

BERN RADIOCARBON DATES III

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This list covers part of the measurements made at the Radiocarbon Dating Laboratory, Physics Department, University of Bern from summer 1960 until summer 1962. Two low-level counters with incorporated anticoincidence arrangement (Houtermans and Oeschger, 1958) are used for routine C^{14} measurements.

As modern reference source we have taken the activity of NBS oxalic-acid standard $\times 0.950$. Errors given are the standard deviations derived from the number of counted particles and the statistical errors of background and modern standard. Results are calculated with the half life of 5568 yr. No C^{13} corrections are made.

Since the beginning of 1962 samples have been converted into methane using the method described by Fairhall et al. (1961).

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SAMPLE DESCRIPTIONS

B-199. Eggen, Wallis, Switzerland **5250 \pm 80**
3300 B.C.

Peat of sedges and Hypnaceae from a bog behind the lateral moraine of the ancient Aletsch Glacier, N of Blatten and Brig-Naters, Wallis ($46^{\circ} 22' 13''$ N Lat, $7^{\circ} 59' 22''$ E Long, alt 1650 m). Coll. 1956 by Max Welten and Otto Hegg; subm. by Max Welten, Univ. of Bern. *Comment* (M.W.): good supplement to the Eggen series, B-201, B-200, B-198 (Bern II). Series is consistent (Welten, 1958).

B-204. Belalp, Wallis, Switzerland **4240 \pm 80**
2290 B.C.

Root-rich peat from a bog deposit near the Aletsch Glacier, N of Brig-Naters, Wallis ($46^{\circ} 23' 6''$ N Lat, $7^{\circ} 59' 2''$ E Long, alt 2330 m). Coll. 1956 by Max Welten and Otto Hegg; subm. by Max Welten. *Comment* (M.W.): valuable supplement to the Belalp series B-202, B-203, B-205 (Bern II). Series is consistent (Welten, 1958).

B-290. Le Cruilles 150.3 cm depth **4920 \pm 120**
2970 B.C.

Sphagnum peat from Les Cruilles, near Le Pont, Vallé de Joux ($46^{\circ} 39' 4''$ N Lat, $6^{\circ} 18' 36''$ E Long, alt 1040 m) western Jura. Coll. 1958 by Samuel Wegmüller, Univ. of Bern; subm. by Max Welten. *Comment* (M.W.): dates

the beginning of the Picea phase. Part of a consistent series with B-288, B-289, B-290 (Bern II).

Sèche de Gimel series, western Jura, Switzerland

Peat samples from a sphagnum bog at Sèche de Gimel, near Col du Marchairuz, western Jura (46° 33' 05" N Lat, 6° 14' 00" E Long, alt 1300 m). Coll. 1958 by Alfred Wasserfallen and Samuel Wegmüller, Univ. of Bern; subm. by Max Welten. *Comment* (M.W.): B-295 and B-294 date the Picea-phase in the western Jura, B-293 the beginning of it.

B-295.	Sèche de Gimel	97.8 cm depth	1060 ± 100 A.D. 890
B-294.	Sèche de Gimel	172.2 cm depth	1500 ± 100 A.D. 450
B-293.	Sèche de Gimel	248 cm depth	3070 ± 160 1120 B.C.

Egelsee series, Simmental, Switzerland

Samples from a bog profile in Simmental near Diemtigen, Bernese Oberland (46° 39' N Lat, 7° 32' 35" E Long, alt 1000 m), (compare B-50 to B-56, Bern I). Coll. 1957 by J. Liechti and Max Welten; subm. by Max Welten. *Comment* (M.W.): reliability of C¹⁴ dating of peat was to be examined by comparison with wood found at the same depth. B-306 and B-307 are congruent within the limits of error, even if we do not suspect that the twig was younger and sank a little into the peat.

B-306.	Egelsee	80 cm depth, sphagnum peat	2530 ± 100 580 B.C.
B-307.	Egelsee	80 cm depth, wood of twig	2350 ± 100 400 B.C.
B-309.	Aare, Aarau, Switzerland		3250 ± 80 1300 B.C.

Trunk of oak from the bed of the river Aare, Aarau (47° 24' 10" N Lat, 8° 03' 55" E Long). Coll. 1960 by Mr. Blesi, Juracementfabrik Aarau; subm. by W. Schmid, Mus. für Natur- und Heimatkunde, Aarau. *Comment* (Mr. B): dates high-water stage during which trunk was floated into the Aare.

B-318. Monbijoubücke >45,000

Small pieces of coal found in sandy layers under ground moraine and Würm II gravels at Monbijoubücke, Bern (46° 56' 26" N Lat, 7° 26' 31" E Long), Gerber, 1927. Coll. 1960 and subm. by W. Nabholz, Geol. Inst., Univ. of Bern. *Comment* (W.N.): sample establishes the Pre-Würm II age of the sands.

Creux du Croue series, western Jura, Switzerland

Sphagnum peat from a bog at Creux du Croue, near Le Noirmont, in western Jura (46° 29' 48" N Lat, 6° 7' 17" E Long, alt 1360 m). Coll. 1958 by Alfred Wasserfallen and Samuel Wegmüller; subm. by Max Welten. *Com-*

ment (M.W.): B-331 dates the beginning of the Piceae-phase, B-330 the phase of Corylus.

B-331.	Creux du Croue	176.4 cm depth	4350 ± 100 2400 B.C.
B-330.	Creux du Croue	386.2 cm depth	8430 ± 120 6480 B.C.

Axel Heiberg-Island series, NWT, Canda

Samples from organic and inorganic sediments in front of White Glacier. The profile was opened naturally by the erosion of a glacier-river (79° 26' N Lat, 90° 24' W Long). Coll. 1960 by Otto Hegg, Univ. of Bern; subm. by Max Welten. *Comment* (M.W. and O.H.): series of deposits was supposed to give dates of advances and retreats of the glaciers connected with upheaval of the area. In the lower part the profile seems to show a normal deposition up to ca. 100 cm below surface, while the upper one shows an inversion probably caused by redeposition of older materials. Definite evaluation demands further researches on similar places in the area (Hegg, 1961).

B-333.	Axel Heiberg	35 cm depth	4950 ± 200 3000 B.C.
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Drepanocladus-peat layers interbedded with thin sand layers.

B-334.	Axel Heiberg	80 cm depth	3070 ± 120 1120 B.C.
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Drepanocladus peat.

B-311.	Axel Heiberg	135 cm depth	2900 ± 120 950 B.C.
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Drepanocladus peat.

B-313.	Axel Heiberg	255 cm depth	4210 ± 100 2260 B.C.
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Rhizome peat.

La Tourbière series, Ct. de Vaud, Switzerland

Gyttja with chalk and clay from a bog at La Tourbière near Coinsins (46° 25' 40" N Lat, 6° 13' 50" E Long, alt 480 m). Coll. 1961 by Samuel Wegmüller; subm. by Max Welten. *Comment* (M.W.): samples date the phase of Betula-Pinus (Alleröd) in the western part of Switzerland. The slight inconsistency of the series falls within the limits of error, but makes far-reaching conclusions unwarranted.

B-336.	La Tourbière	507 cm depth	10,950 ± 200 9000 B.C.
B-337.	La Tourbière	511 cm depth	11,530 ± 200 9580 B.C.
B-338.	La Tourbière	514.5 cm depth	11,200 ± 200 9250 B.C.
B-339.	La Tourbière	518 cm depth	11,750 ± 200 9800 B.C.

B-355. Davos-Platz **3595 ± 100**
1640 B.C.

Larch wood from ca. 2 m depth in soft soil and peat at Davos-Platz, Canton Graubünden (46° 49' N Lat, 9° 50' E Long). Coll. 1961 by R. Haefeli and H. R. in der Gand; subm. by Krähenbühl and Bühler, architects, Davos. *Comment* (R.H.): either the yearly sedimentation of coarse- and fine-grained soil (deposited by the river Land-Wasser) was extremely small, or erosion, alternating with deposition, has removed much of the section (Lütschg, 1944).

B-361. Sangenholz, Egnach, Thurgau **920 ± 200**
A.D. 1030

Charcoal from a cultivated field at Sangenholz, Egnach, Canton Thurgau (47° 32' 06" N Lat, 9° 23' 48" E Long). Coll. by M. Trächsel; subm. by W. U. Guyan, Mus. zu Allerheiligen, Schaffhausen.

Aletschgletscher series, Switzerland

Two larch trunks from moraine on right side of Grosser Aletschgletscher, 30 m above present ice level, Zenbächen (46° 25' N Lat, 8° 02' 5" E Long, alt 1850 m). Trees were lying parallel, a few meters apart, the smaller ends pointing S. Coll. 1961 by R. Haefely and Forstmeister Ritz; subm. by R. Haefely, Susenbergstr. 193, Zürich. *Comment* (R.H.): it is possible but not certain that the trees were overridden by the advancing glacier. Transport by avalanches is not excluded. There is no doubt that the trees were uncovered by the retreat of the glacier in the early 1900's or late 1800's. Compare B-32 and B-71 (Bern I), wood samples found at the right side of the tongue of the Grosser Aletschgletscher, but at an alt of 1600 m (Oeschger and Röthlisberger, 1961).

B-362/1. Aletschgletscher III **1760 ± 100**
A.D. 190

B-362/2. Aletschgletscher IV **1860 ± 100**
A.D. 90

B-379. Hofwiesen I, Barga, Schaffhausen **1610 ± 100**
A.D. 340

Sample from charcoal deposit below water-meadow near Hofwiesen, Barga, Canton Schaffhausen (47° 47' 48" N Lat, 8° 35' 03" E Long). Coll. 1961 by Margrit Sauter; subm. by W. U. Guyan. *Comment* (W.G.): dates an iron furnace.

Goeschenenalp series, Switzerland

During construction of the earth dam for the Goeschenenalp reservoir, Canton Uri (46° 38' 51" N Lat, 8° 29' 29" E Long, alt 1687 m to 1698.4 m), extensive drilling and excavations were carried out in thick valley fill which contained, at different levels, various organic material from scattered driftwood and roots to peat and remnants of forests. Coll. 1960 by Louis Kläy, Federal Inst. of Technol. Zürich, and Heinrich Zoller, Univ. of Basel; subm. by Sect. of Hydrology and Glaciology, for Hydraulic Research and Soil Mechanics,

Federal Inst. of Technol., Zürich, and Heinrich Zoller. *Comment* (Hans Röthlisberger): B-380 and B-381 date a boulder zone by bracketing it; the boulder zone, av. thickness 8 to 10 m of considerable lateral extent, imbedded in alluvium, suggests a glacier advance of 2 to 3 km beyond the 1850 maximum. The boulders may represent a rockslide onto the glacier. B-382 (trunk of Larix) shows that the glacier advanced into a forest. Pollen profiles are under investigation.

B-381. Goeschenenalp 1a	1400 ± 80 A.D. 550
B-381/1. Goeschenenalp 1b	1650 ± 80 A.D. 300
B-380. Goeschenenalp 2	2280 ± 120 330 B.C.
B-384. Goeschenenalp 3	2840 ± 80 890 B.C.
B-382. Goeschenenalp 4	3340 ± 120 1390 B.C.

Tour St. Martin series, Mollondin, Switzerland

Small bits of burnt wood from Tour St. Martin, Canton Vaud (46° 45' 3" N Lat, 6° 45' 00" E Long). From thick layer of burnt wood mixed with dry sand underneath a cobblestone pavement (empierrement). Coll. 1961 and 1962 and subm. by E. André, Service des Bâtiments de l'Etat, Lausanne. *Comment*: the two tests show that the pavement belongs to a medieval structure, not to a Roman or even pre-Roman one as had been thought. Gives earliest occupation of hill.

B-392/2. Tour St. Martin	1190 ± 100 A.D. 760
B-392/4. Tour St. Martin	1260 ± 120 A.D. 690

Vorderrhein series, Ilanz, Graubünden, Switzerland

Oak trunks found in river clay and gravel at the bank of the Rhein River after high water near Ilanz, Canton Graubünden (46° 46' 32" N Lat, 9° 9' 48" E Long). Coll. 1961 by J. Montalta and H. Calortscher, Ilanz; subm. by H. Brunner, Naturh. Mus. Chur, Graubünden. *Comment* (H.B.): postglacial landslide of Flims has dammed the Vorderrhein from Ilanz to Truns. The drifted oak wood, imbedded in sedimenting clay and gravel, may possibly date the landslide (Staub, 1938).

B-395a. Vorderrhein	8320 ± 120 6370 B.C.
Sample from big oak trunk below bark.	
B-395b. Vorderrhein	8570 ± 130 6620 B.C.
Sample from center of same oak trunk (ca. 300 tree rings below bark).	

B-395c. Vorderrhein **8470 ± 150**
6520 B.C.

Sample of small oak trunk.

B-397. Speicher, Hohrüti, Switzerland **1460 ± 100**
A.D. 490

Root and stem, excavated during construction of a building, found interstratified in upper and lower boulder clay, 250 to 280 cm depth (47° 25' 01" N Lat, 7° 6' 15" E Long, alt 940 m). Coll. 1961 and subm. by Hermann Eugster, collaborator of Swiss Geol. Comm. *Comment* (H.E.): root and stem evidently belong to a landslide, not to a Riss-Würm interglacial deposit.

II Fuorn series, Unterengadin, Switzerland

Peat of sedges and Hypnaceae mixed with some sand of dolomite rocks from slightly inclined bog, W of the Ofenpass road near the Hotel of II Fuorn (46° 39' 35" N Lat, 10° 12' 12" E Long, alt 1805 m). Coll. 1958 and subm. by Max Welten. *Comment* (M.W.): the three determinations form a consistent series in a profile formerly thought to record influences of a primitive iron industry on vegetation. The dates confirm the pollen diagrams in demonstrating an age much older than Iron Age and a long span of time for the deposition (Welten, 1962).

B-405. II Fuorn 112 cm depth **4100 ± 100**
2150 B.C.

B-406. II Fuorn 168 cm depth **5410 ± 100**
3460 B.C.

B-407. II Fuorn 226 cm depth **6490 ± 100**
4540 B.C.

Lai Nair series, Unterengadin, Switzerland

Samples from a little basin on the right bedrock slope under former Inn glacier, filled, successively, with clay and chalk-gyttja in late-glacial time, with gyttja in Boreal and Atlantic times and later with peat of sedges and Hypnaceae. Boring by Hiller sampler, E of Tarasp near the thermal station of Schuls (46° 46' 23" N Lat, 10° 16' 40" E Long, alt 1546 m). Coll. 1958 and subm. by Max Welten. *Comment* (M.W.): a very consistent series dating the best pollen-diagram available in the neighborhood of the climatically continental Swiss National Park. The early invasion of *Picea* is dated, as well as the renewed dominance of *Pinus* in more recent times (Welten, 1962).

B-408. Lai Nair 88 cm depth **1310 ± 80**
A.D. 640

Peat of sedges and Hypnaceae

B-409. Lai Nair 222 cm depth **1830 ± 80**
A.D. 120

Peat of sedges and Hypnaceae.

B-410. Lai Nair 277 cm depth **2730 ± 130**
780 B.C.

Peat of sedges and Hypnaceae, with gyttja.

B-411. Lai Nair 331 cm depth	4000 ± 80 2050 B.C.
Gyttja.	
B-412. Lai Nair 410.7 cm depth	7160 ± 110 5210 B.C.
Chalk-gyttja.	

Juf Plan series, Unterengadin, Switzerland

Peat of sedges and Hypnaceae from great alpine inundation plain, formed partly by peat, partly by clay and sand. Boring by Hiller sampler, E of the Ofenpass near the Swiss National Park (46° 37' 18", 10° 15' 20", alt 2223 m). Coll. 1958 and subm. by Max Welten. *Comment* (M.W.): unexpectedly the profile goes back to the early part of the Atlantic period; the pollen diagram is monotonous and confused by much pollen of long-distance transport, and had not been thought to be so old. The rate of growth of this alpine peat seems to have been very low, and there is no indication of truncation or of cessation of growth in recent times (Welten, 1962).

B-413. Juf Plan 30 cm depth	3520 ± 120 1570 B.C.
B-414. Juf Plan 61 cm depth	6380 ± 120 4430 B.C.

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