

## VIENNA RADIUM INSTITUTE RADIOCARBON DATES XI

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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, background counting rates, and half-life. No  $^{13}\text{C}/^{12}\text{C}$  ratios were measured. Sample descriptions have been prepared in co-operation with submitters.

## ACKNOWLEDGMENTS

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## SAMPLE DESCRIPTIONS

## I. GEOLOGIC, GLACIOLOGIC, LIMNOLOGIC, AND FOREST SAMPLES

*Austria*

**VRI-606. Scharfling, O Ö** **2480 ± 110**

Wood fragments, detritus of semi-terrestrial series, at depth 160 to 180cm in lake marl of Egelsee near Scharfling (47° 48' N, 13° 23' E), alt 493m, Upper Austria. Coll 1977 and subm by Roland Schmidt, Limnolog Inst, Österr Akad Wiss, Vienna.

**Gmunden, series, O Ö**

Wood from boring Gschliefgraben, Gmunden, E shore of Lake Traunsee, between Traunstein and Grünberg Mts (47° 53' N, 13° 50' E), O Ö. Coll 1977 and subm by Jedlitschka, Forsttechn Dienst f Wildbach- u Lawinenverbauung, Gmunden.

*General Comment* (J): dating of material that slipped down from above.

Boring 1, alt 460m:

<b>VRI-660. Depth 4.4m</b>	<b>&lt;350</b>
<b>VRI-661. Depth 29m</b>	<b>2250 ± 80</b>
<b>VRI-662. Depth 39m</b>	<b>9500 ± 160</b>
<b>VRI-663. Depth 53m</b>	<b>10,090 ± 150</b>
<b>VRI-664. Depth 43.5m</b>	<b>9690 ± 180</b>

Boring 2:

<b>VRI-665. Depth 0.6 to 1.7m</b>	<b>&lt;220</b>
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House Point 1:

**VRI-675. Depth 2.5m 2420 ± 80**

**Velden series, Kärnten**

Boring core samples from lake Jeserzer See near Velden (46° 38' 02" N, 14° 01' 45" E), Carinthia. Coll 1978 and subm by Ekkehard Schultze, Limnolog Inst, Österr Akad Wiss, Wien.

*General Comment* (ES): absolute chronology of pollen spectrum. No NaOH pretreatment.

**VRI-639. 405 to 395cm 8100 ± 140**

Fine detritus gyttja, depth 405 to 395cm. *Comment* (ES): beginning of *Fagus* domination; Postglacial.

**VRI-640. 485 to 475cm 9560 ± 70**

Fine detritus gyttja, depth 485 to 475cm. *Comment* (ES): increasing *Quercetum mixtum* curve, crossing with *Pinus* curve; boundary Late glacial/Postglacial.

**VRI-641. 515 to 505cm 10,520 ± 150**

Fine detritus gyttja, depth 515 to 505cm. *Comment* (ES): increasing NAP values; younger Late glacial.

**VRI-642. 565 to 555cm 13,850 ± 310**

Clayey gyttja, depth 565 to 555cm. *Comment* (ES): stagnation in vegetational development, crossing of *Pinus* and *Juniperus* curves; older Late glacial.

**VRI-643. 585 to 575cm 15,200 ± 400**

Clayey gyttja, depth 585 to 575cm. *Comment* (ES): beginning of *Juniperus* bush phase; older Late glacial.

**VRI-666. Pasterze, Kärnten 340 ± 80**

Stem wood of *Pinus cembra*, in deposits of artificially dammed lake at Margaritzenboden below tongue of Pasterze glacier (47° 04' N, 12° 46' E), Mt Glockner Group, Carinthia. Coll 1952 by W Hosnedl and subm by Friedrich Ucik, Landesmus f Kärnten, Klagenfurt. *Comment* (FU): answers question whether stem is medieval or deposited after glacial advance ca AD 1600 (Patzelt, 1969).

**VRI-667. Linsendorf, Kärnten 2530 ± 100**

Wood (*Castanea sativa*) —3.5m in basal terrace of recent R Drau, Linsendorf (46° 34' N, 14° 28' E), ca 2km from Anna Bridge, Carinthia. Coll 1979 and subm by Friedrich Ucik. *Comment* (FU): chronologically fixed point in youngest history of Drau Valley. Edible chestnut in Carinthia known for 100 yr from cultivation only.

**VRI-671. Badgastein, Salzburg 2670 ± 100**

Cyperaceae peat, bog Zitterauer Moor, depth 85 to 95cm. Mt Stubnerkogel, 1920m asl, Badgastein (47° 06' 10" N, 13° 06' 15" E), Salzburg.

Coll 1979 and subm by Friedrich Kral, Inst Waldbau, Univ Bodenkultur, Vienna. *Comment* (FK): above this layer, palynologic evidence for beginning of human influence exists for the Gastein Valley.

#### **Pürgschachen series, Steiermark**

Peat from different depths below soil surface of bog near Pürgschachen (47° 35' N, 14° 20' E), Enns Valley, Styria. Coll 1977 by Birkner, subm by Franz Wolkinger, Inst f Umweltwiss u Naturschutz, Österr Akad Wiss, Graz. No NaOH pretreatment.

<b>VRI-610.</b>	<b>Depth 1m</b>	<b>790 ± 80</b>
<b>VRI-611.</b>	<b>Depth 2m</b>	<b>1790 ± 90</b>
<b>VRI-612.</b>	<b>Depth 3m</b>	<b>1950 ± 90</b>
<b>VRI-613.</b>	<b>Depth 4m</b>	<b>3440 ± 100</b>
<b>VRI-614.</b>	<b>Depth 5m</b>	<b>3890 ± 100</b>
<b>VRI-615.</b>	<b>Depth 6m</b>	<b>5760 ± 100</b>
<b>VRI-616.</b>	<b>Depth 7m</b>	<b>7590 ± 140</b>
<b>VRI-617.</b>	<b>Depth 8m</b>	<b>8520 ± 140</b>

#### **VRI-654. Mt Dachstein, Stmk**

**8240 ± 260**

*Pinus* wood from boring core in detritus gyttja of lake Schwarzsee, Mt Dachstein E plateau (47° 30' 30" N, 13° 50' E), alt 1420m, Styria. Coll 1979 and subm by Roland Schmidt. *Comment* (RS): dates spreading of *Abies* and *Fagus* at Mt Dachstein and palynologically recognized climatic oscillation.

## II. ARCHAEOLOGIC AND HISTORIC SAMPLES

### *Austria*

#### **Falkenstein series, N Ö**

Charred wood with roots and inorganic detritus in hearth pit at depth 120cm in hut cut in Quads 6 to 9, excavation at Schanzboden (ring rampart) near Falkenstein (48° 43' 22" N, 16° 35' 05" E), Lower Austria. Coll 1976 and subm by Johannes-Wolfgang Neugebauer, Bundesdenkmalamt, Vienna.

*General Comment* (JN): repeat of VRI-577: 5140 ± 90 (R, v 22, p 113) found too young by ca 600 yr.

<b>VRI-577a.</b>	<b>Charcoal</b>	<b>5430 ± 260</b>
Charcoal, 4% sample, practically free of roots and humic acids.		

<b>VRI-577b.</b>	<b>Humic acids</b>	<b>5250 ± 110</b>
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Sodium humates, 26% sample, precipitated from NaOH pretreatment fraction.

**Stillfried series, N Ö**

Prehistoric finds in loess, Stillfried a d March (48° 25' 00" N, 16° 50' 20" E), Lower Austria. Subm by Fritz Felgenhauer, Inst Ur- u Frühgeschichte, Univ Vienna.

*General Comment* (FF): absolute dating.

**VRI-635. W Rampart 1 2880 ± 90**

Charred grass from W rampart of prehistoric bulwark. Coll 1978 by Walpurga Weiser.

**VRI-636. W Rampart 2 2880 ± 90**

Charcoal from wooden construction of W rampart of prehistoric bulwark. Coll 1976 by Walpurga Weiser.

**VRI-637. Küssleracker 450 ± 90**

Charcoal from cultural layer Küssleracker. Coll 1976 by Sigrid von Osten. *Comment* (FF): date too young.

+ 2000

**VRI-649. St Margarethen, Bgld 23,500 – 1600**

Bone find in cave fissure of quarry St Margarethen (47° 48' N, 16° 48' E), Burgenland. Coll by Christine Gossy, Eisenstadt, Burgenland.

**Rabensburg series, N Ö**

Wood at depth –1.5m below sand layer. Lot 1762, Rabensburg (48° 41' N, 16° 54' E), near Mistelbach, Lower Austria. Coll 1979 and subm by Horst Adler, Bundesdenkmalamt, Vienna.

*General Comment* (HA): probably remnants of mill at former arm of R Thaya. Age between late high middle ages and modern times was expected.

**VRI-658. 690 ± 90**

*Comment* (HF): de Vries correction (Suess, 1970) gives AD 1280 ± 70.

**VRI-659. 520 ± 80**

*Comment* (HF): de Vries correction (Suess, 1970) gives AD 1400 ± 50.

**VRI-673. Eggenburg, N Ö 2940 ± 100**

Small animal bones of young Pleistocene hyena cave "Teufelslucke" near Eggenburg (48° 39' N, 15° 49' E), Lower Austria. Coll 1976 and subm by G Rabeder, Inst Paläont, Univ Vienna. *Comment* (GR): dated for comparison with other dating methods. Collagen extracted after Longin (1971).

**VRI-676. Horn, N Ö 23,210 ± 510**

Bones in three layers below loess, –2 to –3m, at Horn-Raabs St near Horn (48° 40' N, 15° 40' E), Lower Austria. Coll 1931 in un-

stratified sample by Josef Bayer; subm 1980 by Wolfgang Heinrich, Inst Humanbiol, Univ Vienna. *Comment* (WH): palaeolithic hunting site with few artifacts. Collagen extracted from 1000g bone according to Longin (1971). Result is average age.

**VRI-651. Mattsee, Salzburg 1080 ± 80**

Wood of tree-coffin —1.5m below collegiate church in Mattsee (47° 58' 30" N, 13° 06' 30" E), Salzburg. Coll 1978 and subm by Gertrud Mossler, Bundesdenkmalamt, Vienna. *Comment* (GM): coffin and remnants of oldest church was expected to be 1st millennium AD.

**VRI-674. Lamprechtshausen, Salzburg >Modern**

Bones of domestic pig. Site covered by 1 to 1.5m peat which was removed by peat-cutting, bog Waidmoos near Lamprechtshausen (48° 01' N, 12° 57' E), Salzburg. Coll 1977 by E Stüber, Haus d Natur, Salzburg. *Comment* (HF): wood from same site (VRI-603, R, v 22, p 113) is 7000 ± 130. Obviously bone is atomic bomb age. Collagen extracted according to Longin (1971).

**VRI-657. Schwarzenbach, Stmk 3010 ± 100**

Charcoal, find No. 14, —80cm in prehistoric slag deposit "Sunk Church" at Schwarzenbach (47° 29' 30" N, 14° 27' 35" E) near Trieben, Styria. Coll 1979 and subm by Clemens Eibner, Inst Ur- u Frühgesch, Univ Vienna. *Comment* (CE): ceramics point to Urnfield culture. de Vries corrected age (Suess, 1970) not unique: 1320 or 1450 BC.

REFERENCES

- Longin, R, 1971, New method of collagen extraction for radiocarbon dating: *Nature*, v 230, p 241-242.  
 Patzelt, G, 1969, Zur Geschichte der Pasterzenschwankungen: *Wiss Alpenvereinshefte*, v 21, p 171-179.  
 Suess, H E, 1970, Bristlecone pine calibration of the radiocarbon time scale 5300 BC to the present, in: Olsson, I U, Radiocarbon variations and absolute chronology, Nobel symposium 12th, Proc: Stockholm, Almqvist & Wiksell, p 303-313.