

UNIVERSITY OF LUND RADIOCARBON DATES VI

Sören Håkansson

Radiocarbon Dating Laboratory, Department of Quaternary Geology
University of Lund, Sweden

INTRODUCTION

Most of the C^{14} measurements reported here were made between October 1971 and October 1972. Equipment, measurement, and treatment of samples are the same as reported previously (R., 1968, v. 10, p. 36-37; 1970, v. 12, p. 534).

Age calculations are based on a contemporary value equal to 0.950 of the activity of NBS oxalic acid standard and on the "conventional" half-life for C^{14} of 5568 yr. Results are reported in years before 1950 (years B.P.), and in the A.D./B.C. scale. Errors quoted ($\pm 1\sigma$) include standard deviations of count rates for the unknown sample, contemporary standard, and background. Corrections for deviations from the "normal" C^{13}/C^{12} ratio for terrestrial plants ($\delta C^{13} = -25.0\text{‰}$ in the PDB scale) are applied for all samples; also for marine shells, because apparent age of recent marine shells is not always just counterbalanced by the effect of isotopic fractionation (cf. Recent marine shells series, this list). δC^{13} values quoted are relative to the PDB standard.

The remark, "undersized; diluted", in *Comments* means the sample did not produce enough CO_2 to fill the counter to normal pressure and "dead" CO_2 from anthracite was introduced to make up the pressure. "% sample" indicates amount of CO_2 derived from the sample present in the diluted counting gas; the rest is "dead" CO_2 . Organic carbon content reported for bone sample is calculated from yield of CO_2 by combustion of pretreated collagen. Organic carbon lost during treatment is not included in calculated percentage.

The description of each sample is based on information provided by the submitter.

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SAMPLE DESCRIPTIONS

I. GEOLOGIC SAMPLES

A. Sweden

Lilla Toften series

Sediment from ancient lake Lilla Toften, Västmanland, Central Sweden (59° 48' N Lat, 16° 17' E Long). Coll. 1970 and subm. by S. Welinder, Dept. Quaternary Geol., Univ. Lund. Depths given are below surface. Only weak pretreatment with HCl due to small samples. All

samples diluted. Amount of CO₂ from sample is given in *Comments* below as “% sample”.

- Lu-417. Lilla Toften 1, 1.025 to 1.075m** **440 ± 60**
A.D. 1510
 $\delta C^{13} = -27.3\text{‰}$
 Clayey mud. *Picea* increase. *Comment*: 46% sample. (3 1-day counts.)
- Lu-418. Lilla Toften 2, 1.075 to 1.125m** **680 ± 60**
A.D. 1270
 $\delta C^{13} = -27.6\text{‰}$
 Clayey mud. *Picea* increase. *Comment*: 52% sample. (3 1-day counts.)
- Lu-419. Lilla Toften 3, 1.475 to 1.525m** **2450 ± 85**
500 B.C.
 $\delta C^{13} = -29.7\text{‰}$
 Clayey mud. Rational *Picea* limit. *Comment*: 36% sample. (3 1-day counts.)
- Lu-420. Lilla Toften 4, 1.525 to 1.575m** **2660 ± 80**
710 B.C.
 $\delta C^{13} = -29.4\text{‰}$
 Clayey mud. Rational *Picea* limit. *Comment*: 42% sample. (3 1-day counts.)
- Lu-421. Lilla Toften 5, 2.575 to 2.625m** **5530 ± 110**
3580 B.C.
 $\delta C^{13} = -28.2\text{‰}$
 Clayey mud. *Quercus* increase. *Comment*: 42% sample. (3 1-day counts.)
- Lu-422. Lilla Toften 6, 2.625 to 2.675m** **5740 ± 95**
3790 B.C.
 $\delta C^{13} = -28.5\text{‰}$
 Clayey mud. *Quercus* increase. *Comment*: 50% sample. (3 1-day counts.)
- Lu-423. Lilla Toften 7, 3.550 to 3.625m** **6400 ± 120**
4450 B.C.
 $\delta C^{13} = -29.4\text{‰}$
 Clayey brackish mud. Rational *Tilia* limit. *Comment*: 53% sample.
- Lu-424. Lilla Toften 8, 3.625 to 3.700m** **6510 ± 100**
4560 B.C.
 $\delta C^{13} = -28.8\text{‰}$
 Clayey brackish mud. Rational *Tilia* limit. *Comment*: 40% sample. (3 1-day counts.)
- Lu-534. Lilla Toften 9 + 10, 1.825 to 1.925m** **3910 ± 70**
1960 B.C.
 $\delta C^{13} = -29.4\text{‰}$
 Clayey mud. *Ulmus* decrease. *Comment*: 77% sample.

Myrby series

Sediment from small ancient lake at the farm Myrby, Västmanland, Central Sweden (59° 42' N Lat, 16° 31' E Long). Coll. 1971 and subm. by S. Welinder. Depths given are below surface. Pretreated with HCl only.

Lu-536. Myrby 1, 1.30 to 1.35m **4160 ± 60**
2210 B.C.
 $\delta C^{13} = -27.3\text{‰}$

Clayey mud. Beginning of *Plantago*.

Lu-537. Myrby 2, 1.35 to 1.40m **4080 ± 65**
2130 B.C.
 $\delta C^{13} = -26.3\text{‰}$

Clayey mud. Beginning of *Plantago*.

Lu-538. Myrby 3, 1.60 to 1.65m **4930 ± 85**
2980 B.C.
 $\delta C^{13} = -24.1\text{‰}$

Clayey brackish mud. Supposed 1st traces of agriculture. *Comment:* sample undersized; diluted; 72% sample.

Lu-539. Myrby 4, 1.65 to 1.70m **4870 ± 75**
2920 B.C.
 $\delta C^{13} = -24.1\text{‰}$

Clayey brackish mud. Supposed 1st traces of agriculture. *Comment:* sample undersized; diluted; 76% sample.

Frövisjön series

Sediment from ancient lake Frövisjön, Västmanland, Central Sweden (59° 42' 40" N Lat, 16° 29' 40" E Long). Coll. 1971 and subm. by S. Welinder. Depths given are below surface. Pretreated with HCl only.

Lu-615. Frövisjön 1 + 2, 0.375 to 0.475m **1940 ± 55**
A.D. 10
 $\delta C^{13} = -25.1\text{‰}$

Mud. *Quercus* increase.

Lu-616. Frövisjön 3 + 4, 0.775 to 0.875m **2700 ± 55**
750 B.C.
 $\delta C^{13} = -23.2\text{‰}$

Clayey mud. Rational *Picea* limit.

Lu-617. Frövisjön 5 + 6, 0.975 to 1.075m **2880 ± 55**
930 B.C.
 $\delta C^{13} = -25.4\text{‰}$

Clayey mud. Empiric *Picea* limit.

Lu-618. Frövisjön 7, 2.325 to 2.425m **4500 ± 75**
2550 B.C.
 $\delta C^{13} = -26.0\text{‰}$

Clayey brackish mud.

Barsebäcksmossen series

Sediment and peat from Barsebäcksmossen, 15km N of city of Malmö, S Sweden (55° 46' N Lat, 12° 58' E Long). Alt. 1 to 1.5m, area 1.5 sq. km. Coll. 1968 to 1969 and subm. by G. Digerfeldt, Dept. Quaternary Geol., Univ. Lund. Barsebäcksmossen is an ancient Littorina lagoon. Dating is part of study of transgressions and regressions indicated by stratigraphy and diatom analysis. Samples come from reconnaissance profile from shallow part of ancient lagoon (Digerfeldt, 1972), and from main profile, central and deepest part of basin. Depths refer to bog surface. Pretreated with HCl only (except Lu-578, -641, and -642). Some samples were given prolonged acid treatment owing to presence of mollusk shells and other carbonates in abundance. One sample contained enough *Cardium* shells for separate dating. From 2 samples total CaCO₃ fraction was separated for dating.

Barsebäcksmossen, reconnaissance profile:

Lu-426. Barsebäcksmossen, 199 to 204cm **9640 ± 95**
7690 B.C.
 $\delta C^{13} = -25.8\%$

Cladium—magnocaricetum peat, moderately humified, underlying Pollen Zone Boundary PB/BO 1.

Lu-427. Barsebäcksmossen, 175 to 180cm **8910 ± 90**
6960 B.C.
 $\delta C^{13} = -25.8\%$

Cladium—magnocaricetum peat, moderately humified, in BO 1.

Lu-428. Barsebäcksmossen, 160 to 165cm **8530 ± 90**
6580 B.C.
 $\delta C^{13} = -26.4\%$

Cladium—magnocaricetum peat, moderately humified, at BO 1/BO 2.

Lu-429. Barsebäcksmossen, 120 to 125cm **6430 ± 75**
4480 B.C.
 $\delta C^{13} = -19.7\%$

Brackish gyttja, in AT 2.

Lu-430. Barsebäcksmossen, 100 to 105cm **5980 ± 70**
4030 B.C.
 $\delta C^{13} = -18.2\%$

Brackish gyttja, in AT 2.

Lu-431. Barsebäcksmossen, 70 to 75cm **5470 ± 65**
3520 B.C.
 $\delta C^{13} = -18.5\%$

Brackish gyttja, overlying AT 2/SB 1.

Lu-447. Barsebäcksmossen, 55 to 60cm **5210 ± 65**
3260 B.C.
 $\delta C^{13} = -19.7\%$

Brackish gyttja rich in mollusk shells, in SB 1.

Lu-449. Barsebäcksmossen, 40 to 45cm **5220 ± 65**
3270 B.C.
 $\delta C^{13} = -19.7\text{‰}$

Brackish gyttja rich in mollusk shells, in SB 1.

Lu-578. Barsebäcksmossen, 30 to 35cm **4810 ± 65**
2360 B.C.
 $\delta C^{13} = -20.6\text{‰}$

Brackish gyttja, in SB 1. *Comment:* because of proximity to surface and abundant root hairs, sample was specially treated for removal of root hairs and humus. Treated material was divided in coarse and fine fraction by sieving (2 mm net), and dated separately. Both fractions yielded same age (4810 ± 65).

Lu-432. Barsebäcksmossen, **6540 ± 140**
120 to 125cm, Cardium **4590 B.C.**
 $\delta C^{13} = +1.5\text{‰}$

Cardium shells separated from Lu-429. *Comment:* sample undersized; diluted; 42% sample.

Lu-448. Barsebäcksmossen, 55 to 60cm, CaCO₃ **5100 ± 90**
3150 B.C.
 $\delta C^{13} = -0.3\text{‰}$

Total CaCO₃ fraction separated from Lu-447. *Comment:* sample undersized; diluted; 48% sample. (3 1-day counts.)

Lu-450. Barsebäcksmossen, 40 to 45cm, CaCO₃ **4990 ± 95**
3040 B.C.
 $\delta C^{13} = -0.3\text{‰}$

Total CaCO₃ fraction separated from Lu-449. *Comment:* sample undersized; diluted; 57% sample.

General Comment: corrections for deviations from “normal” C¹³/C¹² ratio for terrestrial plants ($\delta C^{13} = -25.0\text{‰}$ in PDB scale) are applied also for shell and CaCO₃ samples. No corrections are made for apparent age of shells of living marine mollusks (cf. Lu-234-236, R., 1969, v. 11, p. 441 and Lu-237, 1970, v. 12, p. 543). Preliminary results of study were pub. by submitter (Digerfeldt, 1972).

Barsebäcksmossen, main profile:

Lu-693. Barsebäcksmossen, 1057.5 to 1062.5cm **11,400 ± 130**
9450 B.C.
 $\delta C^{13} = -25.4\text{‰}$

Lacustrine clay gyttja. *Comment:* undersized; diluted; 82% sample.

Lu-694. Barsebäcksmossen, 1037.5 to 1042.5cm **9910 ± 100**
7960 B.C.
 $\delta C^{13} = -31.0\text{‰}$

Lacustrine clayey gyttja.

Lu-636. Barsebäcksmossen, 1025 to 1030cm	8960 ± 110 7010 B.C. $\delta C^{13} = -30.2\text{‰}$
Lacustrine clayey gyttja. <i>Comment:</i> undersized; diluted; 78% sample.	
Lu-637. Barsebäcksmossen, 990 to 995cm	8380 ± 90 6430 B.C. $\delta C^{13} = -28.9\text{‰}$
Lacustrine gyttja.	
Lu-570. Barsebäcksmossen, 962.5 to 967.5cm	7610 ± 80 5660 B.C. $\delta C^{13} = -30.7\text{‰}$
Lacustrine gyttja.	
Lu-569. Barsebäcksmossen, 950 to 955cm	7380 ± 80 5430 B.C. $\delta C^{13} = -25.0\text{‰}$
Probably brackish gyttja.	
Lu-689. Barsebäcksmossen, 835 to 840cm	6220 ± 70 4270 B.C. $\delta C^{13} = -18.5\text{‰}$
Brackish gyttja.	
Lu-690. Barsebäcksmossen, 735 to 740cm	5900 ± 70 3950 B.C. $\delta C^{13} = -19.1\text{‰}$
Brackish gyttja.	
Lu-638. Barsebäcksmossen, 625 to 630cm	5560 ± 65 3610 B.C. $\delta C^{13} = -17.3\text{‰}$
Brackish gyttja.	
Lu-639. Barsebäcksmossen, 560 to 565cm	5180 ± 65 3230 B.C. $\delta C^{13} = -18.2\text{‰}$
Brackish gyttja.	
Lu-691. Barsebäcksmossen, 510.5 to 515.0cm	5010 ± 65 3060 B.C. $\delta C^{13} = -18.2\text{‰}$
Brackish gyttja.	
Lu-640. Barsebäcksmossen, 455 to 460cm	5060 ± 65 3110 B.C. $\delta C^{13} = -17.3\text{‰}$
Brackish gyttja.	
Lu-561. Barsebäcksmossen, 345 to 350cm	4410 ± 65 2460 B.C. $\delta C^{13} = -22.9\text{‰}$
Brackish gyttja.	

Lu-560. Barsebäcksmossen, 257.5 to 262.5cm **4010 ± 65**
2060 B.C.
 $\delta C^{13} = -23.8\%$

Brackish gyttja.

Lu-692. Barsebäcksmossen, 135 to 140cm **3150 ± 55**
1200 B.C.
 $\delta C^{13} = -28.0\%$

Lacustrine gyttja.

Lu-641. Barsebäcksmossen, 55 to 60cm **2280 ± 55**
330 B.C.
 $\delta C^{13} = -28.0\%$

Lacustrine gyttja. *Comment:* pretreated with HCl and NaOH.

Lu-641 A. Barsebäcksmossen, 55 to 60cm **2250 ± 60**
humic acid **300 B.C.**
 $\delta C^{13} = -27.4\%$

Acid-precipitated part of NaOH-soluble fraction from Lu-641.

Lu-642. Barsebäcksmossen, 37.5 to 42.5cm **1160 ± 50**
A.D. 790
 $\delta C^{13} = -26.5\%$

Carr peat, highly humified.

Lu-642 A. Barsebäcksmossen, 37.5 to 42.5cm, **1190 ± 55**
humic acid **A.D. 760**
 $\delta C^{13} = -27.4\%$

Acid-precipitated part of NaOH-soluble fraction from Lu-642. *Comment:* undersized; diluted; 82% sample.

Lu-592. Sandön **1030 ± 50**
A.D. 870
 $\delta C^{13} = -25.1\%$

Wood from outer part of oak stump from 2.5m depth in Lake Vättern, near Sandön I., ca. 10km NW of Motala (58° 33' N Lat, 14° 52' E Long). Coll. 1969 by Göran Lord; subm. by G. Digerfeldt. Pretreated with HCl and NaOH.

Vassijaure series

Sediment (Livingstone core sampler, diam. 36mm) from small lake, ca. 150 x 150m, 1100m ENE of p. 514.22 near Vassijaure, Torne Lappmark, N Sweden (68° 25' N Lat, 18° 17' E Long). Alt. 480m, close to timberline in sub-alpine region. Coll. 1966 and subm. by M. Sonesson, Dept. Plant Ecol., Univ. Lund. Dating is part of study on vegetational dynamics and peat development in Torneträsk area (Sonesson, 1968; 1970 a, b). Other dates in series were reported previously (R., 1969, v. 11, p. 441-443). Depths given in sample titles refer to lake water level. Water depth 3.0m at sampling point. Pretreated with HCl only. All samples undersized; diluted. Amount of CO₂ from sample is given in *Comments* below as “% sample”.

- Lu-503. Vassijaure, Gp 4, 395 to 405cm** **9040 ± 190**
7090 B.C.
 $\delta C^{13} = -28.5\%$

Detritus gyttja and clay, at Zone Boundary T1/T2. *Comment* (M.S.): date agrees well with previous dates for same boundary (cf. R., 1969, v. 11, p. 442). 40% sample.

- Lu-622. Vassijaure, Gp 4, 365 to 375cm** **5940 ± 115**
3990 B.C.
 $\delta C^{13} = -29.5\%$

Detritus gyttja, at and underlying probable Zone Boundary T2/T3. *Comment* (M.S.): date much younger than corresponding boundary in Abisko valley (cf. R., 1969, v. 11, p. 442-443). 50% sample.

- Lu-623. Vassijaure, Gp 4, 355 to 365cm** **5520 ± 130**
3570 B.C.
 $\delta C^{13} = -29.2\%$

Detritus gyttja, overlying probable Zone Boundary T2/T3. *Comment* (M.S.): same as for Lu-622. 33% sample. (3 1-day counts.)

- Lu-624. Vassijaure, Gp 4, 330 to 340cm** **4570 ± 125**
2620 B.C.
 $\delta C^{13} = -27.9\%$

Detritus gyttja, at supposed Zone Boundary T3/T4. *Comment* (M.S.): date too old for that boundary. 38% sample.

- Lu-625. Vassijaure, Gp 4, 316 to 325cm** **3520 ± 100**
1570 B.C.
 $\delta C^{13} = -27.6\%$

Detritus gyttja, at supposed Sub-Zone Boundary T4a/T4b. *Comment* (M.S.): date instead indicates Zone Boundary T3/T4. 42% sample.

Abisko series

Sediment (Livingstone core sampler, diam. 36mm) from sub-alpine lakes in Abisko valley, Torne Lappmark, N Sweden. Coll. 1963 and subm. by M. Sonesson. Dating is part of study on vegetational dynamics and peat development in Torneträsk area (Sonesson, 1968; 1970a, b). Other dates from Abisko valley were reported previously (R., 1969, v. 11, p. 441-443). Depths given refer to lake water level. Pretreated with HCl only. All samples except Lu-579 and -582 were undersized; diluted. Amount of CO₂ from sample is given in *Comments* below as “% sample”.

- Lu-627. Vuolep Njakajaure, Gp 3, 1530 to 1540cm** **7910 ± 115**
5960 B.C.
 $\delta C^{13} = -30.7\%$

Detritus gyttja, underlying Sub-Zone Boundary T2a/b, Lake Vuolep Njakajaure (68° 20' N Lat, 18° 48' E Long). Alt. 409m; size ca. 500 x 600m. Water depth 12.5m at sampling point. *Comment*: 64% sample.

- Lu-628. Vuolep Njakajaure, Gp 3, 1520 to 1530cm** **7460 ± 90**
5510 B.C.
 $\delta C^{13} = -32.3\text{‰}$
- Detritus gyttja, overlying Sub-Zone Boundary T2a/b. *Comment:* 88% sample.
- Lu-629. Vuolep Njakajaure, Gp 3, 1415 to 1425cm** **4270 ± 90**
2320 B.C.
 $\delta C^{13} = -30.6\text{‰}$
- Detritus gyttja, underlying Sub-Zone Boundary T3a/b. *Comment:* 57% sample.
- Lu-630. Vuolep Njakajaure, Gp 3, 1405 to 1415cm** **4040 ± 90**
2090 B.C.
 $\delta C^{13} = -30.6\text{‰}$
- Detritus gyttja, underlying Sub-Zone Boundary T3a/b. *Comment:* 57% sample.
- Lu-631. Vuolep Njakajaure, Gp 3, 1290 to 1300cm** **1690 ± 100**
A.D. 260
 $\delta C^{13} = -30.6\text{‰}$
- Detritus gyttja, overlying Sub-Zone Boundary T4b/c. *Comment:* 36% sample.
- Lu-580. Tjåutjanjarka N, F1:4, 360.5 to 366.5cm** **10,680 ± 120**
8730 B.C.
 $\delta C^{13} = -21.4\text{‰}$
- Sample from transition zone clay/detritus gyttja from N-most lake on cape Tjåutjanjarka at mouth of Abisko valley (68° 22' N Lat, 18° 56' E Long). Alt. 370m; size ca. 300 x 400m. Water depth 1.6m at sampling point. *Comment:* 82% sample.
- Lu-579. Tjåutjanjarka S, E1:6, 1047 to 1052cm** **10,820 ± 110**
8870 B.C.
 $\delta C^{13} = -26.8\text{‰}$
- Sample from transition zone clay/detritus gyttja from lake ca. 500m SE of sampling place for Lu-580. Alt. 383m; size ca. 300 x 400m. Water depth 6.9m at sampling point.
- Lu-581. Kartinvare, D2:3, 580 to 585cm** **9840 ± 130**
7890 B.C.
 $\delta C^{13} = -25.4\text{‰}$
- Sample from transition zone clay/detritus gyttja from lake 2.2km NW of p. 1154 (Mt. Kartinvare), ca. 17km SW of mouth of Abisko valley (68° 15' N Lat, 18° 33' E Long). Alt. 511m; size ca. 150 x 300m. Water depth 3.8m at sampling point. *Comment:* 71% sample.

Lu-582. Pajeb Njakajaure, P3:6, 529 to 534cm **10,590 ± 110**
8640 B.C.
 $\delta C^{13} = -28.3\text{‰}$

Sample from transition zone clay/detritus gyttja from Lake Pajeb Njakajaure (68° 20' N Lat, 18° 50' E Long). Alt. 469m; size ca. 200 x 400m. Water depth 3.1m at sampling point.

Luopakte series

Peat from perennially frozen mire, size ca. 50 x 100m, on low-alpine part of Mt. Luovare, 1.2km SSE of p. 627.89, Torne Lappmark, N Sweden (68° 14' N Lat, 19° 29' E Long). Alt. 670m. Coll. 1963 and subm. by M. Sonesson. Dating is part of study on vegetational dynamics and peat development in Torneträsk area (Sonesson, 1968; 1970a, b). For other dates from this site, see R., 1971, v. 13, p. 343. Depths given refer to surface of mire.

Lu-632. Luopakte, Bp 140, 85 to 95cm **6520 ± 110**
4570 B.C.
 $\delta C^{13} = -27.1\text{‰}$

Highly humified peat, at supposed Boundary T2/T3. *Comment* (M.S.): date confirms supposition. No pretreatment due to small sample; diluted; 57% sample.

Lu-633. Luopakte, Bp 140, 70 to 80cm **6160 ± 130**
4210 B.C.
 $\delta C^{13} = -28.7\text{‰}$

Highly humified peat, at boundary between minerogenous and ombrogenous peat (composed *i. a.* of *Dicranum cf. elongatum*). *Comment*: no pretreatment due to small sample; diluted; 18% sample. (2 2-day counts.)

Lu-634. Luopakte, Bp 140, 40 to 50cm **4180 ± 100**
2230 B.C.
 $\delta C^{13} = -27.4\text{‰}$

Relatively highly humified peat, at and below Boundary T3/T4. *Comment* (M.S.): date plausible considering low rate of peat deposition and Lu-635. Only weak HCl pretreatment due to small sample; diluted; 50% sample.

Lu-635. Luopakte, Bp 140, 30 to 40cm **3070 ± 75**
1120 B.C.
 $\delta C^{13} = -27.1\text{‰}$

Relatively highly humified peat, at and above Boundary T3/T4. *Comment* (M.S.): see Lu-634. Only weak HCl pretreatment due to small sample; diluted; 48% sample. (3 1-day counts.)

Bysjön series

Sediment from Lake Bysjön; near coast of central Blekinge (56° 11' N Lat, 15° 08' E Long). Site and samples of main sec. Bysjön I (R., 1971,

v. 13, p. 344-345) and Bysjön III (R., 1972, v. 14, p. 382-383) described earlier. New series is derived from Bysjön II, a sec. in lake near shore studied to determine the sub-recent sedimentation rate. Water depth 140cm. Depths given are below lake water level. Coll. 1971 and subm. by B. E. Berglund, Dept. Quat. Geol., Univ. Lund. Pretreated with HCl only.

Lu-614. Bysjön 19, 220 to 230cm **420 ± 55**
A.D. 1530
 $\delta C^{13} = -30.4\%$

Lacustrine detritus gyttja; end of Pollen Zone SA 2. *Comment:* under-sized; diluted; 77% sample.

Lu-621. Bysjön 20, 190 to 200cm **Modern**
 $\delta C^{13} = -29.6\%$

Lacustrine detritus gyttja. *Comment:* sample activity corresponds to radiocarbon age 10 ± 50 B.P.

General Comment (B.E.B.): analyses indicate unusually rapid sedimentation in this part of lake.

Lu-620. Skillinge 4 **6150 ± 70**
4200 B.C.
 $\delta C^{13} = -24.0\%$

Peat from lowest of 5 layers of allochthonous organic material in sand from Littorina stage of the Baltic Sea, 0.9m below surface on building site No. 258, 550m NNE of Skillinge harbor, E Scania (55° 29' N Lat, 14° 17' E Long). Complement to earlier dates from Skillinge (R., 1970, v. 12, p. 545). Coll. 1969 by W. Vortisch; subm. by B. E. Berglund. Pretreated with HCl only.

B. Poland

Lu-613. Lake Pakoskie, peat **3410 ± 50**
1460 B.C.
 $\delta C^{13} = -26.4\%$

Peat from 1.4m depth in lake terrace at Lake Pakoskie, ca. 45km SW of Torun, Voivodeship Bydgoszcz, N Poland (52° 43' N Lat, 18° 06' E Long). Terrace plane 3 to 4m above present lake water level. Peat 0.2m thick, overlain by 0.7m sandy silt and lake marl with shells and plant fossils, underlain by 0.4m marly sand with gravel and intercalations of peat. Coll. 1972 and subm. by W. Niewiarowski, Dept. Geog., Univ. Torun, Poland. Part of study of Holocene lake water level fluctuation in N Poland. Pretreated with HCl and NaOH.

Lu-613A. Lake Pakoskie, humic acid **3480 ± 60**
1530 B.C.
 $\delta C^{13} = -27.2\%$

Acid-precipitated part of NaOH-soluble fraction from Lu-613.

C. Greenland

East Greenland series (II)

Marine shells from emerged marine sediments in Kong Oscars Fjord-Vega Sund dist., NE Greenland. Coll. 1971 and subm. by C. Hjort, Dept. Quaternary Geol., Univ. Lund; part of 3-yr program for study of ice oscillations and shoreline displacement. For other dates from area, see R., 1972, v. 14, p. 388-390.

+ 2600

38,400

- 2000

Lu-532. Kap Mackenzie, 120 to 126m**36,450 B.C.** $\delta C^{13} = +0.1\text{‰}$

Shell fragments (*Hiatella arctica* and *Mya truncata*) from silty clay at +120 to 126m on mt. constituting Kap Mackenzie (72° 54' N Lat, 21° 54' W Long), Geographical Society Ö. Clay deposited in exposed position but undisturbed by ice; thus, probably postdates last ice-advance (Funder and Hjort, ms. in preparation). *Comment*: outer 22% of shells removed by acid leaching. (4 1-day counts.)

9610 ± 95**Lu-533. Kap Mackenzie, 53m****7660 B.C.** $\delta C^{13} = +0.4\text{‰}$

Shells (*Hiatella arctica* and *Mya truncata*) from upper bed, +53m, in marine stratigraphic sequence and now lying on abrasion terrace at this alt., a few km inland from Kap Mackenzie (72° 54' N Lat, 21° 58' W Long). *Comment*: outer 40% of shells removed by acid leaching.

5100 ± 75**Lu-584. Gåseö, Bed D****3150 B.C.** $\delta C^{13} = -17.9\text{‰}$

Organic material (mainly algae) from shell-bearing sandy sediment, Bed D, in transgressive sequence (Hjort, 1973a), Gåseö (72° 48' N Lat, 22° 55' W Long), Scott Kelties Öer, Vega Sund. *Comment*: pretreated with HCl only. Sample undersized; diluted; 58% sample. (3 1-day counts.)

6190 ± 70**Lu-585. Gåseö, Bed C****4240 B.C.** $\delta C^{13} = +1.7\text{‰}$

Shells (*Hiatella arctica* and *Mya truncata*) from sand, Bed C, in same sequence as Lu-584. *Comment*: outer 22% of shells removed by acid leaching.

6470 ± 70**Lu-586. Gåseö, Bed E****4520 B.C.** $\delta C^{13} = +1.7\text{‰}$

Shells (*Hiatella arctica* and *Mya truncata*) from silty clay, Bed E, in same sequence as Lu-584 and -585. *Comment*: outer 26% of shells removed by acid leaching.

+ 1300
33,600
 - 1125

Lu-607. Adam af Bremens Dal**31,650 B.C.** $\delta C^{13} = -1.5\text{‰}$

Shell fragments (*Hiatella arctica* and *Mya truncata*) from an upper bed in stratigraphic sequence reaching +60m, Adam af Bremens Dal (72° 49' N Lat, 22° 35' W Long), Geographical Society Ö. Shells from +40 to 47m (Funder and Hjort, ms. in preparation). *Comment*: outer 22% of shells removed by acid leaching. (3 1-day counts.)

Lu-608. Kap Elisabeth**8090 ± 80****6140 B.C.** $\delta C^{13} = \pm 0\text{‰}$

Shells (*Hiatella arctica*, *Mya truncata*, and *Mytilus edulis*) from abrasion terrace in silty clay at +52m, Kap Elisabeth (72° 55' N Lat, 24° 48' W Long), Ella Ö. Highest and oldest known occurrence of *Mytilus* in area (cf. Noe-Nygaard, 1932). *Comment*: outer 23% of shells removed by acid leaching.

Lu-645. Snaevringen, inner fraction**9660 ± 95****7710 B.C.** $\delta C^{13} = +0.6\text{‰}$

Shells (*Mya truncata*) from abrasion terrace in silty clay at +55m, Snaevringen (72° 44' N Lat, 23° 00' W Long), Vega Sund (Traill Ö). *Comment*: inner fraction (51% of shells) was used.

Lu-644. Snaevringen, outer fraction**9540 ± 105****7590 B.C.** $\delta C^{13} = +0.6\text{‰}$

Outer fraction of shells used for Lu-645. *Comment*: outer fraction corresponds to 41% of shells; outermost 8% removed by acid leaching. Sample undersized; diluted; 85% sample.

Lu-646. Kap Laura**9740 ± 90****7790 B.C.** $\delta C^{13} = -0.6\text{‰}$

Shells (*Mya truncata*) from sandy silty bed in delta built up to +65m, Kap Laura (72° 53' N Lat, 23° 25' W Long), Vega Sund (Geog. Soc. Ö). Shells from 57m. *Comment*: outer 9% of shells removed by acid leaching.

Lu-647. Segldal**9610 ± 95****7660 B.C.** $\delta C^{13} = +1.4\text{‰}$

Shells (*Hiatella arctica*) from silty clay covering outermost of terminal moraines in valley mouth, Segldal (72° 07' N Lat, 23° 34' W Long), Scoresby Land (Kong Oscars Fjord). Shells from +57m. *Comment*: outer 18% of shells removed by acid leaching.

Lu-648. Kirschdalen **8860 ± 90**
6910 B.C.
 $\delta C^{13} = +0.4\text{‰}$

Shells (*Hiatella arctica* and *Mya truncata*) from silty clay, Kirschdalen (72° 34' N Lat, 24° 42' W Long), Lyells Land (Kong Oscars Fjord). Shells from +50m but clay is found to 55m. Shells probably date marked shore-line at 65m. *Comment*: outer 40% of shells removed by acid leaching.

Lu-649. Oxedalen **8660 ± 85**
6710 B.C.
 $\delta C^{13} = +0.2\text{‰}$

Shells (*Hiatella arctica* and *Mya truncata*) from sandy silty beds in delta built up to +40m, Oxedal (72° 06' N Lat, 23° 50' W Long), Scoresby Land (Mesters Vig). *Comment*: outer 35% of shells removed by acid leaching. *General Comment*: corrections for deviations from "normal" C^{13}/C^{12} ratio for terrestrial plants ($\delta C^{13} = -25.0\text{‰}$ in PDB scale) are applied also for shell samples. No corrections are made for apparent age of shells of living marine mollusks. For apparent age in area, cf. Recent marine shells series, below, and paper by submitter (Hjort, 1973b).

Recent marine shells series

Shells of marine mollusks coll. alive during Swedish expedition to NE Greenland in 1899 and 1900. Samples were stored in alcohol at Swedish Mus. Nat. Hist., Stockholm. Selected and subm. by C. Hjort.

Lu-609. Mackenziebugt, inner fraction **Apparent age: 600 ± 47**
 $\delta C^{13} = -0.3\text{‰}$

Shells (*Hiatella arctica*, *Modiolaria laevigata*, *Clinocardium* [*Cardium*] *ciliatum*, and *Serripes* [*Cardium*] *groenlandicus*) from 12 to 35m depth in Mackenziebugt, NE Greenland (73° 28' N Lat, 21° 30' W Long). Coll. 1900 by Swedish Zool. Polar Expedition. *Comment*: inner fraction (55% of shells) was used.

Lu-610. Mackenziebugt, outer fraction **Apparent age: 570 ± 54**
 $\delta C^{13} = +0.2\text{‰}$

Outer fraction of shells used for Lu-609. *Comment*: outer fraction corresponds to 35% of shells; outermost 10% removed by acid leaching. Sample undersized; diluted; 73% sample.

Lu-643. Fame Öer **Apparent age: 590 ± 39**
 $\delta C^{13} = +0.1\text{‰}$

Shells (*Tridonta* [*Astarte*] *borealis*) from 5 to 8m depth at Fame Öer, Scoresby Sund (70° 50' N Lat, 22° 33' W Long). Coll. 1899 by Swedish NE Greenland Expedition. *Comment*: outer 15% removed by acid leaching. Sample undersized; diluted; 89% sample. (3 1-day counts.)

Lu-650. Pendulumöer/Claveringöen Apparent age: 540 ± 38
 $\delta C^{13} = +1.3\%$

Shells (*Tridonta [Astarte] borealis* and *Tridonta [Astarte] elliptica*) from 18 to 21m depth S of L. Pendulumöen (74° 35' N Lat, 18° 23' W Long) and from 25 to 40m depth SE of Claveringöen (74° 10' N Lat, 20° 08' W Long). Coll. 1899 by Swedish NE Greenland Expedition. *Comment*: outer 14% removed by acid leaching. (3 1-day counts.)

General Comment: corrections for deviations from "normal" C^{13}/C^{12} ratio for terrestrial plants ($\delta C^{13} = -25.0\%$ in PDB scale) are applied also for these shells. Age corrections are made for time between collection and 1950. Results are discussed by submitter (Hjort, 1973b).

II. ARCHAEOLOGIC SAMPLES

*Sweden***Viken series**

Wood from large part of oak tree from peat, 50cm thick, ca. 150cm below surface at N. Hage, Viken, NW Scania, S Sweden (56° 09' N Lat, 12° 34' 41" E Long). Coll. 1969 and subm. by B. Hulthén, Hist. Mus., Univ. Lund. Shape and working of wooden object resemble cult figures from Iron age found in other parts of N Europe. Pretreated with HCl and NaOH.

Lu-571. Viken, Sample 1 **350 ± 50**
A.D. 1600
 $\delta C^{13} = -25.3\%$

Wood from outer part of tree.

Lu-619. Viken, Sample 2 **590 ± 50**
A.D. 1360
 $\delta C^{13} = -25.0\%$

Wood cores taken radially from surface to middle of trunk.

General Comment (B.H.): dates younger than expected. Typologically, sample belongs from 100 B.C. to A.D. 100. Part of difference between dates probably due to secular variations in C^{14} activity (Suess, 1970). Bristle-cone pine-corrected historical date for Lu-571 is between A.D. 1420 and 1520. No such correction for Lu-619.

Skanör-Falsterbo series

Wood from excavation of defense structure from Middle Ages at Ljungen, Skanör-Falsterbo, S Sweden (55° 24' N Lat, 12° 52' E Long). Coll. 1971 and subm. by G. Andersson, Hist. Mus., Univ. Lund. Pretreated with HCl and NaOH.

Lu-572. Ljungen, Sample 1 **360 ± 50**
A.D. 1590
 $\delta C^{13} = -23.6\%$

Wood from outer part of oak post 30cm thick assumed part of defense structure. *Comment* (G.A.): dated to determine age of entire construction. Date younger than expected.

Lu-573. Ljungén, Sample 3 **7430 ± 75**
5480 B.C.
 $\delta C^{13} = -23.3\text{‰}$

Wood from small branch in organic layer with seaweed on slope of hillock with defense structure. *Comment* (G.A.): dated to determine if hillock is natural or was formed during construction of defense structure.

Maglarp series

Human bones from excavation in old church at Maglarp, Scania (55° 24' N Lat, 13° 05' E Long). Church is one of the earliest brick churches in Sweden, possibly from end of 12th century. Coll. 1970 and subm. by B. Sundner, Hist. Mus., Univ. Lund. Samples treated as described previously (R., 1970, v. 12, p. 534).

Lu-575. Maglarp, Sample 1 **980 ± 50**
A.D. 970
 $\delta C^{13} = -17.9\text{‰}$

Collagen from well preserved human tibia from grave in N part of chancel. Alt. +4.50m. *Comment* (B.S.): grave may belong to earlier wooden church on same place. Date is satisfactory. Organic carbon content: 6.2%.

Lu-576. Maglarp, Sample 2 **910 ± 50**
A.D. 1040
 $\delta C^{13} = -18.2\text{‰}$

Collagen from well preserved human bones (calcanea and metatarsals) from brick-built grave covered with limestone slabs in S part of tower. Alt. +5.29m. *Comments* (B.S.): grave probably from earliest time of brick church, *i.e.*, ca. A.D. 1150, but not earlier in view of grave construction. (S.H.): considering known variations in C¹⁴ activity (Suess, 1970), possible historic date is between A.D. 1030 and 1200. Organic carbon content: 7.1%.

Lu-603. Norrvidinge, House 339 **130 ± 50**
A.D. 1820
 $\delta C^{13} = -23.8\text{‰}$

Wood fragments from wall no longer standing of House 339 at Norrvidinge 3²²⁻²³, Scania, S Sweden (55° 51' N Lat, 13° 07' E Long). Site is rich in ceramics (Late Neolithic-Early Bronze age). Coll. 1971 and subm. by J. Callmer, Hist. Mus., Univ. Lund. Pretreated with HCl and NaOH. *Comment* (J.C.): modern date indicates that sample, from upper part of fill, may be connected with disturbances in area by farming activities in middle of 19th century and later.

Lu-604. Löddeborg, Grave 9 **3760 ± 65**
1810 B.C.
 $\delta C^{13} = -25.7\text{‰}$

Charcoal from remains of wooden construction in Grave 9 at Löddeborg, Löddeköpinge parish, Scania, S Sweden (55° 44' N Lat, 13° 00' E Long). Grave construction is unique, combining 2 very different grave

types. Assoc. with flint artifacts (2 daggers, 2 spearheads, 1 borer, and 1 scraper). Coll. 1970 and subm. by J. Callmer. Pretreated with HCl and NaOH. *Comment* (J.C.): date agrees fairly well with archaeol. dating of daggers in grave to later part of Late Neolithic.

Hagestad series

Charcoal and bone from Hagestad, Löderup parish, Scania (55° 23' N Lat, 14° 09' E Long). Coll. 1971 and subm. by M. Strömberg, Hist. Mus., Univ. Lund. For other dates from Hagestad, see R., 1972, v. 14, p. 394-395. Charcoal pretreated with HCl and NaOH. Bone treated as described previously (R., 1970, v. 12, p. 534).

2030 ± 55
80 B.C.
 $\delta C^{13} = -21.2\text{‰}$

Collagen from well preserved cattle bone (scapula) from field S of brook, N of coast rd., Hagestad 6² A. *Comment*: organic carbon content: 4.9%.

2130 ± 55
180 B.C.
 $\delta C^{13} = -24.8\text{‰}$

Charcoal from hearth in Trench A:1971 on same field as Lu-652.

2060 ± 55
110 B.C.
 $\delta C^{13} = -23.6\text{‰}$

Charcoal from hearth in Trench 1:1971 on same field as Lu-652 and -653.

1930 ± 55
A.D. 20
 $\delta C^{13} = -23.9\text{‰}$

Charcoal from hearth in Trench 1:1971 on field S of coast rd., Hagestad 26⁶.

2070 ± 55
120 B.C.
 $\delta C^{13} = -23.2\text{‰}$

Charcoal from hearth in Trench 2:1971 on same field as Lu-655. *General Comment* (M.S.): all dates agree well with archaeol. results based on assoc. finds.

Löderup series

Charcoal from grave field with different burial forms at Löderup 15, Löderup parish, Scania (55° 23' N Lat, 14° 07' E Long). Site is closely connected with investigated area at Hagestad. Coll. Nov. 1971 to Jan. 1972 and subm. by M. Strömberg. Pretreated with HCl and NaOH.

Lu-657. Löderup 15, Grave 8:71 **3720 ± 60**
1770 B.C.
 $\delta C^{13} = -26.3\%$

Charcoal from bottom layer of Grave 8:71 (inhumation burial).
 Assoc. with many amber beads of unusual form.

Lu-658. Löderup 15, Grave 35 **3860 ± 60**
1910 B.C.
 $\delta C^{13} = -24.8\%$

Charcoal from bed in Late Neolithic grave (inhumation burial).

Lu-659. Löderup 15, Grave 27 **3810 ± 60**
1860 B.C.
 $\delta C^{13} = -24.9\%$

Charcoal from bed in grave with burnt bones. Assoc. with fragment
 of bronze tweezers.

General Comment (M.S.): date Lu-658 agrees well with archaeol. results,
 but Lu-657 and -659 are older than expected (Iron-age features). Discrep-
 ancancy may be explained by possibility that earlier wooden Stone-age con-
 structions were burnt with re-use of grave field by Iron-age people.

Gårdlösa series

Charcoal from Gårdlösa, Smedstorp parish, SE Scania (55° 34' N Lat,
 14° 08' E Long). Coll. 1964 to 1970 and subm. by B. Stjernquist, Hist.
 Mus., Univ. Lund. Dated for study of continuity of Iron-age settlement in
 Gårdlösa area. For other dates from area and references, see R., 1972, v.
 14, p. 264-266, 392-393.

Lu-651. Gårdlösa 2, Ship-setting **2810 ± 55**
860 B.C.
 $\delta C^{13} = -24.7\%$

Charcoal from hearth close to stone of ship-setting. Depth ca. 60cm.
 Coll. 1970. *Comment*: pretreated with HCl and NaOH.

Lu-662. Gårdlösa 2, Grave 51 **1260 ± 50**
A.D. 690
 $\delta C^{13} = -24.1\%$

Charcoal from grave with burnt bones. Depth. ca. 50cm. *Comment*:
 pretreated with HCl and NaOH.

Lu-663. Gårdlösa 2, Grave Field 1967:2 **2050 ± 60**
100 B.C.
 $\delta C^{13} = -24.7\%$

Charcoal from concentration of burnt bones inside quadratic stone
 setting, depth 50 to 60cm, covered by eolian sand and humus layer. Assoc.
 with 2 glass beads. Coll 1967. *Comment*: no pretreatment due to small
 sample; diluted; 85% sample.

Lu-664. Gårdlösa 2, Grave Field 1967:18 **1980 ± 60**
30 B.C.
 $\delta C^{13} = -24.1\%$

Charcoal from concentration of burnt bones below stone. Assoc. with

rivet washer. Coll. 1967. *Comment*: no pretreatment due to small sample; diluted; 78% sample.

Lu-665. Gårdlösa 2, Grave Field 1967:23 **1510 ± 50**
A.D. 440
 $\delta C^{13} = -23.5\%$

Charcoal from hearth covered by eolian sand and humus, inside circular stone setting. Assoc. with burnt clay and undatable sherds of pottery. Coll. 1967. *Comment*: pretreated with HCl and NaOH.

Lu-666. Gårdlösa 2, Grave Field 1967:26 **1140 ± 50**
A.D. 810
 $\delta C^{13} = -26.2\%$

Charcoal from feature with brittle-burnt stones, soot, and burnt bones. Assoc. with part of bird-fibula, melted glass bead, and a piece of resin. Dept ca. 60cm. Coll. 1967. *Comment*: only NaOH pretreatment due to small sample.

Lu-667. Gårdlösa 2, Grave Field 1967:47 **1280 ± 50**
A.D. 670
 $\delta C^{13} = -26.5\%$

Charcoal from hearth connected with stones in circular stone setting. Depth ca. 60cm. Coll. 1967. *Comment*: pretreated with HCl and NaOH.

Lu-668. Gårdlösa 3, Hearth No. 40 **1680 ± 55**
A.D. 270
 $\delta C^{13} = -26.2\%$

Charcoal from Hearth No. 40 connected with Spring III on cult-place (Stjernquist, 1964). Depth ca. 60cm. Coll. 1964. *Comment*: pretreated with HCl and NaOH.

Lu-669. Gårdlösa 3, Grave 70 **1680 ± 60**
A.D. 270
 $\delta C^{13} = -24.4\%$

Charcoal from pit below triangular stone setting. Depth ca. 50cm. Coll. 1969. *Comment*: only weak HCl pretreatment due to small sample; diluted; 67% sample.

General Comment (B.S.): dates Lu-663 and -664 are 300 to 400 yr older than expected from archaeol. situation. All other dates agree well with estimates based on archaeol. material.

Lu-670. Saxtorp 6:12 **1280 ± 50**
A.D. 670
 $\delta C^{13} = -27.9\%$

Sample from wooden well-lining from excavation at Saxtorp 6:12, Saxtorp parish, Scania (55° 50' 30" N Lat, 12° 58' 10" E Long). Well bottom ca. 150cm below surface, covered by 4 differently colored sand layers. Coll. 1970 and subm. by J. Petersson, Royal Office Antiquities. Cellulose fraction separated and dated because of possible superficial contamination with polyglycol. *Comment* (J.P.): well cannot be dated accu-

rately with archaeol. material. Only 0.5m from well a hearth was found containing Late Bronze-age pottery, but radiocarbon date agrees with archaeol. age estimates for other features in excavation area.

Önsvala series

Charcoal from 3 out of 13 hearths spatially connected with Iron-age grave field dated A.D. 300 to 950 and Viking-age settlement, at Önsvala 5:1, 1800m NE of Mölleberga church, Nevishög parish, Scania (55° 37' 30" N Lat, 13° 13' 50" E Long). Coll. 1969 and subm. by J. Petersson, Hist. Mus., Univ. Lund. Pretreated with HCl and NaOH.

Lu-672. Önsvala 5:1, Feature 61 **1600 ± 50**
A.D. 350
 $\delta C^{13} = -24.4\%$

Charcoal from hearth ca. 35cm below surface.

Lu-673. Önsvala 5:1, Feature 68 **1290 ± 50**
A.D. 660
 $\delta C^{13} = -25.0\%$

Charcoal from hearth ca. 35cm below surface.

Lu-671. Önsvala 5:1, Feature 70 **1590 ± 50**
A.D. 360
 $\delta C^{13} = -24.7\%$

Charcoal from hearth ca. 35cm below surface.

General Comment (J.P.): dates agree well with archaeol. dates of artifacts from oldest part of grave field.

Löddeköpinge series

Animal bones and teeth from excavation of Viking-age settlement at Löddeköpinge, E Scania (55° 45' N Lat, 13° 00' E Long). Coll. 1965 to 1967 and subm. by T. Ohlsson, Hist. Mus., Univ. Lund. Teeth received same treatment as bone (R., 1970, v. 12, p. 534).

Lu-684. Löddeköpinge, Sample 1, bone **1170 ± 50**
A.D. 780
 $\delta C^{13} = -20.9\%$

Collagen from poorly preserved animal bone fragments from House 1, Field A. Assoc. with Viking-age pottery. Coll. 1965. *Comment*: organic carbon content: 3.5%.

Lu-685. Löddeköpinge, Sample 1, teeth **1220 ± 50**
A.D. 730
 $\delta C^{13} = -21.7\%$

Collagen from well preserved animal teeth from same position as Lu-684. Coll. 1965. *Comment*: organic carbon content: 2.3%.

Lu-686. Löddeköpinge, Sample 2 **1130 ± 85**
A.D. 820
 $\delta C^{13} = -21.4\%$

Collagen from poorly preserved animal bone fragments from Feature 8, Field B. Assoc. with comb fragment and Viking-age pottery. Coll. 1966.

Comment: organic carbon content: 0.7%. Undersized; diluted; 33% sample. (3 1-day counts.)

Lu-687. Löddeköpinge, Sample 3 **1120 ± 50**
A.D. 830
 $\delta C^{13} = -21.7\text{‰}$

Collagen from poorly preserved animal bone fragments from Feature 13, Field B. Assoc. with Viking-age pottery. Coll. 1966. *Comment:* organic carbon content: 2.5%.

Lu-688. Löddeköpinge, Sample 4 **1120 ± 50**
A.D. 830
 $\delta C^{13} = -20.9\text{‰}$

Collagen from fairly well preserved animal bone from Feature 11, Field G. Assoc. with iron objects and local as well as imported Viking-age pottery. Coll. 1967. *Comment:* organic carbon content: 1.8%.

Lu-699. Löddeköpinge, Sample 5 **1130 ± 50**
A.D. 820
 $\delta C^{13} = -21.7\text{‰}$

Collagen from well preserved animal teeth from Feature 10, Field K. Assoc. with oval brooch (early type), iron objects, and Viking-age pottery. Coll. 1967. *Comment:* organic carbon content: 1.8%.

General Comment (T.O.): dates are made on bone fragments and teeth, *i.e.*, refuse from cooking and butchering. Samples are chosen to date activities and are from different parts of settlement. Radiocarbon dates closely correspond to archaeol. dates based on analysis of artifacts from houses. Radiocarbon dates confirm that settlement was occupied during 1st half of Viking age (9th century).

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