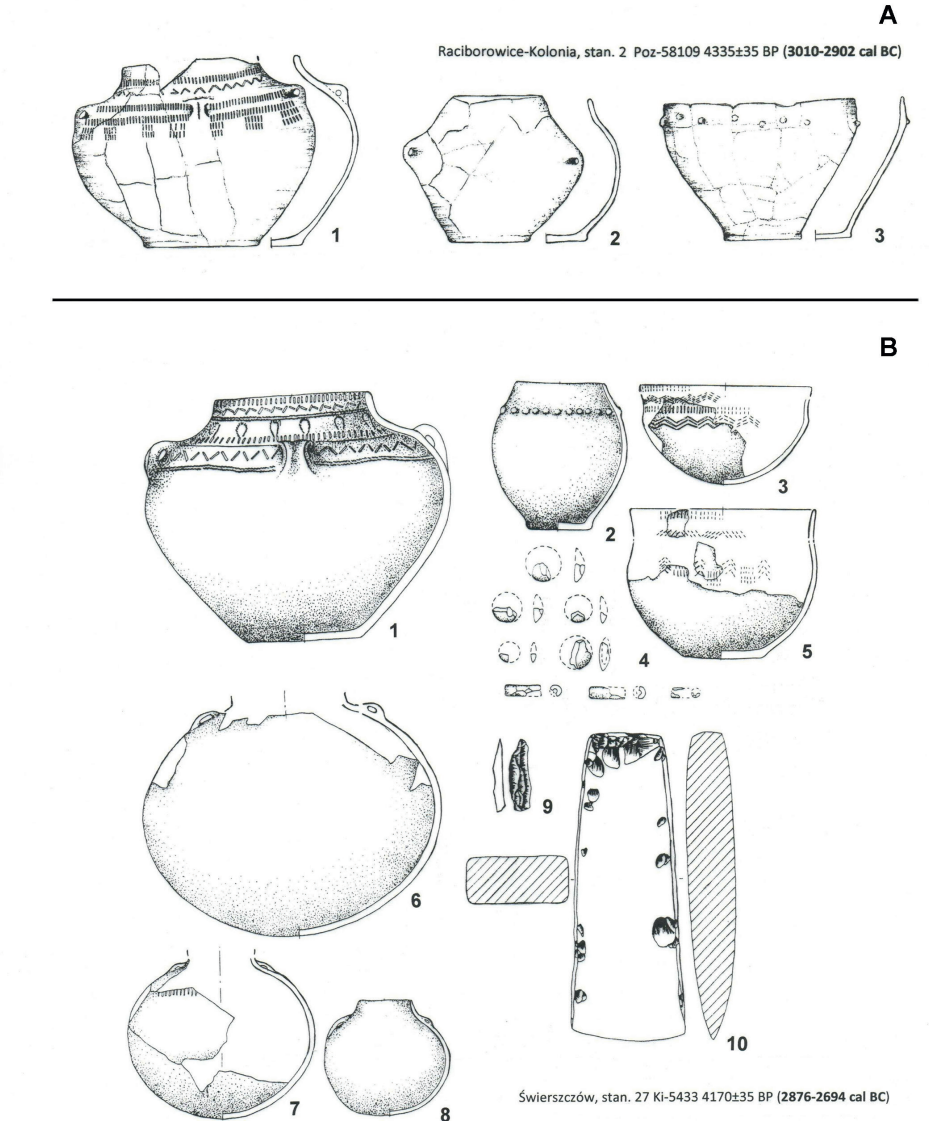
Key: Phase I Phase II Phase III

Table 3

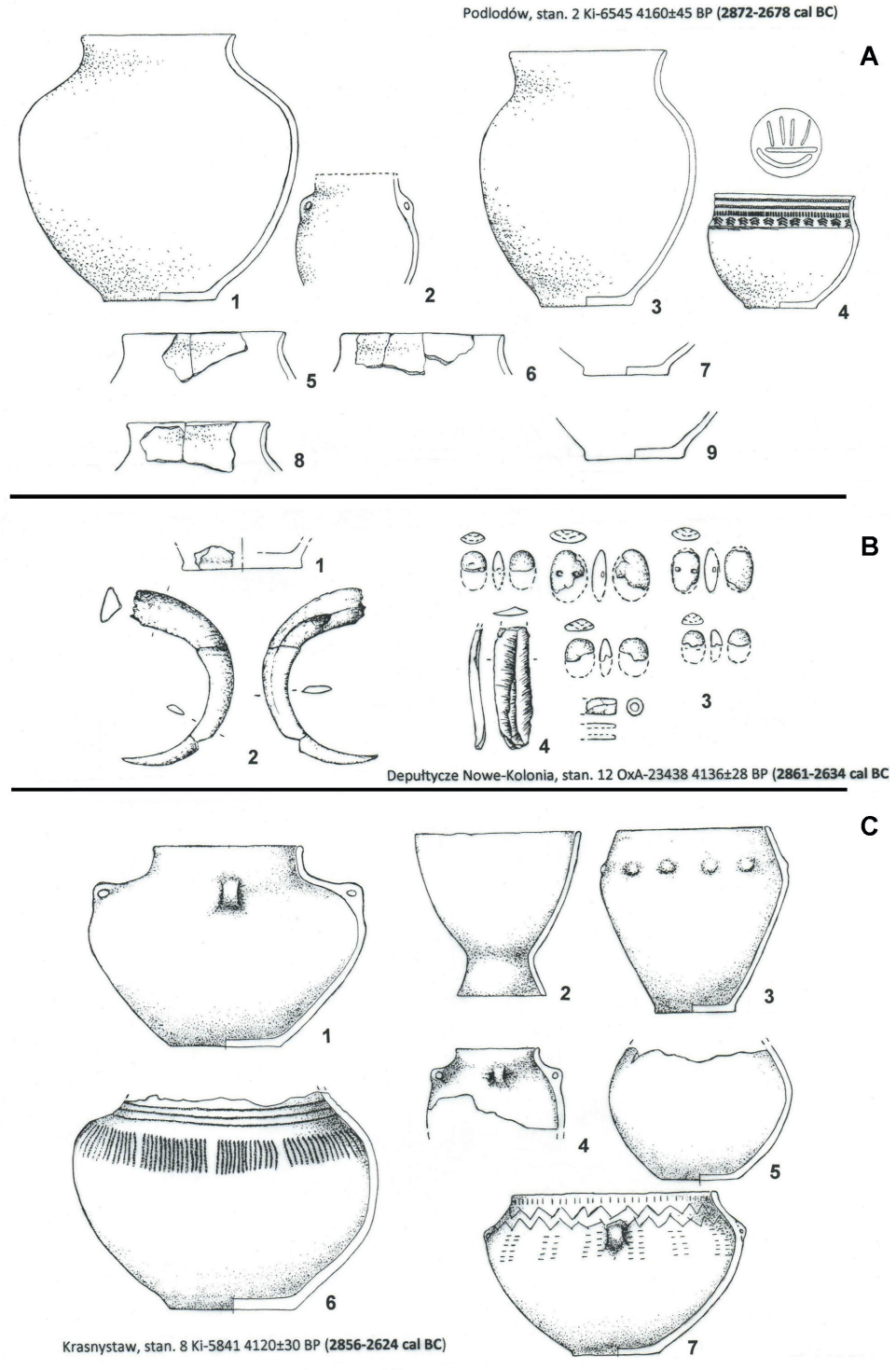
Globular Amphora culture, East Lublin subgroup. Selected cultural traits as markers of three phases. Based on radiocarbon dated graves

Traits	Phase I (3000/2950-2900/2850 BC)	Phase II (2900/2850-2650/2600 BC)	Phase III (2650/2600-ok. 2400 BC)
Biconical amphora			
Bowl of Type IVA2/Beaker of Type VIB			
Pit grave			
Kujawy amphora of Type IIA1 (with short neck)			
Appliqué conical knobs			
Globular amphora of Type IA1 (with short neck)			
Amphora of Type IA1/IA3			
Ovoid-belly amphora of Type IA2			
Barrel-shaped vessel of Type VIIIB3			
Bowl of Type IVA3			
Vase of Type VB1			
Vase of Type VB3			
Clay drum of Type IX			
Pot of Type VIIIB2			
Cord ornamentation			
Slender flint axe with wide butt			
Mediolithic blade			
Small blades			
Flakes			
Knob-shaped amber beads, V-perforated			
Stone cist grave			
White paste inlays			
Boar's tusk			
Tubular amber beads			
Ornamentation of arc impressions (fish scale)			
Ornamentation of broken line, herringbone			
Kujawy amphora of Type IIA1 (with high neck)			
Amphora with funnel-shaped neck and long handles			
Globular amphora of Type IA1 (with high neck)			
Small amphora of Type IB3			
Bowl of Type IVA2			
Vase-goblet (beaker) of Type VIA1			
Chevron ornamentation			
Slender flint axe with narrow butt			
Chunky flint axe with flat butt			
Flint axe with a rounded butt			
Flint chisel			
Bone chisel			
Bone point-perforator			
Bone double-edged point			

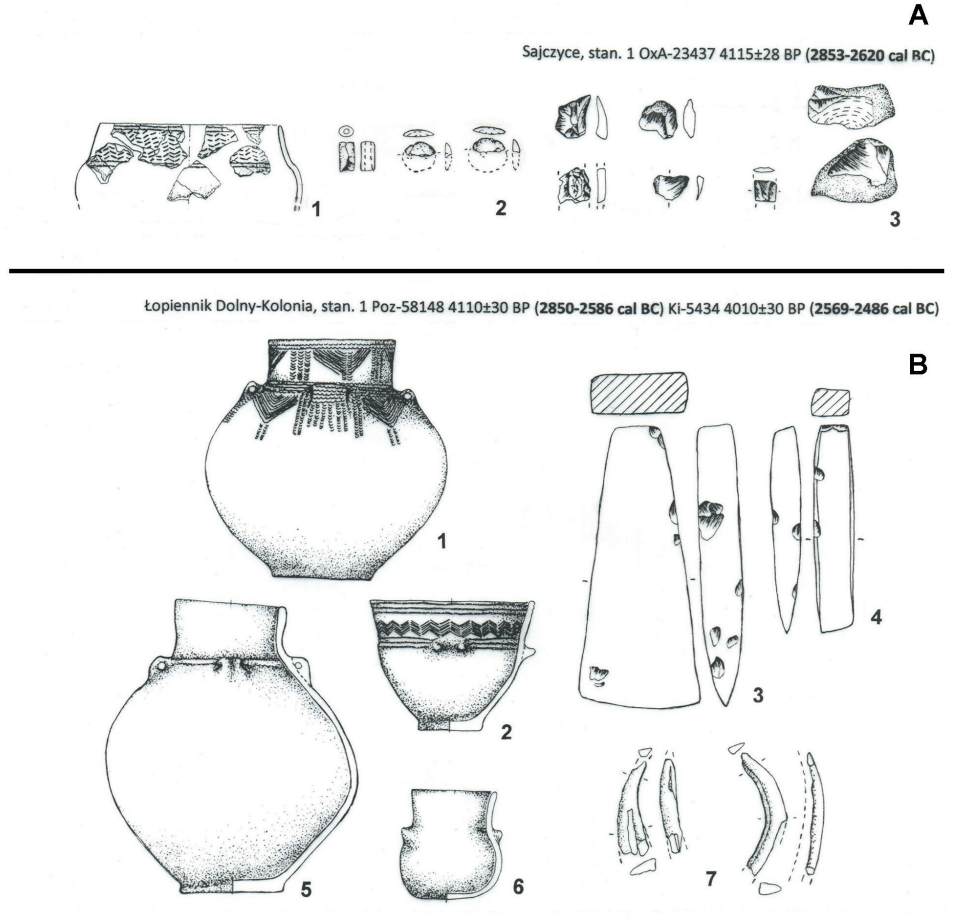
A vessel closely resembling the Type-IIA1 amphora from Raciborowice-Kolonia was found in Świerszczów, in a pit grave, too. It had an ornament of impressed vertical stanchions, broken lines and a cord (Fig. 5B: 1). Another specimen but with no ornament was discovered in a pit grave in Krasnystaw (Fig. 6C: 1). In addition, the same grave held another amphora that due to a missing upper portion could not be typologically classified with certainty. It bore an ornament of cord impressions (Fig. 6C: 6). Both graves have been radiocarbon dated and assigned to Phase II.



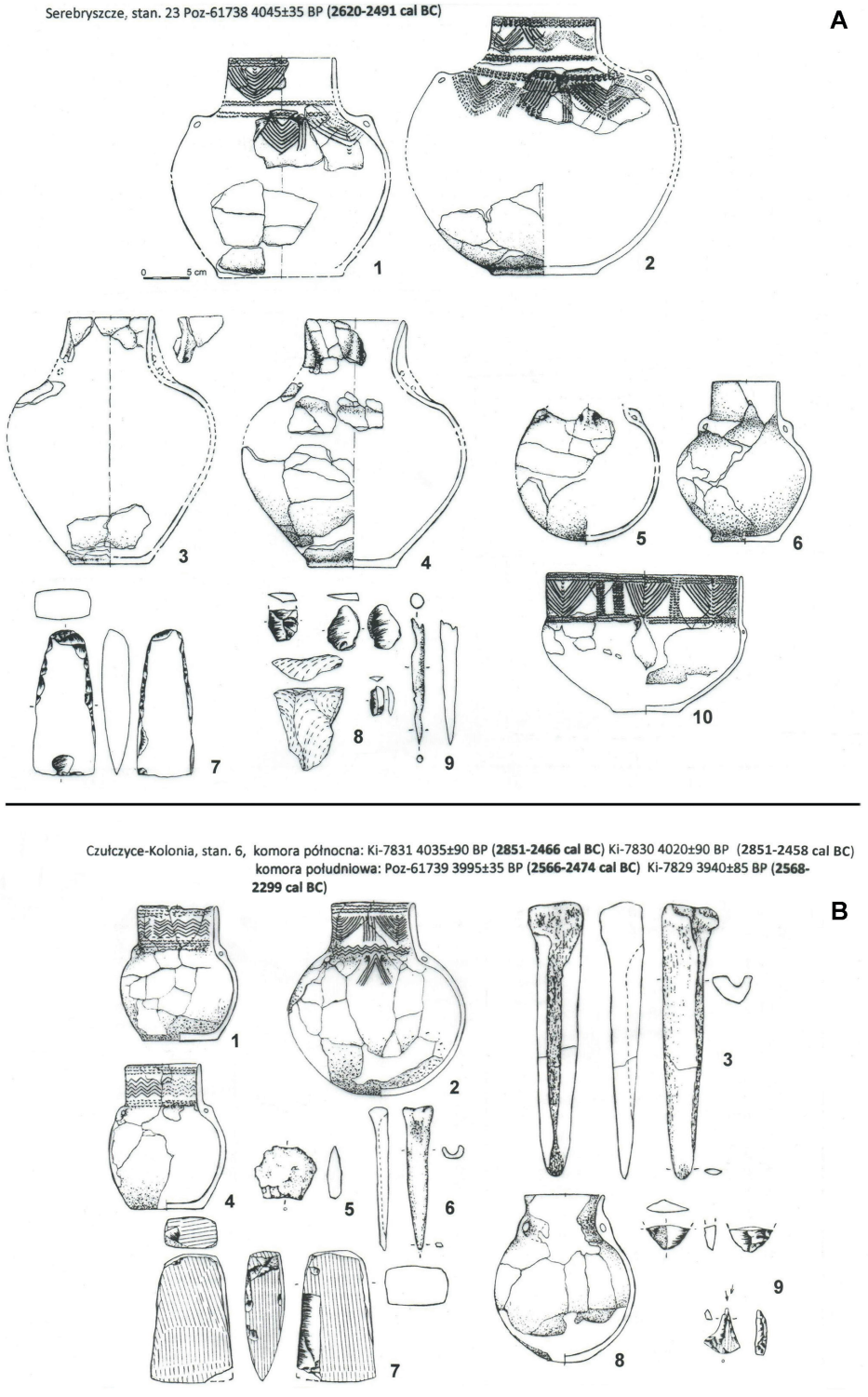
F i g . 5. Radiocarbon-dated complexes related to the Globular Amphora culture, East Lublin subgroup: A – Phase I, Raciborowice-Kolonia, site 2; B – Phase II, Świerszczów, site 5. After Bronicki 2019



F i g . 6. Radiocarbon-dated complexes related to the Globular Amphora culture, East Lublin subgroup. Phase II: A – Podlodów, site 2; B – Depułtycze Nowe-Kolonia, site 12; C – Krasnystaw, site 8. After Bronicki 2019



F i g . 7. Radiocarbon-dated complexes related to the Globular Amphora culture, East Lublin subgroup. A – Phase II, Sajczyce, site 66; B – Phase III, Łopiennik Dolny-Kolonia, site 1. After Bronicki 2019



F i g . 8. Radiocarbon-dated complexes related to the Globular Amphora culture, East Lublin subgroup. Phase III: A – Srebrzyszcze, site 23; B – Czułczyce-Kolonia, site 6. After Bronicki 2019

The grave inventories of the East Lublin subgroup do not include any vessels analogous to the biconical amphora or the Type-IVA2 deep bowl from Raciborowice-Kolonia.

Phase II (2900/2850–2650/2600 BC)

If it is believed that the older date from Łopiennik Dolny-Kolonia (Poz-58148 4110±30 BP) should not decide the chronological classification of the respective feature, Phase II is characterised by finds from four graves: two pit ones (Świerszczów and Krasnystaw) and two cist ones (Depułtycze Nowe-Kolonia and Sajczyce), as well as from one settlement pit (Podlodów).

Cist graves may be evidence of ties joining the east of the Lublin province to the Pontic Area (Black Sea steppes) from where we know of earlier tombs built of stone slabs, dated to the Eneolithic [Szmyt 2014: 120–126]. The east of the Lublin province would be a place (a relay) whence the idea of a cist grave spread to other lands occupied by GAC populations [Kośko, Szmyt 2011: 213–216]. Taking shape at that time, the community of the East Lublin subgroup would thus bury their dead in pit graves (of western origin) and cist ones (being the effect of an eastern or rather south-eastern impact).

Grave goods are varied and typologically diverse. Among vessels, the following forms were identified.

1. *Large bulbous Kujawy amphorae of Type IIA1* [Wiślański 1966: 28–29] with relatively short cylindrical necks. One bears an ornament combining the impressions of a vertical stanchion, broken lines and a cord. The cord impressions are arranged in double lines and oval loops (Świerszczów; Fig. 5B: 1). Another one bears no ornament at all (Krasnystaw; Fig. 6C: 1). Still another, with a lip portion missing (its typological affiliation being thus somewhat uncertain), was in all likelihood decorated solely with a cord ornament (Krasnystaw; Fig. 6C: 6). The shards of yet another (assigned to this typological group on the strength of probability) were decorated with a dense herringbone pattern built of broken lines impressed with a rectangular stamp and supplemented with horizontal lines made with a cord (Sajczyce; Fig. 7A: 1). Additionally, the ornament was inlaid with a white paste. This vessel type is common in north-western Poland, Mazowsze, Podlasie, Lublin province, Volhynia, Podolia and Romania but rare in Mazury, Bohemia and Germany, while in Silesia it has peculiar traits [Wiślański 1966: 28–29].
2. *Globular amphorae of Type IA1* [Wiślański 1966: 25–26]. One bears a trace of decoration with vertical stanchion impressions (Świerszczów; Fig. 5B: 7), but due to the fact that the vessel is preserved only in fragments, the ornamental motif cannot be identified. Another much larger amphora is even in a poorer state and so it cannot be said if it has been ornamented (Świerszczów; Fig. 5B: 6). This type of globular amphorae is common in Mazury and Mazowsze and in north-western Poland; in the Lublin province, Volhynia, Podolia, Silesia and Bohemia

they have been sporadically found as in Saxony, Brandenburg, on the lower Elbe and in Vorpommern [Wiślański 1966: 26].

3. *Amphora of an intermediate variety between Types IA1 and IA3* [Wiślański 1966: 25–27] without any ornament (Świerszczów; Fig. 5B: 8). This variety is typical of the Lublin province and resembles vessels from Volhynia and Podolia [Wiślański 1966: 26].
4. *Ovoid-belly amphora, probably of Type IA2* [Wiślański 1966: 26], unornamented (Krasnystaw and Podlodów; Fig. 6C: 4 and 6A: 2). Both specimens lack their bottom parts, preventing certain typological classification. Similar specimens are known from Kujawy, northern Wielkopolska, Mazowsze, Lublin and Kielce provinces, Volhynia, Podolia and eastern Germany [Wiślański 1966: 26].
5. *Small barrel-shaped vessel* with the greatest protrusion of the belly at a half of its height, ornamented with a row of appliqué knobs (Świerszczów; Fig. 5B: 2) and a similar one with the greatest protrusion of the belly above a half of its height (Krasnystaw; Fig. 6C: 3), representing Type VIIIB3 [Wiślański 1966: 34]. Such forms are encountered in north-western Poland, Podolia and Germany [Wiślański 1966: 34].
6. *Tall hemispherical bowl resembling Type IVA3* [Wiślański 1966: 31], ornamented with rectangular-stamp impressions and a broken line (Świerszczów; Fig. 5A: 3). Similar vessels were found in Kujawy, Mazury, Mazowsze, Podolia, Anhalt, Saxony, in the Elbe drainage basin, Brandenburg and Silesia [Wiślański 1966: 30–31].
7. *Wide-orifice, tall vase of Type VB1* [Wiślański 1966: 32], ornamented with vertical stanchion impressions, incised lines and herringbones (Świerszczów; Fig. 5A: 5) or cord, vertical stanchion and dense herringbone impressions (Podlodów; Fig. 6A: 4). Such forms are found in northern Wielkopolska, Kujawy, Mazury, Kielce and Lublin provinces, Silesia and Germany [Wiślański 1966: 32].
8. *Wide-orifice vase of Type VB3* with a narrowing, short and unmarked neck [Wiślański 1966: 32], ornamented with the impressions of a rectangular stanchion, vertical and horizontal, and broken incised lines (Krasnystaw; Fig. 6C: 7). Analogous forms are rare but single specimens are known from northern Wielkopolska, Kujawy, Kielce and Lublin provinces and Brandenburg [Wiślański 1966: 32].
9. *Goblet-shaped drum* with a pronounced foot, Type IX [Wiślański 1966: 35], unornamented (Krasnystaw; Fig. 6C: 2). Similar drums occur in Kujawy and Bohemia [Wiślański 1966: 35].
10. *S-shaped vessels (pots)* with various degrees of belly protrusion and indistinct short and slightly everted necks, Type VIIIB2 [Wiślański 1966: 34], unornamented (Podlodów, two specimens; Fig. 6A: 1, 3). Similar containers are known from Mazury, Kielce province, Silesia and Bohemia [Wiślański 1966: 34].

The non-ceramic grave goods found in graves dated to Phase II include flint artefacts made exclusively of Volhynia raw-material such as an axe with a relatively

wide butt (Świerszczów; Fig. 5B: 10), bladelets (Świerszczów and Sajczyce; Fig. 5B: 9and 7A: 3), a medioblade (Depułtycze Nowe-Kolonia; Fig. 6B: 4) and flakes (Sajczyce; Fig. 7A: 3). Several features held amber beads: tubular of Type 1AIa [Mazurowski 1983: 24] (Świerszczów, Depułtycze Nowe-Kolonia, Sajczyce; Fig. 5B: 4, 6B: 3, 7A: 2) and V-perforated knob-shaped. The latter came in three varieties [Mazurowski 1983: 26]: Type 1BIb (round, plano-convex; Świerszczów and Sajczyce; Fig. 5B: 4 and 7A: 3), Type 1BIIa (oval, lenticular; Depułtycze Nowe-Kolonia; Fig. 6B: 3) and Type 1BIIb (oval, plano-convex; Depułtycze Nowe-Kolonia; Fig. 6B: 3). In addition, one grave yielded a boar's tusk (Depułtycze Nowe-Kolonia; Fig. 6B: 2).

Tubular amber beads are known from Pomerania, northern Wielkopolska, Mazury, Courland Spit, Mazowsze, Lublin province, Volhynia, Bohemia and – very few – Germany [Mazurowski 1983: 44]. Knob-shaped beads, in turn, were found in Kujawy, Podlasie, Mazury and Lublin province [Mazurowski 1983: 44], while boar-tusk or domesticated pig-teeth pendants occurred in many graves in north-western Poland, Kielce province, Volhynia, Podolia, Bohemia and Germany [Wiślański 1966: 46].

Kujawy amphora of Type IIA1, very similar to the specimens from the Krasnystaw and Świerszczów sites, was found in the grave in Raciborowice-Kolonia (from Phase I; Fig. 5A: 1). The wide-orifice amphora from Sajczyce, in turn, looks a lot like vessels from the East Lublin radiocarbon-undated graves: Ślipcze (pit grave?) [Bronicki 2016a: 207–209, Fig. 158], Strzyżów (pit grave) [Bronicki 2016a: 204, Fig. 155: 1] and Cyców (cist grave) [Bronicki 2016a: 51, Fig. 4: 2]. None of the three vessels was ornamented. The other Kujawy amphorae (extracted from other radiocarbon-undated features) are different because of much taller necks and different belly proportions (Cyców, Miedniki, Sahryń, Stefankowice, Tworyczów) [Bronicki 2016a: 51, 158, 169, 190, 195, 215, Fig. 3: 1,109: 1, 121: 1, 142: 1, 165], hence, they cannot be considered close analogies.

Globular amphorae of Type IA1 from Świerszczów do not have identical counterparts among the furnishings of other East Lublin graves. What is more, their clear classification is greatly hampered by the fact that their lips have not been preserved. Out of the inventories that have been radiocarbon dated, the vessels from Srebrzyszcze (Fig. 8A: 5) and Czułczyce-Kolonia (Fig. 8B: 2, 8) bear the greatest resemblance to Świerszczów ones. The graves from the first two localities have been assigned to Phase III. There are, however, clear differences in the morphology and ornamentation between vessels from the three locations. Specifically, the Czułczyce amphorae have regularly globular bellies whereas the Świerszczów vessel bellies resemble a lying ellipsoid. The Srebrzyszcze specimen has its upper portion missing, hence it is not known if it had any ornament. In turn, one of the Czułczyce amphorae is richly ornamented with inlaid arc impressions, chevrons and a broken line, while the other is unornamented. Graves without ^{14}C determinations yielded more globular amphorae, bearing various degrees of resemblance to Świerszczów

ones. They were found in a cist grave in Sahryń [Bronicki 2016a: 171–172 and Fig. 122: 1–2] and a pit grave in Ślipcze [Bronicki 2016a: 207–209, Fig. 169: 1]. The vessel from the latter feature has its handles placed a little bit higher similarly to the unornamented amphora from Czułczyce-Kolonia (Fig. 8B: 8). One of the Sahryń amphorae is richly ornamented with a motif of chevrons and impressions of a vertical stanchion (in three rows), while the others bear no ornament.

Amphora of an intermediate variety between Types IA1 and IA3 from Świerszczów has only two not very close analogies that occurred in radiocarbon-undated graves: Stadarnia (in pit grave) [Bronicki 2016a: 188, Fig. 139: 2] and Tworyczów (in cist grave) [Bronicki 2016a: 216, Fig. 166: 1]. The former has an incised ornament (chevrons and vertical lines), while the latter bears no ornament.

Preserved in fragments only, ovoid-belly amphorae probably of Type IA2 from Podlodów and Krasnystaw may be similar to the upper portion of the Cyców vessel ornamented with a triangular, arched stamp [Bronicki 2016a: 51 and Fig. 4: 1].

Barrel-shaped vessels of Type VIIIB3 from the Świerszczów and Krasnystaw sites do not find any analogies in other East Lublin subgroup graves while rather similar vessels are known from the Nałęczów subgroup: Parchatka [Bronicki 2016a: 162 and Fig. 114: 1] and Klementowice 2 (= Cemetery B), Grave IV [Bronicki 2016a: 91 and Fig. 44: 2].

Tall hemispherical bowl resembling Type IVA3 from Świerszczów has only a single analogy in the East Lublin subgroup: from the Wytyczno site (from a pit grave). This vessel is ornamented with chevrons and arc impressions [Gurba 1954: 161 and Fig. 37].

Vase of Type VB1, discovered in Świerszczów, finds no close analogies among East Lublin vessels but is rather popular in the Nałęczów subgroup.

Vase of Type VB3 from Krasnystaw very closely resembles a vessel from a pit grave in Strzyżów [Bronicki 2016a: 204 and Fig.155: 2].

Goblet-shaped drum of Type IX, from Krasnystaw, is a single find.

S-shaped vessels (pots) of Type VIIIB2 occurred only once: at the Podlodów settlement. Perhaps this is a kind of pottery that was not used as grave goods in the East Lublin subgroup.

Flint axes of proportions closely resembling those of the tool found in Świerszczów come from radiocarbon-undated features on the following sites: Husynne-Kolonia (pit grave), Stefankowice-Kolonia (cist grave), Zamość (pit grave) [Bronicki 2016a: 66, 195, 222, Fig. 20: 4, 144: 1, 173: 2–3]. Only the specimen from Stefankowice-Kolonia is made of Volhynia flint while the other two – from striped flint.

Fine flint objects are known from two more radiocarbon-dated cist graves: Czułczyce-Kolonia (Fig. 8B: 9) and Srebrzyszcze (Fig. 8A: 8), assigned to Phase III, and from an undated feature in Stefankowice [Bronicki 2016a: 195 and Fig. 144: 2–6]. These specimens are made of local flint (Rejowiec and erratic flint), as well as Volhynia or Dniester flint.

Tubular amber beads (badly damaged) were found in cist graves in Czułczyce-Kolonia, Phase III [Bronicki 2016a: 57] and in a cist grave in Sahryń for which no ^{14}C determination is available [Bronicki 2016a: 173 and Fig. 124: 4–5]. No knob-shaped amber beads, known from the sites in Świerszczów, Depułtycze Nowe-Kolonia and Sajczyce, have been found in other East Lublin subgroup graves.

Boar's tusks were found only in a cist grave in Łopiennik Dolny-Kolonia (Fig. 7B: 7), which, however, must be placed rather in Phase III, and in a radiocarbon-undated pit grave in Strzyżów [Bronicki 2016a: 206].

Phase III (2650/2600–ca 2400 BC)

In Phase III, two graves may be included whose age determinations are clearly the youngest in the East Lublin subgroup, i.e. Srebrzyszcze and Czułczyce-Kolonia. The problem with the third grave – in Łopiennik Dolny-Kolonia – is two different dates obtained for human remains (*see* comments above). Its assignment to Phase III, besides the suggestion following from the date obtained in Kiev, relies on the similarity of proportions of Kujawy and globular amphorae, and 'baroque' vessel ornamentation (with a significant share of chevrons and arc impressions) to those of pottery extracted from the two youngest graves.

The double-chambered structure of the Czułczyce-Kolonia grave is considered a certain rarity albeit sporadically encountered in Volhynia (Wojciechówka/Kolodyazhnoye) [Sveshnikov 1983: 320] and in the Nałęczów subgroup where similar grave forms were exposed on the following sites: Klementowice, Cemetery D, Grave 3; Stok, Cemetery A; Las Stocki, Cemetery H [Bronicki 2016a: 97, 142, 196 and Fig. 48, 49, 95B, 147]. Double-chambered graves are also known from Mazury [Wiślański 1966: 60]. A similar structure was probably shared by a pit grave in Raciborowice-Kolonia, assigned to Phase I. While in Raciborowice, Klementowice, Las Stocki and Stok, the western chamber was allotted to animals, in Czułczyce-Kolonia both chambers held human remains arranged very carefully and symmetrically to each other [Bronicki 2016a: 54 and Fig. 7].

Grave goods, in particular pottery, are less diversified than in Phase II. Six vessel types were recorded.

1. *Bulbous Kujawy amphorae of Type IIA1* of various sizes [Wiślański 1966: 28–29] with relatively tall cylindrical necks. One specimen was unornamented (Srebrzyszcze; Fig. 8A: 6), while another had only a relief strip running around it (Łopiennik Dolny-Kolonia; Fig. 7B: 5), but the other amphorae of this type bore a rich ornament. It included 'hanging' chevrons supplemented by arc impressions forming horizontal and vertical lines (Łopiennik Dolny-Kolonia and Srebrzyszcze; Fig. 7B: 1; 8A: 1–2) or inlaid with a white paste, and multiple broken lines combined with horizontal lines of arcs (Czułczyce-Kolonia; Fig. 8B: 1–2). This vessel type is quite common in north-western Poland, Mazowsze, Podlasie, Lublin province, Volhynia, Podolia and Romania but rare in Mazury, Bohemia and Germany, while in Silesia it has peculiar traits [Wiślański 1966: 28–29].

2. *Amphorae* with tall, funnel-like-everted necks, strongly protruding bellies and well-pronounced bases. Their long, narrow handles, double-perforated horizontally, stretch from the shoulder to lip rim. They are unornamented (Fig. 8A: 3-4). Similar handles are found only on a small amphora from Klementowice, Cemetery B, Grave I, assigned to the Nałęczów group [Bronicki 2016a: 87–88 and Fig. 39: 2]. In shape, they resemble Type IIA1 [Wiślański 1966: 28–29], but the funnel-like necks everted to various degrees are not typical of any amphorae. In all likelihood, we are dealing with a peculiar form – a local East Lublin one (?).
3. *Globular amphorae of Type IA1* [Wiślański 1966: 25–26] are known from two graves: Srebrzyszcze (Fig. 8A: 5) and Czułczyce-Kolonia (Fig. 8B: 2, 8). The vessel from the former grave had its upper portion broken off, hence its height is not known, nor how it was ornamented. Another two specimens have relatively tall cylindrical necks. One of the amphorae has a rich ornament of chevrons, horizontal broken lines and arc impressions (Fig. 8B: 2). This type of globular amphorae is quite common in Mazury and Mazowsze and in north-western Poland; in the Lublin province, Volhynia, Podolia, Silesia and Bohemia they have been sporadically found as they have been in Saxony, Brandenburg, on the Elbe and in Vorpommern [Wiślański 1966: 26].
4. *Small amphora of Type IB3* [Wiślański 1966: 27], without ornament, occurred only once – in a grave in Łopiennik Dolny-Kolonia (Fig. 7B: 6). This form is known from the Nałęczów Plateau, Garwolin Plain, Lubusz Land [Nosek 1967: 440, Pl. VIII] and the eastern GAC group [Sveshnikov 1983: 82 and Pl. XXII: 1, 5, 10].
5. *Vase-goblet (beaker) of Type VIA1* [Wiślański 1966: 32], found in the grave in Łopiennik Dolny-Kolonia, bears a rich ornament of multiple zigzags placed between horizontal lines composed of fine dents (inlaid with a white paste), and flanked by two appliqué knobs placed next to each other. This type is known from northern Wielkopolska, Kujawy, Mazowsze, Kielce and Lublin provinces while similar but single specimens are also found in Saxony, Thuringia and Brandenburg [Wiślański 1966: 32]. They were recorded in Volhynia and eastern Roztocze in the Lviv area as well [Sveshnikov 1983: 62 and Pl. III: 1, 5].
6. *Hemispherical bowl of Type IVA2* [Wiślański 1966: 30] has a tall, cylindrical neck. The only specimen was found in a grave in Srebrzyszcze (Fig. 8A: 10). It bears a rich ornament of chevrons and arc impressions (horizontal and vertical). Similarly-shaped vessels come from West Pomerania, Wielkopolska, Mazury, Lublin province, Bohemia and Saxony [Wiślański 1966: 30].

The non-ceramic grave goods found in radiocarbon-dated graves include quadrifacial trapezium-shaped axes with flat smooth butts made of striped flint: a slender narrow-butt one (Łopiennik Dolny-Kolonia; Fig. 7B: 3) and another one – chunky, thick, repaired, with a broad butt (Czułczyce-Kolonia; Fig. 8B: 7).

Another specimen, trapezium-shaped, too, but with a rounded butt, was made of Volhynia flint (Srebrzyszcze; Fig. 8A: 7). A flint chisel occurred only once (Łopiennik Dolny-Kolonia; Fig. 7B: 4). Fine flint artefacts were found in two graves (Srebrzyszcze and Czułczyce-Kolonia; Fig.8A: 8 and 8B: 9). They were made of Volhynia, Cretaceous (Rejowiec) or erratic flint. In addition, one feature yielded a quartzite flake (Czułczyce-Kolonia; Fig. 8B: 5), and also in one feature, boar's tusks were found (Łopiennik Dolny-Kolonia; Fig. 7B: 7); another two features yielded bone tools: a chisel and point-perforator (Czułczyce-Kolonia; Fig. 8B: 3, 6), and a fragment of a double-edged point (Srebrzyszcze; Fig. 8A: 9). A single amber bead was recorded: a poorly-preserved tubular one (Czułczyce-Kolonia) [Bronicki 2016a: 57].

Kujawy amphorae of Type IIA1 with relatively tall cylindrical necks, which were found in all three Phase III graves, find close analogies in other vessels, being furnishings of radiocarbon-undated features such as those in Cyców, Miedniki, Sahryń, Stefankowice-Kolonia or Tworyczów [Bronicki 2016a: 51, 158, 169–170, 190, 215, Fig. 3: 1, 109: 1, 121: 1, 142:1, 165]. Vessels of this type are not found in Phase I or II. The Stefankowice and Cyców specimens share very similar and rich ornaments (chevrons, broken lines, stamp impressions). The Miedniki and Cyców specimens bear cord impressions.

Globular amphorae of Type IA1 with tall cylindrical necks did not occur in other radiocarbon-dated graves. They were discovered in Sahryń (cist grave) [Bronicki 2016a: 171–172 and Fig. 122: 1–2] and Ślipcze (pit grave?) [Bronicki 2016a: 207–209 and Fig. 169: 1]. The vessel from the latter site closely resembles the unornamented amphora from Czułczyce-Kolonia (both have identically placed handles). The ornamented Sahryń amphora bears an ornament of multiple *chevrons.*

Small amphora of Type IB3 has no good analogy in the East Lublin subgroup. It bears the closest resemblance to vessels from radiocarbon-undated features in Stadarnia (pit grave) and Tworyczów (cist grave) [Bronicki 2016a: 188, 215–216 and Fig. 139: 2, 165: 1] in spite of the fact that they have completely rounded unmarked bases. Both have their upper portions damaged, which makes their typological classification difficult. The Stadarnia amphora bears an ornament of chevrons while the Tworyczów specimen is unornamented.

Vase-goblet (beaker) of Type VIA1 finds very close analogies in vessels from radiocarbon-undated cist graves exposed in Poniatówka and Tworyczów [Bronicki 2016a: 166, 215–216 and Fig. 116: 1, 166: 2]. Both containers bear a rich, 'baroque' ornament of chevrons and horizontal lines composed of arcs. The ornament on the Tworyczów container is in part made with cord impressions.

Hemispherical bowl of Type IVA2 has imperfect analogies in vessels from a cist grave in Sahryń and a pit one in Stadarnia [Bronicki 2016a: 169, 187–188, Fig. 121: 2, 139: 1]. They are ornamented with rectangular stamp impressions, forming a multiple broken line (Sahryń), and rows of vertical stanchions combined with a single zigzag and bands of vertical lines (Stadarnia).

Flint axes with proportions similar to those of the tool found in Łopiennik Dolny-Kolonia come from radiocarbon-undated graves: pit ones from Strzyżów and Stadarnia and cist ones from Sahryń and Kułakowice Trzecie [Bronicki 2016a: 122, 172, 189, 206, Fig. 76, 123: 1, 140, 156]. The Strzyżów specimen is made of Volhynia or striped flint, while the others are made of Cretaceous-Rejowiec flint (Stadarnia, Sahryń), Volhynia flint (Kułakowice Trzecie) and striped flint (Sahryń). The chunky axe from Czułczyce-Kolonia resembles best only a Volhynia-flint specimen from a pit grave in Ślipcze [Bronicki 2016a: 209 and Fig. 159: 2]. The axe with a rounded butt from Srebrzyszcze finds a single analogy in a Cretaceous-Rejowiec-flint tool, found in Huta, Grave II [Bronicki 2016a: 70 and Fig. 23: 1].

The flint chisel is a single find without any analogies in archaeometrically dated features.

Fine flint objects are known from two other radiocarbon-dated cist graves – in Sajczyce (Fig. 7A: 3) and Depułtycze Nowe-Kolonia (Fig. 6B: 4) – and one pit grave – in Świerszczów (Fig. 5B: 9), assigned to Phase II, as well as from radiocarbon-undated cist graves in Huta and Stefankowice [Bronicki 2016a: 70, 195, Fig. 3 and 144: 2-6]. These specimens are made of local (Rejowiec), Volhynia or Dniester flint.

Amber tubular beads were found in pit graves in Świerszczów (Fig. 5B: 4), Depułtycze Nowe-Kolonia (Fig. 6B: 3) and Sajczyce (Fig. 7A: 2) – from Phase II – and in Sahryń – in a radiocarbon-undated cist grave [Bronicki 2016a: 173 and Fig. 124: 4–6].

A boar's tusk was found in a Phase II cist grave in Depułtycze Nowe-Kolonia (Fig. 6B: 2) and in a radiocarbon-undated pit grave in Strzyżów [Bronicki 2016a: 206].

Bone tools: a chisel, point-perforator and double-edged points are known solely from radiocarbon-undated graves: a pit one in Husynne Kolonia and cist ones in Sahryń and Stefankowice [Bronicki 2016a: 66–67, 173, 195, Fig. 19: 1, 124: 2–3, 145: 1].

CHRONOLOGY OF RADIOCARBON-UNDATED GRAVES

In the East Lublin subgroup, there are 31[6] graves for which radiocarbon age determinations are not available. In the case of 12, it is not possible to make any chronological assessments because for the most part these are features discovered in the past by casual finders, whose reports on grave goods (destroyed or now lost) were sadly insufficient. The rest is made up of 'poor' graves which could have

[6] After the age of the Tarnoszyn tomb has been determined, this group consists of 30 grave sites [Bronicki 2021: 242].

Table 4.

Co-occurrence of selected cultural traits in other (not radiocarbon dated) graves of the Globular Amphora culture, East Lublin subgroup

Traits	Faza I	Faza II	Faza III	Cyców	Husynne-Kolonia	Huta, grób II	Kulakowice Trzecie	Miedniki	Nadrybie Dwór	Partyzantów-Kolonia	Poniatówka	Rudno, grób II	Sahryń	Stadarnia	Stefankowice-Kolonia	Stolpie	Strzyżów	Ślipcze	Tworyczów	Wola Gródecka	Wytyczno	Zamość
Biconical amphora																						
Bowl of Type IVA2/Beaker of Type VIB																						
Pit grave					X					X				X			X	X			X	X
Kujawy amphora of Type IIA1 (with short neck)				X				X	X	X			X				X	X				
Appliqué conical knobs																						
Globular amphora of Type IA1 (with short neck)												X										
Amphora of Type IA1/IA3														X					X			
Ovoid-belly amphora of Type IA2																						
Barrel-shaped vessel of Type VIIIB3																						
Bowl of Type IVA3																					X	
Vase of Type VB1																						
Vase of Type VB3													X				X					
Clay drum of Type IX																						
Pot of Type VIIIB2																					X	
Cord ornamentation				X				X	X	X									X	X	X	
Slender flint axe with wide butt					X				X						X							X
Mediolithic blade																						
Small blades				X		X				X		X			X							
Flakes																						
Knob-shaped amber beads, V-perforated																						

Traits	Faza I	Faza II	Faza III		Cyców	Husynne-Kolonia	Huta, grób II	Kulakowice Trzecie	Miedniki	Nadrybie Dwór	Partyzantów-Kolonia	Poniatówka	Rudno, grób II	Sahryń	Stadarnia	Stefankowice-Kolonia	Stolpie	Strzyżów	Ślipcze	Tworyczów	Wola Gródecka	Wytyczno	Zamość
Stone cist grave					X		X	X	X	X		X	X	X		X	X			X	X		
White paste inlays																							
Boar's tusk																		X					
Tubular amber beads														X									
Ornamentation of arc impressions (fish scale)												X	X					X		X	X	X	
Ornamentation of broken line, herringbone					X				X		X			X		X							
Kujawy amphora of Type IIA1 (with high neck)					X				X							X				X		X	
Amphora with funnel-shaped neck and long handles																							
Globular amphora of Type IA1 (with high neck)											X			X					X				
Small amphora of Type IB3																							
Bowl of Type IVA2														X	X						X		
Vase-goblet (beaker) of Type VIA1												X								X			
Chevron ornamentation					X					X		X		X	X	X				X		X	
Slender flint axe with narrow butt								X						X	X	X	X	X					
Chunky flint axe with flat butt																			X				
Flint axe with a rounded butt							X																
Flint chisel																							
Bone chisel																X							
Bone point-perforator														X									
Bone double-edged point						X																	

Table 5. Chronology of not radiocarbon dated graves of the Globular Amphora culture, East Lublin subgroup graves.

Sites	Phase I	Phase II		Phase III	
		older part	younger part	older part	younger part
Strzyżów					
Husynne-Kolonia					
Partyzantów-Kolonia					
Rudno, grave II					
Zamość					
Nadrybie Dwór					
Stadarnia					
Stefankowice					
Stołpie					
Sahryń					
Ślipcze					
Wytyczno					
Cyców					
Huta, grave II					
Kułakowice Trzecie					
Miedniki					
Poniatówka					
Tworyczów					
Wola Gródecka					

been robbed earlier. This group comprises graves from the following sites: Bezek, Branica Suchowolska, Dobryniów-Kolonia, Huta, Kryłów, Okalew, Putnowice-Kolonia, Rudno 1, Sajczyce 18, Tarnoszyn[7], Wytyczno-Kolonia and Zbulitów Mały (*see* Bronicki 2016a).

Ultimately, the age of 19 features was estimated by comparing the styles of objects extracted from them with the inventories of radiocarbon-dated graves (Table 4). The credibility of chronological estimates, however, greatly varies because furnishings from several graves, consisting, for instance, of axes alone, cannot be assigned to a specific phase beyond doubt. The reason being that the shape of axes, due to their frequent repairs, need not be a good chronological marker [Borkowski, Migal 1996: 150–153]. Nevertheless, the analysis of co-occurrence

[7] This grave was finally qualified for phase II [Bronicki 2021: 242].

of cultural elements helped add to the lists of finds related to particular phases. The additions included certain traits that had not occurred in radiocarbon-dated graves. Below, a preliminary indirect dating of the 19 sepulchral features is presented (Tables 4 and 5).

Cyców [Bronicki 2016a: 48–51]. Cist grave. A partially-preserved amphora with a wide, short (?) neck (IIA1) resembles a vessel from Sajczyce (Fig. 7A: 1) and indicates connections to Phase II. In turn, a Type-IIA1 amphora with a tall neck reminds one of specimens from features assigned to Phase III, located in Łopiennik Dolny-Kolonia (Fig. 7B: 1), Srebrzyszcze (Fig. 8A: 1–2, 6) and Czułczyce-Kolonia (Fig. 8B: 1, 4). A slender Type-IA2 amphora has a tall funnel-like-everted neck thus suggesting links to the 'long-handled' amphorae from the Srebrzyszcze grave dated to Phase III (Fig. 8A: 3–4). The ornament of chevrons indicates Phase III, that of impressed arcs – Phase II and III, while cord impressions – Phase II. However, the fact that a cord was used to make the chevrons suggests that the amphora should be assigned to Phase III. This conclusion extends the time when vessels were ornamented with a cord ornament to Phase III, too, which was not established on the basis of radiocarbon determinations. Dating: Phase III.

Husynne-Kolonia [Bronicki 2016a: 66–68]. Pit grave. A small Type-VB3 vase, thanks to its proportions, looks a lot like a much larger vessel of the same type from Krasnystaw (Fig. 6B: 7) assigned to Phase II. Axes may be dated in the same way because they resemble a tool from Świerszczów (especially the larger specimen; Fig. 5B: 10). Dating: Phase II.

Huta, Grave II [Bronicki 2016a: 69–71]. Cist grave. An axe with a rounded butt is similar to a tool from Srebrzyszcze (Fig. 8A: 7), which may suggest a connection of the grave to Phase III.

Kułakowice Trzecie [Bronicki 2016a: 122]. Cist grave. A flint axe with a relatively narrow butt resembles a tool from Łopiennik Dolny-Kolonia (Fig. 7B: 3), which may indicate Phase III.

Miedniki [Bronicki 2016a: 158]. Cist grave. A Kujawy tall-neck amphora (Type IIA1) indicates Phase III albeit there are no close analogies to it among vessels from radiocarbon-dated graves. A cord ornament forming a multiple broken line and chevrons suggests a connection to Phases II and III. Dating: Phase III.

Nadrybie Dwór [Zakościelna 2000: 51–57]. Cist grave. A Type-IIA1 amphora has a relatively short neck and strongly resembles a Phase II amphora from Krasnystaw (Fig. 6B: 1). A cord ornament forms chevrons – a trait of Phases II and III. Both axes are intermediate specimens between the Świerszczów type (Fig. 5B: 10; Phase II) and the Łopiennik Dolny-Kolonia type (Fig. 7B: 3; Phase III). If the grave chronology is determined on the strength of the shape of the short-neck amphora, the grave is assigned to Phase II. This finding, in turn, makes one conclude that chevrons appeared already in this phase, although they have not been observed on vessels from radiocarbon-dated graves. Dating: Phase II (younger section).

Partyzantów-Kolonia [Błędowska, Gałan 2006: 261–267]. Pit grave (?). An amphora resembling Type IIA1 has a short neck and reminds one of the Raciborowice-Kolonia (Fig. 5A: 1; Phase I) and Świerszczów (Fig. 5B: 1; Phase II) amphorae. A Type-IA1 globular amphora has a funnel-like-everted lip and a rather tall neck, which makes it similar to a vessel from Czułczyce Kolonia (Fig. 8B: 8), from a grave dated to Phase III. A Type-VIA3 vase (beaker) is not represented among the furnishings of East Lublin radiocarbon-dated graves. The same applies to a small amphora with a pear-shaped belly, hemispherical base and funnel-like-everted short neck. Cord-impressed and herringbone ornaments suggest dating to Phase II (or possibly Phase III). Flint bladelets were recorded in Świerszczów (Fig. 5B: 9), Depułtycze Nowe-Kolonia (Fig. 6B: 4) and Sajczyce – in Phase II graves (Fig. 7A: 3). The pit grave form has been encountered in older phases. Dating: Phase II.

Poniatówka [Bronicki 2016a: 164–167]. Cist grave. A Type-VIA1 vase (beaker) very closely resembles a vessel from Łopiennik Dolny-Kolonia (Fig. 7B: 2), dated to Phase III. The ornament of chevrons is characteristic of Phase III (or possibly Phase II), while that of impressed arcs – of Phases II and III. The same is true of white paste inlays. An axe with a wide flat smooth butt represents the type that occurred in Łopiennik Dolny-Kolonia (Fig. 7B: 3; Phase III). Dating: Phase III.

Rudno, Grave II [Ścibior 1986: 111–119]. Cist grave. A globular amphora, probably of Type IA1 (classification uncertain due to a missing base) has a short neck, which is a trait of vessels belonging to older phases. Containers of rather similar proportions were extracted from a grave in Świerszczów (Fig. 5B: 6–7), dated to Phase II. The presence of impressed arcs points to Phases II and III. Flint bladelets appeared in Phase II in Świerszczów (Fig. 5B: 9), Depułtycze Nowe-Kolonia (Fig. 6B: 4) and Sajczyce (Fig. 7A: 3). Dating: Phase II.

Sahryń [Bronicki 2016a: 168–173]. Cist grave. A Type-IIA1 amphora and two Type-IA1 vessels have tall necks, which is a marker of Phase III. A Type-IVA2 bowl resembles the most closely Type-VB3 vases from Świerszczów (Fig. 5B: 5) and Podlodów (Fig. 6A: 4), dated to Phase II. The ornament of chevrons was found to appear in late chronology graves (i.e. from Phase III), while that of a multiple broken line – in Phases II and III. White paste inlays, in turn, are found on vessels from Phase II (Sajczyce) and Phase III (Łopiennik Dolny-Kolonia and Czułczyce-Kolonia). Both axes resemble more closely the specimen from Łopiennik Dolny-Kolonia (Fig. 7B: 3; Phase III) than one from Świerszczów (Fig. 5B: 10; Phase II). Tubular amber beads are known from Phase II graves in Świerszczów (Fig. 5B: 4), Depułtycze Nowe-Kolonia (Fig. 6B: 3) and Sajczyce (Fig. 7A: 2) and Phase III ones in Czułczyce-Kolonia [Bronicki 2016a: 57]. A bone double-edged point has only one analogy in the Srebrzyszcze grave (Fig. 8A: 9), while an awl-perforator – in Czułczyce-Kolonia (Fig. 8B: 6). Both analogies come from Phase III. A T-shaped pendant has not been found in any East

Lublin feature of a determined chronology. Dating: Phase II (younger section) – Phase III.

Stadarnia [Bronicki 2016a: 187–189]. Pit grave. A Type-IA1/1A3 globular amphora finds an analogy in Świerszczów (Fig. 5B: 8), in a grave dated to Phase II. A Type-IVA2 bowl resembles best Type-VB3 vases from Świerszczów (Fig. 5B: 5) and Podlodów (Fig. 6A: 4), dated to Phase II as well. The presence of the ornament of chevrons was confirmed in late-chronology graves (of Phase III) and possibly 'classic' ones (of Phase II). The form of a pit grave argues strongly for Phase II. A chevron ornament appears probably already in Phase II (towards its end?), but its presence in radiocarbon-dated graves has not been confirmed. Dating: Phase II (younger section?).

Stefankowice-Kolonia [Bronicki 2016a: 190–195]. Cist grave. The Kujawy amphora belongs to Type IIA1 (with a rather tall, poorly pronounced neck). It has no close analogies among radiocarbon-dated materials. The shape of its belly resembles best that of a vessel from Świerszczów (Fig. 5B: 1; Phase II), but the Stefankowice amphora has slenderer proportions and a clearly taller neck. This trait has been confirmed for Phase III. A Type-IA4 amphora, with a rounded base and pear-shaped belly [Wiślański 1966: 27], is incomplete (the lip portion is missing) and thus it cannot be determined whether its neck was tall or short and, consequently, to which phase it ought to be assigned. This vessel finds no analogy in the East Lublin subgroup. The ornament of a multiple broken line and chevrons must be placed in Phases II and III. Two axes with wide flat smooth butts resemble an axe from Świerszczów (Fig. 5B: 10; Phase II) – a slender specimen with a narrow butt (flat one, too) which resembles more the tool from Łopiennik Dolny-Kolonia (Fig. 7B: 4; Phase III). A bone chisel, quite similar to the Czułczyce specimen (Fig. 8B: 9), may indicate Phase III. Flint bladelets occurred in features in Świerszczów (Fig. 5B: 9), Depułtycze Nowe-Kolonia (Fig. 6B: 4) and Sajczyce (Fig. 7A: 3), i.e. Phase II features. Neither a circular amber disk nor T-shaped bone pendants have any analogies in radiocarbon-dated graves. Dating: Phase II-III.

Stołpie [Bronicki 2016a: 202–203]. Cist grave. A long, slender axe with a rather narrow butt, a flat smooth and slightly irregular one, does not resemble the Phase II Świerszczów specimen, nor other tools of the same category from Phase III graves. Perhaps, it has the most in common with the axe from Łopiennik Dolny-Kolonia (Fig. 7B: 4). A stone cist structure rather rules out Phase I. Dating: Phase II-III.

Strzyżów [Bronicki 2016a: 203–206]. Pit grave. An amphora with a wide, short neck (Type IIA1), similar to the vessels from Raciborowice-Kolonia (Phase I; Fig. 5A: 1) and Świerszczów (Fig. 5B: 1; Phase II), and a Type-VB3 vase, resembling a container from Krasnystaw (Fig. 6C: 7), point to Phases I and II. An axe with a narrow flat smooth butt resembles the tool from the Phase III grave in Łopiennik. The ornament of impressed arcs that is visible on a Type-VB3 vessel occurs in both Phase II and Phase III. Boar's tusks were also found in graves in Łopiennik Dolny-Kolonia (Fig. 7B: 7; Phase III) and Depułtycze Nowe-Kolonia

(Fig. 6B: 2; Phase II). As is the case with axes, this category of finds is not a good age marker. Dating: Phase II (older section?).

Ślipcze [Bronicki 2016a: 207–209]. Pit grave. An amphora with a wide, short neck (Type IIA1), similar to the vessel from Sajczyce (Fig. 7A: 1) points to Phase II, while a globular amphora with a tall neck (IA1), similar to that from Czułczyce-Kolonia (Fig. 7: B: 8), and perhaps a chunky flint axe with a flat smooth butt, resembling a specimen from the same grave (Fig. 8B: 7), display traits characteristic rather of Phase III. The pit structure of the grave indicates a connection to older phases. Dating: Phase II/III (transitional period?).

Tworyczów [Bronicki 2016a: 215–216]. Cist grave. A Type-IIA1 Kujawy amphora (with a tall neck) is characteristic of Phase III. Vessels of very similar proportions are known from Phase III features in Łopiennik Dolny-Kolonia (Fig. 7B: 1), Czułczyce-Kolonia (Fig. 8B: 1, 4) and Srebrzyszcze (Fig. 8A: 1–2, 4). A Type-IA1/1A3 globular amphora most closely resembles a container from Świerszczów (Fig. 5B: 8; Phase II). A Type-VIA1 vase-goblet is similar to a vessel from Łopiennik Dolny-Kolonia (Fig. 7B: 2; Phase III), but has a wider lip and looks more like a bowl. The Łopiennik grave is dated to Phase III one trait of which is a chevron ornament to be found on the vase and amphora. The presence of arcs, in turn, points to Phases II and III, while cord impressions – to Phase II. It appears, however, that cord impressions, although their presence in radiocarbon-dated Phase III graves has not been confirmed, may be an ornament of that time interval, too. A similar situation is witnessed in the case of the Cyców grave (*see* above). Dating: Phase III.

Wola Gródecka [Nosek 1967: 243–244]. Cist grave. A very similar Type-IVA2 bowl was discovered in a grave in Srebrzyszcze, associated with Phase III. An arc ornament occurs in both Phase II and Phase III, while a cord-impressed ornament – in Phase II, but no doubt in Phase III as well, which is evidenced by chevrons made with cord impressions (e.g. on vessels from radiocarbon-undated graves in Cyców, Tworyczów and Miedniki). Dating: Phase III.

Wytyczno [Gurba 1954: 159–164]. Pit grave. Two partially-preserved amphorae may represent the Kujawy amphora type (IIA1) but one may just as well be a globular amphora with a tall neck (IA1?). The tall neck is a trait associated with Phase III found on vessels from Łopiennik Dolny-Kolonia (Fig. 7B: 1), Czułczyce-Kolonia (Fig. 8B: 1, 4) and Srebrzyszcze (Fig. 8A: 1-2, 4) and on globular amphorae from Czułczyce-Kolonia (Fig. 8B: 2, 8). A Type-IVA3 bowl has the closest analogy in a vessel from Świerszczów (Fig. 5B: 3), assigned to Phase II. Meanwhile, Type-VIIIB2 pots are known only from a pit in Podlodów, dated to Phase II (Fig. 6A: 1–2). The ornament of impressed arcs is associated with Phases II and III, cord impressions – with Phase II and most likely with Phase III as well, and chevrons – with Phase III. Cord impressions were used to make chevrons on the tall neck of the amphora, which was recorded already earlier in the case of amphorae from Tworyczów and Cyców (*see* above). Pot-like vessels known from

Podlodów need not be a good chronological marker, therefore, the presence of such a vessel in a Phase III grave need not arouse chronological controversies. Dating: Phase II/III (transitional period?).

Zamość [Bronicki 2016a: 221–222]. Badly damaged pit grave. Both flint axes have proportions resembling those of a tool from Świerszczów (Fig. 5B: 10). This, however, does not determine the chronology of the grave. Furthermore, a bottom shard of a vessel does not make the dating task easier, either (most likely, it is an amphora of an indeterminate type). The pit form of the grave suggests that it is of an older age. Dating: Phase II (?).

CONCLUSION

The above discussion is summarised in the lists of diagnostic traits for particular phases.

Phase I (3000/2950–2900/2850 BC) – preceding the rise of the East Lublin subgroup ('general GAC' horizon)

- Graves: pits (including double-chambered?)
- Ceramics: Kujawy amphorae, biconical deep bowls (beakers)
- Ornamentation: impressions of a vertical stanchion and broken line made with the same stamp, small conical appliqué knobs

Phase II (2900/2850–2650/2600 BC) – 'classic' phase of the East Lublin subgroup

- Graves: pits and cists
- Ceramics: globular, ovoid, pear-shaped low-neck Kujawy amphorae, barrel-shaped vessels, hemispherical bowls, vases/goblets, drums, S-shaped vessels (pots)
- Ornamentation: impressions of a vertical stanchion, broken line, herringbone (made with the same tool), incised lines, cord impressions (horizontal lines and loops, probably chevrons), appliqué knobs
- White paste incrustation
- Volhynia flint objects: axe with a wide flat smooth butt, blades, bladelets and flakes
- Amber objects: tubular and knob-shaped beads (of several varieties), probably a circular disk
- Bone objects: boar's tusks, probably T-shaped pendants

Phase III (2650/2600–ca 2400 BC) – 'late' phase of the East Lublin subgroup

- Graves: cists (including double-chambered), no pit graves
- Ceramics: tall-neck amphorae: Kujawy and globular ones, small wide-orifice amphorae with a poorly marked base, vases-goblets (beakers), hemispherical bowls with cylindrical necks, long, narrow handles double-perforated horizontally and occupying the entire height of the neck (from the shoulder to the lip rim)
- 'Baroque' ornamentation: relief strips, double appliqué knobs, chevrons, arc impressions, broken lines, cord impressions (including angular ornaments)
- White paste incrustation
- Flint objects: slender and chunky trapezium-shaped axes with flat or rounded butts, chisels, fine flake tools and debitage
- Amber objects: tubular beads, probably circular disks
- Bone objects: boar's tusks, chisels, point-perforators, double-edged points

* * *

Future grave discoveries and new radiocarbon age determinations ought to verify the above suggestions as to the chronology the GAC East Lublin subgroup, expand and add to the specifications of cultural traits characteristic of particular phases.

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