

**RIKEN NATURAL RADIOCARBON MEASUREMENTS I**

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Natural C<sup>14</sup> measurements at the Institute of Physical and Chemical Research (RIKEN) became routine in 1962. The counters presently used are made of stainless steel with a volume of about 2.7 L. They are surrounded by 2.5 cm of pure lead, a ring of 22 propane gas-flow anticoincidence counters, about 10 cm of boric acid and 20 cm of iron. When filled with dead CO<sub>2</sub> up to 2 atm, they gave a background counting rate of about 9 cpm (Hamada, 1960).

In this article, results obtained for geologic and archaeological samples since 1962 are described. Dates have been calculated on the basis of the C<sup>14</sup> half-life of 5568 yr, and 95% of NBS oxalic acid as modern standard. Correction for isotopic fractionation was not applied.

## SAMPLE DESCRIPTIONS

## I. GEOLOGIC SAMPLES

**Daisen series**

Carbonized wood and charcoal samples found at various sites around the volcano Mt. Daisen. Coll. and subm. 1961 by Tsurunaga Kimachi.

**N-93. Katori****17,710 ± 750**  
**15,760 B.C.**

Charred wood of a coniferous tree from Katori, Nawa-machi, Saihaku-gun, Tottori Pref., N side of Mt. Daisen (35° 26' N Lat, 133° 32' E Long), coll. from top of gravel layer (A layer, Misen series), 0.7 m below ground surface, overlain by volcanic sand.

**N-95. Shintakata****> 36,800**

Charred wood of a latifoliate tree from Shintakata, Nawa-machi, Saihaku-gun, Tottori Pref., N side of Mt. Daisen (35° 27' N Lat, 133° 31' E Long), coll. from bottom of gravel layer (E layer, Misen series), 3 m below ground surface, overlain by clayey sand.

**N-96-1. Shuki 1****> 36,800**

Charcoal from Shuki, Kurayoshi City, Tottori Pref., E side of Mt. Daisen (35° 25' N Lat, 133° 48' E Long), coll. from charcoal layer 6.0 m below ground surface, overlain by pumice and gravel.

**N-96-2. Shuki 2****21,470 ± 1130**  
**19,520 B.C.**

Charred wood (*Fraxinus verecunda?*) from the layer mentioned above.

**N-97-1. Ohara 1****22,720 ± 800**  
**20,770 B.C.**

Charcoal from Ohara, Kishimoto-machi, Saihaku-gun, Tottori Pref., W

side of Mt. Daisen (35° 23' N Lat, 133° 28' E Long), coll. from charcoal layer, 1 m thick, 25 m below ground surface, overlain by andesite gravel layer.

**N-97-2. Ohara 2****22,970 ± 800****21,020 B.C.**

Charred wood from the layer mentioned above.

*Comment* (T.K.): samples date the last stages of a major eruption of Mt. Daisen. Dates of N-95 and N-93 are stratigraphically reasonable. N-95 is from same layer as Gak-225 (Gakushuin II). Much younger age previously found (Gak-163, Gakushuin I) is supposed due to a landslip, not to an eruption. Discrepancy between dates of N-96-1 and N-96-2 is unreasonably large.

## II. ARCHAEOLOGIC SAMPLES

**Toro and Utoh series**

Wood, mostly worked, from dwelling sites at Toro (34° 57' N Lat, 138° 25' E Long) and Utoh (34° 58' N Lat, 138° 24' E Long), Shizuoka City, Shizuoka Pref., excavated during 1945 to 1950. Samples were found 1 to 2 m below ground surface, in alluvial sand and clay at ancient bed of Abe River and associated with Yayoi pottery. General description about Toro remains is given by Japan Archaeol. Assoc. (1954). Coll. by K. Mochizuki; subm. 1962 by O. Yamada.

**N-70. Toro 1****1950 ± 130****A.D. 0**

Part of wooden bowl.

**N-71. Toro 2****1940 ± 120****A.D. 10**

Wooden warp beam.

**N-73. Toro 3****1940 ± 100****A.D. 10**

Part of wooden construction.

**N-76. Utoh 1****2280 ± 120****330 B.C.**

Wooden stake.

**N-77. Utoh 2****1990 ± 120****40 B.C.**

Unfinished wooden farming tool.

**N-79. Utoh 3****2110 ± 120****160 B.C.**

Wooden base plate.

**N-81-2. Utoh 4****1970 ± 120****20 B.C.**

Wooden rod for unknown use.

**N-52. Kuriu****1490 ± 160****A.D. 460**

Charcoal from a ceramic kiln of historic age at Kuriu, Mashiko-machi, Haga-gun, Tochigi Pref. (36° 26' N Lat, 140° 8' E Long). Kiln used for firing

Sue pottery and roof-tiles. Excavated 1954 by H. Takiguchi and K. Ogawa of Waseda Univ. Coll. and subm. 1959 by N. Watanabe.

**N-53. Nishippara** **2700 ± 170**  
**750 B.C.**

Charcoal from a dwelling site of Jomon period at Owasu, Nasu-machi, Nasu-gun, Tochigi Pref. (36° 57' N Lat, 140° 10' E Long). Excavated 1954 by R. Watanabe and S. Tatsumi of Gunma Univ. Material found together with pottery vessels, hearths, and stones in black soil layer at a level of 30 to 40 cm below ground surface. Pottery of Obora C-2 type. Coll. and subm. 1959 by N. Watanabe.

**N-57. Ochiai** **1220 ± 130**  
**A.D. 730**

Charred timber of a house of Yayoi period at Shimo-Ochiai, Shinjuku-ku, Tokyo (35° 43' N Lat, 139° 41' E Long). Excavated 1955 by H. Takiguchi and M. Nishimura of Waseda Univ. Charred timbers found on floor of dwelling pit No. 11. Pottery of Maenochi type. Coll. and subm. 1959 by N. Watanabe. *Comment* (N.W.): date is younger than expectation.

**N-59. Horinouchi** **3780 ± 150**  
**1830 B.C.**

Charred timber of a burnt house at Horinouchi shell mound, type site of Horinouchi type of Jomon pottery, located at Kokubun-machi, Ichikawa City, Chiba Pref. (35° 44' N Lat, 139° 55' E Long). Material from one of two dwelling pits unearthed 1954 by M. Nishimura of Waseda Univ. Pottery of Horinouchi I type. Coll. by M. Nishimura; subm. 1959 by N. Watanabe.

**N-61. Yoto** **1430 ± 150**  
**A.D. 520**

Charcoal from a dwelling pit of Yayoi period at Yoto, Yorii-machi, Osato-gun, Saitama Pref. (36° 10' N Lat, 139° 12' E Long). Excavated 1958 by T. Sono of Univ. of Tokyo. Material obtained from dwelling pit No. 7. Pottery of Miyanodai type. Coll. and subm. 1959 by N. Watanabe.

**N-68. Goryo** **1890 ± 120**  
**A.D. 60**

Charcoal from a dwelling pit of Yayoi period at Goryo, Higashi-Matsuyama City, Saitama Pref. (36° 2' N Lat, 139° 24' E Long). Excavated 1957 by S. Sugihara of Meiji Univ. and S. Wajima of Research Inst. of Nat. Resources. Material coll. from dwelling pit No. 15. Pottery of Goryo type. Coll. and subm. 1959 by N. Watanabe. *Comment* (N.W.): date is older than expectation.

**N-91. Yarimizu** **178 ± 100**  
**A.D. 1772**

Charred wood from a kiln-like structure of unknown use at Yarimizu, Yugi-mura, Minami-Tama-gun, Tokyo (35° 37' N Lat, 139° 21' E Long). Excavated 1958 by I. Kono of Kunitachi Music College. Charred timbers found lying parallel to each other on the base of a rectangular pit, measuring 1.5 m × 0.5 m, and 40 cm deep. No potsherds in the pit. Coll. and subm. 1959 by N. Watanabe.

**N-94. Ishigami****3000 ± 120****1050 B.C.**

Charcoal from a shell layer of shell mound at Ishigami, Kawaguchi City, Saitama Pref. (35° 51' N Lat, 139° 44' E Long). Excavated 1954 by T. Kubo of Rissho Univ. Jomon pottery from the shell layer of Angyo II type. Coll. and subm. 1959 by N. Watanabe.

## REFERENCES

Date lists:

Gakushuin I Kigoshi, Tomikura and Endo, 1962

Gakushuin II Kigoshi and Endo, 1963

Hamada, T., 1960, Study of the radiocarbon dating I: Rikagaku Kenkyusho Hokoku, v. 36, p. 635.

Japan Archaeological Association, ed., 1954, Toro: Mainichi Press.