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UNIVERSITY OF TOKYO RADIOCARBON MEASUREMENTS IV

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The C^{14} measurements reported here were made in this laboratory between January 1969 and July 1970. Details of our apparatus, sample preparation, and measuring procedure were described in R., 1968, v. 10, p. 144-148. A change has been made since January 1969: strontium carbonate is reduced to strontium carbide with a mixture of 60g of $SrCO_3$ to 40g of Mg-powder (<200 mesh) instead of 60g of $SrCO_3$ to 50g of Mg-powder (<50 mesh).

Counting was made on acetylene gas and was repeated at least twice on the same gas for periods of more than 1000 min. All age calculations are based on a C^{14} half-life of 5570 and 0.95 of the activity of the NBS oxalic acid standard. Ages are quoted in years before 1950. The standard deviation quoted includes only 1σ of the counting statistics of background, sample, and standard counts.

Sample descriptions have been prepared in collaboration with collectors and submitters.

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SAMPLE DESCRIPTIONS

I. GEOLOGIC SAMPLES

Japan

Hikichi sand dune series

Humic soil from sand layer in sand dune, ca. 10 m below surface (alt ca. 20 m), Hikichi, Fujisawa city, Kanagawa Pref. (35° 21′ N Lat, 139° 28′ E Long). Coll. 1968 by K. Endo and subm. 1968 by S. Iwatsuka, Univ. of Tokyo.

TK-49a. Humic soil — **3040 ± 120** / **1090 B.C.**

Base treatment was omitted.

TK-49b. Humic acid — **2560 ± 190** / **610 B.C.**

KOH-leached portion from the same sample as TK-49a. Sample

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mixed with dead carbon for counting. *Comment* (S.I.): date of charcoal from sand layer thought to be same horizon is 3000 ± 180 yr B.P. (TK-48, R., 1969, v. 11, p. 511).

27,100 ± 410
TK-58. Ikenoura **25,150 B.C.**

Wood from fan, depth ca. 20 m, Ikenoura, Mima-cho, Mima-gun, Tokushima Pref. (34° 03′ 48″ N Lat, 134° 03′ 59″ E Long). This fan surface is dislocated by Mino fault along Median Tectonic Line. Coll. 1968 by A. Okada and subm. by S. Iwatsuka. *Comment* (A.O.): this surface is geomorphically correlated with terrace in vicinity of Awa-Ikeda. Wood from terrace sediments dislocated by Ikeda fault along Median Tectonic Line was dated 27,700 ± 600 (TK-39, R., 1969, v. 11, p. 510).

Fuji Volcano series

Samples from outer part of wood stem from Aokigahara lava flow at NW foot of Mt. Fuji, Narusawa-mura, Yamanashi Pref. (35° 28′ N Lat, 138° 42′ E Long). Coll. 1968 by H. Tsuya *et al.* and subm. 1968 by N. Saito, Univ. of Tokyo. *Comment* (N.S.): flow was interpreted to have erupted in 865 A.D.

910 ± 60
TK-62a. Wood **A.D. 1040**

1040 ± 80
TK-62b. Wood **A.D. 910**

Different part of same sample (TK-62a).

8680 ± 190
TK-65. Chikura-cho, Teraniwa **6730 B.C.**

Wood from marine-terrace sediments at Teraniwa, Chikura-cho, Awa-gun, Chiba Pref. (34° 57′ 30″ N Lat, 139° 57′ 30″ E Long). Coll. 1968 by T. Yoshikawa and subm. 1968 by S. Iwatsuka. *Comment* (T.Y.): sample coll. from thin gravel intercalated in marine silt, of which the marine terraces ca. +20 m are composed. Gravel is ca. 10 m below surface. These terraces were formed by eustatic rise of sea level and crustal uplift during Holocene. For three relevant dates see TK-3, TK-7, and TK-8 (R., 1968, v. 10, p. 144-148).

33,400 ± 1200
TK-66. Lake Shiobara-ko **31,450 B.C.**

Driftwood from upper part of lake sediments, Shiobara-machi, Shioya-gun, Tochigi Pref. (37° 0′ N Lat, 139° 50′ E Long). Coll. 1968 by S. Yamada and subm. 1968 by F. Takai, Univ. of Tokyo. *Comment* (F.T.): Shiobara lake sediments (Akutsu, 1964) have been considered Upper Pleistocene in broad sense, containing well-preserved broad leaf and aquatic plant fossils which indicate cool, moist climate.

Boso Alluvial Terrace deposits series

TK-67. Tomiura-cho, Tatara **4070 ± 100**
2120 B.C.

Shells and barnacles from elevated sea cave fringed by abrasion platform, at +13.5 m, E of Daibusaki, Tatara, Tomiura-cho, Awa-gun, Chiba Pref. (35° 02′ N Lat, 139° 50′ E Long). Coll. 1968 by N. Yonekura and subm. 1969 by S. Iwatsuka.

TK-68. Kamogawa-cho, Kaisuka **6880 ± 120**
4930 B.C.

Shells from alluvial terrace deposits, ca. 4.5 m below surface (alt 10 m), near mouth of Kamo R., Kaisuka, Kamogawa-cho, Awa-gun, Chiba Pref. (35° 05′ N Lat, 140° 05′ E Long). Coll. 1968 by N. Yonekura and subm. 1969 by S. Iwatsuka.

TK-69. Misaki-cho, Shinoki **5910 ± 100**
3960 B.C.

Shells from alluvial terrace sediments, 120 cm below surface (alt 10 m), lower part of Isumi R., Shīnoki, Misaki-cho, Isumi-gun, Chiba Pref. (35° 19′ N Lat, 140° 23′ E Long). Coll. 1968 by N. Yonekura and subm. 1969 by S. Iwatsuka. *Comment* (N.Y.): age of fill-top surfaces of dated layers (TK-68, 69) correspond to post-glacial climatic optimum. Inferences: 5500 ± 7500 yr B.P.

Ito pyroclastic flow deposit series

Samples are from Ito pyroclastic flow which determine age of formation of Aira caldera in Kyushu.

TK-75. Hase **38,900 ± 2100**
36,950 B.C.

Charcoal from Ito pyroclastic flow, Hase, Kokubu city, Kagoshima Pref. (31° 42′ 30″ N Lat, 130° 52′ 05″ E Long). Coll. and subm. 1969 by S. Aramaki, Univ. of Tokyo.

TK-77. Kibayashiki **26,800 ± 500**
24,850 B.C.

Charcoal from Ito pyroclastic flow, Kibayashiki, N of Suki, Miyazaki Pref. (32° 06′ 30″ N Lat, 131° 04′ 0″ E Long). Coll. and subm. 1969 by S. Aramaki. Cf. Gak-473 and Gak-558, R., 1966, v. 8, p. 57; Gak-211, R., 1963, v. 5, p. 109. *Comment* (S.A.): TK-59, 60, TK-75, 77 (R., this issue), and Gak-473, 558 were taken from Ito pyroclastic flow (ash-flow tuffs), considered to have caused formation of the Aira caldera, which forms N part of Kagoshima Bay, S Kyushu (Aramaki and Ui, 1966). All tuffs from which charcoal samples were taken were carefully correlated by stratigraphic and petrographic methods and are believed to belong to same sheet. Large variance in ages might indicate unknown secondary effects that greatly modified apparent age.

1230 ± 80

TK-76. Kozushima **A.D. 720**

Charcoal from Mt. Tenjo pyroclastic flow, Nagahama, Kozushima, Tokyo (34° 13′ 29″ N Lat, 139° 08′ 29″ E Long). Coll. 1960 by N. Isshiki, Geol. Survey of Japan, and subm. 1969 by S. Aramaki. Previous age determination of same sample gave 1260 ± 80 (Gak-477, unpub.). *Comment* (S.A.): according to Tsuya (1929), deposit was formed during eruption in A.D. 838, recorded in old documents.

27,900 ± 600

TK-79. Murota pumice flow **25,950 B.C.**

Charred wood from Murota pumice flow, which resulted directly in formation of summit caldera of Haruna Volcano, Nakamurota, Haruna-machi, Gunma-gun, Gunma Pref. (36° 23′ 28″ N Lat, 138° 51′ 06″ E Long). Coll. 1969 by O. Oshima and subm. 1969 by F. Takai. Cf. Haruna volcano series TK-31, 32 (R., 1969, v. 11, p. 510). *Comment* (F.T.): date younger than expected. Flow may be contemporaneous with or a little younger than that of TK-31.

II. ARCHAEOLOGIC SAMPLES

A. Japan

Sakaeura II series

Samples from pit houses at Sakaeura II site, Tokoro-machi, Tokoro-gun, Hokkaido (44° 07′ 31″ N Lat, 44° 01′ 21″ E Long). Pottery is late Okhotsk type. Coll. 1968 by Dept. of Archaeol., Univ. of Tokyo and subm. 1969 by T. Sekino, Univ. of Tokyo.

890 ± 100

TK-83. Pit House 11 **A.D. 1060**

Charcoal from pit house, ca. 70 cm below surface. Sample was mixed with dead carbon for counting.

960 ± 80

TK-84. Pit House 12 **A.D. 990**

Charcoal from pit house, ca. 30 cm below surface. *Comment* (T.S.): compared with TK-21 (R., 1968, v. 10, p. 146) and archaeologic point of view, true age of samples is supposedly ca. 1250 A.D. Cf. TK-2, 9 (R., 1968, v. 10, p. 147), TK-54 (R., 1969, v. 11, p. 513), TK-61 (R., this issue) and Gak-190 (R., 1963, v. 5, p. 117).

32,100 ± 1000

TK-78. Yamashita-cho Cave 1 **30,150 B.C.**

Charcoal from Layer 3 of cave at Yamashita-cho, Naha city, Okinawa (26° 11′ 30″ N Lat, 127° 40′ 30″ E Long) excavated 1968 by Research Group for Pleistocene Man in Okinawa, under N. Watanabe, Univ. of Tokyo. Layer 6 beneath Layers 3 to 5, of which Layers 3 and 5 contained charcoal, yielded human skeletons, deer bones, and antlers. Coll. 1968 and subm. 1969 by N. Watanabe. *Comment* (N.W.): human skeletons are of Pleistocene.

B. Egypt

Egyptian mummy series

Wooden coffin and hempen cloth of a mummy of a maiden in service of large temple at Thebes, Egypt, excavated 1884 and presented 1888 to Fac. of Med., Univ. of Tokyo by French Consulate at Yokohama, Japan. Archaeol. age is ca. 800 B.C. Coll. 1969 by T. Kamiya, Fac. of Med., Univ. of Tokyo, and subm. 1969 by N. Watanabe.

TK-80. Hempen cloth **2810 ± 80** / **860 B.C.**

TK-81. Wood of coffin **2670 ± 80** / **720 B.C.**

C. Peru

TK-85. Pasamayo tomb **540 ± 80** / **A.D. 1410**

Wool products with mummy in tomb, No. 15, Area 2, Pasamayo, 56 km N of Lima, Peru (11° 50′ S Lat, 77° 05′ E Long). Pottery is of Chancay Black-on-White type. Coll. 1969 by H. Vidal V., Univ. of San Marcos, Lima, and subm. 1969 by K. Terada, Univ. of Tokyo. *Comment* (K.T.): Chancay Black-on-White is placed at middle phase of Postclassic period of Peruvian archaeology, presumably 12th to 16th centuries. Date supports previous hypothesis on chronologic position of Late Chancay culture.

D. Israel

Amud Cave series

Bones from deposits in Bed B of Amud Cave, Israel (32° 52′ 30″ N Lat, 35° 30′ 09″ E Long) which yielded Neanderthal skeletons. Coll. 1961 by Tokyo Univ. Scientific Expedition to W Asia and subm. 1969 by H. Suzuki, Univ. of Tokyo.

TK-86a. Bone, carbonate **5710 ± 80** / **3760 B.C.**

Bone carbonate from 2 samples coll. at adjacent localities, 6-9-II and 6-10-II, at same level, 50 cm in average below surface of Bed B.

TK-86a′. Bone, carbonate **7030 ± 120** / **5080 B.C.**

Bone carbonate from 2 samples coll. at adjacent localities, 6-9-$III_{sup.}$ and 6-10-$III_{sup.}$ at same level, 60 cm in average below surface of Bed B, immediately below 6-9-II and 6-10-II, respectively. *Comment* (H.S.): stratigraphic horizon of TK-86 materials underlies horizon of Neanderthal skeleton Amud-I. Bed B is characterized by occurrences of Neanderthal skeletons and stone implements of Transitional type between Levalloiso-Mousterian and Upper Paleolithic. Stratigraphic and paleontologic correlations of Bed B with surrounding Quaternary deposits suggest Middle Würm, probably Interstadial between Early and Main Würm.

Dates are remarkably younger than age postulated from prehistoric as well as stratigraphic and paleontologic correlations. Dating by ionium growth method for animal bones obtained from horizon ca. 1 m below materials of TK-86a and TK-86a′ shows minimum age of 27,000 ± 5000 B.P.

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