

**PHYSICAL RESEARCH LABORATORY RADIOCARBON  
DATE LIST V**

D P AGRAWAL, R V KRISHNAMURTHY, and  
SHEELA KUSUMGAR

Physical Research Laboratory, Ahmedabad 380009, India

We report here dates on archaeological and geologic samples. The samples were counted as methane in gas proportional counters. The techniques used have been described earlier (R, 1971, v 13, p 442-449). Dates are expressed in years BP, taking AD 1950 as the reference year. Modern standard was NBS oxalic acid. Quoted errors are based on counting statistics alone and are equivalent to  $\pm 1$  standard deviation for samples younger than 10,000 years and  $\pm 2$  standard deviations for older samples. Descriptions and references regarding the samples have been supplied by the submitters of the samples.

Most important are the series from the Batadomba cave, Sri Lanka, where the Upper Paleolithic dates go back to ca 28,000 BP. These are the first early dates from Sri Lanka. The  $\text{CaCO}_3$  based dates from Bhimbetka, Madhya Pradesh, are all very young and indicate the contamination potential of such deposits. The Didwana Salt Lake series dates climatic changes inferred both from pollen and chemical variation through the sediment profile.

ARCHAEOLOGIC SAMPLES

*India*

**PRL-931. Arara, Black and Red Ware (BRW) deposit 2780  $\pm$  120**

Charcoal from Arara (23° 76' N, 88° 10' E), Dist Burdwan, Tr 1, Layer 5, depth 1.91m; subm by D K Chakrabarti, Delhi Univ; submitter's Sample 5.

**Bagor series, Madhya Pradesh**

Samples are from Bagor (24° 35' 5" N, 82° 18' 2" E), Dist Sidhi; subm by G R Sharma, Allahabad Univ, Allahabad.

**PRL-711. Middle Paleolithic culture 12,450  $\pm$  220  
- 210**

Calcareous sand, layer of cross-bedded river sand, 16m above river level. *Comment:* carbonate assoc with rolled Middle Paleolithic tools and fresh fossils.

**PRL-714. Middle Paleolithic(?) culture 6460  $\pm$  180**

Charcoal, Tr 1, Layer 3, depth 0.54m. *Comment:* assoc with chert flakes, blades, and chalcedony nodules.

**PRL-715. Mesolithic culture 8090  $\pm$  220**

Charcoal, overlying Layer 2a, depth 0.61 to 0.69m. *Comment:* assoc with geometric tools.

**Bahiri series, West Bengal**

Bahiri (23° 60' N, 88° 10' E), Dist Birbhum; subm by D K Chakrabarti, Delhi Univ, Delhi.

**PRL-866. Chalcolithic culture** **2770 ± 140**

Charcoal, Tr BHR II, Layer 5, depth 2.1 to 2.35m; submitter's Sample 1.

**PRL-867. Chalcolithic culture** **2490 ± 150**

Charcoal, Tr BHR IV, Layer 4, depth 2.25m; submitter's Sample 2.

**Bhimbetka series, Madhya Pradesh**

Bhimbetka (22° 65' N, 77° 57' E), Dist Raisen; subm by V N Misra, Deccan Coll, Pune. *Comment:* samples assoc with Late Mesolithic and Middle Paleolithic industry in Central India.

**PRL-534. Cave deposit (Late Mesolithic culture)** **2780 ± 150**

Charcoal, Tr G, Sq 5, Layer 2, depth 0.66 to 0.7m; submitter's Sample BTK II-B-33.

**PRL-535. Cave deposit (Late Mesolithic culture)** **1160 ± 150**

Charcoal, Tr G, Sq 5, Layer 2, depth 0.66 to 0.7m; submitter's Sample BTK II-B-33.

**PRL-536. Cave deposit (Late Mesolithic culture)** **950 ± 110**

Charcoal, Tr G, Sq 5, Layer 2, depth 0.61 to 0.65m; submitter's Sample BTK II-B-33.

**PRL-787. Cave deposit (Middle Paleolithic culture)** **15,370 + 570  
- 530**

Calcium carbonate, Tr BTK III F 23, Loc I 7, depth 0.86 to 0.9m; submitter's Sample BTK 18.

**PRL-788. Cave deposit (Middle Paleolithic culture)** **17,230 + 480  
- 440**

Calcium carbonate, Tr BTK III F 23, Loc I 6, Layer 4, depth 0.81 to 0.85m; submitter's Sample BTK 17.

**PRL-789. Cave deposit (Middle Paleolithic culture)** **17,670 + 490  
- 460**

Calcium carbonate, Tr BTK III F 23, Loc I 6, Layer 2, depth 0.31 to 0.35m; submitter's Sample BTK 16.

**Daimabad series, Maharashtra**

Daimabad (19° 13' N, 74° 41' E), Dist Ahmednagar, subm by S A Sali, Archaeol Survey India (ASI), Southwestern Circle, Aurangabad. *Comment:* samples were measured to date Sawalda, Buff and Cream Ware, Jorwe, and Late Harappan cultures.

**PRL-654. Sawalda culture 3460 ± 100**

Charcoal, Tr GZ63, House No. 12, Rm no. A15, depth 4.1m; submitter's Sample DMD/42/1977-78.

**PRL-655. Buff and Cream Ware 3490 ± 110**

Charcoal, Tr Z'4, Layer 10A, depth 2m; submitter's Sample DMD/43/1977-78.

**PRL-656. Jorwe culture 3050 ± 150**

Charcoal, Tr Y'2, Kiln no. 1 sealed by Layer 1, depth 0.1m; submitter's Sample DMD/46/1977-78.

**PRL-657. Late Harappan culture 3140 ± 100**

Charcoal, Tr ZD60, hearth sealed by Layer 11 and cut into Layer 12, depth 2.3m; submitter's Sample DMD/53/1978-79.

**Dangwada series, Madhya Pradesh**

Dangwada, Dist Ujjain, subm by M P Khare, Dept Archaeol, Madhya Pradesh, Bhopal. *Comment:* samples date Malwa culture in area.

**PRL-686. Malwa culture 3110 ± 140**

Charcoal grains, Tr IV, Layer 9, depth 2.58m.

**PRL-690. Malwa culture 3400 ± 150**

Charred rice, Tr VII, Layer 8A, depth 2.2m.

**PRL-691. Malwa culture 3200 ± 120**

Charcoal, Tr VII, Layer 8B, depth 2.3m.

**PRL-692. Malwa culture 2900 ± 140**

Charred wheat, Tr VII, Layer 4, depth 2.2m.

**PRL-693. Malwa culture 3280 ± 100**

Charcoal, Tr VII, Layer 6, depth 3m.

**PRL-710. Gerwa well, Middle Paleolithic deposit 26,090 <sup>+ 800</sup> <sub>- 720</sub>**

Calcium carbonate cement from Gerwa well (24° 33' N, 82° 17' E), Dist Sidhi, well sec, depth 10.5m; subm by G R Sharma, Allahabad Univ; submitter's Sample AU/Sidhi-S/16 B-1.

**PRL-907. Kouvakhoh, Microlithic(?) deposit 1040 ± 130**

Soil from Kouvakhoh (24° 28-30' N, 83° 4-11' E), Dist Mirzapur, Layer 1, depth 0.4m; subm by S Rai, Dept Ancient Indian Hist Archaeol, Banaras Hind Univ; submitter's Sample I.

**Khetri series, Rajasthan**

Khetri (28° 58' N, 75° 16' 10" E), Dist Jhunjhunu; subm by K K Tewari, Hind Copper Ltd, Khetrinagar. *Comment:* samples found close to ancient mining area and were dated to study ancient mining activity in area.

**PRL-684. Ancient copper working** **Modern**

Dry wood from Khetri copper complex.

**PRL-685. Ancient copper working** **Modern**

Dry wood from Khetri copper complex.

**PRL-549. Kumbharia, old copper working** **670 ± 110**

Charcoal from ancient working at Kumbharia (24° 20' N, 72° 51' E), Dist Banaskantha; subm by C A Sastry, GSI, Calcutta, submitter's Sample 8. *Comment:* dates mining activity at Ambaji.

**Mahagara series, Uttar Pradesh**

Mahagara (24° 54' 50" N, 82° 3' 20" E), Dist Allahabad, subm by G R Sharma, Allahabad Univ, Allahabad. *Comment:* samples date Upper Paleolithic culture in area.

**PRL-602. Upper Paleolithic culture** **10,980 ± 190**

Shell, Loc XXX-XXXVI, Tr L/6, Layer Upper Level cemented by Gravel III, depth 0.17 to 0.33m; submitter's Sample AU/ALLD/MGR-78/5.

**PRL-603. Upper Paleolithic culture** **13,740 + 400  
- 380**

Shell, Loc XXX-XXXVI, Tr L/6, Layer Upper Level cemented by Gravel III, depth 0.73 to 1.3m; submitter's Sample AU/ALLD/MGR-78/6.

**PRL-538. Moirang, grave deposit** **750 ± 130**

Wood from Moirang (24° 3' N, 74° 5' E), Dist Central Manipur, depth 1.5m; subm by K Singh, Antiquities Unit, Imphal. *Comment:* sample from coffin containing bronze artifacts.

**PRL-609. Nirgudsar, Middle Paleolithic culture** **>31,000**

Carbonized wood from Nirgudsar (18° 31' 30" N, 74° 22' 30" E), Dist Poona, depth 6m; subm by S N Rajaguru, Deccan Coll, Poona.

**Oriyo Timbo series, Gujarat**

Oriyo Timbo (21° 54' N, 71° 32' E), Dist Bhavnagar; subm by M H Ravel, Gujarat State Dept Archaeol and G L Posschl, Univ Mus, Univ Pennsylvania, Philadelphia.

**PRL-876. Lustrous Red Ware culture (Rangpur III)** **4080 ± 160**

Charcoal, Loc SE Qd, Tr F'2, Layer 3, depth 0.35m; submitter's Sample 6096.

**PRL-886. Lustrous Red Ware (Rangpur III) culture 4160 ± 170**

Charcoal, Loc NW Qd, Tr G'3, Layer 3, depth 0.85m; submitter's Sample 5045.

**PRL-889 + 888. Microlithic culture 4720 ± 160**

Charcoal, Loc SE Qd, Tr F'3, Layer 5, depth 1.1m; submitter's Sample 10043.

**Ramapuram series, Andhra Pradesh**

Ramapuram (15° 05' N, 78° 05' E), Dist Kurnool, subm by B Narasimhaiah, Archaeol Survey India, Nagpur. *Comment:* samples date Chalcolithic settlement pattern in region.

**PRL-761. Chalcolithic culture(?) 690 ± 100**

Charcoal, Loc Qd 1, Tr XA, hearth sealed by Layer 2, depth 0.45 to 0.55m; submitter's Sample CS-17.

**PRL-762. Chalcolithic culture 3810 ± 110**

Charcoal, Loc Qd III, Tr XB, Layer 5, depth 0.9m; submitter's Sample CS-15.

**PRL-768. Chalcolithic culture(?) 860 ± 130**

Charcoal, Loc Qd III, Tr XB, layer pit sealed by Layer 1, depth 0.27m; submitter's Sample CS-5.

**Singh-Bagwantpur series, Panjab**

Singh-Bagwantpur (30° 53' N, 76° 33' E), Dist Rupnagar, subm by Y D Sharma, Panjab Univ, Chandigarh.

**PRL-780. Early historic deposit 3610 ± 100**

Charcoal, Loc XI-XII, Tr 30T, Pit 4 sealed by Layer 6, depth 2.2m; submitter's Sample SBP-30-T-III. *Comment:* assoc with early historic and NBP pottery.

**PRL-782. Medieval deposit 1420 ± 100**

Charcoal, Loc V-X, Tr 30R, Pit 4 sealed by Layer 5, depth 2.1m; submitter's Sample SBP-30-R-113.

**PRL-783. Medieval deposit 1750 ± 100**

Charcoal, Loc IX-10, Tr 30R, Pit 4 sealed by Layer 5, depth 1.9m; submitter's Sample SBP-30-R-112.

**PRL-784. Medieval deposit 1740 ± 120**

Charcoal, Loc VIII-IX, Tr 30R, Pit 4 sealed by Layer 5, depth 2.32m; submitter's Sample SBP-30-R-110.

**Sringaverapura series, Uttar Pradesh**

Sringaverapura, Dist Allahabad; subm by B B Lal, Indian Inst Advanced Study, Simla.

**PRL-669. BRW deposit** **2620 ± 130**

Charcoal, Loc Tr YA 3, Qd 3, Layer 18, depth 8.47 to 8.65m; submitter's Sample 2.

**PRL-671. Red Ware deposit** **2070 ± 140**

Charcoal, Tr ZB1, Qd 2, Layer 10E, depth 4.95 to 5.05m; submitter's Sample 5.

#### **Thapli series, Uttar Pradesh**

Thapli, Dist Tehri; subm by K P Nautiyal, Garhwal Univ, Srinagar. *Comment:* samples date Painted Grey Ware culture (PGW) in Garhwal region.

**PRL-731. PGW culture** **2030 ± 140**

Charcoal, Tr TPL 1, Layer 1, 2, 3, depth 0.1 to 1m; submitter's Sample TPL-1/80.

**PRL-732. PGW culture** **2070 ± 120**

Bone collagen, Tr TPL-1, Layer 1, depth 0.3 to 0.8m.

#### **Veerapuram series, Andhra Pradesh**

Veerapuram (16° N, 78° 15' E), Dist Kurnool, subm by T V G Sastry, Birla Archaeol Cultural Research Inst, Hyderabad. *Comment:* dates Black and Red Ware and Black Ware of Megalithic period assoc with iron objects.

**PRL-725. Megalithic culture(?)** **1780 ± 140**

Charcoal, Tr B11, Layer 9, depth 1.7m.

**PRL-727. Megalithic culture** **2090 ± 140**

Charcoal, Tr B15, Layer 10, depth 2.3m.

**PRL-728. Megalithic culture** **2870 ± 140**

Charcoal Tr C13, Layer 13, depth 3.04m.

**PRL-729. Megalithic culture** **2830 ± 140**

Charcoal, Tr B14, Layer 14, depth 3.1m.

**PRL-730. Megalithic culture** **3150 ± 140**

Charcoal, Tr B14, Layer 15, depth 3.4m.

**PRL-932. Zawar, ancient mining works** **2410 ± 100**

Charcoal from Zawar Mala Mine (24° 19–45' N, 73° 40' E), Dist Udai-pur; subm by V L Upadhyaya, Hind Zinc Ltd, Zawar; submitter's Sample ZM/1. *Comment:* sample dated to establish antiquity of mining activity in area.

**Rivona series**

Rivona (15° 10' N, 74° 5' E), Dist Goa; subm by V T Gune, Panaji. *Comment:* samples date monastery and Buddha image.

**PRL-545. Historic deposit** **290 ± 130**

Charcoal, Tr C, Loc SN-0.2m, WE 4.25m, Layer 2, depth 0.85m; submitter's Sample 7.

**PRL-546. Historic deposit** **Modern**

Charcoal, Tr C, SN-0.56m, WE-0.3m, Layer 2, depth 0.9m; submitter's Sample 8.

**PRL-548. Historic deposit** **180 ± 130**

Charcoal, Tr C, extension SN 2.15m, WE 0.35m, Layer 2, depth 0.8m; submitter's Sample 10.

*Pakistan***Rehman Dheri series**

Rehman Dheri, Dist Dik; subm by Chairman, Univ Peshawar, Peshawar. *Comment:* samples were measured to date Kot Dijian culture.

**PRL-673. Kot Dijian culture** **3900 ± 130**

Charcoal, Tr BIV/9, Layer 5, depth 1.2m.

**PRL-674. Early Kot Dijian** **4000 ± 150**

Charcoal, Tr BIV/9, Layer 10, depth 1.8m.

**PRL-675. Pre-Kot Dijian** **4400 ± 110**

Charcoal, Tr BIV/9, Layer 15, depth 3.3m.

**PRL-676. Pre-Kot Dijian** **4520 ± 110**

**PRL-679. Kot Dijian(?)** **>31,000**

Charcoal, Tr BIV/4, Layer 7, depth 1.5m.

*Sri Lanka***Batadomba Cave series**

Batadomba (8° N, 82° E), Dist Ratnapura; subm by S U Deraniyagala, Archaeol Dept, Colombo. *Comment:* samples date Upper Paleolithic and Mesolithic cultures assoc with non-geometric microlithic artifacts.

**PRL-855. Late Upper Paleolithic deposit** **11,200 <sup>+ 330</sup>  
- 320**

Charcoal, Tr 16K, Layer 4A, depth 6m; submitter's Sample BD 16K-4A.

**PRL-856. Late Upper Paleolithic deposit** **12,770** <sup>+ 470</sup>  
– 450

Charcoal, Tr 16K, Layer 4B, depth 1m; submitter's Sample Bd 16K-4B.

**PRL-857. Late Upper Paleolithic deposit** **27,700** <sup>+ 2090</sup>  
– 1660

Charcoal, Tr 16, Layer 7C, depth 2.8m; submitter's Sample Bd 16-7C.

**PRL-858. Late Upper Paleolithic deposit** **15,390** <sup>+ 610</sup>  
– 570

Charcoal, Tr 16H, Layer 6B, burial depth 2.15m; submitter's Sample Bd 16H-6B.

**PRL-920. Late Upper Paleolithic deposit** **20,150** <sup>+ 740</sup>  
– 680

Charcoal, Tr 17, Layer 7B, depth 2.4m; submitter's Sample Bd 17-7B.

**PRL-861. Beli Cave, Paleolithic deposit** **11,910** <sup>+ 430</sup>  
– 410

Charcoal from Beli Cave (8° N, 82° E), Dist Kitulgala, 10G, Layer 4, depth 0.4m; submitter's Sample KB 10G-4; subm by S U Deraniyagala. *Comment:* sample dates Late Upper Paleolithic culture and possibly domestication of cereals.

### *Iran*

#### **Tepe Gaz Tavileh series**

Tepe Gaz Tavileh: R37 (28° 20' N, 56° 35' E), Dist Ferman, Balt Baksh Orzuyeh; subm by M Prickett, Harvard Univ, Cambridge, Massachusetts. *Comment:* samples date Yahya Pd VII—earliest stage of Neolithic settled village agric communities identified so far in SE Iran.

**PRL-744. Yahya Pd VII** **6670** ± 150

Charcoal, Loc TT1, Rm 1, Layer 4.3, depth 0.96 to 1m; submitter's Sample 2.

**PRL-748. Yahya Pd VII** **6640** ± 180

Charcoal, main sec, Layer 14, depth 3.4 to 3.5m; submitter's Sample 6.

**PRL-749. Yahya Pd VII** **6650** ± 180

Wood twig charcoal from main sec, Layer 19.1, depth 4.44m; submitter's Sample 7.



## GEOLOGIC SAMPLES

**Arabian Ocean sediment series**

Box cores of calcareous sediments from Arabian Sea (8°–21° N, 67°–71° E), subm by N Hussain and B L K Somayajulu, PRL, Ahmedabad. *Comment*: samples measured to study sedimentation rate (table 1).

**PRL-721. Arctic Ocean, USA 4370 ± 160**

Organic sediment, Dist Seinpoon Lagoon, Alaska, Core V-49, depth 1.45 to 1.5m; subm by B L K Somayajulu. *Comment*: samples dated for accumulation rate studies.

**Atlantic Ocean sedimentation rate series**

Atlantic Ocean core of calcareous sediments (32° N, 42° W) 3500m water depth; subm by B L K Somayajulu.

**PRL-741. Core sediment 7470 ± 160**

Calcium carbonate, depth 0.08 to 0.1m; submitter's Sample INMD Box 50, 10th sample.

**PRL-742. Core sediment 16,910 + 710  
– 660**

Calcium carbonate, depth 0.17 to 0.2m; submitter's Sample INMD Box 50, 14th sample.

**PRL-743. Core sediment 24,110 + 1600  
– 1300**

Calcium carbonate, depth 0.24 to 0.29m; submitter's Sample INMD Box 50, 16th sample.

*India***Awai series, Rajasthan**

Calcium carbonate, 1km upstream from village Awai (27° 30–35' N, 71° 50–55' E), Dist Jaisalmer; subm by R P Dhir, Central Arid Zone Research Inst, Jodhpur. *Comment*: samples dated to study land formation processes in area (table 2).

**PRL-921. Bandapara, valley-fill sediment 3520 ± 100**

Wood fragments from pit sec near Bandapara (25° 57' N, 91° 6' E), Dist Kamrup, depth 1m; subm by K K Sinha, Geol Survey India, Shillong; submitter's Sample GSI/LB/7/82. *Comment*: sample dated to study Quaternary strat of Lower Brahmaputra valley.

**Barasenchal accumulation rate series, West Bengal**

Barasenchal (26° 31' and 27° 13' N, 87° 59' and 88° 53' E), Dist Darjeeling; subm by B B Mukherjee, Bose Inst, Calcutta.

TABLE I  
Arabian Ocean sediments

Sample no.	Core no.	Core depth (mm)	<sup>14</sup> C date
PRL-550	65-1	100 to 200	5030 ± 170
-551	65-2	400 to 500	4460 ± 160
-620	65-H	850 to 950	5880 ± 130
-552	54-1	100 to 200	4140 ± 210
-553	54-2	400 to 500	7120 ± 220
-621	54	800 to 900	29,000 + 2300 - 1800
-554	46-1	100 to 200	5280 ± 180
-555	46-2	400 to 500	6840 ± 190
-662	46	700 to 800	9320 ± 140
-556	52-1	100 to 200	7960 ± 200
-557	52-2	300 to 400	11,970 + 380 - 360
-558	52-3	500 to 600	16,970 + 770 - 700
-619	52	800 to 900	12,550 + 430 - 410
-718	RC-18-130	330 to 335	16,970 + 650 - 600
-737	RC-18-130	450 to 490	22,050 + 1200 - 1100
-719	RC-17-120	1900 to 1970	27,130 + 2000 - 1600
-720	RC-17-120	20 to 50	3830 ± 120
-733	RC-17-120	120 to 150	9110 ± 170
-734	RC-17-120	210 to 250	12,500 + 440 - 420
-735	RC-17-119	60 to 100	9820 ± 230
-736	RC-17-119	250 to 290	10,640 + 330 - 310
-738	RC-17-119	160 to 190	9530 ± 210
-739	RC-17-117	50 to 70	3180 ± 170
-740	RC-17-117	210 to 230	10,520 + 360 - 340
-752	RC-17-117	360 to 390	9460 ± 210
-753	RC-17-125	450 to 470	>31,000
-754	RC-17-125	100 to 120	10,140 + 350 - 390
-755	RC-17-125	0 to 20	3720 ± 150
-757	RC-17-121	70 to 90	10,230 ± 170

TABLE 2  
Awai, Rajasthan, calcium carbonates

Sample no.	Submitter's sample no.	Depth (m)	<sup>14</sup> C date
PRL-890	Nachna-12/3	1.25 to 1.34	19,260 + 940 - 840
-891	Nachna-12/5	1.8 to 2	>31,000
-892	Nachna-12/7	2.3 to 2.4	>31,000
-893	Nachna-12/9	2.5 to 2.6	>31,000
-894	Nachna-13/2	3	11,420 + 440 - 420
-895	Nachna-13/3	3.37	12,730 + 480 - 460
-896	Nachna-13/4	3.7	24,450 + 1800 - 1500
-897	Nachna-13/5	4.3	25,430 + 1900 - 1500
-898	Nachna-13/6	4.6	29,010 + 3200 - 2300
-899	Nachna-15	4.5	>31,000

**PRL-673. Peat** **740 ± 100**

Peat from 1m depth.

**PRL-638. Peat** **550 ± 130**

Peat from 2m depth.

**PRL-639. Peat** **1720 ± 100**

Peat from 2.5m depth.

**PRL-640. Peat** **3180 ± 150**

Peat from 3m depth.

#### **Budha Pushkar series, Rajasthan**

Budha Pushkar (26° 30' N, 74° 36' E), ca 15km NW of Ajmer; subm by R V Krishnamurthy, PRL, Ahmedabad. *Comment:* samples dated to study paleoclimate of region (Krishnamurthy *et al*, 1981, p 155–160).

**PRL-562. Root Cast formation** **4890 ± 170**

Root cast (calcium carbonate) from surface; submitter's Sample C-32a.

**PRL-563. Root Cast formation** **6300 ± 130**

Root cast (calcium carbonate), depth 0.2m; submitter's Sample C-33.

**PRL-564. Root Cast formation** **6020 ± 170**

Root cast (calcium carbonate), depth 1m; submitter's Sample C-33.

**PRL-565. Root Cast formation** **3420 ± 220**

Root cast (calcium carbonate), depth 1 to 1.5m; submitter's Sample C-34.

**PRL-566. Root Cast formation** **3600 ± 160**

Root cast (calcium carbonate), depth 1.5 to 1.75m; submitter's Sample C-35.

**PRL-567. Root Cast formation** **2900 ± 100**

Root cast (calcium carbonate), depth 1.75 to 2m; submitter's Sample C-36.

**PRL-568. Root Cast formation** **4420 ± 140**

Root cast (calcium carbonate), depth 2.25 to 2.75m; submitter's Sample C-37.

**PRL-569. Root Cast formation** **3780 ± 150**

Root cast (calcium carbonate), depth 1.5 to 2.5m; submitter's Sample C-38.

**PRL-570. Root Cast formation** **4160 ± 110**

Root cast (calcium carbonate), depth 1.5m; submitter's Sample C-39.

#### **Continental shelf series, Gujarat**

Limestone samples dredged from Gulf of Kutch Continental Shelf, Gujarat; subm by R R Nair, Natl Inst Oceanog, Panaji, Goa. *Comment:* all samples are 95–97% aragonite. Samples were measured for geol mapping of continental shelf and Quaternary sea-level studies.

**PRL-485. Limestone** **12,150 + 430  
– 410**

Limestone from Gulf of Kutch (20° 20' N, 70° 18' E), water depth 78m; submitter's Sample G/2/29.

**PRL-486. Algal limestone** **14,320 + 590  
– 550**

Algal limestone from Gulf of Kutch (21° 03' N, 69° 01' E), water depth 173m; submitter's Sample G/2/30.

**PRL-487. Coral** **7490 ± 200**

Coral from Gulf of Kutch (22° 40.5' N, 69° 18.6' E), water depth 25m; submitter's Sample G/2/45(a).

**PRL-488. Limestone** **4290 ± 160**

Limestone from Gulf of Kutch (22° 40.5' N, 69° 18.6' E), water depth 25m; submitter's Sample G/2/45(b).

**PRL-489. Limestone** **13,460 + 520  
– 480**

Limestone from Gulf of Kutch (22° 38.3' N, 69° 27.2' E), water depth 46m; submitter's Sample G/2/47(a).

**PRL-490. Limestone 9220 ± 210**

Limestone from Gulf of Kutch (22° 26.9' N, 67° 57.5' E), water depth 80m; submitter's Sample G/2/61.

**Didwana salt lake series, Rajasthan**

Didwana salt lake (27° 20' N, 74° 35' E), Dist Nagaur; subm by R.J Wasson, Australian Natl Univ (644 to 651) and R Hema, Deccan Coll, Pune (911 to 913). *Comment:* samples dated to study palco-lake levels and paleo-climate.

**PRL-644. Lacustrine deposit 4060 ± 130**

Organic matter, Tr DIA1 well, layer top of Fm III, depth 1.12 to 1.17m.

**PRL-645. Lacustrine deposit 5990 ± 190**

Organic matter, Tr DIA1 well, layer middle of Fm III, depth 2.07 to 2.12m.

**PRL-646. Lacustrine deposit 5840 ± 170**

Organic matter, Tr DIA1 well, layer bottom of Fm III, depth 2.88 to 2.93m.

**PRL-647. Lacustrine deposit 6690 ± 250**

Organic matter, Tr DIA1 well, layer top of Fm V, depth 3.42 to 3.47m.

**PRL-648. Lacustrine deposit 7250 ± 150**

Organic matter, Tr DIA1 well, layer bottom of Fm V, depth 3.55 to 3.6m.

**PRL-649. Lacustrine deposit 9110 ± 210**

Organic matter, Tr DIA1 well, layer top of Fm VII, depth 4.15 to 4.18m.

**PRL-650. Lacustrine deposit 12,450 + 360  
- 340**

Organic matter, Tr DIA1 well, layer bottom of Fm VII, depth 4.5 to 4.55m.

**Didwana carbonate series, Rajasthan****PRL-651. Soil carbonate 24,010 + 1200  
- 1100**

Fine carbonate from railway cutting, depth 9 to 9.2m.

**PRL-911. Soil carbonate 26,210 + 2200  
- 1700**

Soil carbonate nodules from Site 16R, Tr A-10, Layer 1, depth 5.5 to 5.55m; submitter's Sample 1.

**PRL-912. Soil carbonate** **19,940** + 930  
- 830

Soil carbonate nodules from Site RCD, Layer 1, depth 0.46 to 0.66m; submitter's Sample 3.

**PRL-913. Soil carbonate** **15,340** + 450  
- 430

Soil carbonate nodules from Site RCD, depth 0.98 to 1m; submitter's Sample 4.

#### **Great Rann series, Gujarat**

Shells from Great Rann (24° 01' 30" N, 69° 41' 5" E), Dist Kutch; subm by A K Das Gupta, Geol Survey India, Jaipur.

**PRL-475. Shells from surface** **1360** ± 140

Submitter's Sample S/13.

**PRL-476. Shells from bore hole** **3860** ± 180

Depth 1.5m; submitter's Sample R/8/2.

**PRL-925. Jira, Terrace deposit** **590** ± 110

Charcoal from pit sec near Jira (25° 57' N, 90° 38' E), Dist Golpara, depth 3m; subm by K K Sinha, Geol Survey India, Shillong, submitter's Sample GSI/LB/9/82. *Comment:* sample dated to study Quaternary strat of lower Brahmaputra basin.

#### **Laccadives storm beach series**

Storm beach at Chetlat (11° 41' N, 72° 11' E); subm by H N Siddiqui, Natl Inst Oceanog, Panaji, Goa. *Comment:* sample studied to date storm beach.

**PRL-478. Dead coral** **550** ± 130

Dead coral from N end of Chetlat; submitter's Sample CHT-15.

**PRL-480. Dead coral** **220** ± 190

Dead coral from S end of Chetlat I; submitter's Sample CHT-27.

**PRL-482. Dead coral** **150** ± 120

Dead coral from N end of Bitra I; submitter's Sample BR-8.

#### **Lopchu series, West Bengal**

Lopchu (26° 31' and 27° 13' N, 87° 59' and 88° 53' E), Dist Darjeeling; subm by B B Mukherjee, Bose Inst, Calcutta. *Comment:* samples dated to study sedimentation rate in area.

**PRL-641. Peat** **360** ± 110

Peat from 1m depth.

**PRL-642. Peat** **1650 ± 210**

Peat from 2m depth.

**Riasa cave series, Jammu and Kashmir**

Stalactite from Riasa cave in Jammu and Kashmir; subm by K K Sharma, Wadia Inst Himalayan Geol, Dehradun. *Comment:* samples dated to study growth rate of stalactite.

**PRL-612. Stalactite** **900 ± 90**

Stalactite, submitter's Sample IA(1).

**PRL-613. Stalactite** **670 ± 100**

Stalactite, submitter's Sample IA(2).

**PRL-614. Stalactite** **750 ± 140**

Stalactite, submitter's Sample IA(3).

**PRL-615. Stalactite** **Modern**

Stalactite, submitter's Sample IA(4).

**PRL-908. Son at Chopan, terrace deposit** **>31,000**

Shells from left bank fm of Son at Chopan (24° 26–30' N, 83° 4–11' E), Dist Mirzapur, depth 5m; submitter's Sample II. *Comment:* sample dated for age of deposit.

**West coast beach series, Maharashtra**

Calcareous mud from coast beaches; subm by K S Powar, Inst Petrol Exploration, Dehradun. *Comment:* samples dated to study geomorphic evolution of Indian coast.

**PRL-604. Thal Beach** **3270 ± 110**

Shells, 2m alt MSL; submitter's Sample 1/PN5.

**PRL-605. Akshi Nagaon Beach** **3080 ± 110**

Shells, 2.5m alt MSL; Submitter's Sample 2/PN5.

**PRL-606. Borlai Beach** **1970 ± 100**

Shells, 2m alt MSL; submitter's Sample 3/PN5.

**PRL-607. Kasid Beach** **1880 ± 140**

Shells, 3m alt MSL; submitter's Sample 4/PN5.

**PRL-608. Agar Panchaitan Beach** **3190 ± 150**

Shells, 2.5m alt MSL; submitter's Sample 5/PN5.

*Scotland***Lake Fyne sediment rate series**

Lake sediments from Lake Fyne (56° 15' N, 5° 15' W); subm by B L K Somayajulu, PRL, Ahmedabad.

**PRL-501. Lake sediment** **6020 ± 200**

Carbonate from lake sediment, depth 20 to 25cm; submitter's Sample P6 20-25.

**PRL-503. Lake sediment** **12,360 <sup>+ 320</sup><sub>- 310</sub>**

Carbonate from lake sediment, depth 55 to 60cm; submitter's Sample P6 55-60.

**PRL-506. Lake sediment** **>31,000**

Carbonate from lake sediment, depth 65 to 80cm; submitter's Sample P6 65-80.

## REFERENCES

- Agrawal, D P, Gupta S K, and Kusumgar, Sheela, 1971, Tata Institute date list IX: Radiocarbon, v 13, p 442-449.
- Krishnamurthy, R V, Agrawal, D P, Misra, V N, and Rajaguru, S N, 1981, Palaeoclimatic inferences from the behaviour of radiocarbon dates of carbonates from sand dunes of Rajasthan: Indian Acad Sci Proc, v 90, no. 2, p 155-160.