

**RADIOCARBON DATES OF THE INSTITUTE
OF ARCHAEOLOGY III***

1 July 1967—1 July 1969

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The current list presents samples measured in the radiocarbon laboratory, Leningrad Branch Inst. of Archaeol., Acad. of Sci., USSR, from July 1967 through June 1969. Ages of 85 archaeological samples of wood, charcoal, and peat have been determined.

For all samples radiocarbon was measured as benzene prepared by the method proposed by Arslanov and Gromova (1967). Synthesis of benzene is:

Sample → Charcoal → Carbide → Acetylene → Benzene

The yield of benzene from acetylene is 90 to 95% and is very stable. Radioactivity of the samples was measured with 2 scintillation counters with individual photomultipliers (FEU) (Semyontsov, 1970). The counting channel (30 to 80 kw) is set at a CO^{60} spectrum boundary, and monitored by light impulses. The limit of age measured by the counters is 45,000 yr. All dates were measured according to a half-life of C^{14} of 5570 ± 30 yr. Ages of the samples are calculated from 1950. Comments based on the literature and also from field observations made by P. M. Dolukhanov and V. I. Timofeyev.

Belorussian SSR

3590 ± 150

LE-799. Krasnoye Selo flint mine, Grodno Oblast 1640 B.C.

Charcoal from flint mine shaft, No. 125, left bank Ross' R., near Krasnoye Selo, Volkovysk Raion, Grodno Oblast [$53^\circ 08' \text{ N Lat}$, $24^\circ 25' \text{ E Long}$]. Archaeologic age: Late Neolithic to Early Bronze, 2nd millennium B.C. Ref.: Gurina and Kovnurko, 1964; Gurina [Inst. of Archaeol., Acad. of Sci., USSR], 1965, 1966a-c, 1967b, c, 1968, 1969. *Comment* (P.M.D.): previous dates: Shafts 2, 3, 12: 3190 ± 60 (LE-636, R., 1970, v. 12, p. 132); Shaft 12: 3370 ± 50 (LE-680, *ibid.*); Shaft 13: 4310 ± 45 (GIN-148, R., 1968, v. 10, p. 437); Shafts 3, 11, 18: 5050 ± 25 (GIN-164, *ibid.*); Shafts 15, 21, 56: 5300 ± 300 (LE-637, R., 1970, v. 12, p. 132).

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Information in brackets added by translator (E.M.S.) and commentator (D.B.S.).

Krivina peat bog series, Vitebsk Oblast

Krivina peat bog is located in Beshenkovichi Raion, Vitebsk Obl., Belorussian SSR [town of Beshenkovichi: 54° 57' N Lat, 29° 38' E Long]. First study of bog begun 30 yr ago (Polikarpovich, 1940); excavated by M. M. Chernyavskiy, Acad. Sci., Belorussian SSR.

LE-757. Krivina settlement**3880 ± 60****1930 B.C.**

Peat with vegetative remains and wood from bottom of cultural layer; depth, 1.20 to 1.30 m, from Krivina settlement, S part of Krivina peat bog on boundaries of Beshenkovichi and Senno Raions, middle course Krivinka R., between Golovsk and Osovets villages (Chernyavskiy, 1969a). Large quantity of pottery, bone and horn artifacts, a few flint tools, wooden objects, amber artifacts discovered in settlement. *Comment* (M.M.C.): ceramic complex divided into early type (Ceramic I in lower part of cultural level) and later type (Ceramic II) showing influence of Early Bronze Age tribes.

Osovets II sub-series

Campsite is in NE part of Krivina peat bog, 1.5 km from Osovets village, on Krivinka R., Beshenkovichi Raion. Separate fragments of pottery, similar to Ceramic I of Krivina settlement (LE-757) found in base of cultural layer. Inferred archaeol. age: 1st half 2nd millennium B.C. (Chernyavskiy, 1967a, b; 1969b). [Alternative spelling: Asavets].

LE-756. Osovets II, cultural layer**3350 ± 60****1400 B.C.**

Accumulation of wood bark in cultural layer; depth, 1.5 m.

LE-753. Osovets II, cultural layer**3500 ± 50****1550 B.C.**

Log lying horizontally in layer of sapropel; depth, 1.6 m.

LE-754. Osovets II, Test Pit 1**1080 ± 50****A.D. 870**

Peat from Test Pit 1, Excavation 3; depth, 1.6 m.

LE-755. Osovets II, Test Pit 1**2280 ± 50****330 B.C.**

Peat from Test Pit 1, Excavation 4; depth, 1.8 m. *Comment* (M.M.C.): LE-754 and -755 not connected with cultural layer. Most of pottery shows traces of influence of Middle Dnepr culture in ornamentation and [tempering] admixture. Vessels of Middle Dnepr culture also found in lower part of cultural layer.

*Latvian SSR***Osa series, Lubana Lowland**

Osa is in NE Lubana Lowland, right [W] bank of Piestenē R., Balvy Raion [ca. 57° 00' N Lat, 27° 00' E Long]. Excavated by F. A. Zagorskis, Inst. Hist., Acad. Sci., Latvian SSR. Ref.: Zagorskis, 1967. Late Mesolithic

bone and horn artifacts from Excavation "B" under subsoil in compact peat with mixture of sand. Above Mesolithic layer in Excavation "B", Early Neolithic pottery, bone and horn artifacts, are covered without [intervening] sterile layer by Pit-and-Comb pottery and flint and bone inventory. Excavation "A" contained Early Neolithic complex with pottery (attributed by Zagorskis to local variant of Narva pottery) and bone and horn artifacts.

LE-810. **6580 ± 70**
4630 B.C.
Peat from depth 1.4 m; Mesolithic layer.

LE-811. **6960 ± 80**
5010 B.C.
Wood from depth 1.45 m; Mesolithic layer.

LE-812. **6760 ± 80**
4810 B.C.
Wood from depth 1.7 m; Mesolithic layer. *Comment* (F.A.Z.): dates confirm Mesolithic age of lower cultural layer of Osa.

LE-850. **5730 ± 50**
3780 B.C.
Log, lying horizontally, from depth 1.80 to 1.90 m, from lower part of Early Neolithic cultural layer.

LE-758. **4000 ± 60**
2050 B.C.
Wood from depth 0.90 to 1.00 m.

Piestene series

Piestenē [Russ.: Piestinya] campsite is on right [E] bank of Piestenē R., 3 km W of Osa campsite, Rezekne Raion, Latvian SSR [56° 55' N Lat, 27° 00' E Long]. Excavated by F. A. Zagorskis. Site contains typical Pit-and-Comb pottery (8 to 9% of sherds in lower part of cultural layer) and pottery of "Piestinya type" (local variant of Developed Neolithic, characteristic of E Latvia). (Zagorskis, 1967).

LE-750. Piestene I **4670 ± 150**
2720 B.C.
Peat from cultural layer; depth, 0.7 to 0.8 m.

LE-748. Piestene II **4520 ± 120**
2570 B.C.
Wood from cultural layer; depth, 0.9 to 1.0 m.

Madona Raion series

Peat and wood from Eyni and Abora I Neolithic campsites, Lubana Lowland, Madona Raion, Latvian SSR. Excavated by I. A. Loze, Acad. Sci., Latvian SSR. [Cf. also, Madona Raion series for Nainiekste: 4170 ± 130 (LE-648, R., 1970, v. 12, p. 133) and Abora: 3870 ± 70 (LE-671, *ibid.*)]. (E.M.S.).

LE-751. Eyni Campsite **4000 ± 60**
2050 B.C.

Tree bole lying horizontally in base of cultural layer; depth, 1.30 m, from Eyni, N part Lubana Lowland [ca. 57° 00' N Lat, 26° 45' E Long]. Layer contains mainly sherds of vessels with porous composition. Cord marked pottery occurs in upper part of layer (Loze, 1965, 1968).

LE-749. Abora I Campsite **3860 ± 100**
1910 B.C.

Peat and wood from middle part of layer; depth, 0.6 to 0.7 m, Abora I, N part Lubana Lowland, on I flood-plain terrace of Ayviekste R., near confluence with Abora R. [56° 45' N Lat, 26° 18' E Long]. [Note correction of location from R., 1970, v. 12, p. 133 (E.M.S.)]. Part of site adjacent to river contains mainly pottery with intertwined-cord, fine comb, and linear impressions, and also early textile-impressed pottery (Loze, 1965). *Comments* (I.A.L.): Abora I is one of latest Neolithic sites in Latvia and dates from 1st half to middle 2nd millennium B.C.; (D.B.S.): LE-751 and 749 and earlier Madona Raion series, 1970, v. 12, p. 133) date cord-marked pottery in Lubana Lowland.

Sul'ka series

Sul'ka campsite is in SE Lubana Lowland, on Sul'ka R., Rezekne Raion, Latvian SSR [56° 45' N Lat, 27° 00' E Long]. Excavated by I. A. Loze. Palynologic analyses by G. M. Levskovskaya; samples coll. and subm. by P. M. Dolukhanov. Archaeologic material belongs to complex of typical Pit-and-Comb pottery; upper part contains some "Piestinya type" pottery with flint and amber artifacts.

LE-752. **4060 ± 60**
2110 B.C.

Wooden pile lying at angle, with sharpened base; depth, 0.90 to 1.25 m.

LE-834. Excavation 2, Test Pit 2 **4850 ± 60**
2900 B.C.

Peat from depth 0.8 to 0.9 m, below cultural level. Palynologic date: boundary of Atlantic and Sub-Boreal.

LE-836. Excavation 3, Test Pit 2 **5260 ± 70**
3310 B.C.

Peat from depth 1.1 to 1.2 m, below cultural layer. Palynologic date: 2nd half, Atlantic.

LE-837. Excavation 4, Test Pit 2 **5940 ± 95**
3900 B.C.

Sapropel from depth 1.5 to 1.6 m. Palynologic date: 1st half, Atlantic.

LE-838. Excavation 5, Test Pit 2 **6380 ± 120**
4430 B.C.

Sapropel from depth 1.8 to 1.9 m. Palynologic date: 1st half, Atlantic. *Comment* (P.M.D.): LE-834 and 836 pertain to time of regression,

LE-837 and 838 to time of transgression, of Lubana Lake (Dolukhanov, 1970).

Sārinate series

Sārinate belongs to group of settlements within marshy peat bog, Ventspils Raion, Latvian SSR [57° 20' N Lat, 21° 32' E Long]. Refs.: Šturms, 1940; Vankina, 1955, 1958, 1970. Dwellings with traces of wooden construction. Inventory consists mainly of pottery—fragments of pointed-bottom vessels with everted lips, and oval, shallow bowls; also amber ornaments and wooden objects. Originally dated to 2nd millennium B.C. (Šturms, 1940; Vankina, 1955; Bryusov, 1952). At present time most researchers attribute basic complex to Early Neolithic (Zagorskis, 1967; Gurina, 1967a; Vankina, 1970). Paleogeography studied by A. Dreimanis and P. M. Dolukhanov (Dolukhanov, 1970). Samples coll. and subm. by P. M. Dolukhanov; palynologic analyses by D. A. Agranovaya.

LE-813. **3140 ± 60**
1190 B.C.

Peat from depth 0.3 to 0.4 m, above cultural level. Palynologic date: Sub-Boreal.

LE-814. **4510 ± 110**
2560 B.C.

Wood from Neolithic dwelling; depth, 0.6 to 0.7 m. Palynologic date: boundary of Atlantic and Sub-Boreal.

LE-815. **7500 ± 80**
5550 B.C.

Peat from depth 0.9 to 1.0 m. Palynologic date: beginning of Atlantic.

LE-816. **6980 ± 80**
5030 B.C.

Peat from depth 1.2 to 1.3 m. Palynologic date: beginning of Atlantic. *Comment* (P.M.D.): peat from cultural layer (0.6 to 0.7 m) was dated in radiocarbon lab., Inst. Pre- and Proto-History, Berlin Acad. Sci.: 4640 ± 100 (Bln-769, R., 1970, v. 12, p. 417). Previous dates for Sārinate: charcoal: 4490 ± 250 (TA-24, R., 1966, v. 8, p. 434) and bone: 4700 ± 250 (TA-26, *ibid.*). LE-815 and 816 define period of Ancyclus regression.

Lithuanian SSR

Šventoji I series, Lithuanian SSR

Šventoji I [Russ.: Shventoyi], 2-layered Neolithic settlement within boundaries of Littorina Sea lagoon, in Kretinga Raion [Kretinga: 55° 57' N Lat, 21° 15' E Long]. Excavated by R. K. Rimantene, Inst. Hist., Acad. Sci., Lithuanian SSR. Refs.: Rimantene, 1968, 1970. Two cultural layers separated by sterile layer, 0.5 m thick, disappearing in N part of settlement. Lower layer attributed by Rimantene to W group of Narva (Narva-Neman) culture. Upper layer attributed to Rzucewo (Visla-Neman) group of corded pottery (Gimbutas, 1956, p. 157-163 [D.B.S.]). Samples subm. by R. K. Rimantene.

LE-835. **3860 ± 50**
1910 B.C.
Wood from upper cultural level (0.40 to 0.80 m).

LE-833. **4100 ± 60**
2150 B.C.
Wood from lower cultural level (0.80 to 1.10 m).

LE-904. **4225 ± 70**
2275 B.C.
Wood from lower cultural level (0.80 to 1.10 m). *Comment* (P.M.D.):

exact depths not given.

General Comment on dates in E Baltic (P.M.D. and V.I.T.): Mesolithic and Neolithic sites of E Baltic region are currently defined in a series of C¹⁴ datings. Mesolithic age of lower level of Osa campsite is confirmed; date is close to those for Mesolithic Layer II, at Narva, Estonian SSR (TA-17, -40, -52, R., 1966, v. 8, p. 432). Dates for sites of Early Neolithic, E Baltic region are attributed by some to Narva or Narva-Neman culture (Gurina, 1967a, 1970). In this connection, dates of W coastal sites (Šarnate and Šventoji series, this list); TA-24, -26 (R., 1966, v. 8, p. 434); Bln-769 (R., 1970, v. 12, p. 417) are not later compared with sites of E Latvia (Osa series, this list) and Estonia (Kääpa series, TA-4-6, R., 1966, v. 8, p. 431).

Synchronization of Mesolithic and Neolithic sites of E and W Baltic attempted in Table 1. Early Neolithic dates at Osa implies that very early ceramic Osa-type complexes in E Latvia are as old as Early Ertebølle sites. Most of dated Early and Developed Neolithic sites of E Baltic region (with pottery of Narva, Pit-and-Comb, and "Piestinya" types) correspond temporally to last phase of Ertebølle [Muldbjerg] and Bell Beaker culture of W Baltic region. Late Neolithic of E Baltic region corresponds to end of Middle Neolithic in Scandinavia.

Except where noted, dates for Baltic region coll. by Paleogeog. Div., Inst. Archaeol., Acad. Sci., USSR (E.M.S.): for basic sources on Mesolithic and Early Neolithic in Baltic Sea region, see Clark (1936) and Indreko (1964).

North Russian

LE-800. Great Reindeer Island Cemetery, Barents Sea **3000 ± 50**
1050 B.C.

Wooden bedding under Burial 6, Great Reindeer I. cemetery, Barents Sea [Gt. Reindeer I. (*Bol'shoy Oleniy Ostrov*): 69° 04' N Lat, 36° 22' E Long. Depth not given (E.M.S.)]. Cemetery studied by A. V. Shmidt (1930) and N. N. Gurina (1953). Subm. by N. N. Gurina, Inst. Archaeol., Acad. Sci., USSR. Inferred archaeological age: 1st millennium B.C. (early metal era: Bronze to beginning of Iron age). *Comment* (D.B.S.): not to be confused with Reindeer I., Lake Onega. Inventory of Great Reindeer I. indicates sea-mammal hunting; stone, bone and copper tools; mica-flake ornaments, and asbestos-tempered pottery (Tret'yakov and Mongayt, 1956, p. 535-36). Date earlier than expected; cf. Dal'niye

TABLE 1
Dated Mesolithic and Neolithic sites of Baltic Sea area

Site	General loc.	Period and culture	C ¹⁴ date	Reference
1. Lietzow-Buddelin No. 2	Rügen I., GDR	Late Mesolithic/ Early Neolithic	5815 ± 100	Bln-561 (R., 1970, v. 12, p. 402-403)
2. Ralswiek-Augustenhof	Rügen I., GDR	Ertebølle-Ellerbeck	5455 ± 100	Bln-562 (<i>op. cit.</i> , p. 403)
3. Lietzow-Buddelin No. 1	Rügen I., GDR	Ertebølle-Ellerbeck	5190 ± 120	Bln-560 (<i>op. cit.</i> , p. 402)
4. Draved Mose, Dwelling 611	S Jutland, Denmark	Early Mesolithic	9250 ± 180	K-1139 (R., 1968, v. 10, p. 302)
5. Draved Mose, Dwelling 332	S Jutland, Denmark	Early Mesolithic	9210 ± 180	K-1140 (<i>ibid.</i>)
6. Draved Mose, Dwelling 604	S Jutland, Denmark	Younger Klosterlund, Early Mesolithic	9060 ± 130	K-582 (R., 1962, v. 4, p. 31)
7. Draved Mose, Dwelling 329	S Jutland, Denmark	Klosterlund and "prob- ably another younger culture"	9050 ± 160	K-914 (R., 1966, v. 8, p. 227)
8. Draved Mose, Dwelling 611	S Jutland, Denmark	Klosterlund	8990 ± 140	K-790 (<i>ibid.</i>)
9. Draved Mose, Dwelling 329	S Jutland, Denmark	Klosterlund: same as K-914	8470 ± 150	K-841 (<i>ibid.</i>)
10. Draved Mose, Dwelling 332	S Jutland, Denmark	"Younger than Klosterlund"	8430 ± 140	K-791 (<i>ibid.</i>)
11. Draved Mose, Dwelling 604	S Jutland, Denmark	Klosterlund: <i>cf.</i> K-582	8390 ± 150	K-829 (R., 1966, v. 8, p. 226)

TABLE 1 (Continued)

Site	General loc.	Period and culture	C ¹⁴ date	Reference
12. Draved Mose, Dwelling 329	S Jutland, Denmark	Klosterlund?; cf. K-914, 841	8250 ± 170	K-1017 (<i>op. cit.</i> , p. 227)
13. Draved Mose, Dwelling 329	S Jutland, Denmark	Klosterlund?; cf. K-914, 841, 1017	8180 ± 190	K-1016 (<i>ibid.</i>)
14. Kongemosen, depth ca. 17 cm	Åmosen bog, W Zealand, Denmark	Kongemose, "inland phase," Mesolithic Old Coastal	8830 ± 110	K-571 (R., 1966, v. 8, p. 228)
15. Kongemosen, depth ca. 5-8 cm	Åmosen bog, W Zealand, Denmark	Kongemose	8400 ± 150	K-570 (<i>ibid.</i>)
16. Bare Mosse II	Skåne (Scania), S Sweden	Maglemose	8800 ± 100	Lu-230 (R., 1970, v. 12, p. 549)
17. Norslund, Layer 4	Jutland, Denmark	Coastal culture; questionable, <i>see Comment</i> , p. 303	6420 ± 130	K-973 (R., 1968, v. 10, p. 303)
18. Norslund, Layer 3 (A)	Jutland, Denmark	Coastal culture	5730 ± 120	K-990 (<i>ibid.</i>)
19. Norslund, Layer 3 (B)	Jutland, Denmark	Coastal culture	5680 ± 120	K-991 (<i>ibid.</i>)
20. Salpetermose, Upper Layer	Salpetermose bog, Zealand, Denmark	Ertebølle, Late Mesolithic	6020 ± 100	K-1233 (R., 1968, v. 10, p. 304)
21. Salpetermose, Upper Layer	Salpetermose bog, Zealand, Denmark	Ertebølle	5780 ± 20	K-1234 (<i>op. cit.</i> , p. 303)
22. Salpetermose, Upper Layer	Salpetermose bog, Zealand, Denmark	Ertebølle	5550 ± 120	K-1232 (<i>ibid.</i>)

TABLE 1 (Continued)

Site	General loc.	Period and culture	C ¹⁴ date	Reference
23. Salpetermose, Upper Layer	Salpetermose bog, Zealand, Denmark	Ertebølle	5410 ± 120	K-1235 (<i>ibid.</i>)
24. Ølby Lyng	Zealand, Denmark	Late Ertebølle	5320 ± 130	K-1231 (R., 1968, v. 10, p. 304)
25. Ølby Lyng	Zealand, Denmark	Late Ertebølle	5210 ± 130	K-1230 (<i>ibid.</i>)
26. Elinelund	Skåne, Sweden	Ertebølle-Early Neolithic	5320 ± 210	U-48 (R., 1959, v. 1, p. 97)
27. Konens Høj	Jutland, Denmark	Early Neolithic	5260 ± 100	K-923 (R., 1968, v. 10, p. 304)
28. Konens Høj	Jutland, Denmark	Early Neolithic	4850 ± 100	K-919 (<i>ibid.</i>)
29. Vätteryd 2	Skåne, Sweden	Early Neolithic	4690 ± 170	U-47 (R., 1959, v. 1, p. 97)
30. Vätteryd 1	Skåne, Sweden	Early Neolithic	4555 ± 140	U-46 (<i>ibid.</i>)
31. Björkärr 4	Blekinge, Sweden	Early Pitted Ware	4440 ± 100	Lu-38 (R., 1968, v. 10, p. 51)
32. Björkärr 2	Blekinge, Sweden	Late Pitted Ware	4250 ± 100	Lu-36 (<i>ibid.</i>)
33. Björkärr 1	Blekinge, Sweden	Late Pitted Ware	4160 ± 100	Lu-28 (<i>ibid.</i>)
34. Kunda	Rakvere District, N Estonian SSR	Mesolithic	8340 ± 280	TA-14 (R., 1966, v. 8, p. 432)
35. Kunda	Rakvere District, N Estonian SSR	Mesolithic	6015 ± 210	TA-16 (<i>ibid.</i>)
36. Narva, Mesolithic Layer III; depth, 313-318 cm	N Estonian SSR	Mesolithic	7640 ± 180	TA-53 (R., 1966, v. 8, p. 432)

TABLE I (Continued)

Site	General loc.	Period and culture	C ¹⁴ date	Reference
37. Narva, Mesolithic Layer III; depth, 300-310 cm	N Estonian SSR	Mesolithic	7090 ± 230	TA-41 (<i>ibid.</i>)
38. Narva, Mesolithic Layer III; depth, 223-212 cm	N Estonian SSR	Mesolithic	7580 ± 300	TA-25 (<i>ibid.</i>)
39. Narva, Mesolithic Layer II; depth, 212-217 cm	N Estonian SSR	Mesolithic	7315 ± 190	TA-52 (<i>ibid.</i>)
40. Narva, Mesolithic II, hearth	N Estonian SSR	Mesolithic	6740 ± 250	TA-40 (R., 1966, v. 8, p. 432)
41. Narva, Mesolithic II, bone	N Estonian SSR	Mesolithic	6020 ± 120	TA-17 (<i>ibid.</i>)
42. Narva, depth 90-110 cm, charcoal	N Estonian SSR	Mesolithic	5820 ± 200	TA-33 (<i>ibid.</i>)
43. Narva, Mesolithic I, charcoal	N Estonian SSR	Mesolithic	5300 ± 250	TA-7 (R., 1966, v. 8, p. 431)
44. Osa, Mesolithic, depth 1.45 m	Lubana Lowland, Latvian SSR	Mesolithic	6960 ± 80	LE-811 (this list)
45. Osa, Mesolithic, depth 1.7 m	Lubana Lowland E Latvian SSR	Mesolithic	6760 ± 80	LE-812 (<i>ibid.</i>)
46. Osa, Mesolithic, depth 1.4 m	Lubana Lowland E Latvian SSR	Mesolithic	6580 ± 70	LE-810 (<i>ibid.</i>)
47. Osa, lower part E Neolithic layer, depth 1.80-1.90 m	Lubana Lowland E Latvian SSR	Early Neolithic	5730 ± 50	LE-850 (<i>ibid.</i>)

TABLE 1 (Continued)

Site	General loc.	Period and culture	C ¹⁴ date	Reference
48. Kääpa, lower part cultural layer, peat	SE Estonian SSR	Early Neolithic	4865 ± 235	TA-5 (R., 1966, v. 8, p. 431)
49. Kääpa, cultural layer, bone	SE Estonian SSR	Early Neolithic	4480 ± 255	TA-6 (<i>ibid.</i>)
50. Kääpa, cultural layer, charred wood	SE Estonian SSR	Early Neolithic	4350 ± 220	TA-4 (<i>ibid.</i>)
51. Sárnate, bones	NW Latvian SSR	Neolithic	4700 ± 250	TA-26 (R., 1966, v. 8, p. 434).
52. Sárnate, depth, 0.60-0.70 m, peat	NW Latvian SSR	Neolithic; Pit-and-Comb pottery	4640 ± 100	Blm-769 (R., 1970, v. 12, p. 417)
53. Sárnate, charcoal	NW Latvian SSR	Neolithic; Pit-and-Comb pottery	4490 ± 250	TA-24 (R., 1966, v. 8, p. 434)
54. Sárnate, depth, 0.6-0.7 m, wood	NW Latvian SSR	Neolithic	4510 ± 110	LE-814 (this list)
55. Šventoji, lower cultural level	W coastal region, Lithuanian SSR	Neolithic; Narva culture	4225 ± 70	LE-904 (<i>ibid.</i>)
56. Šventoji, lower cultural level	W coastal region, Lithuanian SSR	Neolithic; Narva culture	4100 ± 60	LE-833 (<i>ibid.</i>)
57. Piestenē, cultural layer; depth, 0.9-1.0 m	Lubana Lowland, Latvian SSR	Neolithic; Pit-and-Comb pottery	4520 ± 120	LE-748 (<i>ibid.</i>)
58. Piestenē, cultural layer; depth, 0.7-0.8 m	Lubana Lowland, Latvian SSR	Neolithic; Pit-and-Comb pottery	4670 ± 150	LE-750 (<i>ibid.</i>)
59. Sul'ka, depth, 0.9-1.25 m; wood	Lubana Lowland, Latvian SSR	Neolithic; Pit-and-Comb pottery	4060 ± 60	LE-752 (<i>ibid.</i>)
60. Osa, depth, 0.9-1.0 m; wood	Lubana Lowland, Latvian SSR	Neolithic; Pit-and-Comb pottery	4000 ± 60	LE-758 (<i>ibid.</i>)

TABLE 1 (Continued)*

Site	General loc.	Period and culture	C ¹⁴ date	Reference
61. Naimiekste, depth, 0.4-0.5 m; peat	E Latvian SSR	Neolithic; Cord-marked and Pit-and-Comb pottery	4170 ± 130	LE-648 (R., 1970, v. 12, p. 133)
62. Kreichi	E Latvian SSR	Neolithic; Pit-and-Comb pottery	4020 ± 300	TA-8 (R., 1966, v. 8, p. 433)
63. Eyni, base of layer; depth, 1.3 m	Lubana Lowland, Latvian SSR	Neolithic; Cord-marked pottery in upper section	4000 ± 60	LE-751 (this list)
64. Leimanishki, depth, ca. 1.0 m	Lubana Lowland, Latvian SSR	Neolithic; Cord-marked pottery	3970 ± 250	TA-23 (R., 1966, v. 8, p. 434)
65. Leimanishki, bones	Lubana Lowland, Latvian SSR	Neolithic	3770 ± 200	TA-27 (<i>ibid.</i>)
66. Sventoji, upper level	W coastal region, Lithuanian SSR	Neolithic	3860 ± 50	LE-835 (this list)
67. Abora, depth, 0.74-0.90 m; peat	E Latvian SSR	Neolithic; Cord-marked and early Textile-impressed pottery	3870 ± 70	LE-671 (R., 1970, v. 12, p. 133)
68. Abora, depth, 0.6-0.7 m	E Latvian SSR	Neolithic (<i>see</i> No. 67)	3860 ± 100	LE-749 (this list)
69. Tamula, bones from layer	SE Estonian SSR	Late Neolithic; TA-28 probably earlier period	4050 ± 180	TA-28 (R., 1966, v. 8, p. 433)
70. Tamula, wooden pile, partially in layer	SE Estonian SSR	Late Neolithic; Pit-and-Comb; Cord-marked pottery	3600 ± 180	TA-10 (<i>ibid.</i>)
71. Villa, bones, lower section	SE Estonian SSR	Late Neolithic; Pit-and-Comb; Cord-marked; and later period pottery	3570 ± 240	TA-20 (<i>op. cit.</i> , p. 434)

* Owing to technical difficulties, P. M. Dolukhanov's bar charts for Tables 1 and 2 had to be omitted. (E.M.S.)

Zelentsy, Murman Coast (Early Iron age): 1720 ± 170 (LE-501, R., 1970, v. 12, p. 135-136).

4770 ± 60

LE-725. Podzorovo II

2820 B.C.

Wood from wooden structure [fishing weir]; depth, 2.2 m, Podzorovo II campsite, at junction of flood plain of remnant lake and Voronezh R., Michurinsk Raion, Tambov Obl. [52° 50' N Lat, 40° 15' E Long]. Originally studied by M. E. Foss (1959); excavated 1965 by V. P. Levenok, Inst. Archaeol., Acad. Sci., USSR. [For stratigraphy see Levenok, 1969, p. 84-85 (D.B.S.)]. *Comment* (D.B.S.): compare Berendeyevo swamp: 5730 ± 120 (GIN-112, R., 1968, v. 10, p. 427-28); Pleshcheyevo IV: 4720 ± 50 (GIN-115, *op. cit.*, p. 428); and Pleshcheyevo II: 3870 ± 30 (GIN-116, *ibid.*)

Pingisha peat bog series, Arkhangel'sk Oblast

Pingisha peat bog is on Pingisha R., branch of N Dvina R., Arkhangel'sk Obl. [ca. 63° 40' N Lat, 42° 00' E Long]. Buried remnant-lake peat bog with remains of old fishing structures. Samples subm. by G. M. Burov, Komi Affil., Acad. Sci., USSR. Refs.: Burov, 1968, 1969.

LE-766.

Wood from depth 2.5 m.

1120 ± 50

A.D. 830

LE-768.

Wood (sticks with incisions); depth, 2.5 m.

900 ± 50

A.D. 1050

LE-776. Viss I peat bog, Komi ASSR

Wood from Viss I peat bog, right bank, mouth of Simva R., Komi ASSR [62° 40' N Lat, 52° 00' E Long]. Excavated by G. M. Burov, 1960-67. Refs.: Burov, 1964, 1966-1969. Depth not given (E.M.S.). More than 200 worked wooden objects and stone tools found in bog. *Comment* (P.M.D.): Burov (1966, p. 163) originally attributed inventory of Viss I to Neolithic-Bronze age, subsequently to Mesolithic, 7th to 6th millennia B.C. (Burov, 1969, p. 132). Wooden objects from Viss I dated earlier: 7820 ± 80 (LE-616, R., 1970, v. 12, p. 136); 7150 ± 60 (LE-684, *op. cit.*, p. 137); 7090 ± 80 (LE-685, *ibid.*); 7090 ± 70 (LE-713, *ibid.*). (E.M.S.). Note corrected loc. for Viss I.

8080 ± 90

6130 B.C.

Central Russia

Demidovka gorodishche series, Smolensk region

Demidovka *gorodishche* [fortified settlement] 12 km W of city of Smolensk, on right bank Rusanovka R., left [S] tributary of Dnepr R., 0.5 km S of village of Telyashi [54° 57' N Lat, 32° 00' E Long]. Excavations revealed 3 cultural layers (Shmidt, 1963). Lower layer attributed to Dnepr-Dvina culture, and perhaps dates to middle 1st millennium B.C. Inferred age of upper layer: later than middle of 1st millennium B.C.

Refs.: Shmidt, 1963, 1968. Subm. by P. N. Tret'yakov, Inst. Archaeol., Acad. Sci., USSR.

LE-726. **1820 ± 80**
A.D. 70
Charcoal from lower layer; depth not given (E.M.S.).

LE-727. **1570 ± 60**
A.D. 380
Charcoal from upper layer; depth not given (E.M.S.).

Ukrainian SSR

Bronze Age kurgan burial series

Demitrovskiy cemetery sub-series

Demitrovskiy cemetery is in Nikopol' Raion, Dnepropetrovsk Obl. [Nikopol': 47° 35' N Lat, 34° 25' E Long]. Subm. by V. P. Shilov.

LE-822. Kurgan 1 **3850 ± 90**
1900 B.C.
Wood from Kurgan 1, Grave 5. Depth, 4.7 m.

LE-823. Kurgan 1 **3680 ± 60**
1730 B.C.
Wood from Kurgan 1, Grave 16. Depth, 3.5 m.

LE-824. Kurgan 10 **3920 ± 50**
1970 B.C.

Wood from Kurgan 10, Grave 12. Depth, 2.5 m. *Comments* (P.M.D.): other dates for Pit Grave (*Yamnaya*) burials in Black Sea region and Volga-Don interfluvium: Giryeva burial: 3870 ± 130 (LE[RUL]-136, R., 1965, v. 7, p. 228);* Us'man: 4150 ± 80 (UCLA-1271, R., 1968, v. 10, p. 411); Tsatsa: 4210 ± 80 (UCLA-1270, *ibid.*). (D.B.S.): Zbenovich and Leskov (1969, p. 35, 38) correlate Late Yamnaya burials of Odessa kurgan with influences from Maikop culture of NW Caucasus and Early Usatovo culture of Ukraine; for latter, Mayaki dates are: 4340 ± 65 (LE-645, R., 1970, v. 12, p. 131) and 4400 ± 100 (Bln-629, R., 1970, v. 12, p. 413-14). At Odessa kurgan, Catacomb-culture burials succeed *Yamnaya* graves, and are succeeded by those of Timber-Grave (*Srubnaya*) type. Succession of *Yamnaya* Catacomb is also true for the Sulgir Valley of the Crimea (Gimbutas, 1965, p. 488). Gimbutas (*ibid.*, p. 494, 498, 515) correlates Catacomb-grave culture with Middle Kuban metallurgical phase of NW Caucasus (Maikop is Early Kuban), and with Cord-marked Pottery culture of C Europe. (*See also* discussion for Abora I, Madona Raion sites series, LE-749, this list.) Gimbutas also regards Timber-grave culture as of E origin, related to Andronovo, and expanding W of Volga and Don Rivers in its latest phases (*ibid.*, p. 528-84).

* The original official designation of this lab was RUL; dates pub. as Inst. of Archaeol. I (R., 1965, v. 7, p. 223-28) carry this designation. Refs. to dates in Inst. of Archaeol. I are designated LE[RUL] in this list (E.M.S.).

2920 ± 80
970 B.C.

LE-731. Vybla Cemetery

Wood from basic burial, Krest kurgan, Vybla Cemetery, Pereyaslavl-Khmel'nitskiy, Kiev Oblast [50° 08' N Lat, 32° 25' E Long]. Timber Grave culture [*Srubnaya kul'tura*] type buckle found in burial. Subm. by M. I. Sikorskiy. *Comment* (P.M.D.): inferred age somewhat older: 2nd half 2nd millennium B.C. Dates of other Timber Grave burials: Kudinov: 3520 ± 80 (UCLA-1274, R., 1968, v. 10, p. 411); Archadinskaya [Argadinskaja]: 3390 ± 80 (UCLA-1272, *ibid.*).

General Comment (P.M.D.): Table 2 lists dates for Pit Grave, Catacomb, and Timber Grave cultures in S Europe that USSR obtained in various labs. Existing dates of sites which are variants of Catacomb culture in lower Don R. and N Caucasus region show they are synchronous with Pit Grave burials of Ukraine and Volga-Don interfluve.

4050 ± 150
2100 B.C.

LE-355. Mikhaylovka

Charred bark, lower cultural layer, Mikhaylovka settlement, Kherson Obl. [47° 30' N Lat, 33° 55' E Long]. Subm. by S. N. Bibikov, Inst. of Archaeol., Ukrainian Acad. of Sci., Kiev. Depth not given; *cf.* Bln-630 = 4330 ± 100 for charred reed from depth, 1.50 to 2.00 m (R., 1970, v. 12, p. 414) (E.M.S.).

Transcaucasus

3900 ± 60
1950 B.C.

LE-780. Baba-Dervish, Azerbaydzhan SSR

Charcoal from Baba-Dervish settlement, left [W] bank, Akstafachay [R.], SW of town of Kazakh, Kazakh Raion [town of Akstafa: 41° 13' N Lat, 45° 32' E Long]. Depth, ca. 1 m; [upper] cultural layer, Early Bronze. Subm. by I. G. Narimanov. Excavations of Narimanov and Ismailov (1962) revealed 2 cultural layers; lower: Eneolithic; upper: Early Bronze, Kura-Araxes culture. *Comments* (Kushnareva and Chubishvili, 1970, p. 81): ceramic material of upper layer can be divided typologically into 2 complexes: early stages (3000 to 2600 B.C.) and end of Early Bronze (2400 to 2000 B.C.); (E.M.S.); other dates for Kura-Araxes basin: Shomu-Tepe: 7510 ± 70 (LE-631, R., 1970, v. 12, p. 140) (Neolithic); Kyul'-Tepe 1b: 5770 ± 90 (LE-477, *ibid.*) (Eneolithic); Kyul'-Tepe II: 4870 ± 150 (LE-434, *ibid.*) Eneolithic/Early Bronze); Uch-Tepe: 4830 ± 230 (LE-330, *ibid.*) and 4500 ± 120 (LE[RUL]-305, R., 1965, v. 7, p. 227) (Early Bronze); Uzerlik-Tepe: 3300 ± 260 (LE[RUL]-3, R., 1965, v. 7, p. 226) (Middle/Late Bronze). Kura-Araxes culture characterized by round brick or pisé dwellings with attached entryways or storage structures; burnished pottery, with relief decoration in spirals, concentric circles, meanders and incised geometric designs, and semi-circular handles; also clay andirons and braziers. Arsenic-alloyed bronze used in conjunction with flint and obsidian tools in early period. Burial customs vary: single and double burials; one large kurgan burial at Uch-Tepe. Some fortified settlements. Maikop culture, N Caucasus; Khirbet-Kerak,

Syria; and Beycesultan, Level XIII, Anatolia may be derivative from Kura-Araxes culture (Vaidov *et al.*, 1965; Yessen and Kushnareva, 1965).

Iron age sites series, Georgian SSR

Namchaduri site and Petra-Tsikhisdziri fortress, Kobuleti Raion, Georgian SSR. Samples subm. by D. A. Khakhutayshvili.

LE-781. Namcheduri **2470 ± 80**
520 B.C.

Charred wood from apparent defensive moat, Namcheduri, Kobuleti Raion [town of Kobuleti: 41° 49' N Lat, 41° 47' E Long]. Depth, 2.2 m. Inferred archaeol. date: 1st half of 1st millennium B.C.

LE-779. Petra-Tsikhisdziri fortress **2830 ± 60**
880 B.C.

Charcoal from ruins of fortress-city Petra from layer with black burnished pottery, overlaid by Classical [Greek] period layer [41° 45' N Lat, 41° 45' E Long]. Depth, 3.8 m. Inferred archaeol. date: 8th to 7th century B.C.

LE-818. Aragats, Armenian SSR **2850 ± 50**
900 B.C.

Wood from catacomb-type burial on slope of Mt. Aragats [peak: 39° 31' N Lat, 44° 11' E Long]. Inferred archaeol. age: 12th to 11th century B.C. Sample subm. by T. S. Khachataryan.

Central Asia

Altyn-Tepe series, Turkmen SSR

Altyn-Tepe [Altyn-depe] is in Kaakhka Raion, S part of Turkmen SSR, near city of Meana [36° 53' N Lat, 60° 26' E Long]. Excavations revealed monumental architecture and dwellings; period of development corresponds to Namazga V. On basis of Indian parallels (Mature and Late Harappa), site dates from 20th to 18th centuries B.C. Subm. by V. M. Masson, Inst. Archaeol., Acad. Sci., USSR. Refs.: Ganyalin, 1967; Masson, 1966-1970b; Sarianidi, 1966, 1967; Shchetenko, 1968, 1970.

LE-767. Excavation 2 **3140 ± 50**
1190 B.C.

Charcoal from excavation No. 2, at ruined wall, E of Dwellings 7 and 10; depth, ca. 0.5 m.

LE-769. Excavation 7 **3260 ± 60**
1310 B.C.

Charcoal from excavation No. 7, from area of monumental architecture; depth, ca. 0.5 m.

LE-770. Excavation 5 **4660 ± 50**
2710 B.C.

Charcoal from excavation No. 5, Dwelling 29; depth, ca. 1 m. *Comments* (V.M.M.): samples assoc. with materials of early Namazga V. Analogous samples dated by Berlin lab.: 4120 ± 100 (Bln-716, R., 1970,

TABLE 2
Bronze age sites, South Russia

Name of site	Location	Culture	C ¹⁴ date	Reference
1. Mikhaylovka: lower layer	Lower Dnepr R., Kherson Obl., Ukrainian SSR.	Early Pit Grave (<i>Yamnaya kul'tura</i>)	4330 ± 100 (2380 B.C.)	Bln-630 (R., 1970, v. 12, p. 414)
2. Tsatsa: Kurgan 6, Grave 3	Lower Volga R., Volgograd Obl.	Early Pit Grave	4210 ± 80 (2260 B.C.)	UCLA-1270 (R., 1968, v. 10, p. 411)
3. Us'man: Kurgan 1, Grave 13	Lower Don R., Rostov Obl.	Early Pit Grave	4150 ± 80 (2200 B.C.)	UCLA-1271 (<i>ibid.</i>)
4. Gireyeva Cemetery	Lower Don R., Rostov Obl.	Pit Grave	3870 ± 130 (1920 B.C.)	LE[RUL]-136 (R., 1965, v. 7, p. 228)
5. Demitrovsk Cemetery: Kurgan 10, Grave 12	Lower Dnepr R., Dnepropetrovsk Obl., Ukrainian SSR.	Pit Grave	3920 ± 50 (1970 B.C.)	LE-824 (this list)
6. Demitrovsk Cemetery: Kurgan 1, Grave 5	Lower Dnepr R.	Pit Grave	3850 ± 90 (1900 B.C.)	LE-822 (<i>ibid.</i>)
7. Demitrovsk Cemetery: Kurgan 1, Grave 16	Lower Dnepr R.	Pit Grave	3680 ± 60 (1730 B.C.)	LE-823 (<i>ibid.</i>)
8. Rostov Cemetery: Kurgan 6, Grave 12	Lower Don R., Rostov Obl., Ukrainian SSR.	Catacomb (<i>Katakombnaya kul'tura</i>)	4215 ± 100 (2265 B.C.)	Bln-694 (R., 1970, v. 12, p. 414)
9. Rostov Cemetery: Kurgan 6, Grave 11	Lower Don R.	Catacomb	4065 ± 120 (2115 B.C.)	Bln-697 (<i>op. cit.</i> , p. 415)

TABLE 2 (Continued)

Name of site	Location	Culture	C ¹⁴ date	Reference
10. Rostov Cemetery: Kurgan 1, Grave 5	Lower Don R.	Catacomb	4005 ± 100 (2055 B.C.)	Bln-696 (<i>op. cit.</i> , p. 414)
11. Rostov Cemetery: Kurgan 5, Grave 6	Lower Don R.	Catacomb	3925 ± 160 (1975 B.C.)	Bln-693 (<i>ibid.</i>)
12. Rostov Cemetery: Kurgan 7, Grave 3	Lower Don R.	Catacomb	3880 ± 90 (1930 B.C.)	LE-624 (R., 1970, v. 12, p. 139)
13. Kudimov: Kurgan 2, Grave 6	Lower Don R., Rostov Obl.	Catacomb	3860 ± 80 (1910 B.C.)	UCLA-1273 (R., 1968, v. 10, p. 411)
14. a. Kudimov: Kurgan 1, Grave 7	Lower Don R.	Timber Grave (<i>Srubnaya kultura</i>)	3525 ± 80 (1575 B.C.)	UCLA-1274 (<i>ibid.</i>)
b. Kudimov: Kurgan 1, Grave 7	Lower Don R.	Timber Grave	3180 ± 80 (1230 B.C.)	LE-511 (R., 1970, v. 12, p. 138)
15. Archadinskaya: Kurgan 9, Grave 4	Lower Volga R., Vologograd Obl.	Timber Grave	3390 ± 80 (1440 B.C.)	UCLA 1272 (R., 1970, v. 12, p. 411)
16. Vybla Cemetery: Krest Kurgan, basic burial	Middle Dnepr R., Kiev Obl.	Timber Grave	2920 ± 80 (970 B.C.)	LE-731 (this list)

v. 12, p. 417) and 4025 ± 100 (Bln-717, *op. cit.*, p. 418). Date for materials of late Namazga IV type: 4070 ± 50 (LE-664, R., 1970, v. 12, p. 142) agrees well with dates for Namazga IV layers at Ulug-Depe: 4095 ± 100 (Bln-714, R., 1970, v. 12, p. 419) and 4140 ± 100 (Bln-715, *ibid.*). In pub. series, considerable discrepancy revealed; control dates needed. (E.M.S.): note corrected location for Altyn-Tepe from R., 1970, v. 12, p. 417.

2850 ± 60**LE-773. Kuchuk-Tepe, Tadzhik SSR****900 B.C.**

Charcoal from Kuchuk-Tepe settlement, Shirabad steppe, 70 km NW of Termez, Tadzhik SSR [$37^{\circ} 42' N$ Lat, $67^{\circ} 00' E$ Long]. Depth not noted (P.M.D.). Excavations by L. I. Al'baum revealed dwellings of Late Bronze to Early Iron age (end of 2nd millennium to 9th to 7th centuries B.C.). Refs.: Al'baum, 1969; Masson, 1967a. *Comment* (E.M.S.): date des. gives Muzrabad steppe, evidently error for Shirabad steppe, ca. 70 km NW of Termez.

Tutkaul series, Tadzhik SSR

Tutkaul settlement, Nurek Raion [$38^{\circ} 20' N$ Lat, $69^{\circ} 13' E$ Long] assoc. with outwash of Daray-Osiö creek, mouth of Pulisanga ravine, in inundation zone of Nurek Hydroelectric Sta. Refs.: Korobkova and Ranov, 1968; Ranov, 1968; Ranov and Yusupov, 1970 [on assoc. Sayed site (Mesolithic through Medieval), 3 km E of Tutkaul].

8020 ± 170**LE-772.* Second [cultural] horizon****6070 B.C.**

Charcoal from base of Second [cultural] horizon; Quad. C-20; depth, 7.65 m.

6760 ± 110**LE-777. Second [cultural] horizon****4810 B.C.**

Charcoal from base of Second [cultural] horizon; Quad. 0-29; depth, 9.9 m. *Comments* (P.M.D.): LE-777 dates Second [cultural] horizon with Hissar industry; upper part of Second [cultural] horizon dated at 7100 ± 140 (LE-690, R., 1970, v. 12, p. 143). (E.M.S.): LE-690 attributed to First [cultural] horizon, depth, 4.46 m, in date description. Translation of LE-772 and 777, above, is edited version of inconsistent text.

*Western Siberia: Omsk Region***LE-787. Kokonovka, Omsk Oblast****1950 ± 60**

Wood from grave cover, Kurgan 10, Kokonovka village, Omsk Raion, Omsk Obl. [ca. $55^{\circ} 15' N$ Lat, $73^{\circ} 00' E$ Long]. Subm. by V. A. Mogil'nikov, Inst. Archaeol., Acad. Sci., USSR. Inferred archaeol. age: 4th to 3rd centuries B.C. Ref.: Mogil'nikov, 1968b.

* For LE-772 and 777 Ranov and Korobkova (1971) add extensive data on cultural inventory but stratigraphy remains unclear (D.B.S.).

LE-788. Kalachevka II, Omsk Oblast **2800 ± 60**
850 B.C.

Wood from Kurgan I, kurgan group, Kalachevka II, Sargatskoye Raion, Omsk Obl., W side Omsk-Bol'sherechye rd. [55° 35' N Lat, 73° 26' E Long]. Depth, 1 m. Subm. by V. A. Mogil'nikov. Inferred archaeol. age: beginning 1st millennium B.C. Refs.: Mogil'nikov, 1967, 1968a. *Comment* (D.B.S.): according to Mogil'nikov (1968a), Kurgan I includes 4 burials of varying age; burial 1, at 0.6 m, includes Type B IV arrowhead (hollow-shafted, rhomboid, tanged bronze) dated by Chlenova (1967, p. 263) from 7th-6th centuries B.C. Basic burial (No. 4) dated by sample has two bodies; inventory includes globular pot with everted comb-marked lip, cord-marked neck, and comb-impressed meander on upper belly; single-edge bronze knife. Kurgan I dates W Siberian Younger Bronze age (Shimkin, 1960, p. 655) for which type site is Yelovka (ca. 56° 00' N Lat, 83° 45' E Long, on Ob' R.), cf. Matyushchenko and Igol'nikova (1966). Date for Older Bronze age: Odino: 3180 ± 70 (LE-660, R., 1970, v. 12, p. 145).

Central Siberia: Upper Yenisey Region

Tagar culture burial series, Krasnoyarsk Krai

All sites in series are in Yenisey R. gorge (between 54° 00' and 54° 50' N Lat) S of Krasnoyarsk.

LE-722. Novoselovo **2160 ± 50**
210 B.C.

Wood from Grave 1, Zagotzerno R. landing, Novoselovo region [nr. Ayeshka village: 54° 50' N Lat, 90° 55' E Long]. Detailed loc. not given (E.M.S.). Subm. by M. P. Gryaznov, Inst. Archaeol., Acad. Sci., USSR.

Kichik Kyuzur I cemetery sub-series

Kichik Kyuzur I cemetery [nr. Sovetskaya Khakassiya village, 54° 07' N Lat, 91° 28' E Long]. Detailed loc. not given. Coll. and subm. by M. P. Zavitukhina, Inst. Archaeol., Acad. Sci., USSR. Refs.: Zavitukhina, 1966, 1967.

LE-720. Kurgan 1, Kichik-Kyuzur I **2410 ± 50**
460 B.C.

Wood from Kurgan 1.

LE-721. Kurgan 7, Burial 5, Kichik-Kyuzur I **2180 ± 50**
230 B.C.

Comment (M.P.Z.): burials in Kichik-Kyuzur I cemetery attributed to Podgornoye stage and transitional period from Podgornoye to Saragash stage, Tagar culture.

LE-723. Ulug-Kyuzur cemetery **1670 ± 50**
A.D. 280

Wood from Kurgan 4, Grave 1, Ulug-Kyuzur cemetery [nr. Khakass settlement: 54° 07' N Lat, 91° 28' E Long]. Detailed loc. not given.

(E.M.S.). Subm. by M. I. Pshenitsyna, Inst. Archaeol., Acad. Sci., USSR. Refs.: Pshenitsyna, 1966, 1967. *Comments* (M.I.P.): burials attributed to Saragash stage, Tagar culture; (D.B.S.): note discrepancy with date of 2450 ± 50 for Kurgan 3, Grave 1 (LE-696, R., 1970, v. 12, p. 149).

1790 ± 60

LE-724. Kamenka III cemetery

A.D. 160

Wood from Grave 64, Kamenka III cemetery [unlocated; S of Novoselovo]. Detailed loc. not given (E.M.S.). Subm. by Ya. A. Sher, Inst. Archaeol., Acad. Sci., USSR. Refs.: Sher and Khlobystin, 1966; Sher *et al.*, 1968. *Comment* (Sher *et al.*, 1967, p. 146): “. . . several objects, especially iron knives with looped handles permit dating cemetery to end of Tagar epoch and pre-Tashtyk times. However, pottery and bone artifacts . . . differ substantially from those of sites of same period in Minusinsk Basin.”

General Comment (D.B.S.): accepted chronology of Tagar culture at present time is as follows: Bainy stage: 7th to 6th centuries B.C.; Podgornoye stage: 6th to 5th centuries B.C.; Saragash stage: 4th to 3rd centuries B.C.; Tesi stage: 2nd to 1st centuries B.C. according to Gryaznov, 1968, p. 187.

12,180 ± 120

LE-771. Tashtyk I, Khakass Aut. Oblast

10,230 B.C.

Charcoal from Tashtyk I Paleolithic campsite on left [W] bank, Yenisey R., 2 km upstream from village of Bateni [$54^{\circ} 37' N$ Lat, $90^{\circ} 55' E$ Long]. Three cultural layers with Upper Paleolithic finds (Afontova-Gora culture) at site. Sample coll. from uppermost cultural layer, consisting of eroded hearth patches. Presumably coll. by Z. A. Abramova, Inst. Archaeol., Acad. Sci., USSR (E.M.S.). Ref.: Abramova, 1968. *Comment* (D.B.S.): date slightly later than, but compatible with, those from related Kokorevo series: Kokorevo I-II; GIN-90, 91 (R., 1968, v. 10, p. 435); Kokorevo I, III, IV; LE-526, 628, 629, 540, 469 (R., 1970, v. 12, p. 146).

Tuva ASSR series

Geologic samples from S-most reaches of Upper Yenisey R., Tuva ASSR. Subm. by S. N. Astakhov, Inst. Archaeol., Acad. Sci., USSR.

10,360 ± 110

LE-791. Bol'shaya Yenisey R.

8410 B.C.

Wood from buried soil in cross-sec., Bol'shaya Yenisey R., Tuva ASSR [mouth: $51^{\circ} 45' N$ Lat, $94^{\circ} 25' E$ Long]. Depth, 8 m.

3520 ± 60

LE-792. Khamsara R.

1570 B.C.

Wood from buried peat bog in exposed terrace, height 4-5 m, Khamsara R., Tuva ASSR [mouth: $52^{\circ} 45' N$ Lat, $95^{\circ} 50' E$ Long]. Depth, 1.5 m.

Central Siberia: Arctic Region

LE-793. Warm Lagoon, Taymyr Peninsula **34,500 ± 1000**
32,550 B.C.

Wood from marine terrace formed of sand, 6 km N of *Tyoplaya laguna* [Warm Lagoon], Pronchishcheva Coast, NE Taymyr Pen., Krasnoyarsk Krai [unlocated: Pronchishcheva Coast extends from ca. 74° 00' to 77° 00' N Lat, 113° 00' to 114° 00' E Long]. Depth, 3 m. Subm. by V. M. Makeyev.

*Yakut ASSR***Aldan River series**

Dyuktay Cave, Bel'kachi I and Ust'-Tampton sites presented below date a succession of newly described cultures of the Aldan and Lena valleys, Yakut ASSR. They include Dyuktay culture (Upper Paleolithic), Sumnagin ("Holocene Paleolithic"), Syalakh (Early Neolithic), Bel'kachi (Middle Neolithic) and Ymyyakhtakh (Late Neolithic). Cf. Mochanov, 1969a and b; Fig. 1.

Dyuktay Cave sub-series

Dyuktay Cave, Ust'-Maya Raion, on Dyuktay R., right [E] bank of Aldan R., 1030 km from mouth [ca. 59° 35' N Lat, 133° 10' E Long]. Excavated by Yu. A. Mochanov, Yakut Affiliate, Siberian Br., Acad. Sci., USSR. Ref.: Mochanov, 1969b.

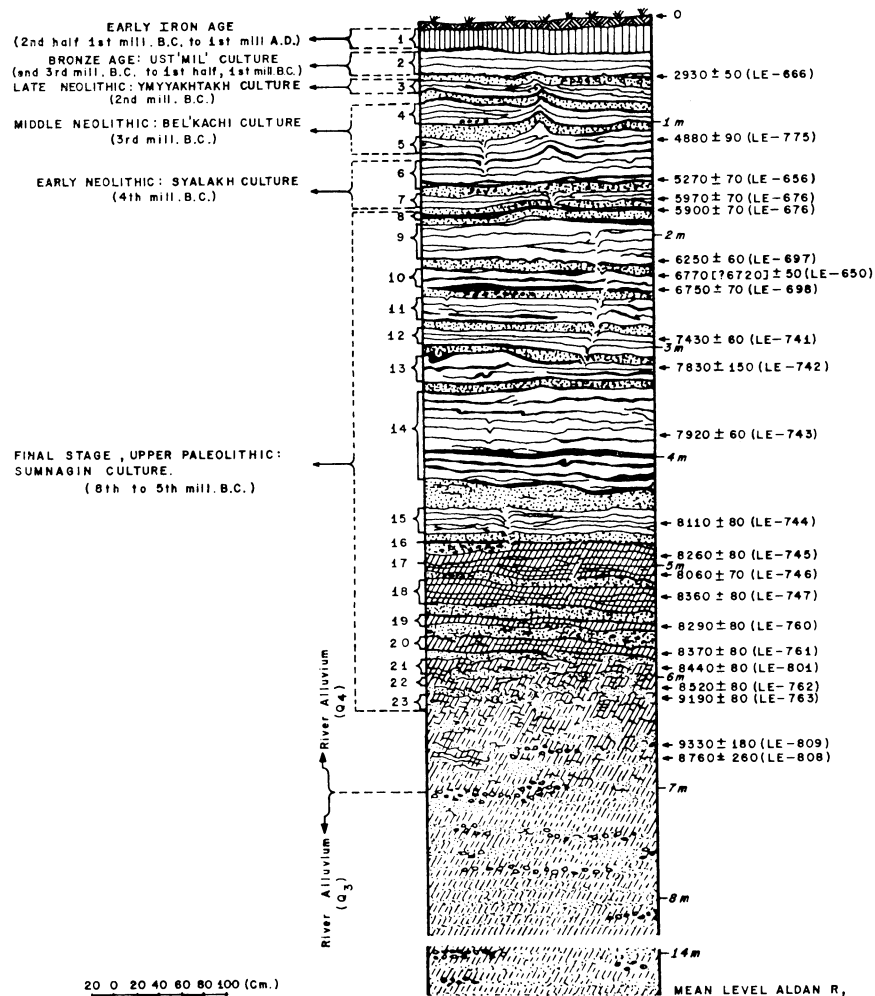
LE-829. Holocene layer **740 ± 50**
A.D. 1210

Charcoal from depth, 115 cm. *Comment* (D.B.S.): inconsistent with Mochanov's basic report (1969b, p. 235) that Holocene strata range in thickness from 10 to 30 cm in cave, and from 80 to 120 cm in platform at cave mouth. Cultural remains in Holocene strata range in type from Iron age to "Holocene Paleolithic" (Sumnagin culture).

LE-784. Upper hearth layer **13,070 ± 90**
11,120 B.C.

Charcoal from upper hearth layer, depth, 230 to 234 cm. *Comments* (Yu.A.M.): LE-784 pertains to Upper Paleolithic layer; LE-829 taken from upper lying deposits. (P.M.D.): Mochanov attributes complex [of Upper Paleolithic] finds to special "Dyuktay culture," genetically connected with Middle Paleolithic sites of Central Asia (Mochanov, 1969b, p. 239). (D.B.S.): Mochanov (*op. cit.*, p. 237) believes Upper Paleolithic materials ascribed to new "Dyuktay culture," belong to single cultural complex, assoc. with mammoth, bison, horse, muskox, collared lemming, and other fauna id. from 15,000 bones. About 10,000 flint artifacts include characteristic bifacially-worked spear points, and triangular and oval knives; disk-, wedge-type, and Levallois cores; mid- and side-line, multifaceted burins; massive, semilunar flensers (*skreblo*); miniature end-scrapers from blades; unifacial oval knives; massive blades with notched bases. Distinctive mammoth-bone artifacts are lanceolate, re-touched spear points. Distribution: Central Aldan R.

Figure 1. Summary Stratigraphic Cross Section
Bel'kachi I Multi-Stratum Campsite



Bel'kachi I sub-series

Bel'kachi I multi-stratum site is on left [W] bank of Aldan R., 1.3 km S of mouth of Ulakhan-El'ge R. [59° 00' N Lat, 131° 57' E Long]. Excavated by Yu. A. Mochanov. Refs.: Mochanov, 1969b; Mochanov *et al.*, in press. [For stratigraphy *cf.* Fig. 1]. Depths not given for LE-808, 809, 802, 764 (E.M.S.).

LE-808.

Charred wood from Layer 27.

8760 ± 260

6810 B.C.

LE-809. Charred wood from Layer 25; Quad. A-48.	9330 ± 180 7380 B.C.
LE-802. Wood from layer relating to Layers 25 and 24.	8740 ± 100 6790 B.C.
LE-764. Charcoal from Layer 24; Trench 50.	8470 ± 80 6520 B.C.
LE-763. Wood from Layer 23; depth, 6.2 m.	9190 ± 80 7240 B.C.
LE-762. Charcoal from Layer 22; depth, 6.1 m.	8520 ± 80 6570 B.C.
LE-801. Wood from Layer 21; depth, 5.9 m.	8440 ± 80 6490 B.C.
LE-761. Charred wood from hearth; Layer 20; depth, 5.7 m.	8370 ± 80 6420 B.C.
LE-740. Wood from layer relating to Layer 20; depth, 5.7 m.	8500 ± 160 6550 B.C.
LE-760. Wood from Layer 19; depth, 5.5 m.	8290 ± 80 6340 B.C.
LE-747. Wood from Layer 18; depth, 5.2 m.	8360 ± 80 6410 B.C.
LE-746. Charcoal from lower portion of Layer 17; depth, 5.1 m.	8060 ± 70 6110 B.C.
LE-745. Wood from upper portion of Layer 17; depth, 4.8 m.	8260 ± 80 6310 B.C.
LE-744. Wood from Layer 15; depth, 4.6 m.	8110 ± 80 6160 B.C.
LE-743. Wood from Layer 14; depth, 3.8 m.	7920 ± 60 5970 B.C.

LE-742.	7830 ± 150
Wood from Layer 13; depth, 3.2 m.	5880 B.C.
LE-741.	7430 ± 60
Wood from Layer 12; depth, 2.9 m.	5480 B.C.
LE-775.	4880 ± 90
	2930 B.C.

Charcoal from Layer 5; depth, 1.1 m. *Comments* (P.M.D.): previous dates for Bel'kachi I: 6750 ± 70 (St. 10a, LE-698, R., 1970, v. 12, p. 150); 6250 ± 60 (St. 9, LE-697, *ibid.*); 5900 ± 70 (St. 8, LE-678, *ibid.*); 5970 ± 70 (St. 7, LE-676, *ibid.*); 5270 ± 70 (St. 6, LE-656, *ibid.*); 2930 ± 50 (St. 2, LE-666, *ibid.*). (E.M.S.): note discrepancies between depths and strata numbers for other dates in Bel'kachi series, R., 1970, v. 12, p. 150, and Fig. 1, this list. (D.B.S.): Mochanov (1969a, p. 124-143) ascribes Strata 11 through 8 (23 through 8, Fig. 1, this list) to Sumnagin culture, Early Holocene. Known sites are surface, evidently seasonal, dwellings with pebble hearths, at mouths of streams, on lower horizon of flood-plain facies of alluvium forming high flood plain, or on covering clayey or sandy loams of flood-plain terraces. Common fauna: moose, bear, reindeer. Flint implements from blades struck from carefully prepared prismatic or wedge cores include especially: knife blades; secondary angle and side burins; end scrapers; inserts; punches; pointed knives (*ostriya*); notched blades. Burin points were made by edge-pressure retouch rather than burin spalling. In early strata, 60 to 85% of all flint tools are microlithic, under 0.4 cm wide; in late strata, 10%. Early to late, flake tools rise from 0 to 15%, including end scrapers (some with small side lugs); bifacially worked chisel tools; side- and mid-line burins. Massive chopping tools and flensers of diabase and quartzite constitute 5 to 10% of total inventories. Spear, dart and arrow points absent. Sandstone slabs used for polishing bone; bone punches and pointed knives also found. Stone net weights found in Late stage. Distribution: Type site, Sumnagin I (58° 55' N Lat, 127° 35' E Long) on Aldan R., S to Ust'-Trompton (LE-832, 831, 830, this list), N to mouth of Aldan R.; W on Lena R. to At-Daban (60° 25' N Lat, 120° 15' E Long) and Nyuya (60° 35' N Lat, 116° 20' E Long); for At-Daban and Nyuya, *cf.* Beregovaya, 1960, p. 93, nos. 421, 423.

Strata 7 and 6 ascribed by Mochanov (1969a, p. 144-164) to Syalakh (Early Neolithic) culture, characterized by net-marked pottery, partly retouched arrowpoints prepared from blades; bifacially-worked, leaf-shaped arrowpoints; rectangular, polished adzes; and multi-toothed, one-sided bone harpoon points. Settlement patterns, flint tools, hunting and fishing continue Sumnagin culture patterns. Distribution: Type site, Syalakh Lake (66° 10' N Lat, 124° 25' E Long); on Aldan R. from Sumnagin I (St. 14 through 11) to mouth; on Lena R. from Solyanka (on N bank of Lena R., ca. 59° 15' N Lat, 112° 00' E Long) to Chekurov-

ka (71° 00' N Lat, 127° 15' E Long); on Vilyuy R. from Ust'-Chona I (62° 40' N Lat, 111° 15' E Long) to mouth. Early Neolithic of Amguyema R. (Amguyema site [67° 20' N Lat, 178° 00' W Long]: 6665 ± 110 [GIN-182, R., 1968, v. 10, p. 442]) is probably related; cf. Levoshin, 1950; Okladnikov, 1950.

Strata 5 and 4 ascribed by Mochanov (*op. cit.*, p. 165-183) to Bel'-kachi (Middle Neolithic) culture, distinguished from Early Neolithic by cord-decorated pottery made by paddle-and-anvil technique; shouldered and lugged adzes; retouched ground adzes; bifacially retouched triangular arrowpoints with asymmetrical grooves at base; fiddle-shaped hoes; multifaceted burins with bifacially flattened grips; bifacially retouched knives with "button" lugs. Distribution: Type site, Bel'kachi I; Sumnagin I (St. 10 and 9). On Aldan, Lena and Vilyuy R., as for Sumnagin culture; also Khatanga (72° 00' N Lat, 102° 30' E Long), Nizhne Kolymsk (68° 30' N Lat, 167° 00' E Long) and Anadyr R. region, especially Ust'-Belaya (64° 55' N Lat, 172° 15' E Long).

Mochanov (*op. cit.*, p. 184-196) ascribes St. 3 to Ymyyakhtakh (Late Neolithic) culture of semi-sedentary fishermen and hunters living in complexes of primary and seasonal settlements in surface dwellings. Cliff at Suruktaakh-khaya (60° 40' N Lat, 123° 10' E Long) served as offering place, with ceremonial fire-drilling and pictography. Stone artifacts include bifacially retouched arrow and spearpoints and knives; slate and nephrite rectangular adzes; white nephrite rings; diabase and quartzite net weights. Bone artifacts: spear points; knives with flint-insert blades; awls; needles; flakers and retouchers. Characteristic pottery, built up of several layers of clay, and paddle-decorated ("waffled") is abundant. Distribution: Type site, Ymyyakhtakh Lake (ca. 63° 00' N Lat, 130° 20' E Long). Aldan R., as for Sumnagin culture; Lena R., Suruktaakh-khaya to Staryy Siktyakh (69° 55' N Lat, 124° 50' E Long); lower Indigirka R. and lower Kolyma R.

Data on Ust' Mil' Bronze age culture (St. 2) are lacking; type site at 59° 45' N Lat, 133° 00' E Long.

Ust'-Timpleton sub-series

Ust'-Timpleton campsite is on Timpleton R., branch of Aldan R. [58° 45' N Lat, 128° 05' E Long]. Ref.: Mochanov, 1969a, p. 124-126. Depths not given (E.M.S.).

LE-832.	9020 ± 80
Charcoal from Layer 4.	7070 B.C.
	9000 ± 110
	7050 B.C.
LE-831.	8380 ± 80
Charcoal from Layer 4 c.	6430 B.C.
	8150 ± 60
	6200 B.C.

2200 ± 50
250 B.C.

LE-830.

Charcoal from Layer 2. *Comment* (P.M.D.): LE-832 and 831 attributed to Sumnagin culture (D.B.S.); Stratum 4 lies in lower part of alluvium covering high flood plain, 15 m above mean water level. Cultural remains lie in dark detritic patches in sandy loam. Moose and bear bones, and flint inventories of Sumnagin culture assoc. with pebble hearths (Mochanov, 1969a, p. 124-26). Stratum 2 consists of yellow-orange loam 10-15 cm thick, separated from Strata 1 and 3 by sterile layers. Inventory is Late Neolithic (Ymyyakhtakh), (Mochanov, 1969a, p. 188). Date inconsistent with Fig. 1.

Khabarovsk Krai and Amur Oblast

860 ± 50

LE-826. Bolon' cemeteries, Khabarovsk Krai A.D. 1090

Charcoal from Bolon' cemeteries, Khabarovsk Krai [51° 55' N Lat, 136° 35' E Long]. Subm. by A. P. Okladnikov, Inst. Archaeol., Acad. Sci., USSR. *Comment* (D.B.S.): inconsistent date: "Mokhe culture" generally attributed to beginning of Christian era to beginning of 7th century A.D. (Shavkunor and Derevyanko, 1968, p. 307-13). Term "Mokhe" derived from name for N tribes in Chinese annals.

2330 ± 50
380 B.C.

LE-825. Mikhaylovka village, Amur Oblast

Charred wood from settlement at Mikhaylovka village [probably same as Mikhaylovskiy: ca. 51° 15' N Lat, 139° 50' E Long]. Depth, 0.6 m. Subm. by A. P. Derevyanko, Siberian Br., Acad. Sci., USSR. *Comment* (D.B.S.): remains of fortified, moated village [*gorodishche*], 6000 m², destroyed by fire. Includes 8 rectangular pit houses; Mokhe stamped pottery; many domesticated goat and swine bones; agriculture evidenced only by mullers. Iron arrows, knives, needles, awls, punches, axes, fish hooks; bone plate armor, decorations, needles; many reindeer antler artifacts (Derevyanko, 1968, p. 235-236). For another early date for iron on Amur R., see Pol'tso: 2930 ± 80 (LE-652, R., 1970, v. 12, p. 152); also Derevyanko, 1966.

Antarctica

1220 ± 80
A.D. 730

LE-730. Molodezhnaya station

Peaty moss from *stantsiya Molodezhnaya* [Molodezhnaya Sta.: 67° 40' S Lat, 45° 51' E Long; Soviet scientific sec.], Antarctica. Subm. by V. M. Kameney, Inst. Arctic and Antarctic.

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ADDENDA

For 2 previous lists from Mstislav Keldysh see: R., 1968, v. 10, p. 417-67; 1970, v. 12, p. 130-155, and a note on Soviet radiocarbon dates: Shimkin, D. B. and Shimkin, E. M., 1967, Field Research Projects (FRP), Occas. Paper No. 1, p. 1-18. For radiocarbon dates see Frumkin, Grégoire, Archaeology in Soviet Central Asia, 1971, Leiden/Köln, p. 20, 58, 129, 130, 134, 139. For Beregovaya, see Peabody Mus. Russian trans. ser. (PMRTS), v. 3, no. 1. See also Okladnikov, Ancient population of Siberia and its cultures, PMRTS, v. 1, no. 1. For Transcaucasia, see Tret'yakov and Mongayt, PMRTS, v. 1, no. 3. For Armenia, see PMRTS, v. 3, no. 3. For Harappan bibliog., see Pande, B. M., Sept. 1971, FRP, Coconut Grove, Florida. Table 1 was redrawn by Robert L. Carrodus, NOAA, University of Miami. (H.F.).