

VIENNA RADIUM INSTITUTE RADIOCARBON DATES XIII

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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.

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SAMPLE DESCRIPTIONS

I. GEOLOGIC, LIMNOLOGIC, AND BOTANIC SAMPLES

Austria

VRI-759. Opponitz, NÖ 8790 ± 130

Gyttja from organic layer between calcareous tuff with mollusk shells in Haselgraben E Opponitz (47° 52' 40" N, 14° 49' 30" E), Lower Austria. Coll 1981 and subm by Ilse Draxler, Geol BA, Vienna. *Comments* (ID): palynology points to favorable Würm climatic phase. (HF): date contradicts palynology. No NaOH pretreatment.

Lungötz series, Salzburg

Peat with wood pieces from peat deposit cut by Lammer R, Lammerthal Valley, W Lungötz (47° 30' N, 13° 21' E), Salzburg. Coll 1981 and subm by Heinz Slupetzky, Geog Inst, Univ Salzburg.

General Comments (HS): information on bog growth is expected. (HF): humic acid fraction was used for peat dating to eliminate wood detritus.

VRI-736a. Sample I, peat 3510 ± 90

Peat with sand from base (−3.5m) of peat layer, 3m thick, in 1st fluvial terrace of Lammer R, now above recent river bed, but in high water zone.

VRI-736b. Sample I, wood Modern

Wood in Sample I. *Comment* (HF): date shows nuclear weapons influence. Wood obviously washed in.

VRI-737a. Sample II, peat 2320 ± 80

Peat with sand from uppermost layer (−0.5m).

VRI-737b. Sample II, wood 2180 ± 100

Wood in Sample II.

Gastein series, Salzburg

Material from bottom of Unterer Bockhart-See, at present nearly completely drained for dam construction. Deep erosional gullies in exposed lake sediment provide access for sampling as much as 7m below sediment surface. Unterer Bockhart-See, 1845m asl, near Gastein (47° 04' 45" N, 13° 03' 10" E), Salzburg. Coll 1981 and subm by Friedrich Kral, Univ Bodenkultur, Vienna.

General Comments (FK): dates palynologically determined events. (HF): contaminating wood detritus excluded by use of NaOH extract only. The following sample depths are relative to sediment surface.

VRI-760. BO II/0-8 1190 ± 80

Sandy gyttja at 2.1m in zone with thin dark and light layers underlying coarse sand layer, 1.5m thick, possibly assoc with gold mining. *Comment* (FK): dates palynologically determined max in pasturing activity.

VRI-761. BO II/125-135 3140 ± 90

Sandy gyttja at ca 3.3m in dark-colored zone with few thin sand layers. *Comment* (FK): dates palynologically determined beginning of pasturing activity or 1st local human influence.

VRI-762. BO II/130 3030 ± 120

Pine cones in Sample VRI-761.

VRI-763. BO II/182 3050 ± 90

Cembra wood in Sample VRI-764.

VRI-764. BO II/180-185 3480 ± 90

Sandy gyttja at 3.9m in dark-colored zone with thin sand layers. *Comment* (FK): dates pasturing activity in outlying areas palynologically traceable by air-borne pollen. Younger stem, VRI-763, may have sunk ca 50cm in soft sediments to this older layer.

VRI-765. BO III/8-12 4800 ± 90

Sandy gyttja at ca 5.4m in dark zone without sand layers. *Comment* (FK): dates increase of *Abies* pollen.

VRI-766. BO III/88-92 7180 ± 110

Sandy gyttja at ca 6.2m in dark zone without sand layers. *Comment* (FK): dates max alt of timber line (*Pinus*, *Cembra*).

VRI-767. BO III/165-175 9690 ± 360

Gyttja with much sand at ca 7m in relatively light-colored zone with partly-coarse sand. *Comment* (FK): dates immigration and spread of *Alnus* and *Pinus*.

VRI-781. BO I/40-50 1250 ± 80

Sand with gyttja and wood detritus, with several dark and light layers, at 40 to 50cm. *Comment* (FK): dates beginning of present environ-

ment, nearly free of trees. Provides min age for underlying homogeneous coarse sand zone possibly related to gold and silver mining.

VRI-782. BO II/55-65 **2080 ± 80**

Sandy gyttja and wood detritus interspersed with dark lake sediment at 2.6m. *Comment* (FK): dates beginning of corn pollen and wood regression in vicinity.

Hochlantsch series, Steiermark

Calcareous sinters at Mt Hochlantsch area, between Teichalm hut and Zechner Hube (47° 21' 50" N, 15° 26' 50" E), near Bruck an der Mur, Styria. Coll 1981 by Hannes Gollner, subm by H W Flügel, Inst Geol and Paläont, Univ Graz.

General Comment (HWF): dated to study temporal correlation between carbonate sinters in cleft of disturbance (Sample A) and in dissolving fissure of Devon lime (Sample B) that cross each other.

VRI-771. Sample A **1.9 ± 0.4% modern**

VRI-772. Sample B **26.4 ± 0.5% modern**

Comment (HF): recent value, 100% modern, provides max ages: Sample A: 31,700 ± 1600, Sample B: 10,700 ± 160 BP.

Seefeld series, Tirol

Peat from different depths of Katzenlochmoor at foot of Mt Hohe Munde (47° 20' 39" N, 11° 07' 16" E), near Seefeld, Tirol. Coll 1981 and subm by Sigmar Bortenschlager, Bot Inst, Univ Innsbruck.

General Comment (SB): dates pollen diagram.

VRI-625. Base **8630 ± 130**

Peat from base. *Comment* (SB): dates beginning of peat growth.

VRI-628. 140-143 **8450 ± 120**

Sphagnum peat from depth 140 to 143cm. *Comment* (SB): dates *Picea* increase.

VRI-626. 92-95 **7470 ± 120**

Sphagnum peat with *Eriophorum* from depth 92 to 95cm. *Comment* (SB): dates beginning of arboreal pollen decrease.

VRI-627. 72-75 **7100 ± 180**

Sphagnum peat with *Eriophorum* from depth 72 to 75cm. *Comment* (SB): dates end of arboreal pollen decrease.

Kirchbichl series, Tirol

Detritus-gyttja in profile of former lake, Kirchbichl watering place (47° 30' 36" N, 12° 05' 26" E), Tirol. Coll 1981 by Burgi Wahlmüller; subm by Sigmar Bortenschlager.

General Comments (BW): dates pollen diagram. (HF): no humic acid separation.

VRI-690. 453-460 **8050 ± 130**

Sample at depth 453 to 460cm. *Comment* (BW): dates spread of *Picea*.

VRI-691. 670-677 **9070 ± 140**

Sample at depth 670 to 677cm. *Comment* (BW): dates end of clay deposition.

VRI-692. 695-702 **9430 ± 130**

Sample at depth 695 to 702cm. *Comment* (BW): dates beginning of clay deposition.

VRI-768. Kienberg, Tirol **Modern**

Humic acids from lowest layer of $O_f(O_h/A_h)$ horizon of Ranker on landslip block near Kienberg/Jerzens im Pitztal (47° 08' N, 10° 45' E), Tirol. Coll 1981, extracted and subm by Gerhard Heiss and Irmentraud Neuwinger, Forstl BVA, Innsbruck. *Comment* (IN): date of landslip was hoped for. (HF): date shows nuclear weapons influence.

Telfs series, Tirol

Soil from Griessbach alluvial cone, Telfs (47° 18' N, 11° 04' E), Tirol. Coll 1982 and subm by Irmentraud Neuwinger.

General Comment (IN): dates top layer of alluvial cone.

VRI-769. Sample 102/82 **Modern**

Humic acids extracted from lowest layer of A_h horizon of Rendzina, -20 to -25cm, ca 20m E of VRI-741 (R, 1982, v 24, p 225). *Comment* (HF): date shows nuclear weapons influence.

VRI-785. Sample 17a/82 **4250 ± 100**

Charcoal of buried A_h horizon, -80 to -100cm. *Comment* (HF): dendrochronol age, 2820 to 3240 BC (Suess, 1979).

VRI-784. Sulzberg, Vorarlberg **Modern**

Wood from plant layer, -50cm in lake marl, Unterlitten near Sulzberg (47° 32' N, 9° 55' E), Vorarlberg. Coll 1982 and subm by Ilse Draxler. *Comments* (ID): interval from Middle ages to present is expected from palynology. (HF): date shows nuclear weapons influence.

CSSR

Vysoke Tatry series

Peat (VT-I-A) from bog near Trojhranne pless lake (49° 13' 15" N, 20° 13' 50" E), 1650m asl, Vysoke Tatry. Coll 1981 by Heinz Hüttemann; subm by Sigmar Bortenschlager.

General Comment (HH): dates pollen diagram.

VRI-629. 110-100 **2290 ± 90**

Sphagnum-Eriophorum peat at depth, -110 to -100cm. *Comment* (HH): dates beginning of cultural phase.

VRI-697. 155-150 **3640 ± 90**

Sphagnum-Eriophorum peat at depth, -155 to -150cm. *Comment* (HH): dates both EMW and *Pinus* increase and *Picea* decrease. No humic acid separation.

VRI-698. 55-50 **890 ± 70**

Cyperaceae peat at depth, -55 to -50cm. *Comment* (HH): dates beginning of intensive human activity including land clearance. No humic acid separation.

Riesengebirge series

Peat and wood from Pancica bog near Elbebaude, 1325m asl (50° 46' 45" N, 15° 32' 30" E), Mt Riesengebirge. Coll 1982 by Heinz Hüttemann; subm by Sigmar Bortenschlager, Bot Inst, Univ Innsbruck.

General Comments (HH): dates pollen diagram. (HF): no humic acid separation.

VRI-693. 180-185 **4710 ± 90**

Sphagnum peat at depth 180 to 185cm. *Comment* (HH): dates supposed burning horizon.

VRI-694. 125-130 **4280 ± 90**

Sphagnum peat at depth 125 to 130cm. *Comment* (HH): dates 1st clearing activity.

VRI-695. 85-90 **2460 ± 80**

Brown moss *Carex* peat at depth 85 to 90cm. *Comment* (HH): dates climax of intensive cultural phase.

VRI-696. 25-30 **610 ± 80**

Sphagnum-Trichophorum peat at depth 25 to 30cm. *Comment* (HH): dates beginning of modern culture phase.

VRI-707. 200 **4750 ± 90**

Root of pine at depth 200cm.

Greece

Lailias series

Samples of bog 1420m asl at Lailias (41° 16' 14" N, 23° 35' 30" E). Coll 1980 by A Gerassimidis; subm by Nikolaos Athanasiadis, Inst Forstbot, Aristotelion Univ, Thessaloniki.

General Comment (NA): dates pollen diagram. Pretreatments were unnecessary.

VRI-746. 58-61 **250 ± 80**

Carex-Sphagnum peat with modern roots at depth 58 to 61cm.

VRI-747. 127-132 **910 ± 80**

Dy with modern roots at depth 127 to 132cm.

VRI-748. 175-200 **1870 ± 140**

Dy with coarse sand at depth 175 to 200cm.

Flamboyro series

Peat from bog near Flamboyro (40° 15' 24" N, 22° 09' 36" E), Mt Pieria, 1650m asl. Coll 1980 by A Gerassimidis; subm by Nikolaos Athanasiadis.

General Comment (NA): dates pollen diagram. Pretreatments were unnecessary.

VRI-749. 48-52 **520 ± 80**

Peat with roots at depth 48 to 52cm.

VRI-750. 120-125 **1960 ± 80**

Peat with roots and clay at depth 120 to 125cm.

Kokkini Brissi-Pieria series

Peat and dy at Kokkini Brissi (40° 17' 55" N, 22° 09' 38" E), Pieria Mt, 1420m asl. Coll 1981 by A Gerassimidis; subm by N Athanasiadis.

General Comment (NA): dates pollen analysis. No pretreatment.

VRI-751. 63-68 **<200**

Clayey peat at depth 63 to 68cm; contaminated by rootlets.

VRI-752. 170-175 **610 ± 80**

Clayey dy at depth 170 to 175cm; contaminated by rootlets.

II. ARCHAEOLOGIC AND HISTORIC SAMPLES

Austria

Stillfried an der March series, NÖ

Charcoal from different loci of W rampart cut of prehistoric bulwark on Kirchberg hill, Stillfried (48° 25' N, 16° 50' E), near Angern an der March, Lower Austria. Coll 1977 by C Eibner, Inst Ur- u Frühgesch, Univ Vienna.

VRI-773. Sample ST 7225 **1950 ± 80**

W rampart cut, 140 to 150cm below level, 16.25m run, 140 to 160cm S of N profile 1980.

VRI-774. Sample ST 7226 **2480 ± 80**

W rampart cut, below pit bldg, 14.5 to 15.5m run, 110 to 180cm S of N profile 1980.

VRI-783. Geras, NÖ **680 ± 80**

Human bones from burials at -175cm, excavated at S face of church of Stift Geras (48° 47' N, 15° 42' E), Dept Horn, Lower Austria. Coll 1982 and subm by Ambros Josef Pfiffig, Stift Geras. *Comments* (AJP): early slave settlement is suggested. Reconstruction of Stift Geras after 1650 disturbed burials. (HF): de Vries corrected age (Suess, 1970) is AD 1270 ± 80.

VRI-739. Traunkirchen, OÖ **2480 ± 90**

Wood remnants of prehistoric lake dwelling, -2m below water level from bottom of Lake Traunsee, near Traunkirchen (47° 51' N, 13° 47' E), Upper Austria. Coll 1981 and subm by Johann Offenberger, Bundesdenkmalamt, Vienna. *Comment* (JO): date points to Hallstatt period, de Vries-effect correction (Suess, 1970), including standard deviation, yields 800 to 600 BC.

Hallstatt series, OÖ

Samples from wooden rust overlain by Roman layer, -2m below Echerntalweg near S parking lot, Hallstatt (47° 33' 30" N, 13° 39' E), Oö. Coll 1980 by Hubert Unterberger, subm by Chr Farka, Bundesdenkmalamt, Vienna.

General Comment (HF): dates prove only some samples are of Roman origin.

VRI-743. Hallstatt 1 **1670 ± 80**

Comment (HF): de Vries correction provides Roman date, AD 330 ^{+ 90} - 80 (Suess, 1970).

VRI-744. Hallstatt 2 **<300****VRI-775. Attersee, OÖ** **4610 ± 100**

Wooden piling at bottom of Lake Attersee, -2m below water level, sample Abtsdorf II 197/1-1982, near Abtsdorf (47° 53' 48" N, 13° 31' 58" E), Upper Austria. Coll 1982 by Union Tauchklub Wels; subm by Johann Offenberger. *Comment* (JO): dates Neolithic lake dwelling.

VRI-742. Innsbruck, Tirol **300 ± 90**

Human bones, from -2m at N portal in great court of Hofburg Castle, Innsbruck (47° 17' N, 11° 25' E), Tirol. Coll 1981 at gas-line installation; subm by Werner Platzer, Anatom Inst, Univ Innsbruck. *Comments* (WP): loc of medieval cemetery, abandoned in AD 1501. (HF): de Vries correction (Suess, 1970) yields calendric date, AD 1480 ^{+ 40} - 30.

*Spain***Canary Islands series**

Shell remains from different depths of shell heap. Conchero El Julan, S of Hierro I, Canary Is. Coll 1982 by Herbert F Nowak; subm by Hans Biedermann, Inst Canarium, Hallein. *Comments* (HB): dated for study of Canarian Megalith culture. (HF): surface leaching pretreatment.

VRI-777. El Julan 1 **1010 ± 80**
Depth -0.02 to -0.05m.**VRI-778. El Julan 2** **1140 ± 80**
Depth -0.50 to -0.55m.

VRI-779. El Julian 3	1260 ± 80
Depth -0.98 to -0.99m.	
VRI-780. El Julian 4	1420 ± 80
Depth -1.09 to -1.10m.	

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