

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

Sunday, May 4. Left home at 6:30 to get my connection through Dallas to El Paso. Delta's non-stop would get me to the Elderhostel too late for supper. Delta was late this morning so we got to Dallas after the plane to El Paso had left! Delta buses us to American, where they thoughtfully had provided me with a first class seat, and we flew on to El Paso getting there about noon. El Paso is a border town, where most of the people seem to speak Spanish. Picked up my rental car, where they really interrogated me about my driving history, ("we have to since this is a border town" the rental clerk said), had a quick fast food sandwich and I was off to Carlsbad. It is about 160 miles to Tres Rios and the first 75 or so miles are flat monotonous desert land covered with sagebrush and cactus, but as we approach the Guadalupe Mountains it gets more interesting. El Capitan in the Guadalupe Mountains looms high and the visitor's center of the National Park is at its base and provides a much needed rest stop. There is a natural history exhibit in the center, but I am soon off for the last part of my journey. White City is the closest town to the caverns and we are staying at the Tres Rios Christian Growth Center near by. The journey getting here has been an adventure in itself! Tres Rios has dormitory rooms, six beds to a room, and my one roommate is a nice 80 + year-old lady named Ruth Whiting from Arizona. We do have a private bath, but the furniture leaves a bit to be desired, there is no reading light and the bed sags a bit, but I can sleep anywhere. At 5:00 PM, Mountain time we convene in the assembly room for the introductory lectures and then have a hearty dinner of spaghetti, salad and apple cobbler. It is obvious we are not going to starve to death! We are told that the only time that we can see the bats is tonight, so after dinner we caravan in our cars to the park and sit in an outdoor arena and wait .. and wait .. and wait. Tony, our leader, says perhaps they won't come out tonight. Some mule deer appear and much is made over them. There are also cave swallows, and we wait and wait. The Mexican free tail bats are migratory and only come back to Carlsbad in May to have their young. There is some doubt in my mind that there are any bats that have returned. Then just as it started to get dark out of the cave came winged creatures, which Tony identifies as the bats, but they could have been the cave swallows which also live in the cave. They came from the cave in flocks and flew off to the right but it was certainly not the big black cloud of bats I have heard about, and it had gotten so dark they were very hard to see. The best time to see the bats is in August when the young are old enough to join the adults and then you do see the famous clouds of bats off on their nightly feeding foray. Back at the ranch we have a meeting to introduce ourselves. There are 26 of us at this Elderhostel. I am the only eastern or southerner. California seems to be the most popular homeport, and we have a fair sprinkling of engineers, teachers, retired service personnel and so forth. My own credentials always seem rather meager in such a gathering! To complicate my life, I am in the middle of selling the Flowery Branch house so have to have a long powwow with my real-estate agent before finally going to bed about 10.00.

Monday May 5, 1997. Our schedule. Our teachers are rangers from the park and their spouses.
8:15-9:00 AM. Larry & Phyllis Weston give the weeks plan describing the cave walk-through and discuss the rest of our curriculum.
9:15-10:15. Historical geology and how cave decorations were created. 10:30-11:45. Cavern history from 1901 to present (slide show). 12-1. Lunch
1:15-2:00 PM Permian geology (WIPP, Gnome & Gasbuggy Projects).
2:15-3:00 PM. The Bat Bombs: A True Story. 3:00-5:00. Free Time!
5:00-6:00 The Bountiful Desert, by Chris Burns, Presenter. 5
6:00 7:00 Dinner.
7:00-9:00 more Bountiful Desert.

HISTORY OF THE CAVE: Basket weavers were the first settlers near the cave and they left pictographs and an escalpia where they ground their mescat, and where they would cook their mesquite. About 1901 a cowboy named Jim White saw the bats. There were probably 4 to 5 million bats at that time. He decided to explore the huge hole that they came from. Taking a Mexican boy with him, they took supplies for 3 days but it only took them half way down into the cave, before Jim's backpack caught fire, started by the Mexican boy's flare. They found lots of bat guano Abijah Long put in a mining claim to mine the guano. Through the years other people had the rights to mine the guano. To mine they drilled a hole and put a hoist for the guano buckets over the bat cave. They would spend the week in the cave shoveling the guano into buckets to be hoisted to the top. They also left graffiti on the walls, and remnants of their equipment, which we

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

will see on our tour. They even took a mule down in the cave to pull a cart full of guano. Guano is very high in nitrogen and makes fertilizer. The guano was shipped to California to fertilize the orange groves, but the business wasn't profitable and finally ended about 1950. Jim White worked for the guano operation but he also would take his friends down in the cave to see the formations. It was very rugged to get to the cave entrance. The modern roads had not been built. Seeing the pictures of the women in their long dresses and realizing the only way to get down into the cave was two-by-two in the guano buckets makes you realize how different access to the cave is today. Ray V. Davis started photographing the cave about 1918, using flares. In 1923, Carlsbad was declared a National Monument becoming a National Park in 1930. Jim White opened the Caverns to the public in 1924 and built the first trails. White had passion for the cave but a man named Colonel Bowes, who was hired to superintend the park, was the great promoter who commercialized the caverns, and made it accessible. Bowes built the elevator shaft. Will Rogers was the first man down, lowered on a rope. Robert Ripley an early visitor did a broadcast from the cave. At one time they had 7000 people in the cave, but it now averages 4000 a day at peak season. Even 4000 are a bit crowded. Peak season is Memorial Day to Labor Day. Newer faster elevators were installed in 1954. CCC workers in the 30s improved the trails. Several movies have been done in the cave, including Journey to the Center of the Earth.

CREATION OF THE CAVE: The Permian period 200-250 million years ago is when Carlsbad was being formed. The whole area was under water and a great tropical reef was formed around a large lagoon, which today are the Guadalupe Mountain range and the area where Carlsbad is. The Great Capitan horseshoe shaped reef is from Paleozoic area. There is another older reef below this one about 600 million years old. This was the time when the world was one big continent and the tectonic plates had not torn it apart. The reef is 95% limestone, being formed from the skeletal remains of primitive sea creatures and sponges. Most of reef is below the ground, only the part from Guadalupe to Carlsbad is exposed and many hundreds of caves are in the area. There must be even more caves not yet discovered. The lagoon evaporated and created salt beds and mineral deposits. Potassium and sodium chloride. The organic part of the ancient sea creatures went to Texas and formed the oil fields. The uplift of the Rocky Mountains was about 60 million years ago, (Guadalupe's peaks are still rising up to 9 feet a year). Carlsbad's hole was created about 30 million years ago. The uplift caused cracks in the reef 3 million years ago and cavities were formed. Sulphite gases are apparent and may have helped form the caves but it is more logical that they would have formed caves larger at the top than at the bottom. Since Carlsbad is larger at the bottom, it may be sulphuric acid, which was at lower elevations that formed the caves by effervescing in the soft limestone. As evaporation occurred the sulphuric acid became more and more concentrated. Scientists really do not know. They do know, however, that a river didn't form the caves. The deepest part of the cave is 1030 feet. Main room of cave about 750 feet deep. Oldest formations at the mouth of cave are about 2 million years old. At deeper parts they become younger and younger (750 thousand years). The big room is 500 thousand years old. Size of formations is caused by amount of limestone in water and how fast water is dripping. One formation in the cave has grown a half-inch in last 3 or 4 years. Stalactites are "soda straw" formations where the end has clogged up. Some iron may make them orange in color. Green formation is algae, caused by the artificial light in the cave. (Volunteers clean the formations with chlorax to get rid of the algae). Black formations shows manganese. Stalagmites grow up from the bottom and it depends on the amount of water and mineral how big they get. When stalagmites and stalactites connect they are called columns. Flowstone is flowing water that has solidified. Cave pearls on floor of cave are formed somewhat like real pearls around a piece of sand or bat bone. When they are on roof they are called popcorn. "Chandeliers" hang from ceilings. A very high one at Carlsbad is 250 + feet above the floor. Wiggly helictites grow like hair with no regard for direction but no one knows how they form. There were ancient bats in cave 18-30 thousand years ago. Also spiders and crickets. There were 4 1/2 million bats when Jim White discovered the cave, now about 700-1000 thousand. This is probably due to the availability of insects. The decorations in the cave were formed only about 2 million years ago. There is another kind of bat in the bottom of cave who hibernate not migrate. They fly out each evening with the other bats in search of food. No one knows what inner mechanism tells them when to go. Lechuguilla Cave about two miles away was found from the wind blowing out of its hole. Most caves "breathe". Lechuguilla is longer (4th longest in world, 100

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

+ miles of explored trails) than Carlsbad, which is the 33rd longest in world. About 32 and 1/2 miles of Carlsbad are known although not all is mapped and surveyed. Since Lechuguillia was found only a decade or so ago, it is unspoiled, and modern caving techniques are helping to keep it from becoming contaminated. It has unique microbes, which may be useful in medicine, and other unique things are being found and researched.

There are no dinosaur bones here but camel and giant sloth bones appear from 15000 years ago. Indians came into area about 12000 years ago. There are many small earthquakes in the area each day, but no major earthquake problems. Two miles from here the Black River just appears out of the ground. No one knows its origin. It flows in wet and drought times and has nothing to do with rain levels. Fertilizer is a major production in the area and there are many potash mines but it is cheaper to buy from Russia, China or Canada. There are different types of potash depending on when it was stratified. This area has the third largest caves in country after Kentucky and the Ozarks.

And then it was time for lunch! We had baked potatoes, all sorts of toppings from beans to hot peppers, salad, soup and desert.

WIPP PROJECT. Created by Dept of Defense and Dept of Energy, for nuclear energy waste. There was also Project Gnome Project trying to develop and detonate a 3100-ton bomb, 1200 feet below the surface to extract gas energy. The dome collapsed and the gases got into the atmosphere and were carried over Nebraska and Iowa, causing the cows and their milk to become radioactive so project gnome was abandoned. There are 3 types of radiation. Alpha and Beta can be easily stopped by aluminum foil but gamma radiation need concrete, lead or salt rock to stop it. The gamma waste from nuclear radiation is stored below the surface in containers. Nuclear radiation is only about 1% of the total and comes from nuclear weapons and power plants. Much more comes from sunlight, dental x-rays, TV sets and so forth. Westinghouse manages the Wipp (Waste Integration Pilot Project) facility. 43000 barrels of waste is stored at Los Alamos above ground. This is defense alpha beta waste, not medical waste or gamma waste. Surprisingly, the whole area supports the Wipp project. Nuclear waste will be stored here in salt pits, starting next year. Larry discusses the safety of this. He feels there is very low risk. Also the economic impact of having it in Carlsbad, when it brings highly paid executives who are well educated, into the community. The salt has a stable formation, good radiation shielding, behaves like plastic under pressure, heals its own cracks and so forth. Thus to store it in the salt caves far below the surface carries little risk. In Louisiana, oil is stored in underground salt domes. The reason the storage hasn't started yet is because of the lawsuits, which are more over procedure of getting the waste here, not the concept of having it here. Perhaps by April 1998 they will resolve the problems enumerated in a 22000-page document. For instance, the trucks transporting the barrels have homing devices so they always know where they are. The barrels are built to sustain great pressures, such as accidents and so forth. Westinghouse is bringing a plant to Carlsbad to build the containers. We really have no alternative to storing it here. Many of the current waste sites are not safe. This is low-level waste that they are discussing. The objections come from the method of getting it here.

THE BAT BOMB PROJECT. Doc Adams, a dentist, in 1942 had the idea of tying bombs on bats and releasing the bats over Tokyo, where they would enter people's homes. The bombs would be detonated and Tokyo could be humanitarily destroyed leaving the people alive but homeless, as they would run out into the streets when the bats blew up their homes. This project was taken very seriously. Even President Roosevelt said he would give the matter consideration. After all bats must have been put on earth for a reason! It was estimated 4-5 million bats would be needed. There were a lot of problems such as how to catch that many bats, how to develop an explosive device that would not overload the bat, how to transport the bats to Tokyo, how to convince anyone the plan is possible! Doc Adams was put in charge of the Bat Bomb project. Louis Fiesser, incendiary chemist was picked to develop the explosive device. Then they had to select the bat to carry the bomb. The Mexican freetail bat was selected. Ney Cave in Texas was picked because of its ten million-bat population. 250 adult bats occupy one square foot so you can count bats by measuring the area the bats occupy. A bat named "flamethrower" was befriended and tamed so they could fly him in an airline hanger and test the bomb. University research centers were used to develop a way to get them to Tokyo. (Did they need Parachutes?) Harvard was employed to find how much weight a bat could carry. They found a half-pound bat

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

could carry about a half ounce. Everyone already knew this but now it was official. The University of California was employed to find what heights the bat could stand. It was determined they could stand great heights if they were kept cold because they would be in a torpid state. Elaborate egg crate container launching platforms were designed. Leeds and Northrup was hired to develop the time bomb for the bat's back. They were going to super glue the time bomb to the bat's back. B-25 bombers were the bomber of choice and they practiced over Carlsbad National Park. But Doc Adams thought TWA should give him 10 Constellations, which could carry 197000 bats. To test the bats, they build paper houses out on the desert. They dropped a thousand or so bats from 25000 feet but the bats didn't cooperate and most of them went to a nearby farmer's barn instead of to the dummy houses. Then an airfield was burned down in the testing of the bomb. The accidental incineration of the Carlsbad Auxiliary Army by incendiary bats was both a high and a low in the fortunes of project X-ray. The project went on until 1945. Then Eleanor Roosevelt made them give up the project because of cruelty to animals. However, Larry feels the project was stopped because of the atom bomb and that the bombs were no longer needed. There is some thought it was stopped because it would have been an excellent delivery method in chemical warfare. So Carlsbad had it's secret project just like the Manhattan project. A man by the name of Jack Coulter has written a book about the whole thing. But in retrospect it is unbelievable that so many people took it all seriously!

We had a southwest dinner with refried beans, rice, chicken, tortillas and so forth.

THE BOUNTIFUL DESERT. Chris Burns a very vivacious and enthusiastic park ranger who was born in Ohio but starting with Big Bend National Park has become a ranger at Carlsbad. There are four deserts in North American. The Chihuahua desert is mostly in Mexico. Also the Sonora and the Mohave deserts and Great Salt desert in Utah. The Indians in this area were hunters and gatherers. The woman had to supply food for the family and she had to rely on what was growing on the land. Chris talks about the various edible plants in the region. Mormon tea. Basket Grass for baskets and Sotule which only grows in Chichuachua desert, Makes an alcoholic beverage. The flower petals of the Yucca are edible. So is the pulp of the fruit. The Indians also used the fibers to make sandals and so forth. The lechuguilla is also indigenous to this desert. It had spines, which the Indians used as needles. They also made a medicine from the sap. It is a derivative of cortisone. The century plant is pollinated by bats. Prickly Pear cactus. And so forth. She treated us all to juniper tea, which tasted a bit like turpentine to me! It has been a long day and it was hard to take it all in!

BATS. After a popcorn snack Chris then talked about bats. You must like bats to work at Carlsbad Caverns. One of their goals is to convince people to like bats. Or at least to leave bats alone! Every ranger must have a bat presentation. Bats return in late April or early May from Mexico or Central America. It depends on warm weather and insects. No one knows where their winter home is. A bat can fly up to 50 miles each night. Bats are the only winged mammals. They are the second most numerous mammal after rodents. There are nearly 1000 species of bats. They are found everywhere in the world except the Arctic and Antarctica. The largest, the flying fox bat, has a 6-foot wingspan. They eat fruit. The Mexican Freetail eats insects. The smallest, the bumblebee bat, eats nectar, is about the size of a bee and has a five-inch wingspan. There is even a fish-eating bat, which can dive to catch a fish. Vampire bats live on blood. All bats can echo locate. People are encouraged to build bat boxes to help control insects. There are old wives tales such as bats will get in your hair They would only do this if a bug was in your hair. Their echolocation is much more accurate than sonar or radar. Bats have very large ears and they have bumps on their face, which makes them ugly. They send off high-pitched noises, which bounce off objects, and the big ears and bumps help them identify what is there. Their four fingers are very elongated and are enclosed within the wing membrane. The thumb is free and used for grasping. They are covered with fur, give live birth and nurse their young. Most bats have a membrane between their legs and the freetail bat has a long tail free of the membrane. Their feet look like human feet but they have very long toenails to help them hang on the ceiling. They have barbed hair on their feet, which also helps them cling. They can cling to things like light bulbs or a piece of glass. Humans have to think to hold on. If they fall asleep their hands relax. Not so with bats, they have to think to open their feet. Thus the sounder asleep they are, the more securely they grasp. Even dead bats continue to hang from the ceiling. The bats come back here each year to have their young. Since males don't help raise the young, there are more

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

females than males in the cave. The mother gives birth to just one pup, one quarter her own size. (Translated into human terms it would be like having a 40-pound baby). The babies are breach born and then climb up the mother's body to nurse. They are born with no fur and can cling to the ceiling from the beginning. By roosting closely together, 2 - 3 hundred per square foot, their body heat helps them stay warm. The mother's find its own baby returning to the location where she left the baby, she screams and baby screams back. The final clue is they sniff each other and recognize each other by their smell. Mom sleeps in an adult section of the cave but the babies live in baby section. It only takes 5 weeks for junior to mature enough to go out at night with the rest of the flock. Mexican Freetail Bats must start from a high point, as they cannot take off from the ground. Like shags they must drop to gather momentum before they can fly higher. The cavern roof is often 90 feet high. If baby drops off and doesn't figure out how to fly on way down they are a goner. Best time to see the bats is late August or early September because then the young are flying with the adults. 5000 bats a minute come out of Carlsbad. They always head for the Pecos and Black Rivers to the south and west. They need water from the river as well as food, which is found near the fertile fields of the farms along the river. A bat can eat at least their own body weight to twice their weight each night. This is a lot of bugs! They return to the cave when they are satisfied. They come back in small groups and dive bomb into the cave and head back to their area of the cave. To land they grab something like the ceiling or another bat with their finger nails and then grasp with their feet. On second Thursday in August, the rangers put on a bat flight breakfast between 5 and 7, so people can see the returning bats. It is a different show from the departing flight. The bats start leaving in the fall and are usually gone by Halloween. Bats are not blind, they are not "old bats" they are not off their rocker as in bats in the belfry. They pollinate many different fruits. When they eat the rotting fruit they help distribute the seeds. The vampire bats live in central and south America. They are pretty big and can land on the ground. They have an anticoagulant in their bite so the blood flows. But it only takes a tablespoon full so it really doesn't kill the animal. But blood does carry disease so often the chicken gets sick. Thus the farmers try and kill off the bats. They seal off entrances to caves and kill the bats. The problem is the bats in that cave may not be vampire bats at all; perhaps they are the unlocated Mexican longtail bats! They are trying to educate people to kill the vampires with coagulants in blood. Rabies is a problem. They don't carry rabies because they die so fast. The only time it is a problem is if you pick up a sick bat. Humans are the bats worst enemies. DDT, which is still sold in Mexico, can kill bats. You can adopt a bat for \$5. I was tired from absorbing so much knowledge.

Tuesday, May 6. 7:30-8:15. Breakfast. 8:15. Leave for caverns 8:30-11:00 AM tour of the entrance to the caverns with Larry and Phyllis Weston, about 1 1/4 miles. 11:00-12:00 Sack lunch provided in the underground lunchroom. 12:00-2:45. Tour of the "Big Room" in the Caverns, over a mile long. 3:45 Bus returns to Tres Rios. 4:15-5:00 Free time. 5:00-6:00. Dinner 6:00-9:00. What Special World Exists Underground. Pat Jablonsky. The tour of the caverns was wonderful. A truly cavernous natural entrance led to a paved trail down to the main room 750 feet below. The walk into the cave is about 1 1/4 miles down a series of switchbacks. This is one of the most spectacular entrances I have ever seen. After we left the twilight zone (where no more natural light occurs), we started to see the wonderful formations. Our leader, Brenda, was very knowledgeable and gave us the historical names of everything and also explained how the various formations occurred. It took over two hours to reach the bottom where the rest rooms and Tony waited with out box lunches in the underground lunchroom. After a break, we set out again to tour the "Big Room" which could hold 14 Astro domes. It is enormous and takes almost 3 hours to tour. It is the largest cave room known. Wonderful stalactites, stalagmites, columns, draperies everywhere. A huge drapery chandelier hangs in the middle. What made this cave even more unique was the fact that no colored lights were used to enhance the effect. Only the walkway showed evidence of human intervention. The formations were spectacular in the subdued electric light. Since we are early in the season, we had the cave almost to ourselves and were able to stop and closely examine whatever we wished. Carlsbad is without a doubt the most beautiful cave I have ever seen.

But was I tired when we finally took the elevator back to the top! After a short rest we had dinner - brisquit, beans, potato salad

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

SPECIAL WORLD UNDERGROUND. Pat Jablonsky. She had a grant to study the impact humans have on a cave environment. She has done research in Lechugilla Cave and is about to start doing research in Carlsbad. She is the curator of the Art and History museum in the town of Carlsbad. And she has a wealth of information about very facet of what we have been seeing. She talked to us about cave formations and how hydrogen sulphide belches caused the formation of gypsum in the cave. Pat passed around mineral samples of what we had seen in the caverns. She told tales of how caves are discovered. One was found when a flash flood opened up an entrance to a cave. Then she told tales of the exploration of caves. And some of her own adventures and misadventures. Her main concern is the problems occur when humans litter a pristine cave and introduce crickets or other insects and animals. She points out the micro world that lives with you that can contaminate an environment. She talked about bats and had skeletal remains of bats. She finished with a slide show of various scenes in the area. I don't know if her talk was poorly organized or whether my poor tired brain could absorb no more but I did not learn much new. I am learning more than I bargained for!

Wednesday May 7, 1997. 7:30-8:15A Breakfast 8:15-4:00 FREE TIME! 4:00-6:00 The Not-so-Peaceful New Mexico Frontier, Doug Dinwiddie, Professor at U of NM at Carlsbad. 6:00-7:00 Dinner & 8:00-9:00. What special World Exists Underground. Pat Jablonsky.

The four singles, Maggie, Jackie, Ruth and I take our free time to tour the Living Desert, a very well done zoo of local animals and flora, on the north side of Carlsbad. Then we went to lunch at the Stevens Motel. Had a salad plate, which was a refreshing change from our daily fare and then toured the Carlsbad Art and History Museum, with a small but interesting collection.

NOT-SO-PEACEFUL NEW MEXICO. First Indians came to NM 12000 years ago. Spanish Exploration was 1539-1598. They were looking for gold and hoping to convert the Indians to Christianity. The Spanish named the Indian villages "pueblos". Spanish Colonial period, (when the Spanish started to colonize the area) was from 1598-1860 and 1696-1821, broken in 1680-1696 by the Pueblo Revolt, when the Indians drove the Spanish back to El Paso. The Mexicans had a revolt in 1821 and got their independence from Spain. Mexico included New Mexico, parts of Texas, California and Arizona. Mexican Rule was from 1821-1846. Santa Fe Trail from Missouri to Santa Fe, New Mexico, changed the character of area through its commerce and made New Mexico dependent on the United States for many of its supplies. Settlers came into Texas from Louisiana and Arkansas bringing their slaves. Texas had freed its slaves many years before. The Texans revolted in 1836 and was independent until 1846. They tried to claim a lot of New Mexico. The US annexed Texas and this caused the Mexican War, since Mexico had considered that Texas had gotten independence under duress and that it was still part of Mexico. In 1846, the US and Mexico went to war. US Territorial Rule 1846-1912. New Mexico remained a territory a very long time. Elkins had a bill before congress in 1876 that would have made New Mexico a state at the same time as Colorado. There was a flamboyant speech and Elkins, who didn't know what the speech was about, shook hands with a man who had given it and that inflamed the southerners. Another reason for delayed statehood was the Lincoln County War. But statehood was finally achieved in 1912, and New Mexico became 47th state. Doug Dinwiddie told some funny stories about how New Mexico is often thought not a part of the United States. Their license plates now say New Mexico, USA.

The TERRITORIAL PERIOD Wide-open spaces included Arizona until 1863. Large Indian population and people of Mexican descent, plus the western European descent people who came into the area. Settlement was interrupted during the Civil War. After the War large numbers of settlers came, particularly from the south. The Homestead Act was in place giving anyone 160 acres if he could prove he had lived there 5 years. Joseph McCoy promoted cattlemen to come into the area, and for the railroads to take the cattle east. The railheads were in the north and the cattlemen drove their cattle up the Pecos River to the railheads. It lasted 15 years, ending when the railroads were finally built into Texas. John Chisum was a big- time cattleman who came ion late 1860s and became biggest cattleman in this part of the SW. He had perhaps 70000 cattle. He did not like the smaller cattlemen who came into the area and rustled his cattle. He bobbed off the ears of his cattle in addition to the brand to make it harder for the rustlers. His ranch headquarters were in what is now Roswell, NM, about 40 miles north of Carlsbad. Some army personnel stayed in NM after the war. A partnership formed at Ft Stanton between L. G. Murphy,

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

Emil Fritz, and Jimmy Dolan who had a store, and went into competition with Chisum. They used their army contacts to get a contract to provide cattle to the Indians and the army. They started to buy cattle, no questions asked. They had other crooked business practices. The army broke their contract in 1873, but they went 10 miles off the military post to Lincoln, NM and started another store. Lincoln County encompassed the whole southeast quadrant of New Mexico. One of their main providers was a young rustler named Jesse Evans. He was probably the most notorious rustler in NM during this period. In 1875 Alexander McEwen came to Lincoln. He soon was doing legal work for the Murphy partners who were called "The House". Emil Fritz died in 1875 leaving a life insurance policy of \$10000. The House tried to claim it and a lawyer named McSween is asked to settle the dispute. He was able to get the money but the House didn't get a cent. McSween built a fancy house and everyone thinks it was with the Fritz insurance. However he remained The House attorney. Murphy left Lincoln in 1876 leaving behind Jimmy Dolan to run the store. He was a crooked businessman with a bad temper. McSween met a young Englishman named John Henry Tunstall, who had money to invest, and invited him to Lincoln. Tunstall came in 1876 and met Dolan. Tunstall was about to buy a ranch from Dolan when McSween told him Dolan didn't own the ranch and the deal fell through. This made Dolan angry. He fires McSween, who then formed a partnership with Tunstall and Chisum. They opened a store and bank to compete with The House. The sheriff of Lincoln was William Brady, who was in the pocket of The House. He was Jimmy Dolan's puppet and his office was in the store. When Tunstall had legal problems with Dolan he couldn't go to Brady but there is a JP named Wilson who aligns himself with Tunstall. Tunstall bought a ranch about 15 miles south of Lincoln and started raising cattle. And then McSween was indicted for stealing the Frits insurance policy. Sheriff Brady was going to seize McSween's property including his herd, which was on Tunstall's ranch. Tunstall decides it would be a good idea to separate his cattle from McSweens. One of the cowboys he hires is William Bonney, also known as Billy the Kid. Billy was born 1859 in Brooklyn. The father abandoned the family and the mother took her two young sons and headed west. In 1870 she married William Antrim in Santa Fe. They moved to Silver City, NM about 1871. The mother died in 1874 and Billy got into trouble with the law for the first time. He stole some laundry from a Chinese laundry and was put in jail. Billy panicked and escaped by climbing out the chimney and stole a horse and rode off to Arizona, where he killed a man who was abusing him. He was 15 years old. Billy then fled again and became a fugitive. He came to southern New Mexico and rode for a while with Jesse Owen's rustling gang. Then he decided to get out of that game and went to work for Tunstall. In 1878, while they are separating Tunstall's cattle from McSweens, Billy went off to shoot some turkeys and when he came back, a posse is accosting McSween. One of the men is Jesse Evans, wearing a badge. Some of the men in the posse shoot Tunstall and his horse. They took the livestock and leave. Billy and his two companions recovered the body and take it back to Lincoln where they told McSween what had happened. This was the spark for the Lincoln County War, which raged for about 5 months. A climactic battle in July 1878 was the apparent end, but the conflict actually went on for many years. 3 men died in first 5 months, more than 50 died in the aftermath. This was a battle between two sets of businessmen who wanted to control the territory. Billy wanted revenge for the people who killed his employer. A group was formed called the Regulators. They wanted it to have a legal justification so they went to the justice of the peace. (They couldn't use Brady), and got warrants for the arrest of the posse. They went to notorious Seven Rivers and took two members of the posse prisoner, Morton and Baker. They were killed and also a man named McClosky who was one of the Regulators. Billy had killed McClosky because he thought he was a spy. Billy method of killing was by surprise or ambush. Then they wet after the rest of the posse. Brewer was killed by Buckshot Rogers, who also died. Sheriff Brady was ambushed and shot. The law was very scattered in the territory and the settlers tried to solve their own problems first before involving the law. Liquor was also readily available. People carried guns and there was some racism involved which all contributed to what was called the Lincoln County War.

SPECIAL WORLD UNDERGROUND. Pat Jablonsky was part of the crew that removed the old trail from the big room. Then she was asked to clean the lint out of the cave. She got 22 volunteers to come to Carlsbad to clean out the lint. After 10 years the project is still going on, and many of the original volunteers come back regularly, every late September and early October, when there are less visitors in the Caverns. The lint is removed with needle nosed

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

pinchers or cell collecting brushes, and is quite tedious. The lint is made up of blue jean fiber and hair, also dead skin cells, plant material, insect carcasses, fecal matter and has a detrimental impact on the cave. Other pollutants are the electric lights, which cause algae, the bats, and copper pennies in the pools, which stain. Cleaning of the trails pollutes if the water is allowed to just run off into the cave. 17 pounds of tennis shoe soles is scraped off in the cave each year. Breathing raises the CO2 level and corrodes. Pat showed us slides to show the vandalism and collections of lint in the cave and also the restoration work that her volunteers do. After a break we have an armchair visit to Lechuguilla Cave. The cave had been known for years but it was not thought of as very big. However there were drafts of wind hissing from the floor. In the 50s, 60s and 70s cavers would try and find the source of the hissing. In about 1984 a group of Colorado cavers got a permit and for 2 years they dug through the floor. Finally they broke through into the cave. (A cave is a hole that goes beyond the twilight zone.) This became the most phenomenal cave discovery, some 86 miles of cave so far. It is a virgin Carlsbad. Keeping the pollution down has been a real problem, like putting their human waste in bags and carrying it out. Some of the cavers stepped on some formations. NASA has done a bacteriological study, which will help with the Mars probe. They think some of the microbes found will help with cancer research. There are formations that have never been seen any place else in the world. Many other studies are going on in the cave.

Thursday, May 8. Back to Carlsbad Caverns for a tour of the Kings and Queens Palace. Unfortunately about 40 other people also join the tour and there are only Larry & Phyllis to guide us. It was a mob scene and made it very difficult to see and to hear what they were pointing out! However the four rooms on the tour were the most beautiful that we have seen. Elaborately decorated with formations. At one point they turned off the lights so we can experience total darkness. Once that part of the tour is over, Larry and Phyllis took just the Elderhostel (and only the half that wanted to go) to the left hand cave beyond the lunchroom. There were very few formations, most of it being the formation they call bone yard, but the real experience was to be "off trail". Nothing but flashlights to guide an unpaved trail, and as we walked in about a quarter of a mile where we found a rock with lots of fossils.

LINCOLN COUNTY WAR. April 1, 1878. Billy the Kid and his Regulators went into Lincoln and hid in Tuntstall's store waiting for Brady to come by. Brady took 4 deputies with him on his daily walk to the courthouse. As they passed the corral Billy opened fire on them. Brady and one of the deputies were killed, the rest returned fire. Billy was hit by one of the deputies but was not seriously injured. The other Regulators escaped but Billy had hidden somewhere, perhaps under the floor of the Tuntstall store, or was hidden by friendly supporters. When he had recovered enough to travel he got away. He was indicted for the murder of Sheriff Brady. President Hayes appointed Frank Warner Angel to go to New Mexico and investigate the Lincoln County War. Then President Hayes decided to change the governor of the territory and Lew Wallace was appointed Governor (He wrote Ben Hur while he was governor). The McSween returned to Lincoln with Billy The Kid and 16-armed men, and they fortified themselves in the McSween house near the Tuntstall store. Some of their supporters are in other parts of the town. The new sheriff Peppin armed a lot of men and strategically surrounded the town. McSween refused to surrender and a battle broke out that went on for 4 days. Col. Dudley from Fort Stanton (who believed one of his soldiers was fired on by McSween's men) brought an infantry of some 40 men, and also a cannon. McSween then said he would surrender to Col. Dudley but Dudley refused feeling McSween should surrender to the sheriff. By the last night of the battle, McSween had become very depressed and the house was on fire. McSween and five others decide to surrender. Billy then decided to shoot his way out, while this is going on. One of the Jones boys was going to accept the surrender when he was killed. Then Pippin opened fire on the McSween party and kill them all. But Billy and the others are able to escape. So Dolan ends up the winner. Mrs. McSween sued for damages but Dolan and his party shot her lawyer. Pat Garrett is elected sheriff to succeed Sheriff Peppin. Garrett is relatively independent, not in Dolan's hands. He goes in search of Billy. Billy tried to make a deal for amnesty with the governor in return for testimony. Everyone involved in the war received a pardon, except for Billy. Garrett eventually found Billy the Kid and took him prisoner about December 1879. He was convicted of the murder of Sheriff

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

Brady and was sentenced to be hanged the first week in May 1881. He escaped but later Garrett found him and killed him.

I have to leave in the middle of this interesting description of the Lincoln County War to drive the 20 miles into Carlsbad to receive and send a fax relative to the sale of the Flowery Branch house. Also I got a much needed shampoo and blow dry and really enjoyed my breather from all the lectures and people.

After another hearty southwestern dinner, we are entertained by the folkloric dancers from Loving, NM, some as young as kindergartners. They seemed to have a good time and we enjoyed watching them. I lay awake most of the night wondering how I was going to be able to empty the house by the 31st of May, particularly since that is the day I want to be in Cincinnati for Megan's graduation.

Friday, May 9, 1997. THE NOT-SO-PEACEFUL NEW MEXICO FRONTIER: Doug Dinwiddie gives the last lecture, talking about other notorious figures in early New Mexico history. "The Wild Bunch", which included Butch Cassidy and the Sundance Kid specialized in train robbery. This whole group had their picture taken and actually sent it to the various law enforcement officers. They worked as cowpunchers in New Mexico when they weren't hijacking trains. The Pinkertons were hired to catch them. It is thought that Cassidy and Sundance left the area and went to Bolivia where they died. Another notorious person was the killer Clay Allison. He died when he fell off his wagon, which rolled over him and broke his neck. Tom Lyons was a cattle baron in Western New Mexico, and he was a contract killer. Dinwiddie's great grandfather worked for him in his store. Dinwiddie did his doctoral thesis on Lou Blachly who collected oral histories from old timers in the early 50s. Bletchley's tapes gave Dinwiddie the grist for many funny tales of these rough and ready men on the frontier. Jack Stockbridge gave Blachly 80 tapes and had a fantastic memory! Stockbridge was one of Roosevelt's Rough Riders. He was a ranger and a miner. He had a long memory and could remember who married who and so forth. Stockbridge had stories about the outlaws. Tom Darnell was the best bronc buster in the area but had a nasty temper (red headed) and was a bully who enjoyed fighting. He was a racist and is known to have killed 4 or 5 men. Tom Darnell became a Rough Rider along with Stockbridge. They had a shootout with some black soldiers and killed 4 of them. Darnell went back to New Mexico after the Mexican war and went to work on a ranch. He was shot in a barroom brawl. Montague Stevens, born in England and related to royalty, came to US in 1880s, having been in the British army. He offered his services to the US Army but they didn't want him except as a mule packer. He took part in the Geronimo campaign. He was a hunter and lost his left arm in a hunting accident. He gave Blachly 60 tapes of his recollections. He told of Joel Fowler, a hired gun who came to NM to avoid the Texas Rangers. It is thought he killed about 30 men as a contract hit man. He homesteaded in New Mexico. He killed a man in a bar in Socorro, with a knife and was put in jail. Joel Fowler almost escaped by digging his way out of the jail. The town people decide to have a necktie party. However the rope was too long and his toes met the ground. So they lifted him up and then piled on top of him until they broke his neck. Stevens was asked if he participated but he said no, because he only had one arm. Dinwiddie told some gruesome tales of hangings in NM.

Dinwiddie then talked of the Indian Wars. The Apaches first came to SW from the north about 1400 to 1500 AD. It is thought they came from Alaska since their language is similar. They were hunters and gatherers, and sometimes they gathered other people's things. Apache is a Zuni word meaning the enemy. The Apaches were not one big tribe but had several subdivisions: Chiricahua, Mescalero, Warm Springs and Tonto. They believe in an after life, but it isn't heaven since you will have the same enemies in your afterlife. Thus you try to disable your enemies in this life so when they are reborn with you, they wont bother you again. Hence they were brutal, eviscerating or maiming their enemies. The Apaches were known for their tortures. Two types of raiding. One for procurement of food etc, where killing was incidental. Their second kind of raid was for vengeance when they thought they had been wronged. The Apaches were never conquered by the Spanish or Mexicans. Scalps were the proof they had killed. The US government in the 1850s then had responsibility for the Apaches. The government had set up reservations to educate the Indians with the goal of teaching them farming methods and eventually integrating them into the mainstream. The Apaches however, had no interest in learning to be farmers. They knew where the vegetables were and they knew how to "gather"

1997 JOURNEY UNDER THE EARTH CARLSBAD CAVERNS

them. The first incident between the apaches and the US was in 1861. Cochise was a big military leader and a politician and had a good relationship with the US government. But a boy was kidnapped and Lt Bascom was set to investigate. Cochise was brought in for questioning and said the apaches had nothing to do it. But Bascom doesn't believe him and decided to keep Cochise prisoner. Cochise escaped but four other apaches are held prisoner. Cochise then went and took two white men hostage and suggested an exchange. In the end all the hostages on both sides are killed. Cochise also attacked a wagon train and killed all 30 people. This started a long war between the apaches and the government. It turned out the Tonto apaches had kidnapped the boy and Cochise's tribe had nothing to do with it. A gold strike was made at Pinos Altos in 1860. For a while the Indians tolerated it. Then there was an incident and Mangas Colorados and Cochise decided to rid the country of white men and attack Pinos Altos. Some were killed and a siege of almost a year surrounded Pinos Altos. In 1862 the California Column of troops broke the siege. After the war the government tried again to put the apaches on a reservation. A deal was struck with Cochise and the Chiricauzas. But the reservation did not last very long because the reservation was close to the Mexican border and the apaches felt their agreement did not extend to Mexico and started raiding the Mexican farms, coming back to their reservation for sanctuary. The Mexicans complained to the US government. Then gold was found on the reservation and the miners wanted the Chiricauza moved to a different reservation near San Carlos, which wasn't a nice place and was already settled by the Tonto Indians. Then Cochise died of natural causes, and the Chiricauzas were forced to move to San Carlos. Many flee. Victorio, of the Warm Springs branch, with 400 men women and children were pursued by the government. It took a year and a half until the Mexicans killed him. Dinwiddie described some of the Indian raids. Geronimo was the last of the Apache warriors. He was not a politician like Cochise. His family was all killed about 1854 by Mexican soldiers and he devoted the rest of his life in avenging the killing. He was a heavy drinker and he was very dangerous when he drank. He was suspected of making many gruesome raids against the population. Gen. George Crook tracked Geronimo in Mexico and asked him to surrender and Geronimo agreed. He was allowed to keep his weapons until they were back in the United States because Crook did not want the Mexicans to get the bounty for Geronimo's capture. Geronimo escaped but in 1876 he finally surrendered to Gen. Miles. Geronimo and the scouts that brought him in were going to be shipped to Florida for rehabilitation. Eventually they are sent to Ft Sill, OK, and Geronimo became a celebrity there, but he was never allowed to go back to the SW and died in 1909 of pneumonia and is buried at Ft Sill.

Then we had graduation, and I got a certificate. Would I go on another Elder Hostel? Probably, but I would pick one with better housing. It was more strenuous than I had expected and I got very tired but the learning experience is always fun.

Then I drove the 150 miles back to El Paso. Delta flew me to Albuquerque, United on to Denver where I was so glad to see Scotti. On Saturday we shopped, saw a funny robin Williams movie called Father's Day and drove to Fort Collins where we took Rich and his girl, Esther, and roommate, Mitch, out for dinner. Sunday was mother's day and after brunch we went to see a great performance of Showboat, visited with Scotti's boss and her husband and had supper at Rose's. Monday I returned to Atlanta.