

UNIVERSITY OF ARIZONA RADIOCARBON DATES II*

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The radiocarbon age measurements reported on in this article were made during a period from May, 1957, through May, 1958. During this time the laboratory was operated by the Department of Anthropology, under the direction of Dr. Emil W. Haury. On July 1, 1958, the Carbon-14 laboratory, under the supervision of Dr. Paul E. Damon with Dick Shutler, Jr. as laboratory technician, was transferred to the Geochronology Laboratories.

This is the final list of solid-carbon dates that will appear from this laboratory. The solid-carbon method has been discontinued, and the laboratory is now being converted to the carbon-dioxide gas method, with the aid of a grant from the Research Corporation. Details of the solid-carbon method as employed by this laboratory were described by Wise and Shutler (1958). However, certain additions and improvements were made in the pretreatment of samples and counting techniques that apply to this list of dates. These, and the method of calibrating the counter and reducing the ash content of samples will be discussed.

The early method of pretreatment consisted of boiling the samples in 50% HCl for 30 minutes. This was to bring any carbonates present into solution, so they could be filtered away. In September, 1957, boiling in a 2% solution of NaOH for 15 minutes was added to the HCl treatment. This NaOH solution solubilizes the lignin, releasing any humic acid that may be present. The humic acid would contain any modern contamination that might be present (decayed rootlets, etc.). Prior to the NaOH treatment, rootlets and other contaminating matter are removed by handpicking under the binocular microscope.

Most samples reported in this list were counted twice. If the two counts did not agree within the standard error, a third run was made to improve the accuracy of the date. Standard error of the average of multiple runs is reduced by a factor equal to the square root of N , the number of separate determinations.

The carbon black was mixed with agar and distilled water to form a slush. This mixture adhered very well to the wall of the cylinder that was placed in the screen-wall counter. Pure agar has a modern count, but the amount used in the slush was so small that it had a negligible effect on the carbon black.

The original calibration of the counter was made in the fall of 1955. Anthracite coal was used for the dead-carbon run. Within the experimental error a one-to-one correlation between the activity of background and that of anthracite coal was obtained on two different runs. Wood cut from local trees was used for the modern count. An average of 6.2 counts/min was obtained. Modern wood has been run periodically to check the modern activity. Dead carbon from Bermuda has also been run. In this case, a one-to-one correlation between background and the sample count was also obtained. Wood of 1895, along with modern wood, was run to check the modern count. The activity of

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A-86. Arizona EE:2:30 **Average: 3300 ± 230**

Charcoal, *Prosopis* (id. by T. L. Smiley). Pit 14, Test 3, Matty Canyon, Cienega Valley, Sec. 17, T 19S, R 17E, (31° 51' N Lat, 110° 35' W Long), Pima County, Arizona. Charcoal collected from cooking pit, 75 cm deep, max diam 130 cm, orifice 100 cm, in archaeological site (F. W. Eddy, 1958). Coll. October 3, 4, 1957 and subm. by F. W. Eddy, Arizona State Museum, Tucson.

A-86A. **3080 ± 300**

A-86B. **3660 ± 400**

A-86C. **3180 ± 300**

Cienega Creek series, Arizona EE:2:35

Charcoal and charred wood from lens above first bedrock falls in Cienega Creek 0.5 mi above junction with Matty Canyon arroyo, Sec. 17, T 19S, R 17E, Cienega Valley (31° 51' N Lat, 110° 35' W Long), Pima County, Arizona. Lens correlated with artifact-bearing stratum of San Pedro stage, Cochise Culture in Matty Canyon. The lens probably represents a deep cooking pit bisected by the recent arroyo cutting (F. W. Eddy, 1958). Coll. October 5, 1957 and subm. by F. W. Eddy, Arizona State Museum, Tucson.

A-87. Cienega Creek 3B **2610 ± 250**

Charcoal, in part *Prosopis* (id. by T. L. Smiley). Sample 3B, Lens 4.

A-89. Cienega Creek 3A **Average: 2770 ± 170**

Charred wood from branch of a tree. Sample 3A, Lens 4.

A-89A. **3180 ± 300**

A-89B. **2620 ± 200**

A-89C. **2520 ± 300**

A-88. Matty Canyon, Cienega Valley **Average: 2860 ± 210**

Cienega (decayed plant) material, from upper of two Cienega strata in wall of Matty Canyon Creek. Sample No. 6, 60 feet NW of MC-5 M₁ (Unit 3) (F. W. Eddy, 1958). Sec. 17, T 19S, R 17E, (31° 51' N Lat, 110° 35' W Long), Pima County, Arizona. Coll. November 29, 1957 and subm. by Dick Shutler, Jr., University of Arizona, and F. W. Eddy, Arizona State Museum, Tucson. *Comment:* sample presumably dates upper Cienega stratum in Matty Canyon. This stratum is equated with San Pedro stage of the Cochise Culture, by time correlation with Arizona EE:2:30 (see A-85).

A-88A. **2980 ± 300**

A-88B. **2740 ± 250**

II. CHECK SAMPLES

A-79. Manitowoc County, Wisconsin **Average: 12,000 ± 280**

Wood from Two Creeks forest bed. Coll. 1952 by J. H. Zumberge and S. H. Spurr, University of Michigan; subm. by T. L. Smiley, University of Arizona, September, 1957. Sec. 11-13, T 21N, R 25E (approx. 44° 15' N Lat, 87° 34' W Long). *Comment:* Two Creeks forest antedates Valdres substage of Wis-

consin glaciation, and has been dated as ca. 11,000 yr by many other laboratories.

A-79A. **12,150 ± 400**

A-79B. **12,000 ± 400**

A-81. Groningen, Netherlands **Average: 900 ± 160**

Wood from St. Walburg church in Groningen (53° 12' N Lat, 6° 36' E Long), Netherlands. This sample has been used as a standard for interlaboratory comparison. The radiocarbon laboratory at Groningen (de Vries, 1954) obtained an average of 1125 yr based on nine measurements; other measurements are given by Olsson (U-69, 1095 ± 70; Olsson, 1959). Subm. by Hl. de Vries, University of Groningen.

A-81A. **925 ± 230**

A-81B. **870 ± 110**

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