

UNIVERSITY OF SASKATCHEWAN RADIOCARBON DATES VI

A A RUTHERFORD, J WITTENBERG, K J McCALLUM

Saskatchewan Research Council
30 Campus Drive, Saskatoon, Saskatchewan

This series reports some of the measurements made since the previous list. Methods essentially remain as described in Saskatchewan II (R, 1960, v 2, p 73) with expanded facilities and new electronic equipment since 1973. The laboratory operates commercially, administered by the Saskatchewan Research Council under the direction of A A Rutherford.

SAMPLE DESCRIPTIONS

I. GEOLOGIC SAMPLES

S-196. Mikado, Saskatchewan **>33,000**

Wood from 6.4m below surface in sand underlying 4m till (51° 38' N, 102° 14' W). Coll 1961 by E Chernoff; subm 1963 by N W Gabora and B A McCorquodale, Saskatchewan Mus Nat Hist, Regina.

S-416. Courval, Saskatchewan **5200 ± 140**
3250 BC

Carbonaceous silt from testhole 7.9m below surface in lacustrine sediments (50° 08' N, 106° 15' W). Coll and subm 1966 by E A Christiansen, Geol Div, Saskatchewan Research Council.

S-424. Saskatoon, Saskatchewan **4100 ± 50**
2150 BC

Carbonaceous clay containing plant and animal remains in high-level channel of South Saskatchewan R (52° 08' N, 106° 41' W). Sample from augerhole 1.5m below surface at base of carbonaceous clay. Coll and subm 1967 by E A Christiansen. *Comment* (EAC): dates organic fill in meltwater valley (Christiansen, 1970).

S-426. Sutherland, Saskatchewan **>34,000**

Wood from cutting sample of testhole near Sutherland, Saskatchewan (52° 10' N, 106° 32' W). Sample from sand 16.7 to 22.8m below the surface, underlying 10.7m till. Coll and subm 1967 by E A Christiansen. *Comment* (EAC): for importance of date, see Christiansen (1970).

Saskatoon series, Saskatchewan

Carbonaceous samples from storm-sewer trench (52° 07' N, 106° 42' W). Coll and subm 1968 by E A Christiansen.

S-439. **8990 ± 145**
7040 BC

A horizon underlying 1.5m eolian sand.

S-440. **>32,600**

Carbonaceous particles in sand, 3m below surface.

General Comment (EAC): S-439 dates last eolian activity recorded at site, S-440 is presumably on coal particles.

Beaver Creek series, Saskatchewan

A horizons underlying eolian sand (51° 59' N, 106° 43' W). Coll and subm 1968 by E A Christiansen.

S-443. **7640 ± 150**
5690 BC

A horizon underlying .6m eolian sand.

S-442. **9940 ± 160**
7990 BC

A horizon underlying 1.2m eolian sand.

General Comment (EAC): dates regional dune activity (Christiansen, 1970).

S-444. Saskatoon, Saskatchewan **3150 ± 80**
1200 BC

A horizon underlying .6m eolian sand (52° 08' N, 106° 40' W). Coll and subm 1968 by E A Christiansen. *Comment* (EAC): dates youngest eolian activity at site (Christiansen, 1970).

S-445. Batoche, Saskatchewan **7070 ± 115**
5120 BC

A horizon in eolian sand 1.5m below surface, S cut in W bank South Saskatchewan R at Batoche Ferry Crossing (52° 46' N, 106° 08' W). Coll and subm 1968 by E A Christiansen. *Comment* (EAC): dates youngest buried soil at site, same location as S-233 and -234 (R, 1968, v 10, p 366-367).

S-455. Marquis, Saskatchewan **>33,000**

Carbonaceous silt and sand, 18 to 18.9m below surface underlying till (50° 39' N, 105° 48' W). Coll and subm 1968 by E A Christiansen.

S-456. Goodspirit Lake, Saskatchewan **5040 ± 90**
3090 BC

Carbonaceous silt 3.6m below surface underlying sand and 16.2m above till, on S shore of Goodspirit lake (51° 31' N, 102° 37' W). Sample from upper carbonaceous horizon, 2nd horizon occurs at 5.8m below surface. Coll and subm 1968 by A A Rutherford. *Comment* (AAR): dates upper of 2 former shore surfaces, period of stable sand prior to last dune activity.

S-457. Handsworth, Saskatchewan **11,400 ± 190**
9450 BC

Wood from 13.7m below surface in gyttja underlying till (49° 51' N, 102° 48' W) in hummocky moraine. Coll 1961 by E Sanford; subm 1968 by E A Christiansen. *Comment* (EAC): date too young to antedate last glaciation as suggested by stratigraphic position. Wood was probably covered by slumped till during last glaciation.

- 10,060 ± 160**
8110 BC
- S-460. Empress, Alberta**
A horizon 2.1m below surface underlying eolian sediments (50° 51' 30" N, 109° 58' W). Coll and subm 1968 by P P David. *Comment* (PPD): for detailed description, see David (1970).
- 9500 ± 150**
7550 BC
- S-461. Prelate, Saskatchewan**
Carbonaceous material in dark layer in exposure underlying 2.1m loess (50° 45' N, 109° 24' W). Coll and subm 1968 by P P David. *Comment* (PPD): layer interpreted as paleosol developed on loess. Date should indicate start of a dry interval (David, 1970).
- 3730 ± 80**
1780 BC
- S-489. Gradora, Saskatchewan**
A horizon in eolian sand 1.4m below surface (52° 08' N, 107° 00' W). Coll and subm 1969 by E A Christiansen. *Comment* (EAC): dates eolian activity (Christiansen, 1970).
- 22,100 ± 465**
20,150 BC
- S-494. Pike Lake, Saskatchewan**
Carbonaceous silt underlying 9.1m sand in terrace 3m above till (51° 55' N, 106° 50' W). Coll and subm 1969 by E A Christiansen. *Comment* (EAC): cannot ascertain stratigraphically whether sand is interglacial or postglacial. Date suggests sand antedates last glaciation.
- Crater Lake series, Saskatchewan**
Carbonaceous material from shelby tube cores taken by cable-tool rig, bottom of Crater Lake, S of Yorkton, Saskatchewan (50° 57' N, 102° 27' W). Coll and subm 1970 by E A Christiansen.
- 2470 ± 85**
520 BC
- S-522.**
Gyttja, 7.62m below lake surface, + 516.6m.
- 4820 ± 130**
2870 BC
- S-523.**
Gyttja, 10.67m below lake surface, + 516.6m.
- 6425 ± 110**
4475 BC
- S-524.**
Gyttja, 12.19m below lake surface, + 516.6m.
- 8590 ± 115**
6640 BC
- S-525.**
Gyttja, 15.24m below lake surface, + 516.6m.
- 11,715 ± 150**
9765 BC
- S-526.**
Gyttja, 17.68m below lake surface, + 516.6m.

- S-527.** **22,410 ± 485**
20,460 BC
Carbonaceous silt, 18.59 to 19.81m below lake surface, +516.6m.
General Comment (EAC): for chronologic profile, see Christiansen (1971).
- S-528. Crater Lake, Saskatchewan** **8190 ± 110**
6240 BC
Carbonaceous silt from auger flight sample, 8.8m below ice surface, testhole 45.7m from shore (50° 57' N, 102° 27' W). Coll and subm 1970 by E A Christiansen.
- S-573. Beaver River, Saskatchewan** **>34,500**
Peat from side wall core, 39 to 39.6m below surface in testhole underlying 2 tills (54° 37' N, 107° 48' W). Coll and subm 1970 by S H Whitaker.
- S-574. Bridge Creek, Saskatchewan** **>31,250**
Peat and carbonaceous silt from side wall core, 15.8 to 16.2m below surface, underlying till (54° 12' N, 108° 37' W). Coll and subm 1970 by S H Whitaker.
- S-624. Matchee, Saskatchewan** **>31,250**
Carbonaceous silt in exposure 7.3m below surface in stratified sediments underlying till (54° 04' N, 108° 08' W). Coll and subm 1971 by E A Christiansen.
- Nipawin series, Saskatchewan**
Carbonaceous material from testhole core near Nipawin, Saskatchewan (53° 24' N, 104° 01' W). Coll and subm 1971 by W Clifton, Saskatchewan Dept Hwys, Regina.
- S-625.** **>34,500**
Carbonaceous silt, 19 to 19.5m depth.
- S-626.** **>31,250**
Wood, 22.1 to 22.4m depth.
- S-627.** **>31,250**
Carbonaceous silt, 22.9 to 23.3m depth.
- S-628.** **>31,250**
Carbonaceous silt, 24.4 to 24.7m depth.
- General Comment* (WC): all horizons too old, hence, results are inconclusive.
- S-634. Strong River, Saskatchewan** **4140 ± 105**
2190 BC
A horizon buried 2.1 to 2.4m below surface, exposed in road cut through sand dune (53° 22' N, 105° 15' W). Coll and subm 1971 by E A Christiansen. *Comment* (EAC): dates last period of dune formation at site.

- S-635. Nipawin, Saskatchewan** **6610 ± 95**
4660 BC
A horizon buried under 1.5m eolian sand (53° 20' N, 104° 02' W). Coll and subm 1971 by E A Christiansen. *Comment* (EAC): dates eolian activity in area.
- S-636. Kelliher, Saskatchewan** **>34,500**
Wood from 9.7m below surface, exposed while digging water well near Killiher, Saskatchewan (51° 17' N, 103° 47' W). Coll by N Budd; subm 1972 by E A Christiansen.
- S-648. Lake Athabasca, Saskatchewan** **4890 ± 60**
2940 BC
Charcoal from sand dune area near mouth of MacFarlane R, S shore Lake Athabaska, Saskatchewan (59° 10' N, 108° 02' W). From 30cm depth, 1 of 4 charcoal layers interbedded with sand, underlying till or silt 5 to 10cm thick. May represent foreset bed of delta prior to glaciation. Coll and subm 1971 by R Hermish, Univ Saskatchewan.

II. ARCHAEOLOGIC SAMPLES

Franklin Tank series, Northwest Territories

Peat and humus from Franklin Tank site (LgRk-2), on terrace 11.9m above Great Bear Lake on point formed by junction S side of Great Bear R and Great Bear Lake (65° 09' N, 123° 33' W). Stratified, with 6 zones, 2 cultural complexes. Zone B, N T Docks component, Zone C, Franklin Tanks component (MacNeish, 1955; 1964). Coll and subm 1952 by R S MacNeish, Nat Mus Canada (now, R S Peabody Foundations).

- S-5. Franklin Tanks, Floor 1** **5000 ± 200**
3050 BC

Peat from Floor 1, S5E5 assoc with assemblage related to Dorset and Pointed Mountain in N Canada and Denbigh and the Campus site in Alaska (N T Docks complex).

- S-8. Franklin Tanks, Floor 2** **4100 ± 200**
2150 BC

Humus from bottom of Floor 2, from frozen earth Sq 6-0, assoc with Plainview points (Franklin Tanks complex).
General Comment (RSM): S-5 appears about right. S-8 obviously contaminated and might well be part of Floor 1 soliflucted into a lower position.

Michipicoten series, Ontario

Charcoal from Michipicoten site (C1 f-1), S bank Michipicoten R near its embouchure into Lake Superior, Ontario (44° 56' N, 84° 51' W). Stratified with 9 components ranging from historic period to AD 1100, components attributed to Algonkin-speaking population (Wright, 1968). Coll and subm 1961 by J V Wright, Nat Mus Canada, Ottawa.

- 490 ± 75**
- S-169. Michipicoten site, Stratum III** **AD 1460**
Charcoal from Sq E 50, depth 27.9 to 30.5cm below surface S half of sq. Major occupation of site: AD 1450 to 1500.
- 850 ± 60**
- S-170. Michipicoten site, Stratum IX** **AD 1100**
Charcoal from N portion Sq E 55 and S portion Sq E 60, depth 150cm below surface. Estimated age: AD 1000 or less.
General Comment (JVW): dates agree with estimate.
- 1250 ± 60**
- S-171. Heron Bay site, Ontario** **AD 700**
Charcoal and carbonized bone from Herron Bay site, W bank Pic R near its embouchure into Lake Superior (48° 37' N, 86° 17' W). From Sector Y at depth 25.4 to 38.1cm. Coll and subm 1961 by J V Wright, Nat Mus Canada. *Comment (JVW):* site is early component of Laurel tradition. Date disagrees with 500 bc estimate based on seriation and pertinent radiocarbon information.
- 3100 ± 70**
- S-193. Pelly Farm site, Yukon Territory** **1150 BC**
Charcoal from Pelly Farm site (KfVd-2), N bank Pelly R, 4.8km above confluence with Yukon R, Yukon Terr (62° 51' N, 137° 20' W). From Sq S3 W2 Level 4, Floor 4, .7m below surface, pure component of Champagne phase. Multicomponent site with occupations assigned to Champagne, Little Arm and Faye phases (MacNeish, 1964). Coll and subm 1960 by R S MacNeish. *Comment (RSM):* may be date for Fay Lake phase, fits with other comparative material from Yukon Terr.
- Point-aux-Buissons series, Quebec**
Charcoal from Point-aux-Buissons site (BhF1-1), 7.2km W of Beauharnois, Quebec (45° 29' N, 73° 57' W), 12 to 16h multicomponent site extending from Early Middle Woodland to late Onondaga Iroquois. Material predominately Late Middle Woodland. Coll 1967 by M L Girouard, Soc Archeol Prehist Quebec; subm 1969 by R Wilmeth, Nat Mus Canada, Ottawa.
- 3020 ± 110**
- S-480. Point-aux-Buissons, terminal Middle Woodland** **1070 BC**
Charcoal (NMC-224) from 297cm S of Stake 170 N 56 E and 378cm S of Stake 170 N 46 E, depth 50.8cm. Should date terminal Middle Woodland period which appears widespread in Upper St Lawrence valley.
- 4010 ± 115**
- S-481. Point-aux-Buissons, early Point Peninsula** **2060 BC**
Charcoal (NMC-225) from 53cm E of Ref Point 88-0, 109cm E of Ref Point 88-4, depth 48.3cm. Should date earliest material at site.
General Comment (AAR): dates older than 500 bc estimate.

3425 ± 105**S-668. Harder site, Saskatchewan****1475 BC**

Charred bone (NMC-547) from Harder site (52° 13' N, 107° 03' W). From Unit 5N OW Plan 2 at 54.8cm depth in stabilized sand dune depression, center of Dunfermline Sand Hills. Appears as temporary habitation site of Oxbow complex. Lithics include varied types dominated by projectile points, end scrapers, and small retouched flakes. Bison and Canid dominate faunal remains. Coll 1971 by I Dyck; subm 1971 by R Wilmeth. *Comment* (ID): confirms previous dates S-490: 3360 ± 120 yr BP (S-490 erroneously reported as 1560 ± 60 yr BP, R, 1973, v 15, p 204).

Heron series, Saskatchewan

Charcoal and bone from Heron site (EcNx-2), NW of Swift Current, Saskatchewan (50° 20' N, 107° 51' W). Multicomponent site on upper W bank of glacial outwash channel. Paleocultural debris deposited W of bank to base and along escarpment of hill. Material from sand surface blowouts includes Clovis, Oxbow, McKean, Duncan, Hanna, Pelican Lake, and side-notched points. Coll 1970 by E Anderson; subm 1970 by R Wilmeth for J F V Millar, Univ Saskatchewan.

2280 ± 65**S-571. Heron site, Unit A67****330 BC**

Charcoal (NMC-393) from sandy clay zone, depth 63cm.

2330 ± 70**S-572. Heron site, Units B16 and B19****380 BC**

Charcoal and bone (NMC-394) combined sample from sand and clay zone, depth 32cm.

General Comment (JFVM): close results appear to date this horizon in both parts of site. Clovis and Oxbow material came from large blowout area between excavations.

2680 ± 75**S-575. Zoerb site, Saskatchewan****730 BC**

Charred bone from lowest of 2 occupation layers, Zoerb site (51° 59' N, 107° 02' W). Upper layer, ca 15cm below surface, contained much bone and Avonlea type points. Lower layer, separated from upper occupation by 45 to 60cm yellow sand, contained no diagnostic artifacts. Coll 1970 by W Pendree; subm 1970 by W O Kupsch, Dept Geol Sci, Univ Saskatchewan. *Comment* (WP): date too recent.

2440 ± 75**S-578. Constance Bay site, Ontario****490 BC**

Charcoal from Constance Bay Site 1 (BiGa-2), SW side of Constance Bay, 48km W of Ottawa, Ontario (45° 29' N, 76° 04' W). Single component site produced ceramics, lithics, fragments of copper, galena, mica and bone, hearth features and an apparent red-ocher burial marked by a possible petroform effigy. Coll and subm 1970 by G D Watson. *Comment* (GDW): date and pottery types place site in Middle Woodland period

about same age as Burley site (Jury & Jury, 1952) and Saugeen Focus Donaldson site (Wright & Anderson, 1963). Faunal material discussed elsewhere (Savage, 1972).

Mitchell site series, British Columbia

Charcoal from Mitchell site (EeR1-22), E bank of Fraser R N of Lillooet, British Columbia (50° 44' 25" N, 121° 55' 30" W). Two pit houses, one with historic components only, the other containing both historic and prehistoric material. The latter exhibited 5 major occupation minor floors. Artifact yield moderate and similar to material recovered at Lochmore-Nesikep sites (Sanger, 1970). Coll 1970 by A H Stryd, Univ Calgary (now Cariboo College, Kamloops); subm 1970 by R Wilmeth.

2185 ± 85
235 BC

S-580. Mitchell site, Floor C

Charcoal (NMC-396) from Sq 10-11W, 10-12S, Level 5, 80 to 100cm below surface in thin stratum of charcoal and burned soil representing burned and collapsed roof. One of major floors (or roofs) best defined but not oldest.

2550 ± 80
600 BC

S-581. Mitchell site, Floor E

Charcoal (NMC-397) from Sq 8-10W, 12.9-13.9S, Level 10, 100 to 110cm below surface, in well-defined charcoal lens representing living floor.

2775 ± 75
825 BC

S-582. Mitchell site, Floor F

Charcoal (NMC-398) from Sq 10-11W, 14-16S, 1.4 to 1.5m below surface and 17 to 26cm below thin stratum of Bridge R volcanic ash. Oldest floor at site.

General Comment (AHS): all 3 dates reasonable and are minimum and maximum for Bridge R volcanic ash (between Floors E and F). Absence of microblades indicates that these tools probably were not used in Lillooet area by 800 BC, ca 8 centuries earlier than previously thought.

Fountain site series, British Columbia

Charcoal and burned evergreen cones from Fountain site (EeR1-19), E bank of Fraser R, 12.9km N of Lillooet, British Columbia (50° 44' 30" N, 121° 51' 55" W). Large multicomponent village with pit houses and cache pits. Three major components: a microblade complex of BC age, a transitional period around time of Christ, and Kamloops phase, AD 1250 to 1800. Coll 1970 by A H Stryd; subm 1970 by R Wilmeth.

1490 ± 70
AD 460

S-583. Fountain site, 50 to 60cm depth

Charcoal (NMC-399) from Sq 28-30S, 2.8-4SE, Level 5 and 6, 50 to 60cm below surface, Feature 13, small cooking oven assoc with extensive charcoal and burned soil stratum.

1505 ± 70**S-584. Fountain site, 127cm depth****AD 445**

Charred evergreen cones (NMC-400) from cutbank at 84-88S, depth 127cm below surface in small oven located in basal cultural deposit, S part of site, part of oven extended into sterile glacial lake silts.

General Comment (AHS): both date period between microblade and Kamloops phase components and indicate artifact mixing more extensive than thought. Arrow points assoc date with introduction of bow and arrow to this part of British Columbia.

Tezli site series, British Columbia

Charcoal from Tezli site (FgSd-1), Kluskus Lakes, British Columbia (53° 04' 30" N, 124° 30' 05" W). Site, attributed to Kluskus Carrier Indians, is on both sides of Kluskus Stream in grassy clearing with 35 pits observed. Coll 1970 by R Anderegg and P Donahue, Univ Wisconsin; subm 1970 by R Wilmeth.

565 ± 65**S-585. Tezli site, Pit EE****AD 1385**

Charcoal (NMC-410) from Pit EE on S side of Kluskus Stream, from burned area or hearth scatter in Level 2, depth 4.5 to 7.5cm below surface.

1870 ± 100**S-586. Tezli site, Pit D****AD 80**

Charcoal (NMC-411) from Level 3, dark band which may represent buried A horizon, in House or Pit D, on N house ridge, 17cm below surface.

General Comment (PD): dates acceptable. Houses on E side of stream seem later than others. Site occupied earlier than suggested by pithouses.

875 ± 95**S-587. Hennessey site, Northwest Territories****AD 1075**

Burned caribou bone (NMC-383) from Hennessey site (KfNm-3), SE shore of Artillery Lake, MacKenzie, N W T (62° 56' N, 108° 13' W). From hearth 90cm diam, buried 8 to 10cm below surface, at extreme S end of site. Coll 1969 by W C Noble, McMaster Univ; subm 1970 by R Wilmeth. *Comment* (WCN): sample dates hearth later than 200 BC to AD 100 Hennessey complex at KfNm-3 (Noble, 1971). Another burned caribou bone from a circular pit structure at extreme S end of Hennessey was dated at AD 1410 (I-4550: R, 1972, v 14, p 129) which agrees with AD 1300 to 1500 Frank Channel complex. S-587 falls within Narrows phase of Talthleil Shale tradition, dated AD 940 (GaK-1258: R, 1969, v 11, p 312) and AD 1070 (I-4973: R, 1973, v 15, p 291). Multiple occupation of Hennessey site is apparent.

2995 ± 105**S-588. Paddon site, Manitoba****1045 BC**

Bone (NMC-385) from Paddon site (D1Lh-1), E St Paul, Manitoba (49° 59' N, 97° 03' W). From Feature 11, excavation Unit, 0, 1, and An-

nex, depth 105 to 120cm. Site stratified with Blackduck pottery in upper levels. Bone is from bison kill assoc with Larter tanged point. No dates for this point, archaeol estimates 1500 BC (MacNeish, 1958). Coll 1969 by J Mori, Manitoba Archaeol Soc; subm 1970 by R Wilmeth. *Comment* (JM): site eroded by river.

S-589. Mittimatalik site, Northwest Territories **4385 ± 155**
2435 BC

Bone (NMC-387) from Mittimatalik site (PeFr-2), Pond Inlet village, W bank of creek near pipe-line, Baffin I, N W T (72° 42' N, 77° 58' W). From +8m, assoc with Pre-Dorset harpoon heads, at base of midden, 50cm thick, also containing Thule and Dorset artifacts. Thule house excavated by Mathiassen, 1923, ca 6m from Pre-Dorset find. First time Pre-Dorset harpoon heads found in apparently undisturbed location. Coll 1969 by G Mary-Rousselière; subm 1970 by R Wilmeth. *Comment* (GM): little known of Pre-Dorset harpoon evolution, sea level elev based age estimate at 2800 yr. S-589 date does not fit other dates (shell samples) from same region, Tay Sound.

S-590. Satut site, NWT **1510 ± 135**
AD 440

Bone (NMC-388) from Satut site (PeHa-1), W coast Eclipse Sound, S shore of flat point marking S end of Navy Board Inlet, Baffin I, N W T (72° 44' N, 80° 13' W). From Sq 7 of pure Dorset midden, +2.7m. Small area, but rich artifact site, inhabited during limited period of Dorset culture, characterized by specialized industry. Coll 1969 by G Mary-Rousselière; subm 1970 by R Wilmeth. *Comment* (GM): date acceptable, but ca 200 yr younger than estimate, suggests Satut site close in age to Houses 71 and 72 at Nunguvik.

S-591. Arnakadlak site, NWT **2725 ± 140**
775 BC

Bone (NMC-389) from Arnakadlak site (PgHb-3), 5.6km S of Nunguvik site, on characteristic rock formation point, Baffin I, NWT (73° 00' N, 80° 38' W). From +6.5m in old tent ring, 10 to 15cm below surface. Site has 6 Thule houses at 2.5 to 4m levels and a few old-looking tent rings between 2 and 10m. Late Pre-Dorset or early Dorset site. Date could clarify transition. Coll 1969 by G Mary-Rousselière; subm 1970 by R Wilmeth. *Comment* (GM): only a few remains of stone industry found at site, abundant burins and burin spalls support date.

S-592. Agleruuyag site, NWT **2740 ± 130**
790 BC

Bone (NMC-390) from Agleruuyag site (PaHb-1), E shore of Milne Inlet, opposite Qorluktog Bay, on N shore of river, NWT (72° 03' N, 80° 28' W). From inside oval to rectangular shaped Tent Ring 1, on terrace at +25m. Short distance N are 2 Pre-Dorset tent rings; to S and W are numerous late prehistoric and modern remains. Few artifacts found suggest early Dorset occupation while location of tent ring would make it appear older. Coll 1969 by G Mary-Rousselière; subm 1970 by R Wilmeth.

Teacher's Cove series, New Brunswick

Charcoal and soft-shell clam from Teacher's Cove site (BgDr-11), N side of Passamaguoddy Bay at Teacher's Cove, New Brunswick (45° 09' W, 67° 00' W). Clam-shell midden site with interesting combination of ceramics. May be latest housepit site in area. Coll 1970 by J Benmouyal for D Sanger, Nat Mus Canada (now Univ Maine); subm 1970 by R Wilmeth.

1170 ± 100**S-608. Teacher's Cove site, Feature 3a****AD 780**

Charcoal (NMC-450) from N 29.5, W 28.5, depth 45cm below surface, in barklined pit (Feature 3a) in Housepit 1. Should date one of last housepits in area, which appear to die out prior to European contact. Estimated age: 1200 yr.

1635 ± 60**S-609. Teacher's Cove site, shell lens****AD 315**

Soft-shell clam (NMC-451) from N 31-31.5, W 27-28, in shell lens separating Housepit 1 (upper) from Housepit 5 (lower), ca 45cm below surface. Should date lower limit for Housepit 1 and post-abandonment for Housepit 5. Should be earlier than S-608, probably 1200 to 1400 yr.

General Comment (DS): 2 dates agree with site stratigraphy and provide good chronologic controls for assoc grouping of artifacts as well as main house feature. S-609 somewhat younger than expected.

Radio Creek site series, Northwest Territories

Charcoal from Radio Creek site (NhTr-1), eroding from E river bank, MacKenzie R, Dist MacKenzie, NWT (69° 17' N, 132° 53' W). Site ca 50 to 100m N of small creek with group of abandoned cabins. Probably single component, occupied by Beluga hunters ancestral to MacKenzie Eskimos. Coll 1970 by R McGee, Nat Mus Canada (now Memorial Univ Newfoundland); subm 1970 by R Wilmeth.

350 ± 105**S-610. Radio Creek site, Sq I-20 (E)****AD 1600**

Charcoal (NMC-542) from Sq I-20 (E), 40 to 45cm below surface in concentration of bone, charred logs and fire-cracked rocks.

495 ± 100**S-611. Radio Creek site, Sq K-21 (S)****AD 1455**

Charcoal (NMC-453) from Sq K-21 (S), 35cm below surface. Outer layer of charred log in midden of bird and fish bone, pottery, and fire-cracked rocks.

General Comment (RM): S-611 acceptable date. MASCA bristlecone pine curve adjusted date, AD 1350 to 1450, fits well with Kittigazuit dates and dendrochronologically dated Alaskan sequences. Date S-610 adjusts to AD 1420 to 1630, somewhat more recent than expected.

Kittigazuit series, Northwest Territories

Charcoal, ash, and mixed organic material from Kittigazuit site (NiTr-2), E bank of E channel of MacKenzie R of Kittigazuit Bay, Dist MacKenzie, NWT (69° 21' N, 132° 40' W). Site represents occupations by MacKenzie Eskimo Beluga hunters between AD 1400 and 1900. Coll 1969 and 1970 by R McGhee; subm 1971 by R Wilmeth.

340 ± 120**S-612. Kittigazuit site, Sq R-118(n) AD 1610**

Charcoal and ash (NMC-454) from Sq R-118(n), 65cm below surface, 355cm below datum, from upper levels of ashy deposit, (Layer 3, approx middle of occupation).

300 ± 80**S-613. Kittigazuit site, Sq N-80(c) AD 1650**

Charcoal (NMC-455) from Sq N-80(c), 25 to 30cm below surface, in dark humus layer assoc with artifacts near floor of small house depression. This sec of site apparently occupied during early part of occupation period.

875 ± 70**S-614. Kittigazuit site, Sq Q-120(e) AD 1075**

Mixed organic material (charcoal, hair, feather, baleen, grass) from Sq Q-120(e), (NMC-456), 190cm below surface and 400cm below datum, in small patch of organic material in E profile of sq, 20 to 30cm below base of midden Layer 4, surrounded by sterile yellow sand patched with soliflucted organic material. Sample may date Layer 5, occupation, Norton or Birnirk, but if more recent than AD 1200 it is probably derived from base of Layer 4 by solifluction.

General Comment (RM): all dates are acceptable. Cultural comparisons fit well with bristlecone pine curve adjusted dates (McGhee, 1971).

Sandy Point site series, New Brunswick

Charcoal from Sandy Point site (BgDs-6), W side of St Croix R, at Sandy Point, New Brunswick (45° 08' N, 67° 08' W). Early shell midden site with rocker dentate ceramics and Late Archaic points. Previous date yielded 1900 ± 100 yr BP (Y-1292: R, 1969, v 11, p 602); (Pearson, 1966). Coll 1970 by J Lavoie for D Sanger; subm 1971 by R Wilmeth.

1720 ± 335**S-617. Sandy Point site, Level 3 AD 230**

Charcoal (NMC-448) from N 21.0-21.25, W 27.8-28.0, depth 2m below datum, 30cm from surface, bottom Level 3 in Housepit 2, possibly one of earliest housepits in area.

1410 ± 90**S-618. Sandy Point site, Level 10 AD 450**

Charcoal (NMC-449) from N 21-21.5, W 27-28, 2.25m depth below datum, 70cm from surface, Level 10 in Housepit 2, assoc with calcined shell.

General Comment (DS): dates should have provided a cross-check. Large tolerance of S-617 due to poor carbon yield for radiocarbon analyses, but does, to some extent, support previous date.

1350 ± 140**S-620. Krieger site, Ontario****AD 600**

Charcoal from Krieger site near Chatham, Ontario (42° 25' 15" N, 82° 05' 45" W). From 35 to 43cm below surface in refuse pit containing charcoal, bone, and pottery. Site history of excavations, artifacts, and features previously described (Kidd, 1954; 1956). Coll and subm 1970 by K E Kidd, Trent Univ, Peterborough. *Comment* (KEK): dates occupation; culture appears to forerun later Iroquoian of SW Ontario and also bears proof of Middle Woodland. Date important for early use of ossuary form of burial.

5945 ± 145**S-623. Managua, Nicaragua****3995 BC**

Soil from layer below mudstone containing fossilized human footprints (El Caucé), quarry near Managua, Nicaragua (12° 09' N, 86° 18' W). Soil horizon believed assoc with inhabitants responsible for El Caucé footprints. Geologic evidence suggested age of 2000 to 5000 yr (Williams, 1952). Coll and subm 1969 by A L Bryan, Univ Alberta. *Comment* (ALB): date supports younger origins (Bryan, 1973) and not assoc with "early man". Footprints are contemporary with early plant and animal domestication and thereby early village life further N. Also demonstrates rapid accumulation of volcanic deposits from weathering horizons.

1695 ± 110**S-629. Duc site, Northwest Territories****AD 225**

Charcoal from stratified Duc site (KjNb-7), 9.6km downstream from junction of Hanbury and Thelon Rivers, Thelon Game Sanctuary, NWT (63° 39' 34" N, 104° 28' 30" W). From thick cultural level containing 2 stemmed points, basally ground, possible transition of Hennessy Point. Similar point in Junction site dated AD 385 ± 90 yr (I-5977). Coll and subm 1971 by B C Gordon, Univ Calgary (now Nat Mus Canada). *Comment* (BCG): date reasonably agrees with Hennessy period and Junction site point assoc date, but conflicts with previous date (I-5976).

775 ± 105**S-630. Meyer site, NWT****AD 1175**

Charcoal from main cultural level of Meyer site (KjNb-5), 12.9km downstream from junction of Hanbury and Thelon Rivers, Thelon Game Sanctuary, NWT (63° 39' 52" N, 104° 27' 10" W). Assoc with quartzite biface fragments, scrapers, unifaces, and projectile point in hearth. Coll and subm 1971 by B C Gordon. *Comment* (BCG): dates quartzite artifacts.

1970 ± 120**S-631. Long Blowout site, NWT****20 BC**

Charcoal from stratified Long Blowout site (KjNb-3), 12.9km down-

stream from junction of Hanbury and Thelon Rivers, Thelon Game Sanctuary, NWT (63° 40' N, 104° 25' 45" W). From 10cm above Arctic Small Tool level, assoc with quartzite biface fragments. Coll and subm 1971 by B C Gordon. *Comment* (BCG): dates quartzite artifacts.

Junction site series, NWT

Charcoal from stratified Junction site (KjNb-6), 9.6km downstream from junction of Hanbury and Thelon Rivers, Thelon Game Sanctuary, NWT (63° 39' 30" N, 104° 28' 20" W). Coll and subm 1971 by B C Gordon.

S-649. Upper quartzite level **590 ± 60**
AD 1360

S-650. Level 3 **1790 ± 45**
AD 160

Assoc with worked flakes, knife, scraper and biface fragments, and red hair (bear) id by H M Appleyard.

S-632. Arctic Small Tool Level **2890 ± 125**
940 BC

General Comment (BCG): dates acceptable but S-650 older than expected.

Hahanudan 2—house site series, Alaska

Charcoal from Hahanudan 2-house site, S side of Hahanudan Lake, W interior Alaska (65° 43' 30" N, 155° 32' 30" W). Site with 2 house pits and adjacent site with 3 house pits are collectively referred to as Hahanudan assemblage. Shows distinctive cross-ties with Ipiutak and other middle date-range Eskimo cultures. Occupation previously interpreted as Indian with Eskimo influence. Historic and contemporary occupants of region are Koyukon Athabaskans. Coll 1971 by D W Clark, Nat Mus Canada; subm 1972 by R Wilmeth.

S-655. Hahanudan 2—house site, House 1 **1360 ± 90**
AD 590

Charcoal (NMC-550) from red layer of hearth in House 1, correlated floor layer 2.1 to 2.4m from 0 point, 0 to 45.7cm S.

S-656. Hahanudan 2—house site, House 2 **1285 ± 75**
AD 665

Charcoal (NMC-551) from House 2, gray layers of occupation floor, 3.6 to 4m from 0 point, 152 to 183cm W.

General Comment (DWC): dates within upper range of Ipiutak culture and acceptable, based on Hahanudan-Ipiutak cross-ties.

Hahanudan 3—house site series, Alaska

Charcoal from Hahanudan 3-house site, S side of Hahanudan Lake, Melozitna Quad, W interior Alaska (65° 42' 30" N, 155° 33' W). Site alt 65.8 to 67m above msl contains 3 housepits correlated with 2-housepit site, collectively referred to as Hahanudan assemblage. Coll 1971 by K Fladmark and W Peacock, for D W Clark; subm 1972 by R Wilmeth.

1500 ± 90**S-657. Hahanudan 3—house site, House B** **AD 450**

Charcoal (NMC-552) from House B, burned part of probably collapsed superstructure, from floor at several locations within structure.

1465 ± 75**S-658. Hahanudan 3—house site, House C** **AD 485**

Charcoal (NMC-553) from House C, in red-stained soil 40.6cm below base of root mat, assoc with floor, 4.2m from 0 point, 137cm E.

General Comment (DWC): dates in middle to upper range of Ipiutak culture and acceptable, based on Hahanudan-Ipiutak cross-ties. S-655 and -656, as well as obsidian hydration measurements, indicate 3-house site is somewhat older than 2-house site, however, assemblages from all houses are similar enough to be regarded from a single culture.

1005 ± 75**S-669. Tschetter site, Saskatchewan** **AD 945**

Charred bone (NMC-548) from Tschetter site (FbNr-1), E edge of Dunfermline Sand Hills, Saskatchewan (52° 12' 50" N, 106° 55' 52" W). Alt ca + 506m, from Test Pit 1, Plan 6, at 42.7cm below present surface. Gray to black sand from surface to 33.5cm, underlain by bone bed 15.2cm thick. Bones underlain by 18.3cm brown sand followed by massive yellow sands. Large quantity of disarticulated buffalo bone in shallow dune depression indicates kill site, probably pound. Some canid, hare, and rodent bone present. Lithic assemblage dominated by recent side-notched projectile points. Coll 1971 by I Dyck, Univ Alberta (now Sask Mus Nat Hist); subm 1972 by R Wilmeth. *Comment* (JD): dates site occupation.

1185 ± 70**S-670. Rousell site, Saskatchewan** **AD 765**

Bone (NMC-549) from Rousell site (FbNs-2), in large stabilized sand dune depression, alt ca + 503m near Dunfermline, Saskatchewan (52° 12' 11" N, 107° 03' 01" W). From Test Pit 4, 18.3 to 27.4cm below present surface, ditch profile across site exhibits dark-brown sandy horizon to 27.4cm, underlain by massive yellow sands. Several horizontally separated concentrations of buffalo bone assoc with 1 or 2 projectile points, several bone tools, and a few chert flakes. Each concentration represents one or a few animals and is comprised of both articulated and disarticulated whole and broken bones. All points are of Avonlea type. Coll 1971 by J Dyck; subm 1972 by R Wilmeth. *Comment* (JD): dates site occupation.

2405 ± 80**S-671. Saatut site, Northwest Territories** **455 BC**

Bone (NMC-406) from Saatut site (PeHa-1), W coast Eclipse Sound, S shore of point marking entrance of Navy Board Inlet, Baffin I., NWT (72° 43' N, 80° 13' W). From Sq 2 of house depression, < 40m from main part of site, but twice the height above sea level. Artifacts similar to main site, but location would suggest older period. Coll 1969 by Fr G Mary-

Rousselière, Catholic Mission, Pond Inlet; subm 1972 by R Wilmeth. *Comment (GM)*: date seems too old, estimated occupation 1700 to 1800 yr BP.

Nunguvik site series, NWT

Bone and burned material from Nunguvik site (PgHb-1), S of Low Point, W coast of Navy Board Inlet, N Baffin I, NWT (73° 01' 30" N, 80° 38' W). Most extensive site found to date in N Baffin, signs of occupation during most of Dorset and Thule periods. Thule houses on 12m terrace. Coll 1970 by Fr G Mary-Rousselière; subm 1972 by R Wilmeth.

2655 ± 80

S-672. Nunguvik site, Dorset House

705 BC

Bone and burned material (NMC-407) from lower level of house depression on 12m terrace containing early Dorset material. Probably represents earliest occupation of site. Artifacts generally similar to those from Tyara (Taylor, 1968) but much higher proportion of burins. Tyara dates (R, 1973, v 15, p 37) 2600 to 2700 yr BP.

1100 ± 135

S-673. Nunguvik site, Thule House 52

AD 850

Bone (NMC-408) from floor of Thule house on 12m terrace, but isolated and > 200m from early Thule House 42 (S-477: R, 1973, v 15, p 203) with 1st occupation AD 1090, House 52 seems to have been inhabited for short period and never reoccupied. Artifacts indicate early Thule period, only 2 harpoon heads recovered or rare Thule Type 1.

General Comment (GM): early Dorset House 46 fits estimate. 400-yr reduction (McGhee and Tuck, in press) and adjusting by the Suess curve gives 420 BC, the corrected date for Tyara. AD 850 is too old, but corrected date, AD 1270 by above method, fits with 2 dates obtained on plant material for earlier Thule House 42; AD 1210 and 1235 corrected dates S-477 and 516 (R, 1973, v 15, p 202-203).

865 ± 130

S-674. Tununeg site, NWT

AD 1085

Bone (NMC-409) from Tununeg Mt, Baffin I, NWT (72° 02' 30" N, 80° 54' W). From floor of House A, + 10m, 1 of 7 very old-looking and overgrown Thule houses, obviously not reoccupied in modern times. Old tent rings and a few graves present. Most artifacts appear like early Thule, but presence of drilled lashing holes in Thule Type II harpoon head suggests more recent occupation than Nunguvik House 42 and 52. Coll 1970 by Fr G Mary-Rousselière; subm 1972 by R Wilmeth. *Comment (GM)*: date much too old for a middle Thule house. If age reduced by 400 yr (McGhee & Tuck, in press) and then adjusted by Suess Curve to AD 1435, it falls into 500-yr age estimate of occupation.

Wabinoosh River site series, Ontario

Charcoal from Wabinoosh River site (EaJf-1), N bank of Wabinoosh R, last rapid before entrance to Wabinoosh Bay, Lake Nipigon, Ontario

(50° 03' N, 88° 57' W). Large village in Boreal forest at excellent fishing pool. Upper terrace appears to be pure component of Laurel tradition, while lower terrace appears to be multi-component site chronologically blending into Lake Woodland. Coll 1968 by KCA Dawson, Lakehead Univ; subm 1972 by R Wilmeth.

1095 ± 180**S-600. Wabinoash River site, upper terrace AD 885**

Charcoal (NMC-467) from hearth at edge of upper terrace, grid ref N180 WO (Test Pit 24). Laurel tradition ceramics recovered from hearth.

710 ± 175**S-681. Wabinoash River site, upper terrace AD 1240**

Charcoal (NMC-468) from hearth in upper terrace, grid ref N175 E90, Level II, 5.1 to 10.2cm. Assoc with Laurel tradition ceramics.

350 ± 100**S-682. Wabinoash River site, upper terrace AD 1600**

Charcoal (NMC-469) from small hearth-like feature at depth 10.2cm, Test Pit 12, grid ref N155 E45. Hearth contained Blackduck focus rim-shoulder with Laurel Dentate Stamped decoration, probably representing period of transition from Laurel to Blackduck, AD 800 to 1000.

General Comment (KCAD): site, apart from limited late historic logging operations, is still in undisturbed forest. This, and recovery of material underlying forest duff may, in part, account for unexpected late dates. Data suggests terminal dates for Laurel tradition in N Boreal forest later than S areas. Hence, S-680 is acceptable date; S-681 appears late, but given assoc with a Laurel projectile point, pseudo-scallop shell, and dentate pottery, it cannot be completely rejected; and likewise for S-682 overlying transitional Laurel-Blackduck vessel and 1 blue trade bead.

1120 ± 75**S-683. Snyder Dam site, Manitoba AD 830**

Bone (NMC-470) from Snyder Dam site, Manitoba (49° 10' N, 101° 00' W). From lower of 2 hearths excavated on river bank, 122cm below surface at top of bank. Bone found in and on top of ash lens, assoc with cultural material, fragments of thick crude Woodland vessel, a small shallow side-notched point, and 6 flakes of knife river flint. Pottery vessel resembles Flanders Crockery Creek ceramics from S-central Michigan (Losey, oral comm) and somewhat like Canteen cordmarked ware. First date from W Canada with this type of pottery; will help determine periods of E Woodland ceramics into NE Plains, as well as degree of overlap and co-existence of ceramic traditions. Coll 1970 by K Williams and J Yeo for L Syms; subm 1972 by R Wilmeth. *Comment* (LS): date is satisfactory although it appears to be slightly early. Dates S-741 of 1010 ± 60 yr BP on charcoal and S-739 of 925 ± 70 yr BP on bone, from same occupation cluster fairly closely. Range of AD 880 to 1000 assigned to this component based on charcoal date and because the 2 bone dates overlap either end of this range. None of the dates corrected for ¹⁴C fluctuations.

S-684. Cormie Ranch site, Alberta **1095 ± 130**
AD 855

Bone (NMC-471) from Cormie Ranch site (FiPp-300), Alberta (53° 20' N, 114° 35' W). From Occupation Layer 1, Loc 1, L-h horizon at base, in Unit 7.6m N, 0m E, at 6m below surface. Site at + 749.2m, stratified with 3 components consisting of living floors resting within eolian sands of former beach. Cultural affiliation unknown, occurrence of large Besant-like projectile points suggests AD 500. Stratum containing Layer 1 is distinct from lower eolian sands. Radical change in environment and faunal assemblage apparent. Coll 1970 by T C Losey, Univ Alberta; subm 1972 by R Wilmeth. *Comment* (TCL): occupation Layer 1 date consistent with site stratigraphy. Postulated "radical environment change" only apparent because 250 yr between Layer 1 (AD 855) and Layer 2 (AD 605) probably too short to allow a shift of magnitude indicated by faunal and artifact assemblages. Apparent shift may be due merely to local stabilization of beach environment through normal ecologic process of adaptation to local hunting and gathering economics.

S-692. Fisherman Lake, NWT **110 ± 325**
AD 1840

Bone (NMC-694) from Fisherman Lake site (JcRw-51), ca 19.3km NW of Fort Liard of Amoco (Canada) Petroleum Ltd gasline, NWT (60° 30' N, 123° 25' W). From layer of humus 3 and 30cm depth. Single component late prehistoric site. Coll 1971 by G Hilderman for J V Millar, Univ Saskatchewan; subm 1972 by R Wilmeth. *Comment* (JVM): date appears late, but archaeological evidence would place occupation several hundred yr earlier. No European-derived artifacts found.

Duc site series, NWT

Charcoal from Duc site (KkNb-7), 9.1m above prominent caribou crossing of Thelon R and ca 30.5 to 45.7m from river flood level, Dist MacKenzie, NWT (63° 39' 34" N, 104° 28' 30" W). Prominent glaciolacustrine sand ridge, remnant of Glacial Lake Thelon, ca 167.6m above mean sea level, N bank steep and eroding with materials scattered along ice-push bank. Coll 1971 by J Hunston and R Jones for B C Gordon, Nat Mus Canada; subm 1973 by R Wilmeth.

S-711. Duc site, Early Chipewyan layer **2440 ± 120**
490 BC

Charcoal mixed with sand (NMC-515) from early Chipewyan layer Sq 1, ON OE, from above Arctic Small Tool tradition material in adjacent sq. Estimated age: 500 yr.

S-712. Duc site, combined Layers 4 and 5 **Modern**

Charcoal mixed with sand (NMC-516) from hearth 13cm below surface in combined Layers 4 and 5 (late Chipewyan). Estimated age: 300 to 400 yr.

- 2445 ± 75**
- S-665. Duc site, Arctic Small Tool Layer** **505 BC**
Charcoal mixed with sand (NMC-517) from Arctic Small Tool tradition hearth containing many artifacts, Sq 11, 8N 6E estimated age: 900 to 1000 BC.
- 2355 ± 80**
- S-715. Duc site, Early Chipewyan layer** **405 BC**
Charcoal (NMC-572) from Early Chipewyan layer, Sq 2, 2N OE, assoc with stemmed point. Estimated age: 1600 to 1700 yr.
- 1150 ± 85**
- S-716. Duc site, Late Chipewyan layer** **AD 800**
Charcoal (NMC-573) from Layer 4, Sq 4, 4N OE. Dates Nanton variety Plains side-notched point. Estimated age: AD 1500 to 1700.
- 845 ± 115**
- S-717. Duc site, Boundary Layers 3 and 4, (Middle Chipewyan layers)** **AD 1105**
Charcoal (NMC-574) from area where Layers 3 and 4 merge, assoc with eared projectile point and an Avonlea style side-notched point. Estimated age: AD 1000 to 1400.
- 5010 ± 225**
- S-735. Duc site, below Early Chipewyan and Arctic Small Tool layers** **3060 BC**
Charcoal (NMC-581) from below basal layer, Test Pit 1, Sq 12, underlying diamond-plan ground projectile point. Estimated age: 1500 to 2500 BC.
- 1465 ± 195**
- S-736. Duc site, Layer 4 (Lake Chipewyan)** **AD 485**
Charcoal (NMC-582) from Layer 4, assoc with projectile point basal sec resembling those of Frank Channel complex (Noble, 1971). Estimated age: AD 1200 to 1500.
- 2345 ± 170**
- S-737. Duc site, Early Chipewyan layer** **395 BC**
Charcoal (NMC-583) from Layer 1, Sq 3, 2N 2E, 45 to 50cm depth. Estimated age: 1500 to 1600 yr.
General Comment (BCG): dates Chipewyan cultures earlier than expected from other dated Chipewyan sites in sub-arctic. S-665 appears too young compared to 900 to 1200 BC dates for Arctic Small Tool tradition at Junction site several 100m from this site.
- 1025 ± 120**
- S-713. Savoie site, New Brunswick** **AD 925**
Charcoal (NMC-567) from Savoie site, Bif Tracadie R, 5.6km above mouth, 366m above Tommy's Point, New Brunswick (47° 27' N, 65° 45' W). From Unit H, S end of site, depth 25.4 to 30.5cm in matrix of undisturbed brown sand mixed with white ash, underlying and among rock feature. Small prehistoric fishing campsite, probably simple occupation during summer or fall. Ceramic assemblage suggests Late Woodland mani-

festation, probably Micmac in cultural affiliation. Should provide good date for Late Woodland occupation of region. Coll 1972 by D L Keenlyside; subm 1973 by R Wilmeth. *Comment* (DLK): acceptable date generally agreeing with expected range, AD 1000 to 1500. Assoc ceramic and lithic assemblages typologically and chronologically correspond closely to Carson site (S-510: R, 1973, v 15, p 206).

1155 ± 130

S-714. Cayuga Bridge site, Ontario

AD 795

Charcoal (NMC-568) from Cayuga Bridge site (AfGx-1), on low alluvial river flat, W bank Grand R, on either side of hwy bridge at Cayuga (42° 55' N, 79° 53' W). From Profile 1, pit Feature 1, Stratum 4, depth 1.2 to 1.4m. Site consists of 12 superimposed strata of which 3 are cultural. Strata 2a, 2c, and 4 appear to represent Princess Point complex; material from 4 being early Princess Point. A date for this site and that for late Porteous site should bracket Princess Point complex in temporal terms. Coll 1970 by D M Stothers for D L Keenlyside; subm 1973 by R Wilmeth. *Comment* (DMS): pit contained grit-tempered, collarless everted and splayed rims, and cord-roughened body sherds. Rims are decorated with cord-wrapped stick impressions and deep encircling exterior punctates with interior bosses. Wide-based "Levanna-like" points and hollow conical antler tine projectile points also assoc. Lamellar flakes, native copper, and burned marginella shells recovered from same pit feature. Immature white-tail deer faunal remains and other factors attest to late spring-summer occupation. Site believed to be late, early phase of Princess Point complex, ca AD 500 to 750.

1980 ± 70

S-721. Grant Anchorage, site, British Columbia

30 BC

Charcoal (NMC-364) from Grant Anchorage site (FcTe-4), on Higgins Passage, S end of Swindle I., Laredo Sound, British Columbia (52° 29' N, 128° 45' W). From Sec A, Unit I-C, S 2.5m, E 1.5m, depth 2.3m. Large shell midden and village site, in historic territory of Kitasa (S Tsimpshian). Sample from lowest cultural level, overlying sterile gravels. Coll 1972 by B O Simonsen, Archaeol Sites Advisory B, British Columbia; subm 1973 by R Wilmeth. *Comment* (BOS): date somewhat later than previous date of 2090 ± 100 yr BP (Gak-2757: R, 1973, v 15, p 63) from layer 71cm above S-721, which should have been older. Gak-2757 date almost identical to Gak-2755 date; both may represent charred remains of same cultural feature (Simonsen, 1973).

1380 ± 70

S-722. Manyfingers site, Alberta

AD 570

Bone (NMC-560) from Manyfingers site (DhPj-31), E side Belly R, on 1st terrace, S Alberta (49° 17' N, 113° 33' W). From Test 5, Level 11, 126cm below surface. Multi-terrace terrain, multicomponent camp and processing area of 20,000sq m being eroded by the river. Deposits range from 70 to 140cm thickness. Occupation level contained butchered bison bone, large chopping and cutting tools assoc with anvil stone. No pro-

jectile points found in Test 5. Both Late Plains side-notched and Avonlea points occur in well-defined layers on 2nd terrace. Sample from lowest terrace probably early Avonlea or Besant. Coll 1972 by P Perry for J M Quigg, Univ Calgary; subm 1973 by R Wilmeth. *Comment* (JMQ): date correlates with estimated age of Avonlea culture in S Alberta. Artifacts from this culture occur in a dense occupation layer in overlying terrace (1m). These include small side-notched points (Avonlea), end scrapers, retouched flakes, unifaces, choppers, and knot impressed pottery. Also, quantities of butchered bone and fire-broken rock were present.

DgPk-75 site series, Alberta

Charcoal from W side Belly R, on 1st terrace S Alberta (49° 08' N, 113° 40' W). Late plains camp on terrace 3m above flood plain. Stratified campsite in 70cm alluvium with well separated occupations in 3 burned Ah soil horizons. Firecracked rocks, ceramics, flakes, butchered bone, and a few tools present in Occupation III. Material sparse in lower units (Quigg, 1973). Coll 1972 by J M Quigg and J Walker, Univ Calgary; subm 1973 by R Wilmeth.

630 ± 135

S-723. DgPk-75 site, Test 4

AD 1320

Charcoal (NMC-561) from stone-lined hearth in Test 4, Level 2, 22cm below datum, at 55E, S wall.

1200 ± 170

S-724. DgPk-75 site, Test 3

AD 750

Charcoal (NMC-562) from floor of Test 3, Level 6, 50 to 59cm below datum.

General Comment (JMQ): S-723 falls within range of Old Women's phase Northwestern Plains and cross-checks with ceramics, Plains Triangular Point, and numerous obsidian hydration dates obtained from specimens also assoc with hearth. S-724 falls at terminus of Avonlea phase or start of Old Women's phase. Though no culturally diagnostic material was recovered from this occupation, similarities in debris on living floor, lithic types, and obsidian hydration dates place it in Old Women's phase. If correct, date is one of earliest for this phase.

Riviere au Bouleau 1 site series, Quebec

Charcoal from Riviere au Bouleau 1 site (EbKj-2), N shore St Lawrence R, Quebec (50° 17' 3" N, 65° 31' 6" W). Large site 100m × 50m in Boreal forest, in podzolic soil. Cultural affiliation; late Archaic and Middle Woodland. Coll 1972 by P Somcynsky and D Chevrier; subm 1973 by R Wilmeth.

4980 ± 210

S-729. Riviere au Bouleau 1 site, Pit 1S, 103E

3030 BC

Charcoal (NMC-569) from Pit 1S, 103E, depth below surface 24cm, below zero line 13.4m.

935 ± 85**S-730. Riviere au Bouleau 1 site, Pit 2S, 107E AD 1015**

Charcoal (NMC-570) from Pit 2S, 107E, depth below surface 13cm, below zero line 13.16m.

General Comment (DC): dates do not seem to correspond to archaeol data of 2-component site.

7245 ± 255**S-731. Stampede site, Alberta****5295 BC**

Charred bone and charcoal (NMC-571) from Layer 12A Stampede site (KjOn-117), Cypress Hills Prov Park, Alberta (49° 40' N, 110° 15' W). From shallow unlined hearth in cultural Layer 12A, 351cm below surface, 50cm below Mt Mazama ash, in NW¼ sq 12E 22S. Site is a deep, well stratified multicomponent campsite on a flood plain at N base of Cypress Hills. Fine sands, sandy clay interrupted occasionally by thin Ah soil developments, some assoc with human occupation; Besant, Pelican Lake, Oxbow, Bitter Root. Coll 1972 by E Gryba, Univ Alberta, Edmonton (now Univ Manitoba) and D Cardinal, Univ Alberta; subm 1973 by R Wilmeth. *Comment (EG)*: date places material from Layer 12A well within range of Mummy Cave cultural complex for Northern Plains.

3560 ± 105**S-738. Seahorse Gully site, Manitoba****1610 BC**

Sea shell (NMC-395) from Seahorse Gully site, on 35m high quartzite ridge along E shore Button Bay, W coast Hudson Bay, W side of mouth Churchill R, Churchill, Manitoba (58° 45' N, 94° 15' W). From 10.1 to 15.2cm below present gravel surface, below occupation layers of pre-Dorset Eskimo houses. Shells probably all deposited at some time. Pre-Dorset Eskimo occupation with oval and rectangular tent-rings scattered over ridge. Dwellings excavated yielded artifacts of Arctic Small Tool tradition (Meyer, 1970). Should indicate time of Hudson Bay waters at ridge level (35m above present level) and time interval between gravel bar formation and initial occupation 950 BC (S-521: R, 1973, v 15, p 209). Coll 1968 by R J Nash, Manitoba Mus Man & Nature for D Meyer, McMaster Univ; subm 1973 by R Wilmeth. *Comment (DM)*: date accepted as time period when Hudson Bay waters were 35m above present level (Andrews *et al*, 1971).

1975 ± 310**S-747. Ice Mountain site 3, British Columbia****25 BC**

Charcoal (NMC-426) from Ice Mountain site 3 (IaTr-2), 22.5km NE of Telegraph Creek, on Telegraph Creek Rd, at confluence of Stikine and Tahltan R, at ca +152.4m (58° N, 131° W). From pit SO WO, 123cm below datum. Series of obsidian hydration age estimates range from 475 yr in uppermost layer to 2940 yr. Little is known of cultural affiliation represented by artifacts. Sample analyzed for radiocarbon control on hydration sequence. Coll 1969 by J W Smith, Univ Calgary (now Los Angeles, Cali-

formia); subm 1973 by R Wilmeth. *Comment* (JWS): date falls in general range expected.

Boardwalk site series, British Columbia

Charcoal from Boardwalk site (GbTo-31), NW side of Elizabeth Point, Digby I, Prince Rupert Harbour, British Columbia (54° 17' 40" N, 130° 22' 35" W). Prehistoric winter village of Gispakloats tribe of Tsimshian. Shell midden containing ca 310,000cu m cultural material. Coll 1968 and 1969 by R I Inglis and G F MacDonald, Nat Mus Canada; subm 1973 by R Wilmeth.

3170 ± 110

S-748. Boardwalk site, Area B, Level 17 **1220 BC**

Charcoal (NMC-587) from Sq I6, concentrated in central area of sq, depth 251.5 to 256.5cm. Matrix of crushed shell, gravel, and decomposed rocks, in dark brown soil.

3425 ± 205

S-751. Boardwalk site, Area B, Level 16 **1475 BC**

Charcoal (NMC-590) from Sq I6, concentrated in NE quad, depth 228.6 to 238.8cm. Matrix of crushed shell, gravel, and decomposed rock in brown soil.

1695 ± 75

S-754. Boardwalk site, Area B, Level 10 **AD 255**

Charcoal (NMC-593) from Sq I6, NW quad, depth 137.2cm to 144.8cm in a concentrated pocket surrounded by a matrix of burned clam and mussel shells. Should date early levels of upper horizon.

4230 ± 220

S-752. Boardwalk site, Area B, Level 14 **2280 BC**

Charcoal (NMC-591) from Sq G6, SW corner, depth 228.6m; 2.5cm layer 50.8cm long in matrix of crushed and burned shells, brown soil. Should date basal layers of deposit, ca 2000 BC.

1870 ± 75

S-753. Boardwalk site, Area B, Level 8 **AD 100**

Charcoal (NMC-592) from Sq G6, NW quad, 111.8 to 119.4cm below surface, in a matrix of burned shells and black soil. Assoc with a heavy concentration of artifacts including a miniature ceremonial club.

1270 ± 190

S-749. Boardwalk site, Area C, Level 1 **AD 680**

Charcoal (NMC-588) from Sq N45 E25, 25.4cm below datum in light brown matrix. Should date upper level burials from shell ridge in Area C.

3625 ± 105

S-750. Boardwalk site, Area D, Level 11 **1675 BC**

Charcoal (NMC-589) from Sq E2, 259cm below datum and 5cm above basal clays, NW quad, in matrix of dark soil with crushed clam and mussel, decomposed rocks. Will date lower levels of Area D ca 2000 BC.

General Comment (RII): all dates show localization of occupation during various periods, *ie*, a given date from one area cannot be applied to whole site occupation. S-752 is earliest date for site with occupation time span > 4000 yr. S-748 and -751 are acceptable in general temporal context. Two other dates from some excavation unit S-472 (3460 ± 80 yr BP at 365.8cm below datum) and S-473 (3450 ± 80 yr BP at 289.6cm below datum) (R, 1973, v 15, p 201) fit into same period confirming some sort of localized rapid deposition. Further evidence of rapid buildup and some stratigraphic mixing comes from an individual dog burial extending from 213.4 to 251.5cm below datum. S-750 dates initial occupation of Area D, ca 600 yr after Area B. S-749 provides a terminal date for use of shell ridge of Area C for a burial area, AD 700, 1100 yr before abandonment of site.

S-777. Gladstone site, Yukon **1285 ± 145**
AD 665

Artiodactyl long bone shaft fragments (NMC-665) from Gladstone site (JhVg-1), E shore Kluane Lake, W of mouth Gladstone Creek, Yukon ($61^{\circ} 20' N$, $138^{\circ} 40' W$) at 792m above mean sea level. From Sq N5 E47, Level F1, 5 to 10cm below White R volcanic ash, sealed within top of paleosol known as Slims soil (red zone) uppermost unit of Kluane loess. Sample from largest concentration of bone, major component of site (Gladstone phase). Site stratified with 3 components. Should date Gladstone phase and latest deposit increments of Slims soil parent material, ca 5000 to 6000 yr BP. Coll 1973 by R E Morlan and J R Hunston, Nat Mus Canada; subm 1973 by R Wilmeth. *Comment (REM):* date much more recent than expected, either estimate is wrong or sample is unsuitable in some way, eg, leaching with younger carbon. Charcoal samples submitted to clarify meaning of site.

Cactus Flower site series, Alberta

Charcoal and bone from Cactus Flower site (EbOp-16) on flood plain of South Saskatchewan R Alberta ($50^{\circ} 15' N$, $110^{\circ} 38' W$). Ten defined occupation layers, designated I (most recent) to X (earliest). Occupations well separated stratigraphically by units of alluvium derived apparently from periodic flooding. Occupations I and II are Pelican Lake, and III-IX attributable to McKean complex. Diagnostic material has not yet been recovered from Occupation X. Coll 1973 by E A Simmonds, N Krell, and J Brumley, Univ Calgary; subm 1973 by R Wilmeth.

S-782. Cactus Flower site, Occupation VIII **4130 ± 85**
2180 BC

Charcoal (NMC-628) from excavation Unit 1, NW $\frac{1}{4}$ Sq 6S-4W and SE $\frac{1}{4}$ Sq 4S-6E, Occupation VIII from within and next to Feature 13, a basin hearth. Will date primarily McKean complex component ca 3500 to 4500 yr BP.

- 2130 ± 130**
180 BC
- S-783. Cactus Flower site, Occupation IX**
Charcoal (NMC-629) from excavation Unit 3, from 1 to 4m W of datum, Occupation IX. Pieces of charcoal scattered over broad area of living floor. Will date earliest defined McKean complex occupation.
- 3625 ± 80**
1675 BC
- S-784. Cactus Flower site, Occupation IV**
Bone (NMC-630) from excavation Unit 5, all areas, Occupation IV. Unid. bone fragments throughout excavation unit. Will date terminal or near terminal age for McKean complex at site and probably entire region.
- 3890 ± 160**
1940 BC
- S-820. Cactus Flower site, Occupation VI**
Bone (NMC-631) from excavation Unit 5, all areas. Unid. bone fragments throughout excavation unit. Occupation contains McKean materials. Will indicate time difference between this and other McKean occupations.
- 3725 ± 95**
1775 BC
- S-821. Cactus Flower site, Occupation X**
Charcoal (NMC-632) from excavation Unit 1, scattered chunks of charcoal in and around poorly defined surface hearth (Feature 19). Will date earliest occupation of site, lacking diagnostic artifacts.
- 3620 ± 95**
1670 BC
- S-822. Cactus Flower site, Occupation IV**
Charcoal (NMC-633) from excavation Unit 1, Sq 4S-12W. Large pieces from hearth area. Will date uppermost defined McKean component in unit.
- 3615 ± 95**
1665 BC
- S-823. Cactus Flower site, Occupation VI**
Charcoal (NMC-634) from excavation Unit 5, Sq OS 4W, from basin hearth, Feature 21, check sample on S-820.
General Comment (JB): with exception of S-783, dates are acceptable and agree with McKean complex dates from elsewhere on plains.

REFERENCES

- Andrews, J T, McGhee, R, and McKenzie-Pollock, L, 1971, Comparisons of elevations of archaeological sites and calculated sea levels in Arctic Canada: *Arctic*, v 24, no. 3.
- Bryan, A L, 1973, New light on Ancient Nicaraguan footprints: *Archaeology*, v 26, p 146-147.
- Buckley, James, 1973, Isotopes' radiocarbon measurements X: *Radiocarbon*, v 15, p 291.
- Buckley, J D and Willis, E H, 1972, Isotopes' radiocarbon measurements IX: *Radiocarbon*, v 14, p 129.
- Christiansen, E A (ed), 1970, Physical environment of Saskatoon, Canada: Ottawa, Natl Research Council Pub no. 11378.
- 1971, Geology of the Crater Lake collapse structure in southeastern Saskatchewan: *Canadian Jour Earth Sci*, v 8, p 1505-1513.
- David, P P, 1970, Discovery of Mazama ash in Saskatchewan: *Canadian Jour Earth Sci*, v 7, p 1579-1583.

- Jury, W and Jury, E, 1952, The Burley site: Univ Western Ontario, Bull 9, London, Ontario.
- Kidd, K E, 1954, A woodland site near Chatham, Ontario: Royal Canadian Inst, Trans, v 30, pt 2, p 141-178.
- 1956, A brief study of the human remains from the Krieger woodland site in southwestern Ontario: Pennsylvania Archaeologist, v 26, no. 1, p 15-26.
- Kigoshi, K, Aizawa, H, and Suzuki, N, 1969, Gakushuin natural radiocarbon measurements VII: Radiocarbon, v 11, p 312.
- Kigoshi, K, Suzuki, N, and Fukatsu, H, 1973, Gakushuin natural radiocarbon measurements VIII: Radiocarbon, v 15, p 63.
- MacNeish, R S, 1955, Two archaeological sites on Great Bear Lake, Northwest Territories, Canada: Nat Mus Canada, Bull 136, p 54-84.
- 1958, An introduction to the archaeology of southeast Manitoba: Nat Mus Canada, Bull 157, Anthropol ser no. 44.
- 1964, Investigations in southwest Yukon: archaeological excavations, comparisons and speculations: R S Peabody Foundation archaeol paper, v 6, no. 2, Andover, Massachusetts.
- McCallum, K J and Wittenberg, J, 1968, University of Saskatchewan radiocarbon dates V: Radiocarbon, v 10, p 366-367.
- McGhee, R, 1971, Excavation at Kittigazuit: The Beaver, p 34-39, Winnipeg, Canada.
- McGhee, R and Tuck, J, Updating the Arctic: School of American Research, Santa Fe, New Mexico, (in press).
- Meyer, D, 1970, PreDorset settlements at the Seahorse gully site: Masters thesis, Univ Manitoba, Winnipeg, Canada.
- Noble, W C, 1971, Archaeological surveys and sequences in central District of Mackenzie, NWT: Arctic Anthropology, v 8, no. 1, p 102-135, Madison, Wisconsin.
- Pearson, R J, 1966, Some recent archaeological discoveries from Prince Edward Island: Anthropologica, v 8, no. 1, p 101-109.
- Quigg, J M, Belly River valley prehistory: MA thesis, Univ Calgary.
- Rutherford, A A, Wittenberg, J, and McCallum, K J, 1973, University of Saskatchewan radiocarbon dates VI: Radiocarbon, v 15, p 204.
- Sanger, D, 1970, The archaeology of the Lockmore-Nesikep locality, British Columbia: Sysis, v 3, supp 1, Victoria.
- Savage, H, 1972, Faunal material from the Constance Bay site no. 1: Ontario Archaeol Pub 18, Toronto.
- Simonsen, B O, 1973, Archaeological investigations in the Hecate Strait-Melbank Sound area of British Columbia: Mercury ser, Archaeol Survey of Canada, paper 13, Nat Mus Canada.
- Stuiver, Minze, 1969, Yale natural radiocarbon measurements IX: Radiocarbon, v 11, p 602.
- Taylor, W E, 1968, The Arnapik and Tyara sites: and archaeological study of Dorset culture origins: Soc American Archaeol, mem 22, Salt Lake City, Utah.
- Williams, H, 1952, Geologic observations on the ancient human footprint near Managua, Nicaragua: Carnegie Inst Washington Pub 596, p 1-31.
- Wright, J V, 1968, The Michipicoten site, Ontario: Nat Mus Canada Bull 224, Ottawa.
- and Anderson, J E, 1963, The Donaldson site: Nat Mus Canada, Bull 184, Ottawa.