

GAKUSHUIN NATURAL RADIOCARBON MEASUREMENTS III

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This date list covers many of the datings done from November 1962 to October 1963. The instruments and technique used for this work are essentially the same as those used for the previous work (Gakushuin II). Age calculations are based on the Libby half life of C^{14} , 5570 ± 30 yr. The errors quoted are the standard deviations obtained from the number of counts only. When observed activities are less than 2σ above background, infinite dates are given with a limit corresponding to the activity of 3σ , and when they are greater than the activity of 95% of NBS oxalic-acid standard minus 2σ , modern dates are given with the limit equal to 3σ below the 95% of NBS standard.

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SAMPLE DESCRIPTIONS

I. TREE RING SAMPLES

Yaku-sugi series, Kyushu

Wood of *Cryptomeria japonica* from Yaku Island, Kyushu ($0^{\circ} 40' N$ Lat, $130^{\circ} 30' E$ Long). Coll. 1960 and subm. by Minoru Oda, Univ. of Tokyo. The tabulated δC^{14} are computed as age-corrected C^{14} concentrations, taking 95% of NBS standard as modern activity, not corrected for isotopic fractionation. Errors quoted do not include the errors on the activity measurements of NBS standard. *Comment*: tree has 1821 growth rings, and was probably cut in A.D. 1950. Wood samples dated by tree ring counting may have errors less than 50 yr. Thin sliced wood samples were treated for ca. 30 min with hot 5% NaClO solution.

	δC^{14} , ‰
GaK-270:1. Yaku-sugi—29	2 ± 5.9
From A.D. 710 to A.D. 729.	
GaK-270:2. Yaku-sugi—34	-8 ± 3.0
From A.D. 810 to A.D. 829.	
GaK-270:3. Yaku-sugi—46	-7 ± 2.2
From A.D. 1050 to A.D. 1069.	

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GaK-270:4. Yaku-sugi—50	-7 ± 3.5
From A.D. 1130 to A.D. 1149.	
GaK-270:5. Yaku-sugi—54	-5 ± 2.0
From A.D. 1210 to A.D. 1229.	
GaK-270:6. Yaku-sugi—60	-12 ± 1.9
From A.D. 1330 to A.D. 1349.	
GaK-270:7. Yaku-sugi—66	-3 ± 2.2
From A.D. 1450 to A.D. 1469.	

II. GEOLOGIC SAMPLES

*A. Japan***Ariake series, Kyushu**

Samples from Ariake area, Nagasaki and Saga Prefectures, Kyushu. Connected with the eruptions of Unzen and Aso Volcano. Coll. 1962 by Ariake Research Group.

GaK-272. Kuriyagawa	33,200	+3800
		-2700
	31,250 B.C.	

Wood from bank of the Kuriya, Taira, Takaki-gun, Nagasaki Prefecture (32° 52' N Lat, 130° 20' E Long), imbedded in tuffaceous clay of Older Unzen pyroclastics. Coll. and subm. by Tsuhei Hoshino, Maritime Safety Agency.

GaK-283. Oumisaki	30,600 ± 3000
	28,650 B.C.

Charcoal from Matsuobashi, Ariakemura, Nagasaki Prefecture (32° 49' 50" N Lat, 130° 21' E Long), imbedded in volcanic mudflow from Maidake, Unzen Volcano, ca. 5 m below surface. Coll. and subm. by Tomoyuki Shinbori, S. K. Kenkyu-sho. *Comment* (T.S.): dates an eruption of Unzen Volcano. Stratigraphically, a younger date than that for the Aso Lava (GaK-274) was expected.

GaK-274. Shimabara 1	22,100 ± 900
	20,150 B.C.

Wood from Harajooshi Minami-arimamachi Nagasaki Prefecture (32° 37.5' N Lat, 130° 15.5' E Long), ca. 5 m above sealevel, imbedded in Ōe Layer underlain by Aso Lava. Coll. and subm. by Yukio Kuwano, S. K. Kenkyu-sho. *Comment*: Ōe layer is twofold, consisting of a lower layer of sandy silt containing fossil plants, and an upper one of shell beds. On age of the latter see GaK-319 of this series.

GaK-319. Shimabara 2	19,400 ± 700
	17,450 B.C.

Shell of *Rapana thomasiana* from same site as GaK-274, ca. 7 m above sealevel, imbedded in Ōe Marine layer. Coll. and subm. by Y. Kuwano.

GaK-282. Yame	32,600	+3200
		-2300
	30,650 B.C.	

Charcoal from Oota, Hirokawacho, Yamegun, Fukuoka Prefecture (33°

13.7' N Lat, 130° 32.5' E Long), 3.2 m below surface, imbedded in lower layer of Yame pumice flow. Coll. by Y. Gohara and T. Shinbori; subm. by Y. Gohara, S. K. Kenkyu-sho. *Comment* (Y.G.): lower layer of Yame pumice flow is correlative with the Aso Lava. More accurate dates are needed to show the relationship between them.

GaK-273. Shimabara 3 **>31,00**

Charcoal from near the site of GaK-274 (32° 37.5' N Lat, 130° 16' E Long), imbedded in base of Aso Lava (welded tuff), 1.9 m thick. Coll. and subm. by Y. Gohara. *Comment* (Y.G.): dates Aso Lava and an eruption of Aso Volcano.

GaK-284. Imari **26,350 ± 1100**
24,400 B.C.

Clay containing small fragments of wood from Imari City, Saga Prefecture (33° 16' N Lat, 129° 52' E Long). Coll. and subm. by Kōzi Suzuki, S. K. Kenkyu-sho. *Comment* (K.S.): field relations suggest that sample came from one of the Yame pumice flows dated by GaK-282. Date does not positively support the view.

GaK-329. Tokushima **14,500 ± 600**
12,550 B.C.

Peat from boring at Kotashima, Anan City, Tokushima (33° 53' 15" N Lat, 134° 39' 46" E Long), 23 m from surface, in silty clay overlain by fine sand and underlain by sandy gravel. Coll. 1962 by Fukada Geol. Inst.; subm. by Kazumi Suyari, Univ. of Tokushima. *Comment* (K.S.): dates base of alluvial deposit.

Osaka marine layer series

Shells from marine sand in Osaka area. Coll. and subm. by Hikotaro Kajiyama, Juso P. O. *Comment*: series dates a marine layer of ca. 5000 B.P., as does GaK-166, 4840 ± 120 (Gakushuin I).

GaK-278. Kadoma **6110 ± 160**
4160 B.C.

Dosinia angulosa, *Macoma tokyoensis* and *Anodontia sternsiana* from Mitsushima Kadoma City, Osaka (34° 42' 41" N Lat, 135° 35' 32" E Long), alt 2.5 m, 7 m below surface. Coll. 1962.

GaK-279. Ogimachi **4870 ± 150**
2920 B.C.

Callista chinensis and *Dosinia japonica* from site of Yomiuri Building, Ogimachi, Osaka (34° 41' 53" N Lat, 135° 30' 23" E Long), alt 3.5 m, 10 m below surface. Coll. 1954.

GaK-293. Toyonaka **4450 ± 140**
2500 B.C.

Mya japonica, *Meretrix lusoria*, *Anadara subcrenata* and *Dosinia japonica* from Hattori, Toyonaka City (34° 45' 28" N Lat, 135° 28' 22" E Long), alt 4.0 m, 3 to 4 m below surface. Late Yayoi pottery was found 1 to 2 m below surface. Coll. 1953.

Sakai City series, Osaka

Wood and peaty clay from Sakai City, taken from the deposits overlain by alluvium and underlain by the Pleistocene Osaka Group, both unconformably. Dates were expected to provide correlation between buried deposits and nearby terrace cut in alluvium. Subm. by Nobuo Ikebe and Junnosuke Takenaka, Osaka City Univ. *Comment* (N.I.): greater age of the clayey sediments (GaK-320) than of the terrace deposits (GaK-321) agrees with geological evidence.

GaK-320. Ohama Park **>32,000**

Wood from boring 1.5 km off the coast of Ohama Park, Sakai City (34° 34' 30" N Lat, 135° 26' E Long), imbedded in sandy gravel, 23 m below sea-level. Base of alluvial deposit at this site is 5 to 10 m below sealevel. Coll. 1962 by N. Ikebe.

GaK-321. Ebaradera **23,700 ± 1100**
21,750 B.C.

Wood from Ebaradera, Sakai City (34° 30' N Lat, 135° 28' 30" E Long), imbedded in alluvium underlying terrace, 25 m above sealevel. Coll. 1963 by J. Takenaka.

GaK-322. Toyota **16,800 ± 500**
14,850 B.C.

Wood fragments from Toyota, Sakai City (34° 29' 11" N Lat, 135° 30' 30" E Long), imbedded in clayey sand underlain unconformably by the terrace alluvium at alt 55 m. Coll. 1963 by J. Takenaka.

GaK-175. Lake Biwa, Shiga Prefecture **28,500 ± 2500**
26,550 B.C.

Wood from the lacustrine terrace (T-3) of Takashima-gun, Shiga Prefecture (35° 19' N Lat, 135° 58' E Long), alt 135 m, in W part of Lake Biwa basin. Sample was imbedded in sand layer overlain by subrounded gravels. Coll. 1959 and subm. by S. Horie, Kyoto Univ.

GaK-312. Yokoyama, Nagano **28,400 ± 1800**
26,450

Charred wood from Yokoyama, Kawanishimura, Nagano (36° 22' N Lat, 138° 10' E Long), imbedded in peat in Shiota Layer. Coll. and subm. by Namio Iijima, Shinshu Univ. *Comment*: in addition to the peat, Shiota layer contains several fossils of *Elephas namadicus naumanni*, horse and *Megaceros*. See GaK-161, 15,750 ± 390 (Gakushuin I) for date of related Totchu deposit; and Lake Nojiri series, this date list.

Lake Nojiri series, Nagano

Wood samples from W side of Lake Nojiri, Tachigahana, Nagano (36° 50' N Lat, 138° 14' 56" E Long), imbedded in lacustrine sediments. Samples associated with *Megaceros* and *Elephas namadicus naumanni*, and upper layer contained a Paleolithic culture. Coll. 1962; subm. by Lake Nojiri Research Group, Univ. of Nagano.

GaK-267. Nojiri 1 **16,150 ± 550**
14,200 B.C.

40 cm below surface.

GaK-268. Nojiri 2 **21,600 \pm 900**
19,650 B.C.

61 cm below surface.

GaK-269. Nojiri 3 **31,000 \pm 2500**
29,050 B.C.

97 cm below surface.

Takata series

Drift wood from Koizumi, Naoetsu City (37° 8' N Lat, 138° 15' E Long), alt 8.3 m, imbedded in alluvial deposit of Takata plain. Coll. 1962; subm. by Takata Plain Research Group, Takata High School. *Comment*: dates end of marine and beginning of terrestrial deposition.

GaK-280. Koizumi -250 cm **2800 \pm 150**
850 B.C.

GaK-281. Koizumi -256 cm **2240 \pm 150**
290 B.C.

GaK-311. Komoro, Nagano **10,650 \pm 250**
8700 B.C.

Charred wood from S side of Komoro Electric Power Dam, Komoro City (36° 19' N Lat, 138° 25.4' E Long), imbedded in pumice flow II of Asama Volcano. Coll. 1962; subm. by Kunio Kobayashi, Shinshu Univ. *Comment* (K.K.): correlative to Itahana yellow pumice, dated as 13,130 \pm 230 by GaK-159 (Gakushuin I).

GaK-318. Rengeji, Gotemba 2 **16,500 \pm 400**
14,550 B.C.

Partly charred wood from Rengeji, Gotemba City (35° 19' 16" N Lat, 138° 58' E Long), imbedded in peaty clay overlain by Upper Tachikawa Loam. Coll. 1961 by Koji Suzuki, S. K. Kenkyu-sho; subm. by Yukiko Mori, Meijo Gakuen, Tokyo. *Comment* (Y.M.): dates an eruption of Old Fuji Volcano, older than that dated as 3800 \pm 130 (GaK-203, Gakushuin II).

GaK-275. Toyano, Fukushima **21,000 \pm 850**
19,050 B.C.

Wood from bank of the Abukuma, Toyano, Fukushima (37° 43' 40" N Lat, 140° 28' 32" E Long), imbedded in peaty layer in clay overlain unconformably by alluvial gravels. Associated with pollen of *Juglans*, *Styrax*, *Alnus*, *Picea* and *Pinus koraiensis*. Coll. 1962; subm. by Noriko Tomiyama, Fukushima Univ. *Comment*: dates formation of Fukushima basin, in approximate agreement with GaK-209, 25,400 \pm 1150 (Gakushuin II). The overlying gravel layer was dated 6370 \pm 110 by GaK-208.

GaK-176. Ichinome-gata, Akita **9070 \pm 400**
7120 B.C.

Wood from lacustrine terrace of a closed lake named Ichinome-gata, Akita (39° 57' N Lat, 139° 44' E Long), alt 88 m, imbedded in silt several meters above lake level. Coll. 1955; subm. by S. Horie. *Comment* (S.H.): dates lacustrine terrace formed during a rainier time of higher lake level.

GaK-177. Lake Inawashiro, Fukushima **>30,000**

Wood from sand and sandy clay layer of lacustrine terrace of Lake Inawashiro, Fukushima (37° 28' N Lat, 140° 6' E Long), alt 514 m, ca. 30 cm above bank of river that has trenched the lacustrine terrace, and 4 m below terrace surface. Coll. 1961; subm. by S. Horie. *Comment* (S.H.): date indicates that former high lake level was sometime during the late Pleistocene.

GaK-178. Lake Tazawa, Akita **2490 ± 100**
540 B.C.

Wood from silt layer of lacustrine terrace of extinct closed Lake Tazawa, situated in a caldera, Akita (39° 43' N Lat, 140° 40' E Long), alt 250 m. Coll. 1951; subm. by S. Horie. *Comment* (S.H.): date is minimum for age of the caldera and of the high lake level.

GaK-314. Hanayama, Miyagi **27,900 ± 1700**
25,950 B.C.

Drift wood, perhaps *Cryptomeria japonica*, from Zasu, Hanayama-mura, Miyagi Prefecture (38° 47' 30" N Lat, 140° 50' 47" E Long), imbedded in lacustrine sediments, 1.5 m below surface. Coll. 1962; subm. by Keiji Oide, Tohoku Univ. *Comment* (K.O.): sediments contain pisolite and volcanic ash which are common in several lacustrine layers found along the line from Naruko via Zasu and Nakayama-daira to Mukai-machi Basin, Yamagata Prefecture. Sediments in one of these lacustrine layers at Onikobe were described by Shimada (1955).

GaK-344. Rishiri Island **20,800 ± 1000**
18,850 B.C.

Charcoal from N coast of Rishiri I., Fujino Sagidomari, Rishiri-gun, Hokkaido (45° 15.2' N Lat, 141° 12.5' E Long), alt 10 m, from just below basalt lava flow that is underlain by a Miocene marine layer. Coll. 1962 by Kazunori Matsui; subm. by Konosuke Sawamura, Geol. Survey of Japan. *Comment*: dates the basalt lava flow. On the petrology of the lava, see Y. Katsui (1953).

*B. Antarctica***East Ongul Island series**

Molluscan shells and foraminifera from East Ongul I. (69° 1' S Lat, 39° 34' E Long). Coll. and subm. 1962 by Japanese Antarctic Research Exped. *Comment*: topographic evidence indicates that part of Ongul I. was submerged beneath the sea and then uplifted ca. 20 m after the shrinkage of the ice sheet. Dates show the retreat of ice from Ongul I. took place at least 23,000 B.P., although dates are not well ordered in relation to alt. The reduction of age by admixture of recent shells is possible. Other measurements in this series are GaK-200 and 201 (Gakushuin I). Sampling, topography and species of associated foraminifera are described by Megro *et al.* (1963).

GaK-285. Kitamihama 1 **25,400 ± 1200**
23,450 B.C.

Molluscan shell fragments from Kitamihama, N-facing beach of East Ongul I., alt 7 to 8 m.

GaK-289. Kitamihama 2 **31,200** \pm **2500**
-1900
29,250 B.C.

Foraminifera mixed with a few echinoid spines from the site of GaK-285.
Alt 7 to 8 m.

GaK-286. Kitamihama 3 **34,000** \pm **3000**
-2000
32,050 B.C.

Molluscan shell fragments from Kitamihama, alt 12 m.

GaK-287. Kainohama 1 **22,800** \pm **1000**
20,850 B.C.

Molluscan shell fragments from Kainohama, alt 9 to 10 m.

GaK-288. Kainohama 2 **29,500** \pm **2400**
-1800
27,550 B.C.

Molluscan shell fragments from Kainohama, alt 3 to 4 m.

C. Madagascar

GaK-277. Baie des Galions **2250** \pm **420**
300 B.C.

Shell from a wave-cut notch at Baie des Galions, S of Madagascar (25° 30' S Lat, 46° 30' E Long). Notch is 1 to 1.4 m above the similar notch corresponding to present sealevel. Coll. 1957 and subm. by R. Battistini, Univ. de Madagascar. *Comment* (R.B.): dates the period in which sealevel was 1 to 1.4 m higher than present level. Similar notches are frequent on S and W coasts of Madagascar (Battistini, 1958).

III. ARCHAEOLOGIC SAMPLES

A. North America

Platte County series

Charcoal samples from burial mound and remains of house of the Steed-Kisker focus of the Middle Mississippi Culture, Platte County, Missouri. Coll. and subm. by M. Shippee, Univ. of Missouri.

GaK-266. Platte County 1 **660** \pm **80**
A.D. 1290

Charcoal from burial mound (C), (39° 42' N Lat, 94° 40' W Long), 30 to 36 in. from the surface. Coll. 1958.

GaK-330. Platte County 2 **690** \pm **90**
A.D. 1260

Charcoal from a large post lying on floor of a house (39° 15' N Lat, 94° 40' W Long). Coll. 1962.

GaK-295. Clay County **750** \pm **120**
A.D. 1200

Charcoal from a small storage pit in floor of House 2 at site 14CY30, Clay County, Kansas (30° 14' 10" N Lat, 96° 58' 45" W Long). Site is an earthlodge site belonging to the Smoky Hill Aspect of the Central Plains Phase. Coll. 1961 and subm. by T. A. Witty, Kansas State Hist. Soc. *Comment*

(T.A.W.): date agrees very closely with date from House 1, A.D. 1176 \pm 150 (M-113, Michigan I).

GaK-296. Two Dog site, Kansas **900 \pm 100**
A.D. 1050

Charcoal from the Two Dog site, 14M0301, Morris County, Kansas (38° 14' 13" N Lat, 96° 31' 50" W Long), a village site belonging to the Middle Woodland Pattern. Sample was taken from occupation level at the site, associated with conical based pot. Coll. 1962 and subm. by T. A. Witty. *Comment* (T.A.W.): while date appears late for this artifacts inventory, it might show that Middle Woodland peoples were still occupying the Flint Hills area in this period. More work is needed on this problem. See T. A. Witty (1962a).

GaK-297. William Young site, Kansas **5340 \pm 160**
3390 B.C.

Charcoal from William Young site, 14M0304, an Archaic campsite to be assigned to the Mumkers Creek Focus, Morris County, Kansas (38° 44' 50" N Lat, 96° 31' 28" W Long). Sample was taken from center of occupation zone, associated with lanceolate-shaped points, large chipped stone blades and fired clay effigy heads. Coll. 1963 by W. Frantz, Kansas State Hist. Soc.; subm. by T. A. Witty. *Comment* (T.A.W.): the dating and artifacts identify a hitherto unrecognized Archaic complex (Witty, 1962a).

GaK-298. Slough Creek site, Kansas **390 \pm 120**
A.D. 1560

Portion of a burned lodge post taken from House 1 in Slough Creek site, 14M0308, Morris County, Kansas (38° 42' N Lat, 96° 32' 20" W Long). Associated stone artifacts are Middle Woodland specimens but pottery and house features share traits with the later Central Plains Phase. Coll. 1962 by W. Frantz; subm. by T. A. Witty. *Comment* (T.A.W.): date is too late for the traits (Witty, 1962a). Another sample should be processed.

GaK-306. Morris mound, Kansas **2570 \pm 110**
620 B.C.

Charcoal from center of Morris mound 14M0314, Morris County, Kansas (38° 42' 50" N Lat, 96° 32' 7" W Long). Sample was part of central burial complex, associated with Snyder-like blades. Coll. 1962 and subm. by T. A. Witty. *Comment*: see T. A. Witty (1962 a,b).

B. Japan

Naniwa-gu series, Osaka

Wood from remains of royal palace Naniwa-gu, probably constructed in the Shomu period (ca. A.D. 700), Hoensakamachi Higashiku, Osaka (34° 40' N Lat, 135° 31' E Long). Coll. and subm. by Tokutaro Yamane, Osaka City Univ. *Comment*: see report by T. Yamane *et al.* (1956) and GaK-114 (Gakushuin I).

GaK-294. Naniwa-gu 1 **910 \pm 90**
A.D. 1040

Base of wooden pole still erect in ground. *Comment* (T.Y.): date seems too young.

GaK-324. Naniwa-gu 2 **1530 \pm 80**
A.D. 420

Wooden plate of *Cryptomeria japonica* taken from 3.6 m from surface. Sample has more than 100 tree rings. Coll. 1954. *Comment* (T.Y.): probably implies a maximum age of the construction of Naniwa Takatsu-gu.

GaK-292. Morinomiya, Osaka **1800 \pm 120**
A.D. 150

Shells of *Corbicula sandai* from remains of shelter at Morinomiya, Higashi-ku, Osaka (34° 40' 39" N Lat, 135° 31' 55" E Long), alt 7.0 m. Coll. 1960 and subm. by H. Kajiya.

GaK-301. Kaide, Kyoto **1970 \pm 120**
20 B.C.

Charred wood from midden exposed by construction of Tokaido Railway, Minami-hichihanda Kaide, Otokuni-gun, Kyoto (35° 0' N Lat, 135° 45' E Long), 1 m below surface. Associated with Middle Yayoi pottery. Coll. 1962 and subm. by Shuichi Nakayama, Education Comm. Kyoto.

Fukumachi series, Fukui

Wood samples from remains of artificial waterway for rice-field, Fukumachi, Fukui City (36° 3' N Lat, 136° 11' E Long), alt 4 m. Sediments in this waterway contain Late Yayoi pottery. Coll. 1962 by Seiji Onishi, Fukui Univ.; subm. by S. Miura. *Comment* (S.O.): dates the construction of waterway and Late Yayoi Period on the Japan Sea coast.

GaK-315. Fukumachi 1 **1850 \pm 90**
A.D. 100

Pile driven into sandy sediments of waterway. Top of the pile was at the boundary of sand and clay, 2 m below present surface.

GaK-316. Fukumachi 2 **1570 \pm 100**
A.D. 380

Pile driven into sandy sediments. Top is 30 cm above boundary of sand and clay, 1.7 m below present surface.

GaK-317. Fukumachi 3 **1460 \pm 100**
A.D. 490

Drift wood taken from sandy sediments in the waterway, 2 m below present surface.

GaK-309. Togimachi, Ishikawa **900 \pm 120**
A.D. 1050

Charcoal from peaty humic layer in sand dune, Sakami Togimachi, Ishikawa Prefecture (27° 8' N Lat, 136° 42' E Long) associated with Middle Jomon pottery and stone ware. Coll. 1962 and subm. by Norio Fuji, Kanazawa Univ. *Comment*: date seems too young, but association of charcoal and pottery may be secondary result of dune movement.

GaK-310. Sakanomiya, Kanazawa **1690 \pm 80**
A.D. 260

Shells from shell mound, Sakanomiya Tsukikage, Ishikawa Prefecture (36° 38' N Lat, 136° 43' E Long), associated with Yayoi pottery. Coll. 1959 by Y. Yoshioka; subm. by N. Fuji.

C. Australia

GaK-334. Noola Rockshelter**11,600 \pm 400**
9650 B.C.

Charcoal from hearth at depth of 121 in. in a horizon containing a flaked pebble chopper, Noola Rockshelter via Rylstone, New South Wales (33° 0' S Lat, 149° 57' E Long). Coll. 1963; subm. by N. B. Tindale, South Australian Mus. *Comment*: charcoal was very finely dispersed in deposit of kaolin and quartz sand derived from weathering of shelter; it was separated by elutriation and treated with acid. Upper portion of this excavated section, to a depth of 96 in., was reported by N. B. Tindale (1961).

GaK-335. Lake Menindee**18,800 \pm 800**
16,850 B.C.

Charcoal from hearth in Area II, top of Layer B, Lake Menindee, New South Wales (32° 18' S Lat, 142° 20' E Long). Coll. 1962; subm. by N. B. Tindale. *Comment*: fine charcoal powder was separated from sand by elutriation and treated with acid. (N.T.) The hearth lies stratigraphically above a stone implement found in Layer B. The bones of extinct Australian mammals are abundant in Bed B. See Tindale (1955).

GaK-336. Cape Northumberland**1470 \pm 120**
A.D. 480

Charcoal from lowest occupation horizon at edge of cliff at depth of 4 ft, Cape Northumberland, South Australia (38° 1' S Lat, 140° 57' E Long). Charcoal was mixed with wind-blown shell sand. Coll. 1961; subm. by N. B. Tindale. *Comment* (N.T.): dates the earliest local occupation by a people who used the relatively unstained blue-black flint implements of the Murundian Culture. See Tindale (1957).

GaK-337. Shellharbour**140 \pm 100**
A.D. 1810

Charcoal from the basal 1 in. of the occupation horizon, Shellharbour, New South Wales (34° 37' S Lat, 150° 37' E Long); mixed with wind-blown sand and shells. Coll. 1962; subm. by N. B. Tindale. *Comment* (N.T.): a late occupation site with pebble end-chopping tools and food shell debris on the present sea shore. Site rests on dunes which were formed over earth and rock considered to have been planed off by seas of the 10-ft (Later Peronian) terrace period.

D. Madagascar

GaK-276. Talaky**840 \pm 80**
A.D. 1110

Charcoal from 1 mi E of Talaky Ambany, Tsihombe, Madagascar (28° 28' S Lat, 48° 21' E Long), in a fireplace located in Sq. C4 and C5 of 2nd site in B zone, 20 cm below surface. Associated with pottery, iron hooks and other artifacts. Coll. and subm. 1962 by P. Vérin, Univ. de Madagascar. *Comment* (P.V.): date indicates that iron was known in the beginning of the second millenium in the area, when *Aepyornis maximus* was abundant. For a detailed description see Battistini *et al.* (1963).

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