

TABLE 24—Age of speleothems and other deposits in Guadalupe Caves. Abbreviations: FSU, Florida State University, Department of Geology, Tallahassee, Florida; UT, University of Texas, Department of Geology, Arlington, Texas; MU, McMaster University, Geography Department, Hamilton, Ontario, Canada; UK, Geologisches Institut der Universität Köln, West Germany; NLB, Niedersächsisches Landesamt für Bodenforschung, Hannover, West Germany.

Type of deposit	Sample no.	Location	Dating method	Age (yrs)	<sup>234</sup> U/ <sup>238</sup> U ratio	Analyses by, notes
<b>Carlsbad Cavern, this study</b>						
Spar	1	Entrance	U-series	>350,000	1.025 ± 0.23	D. Ford, MU; ~4,300 ft elevation.
Spar	2	Lower Guadalupe Room	U-series	>350,000	1.008 ± 0.15	D. Ford, MU; collected by M. Queen; ~3,800 ft elevation.
Spar	3	Secondary Stream Passage	ESR	—	—	G. Hennig, NLB, and R. Grün, UK; saturated; no date obtainable.
Spar	4	Secondary Stream Passage	ESR	879,000 ± 124,000	—	G. Hennig, NLB, and R. Grün, UK; collected 10 cm from sample 3; ~3,700 ft elevation.
Spar	5	Bell Cord Room	U-series	>280,000	0.99 ± 0.05	J. Cowart, FSU; ~3,675 ft elevation.
Spar	5	Left Hand Tunnel	U-series	>350,000	0.959 ± 0.148	D. Ford, MU; ~3,650 ft elevation.
	6	Left Hand Tunnel	U-series	>350,000	0.877 ± 0.03	D. Ford, MU; connected to sample 5.
	7	Left Hand Tunnel	ESR	—	—	R. Grün, MU; manganese contamination; no date. Next to sample 5.
Spar	8	Mystery Room	ESR	—	—	G. Hennig, NLB, and R. Grün, UK; saturated; no date.
Spar	9	Lower Cave	U-series	>350,000	0.987 ± 0.025	D. Ford, MU; collected by M. Queen just west and above Nicholson's Pit, 3,570 ft elevation.
	10	Lower Cave	U-series	>350,000	0.982 ± 0.45	Connected to sample 9.
Rounded spar	11	Lower Cave	U-series	—	1.07 ± 0.15	J. Cowart, FSU; found with rounded cobbles in trench; no date due to low thorium concentration.
Cave rafts of siltstone-raft sequence	12	Lower Devil's Den	ESR	257,000 ± 64,000	—	G. Hennig, NLB, and R. Grün, UK; ~3,720 ft elevation.
	13	Lower Devil's Den	U-series	259,600 + 40,800 - 29,600	1.007 ± 0.018	D. Ford, MU; same collection site as sample 12.
	14	Lower Devil's Den	U-series	213,800 + 21,300 - 17,800	1.028 ± 0.017	D. Ford, MU; connected to sample 13.
Cave rafts of siltstone-raft sequence	15	Main Corridor	ESR	—	—	G. Hennig, NLB, and R. Grün, UK; saturated; no date obtainable; ~3,675(?) ft elevation.
	16	Main Corridor	U-series	>350,000	1.086 ± 0.234	D. Ford, MU; same as 15; in an out-of-place breakdown block.
	17	Main Corridor	U-series	205,200 ± 52,600	1.06 ± 0.14	J. Cowart, FSU; same as sample 15.
Flowstone	18	Bell Cord Room	U-series	151,700 + 8,800 - 8,200	1.119 ± 0.14	D. Ford, MU; flowstone corroded by rillenkarren.
	19	Bell Cord Room	U-series	176,000 ± 65,000	1.00 ± 0.07	J. Cowart, FSU; collected 0.5 ft lower than sample 18.
Flowstone	20	Big Room	U-series	107,600 + 3,400 - 3,300	1.568 ± 0.025	D. Ford, MU; underlies silt-breccia.
Flowstone	21	Lower Cave	U-series	176,000 ± 25,000 at base 148,000 ± 10,000 in middle 125,000 ± 10,000 at top	2.236 2.169 1.867	D. Ford, MU; overlies cobbles.
	22	Lower Cave	ESR	160,000 ± 32,000 at base 125,000 ± 25,000 at top	—	R. Grün, MU; same as sample 21.
Popcorn	23	Left Hand Tunnel	ESR	272,000 ± 106,000	—	G. Hennig, NLB, and R. Grün, UK; popcorn below the "popcorn line."
	24	Left Hand Tunnel	U-series	>350,000	0.931	D. Ford, MU.
Popcorn	25	Left Hand Tunnel	U-series	33,000 ± 800	0.601	D. Ford, MU; collected about 7 m from sample 24; popcorn of "popcorn line."
Popcorn	26	Left Hand Tunnel	U-series	36,300 ± 1,800	0.56	D. Ford, MU; popcorn of "popcorn line"; dirty; date may not be reliable.
Popcorn overlying stalagmite	27	Big Room (by Lion's Tail)	U-series	45,000 ± 2,000 87,000 ± 6,000 102,000 ± 4,000	1.971 (outer cm) 2.619 2.005 (inner cm)	D. Ford, MU; drill core in massive stalagmite covered with popcorn of "popcorn line"; core 3 cm deep; outer cm popcorn, intermediate and inner cm stalagmitic travertine.
Stalactite	28	Main Corridor	U-series	>350,000	—	D. Ford, MU; tilted stalactite on bottom of Iceberg Rock.
	29	Main Corridor	ESR	513,000 ± 30,000	—	R. Grün, MU; same sample as 28.
Rafts	30	Balcony, Lake of the Clouds	U-series	50,000 ± 4,000	—	D. Ford, MU; may represent last speleogenesis event.
Rafts	31	Christmas Tree Room area	U-series	>350,000	—	D. Ford, MU; rafts overlain by sulfur crystals. Date is probably spurious due to high uranium content (U = 238 ppm).
Gypsum block	32	Polar Region, Big Room	ESR	—	—	G. Hennig, NLB, and R. Grün, UK; did not exhibit an ESR-sensitive peak.
Montmorillonite clay	33	Papoose Room	K-Ar	188 ± 7my	—	S. Stokowski, Geochron Labs.
<i>Nothrothiops</i> (sloth) bone	34	Lower Devil's Den	C-14	>29,700	—	Geochron Labs.
	35	Lower Devil's Den	U-series	111,900 + 13,300 - 11,100	0.808	D. Ford, MU; date on bone material.
	36	Lower Devil's Den	U-series	58,000 + 5,600 - 5,100	0.787 ± 0.13	D. Ford, MU; calcite crystals inside of weathered bone.
<b>Carlsbad Cavern, other studies</b>						
"Texas Toothpick" stalagmite	37	Lower Cave, below Jumping Off Place	U-series	167,000 to >350,000	2.247-2.509	D. Ford, MU; stalagmite overlies paleomagnetically reversed silt; core of stalagmite might approach or exceed 600,000 yrs; core drilled by B. Ellwood, UT. Brooks et al. (manuscript).
"Georgia Giant" stalagmite	38	Main Corridor	U-series	60,000 to 180,000	3.0-3.4	J. Cowart, FSU; stalagmite overlies Iceberg Rock; core drilled by B. Ellwood, UT. Brooks et al. (manuscript).
Soda straw	39	Main Corridor	U-series	20,000 at bottom 50,000 at top	—	J. Cowart, FSU; collected by B. Ellwood, UT, near "Georgia Giant" stalagmite.
Aragonite moonmilk	40	Lower Cave(?)	C-14	18,000 ± 580	—	"Mud wholly of aragonite" (Dunham, 1972).
<b>Other Guadalupe caves, other studies</b>						
Stalagmite	41	Ogle Cave	U-series	125,000 to 205,000	—	Harmon & Curl (1978).
Bat guano	42	New Cave	C-14	>17,800	—	Libby (1954).
	43	New Cave	C-14	>28,250 >32,500	— —	20 cm below flowstone caprock. 225 cm below flowstone caprock. Letter from R. H. Brown to Carlsbad Caverns Natl. Park (1981).
Bat guano	44	Ogle Cave	C-14	4,150 to 7,300	—	Upper level of guano, cut by miner's trench (D. DesMaris, pers. comm. 1984).