

**THE FOUNDATIONS OF RADIOCARBON  
CHRONOLOGY OF CULTURES BETWEEN  
THE VISTULA AND DNIEPER:  
3150-1850 BC**

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## Editor's Foreword

This volume of the *Baltic Pontic Studies* focuses on the results of the research carried out so far into the absolute (radiocarbon) chronology of the area lying between the Vistula and Dnieper or the bio-cultural borderland between the West and East of Europe. Absolute chronology is treated here both as a research goal and fundamental premise in the broader studies of the chronometric and development synchronization of "borderland" cultural systems. In a series of articles devoted to individual taxa a considerable number of new  $^{14}\text{C}$  dates have been compared. The dates concern source materials that have been chosen from the point of view of their representativeness and chronometric value ("short-lived" materials were preferred to minimize a potential error). The vast majority of analyses were purposefully made in the same  $^{14}\text{C}$  laboratory of the *State Scientific Center of Environmental Radiogeochemistry of Ukrainian Academy of Sciences* in Kiev taking advantage of funds generously provided by the *Polish Committee for Scientific Research*.

The volume devoted to the "dark" section of the "borderland" history (3150-1850 BC) is the first but not the last publication on the broader issues mentioned above that we intend to present in the near future.

## Editorial comment

1. All dates in the B-PS are calibrated [see: Radiocarbon vol.28, 1986, and the next volumes]. Deviations from this rule will be point out in notes.
2. The names of the archaeological cultures and sites are standarized to the English literature on the subject (e.g. M. Gimbutas, J. P. Mallory). In the case of a new term, the author's original name has been retained.
3. The spelling of names of localities having the rank of administrative centres follows official, state, English language cartographic publications (e.g. *Ukraine, scale 1 : 2 000 000*, Kiev: Mapa LTD, edition of 1996).

Marzena Szmyt, Ivan T. Chernyakov

## RADIOCARBON CHRONOLOGY OF “AKKIEMBETSKIY KURGAN”. A PRELIMINARY REPORT

While working on the program of research into the radiocarbon chronology of the area between the Vistula and Dnieper [cf. Klochko, Koško, Szmyt, Problem. . . , in this volume], researchers were attracted by the Dniester drainage because it appeared to be particularly important for the correlation of the cultural phenomena of Eastern and Western Europe. The research carried out so far shows that the area, heavily settled first by Late Tripolye culture and Yamnaya culture groups and later used by the Catacomb culture as well, was reached by Central European groups such as Globular Amphora culture and Corded Ware culture [Chernyakov, Toshchev 1985; Yarovoy 1985; Dergachev 1986; Toshchev 1991; Alekseyeva 1992]. At the same time, there are relics of settlements of populations migrating from steppe expanses located further to the east as, for instance, the Kemi-Oba culture [Subbotin 1995].

It was assumed that the best results would be obtained by analyzing a multi-phase feature whose stratification is well recorded. These conditions were met by the so-called Akkiembetskiy *kurgan* located near the village of Zatoka (Bilhorod Dnistrovskiy District, Odesa Region). Excavations were carried out there by Ivan T. Chernyakov with his team. The investigations revealed that the place had been used many times in the course of prehistory (in particular at the turn of the Eneolithic and the beginning of the Bronze Age) and that it had a well-preserved stratigraphic sequence of layers - successive *kurgan* mounds. At present, a discussion of sources is being prepared for publication in the *Baltic-Pontic Studies*. Here, we wish to present preliminary results of the radiocarbon dating of features (chiefly graves) from the *kurgan*. The following data concerning the stratigraphic and cultural position of the investigated features are working conclusions of I.T. Chernyakov.

The analysis encompassed twenty features: 1 ritual place (so-called temple) and 19 graves belonging to four cultural units, namely the Usatovo group later the TC (ritual place and 6 graves), Kemi-Oba culture (4 graves), Budzhak group (culture)

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\* Project financed with grant no. 1 H01G01810 provided by the Polish Committee for Scientific Research in 1996-1998.

Table 1

Radiocarbon dates from the Akkiembetskiy kurgan

Lab. no.	Feature	Material	Class of dating	Cultural unit	Stratigraphic group	BP	BC
Ki-6800	Ritual place	Animal bones	IA	Usatovo	I	4170±60	2759±101
Ki-6801	Ritual place	Animal bones	IA	Usatovo	I	4095±65	2600±124
Ki-6802	Grave 6	Human bones	IA	Usatovo	II	4020±65	2539±92
Ki-6803	Grave 6	Human bones	IA	Usatovo	II	4090±60	2590±115
Ki-6804	Grave 9	Human bones	IA	Usatovo	II	3990±60	2491±89
Ki-6805	Grave 10	Human bones	IA	Usatovo	II	3930±55	2387±79
Ki-6806	Grave 7	Wood	IIA	Usatovo	?	3975±55	2479±88
Ki-6807	Grave 7	Human bones	IA	Usatovo	?	3950±60	2402±97
Ki-6808	Grave 7	Human bones	IA	Usatovo	?	3935±45	2399±66
Ki-6809	Grave 23	Human bones	IA	Usatovo	III	3920±60	2379±85
Ki-6810	Grave 24	Human bones	IA	Usatovo	III	3945±50	2398±78
Ki-6811	Grave 1	Trzcina	IA	Kemi-Oba	IV	3900±65	2367±92
Ki-6812	Grave 1	Human bones	IA	Kemi-Oba	IV	3950±60	2402±97
Ki-6813	Grave 2	Human bones	IA	Kemi-Oba	IV	3930±50	2392±72
Ki-6814	Grave 3	Human bones	IA	Kemi-Oba	V	3890±50	2368±80
Ki-6815	Grave 12	Human bones	IA	Kemi-Oba	V	3925±55	2388±78
Ki-6816	Grave 13	Wood	IA	Budzhak	VI	3865±50	2309±89
Ki-6817	Grave 14	Wood	IIA	Budzhak	VI	3920±45	2391±66
Ki-6818	Grave 17	Wood	IIA	Budzhak	VII	3840±65	2298±107
Ki-6819	Grave 17	Human bones	IA	Budzhak	VII	3865±60	2314±97

Lab. no.	Feature	Material	Class of dating	Cultural unit	Stratigraphic group	BP	BC
Ki-6820	Grave 21	Wood	IIA	Budzhak	VII	3760±45	2126±79
Ki-6821	Grave 22	Wood	IIA	Budzhak	VII	3775±60	2160±105
Ki-6822	Grave 22	Human bones	IA	Budzhak	VII	3810±55	2229±96
Ki-6823	Grave 11	Human bones	IA	Mnogovalikovoi Pottery	VIII	3795±60	2215±106
Ki-6824	Grave 15	Human bones	IA	Mnogovalikovoi Pottery	VIII	3745±50	2118±79
Ki-6825	Grave 16	Human bones	IA	Mnogovalikovoi Pottery	VIII	3780±60	2166±107
Ki-6826	Grave 20	Human bones	IA	Mnogovalikovoi Pottery	VIII	3685±45	2046±75

of the Late Yamnaya culture (5 graves) and the Mnogovalikovoi Pottery culture (4 graves). All measurements were carried out at the  $^{14}\text{C}$  laboratory State Scientific Center of Environmental Radiogeochemistry of the National Academy of Sciences of Ukraine under the supervision of Dr. Nikolay N. Kovalyukh. The dates were calibrated using the program of B. Weninger [1993]. The results are shown in Tables 1 and 2.

In aggregate, radiocarbon analyses of 27 samples were performed. They contained human bones (from graves; 18 samples) and animal ones (from the ritual place; 2 samples) as well as wood (from graves; 6 samples) and reed (from a grave; 1 sample). Eleven samples were taken from features of the Usatovo group, 5 from Kemi-Oba culture graves, 7 from Budzhak group graves and 4 from the graves of the Mnogovalikovoi Pottery culture. According to a classification of datings, suggested elsewhere, based on the sample contents and context [Czebreszuk, Szmyt 1998; 2000], they belong to classes IA (21 items) and IIA (6 items), i.e. to the highest classes in the category of samples containing short-lived materials (IA) and long-lived ones (IIA).

From the point of view of the standard error size, the series contains datings of medium accuracy. The standard error range is 45-65 radiocarbon years with four datings having errors of 45, 55 and 65 years, five datings having a deviation of 50 years and ten datings having a deviation of 60 years.

To verify the series, two samples from each of six features were sent to radiocarbon analysis. In the cases of the ritual place and grave no. 6, bones were dated in both cases (belonging to the same skeleton from grave 6 and the head of a horse found at the ritual place), the samples from graves 17 and 22 contained separately

Table 2

Group calibration of dates from the Akkiembetskiy kurgan

Stratigraphic group	Cultural unit	Lab. Nos	BC - 2 sigma	BC - 1 sigma
I	Usatovo	Ki-6800, 6801	2880-2490	2820-2580
II	Usatovo	Ki-6802, 6803, 6804, 6805	2850-2300	2610-2340
?	Usatovo	Ki-6806, 6807, 6808	2570-2230	2480-2300
III	Usatovo	Ki-6809, 6810	2550-2210	2460-2300
IV	Kemi-Oba	Ki-6811, 6813	2560-2210	2460-2290
V	Kemi-Oba	Ki-6814, 6815	2520-2200	2440-2280
VI	Budzhak	Ki-6816, 6817	2480-2180	2450-2290
VII	Budzhak	Ki-6818, 6819, 6820, 6821, 6822	2450-2030	2340-2100
VIII	Mnogovalikovoi Pottery	Ki-6823, 6824, 6825, 6826	2360-1920	2220-2000
I - III	Usatovo	Ki-6800 – Ki-6810	2850-2260	2610-2310
IV - V	Kemi-Oba	Ki-6811 – Ki-6815	2550-2210	2450-2280
VI - VII	Budzhak	Ki-6816 – Ki-6822	2460-2040	2380-2130
VIII	Mnogovalikovoi	Ki-6823 – Ki-6826	2360-1920	2220-2000

bones and wood, from grave 1 bones and reed were dated, whereas from grave 7 human bones were dated twice and reed once. The datings for different samples from the same feature are similar (see Table 1). Only in one case (grave 7) was a dating of a wood sample slightly older than dates procured from bone samples.

All in all, the datings show that the investigated place was intensively used in the 3rd millennium BC, in the period from  $2759 \pm 101$  BC to  $2046 \pm 75$  BC, with the use being especially intensive in 2480-2120 BC (we give dating ranges here at the level of 1 sigma = 68%, for full information see Tables 1 and 2). After taking into consideration the discussed series of dates, the chronology of individual taxa (cultures) looks as follows: Usatovo group - 2610-2310 BC, Kemi-Oba culture - 2450-2280 BC, Budzhak group - 2380-2130 BC, Mnogovalikovoi Pottery culture - 2290-2060 BC. The unbroken continuity of datings and the overlapping of their chronological ranges are clearly observable in the case of the named taxa, which may be evidence of the temporal proximity of such cultures as Usatovo and Kemi-Oba, Kemi-Oba and Budzhak, Budzhak and the Mnogovalikovoi Pottery culture.

Owing to the surviving stratification of the *kurgan*, it is possible to analyze the cultural-stratigraphic units with a greater accuracy. The datings are related to eight stratigraphic groups, i.e. complexes of features of a similar stratigraphic position. The oldest of those groups (I) is the ritual place of an Usatovo group population.

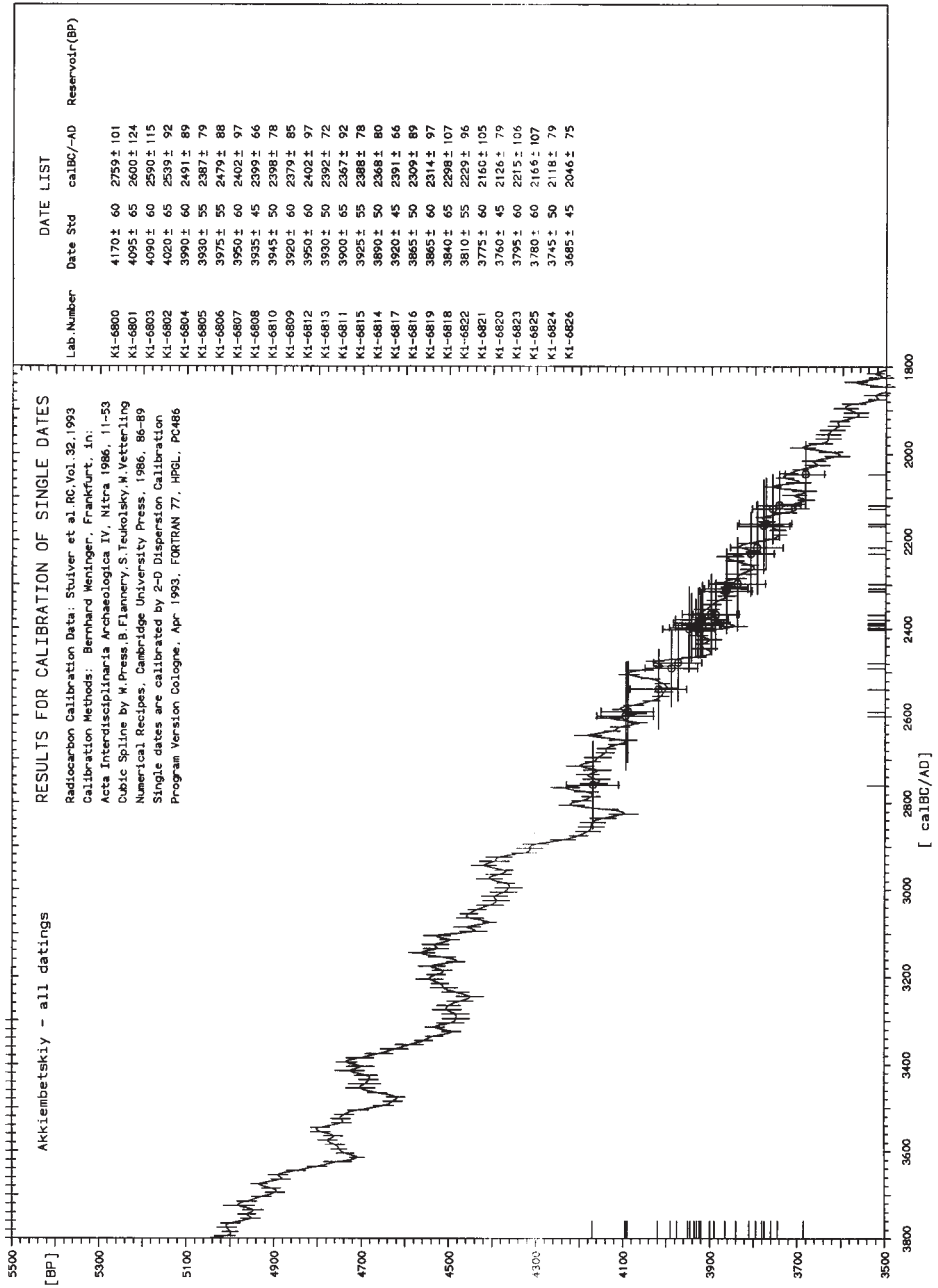
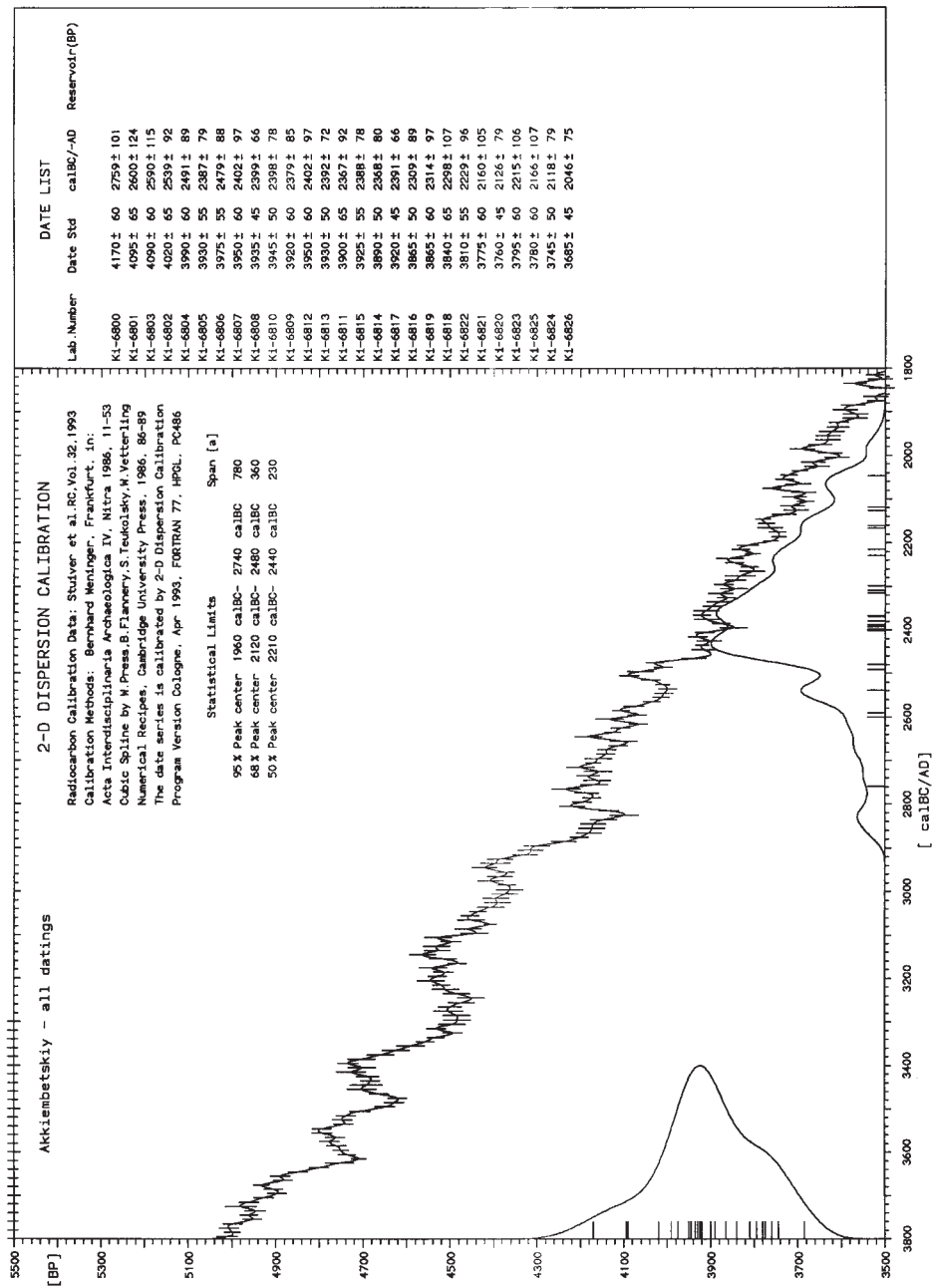


Fig. 1. Calibration of dates procured from the Akkiembetskiy kurgan



Two dates, obtained by analyzing the skull of a horse, point to 2820-2580 BC (in this interval, probably to 2815 BC). The same cultural unit is connected with the next two stratigraphic groups: group II (dates from graves 6, 9 and 10) may be dated to ca 2610-2340 BC and group III (graves 23 and 24) to ca 2460-2300 BC. No exact stratigraphic position was determined in respect of another Usatovo grave (no. 7) dated to 2470 BC. Next two stratigraphic groups are formed by graves of the Kemi-Oba culture. The older one (group IV; graves 1 and 2) may be dated to 2460-2290 BC, while the younger one (group IV; graves 3 and 12) to 2440-2280 BC. Also two other groups comprise graves of the Late YC, specifically the Budzhak group. The older of them (VI) is made up of graves 13 and 14, which can be jointly dated to 2450-2290 BC, while the chronology of the younger one (group VII; graves 17, 21 and 22) falls on 2340-2100 BC. The last of the dated stratigraphic groups (VIII) comprises graves of the Mnogovalikovoii Pottery culture (no. 11, 15, 16 and 20), whose dates jointly mark out the interval of 2220-2000 BC. A more detailed chronological and stratigraphic analysis will be possible only when all the sources are processed.

\* \* \*

As a result of the program mentioned earlier, a series of radiocarbon dates was obtained practically for the whole cultural sequence recorded in the Akkiembetskiy *kurgan*. It should be stressed that it is the first multi-cultural feature so carefully examined in the whole of East European steppes. It will be possible to appreciate in full the undertaken effort when all the sources are presented, which should not take long.

*Translated by Piotr T. Żebrowski*

## ABBREVIATIONS

AO	– Arkheologicheskiye otkrytya, Moskva.
AJA	– American Journal of Archaeology, New York.
BPS	– Baltic-Pontic Studies, Poznań.
EA	– Eurasia Antiqua, Berlin.
FPP	– Folia Praehistorica Posnaniensia, Poznań.
KSIA	– Kratkiye soobshcheniya Instituta Arkheologii, Moskva.
KSIA AN USSR	– Kratkiye soobshcheniya Instituta Arkheologii AN USSR, Kiev.
KSIIMK	– Kratkiye soobshcheniya Instituta Istorii Materialnoy kultury, Moskva.
KSOGAM	– Kratkie Soobshcheniya Odesskogo Gosudarstvennogo Arkheologicheskogo Muzeya, Odessa.
MIA	– Materialy i issledovaniya po arkheologii, Moskva.
NA IA NANU	– Naukovy Arkhiv Instituta Arkheologii Nacionalnoi Akademii Nauk Ukrainu, Kiev.
SA	– Sovetskaya Arkheologia, Moskva.
SpA	– Sprawozdania Archeologiczne, Kraków.
ZFA	– Zeitschrift für Archäologie, Berlin.

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