

# Radiocarbon

1981

## TELEDYNE ISOTOPES RADIOCARBON MEASUREMENTS XII

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Teledyne Isotopes  
Westwood, New Jersey 07675

This date list reports samples completed before 1979. Methods, equipment, and techniques were reported previously (R, 1968, v 10, p 246; R, 1970, v 12, p 87). Age calculations are based on the conventional  $^{14}\text{C}$  half-life of 5568 years. The working laboratory standard is 95% of the NBS oxalic acid standard (SRM 4990). Results are reported in years before 1950 and the standard deviation is based on counting statistics of sample, background, and modern standard. Corrections for  $\delta^{13}\text{C}$  are not included.

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### I. GEOLOGIC SAMPLES

#### *United States*

#### *Alaska*

#### **Beaufort and Chukchi Sea Coast series**

Samples from coastal areas of Beaufort and Chukchi Seas dated as contribution to Outer Continental Shelf Environmental Assessment Program. Coll and subm 1978 by D M Hopkins, USGS, Menlo Park, California (Hopkins and Robinson, 1979).

**I-10,328. 76 Ahp 47a** **9130  $\pm$  150**

Basal peat from older of two successive thaw lakes, Wainwright Quad, 1.1km SW Nokotlek Pt ( $70^{\circ} 18' 45''$  N,  $161^{\circ} 03' 00''$  W). *Comment:* with I-10,329 shows two lakes existed at same site, older lake for  $<3000$  yr.

**I-10,329. 76 Ahp 47b** **6240  $\pm$  120**

From basal 10cm of 60cm detrital peat representing younger thaw lake.

**I-10,330. 76 Ahp 60a** **8280  $\pm$  140**

From basal 5cm of deposit 1.9m thick representing peat accumulated in low-center ice-wedge polygons. *Comment:* date is min for inception of low-center polygons and provides estimated rate of peat accumulation at Nokotlek Pt.

**I-10,331. 76 Ahp 60b 9540 ± 150**

Fine-grained cryoturbated peat stringers in colluvium 25cm below base of low-center polygon peat (I-10,330).

**I-10,332. 76 Ahp 62 8440 ± 160**

Twigs in basal 10cm of thaw-lake deposit 1.5cm thick, Wainwright Quad, 0.2km SW Nokotlek Pt (70° 19' 42" N, 161° 01' 00" W). Coll within 50m of former lake margin and thought to have been deposited shortly before lake was drained.

**I-10,368. 76 Ahp 82 9180 ± 150**

Basal peat of an older thaw-lake, Wainwright Quad, 10km SW of Wainwright Inlet (70° 31' 30" N, 160° 17' 00" W).

**I-10,369. 77 Ahp 35b 3950 ± 120**

Detrital peat 1cm below white ash layer in windblown sand sequence derived from Canning R bars. Mainland shore of Canning Lagoon, 0.4km W of mouth of E branch of Canning R (70° 04' 42" N, 145° 35' 00" W). *Comment:* age is min for accumulation of windblown sand; with I-10,370, brackets age of ash.

**I-10,370. 77 Ahp 35c 3320 ± 100**

Twigs and detrital peat 5cm above white ash layer.

**I-10,371. 77 Ahp 40a 4890 ± 230**

Detrital peat at depth 3.6m in 4m layer windblown sand from river bars, E end of Flaxman I. (70° 10' 35" N, 145° 56' 48" W). *Comment:* sample from 5cm above ash layer thought to be same as ash bracketed by I-10,369 and -10,370.

**I-10,372. 77 Ahp 40z 2380 ± 180**

Detrital peat at depth 0.45m in 4m layer windblown sand. *Comment:* date is max for drowning of Leffingwell Channel by rising sea level.

*Indiana***I-9635. Patoka damsite 7670 ± 130**

Sycamore wood (*Platanus occidentalis*) from Dubois Co (38° 26' 00" N, 86° 42' 25" W). At base of alluvial silt and sand overlying Illinoian age sediments, 10m below ground surface. Coll 1976 by H Gray, J Bassett, and R Powell; subm 1976 by N Bleuer, Indiana Geol Survey, Bloomington. *Comment:* dates base of postglacial alluvial backfill on Patoka R and agrees with dates for similar positions in Indiana (Gray, 1963).

**I-9636. Briggs Bros Catfish Farm 13,600 ± 210**

Spruce wood (*Picea* sp) from Jasper Co (40° 56' 10" N, 87° 56' 18" W). From 2.3m depth in basin of marly loam and beneath 15cm muck which yielded mastodon remains. Basin lies within elongate crisscrossing

trenches S of Iroquois Moraine (Bleuer, 1974). Coll 1975; subm 1976 by N Bleuer.

**I-9637. Cates Strip Pit** **24,070 ± 570**

Peaty silt from Fountain Co (39° 59' 43" N, 87° 21' 48" W). Exposed on E wall of small coal strip pit within single till unit at depth 3.7m. Till is considered equivalent of Glenburn Till on basis of mineralogy (Johnson, 1972). Coll and subm 1976 by N Bleuer. *Comment*: date is Farmdalian and appropriate for inclusion in basal Wisconsin till.

**I-9634. Putnam Section 128** **20,100 ± 400**

Organic silt from Putnam Co (39° 41' 16" N, 86° 45' 15" W). Strat sec from top: upper till, sand, woody till with basal ice shearing, clay, sample silt. Coll 1976 by M Moore and N Bleuer, subm 1976 by N Bleuer. *Comment*: dates base of Trafalgar fm, is similar to other dates in this position.

**I-10,075. Fort Wayne Admore Rd, Quarry-2** **22,340 ± 520**

Wood from thin discontinuous outwash bed above weathered sand, below loamy till (Bleuer and Moore, 1971; Moore and Bleuer, 1973). SENENW sec 29, T 30 N, R 12 E, Fort Wayne (41° 01' 36" N, 85° 11' 58" W). Coll 1977 by M Moore; subm 1978 by N Bleuer. *Comment*: dates outwash at base of Trafalgar fm stratigraphically below woody silt dated 21,310 ± 350 (ISGS-382) suggesting rigid advance of Huron Erie Lobe across Indiana.

**Russellville series**

Silt and woody debris SWSENW sec 8 T 16 N R 5 W and S of Russellville (39° 50' 44" N, 86° 59' 14" W). Coll 1977 by N Bleuer and J Hill; subm 1977 by N Bleuer.

**I-10,073. Russellville silt-lower** **21,830 ± 510**

From organic bed *in situ* below two loams till of Trafalgar fm (Wayne, 1965).

**I-10,074. Russellville wood-top** **20,100 ± 400**

Occurs as woody debris mat. *Comment*: date is in range of those between Center Grove (lower) and Cartersburg (upper) members of Trafalgar fm. Site is beyond Crawfordsville Moraine, assumed to be outer limit of Cartersburg member.

*California*

**I-9706. No. 2 Van Duzen River** **1600 ± 80**

Wood (*Pseudotsuga menziesii*), Douglas fir in growth position on South Fork Van Duzen R, Blocksburg (40° 19' N, 123° 33' 30" W). Coll and subm 1978 by H M Kelsey, US Geol Survey, Menlo Park. *Comment*: dates episode of landslide fill.

**I-9731. Tomasini Point** **>40,000**

Peat interbedded with estuary-type sediments on N facing cliffs of Tomasini Pt, Tomales Bay, Marin Co (38° 07' 06" N, 122° 50' 36" W). Coll and subm 1976 by D L Wagner, California Div Mines & Geol, San Francisco. *Comment:* dates outcropping of Millerton fm and dated to help determine age of trace of San Andreas fault. Richards and Thurber (1966) dated mollusks at apparent age, 35,000 yr BP, but felt true age is >55,000 yr. Date supports that conclusion.

*Minnesota***I-8533. Squaw Lake** **790 ± 90**

Gyttja from 50 to 60cm in 24m water, Squaw L, Clearwater Co (47° 14' N, 95° 16' W). Coll 1973; subm 1975 by W A Patterson, III, Coll Forestry, Univ Minn, St Paul. *Comment:* sediment accumulation rate for Squaw L is estimated at 0.7mm/yr. Pollen profiles show shift from white to red/jackpine pollen in upper 0.5m sediment. Based on inferred sedimentation rate, shift in pine species representation occurred between AD 1650 and 1850 and appears correlated with increasing occurrences of fire (Patterson, ms).

**Portage Lake series**

Marl samples from lake sediment core in Cass Co (47° 05' N, 79° 22' W). Coll 1970, subm 1973 by J H McAndrews.

**I-7270. 300 to 310cm** **3690 ± 120**

Dates basal *Pinus strobus* pollen zone. *Comment:* date for similar zone boundary in Bog D Pond is 2730 BP (McAndrews, 1966) is possibly due to metachronous east-west migration of *Pinus strobus*.

**I-7271. 690 to 700cm** **7320 ± 120**

Dates top of *Pinus banksiana/resinosa* zone. *Comment:* date is young compared to same boundary in Bog D but correlates well with Shay's date of ca 7500 BP for same boundary (Shay, 1971).

**I-7272. 780 to 792cm** **9780 ± 140**

Dates *Picea* decline and pollen zone boundary. *Comment:* date seems young for this zone boundary compared to Bog D Pond but correlates well with Shay's date of ca 9500 BP (Shay, 1971).

**Lake Minnie series**

Gyttja samples from lake sediment core, Hubbard Co (47° 15' N, 95° 00' W). Coll and subm 1974 by J H McAndrews.

**I-8458. 400 to 410cm** **3400 ± 110**

Dates bottom of *Pinus strobus* pollen zone. Significantly older than similar horizon at Bog D Pond (McAndrews, 1966).

**I-8459. 810 to 820cm 10,730 ± 150**

Dates pollen zone boundary characterized by decline in *Picea* and rise in *Pinus*. Date is older than similar zone at Itasca Bison site (Shay, 1971) but compares well with Bog D Pond.

*North Dakota***Spiritwood Lake series**

Gyttja samples from lake sediment core in Stutsman Co (47° 05' N, 98° 35' 30" W). Coll 1970 by J H McAndrews and R Loeffler; subm 1974 by J H McAndrews.

**I-8479. 580 to 600cm 2830 ± 90**

Dates slight rise in *Pinus* and *Graminae. Fraxinus*, although not continuous, is more common above this level. Date correlates with boundary of pollen zones 3/4 at Pickerel L, South Dakota (Watts and Bright, 1968).

**I-8480. 1350 to 1370cm 8300 ± 140**

Level correlates with boundary of pollen zone 2/3 at Pickerel L.

**I-8481. 1430 to 1450cm 10,970 ± 160**

Dates pollen zone boundary noted by decline of *Picea* and rise of *Pinus*. *Comment*: correlates with end of *Picea/Populus* zone (McAndrews, 1966) and older than *Picea* decline at Seibold site (Cvancara *et al*, 1971) but correlates with *Picea* decline at Pickerel L.

*Canada***Van Nostrand Lake series**

Marl samples from lake sediment core in Whitechurch twp, 20mi N of Toronto, Ontario (44° 00' N, 79° 22' W). Coll 1968 and subm 1971 by John H McAndrews, The Royal Ontario Mus, Toronto.

**I-5785. 480 to 490cm 5710 ± 140**

*Comment*: dates pollen zone boundary 4/5, beginning of *Tsuga* min. However, dates based on carbonate carbon may be too old. Same boundary at Found L, Ontario dates 4640 ± 95 (I-7987).

**I-5786. 930 to 940cm 9750 ± 140**

*Comment*: dates pollen zone between *Pinus banksiana/resinosa* and *P strobus* (McAndrews, 1972).

**I-7741. Sawlog Bay 6220 ± 110**

Gymnosperm wood embedded in marl horizon in L Nipissing beach, Simcoe Co, Ontario (44° 52' N, 79° 57' W). Coll 1973 and subm 1974 by J H McAndrews. *Comment*: dates early stage in building L Nipissing beach (Lewis, 1970). Pollen analysis of marl indicates pollen zone 3 (McAndrews, 1972).

**Pass Lake series**

Gyttja samples from lake sediment core in Thunder Bay Dist, Ontario (48° 33' 40" N, 88° 44' 20" W). Coll and subm 1975 by J H McAndrews.

**I-8691. 195 to 205cm** **5070 ± 100**

**I-8692. 230 to 240cm** **5300 ± 100**

**I-8879. 210 to 220cm** **7280 ± 120**

*General Comment:* all dates too young. Pollen study indicates approx age of 9500 BP. Geologic evidence (Saarnisto, 1974; 1975; Mothersill, 1971) indicates age should be contemporary with L Minong Beach. Brohn site (MacNeish, 1952) of Paleo-Indian period is also contemporaneous with formation of Minong beach and supports earlier date.

**I-8879C. 210 to 220cm** **7460 ± 280**

Duplicate of sample I-8879.

**Lac Roche Moutonee series**

Gyttja samples from lake sediment core 2.5mi E Indian House Lake, Quebec (56° 47' N, 64° 48' W). Alt 443m. Coll and subm 1975 by J H McAndrews.

**I-9064. 0 to 20cm** **510 ± 150**

**I-9065. 100 to 115cm** **2660 ± 170**

**I-9066. 200 to 215cm** **3510 ± 180**

**I-9067. 250 to 260cm** **4090 ± 250**

Dates beginning of *Betula/Alnus* decline and gyttja-clay transition interpreted as retreat of N2 phase of L Naskapi (Ives, 1960).

**ELA (Hayes) Lake 240 series**

Gyttja from lake sediment core in Experimental Lakes Area, Kenora Dist, Ontario (49° 35' N, 93° 45' W). Coll 1969; subm 1973 by J H McAndrews.

**I-7267. 220 to 230cm** **4690 ± 130**

Correlates with pollen zone boundary LC 5/6 with varve date, 3000 BP (Craig, 1972).

**I-7268. 410 to 420cm** **6970 ± 120**

Dates beginning of *Pinus strobus* pollen rise that correlates with Lake of the Clouds varve date, 7000 BP (Craig, 1972).

**I-7269. 560 to 570cm** **10,800 ± 160**

Dates pollen zone boundary defined by decline of *Picea* and rise of *Pinus banksiana/resinosa*. Varve date for same pollen zone boundary is 9200 BP (Craig, 1972).

**Georgian Bay series**

Peat samples from layer in gray silty clay in lake sediment core. From W coast of Georgian Bay, Bruce Co, Ontario (44° 55' 05" N, 81° 07' 10" W). Coll 1973 by T W Anderson; subm 1974 by J T McAndrews.

**I-7857. P2A** **8790 ± 150**

From top of peat layer, at 292cm depth. *Comment*: pollen analysis by TWA indicates peat accumulated during early Holocene pine period and contains pollen of rooted aquatic plants. Date is min for end of low-water L Hough Stage (Sly and Lewis, 1972).

**I-7858. P2B** **9930 ± 250**

Bottom of peat layer, 330cm depth, water depth, 25.6m.

**Rice Lake series**

Sediment samples from core 7, Rice L, Peterborough Co, Ontario (44° 10' N, 78° 15' W). Coll and subm 1973 by J H McAndrews.

**I-7222. 140 to 150cm** **3890 ± 130**

Gyttja in pollen zone 6 (McAndrews, 1972).

**I-7223. 183 to 200cm** **6560 ± 120**

Marl from top of pollen zone 3.

**I-7274. 440 to 450cm** **8210 ± 160**

Gyttja at top of *Picea* pollen zone. *Comment*: date is too young for this boundary (Karrow *et al*, 1975).

**I-9772. Port McNeill, British Columbia (PM8)** **>38,000**

Wood fragments from glacially overridden beds of fine sand and silt. Overlain by massive till and weathered marine silts and clay. NTS sheet 92 L/11 Port McNeill (50° 31' 30" N, 127° 02' 30" W). Coll 1976 by D Howes, A Catteron, and B Smith; subm 1976 by D Howes, Environment and Land Use Comm, Victoria, British Columbia. *Comment* (DH): first known interglacial date on N Vancouver I. and may allow for possible correlation with lower marine unit of quadrasediments recorded by Fyles (1963) on S Vancouver I.

*Greenland*

**I-10,433. GGU 215942/5+9** **6630 ± 110**

Moss peat from loc 77/320, Natarnivinngup qaqa, Holsteinsborg Kommune, W Greenland (67° 09' N, 53° 32' W). From basal 1.5cm of 0.95m terrestrial peats overlying fluvioglacial sands on distal side of lateral moraine. Coll and subm 1977 by M Kelly, Univ Lancaster, Lancaster, England. *Comment*: date is min for series of moraines of local glaciers.

*Pacific Islands***Tonga Islands series**

Coral (*Porites lobata*), 100% aragonite from Tongatapu I. Coll and subm 1976 by F W Taylor, Dept Geol Sci, Cornell Univ, Ithaca, New York for study of Pacific geodynamics.

**I-9819. TPU-AN-1** **6240 ± 110**

From 2m sea cliff N of Kolonga Village (21° 7' 18" S, 175° 4' 48" W) 0.7m above high tide level.

**I-9820. TPU-AT-1** **6120 ± 110**

From excavation in third street downtown Nuku'alofa (21° 7' 42" S, 175° 12' W) 0.5m above high tide level. *Comment:* other dates from nearby equivalent exposures using  $^{230}\text{Th}/^{234}\text{U}$  method are: *Porites lobata* 5900 ± 900, *Porites* sp 6200 ± 300 and 7600 ± 800, *Acropora* sp 6200 ± 300 (Taylor and Bloom, 1977; Bourrouilh and Hoang, 1976).

**I-9818. EUA-AV-1** **6360 ± 110**

Coral (*Acropora humilis*), 100% aragonite, in growth position on surface of emerged reef 0.5m above mean high tide. From W coast of Eva I., 100m N of Ohonua Village (21° 20' 18" S, 174° 57' 12" W). Coll and subm 1976 by F W Taylor. *Comment:* a  $^{230}\text{Th}/^{234}\text{U}$  date obtained on coral at this locality is 5700 ± 500 (Taylor and Bloom, 1977). Location is considered equivalent to TPU-AT and TPU-AN, this date list. Mean daily tidal range of 1.2m indicates 2.2m of Holocene emergence (Hoffmeister, 1932; Ladd and Hoffmeister, 1927).

*Malaysia***I-10,183. Serdang Ash Deposit, YCP-14/31** **>40,000**

Wood and sieved peat from Selangor Brickworks clay pit. From thin discontinuous peat horizon underlying 90cm gray-yellow ash deposit 39m above MSL. Pit located at mile 12 Serdang, 0.7km S of Serdang Lama, Selangor. On 1: 63360 Kuala Lumpur topographic map, sheet 94, new series, grid ref 664804 (3° 00' 41" N, 101° 43' 25" E). Coll 1977 by P H Stauffer and B C Batchelor, Dept Geol, Univ Malaya, Kuala Lumpur. *Comment:* (BCB): ash and peat deposited in open water lacustrine environment. Ash probably originated from volcanic eruptions at L Toba, Sumatra, Indonesia (Stauffer, 1973 a,b; Stauffer and Batchelor, 1978).

*Australia***Wonnerup series**

Samples from beach ridges SE shore of Deadwater, Wonnerup Inlet, SW Australia (33° 35' S, 115° 28' E). Coll 1977 by J Searle; subm 1977 by B Logan, U Western Australia, Nedlands.

**I-10,195. Wonnerup 2** **4600 ± 120**

Shell (*Katelysia scalarina* [Lamarck] and *K rhtiphora* [Lamy]) at alt 1.2m representing basal part of Late Holocene beach and ridge sequence. *Comment:* indicates period when Holocene to modern beach ridges formed and sea level regressed due to tectonic or eustatic adjustment.

**I-10,196. Wonnerup 1** **205 ± 75**

Peat from former beach face deposit within prograding sequence of Late Holocene sediments. *Comment:* dates time plane within Late



Holocene sequence and indicates coastal accretion of ca 170mi in last 200 yr.

### Africa

#### South Basin, Lake Tanganyika series

Diatom-rich gyttja from 10.74m core in L Tanganyika in 440m water, near Mpulungu, Zambia (8° 30' S, 30° 50' E). Coll 1960 by D A Livingstone and R A Kendall and subm 1978 by D A Livingstone, Dept Zool, Duke Univ, Durham, North Carolina.

**I-10,490. Tang 2-3** **15,900 ± 600**

Lowermost 0.49m of core.

**I-10,491. Tang 2-1** **1380 ± 190**

Uppermost meter of core.

*General Comment:* core provides estimate of min time since level of L Tanganyika could have been 440m below modern level. Livingstone (1965) estimated time at 22,000 yr by extrapolation. Hecky and Degens (1973) challenged this estimate and suggested hydrologic budget in which water level fell at least 500m during late-Pleistocene interpluvial. Dates show that lake level was above -440m during driest part of late Pleistocene interpluvial and deny suggestion of Hecky and Degens that flocks of endemic sp in L Tanganyika evolved while lake was separated into two basins.

## II. ARCHAEOLOGIC SAMPLES

### United States

#### Palomar College Campus series

Charcoal from Hearths Site PC-3 on ridge above cactus garden SE edge Palomar Coll campus, San Marco, California (33° 08' 50" N, 117° 11' 06" W). Coll 1977 by S Murray and T Thurber and subm 1977 by D O'Neill, Palomar Coll.

**I-10,626. F C 406** **290 ± 110**

Level V, 40 to 50cm in Pit S24W4.

**I-10,627. F C 255** **390 ± 80**

Level II, 10 to 20cm, S wall Pit S18 EO. *Comment:* site attributed to San Luis Ray II cultural period. Dates agree and narrow period to prehistoric Luiseño.

#### Dead River series

Charcoal from N shore Ottertail L near mouth of Dead R, E of Co Hwy 1, Ottertail Co, Minnesota (46° 25' 40" N, 95° 40' 20" W). Coll 1977 and subm 1978 by M G Michlovic, Moorhead State Univ, Moorhead, Minnesota.

**I-10,140. Dead River Site A** **1070 ± 120**

From hearth extending 20cm below 15cm thickness of humus. Assoc with Blackduck pottery.

**I-10,475. Dead River Site B 1170 ± 120**

Feature 9, assoc with Blackduck ceramics and burned turtle carapace at depth 10cm in sandy soil. *Comment*: date corroborates suggestion that pottery is derived from early Blackduck time range.

**Bull Run Site series**

Charred wood from Bull Run site (36LY119) 1mi above confluence of Loyalsock Creek and Susquehanna R on Bull Run in Loyalsock, Pennsylvania (41° 14' N, 76° 56' 30" W). Coll and subm 1977 by J P Bressler, Williamsport, Pennsylvania.

**I-10,165. Pit SW-21, Feature A 3170 ± 250**

From hearthlike pit 10 to 18cm below plow zone assoc with Marcey Creek Plain pottery, red ocher inclusions, Orient Fishtail points, and chipping debris. *Comment*: similar pits nearby contained burials without grave goods but heavily treated with red pigment (Kraft, 1970).

**I-10,166. Pit NW-16B 720 ± 100**

From stockade postmold, 18cm diam, of single-row stockade that encircled this Shenks Ferry village. *Comment*: pioneer site for Stewart Phase of Shenks Ferry (Heisey and Witmer, 1972) id. by Shenks Ferry rim sherd and lumps of raw pottery clay.

**I-10,167. Pit SE69, Feature A 470 ± 100**

Twigs with small diams taken from ovate, basin-shaped hearth, 61cm in diam, 10cm deep. Assoc with Stewart Phase Shenks Ferry body and rim sherds.

*Canada***Pearl Beach series**

Samples from Pearl Beach (Da Gv-1) on central N shore Larder L, Kirkland Lake Dist, Ontario (48° 06' 04" N, 79° 39' 35" W). Coll and subm 1977 by W C Noble, McMaster Univ, Dept Anthropol, Hamilton, Ontario.

**I-10,261. No. 2 220 ± 80**

Charred jackpine (*Pinus banksiana*) at 33cm depth, in small gray ash pit, Area B, Unit 1.

**I-10,262. No. 11 230 ± 80**

Charcoal, mostly cedar, from large hearth, 8cm deep, Area B, Unit 5A. *Comment*: dates late historic occupation by Ojibwa beaver hunters during early 1700's (Pollock, 1976).

**I-10,651. Wyoming Rapids site 2480 ± 90**

Charcoal from site (AgHk-4) on Ausable R, W Williams twp, Middlesex Co, Ontario (43° 06' 49" N, 81° 48' 12" W). Coll and subm 1978 by I Kenyon, Min Culture and Recreation, London Court House, London, Ontario. From occupation zone 2m deep and 50cm below

Middle Woodland zone that yielded Saugeen ceramics. *Comment:* sample dates assoc Vinette I vessel of Early Woodland provenience.

**I-10,313. George Davidson site** **3780 ± 90**

Charcoal from site (AhHk-54) on Ausable R, SW Ontario (43° 11' N, 81° 49' W). Coll 1977 by I Kenyon and subm 1978 by W Fox. From small pit, Feature 3, in occupation horizon capped by riverine silt. *Comment:* dates Late Archaic Genesee component including stemmed Satchell complex bifaces.

**Force Village series**

Charcoal from Force Village (AgHd-1) Burford twp, Brant Co, Ontario (43° 08' 15" N, 80° 31' 19" W). Recovered by flotation of fill from storage pits in Glen Meyer longhouse. Coll and subm 1978 by W A Fox, Min Culture Hist Planning Research.

**I-10,628. Feature 39** **625 ± 75**

From Feature 39, dates late Glen Meyer longhouse.

**I-10,629. Feature 104** **715 ± 75**

From Feature 104, late Glen Meyer longhouse.

**I-10,630. Feature 111** **1070 ± 80**

From Feature 111, dates Glen Meyer longhouse.

**I-10,631. Feature 122** **705 ± 75**

From Feature 122 containing two Iroquois linear vessels.

**Dawson Creek site series**

Charcoal from Dawson Creek site (BaGn-16) Hamilton twp, Northumberland Co, Ontario (44° 06' 56" N, 78° 19' 29" W). Site is on wooded peninsula, N shore of Rice L. Coll and subm 1976 by L J Jackson, Dept Anthropol, Trent Univ, Peterborough, Ontario.

**I-9862. Feature 1** **2550 ± 90**

From fire hearth containing tip of bifacial chert knife, ceramic sherds, red ocher fragments, chert flakes, and charred seeds. Hearth depth, 27 to 54cm, volume, 0.14 cu m.

**I-9861. Feature 2** **2420 ± 90**

From fire hearth containing ceramics diagnostic of Early Woodland period. Hearth depth, 17 to 65cm, volume, 0.13 cu m.

**I-9565. Feature 2-1** **2430 ± 90**

From same feature as I-9861. *Comment:* dates agree with Early Woodland ceramic assoc. Ceramic analysis indicates affinities with Vinette I sites in central New York State (Jackson, 1980).

*Mexico*

**Chicanna series**

Wood lintels from above doorways of Rio Bec structures in Late Classic Bejuco phase from Rio Bec zone, S Campeche (18° 30' 48" N, 89°

28' 24" W). Coll 1971 by A P Andrews; subm 1977 by E W Andrews V, Middle Am Research Inst, Tulane Univ, New Orleans, Louisiana.

**I-10,086. Chicanna, Structure I 1270 ± 80**

From between Rms 7 and 8, S end of structure (Ball, 1977; Potter, 1977; Eaton, 1974). *Comment*: sample from twin-tower Rio Bec structure; provides first <sup>14</sup>C date from this type of structure. Ceramics suggest date, AD 600 to 730.

**I-10,087. Chicanna, Structure VI 1210 ± 80**

From between Rms 1 and 2. *Comment*: Structure VI dated by ceramics to AD 600 to 730; two-room building supporting high narrow roof-comb perforated by rectangular slots.

**I-10,085. Payan, standing structure 1420 ± 80**

Wood lintel over main doorway, W facade entrance to Rm 3 from Rio Bec zone, S Campeche (18° 32' N, 89° 18' W). Coll 1971 by A P Andrews; subm 1977 by E W Andrews, V. *Comment*: W facade of standing building at Payan carries Rio Bec style relief carving (Ruppert and Denison, 1943).

**Los Grifos series**

Charcoal fragments in sediment from Los Grifos rock shelter, 7km NW of Ocozacoatlá, Chiapas (16° 50' N, 93° 25' W). Coll 1977 and subm 1978 by J Garcia-Barcena, Inst Nac Anthropol, Dept Prehist, Mexico City.

**I-10,760. L G VI c/e 8930 ± 150**

Sample dates three closely spaced preceramic occupation floors, Strata 27 to 29. *Comment*: two series of occupations are separated by erosional discordance. Late series corresponds to ceramic occupations (Classic and Postclassic). This data corresponds to upper part of earlier series of preceramic occupations. Lithic materials closely resemble earliest dated occupation at Santa Marta (9280 ± 290, I-9259 and 9330 ± 290, I-9260).

**I-10,761. L G VII/VIII 9460 ± 150**

From hearth underlying occupation floor with assoc lithic materials and food remains, Strata 34 to 38. *Comment*: lithic material included fluted points resembling Clovis wasted points reported from several Central American countries and Durango, Mexico (Garcia-Barcena, 1979).

**I-10,762. L G IX 9540 ± 150**

From hearth assoc with second earliest occupation floor, Stratum 46, containing lithic artifacts and food remains (Garcia-Barcena *et al*, 1976; MacNeish and Peterson, 1962).

**San Martin Huamelulpan series**

Charcoal from Mixteca Highlands, San Martin Huamelulpan, Tlaxiaco Oaxaca (17° 21' N, 97° 41' W). Coll 1974 by M Gaxiola and A Alaniz; subm 1975 by M Winter, INAH Centro Reg Oaxaca.

**I-8614. No. 6, C-J Feature 8 2260 ± 80**

From Level 8 at base of building assoc with primary deposit of ceramic vessels belonging to earliest period, Huamelulpan I from 400 to 100 BC.

**I-8615. No. 7, A-6 Feature 27 1980 ± 80**

From Level 2 assoc with Period II of Huamelulpan, dated 100 BC to AD 200.

**I-9155. Rancho Dolores Ortiz, S-1 2590 ± 90**

Charcoal and soil combining two samples from Sq 49GG, 2.17m deep, and Sq 50GG, 2.15m deep, Mun San Pedro Chicozapotes, Dist Cuicatlan, Oaxaca (17° 44' N, 96° 57' W). Coll 1975 by A Alaniz and subm 1975 by M Winter. *Comment*: assoc ceramics similar to Tierras Largas phase in Valley of Oaxaca, Early Cruz phase in Nochixtlan Valley, and Early Ajalpan phase in Tehuacan Valley, all dating ca 1300 BC. Date is too recent.

**I-10,460. Rancho Dolores Ortiz, S-2 3250 ± 100**

Combines three samples from Capa VI-A: Sqs 50HH at 2.50m, 46DD, and 45BB. Details same as I-9155. *Comment*: date acceptable; subm as check on I-9155.

**I-10,458. Yucuita 1977, Elemento K12 1690 ± 90**

Charcoal from base of E part of circular hearth, San Juan Yucuita, Oaxaca (17° 30' N, 97° 16' W). Opening to hearth contained ceramics of Las Flores phase. Coll 1977 by D Deraga and subm 1978 by M Winter. *Comment*: date slightly earlier than expected (Spores 1972; 1974). However, date may mark beginning of Las Flores phase.

**I-10,459. Monte Alban Elemento 75-1,S2 1620 ± 90**

Charcoal sealed in circular hearth intrusive into W wall of Edificio 75-1, sq sunken tank on E side of Main Plaza and surrounding structure known as Adoratorio, Monte Alban, Oaxaca (17° 02' N, 96° 46' W). Coll 1975 and subm 1978 by M Winter. *Comment*: ceramics found in feature are characteristic of Monte Alban II. Feature was used after construction of Edificio 75-1 and either before or after another related reservoir that dates from Monte Alban II.

**I-7859. JUI-CS/CT 3100 ± 140**

Charcoal assoc with potsherds, shell, bones, and worked obsidian from 5.4 to 5.5m level at Laguna Zope (JUI) 2km WSW of Juchitan, Oaxaca (16° 25' N, 95° 03' W). Coll 1972; subm 1974 by R N Zeitlin, Depth Anthropol, Yale Univ, New Haven, Connecticut. *Comment*: date agrees with cultural material attributed to early Preclassic Lagunita phase.

## South America

**CAM-14 series**

Charcoal from CAM-14 site, shell mound on marine terrace on S mouth of Quebrada Camarones, Tarapaca Prov, Chile (19° 10' S, 70° 18' W). Coll and subm 1976 by H Niemeyer and V Schiappacasse, Univ Norte, Casilla, Chile.

**I-9816. CAM-14-B-2** **6620 ± 390**  
From 75cm beneath floor of Level d, Sq B.

**I-9817. CAM-14-F-4** **6650 ± 160**  
From 75cm beneath floor of Level c, Sq F. *Comment* (HN): disregarding late intrusive occupation during Inca period, site is considered single component belonging to Early Archaic of N coast or Shell Fish Hook culture (Bird, 1943; Mostny, 1964). Date agrees with another date of same culture at Quiani site, 6170 ± 220: I-1384 (R, v 11, 1969, p 102).

**I-10,097. OGSE-80, Santa Elena** **8810 ± 400**

Charcoal composite from unmixed Vegas complex levels of midden between 100 to 140cm in cut F-H/8-11 and 90 to 110cm in adjacent cut G-H/1-5, 1km SW of Santa Elena, Ecuador (2° 13' S, 80° 52' W). Coll and subm by K E Stothert, Dept Anthropol, Fordham Univ, New York. *Comment*: date agrees with 1 of 2 previous dates from Vegas type site: L-1042A, 6650 ± 200 bc, and L-1042F, 5650 ± 100 bc. Vegas midden began to develop in mid-7th millennium bc, but it is unknown how long people continued to use site (Stothert, 1976; 1977).

## Malaysia

**Jenderam Hilir series**

Wooden artifacts from Jenderam Hilir, Sepang, Selangor, W Malaysia (2° 53' 25" N, 101° 43' 51" E). Coll 1977 and subm 1978 by Leong Sau Heng, History Dept, Univ Malaysia, Kuala Lumpur.

**I-10,756. Boat paddle-1** **1560 ± 90**  
From E cutting at 4.7m depth in river alluvium taken during 1977 Nat Mus excavation.

**I-10,757. Boat fragment-2** **1470 ± 90**  
Recovered during hydraulic tin mining of river alluvium. *Comment*: wood of non-Malaysian origin. First date related to first millennium AD.

**I-10,758. Wooden artifact-3** **2490 ± 90**  
Possibly part of wheel, recovered during tin mining of river alluvium.

## Pacific Islands

**Futuna Island series**

Charcoal from Sigave Dist Futuna I. (14° 17' 55" S, 178° 09' 47" W). Coll and subm 1974 by P V Kirch, Bernice P Bishop Mus, Honolulu, Hawaii (Kirch, 1976).

**I-8354. Site WF-FU-4 Lotuma** **185 ± 80**

Trench T6 in buried agricultural soil horizon. *Comment:* dates buried pondfield agricultural horizon later sealed by flood-deposited clay and gravel.

**I-8355. Site WF-FU-11 Tavai** **2120 ± 80**

Layer IX at Loc A. *Comment:* dates village site to Late Eastern Lapita ceramic horizon.

**I-8356. Site WF-FU-21 Maunga** **<180**

Test Pit 1, late prehistoric fortified terrace.

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