

## VIENNA RADIUM INSTITUTE RADIOCARBON DATES XII

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Measurements have continued with the same proportional counter system, pretreatment procedure, methane preparation and measurement, and calculation, as described previously (R, 1970, v 12, p 298-318). Uncertainties quoted are single standard deviations originating from standard, sample, and background counting rates. No  $^{13}\text{C}/^{12}\text{C}$  ratios were measured. Sample descriptions have been prepared in cooperation with submitters.

### ACKNOWLEDGMENTS

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### SAMPLE DESCRIPTIONS

#### I. GEOLOGIC, LIMNOLOGIC, AND BOTANIC SAMPLES

##### *Austria*

**VRI-678. Stöttera, Bgld** <250

Wood from youngest terrace, depth -90cm (47° 47' N, 16° 28' E), N Stöttera, Burgenland. Coll 1978 and subm by Franz Sauerzopf, Biol Inst Burgenland, Illmitz. *Comment* (FS): dates subfossil fauna.

**VRI-729. Oberschütt, Kärnten** 400 ± 80

Wood sample V 46/2a from fall area of Dobratsch Mt, Oberschütt (46° 33' N, 13° 45' E), Gailtal, Carinthia. Coll 1980 by Bäk and Herzog, Amt d Kärntner Landesregierung, Klagenfurt. *Comment* (B&H): dates fall of Dobratsch Mt. DeVries-corrected calendric age: AD 1450 + 50 - 40 (Suess, 1970).

**VRI-734. Marchegg, N Ö** 2660 ± 90

Wood from oak embedded in water and mud at surroundings of March R near Marchegg (48° 17' N, 16° 55' E), Lower Austria. Coll 1980 and subm by Alois Machalek, Zentralanst f Meteorol and Geodynamik, Vienna. *Comment* (AM): dating for dendro-climatic studies.

**VRI-685. Frankenburg, O Ö** 10,260 ± 160

Wood from boring core at depth -7m, Remigen, near Frankenburg am Hausruck (48° 03' 48" N, 13° 30' E), Upper Austria. Coll 1980 by Fritsch and subm by Christian Veder, Inst Bodenmechanik, TU Graz. *Comment* (CV): dates soil slide.

**VRI-689. Steyregg, O Ö** 1670 ± 80

Oak stem, -14m, 6m below subsoil water level in deposits of Danube R near Steyregg (48° 17' N, 14° 22' E), O Ö. Coll 1980 and subm by Robert Schindele, Gansbach-Kicking, O Ö.

**Badgastein series, Salzburg**

Wood from excavation for reconstruction of Elisabeth-Stollen adit in Badgastein thermal area (47° 07' N, 13° 08' 30" E), Salzburg. Coll 1979/1980 and subm by Franz Kahler, Klagenfurt.

**VRI-679. Sample 1** **2770 ± 80**

Rolled Larch in blue ground moraine or polished granite. *Comment* (FK): too young to date glacial advance.

**VRI-680. Sample 2** **2170 ± 80**

*Abies* with root-stock in upright position in slope detritus -5m below retaining wall in Bismarck St. *Comment* (FK): date provides chronologic information on slope movement.

**Böckstein series, Salzburg**

Wood from area of Bockhartsee lake (47° 04' 25" N, 13° 03' 30" E, Nassfeld near Böckstein, Salzburg. Coll 1981 at building site of water power sta and subm by SAFE, Salzburg.

*General Comment* (SAFE): stems at bottom of lake are remains of former warm period. Presently, surroundings are completely deforested.

**VRI-721. Bog** **5130 ± 140**

Wood at -2m from bog E Bockhartsee lake, 1875m asl.

**VRI-722. Lake** **840 ± 80**

Wood at -27m from lake bottom, 1820m asl.

**VRI-718. Neurath-Stainz, Stmk** **19,720 ± 390**

Sand with gyttja below gravel deposit, probably "Niederterrasse", SE Neurath-Stainz (46° 54' N, 15° 16' E), Styria. Coll 1980 by P Beck-Mannagetta; subm by Ilse Draxler, Geol BA, Vienna. *Comment* (ID): dates pollen analysis. Organic material was concentrated by submitter.

**VRI-728. Pichling, Stmk** **2630 ± 80**

Wood in sand and gyttja of "Niederterrasse" N Zirknitzbach bridge, WSW Pommer, 317m asl, E Pichling near Stainz (46° 54' N, 15° 16' E), Styria. Coll 1981 by P Beck-Mannagetta; subm by Ilse Draxler. *Comment* (ID): chronologic clue for horizon in which sample was found.

**Lehenberg series, Tirol**

Peat coal in layer, 3m thick, below 17.6m moraine, Lehenberg (47° 27' 20" N, 12° 23' 30" E), NW Kitzbühel, Tyrol. Coll by boring 1976 by firm Etschel & Meyer; subm by Sigmar Bortenschlager, Bot Inst, Univ Innsbruck.

*General Comment* (SB): pollen analysis points to interglacial period. Samples VRI-556, -557 should clarify incomprehensible age of VRI-555.

**VRI-555. T2/1955** **29,340 ± 1200**

Sample from -19.55m.

**VRI-556. T2/1755** >35,800

Sample from -17.55m, uppermost part of peat layer.

**VRI-557. T2/2055** >35,800

Sample from -20.55m, lowermost part of peat layer.

### **Kühtai series, Tirol**

Peat from base of bogs at Kühtai, Tyrol. Coll 1981 by H Hüttemann; subm by Sigmar Bortenschlager.

*General Comments* (SB, HF): dates beginning of bog growth. No NaOH pretreatment.

**VRI-622. Kühtai I** 2800 ± 100

Peat from depth -200 to -210cm of bog near rivulet Finstertaler Bach (47° 12' 20" N, 11° 01' 10" E), alt 1970m.

**VRI-623. Kühtai II** 8300 ± 130

Peat from depth -185 to -200cm of bog near Dortmunder-hut (47° 12' 20" N, 11° 00' 38" E), alt 1980m.

**VRI-624. Zillertal, Tirol** 6800 ± 150

Peat from base of bog, depth -240 to -250cm in area of Gr Möseler Mt (47° 01' 33" N, 11° 48' 19" E), Zillertaler Alps, Tyrol. Coll 1981 by H Hüttemann; subm by Sigmar Bortenschlager. *Comment* (SB): dates beginning of peat growth.

### **Deffereggental series, Tirol**

Wood (*Pinus cembra*) from bog (46° 58' 50" N, 12° 09' 30" E), 2035m asl, Jagdhausalm, Deffereggental, E Tyrol. Coll 1980 and subm by Friedrich Kral, Univ Bodenkultur, Vienna.

*General Comment* (FK): absolute dates for pollen analysis.

**VRI-724. Jagd 80/100** 6180 ± 180

Wood from base of bog at -80cm. *Comment* (FK): gives bog age and fixes early human activity in woods.

**VRI-725. Jagd 28** 1240 ± 80

Wood from younger sandy layer at -28cm. *Comment* (FK): dates extended human activity starting development to treeless landscape of today.

**VRI-726. Matrei, Osttirol** 2310 ± 90

Wood (*Larix*) at -38cm from bog at Hauptmer Alm (47° 06' 10" N, 12° 31' 20" E), 1780m asl, near Matrei, E Tyrol. Coll 1980 and subm by Friedrich and Renate Kral. *Comment* (FK): sample at change from *Carex* peat to wood peat fixes pollen-analytically detected extended wood cutting.

**VRI-727. Huben, Osttirol** 470 ± 80

Pine cones in Bärenlacke bog change from *Carex* peat to wood peat at -30cm (46° 54' 45" N, 12° 34' 55" E), 1640m asl, near Huben, E Tyrol.

Coll 1980 and subm by Friedrich und Renate Kral. *Comments* (FK, HF): dates pollen-analytically detected local human encroachment upon forestland. No NaOH pretreatment.

**VRI-740. Kienberg, Tirol** **Modern**

Humic acids extracted from lowermost A<sub>h</sub> horizon of thin brown earth layer, 10cm below ground on landslide material in woodland near Kienberg/Jerzens, Pitztal (47° 08' N, 10° 45' E), Tyrol. Coll 1981, extracted and subm by Irmentraud Neuwinger, Forstl BVA, Innsbruck. *Comment* (IN): date of landslide was expected.

**VRI-741. Telfs, Tirol** **<260**

Humic acids extracted from -20 to -25cm, lowermost A<sub>h</sub> horizon of Rendzina near Telfs (47° 19' N, 11° 04' E), Tyrol. Coll 1981, extracted and subm by Irmentraud Neuwinger. *Comment* (IN): dates uppermost layers of alluvial cone.

CSSR

**VRI-620. Hohe Tatra, CSSR** **6050 ± 110**

Peat sample VT-1-A at depth -200 to -212cm from base of bog near Triangelsee lake, Hohe Tatra Mt, 1600m asl (49° 13' 15" N, 20° 13' 50" E), CSSR. Coll 1980 by K Rybnicek and H Hüttemann; subm by Sigmar Bortenschlager. *Comment* (SB): dates beginning of bog growth.

**VRI-621. Riesengebirge, CSSR** **7600 ± 130**

Peat sample KR-1-B at depth -220 to -225cm from base of Pancica bog near Elbebaude, 1300 to 1370m asl (50° 46' 45" N, 15° 32' 30" E), Riesengebirge Mt, CSSR. Coll 1980 by K Rynicek and H Hüttemann; subm by Sigmar Bortenschlager. *Comments* (SB, HF): dates beginning of bog growth. No humic acids separation.

II. ARCHAEOLOGIC SAMPLES

*Austria*

**Bernhardsthal series, N Ö**

Charcoal from excavation of Germanic settlement at Bernhardsthal, Aulüssen field (48° 42' N, 16° 52' E), Mistelbach dist, Lower Austria. Coll 1980 and subm by Horst Adler, Bundesdenkmalamt, Vienna.

*General Comment* (HA): check for stratigraphic and archaeol dates.

**VRI-705. Quad U/16/B** **1690 ± 80**

Sample from Quad U/16, Color B. *Comment* (HF): deVries correction (Suess, 1970) gives AD 300 ± 60.

**VRI-716. Quad U/22/A** **1800 ± 90**

Sample from Quad U/22, Color A. *Comment* (HF): deVries correction (Suess, 1970) gives AD 200 ± 90.

**VRI-717. Villach, Kärnten** **<260**

Wooden remnant of axe, -6m, near Stadtbrücke bridge of Drau R, Villach (46° 36' 59" N, 13° 50' 55" E), Carinthia. Coll 1959 and subm by

Dieter Neumann, Mus Villach. *Comment* (DN): accompanying finds point to Middle Ages or early modern times. DeVries-corrected age (Suess, 1970) is younger than AD 1650.

**VRI-681. Untersee, O Ö** **500 ± 80**

Wood coll near shore from bottom of Hallstättersee lake (47° 36' 40" N, 13° 38' 20" E), near Untersee, Upper Austria. Coll 1980 by Union-Tauchclub Wels, subm by Johann Offenberger, Bundesdenkmalamt, Vienna. *Comment* (JO): date confirms suggestion of medieval lake dwelling.

**VRI-683. Schörfling, O Ö** **910 ± 80**

Wood soaked with water from bottom of Attersee lake (47° 55' 58" N, 13° 33' 34" E) near Schörfling, Upper Austria. Coll 1980 by Union-Tauchclub Wels; subm by Johann Offenberger. *Comment* (JO): date invalidates suggestion of Neolithic lake dwelling remnants.

**VRI-684. Irrsee, O Ö** **350 ± 80**

Wood soaked with water from bottom of Irrsee lake (47° 55' 53" N, 13° 18' 00" E). Coll 1980 by Union-Tauchclub Wels; subm by Johann Offenberger. *Comment* (JO): date confirms suggestion of medieval lake dwelling remains.

**VRI-687. Kammer, O Ö** **4420 ± 100**

Wooden piling (*Fraxinus* sp) –3m below water level from bottom of Attersee lake ca 50m offshore in bay of Kammer yacht port (47° 34' N, 13° 21' E) near Schörfling, Upper Austria. Coll by Robert Gotsleben; subm by Johann Offenberger. *Comment* (JO): date confirms Neolithic origin.

**VRI-723. Seewalchen, O Ö** **4910 ± 110**

Wooden pile, –1.7m below water level at bottom of Attersee lake, 15m offshore, Kammer outlet region (47° 57' N, 13° 35' E) near Seewalchen, Upper Austria. Coll and subm 1980 by Johann Offenberger. *Comment* (JO): remains of Neolithic lake dwelling.

**Attersee 1 series, O Ö**

Wood remnants of lake dwellings in Attersee lake, Upper Austria. Coll 1981 and subm by Johann Offenberger.

*General Comment* (HF): dates confirm Neolithic origin.

**VRI-730. 166/1-1981** **4720 ± 100**

Sample at –2.5m below level, Attersee (47° 55' 17" N, 13° 32' 21" E).

**VRI-731. 181/1-1981** **4680 ± 100**

Abtsdorf III (47° 53' 36" N, 13° 32' 02" E).

**Attersee 2 series**

Wood from bottom of lake Attersee near Attersee, Upper Austria. Coll 1981 and subm by Johann Offenberger.

*General Comment* (JO): dates clarify unknown age of lake dwelling remnants.

**VRI-735. 183/1-1981 Abtsdorf I 3180 ± 90**

Sample coll in Abtsdorf (47° 53' 40" N, 13° 32' 03" E). *Comment* (JO&HF): Bronze age date rejects assumption of Neolithic origin. DeVries correction (Suess, 1970) gives 1500  $\begin{smallmatrix} + 100 \\ - 50 \end{smallmatrix}$  BC.

**VRI-738. 186/1-1981 Oberndorfer 220 ± 70**

Sample taken at Oberndorfer farm (47° 54' 58" N, 13° 32' 30" E), 1.5m below water level. *Comment* (JO&HF): date confirms historic age. DeVries correction (Suess, 1970) gives AD 1650  $\begin{smallmatrix} + 110 \\ - 170 \end{smallmatrix}$ .

**Weyregg a Attersee series, O Ö**

Wood, -2m below water level from bottom of Attersee lake, Weyregg (47° 54' N, 13° 34' E), Upper Austria. Lake dwelling remnants from two different cultural layers one above another separated by lake marl. Coll 1981 and subm by Johann Offenberger.

*General Comment* (JO): dates confirm Neolithic origin.

**VRI-732. Weyregg I/Sch I/OKS 1-1981 4640 ± 110**

Wood from upper layer.

**VRI-733. Weyregg I/Sch II/UKS 1-1981 4660 ± 100**

Wood from lower layer.

**VRI-745. Gmunden, O Ö 800 ± 80**

Wooden piling from prospecting ditch -2.5m below water level near Orth castle, Traunsee lake, Gmunden (47° 57' N, 13° 35' E), Upper Austria. Coll 1981 by R Gotsleben; subm by Johann Offenberger. *Comment* (JO): dates oldest pilings.

**Gaishorn series, Stmk**

Charcoal from excavation of smelting site Oberschwärzen, Gaishorn (47° 28' N, 14° 32' E), Paltental, Styria. Coll 1980 and subm by Clemens Eibner, Inst Ur-Frühgesch, Univ Vienna.

*General Comment* (CE): excavated ceramics not significant. Early Bronze age to ancient historic origin is possible.

**VRI-719. Find no. 20 1070 ± 70**

Charcoal band in loess above copper smelting site. Formation of sample layer unknown.

**VRI-720. Find no. 65 2640 ± 90**

Remains rich in charcoal from smelting furnace. *Comment* (HF): no NaOH pretreatment.

**VRI-682. Eisenerz, Stmk****410 ± 120**

Charcoal and slag from Feistawiese (47° 31' 42" N, 14° 55' 24" E), Mt Steirischer Erzberg near Eisenerz, Styria. Coll 1972 by F Hofer and J Slesak, subm by Gerhard Sperl, Erich-Schmid Inst f Festkörperphysik d Österr Akad Wiss, Leoben. *Comment (GS)*: date confirms medieval age of sample that was previously thought to be late Roman.

## REFERENCES

Suess, H E, 1970, Bristlecone pine calibration of the radiocarbon time scale 5300 BC to the present, in Olsson, I U, ed, Radiocarbon variations and absolute chronology, Nobel symposium, 12th, Proc: Stockholm, Almqvist & Wiksell, p 303-313.