argue the point. This I do know — she was a very sick little girl, with a very high fever, and Dr. Thompson jerked her out of it almost like a miracle.

When the doctor told us we might go on, we returned to Birdie's Mother's; sold our Model-T Ford; built a very large, homemade luggage carrier onto the rear end of the Willys and prepared for the long trip. Boulder Dam is a long way from Indiana! We didn't know if we would ever get back, so we thought we had better visit as many of our relatives as possible on the road. (We didn't get back for another visit for fifteen years.) We visited my sister, Ruth Anna, in Wabash; Birdie's uncle in Kokomo; two of my nieces, Esther Sexton and Mildred Voss, in Chicago; and my Alma Mater, Penn College; my sister-in-law, Jessie, and some of my old friends in Oskaloosa, Iowa. Then we visited one of Birdie's brothers, Lee Pickett, in Norfolk, Nebraska, and the other brother, Ross Pickett, in Topeka, Kansas. From there we went down into the southeastern part of the state where I had lived. In Labette County, Kansas, where I was born, some things looked natural; others had changed. I didn't find a person I knew. I had been gone thirty-eight years from Cherokee County, yet I found several people I had known and they gave us a very warm reception. We spent our last night in Kansas in Coffeeville, scene of the Dalton Brothers' last bank robbery, in 1892. That was before the word "Motel" had been invented. We spent the night, and many succeeding nights, in what was then known as tourist cabins. They all had full cooking facilities, bedsteads and mattresses—but little else. We carried our bedding with us.

Chapter 22

THE WIDE OPEN SPACES

From Coffeeville, we went southwest into Oklahoma—more or less where Highway 169 runs today. At that time it was not a highway at all but just a succession of section-line roads to Tulsa. There we took Highway 66, a road later made famous by John Steinbeck in his book, "The Grapes of Wrath". In Chapter 12 of that book he gives a much more vivid description of the country and the road than I know how to write; and our trip over it was only a very short time before his. It was such a joy and comfort to drive over that smooth pavement after so many miles of deep dust on the dry, dirt roads.

Our joy was short-lived. Soon it began to rain; and, about a dozen miles beyond Oklahoma City, the pavement ended. The road had been very hard and dry with a deep coating of dust on top. The rain had soaked the dust into a soapy solution and the ground underneath remained hard so cars slid everywhere. I am not quite clear if the exodus from Arkansas and Oklahoma that Steinbeck describes had already begun, or if this traffic was of local origin. This I do know. Never in all my life, neither before nor since, have I seen so many cars in serious trouble in so short a distance as I saw between the end of the pavement and El Reno, Oklahoma, which was the first town. They were all headed west. The rain was pouring down; the road was graded; cars were sliding everywhere and many of them were in the side ditches with no hope of getting out without help. There was very little possibility of help that night. Many of the cars were drowned out. Fortunately, the traffic was all going my way. I drove very slowly and very carefully right in the middle of the road. The car did a lot of skidding and sliding but I managed to get into El Reno before dark. It was not a very large place at that time and every tourist cabin in town was already occupied. Through a filling station attendant I found a private house where the owner was glad to take us in and earn a little extra money.

It rained most of the night and the next morning

where General Lew Wallace lived while he was Governor of New Mexico and while he wrote "Ben Hur". We also visited the oldest church in what is now the United States, built in 1541. Both buildings are of adobe construction. The French priest who showed us through the church called our attention to the enormous amount of hand-carving there was on the furniture, the images, and the finishing of the building itself, then said, "Two very important tools they used when building and finishing this house and its furniture have been completely lost—Time and Patience."

The next day was Sunday. I was driving along at about thirty-five miles an hour over a lonely, washboard desert road, some fifty or sixty miles west of Albuquerque, New Mexico, when suddenly the cross rod that connects the steering apparatus between the front wheels, let go! The left front wheel swung out and started out across the desert in a direction all its own, entirely disconnected from the steering apparatus but not from the axle. Had we been on a graded road with deep side ditches, anything might have happened. As it was, we merely traveled out across the desert until I could get the car stopped. The rod had stripped a thread. I had not a thing to fix it with; there was not a car in sight; we had not passed a garage since we left Albuquerque; and I had no idea how much farther ahead we would have to go to find one. I put the rod back in place but had no way to hold it since the thread was stripped.

The landowner on one side of the road had started building fence. He had his posts set and one strand of wire unrolled but not stretched. I was in very much the same condition that David was in when he ate the shewbread that was in the temple—desperate! Matt. 12:4. The Bible says he did so without sin. I hated very much to do it, but I cut a piece of wire out of that strand; put it around the two arms of the steering gear; twisted it tight with the pliers; limped on to a garage some thirty or forty miles away where I got the rod welded in place. I would gladly have paid for the wire if I could have found anyone to pay.

Our next stop of interest was the Petrified Forest in Arizona. That was a great surprise. In my book, a forest is standing trees. I expected to see a lot of standing trees—petrified. A petrified log

yard would have been a much more accurate name for what I saw. It had been a forest—but that was millions of years ago. Today it is several thousand acres of desert land, sparsely sprinkled with petrified logs—the largest of which are more than three feet in diameter and fifty or sixty feet in length. The museum there was very interesting and we spent quite some time in it. The Ranger told us we could not take any specimens out of the park but told us there were some logs outside of the park on government land, where we could help ourselves. I think we played the hog. There were so many beautiful samples it was hard to leave any behind. Everyone picked up as if he were the only one collecting. We had no way of weighing them, but we must have had nearly a hundred and fifty pounds. We took them with us all the way up into Utah. We were in Utah so long we found out how worthless they really were. After we left Utah, we had to have a lot of our goods expressed to us. I did not think they were worth the express so ordered them left behind.

In reading about the proposed Boulder Dam on the Colorado River, one of the things that impressed me was the statement that the Colorado River water was too thick to drink, but too thin to plow. When, at last, we came to the river, the water indeed looked the part, and there were times while I was working there that it wasn't much too thin to plow. Several times while I was operating the sand classifier—while working on the dam—the water got so muddy we couldn't wash the sand in it. At such times, we screened the sand out of the gravel; ran the gravel over the classifying screens and pumped the sand out into the desert.

Incidentally, Colorado is the Spanish for red. The Spaniards named the river that because of the red mud it carried. There is also a lot of confusion about the name of the dam. Herbert Hoover, although born in Iowa, spent many years in California. He always had the interests of the west at heart. While he was Secretary of Commerce, some prominent California politicians and the Bureau of Reclamation got the grandiose idea into their heads of building the biggest dam in the world in Boulder Canyon on the Colorado River. It was to be a three-purpose dam: flood control, power and irrigation. Secretary Hoover,

Senator Hiram Johnson, and Congressman Philip Swing—working together—concocted what was known as the "Swing-Johnson Bill" or "The Boulder Canyon Act" and got it through Congress. It provided for building the dam in Boulder Canyon.

After the Bill was passed and engineers went to work on the project, they drilled holes in the bottom and sides of the canyon and found that they were badly crevassed and wholly unfit for a dam foundation. They then went about thirty miles down-river to Black Canyon to investigate—and found it superb. It was an andesite rock, so good that the four diversion tunnels—each fifty-six feet in diameter—were blasted through the canyon walls without using one bit of shoring or lining. Whether it was the Secretary of the Interior, the Bureau of Reclamation, or a subsequent act of Congress that authorized the dam to be built in Black Canyon instead of Boulder Canyon, I do not know. Neither do I know who named it Hoover Dam, though the name was well-deserved, since Herbert Hoover had done more toward promoting the project than any other one man and was President of the United States when work was finally begun. Under that name the Government advertised for bids. The contractors began work and had all their printing done, including the brass badges the men had to wear.

After Roosevelt was elected President, he appointed Harold Ickes as Secretary of the Interior. Ickes was so narrow-minded a Democrat that he could not stand to see any honor go to a Republican—no matter how much the honor was merited. So he issued an edict, arbitrarily changing the name to Boulder Dam, in spite of the fact that it was thirty miles from Boulder Canyon. Printing and badges were never changed. During Truman's administration, his Republican Congress officially changed the name to Hoover Dam and Truman signed the Bill. So Hoover Dam is now the official name.

We reached the Colorado River at the little town of Topock, Arizona, and crossed over into California. Rarely has anyone been more disappointed in a place than I was in California. I first decided to go there while I was in North Dakota. Brother Robert diverted me from going just then, but I expected to go later. That diversion had become quite prolonged; but now, after thirty-two years, I had arrived. Instead of the

big trees, the beautiful orange groves, and the luscious vegetable gardens I expected to find, here was only rolling, hilly, and rocky desert where nothing would grow but sagebrush and greasewood. If this was California, let those have it who wanted it. I wanted no part of it! I had read of California's great expanse of latitude, and its great variety of climate, scenery, and agricultural products, but that all melted into nothingness when confronted with this great expanse of worthless desert. I had pictured California as a veritable Garden of Paradise on earth and this definitely was not it. I drove for about twenty-five miles through that forlorn country and turned off into Nevada—leaving California, I hoped, forever. Nevada was not much better, but I had not expected so much from it. After some seventy-five or eighty more miles of desert road, we came up onto a high pass—known later as Railroad Pass—and looked down on Las Vegas, our destination. It was the closest human habitation to the damsite. In the evening sunshine and in that desert air, it looked very close and we rejoiced that we were so near our journey's end. Actually, it was still twenty miles away as a crow would fly but much farther over that sandy, dusty, winding desert road we had to travel.

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"Vega" is the Spanish for meadow. Just southeast of the town is a very large spring, fed by the snows on Mt. Charleston. The spring was surrounded by quite an extensive grove of big cottonwood trees and the water, flowing from the spring, spread out and watered quite an extensive grassy plain which doutless suggested the name of meadow or "Vega". Water is a very important item in a desert country. Wild animals assembled here in great numbers to drink the water; eat the grass;and, lie in the shade. Then came the Indians; followed by the Spaniards. The Spaniards' wanderings were in search of gold or booty. They found neither here, so named the place and moved on.

Next came the Mormons. When they blazed the Mormon Trail from Salt Lake City to their very extensive tract of land in San Bernardino County, California, they came by here and made this a watering and camping place on the trail. When the stern-wheel steamers began plying the Colorado River, the head of navigation was very near here. The Mormons built a big adobe

warehouse at that point and named it Callville. They began ordering merchandise from New England and Europe; had it shipped around Cape Horn on "Windjammers"; trans-shipped at the mouth of the Colorado River to river steamers and delivered to Callville. At Callville, it was loaded on ox wagons and hauled some four hundred and fifty miles to Salt Lake City. As the grass below the big spring was the only animal feed for many miles along the trail, the freighters made it a practice to stop several days at Las Vegas to feed and rest their oxen. Next, the Mormons built a big adobe house and opened up a combined Mission and Trading Post for the Indians. When we arrived, this building was still in good repair. The Government had taken it over as a laboratory and living quarters for some of its men.

When the Salt Lake and Los Angeles Railroad was built, it too needed water, so they built it past here; made this a division point; and built their machine shops here.

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When we reached town, by far the largest part of the inhabitants were railroad employees. There were a few saloons, hotels, gambling joints, and tourist cabins. Already the town was beginning to fill up with other people who, like myself, had come hoping to get work on the dam. The tourist camps were full of them. Many who could not get into the camps, or did not have money to pay for their lodgings, were camped under the cottonwoods. We stayed in a tourist camp until I saw a family moving out of a duplex. I rushed right over; rented it; moved in and put the children in school.

I soon discovered that I had arrived at just the wrong time. All the preliminary engineering for the dam had been completed and the contract for its construction had not yet been let, nor could I find out when it would be. I contacted every contracting firm in town and they all had all the men they could use. The railroad company started to build a spur track out to the damsite. I went there the morning work started, hoping to get some kind of a job—even if I had to use a pick and shovel. There were three men there for every job.

I had gone to Las Vegas in the first place because there was no work anywhere else, and this was,

at least, a prospect. I stayed for about two months. Things were getting worse rather than better. Men were coming in by the hundreds, hoping to get work on the dam. I had left Florida with more than a thousand dollars that I had saved on my Cuban job. With our long trip; rent to pay; and seven of us eating, it was melting fast! I was getting desperate!

Then one day I saw an ad, in the local paper, of a tourist camp for sale and went down to investigate. The camp was way up in Utah. The owner was a Mrs. Taylor. It had been a good paying proposition so long as she operated it herself, but her health broke down. She leased it and moved to Las Vegas. Her tenant had let the place run down and was not keeping up his payments. She was not physically able to take it over herself so had decided to sell it. She made me what looked like a good proposition, so Birdie and I went up to look at it. It was at Virgin, Utah, a Mormon settlement on a desert, unpaved road that connected Zion National Park with Highway 91. Also, if you had courage enough, you could go from Zion Park, over desert roads some 250 miles, to Flagstaff, Arizona. I learned later, to my sorrow, that few had the necessary courage.

The camp consisted of four double cabins; a combined office, store, and dining room—with a kitchen adjoining; a big dance hall and a filling station. All buildings were of adobe. The plumbing consisted of a bowl, a pitcher of water and a slop jar. That really sounds antiquated today, but it wasn't too far out of line at that time. The water supply was a big cistern that caught water off a lot of roof when it rained, but that was semi-desert country; it didn't rain half often enough. When the cistern went dry, water had to be hauled from a nearby mountain stream to fill it. In the spring of the year when the snow was melting off the mountains, the water was nice and soft. In the summer when the stream was fed by springs, the water was so hard that—as one of our guests expressed it—if you should drop it, it would break. All cabins were equipped with a full set of cooking facilities.

Mrs. Taylor showed us her books for when she operated it. It had indeed been a prosperous business. Neither she nor we realized the financial change that had come over the whole country in the more than two

years since she was operating it. She offered it to me for $12,000; $500.00 cash and $50.00 a month until paid for. I didn't have the $500.00 but knew where I could borrow it. I considered the price reasonable for what she had, so we bought it and moved in. Her tenant really had—just as she said—let the place run down. Even left the doors open and let the chickens roost in the cabins. We had a real job cleaning up. The neighbors told us he spent most of his time making moonshine liquor. When he got a good supply on hand, he would give a dance in the dance hall; sell his liquor; and generally have to call the deputy sheriff to keep his guests from beating each other up.

About the first thing I did after we got the place cleaned up, was to go to Cedar City; spend my last dollar for a supply of groceries and gasoline and opened up for business. It was both in the dead of winter and the depth of the depression. We had a little business in all catagories right from the start, but not nearly enough to feed and clothe seven people and make the payments on the place. To make things worse, Birdie was washing one morning when the gasoline stove exploded and set the kitchen on fire. Fortunately, no one was hurt. As I said before, the building was adobe. Had it been of wood we would have lost the whole place right then. As it was, all there was to burn were the doors, window frames and roof. Just as soon as I could get in through the smoke, I rushed in, grabbed some clothes out of the tub and beat out the fire in doors and windows before it got into the roof. We lost two doors and two windows and had an awful lot of smoke damage. The Insurance Company took care of our damage, but they were so slow getting at it that we lost a big part of the little business we did have. What little business we had left, not only didn't keep me busy, but paid only a very small fraction of our needs.

Times were so tough, in general, that the State Highway Department started spreading relief around by giving work on the highway. I put in an application. They told me they only had a limited amount of money to spend, so were obliged to spread it very thinly. The best they could do was to give me two days' work a week. They worked ten hours a day, and the pay was twenty-five cents an hour—or five dollars a week—for shoveling gravel! That was about as big a come-

down as a man often has to take—from three hundred and fifty dollars a month and expenses to five dollars a week and board myself—from supervising eleven hundred men to working on the business end of a shovel handle.

I never knew but one man that took a greater fall without cracking. I first met him in Montana. He had been an employee of the Dutch Shell Oil Company, out in Borneo, for several years on a salary of six hundred dollars a month, which was really big money in those years. The Company wanted him to go to South America, but he didn't want to go. He had saved his money; and, as he expressed it, he was "Nigger-rich". He resigned and went into the oil business on his own and lost every dollar. When I first met him he was a labor foreman for Henry Kaiser on a pipeline in Montana. When I last saw him, he was wearing a hard hat and working as a common laborer on a clean-up gang on Hoover Dam. He only had a wife to support. I had a whole family.

The natives raised a lot of wheat and navy beans by dry farming up on the Kolob Plateau just above where we lived. They were, by far, the cheapest food we could buy, so we bought them by the bushel and reduced our diet pretty much to boiled wheat and beans. If anyone has any doubts about the monotony of that diet, just let him try it.

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As stated before, this was in a Mormon settlement. I first learned about Mormons as a boy in Indiana. An agent came through the country selling a book about them, and Uncle Robert bought one as a birthday present for Aunt Julia. She let me read it. I found it very interesting, very enlightening, and also very shocking. It was written by a woman who was not a Mormon, but whose husband was. Whether he was a Mormon when she married him or joined later, I don't know. She married him in Missouri or Illinois and went with him on the long trek to Salt Lake City.

The Mormon Church was originated in New York by Joseph Smith about 1830. They moved to Ohio, and a little later wanted to move to Missouri. The Governor would not let them come into the state, so they founded the town of Nauvoo, Illinois. One of the tenets of the creed is that a woman has no rights of her own, and can be saved or inherit eternal life only through her

husband. Smith's preaching was much more generally accepted by women than by men. According to him, a woman married to a non-Mormon—whom they called Gentiles—had no hope of a life after death unless she was sealed to a Saint (Mormon) by a spiritual marriage. Joseph Smith never advocated polygamy. He wrote the "Book of Mormon" and I was very much surprised when I read it that there are two whole chapters in it instructing members not to practice it—and explaining why. Under those circumstances he couldn't turn right around and advocate polygamy, so he invented "Spiritual Marriages". Personally, I can't see any difference between a Spiritual Marriage and a Carnal Marriage. When Brigham Young took over the direction of the Church, he cut away all camouflage and, openly, both preached and practiced polygamy.

In both the human and the animal kingdoms there is an unwritten law that when a third party of the same species comes between a male and his female, that third party is plainly looking for trouble. In Nauvoo, Illinois, Joseph Smith did exactly that by getting women to leave their husbands and be sealed by Spiritual Marriages to Mormons. Trouble wasn't long in catching up with him. First, officers arrested him and his brother and put them in jail. That was not enough to satisfy the aggrieved husbands, so they formed a mob; broke into the jail and shot both of them right in their cells. The feeling against the Mormons was so strong that they had to get out of Nauvoo in a hurry.

The officers of the Church met and unanimously elected Brigham Young as their new leader. They could not have found a more competent one. He led the whole colony to Council Bluffs, Iowa, where he left the main body while he, with one hundred and forty-three followers, pushed on to the Great Salt Lake in Utah. When he saw the desert valley beside the lake on July 24, 1847, he exclaimed, "This is The Promised Land!" He laid out irrigation ditches; put the men to digging them; to planting such things as could be planted at that time of year and made preparations to receive the whole colony. With his work at Salt Lake well organized, he hastened back to Council Bluffs. The following spring he led the whole colony to Salt Lake.

In the meantime, while the Mormons were encamped at Council Bluffs, the Mexican War broke out. President Polk sent an army recruiter to their camp. Everybody was very unsettled; and, not having anything in particular to do, a whole battalion volunteered in twenty-four hours—probably the most rapid volunteer recruiting in all history. They only volunteered for one year and went down in history as the Mormon Battalion. First, they marched to Ft. Riley, Kansas, where they put in a period of training; then they headed west on foot. At Raton, New Mexico, they were divided. One part went north to Denver to garrison that city which had just been taken from the Mexicans. The rest continued west to San Diego, California. That trip through the deserts of southern Arizona and California must have been awful. They put in the rest of their time doing garrison duty in San Diego. If either bunch was ever in a battle, I never learned of it.

At the end of their year they were all mustered out. Those in Denver promptly joined their families at Salt Lake. From San Diego to Salt Lake was a much longer and more difficult journey. They did not have Uncle Sam to furnish the groceries and camp equipment; nevertheless, a part of them made the trip. Others went into northern California to dig gold. Of those who went to dig gold, some went later to Salt Lake, and some stayed in California and were lost to history.

The lady who wrote the book went into quite a little detail of their hardships and sufferings along the long trail from Council Bluffs to Salt Lake. She told of other men marrying plural wives, but said her husband never did. If he ever paid any attention to another woman, she never caught him at it. He was always very kind and considerate of her; and, while he suggested that she should join the Church, he never insisted. Long after they reached Salt Lake and had their own shack erected, a bunch of howling, yelling Indians in war paint and feathers, went by their house one day while they were eating dinner. She made some remark to the effect that the City Council should not allow the Indians to come through like that and disturb the quiet of the place. Her husband smiled and said that those were not exactly Indians. They were the "Avenging Angels". He didn't explain.

Little by little, by observation and talk with

other women, she learned that the "Avenging Angels" were a bunch of murderers and cutthroats that Brigham Young kept employed. They dressed as Indians; went out and attacked the emigrant trains going to California. They killed the men and drove off the horses and cattle. Next day, the Mormons would go out and very sympathetically bring the widows, orphans, wagons, and supplies into the nearest Mormon settlement where they were cared for. Soon the women married Mormons and the children were brought up as Mormons.

One day the author made some remark to another woman about some of the things that were going on. The other woman told it where it came back to the author's husband. He was the sternest to her that he had ever been. He told her that if she didn't keep her mouth shut it would involve them both. That he had already had great difficulty keeping them both out of trouble because she talked too much, and he didn't want it to happen again.

He was a member of the Church Council, and was spending more and more of his evenings at Council meetings. Because of his changed attitude toward her and his spending so much time at Council meetings, she began to wonder if he really was spending his time at Council meetings, or if he was spending it with another woman. She heard that on account of so many Indian massacres in that region, the government had established an Army Post not many miles away. One night while he was at Council meetings, she dressed in his best suit of clothes; mounted his best horse and rode into the night. She didn't stop until she reached the Army Post. At her request, they sent her east on a supply train. She got back to her own people and wrote her book.

The climax of the murders came with the Mountain Meadows Massacre in 1858. The organizer and perpetrator of that massacre was John D. Lee, a man very high in the Council of the Church. The book "Early Mormons in Arizona" goes into the organization of the affair in great detail, but studiously avoids naming the man responsible. I have talked with many Mormons about the affair and they do not agree. Three of John D.'s sons and several of his grandchildren were neighbors of mine there at Virgin. I never talked with any of them about the affair. I did talk to Leslie Wilcox, son-in-law of one of them, and to Bishop Earl, head

of the local Church. Wilcox said that John D. did it all right, but that he did it on direct orders from Brigham Young. Bishop Earl said that he had no such orders. That he and some of his friends did it out of pure greed. That emigrant train had the finest horses and cattle that had ever come out of the East and they wanted them. A man named Gates, who lived at Hurricane, told me that Brigham Young sent Gates' grandfather posthaste to tell John D. to let this train go by. He rode day and night to deliver the message, but he arrived too late. The question that strikes me is, if Brigham Young had not previously given an order to murder emigrant trains, why would he send a messenger with such great urgency to let this train go past? It looks to me—from this distance—like John D. had a general order to murder the trains as they came; that sometime after this train passed Salt Lake, Brigham heard some kind of rumbling that Washington was beginning to take notice of the great number of murders out here; so decided that this train should be allowed to pass—but made his decision too late.

It has been about twenty-seven years since I read "Early Mormon Settlers In Arizona". I have no idea where I could find a copy. Memories are frequently faulty, but the following is as nearly as I can remember what happened: Feed for animals is very scarce on the desert. Mountain Meadow was a high plateau with plenty of good grass, so the train camped here a few days to rest and feed their livestock. John D. went to them; made friends with them and told them they were coming into Indian country which was very dangerous. But he was friendly with the Indians; and, if they would give him their firearms and obey his instructions, he would take them safely past the danger. On the day the emigrants chose to move on, John D. had them put Mormon drivers on all the wagons, under the pretext that the Indians knew the Mormons and would let them pass. He had all the men walk behind the wagons. They started shortly before night, supposedly so they could go through the Indian country during the night. Shortly after dark the "Avenging Angels" attacked the train and killed every man in it.

Sometime after the massacre, Lee took over the operation of a ferry across the Colorado River near the mouth of the Paria River. This was far from the scene of his crime and still bears his name. The

Government sent soldiers to investigate this massacre. Apparently there were very few who knew anything about it, and those who did know would not talk. In the meantime, John D. was many miles away at his ferry. But even ferrymen must eat! I have no way of knowing how much time the soldiers spent hunting evidence, and how much looking for John D.; but, after seventeen years, they arrested him when he went out for supplies. It took three more years to get him convicted and executed. He faced a firing squad on the scene of his crime. Usually a man is blindfolded when he faces a firing squad, but men who knew John D. told me that he told the soldiers he didn't need a blindfold. He walked boldly out and pinned a piece of paper over his heart for them to shoot at.

During the three years Lee was in prison, he wrote a book, "Mormonism Unveiled". I don't know how he got it published. Maybe the Army did it for him. The Mormons did not like it and destroyed all the copies they could get their hands on. Along with many other things, it contained one very significant but highly controversial statement: "Joseph Smith was a Saint, but Brigham Young was a Devil Incarnate". I am very skeptical about the first part of that statement, but agree with the latter part one hundred percent. At the same time, I take off my hat to Young as a great engineer and the greatest leader of men since Moses. Moses had a much larger congregation, but God was leading him and fed the people with manna. When, at last, they reached the Promised Land, they drove out the inhabitants and "harvested the crops that they had not sown". Brigham Young was strictly on his own and had to feed his people as well as lead them. There were plenty of buffalo while they were crossing the Plains; but when they entered the desert they had only a few birds and jackrabbits, with an occasional deer—nothing like enough to feed so many. I don't know how he did it, but somehow he managed to feed them and keep them together.

After they arrived, he laid out irrigation ditches. The men had to dig them and irrigate the ground before they could plant; then wait for their crops to grow before they could eat of the fruit of the land. One cannot but marvel even today at the wonderful irrigation systems he laid out; the city which he designed with wide straight streets; planned for the future

and the Temple which he built.

There is a saying up through that country that a good Mormon can make water run uphill. If you don't believe they can do it, just take a drive up through almost any agricultural district in Utah. There are a lot of irrigation ditches beside the roads and to the great surprise of most strangers, the water in about half of them is running uphill. Of course, it is an optical illusion, but it looks convincingly real. If you have any doubts about the reality of what you see, just take your foot off of the accelerator.

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When I moved to Virgin, there was an irrigation project under construction, bringing water to my land and several surrounding tracts. But Brigham Young was dead and had not engineered this one. One day I walked out to where the men were working to see how the work was coming and, to my surprise, I saw no grade stakes. I went to the foreman and asked who their engineer was. He told me they had no engineer and, furthermore, he didn't need one. To prove it, he showed me the water in his ditch just behind where the men were digging. Then he made the revealing crack. He said he had spent the best seventeen years of his life getting the water this far and was glad indeed that he was so nearly through.

When the water finally reached my land, I decided to have a look at this marvelous ditch that was dug without an engineer and had taken seventeen years to dig. I walked over it when the water was running and the very first thing that caught my attention was the unevenness of his grades. In places, the water was running like a mill race; in others, it was barely moving. Running water carries silt, and the faster it runs the more silt it carries. On the steep grades, the water was eroding the sides and bottom of the ditch. On the flat grades, the water was dropping the silt it had picked up on the steep grades. If there wasn't someone handy with a shovel to build up the bank, the water would soon overflow the lower bank; take out across the desert benefiting no one and depriving everyone of water farther down the ditch. In places along that part of the ditch which had been in use for some years, the lower bank had

been built up a little at a time until it was three or four feet above its original height. I found many places where he had dug several feet of ditch. When he turned the water into it, it either wouldn't run at all or ran too fast, having to be abandoned and a new ditch dug. Finally, I came to where the water was coming out of a tunnel through a spur of the mountain. That was something that needed some study, so I proceeded to look into it. It takes time and costs a lot of money to dig tunnels, even small ones. The spur of the mountain ran right down to the edge of a mountain stream. There was no room for a ditch between the mountain and the stream. The irrigation ditch came out of this stream just above the mountain spur. Further study revealed that he could have put his intake just below the mountain; and by using flatter grades, he could have reached my place just as high up as he was, thus avoiding the tunnel and a lot of maintenance. By putting in grade stakes, he could have used a lot more men and would not have had to abandon any ditch. It doesn't cost any more to hire one hundred men for one month, than to hire one man for one hundred months. I would have put enough men on to complete the job in one season and had the use of all the land for the other sixteen years.

It has been my life custom that wherever I am if there is a Sunday School or Church within reach, I attend. Here the only Church was the Mormon, so I attended that. Bishop Earl taught our Sunday School class. One Sunday he surprised me. He said, "Mr. Williams, I am going to ask you to do something that I very much doubt if any Gentile has ever been asked to do before. I want someone to teach my Sunday School class next Sunday. You know a lot more about the Bible than any other member. Will you teach it?" I taught it and several members of the class told me they enjoyed my teaching very much.

I have been asked many times what kind of people the Mormons are. I learned a long time ago that you can't classify any race or sect. There are good and bad among all of them. We were told that Brigham Young had a tough bunch that he couldn't handle, so he settled them down here which is some two-hundred and fifty miles from Salt Lake City where they would at least be out of his way. He labeled them "Jack Mormons". I never knew why he named them "Jack

Mormons" until quite recently when I read an article about the Mormons in "Look Magazine". It said he named them that because they so much resembled the four-footed, long-eared animal of that name, in that they were so long on noise and so short on pulling on the traces.

The moral code of the Orthodox Mormons is very high. They use neither tea, coffee, liquor nor tobacco. Our neighborhood was mostly made up of Jack Mormons. I think they all used tea and coffee; most of the men used tobacco; and some not only used but manufactured and sold liquor. One thing strange to me was that they held dances in the church buildings and opened them with prayer. In the local church, some of the members frequently got so drunk they had to send for the deputy sheriff to keep order. Naturally, we never went.

One day I got another surprise. The wife of one of the local members told me they were having a homecoming with a supper and dance at the La Virkin Church, a few miles away, and invited Birdie and me to go. I thanked her and told her we had never lived there, hence it would be no homecoming for us. We would know no one there except a few from our neighborhood and, furthermore, we didn't dance. She almost insisted that we go and finally got to the point. They had more members in Virgin than they had cars to haul them. I had a car. If we would go and haul some of their people, they would buy our gas and oil and give us our suppers. After much persuasion, we went. It was a very orderly affair in a very large church. They opened with prayer; squared off and danced a while. They then stopped; served a splendid supper and danced some more. I didn't dance any but spent a very pleasant social evening with others that were not dancing at the time, and I saw no sign of drinking nor boisterousness. This church was outside of the Jack Mormon settlement. If there were any Jack Mormons there, they behaved themselves very circumspectly, as did the local members and the homecomers.

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Just a little amusing sidelight on one particular Mormon family. At Boulder City, I had a Mormon family living in my house and I boarded with them. The woman's parents were Germans who emigrated to the Argentine where she was born. Her father was killed

in an accident when she was seven or eight years old. Her mother returned to Germany; met and married a German Mormon and the family emigrated to Salt Lake City, where her daughter grew up and married. Work was scarce around Salt Lake City just the same as in the rest of the United States, so her husband came to Boulder City and was lucky enough to get work. There we worked seven days a week. When their baby was a few months old, she wanted to have it baptized but he wouldn't take time off from his work to attend. I made some kind of a remark to the effect that he must not be a very good Mormon or he would take time to attend his only son's baptism.

"I should be a good Mormon. I have been baptized three times."

"Why? Do the Mormons immerse three times like the Dunkards?"

"Normally, they don't. But when the Bishop put me under, I came up swearing and he promptly shoved me under again. I came up swearing the second time and he chucked me under the third. By that time I decided that if I didn't keep my mouth shut that Bishop would drown me."

On the appointed day for the Baptism, he worked and she took the baby.

Whatever you can say against the Mormons, there is one good thing you must say for them: they look after their own. If anyone is in need, the Church relieves that need. During the dark days of the depression when there were so many thousands on government relief, there wasn't a Mormon among them except a very few who were isolated from their Church.

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Soon after we opened up for business, a man from Panguitch, about a hundred miles to the northeast, came by on his way to Los Angeles. He had a one-ton truck and made a business of driving to Los Angeles once a week and bringing supplies to a number of isolated stores in the southwest corner of Utah. He offered to buy me any supplies I needed and deliver them right to my door. I gave him a trial order; found that he could buy goods in Los Angeles; charge a reasonable freight and deliver to my door for just about what I could buy for in Cedar City. Thus I saved the time, gasoline, and wear and tear on my car. I became one of his regular customers. From Panguitch

to Los Angeles is something like five-hundred and fifty miles. He made the round trip every week besides making side trips to some of the stores that were not on the road. Ordinarily, he took a driver with him and one drove while the other slept. They drove right through without a rest.

We were away down in an isolated corner of Utah, where news did not get around very fast. There were no radios nor TV's in those days and I was too poor to afford a newspaper. One day when our Huckster came, he had big news. The contract for Hoover Dam had been let and work was already starting. That was about the extent of his information, but it was big news anyhow. He had some big orders for this trip. He was taking two trucks but only three drivers, so everyone would have to drive sixteen-hour days. Right on the spur of the moment, I decided I should, at least, try to get work on the dam, so I volunteered to drive one of the trucks as far as Las Vegas, just for the ride. We reached there about two o'clock in the morning and I went to a hotel. The night clerk told me they were full and he thought every hotel in town was, too. He gave me permission to sit in a chair in the hotel lobby until morning. After daylight, I started looking for something to eat. I had no difficulty whatever. Eating joints had sprung up all over the place.

I thought the best place to look for a job was where work was to be done, so I headed for the dam-site. I had no difficulty hitching a ride. It seemed like everybody and his brother was going my way, and a thick dust pall, kicked up by the traffic, hung over the whole surrounding desert. I didn't reach my destination. Eight miles horizontally and two-thousand feet vertically short of my destination, I ran into the biggest mad-house of men and machines it has ever been my privilege to see in action. They were building Boulder City. They had leveled off the highest hill and built a water tower on it. To the north, the ground fell off too fast to build a city on. To the east, south and west, it fell off more slowly in a long series of undulating hills. Bulldozers were leveling those hills like mad, and behind the bulldozers came the engineers, laying out streets and putting in stakes for sidewalks and sewers. Then, the ditching machines, digging ditches for sewers and water

pipes, and behind them the pipe layers. Even while the sewer and water pipes were being laid, the carpenters and concrete men were building warehouses, dormitories, stores, sidewalks, a water treatment plant, a sewage disposal plant, and many one-,two-, and three-bedroom houses. A very heavy pall of dust hung over the whole operation. On a job of this kind, a lot of the work must be done by hand, but here nothing was done by hand that could be done by a machine.

I asked about work on the dam, and was told they were not going to start any work on the dam until they had a place for the workers to live. That is why I didn't reach my destination. I don't think I would be exaggerating to say there were thousands of men and hundreds of machines on the job. Every foreman I asked about a job told me he didn't hire men, he only worked them. All men were hired at the recently opened employment office in Las Vegas. I spent the day just looking at the work going on. It didn't earn me anything, but was very interesting and instructive just to watch those machines do the work that man had always done.

In the late afternoon, I hitched a ride into Las Vegas. Then came the question of where to sleep. Every room in town was taken. I found an enterprising man who had rented a big parking garage; filled it with army cots and was renting them out by the night. I spent the night with him. Next day I went to the employment office. They had all the men they could use just now, but were registering all comers together with their names, occupations, and addresses for future reference. I registered as a civil engineer, but added that I would gladly accept a job as rodman. (I got a letter from them offering me a job as rodman long after I was working on a job away down in Old Mexico.)

In Vegas, I learned that this was the biggest contract ever awarded. There wasn't a contractor in the United States financially able to do the job. There were only three bids submitted on the job, and all of those were joint bids of more than one company. To my very great surprise, the winning group was headed by Henry Kaiser. He wasn't the heaviest stockholder because he didn't have that kind of money, but he was the one that got the group together and

organized the Company. There were six contractors: Utah Construction Co., Morrison and Knutson Corp., Pacific Bridge Co., Bechtel-Kaiser Co., and two other big companies whose names I no longer remember. They were incorporated under the name "The Six Companies". With the information that Kaiser was one of the contractors, my hopes rose. I learned that each of the six companies had a representative on the ground. I hunted up Kaiser's man and told him who I was. He was very cordial and very sorry. Every one of the Six Companies had joined in this bid so that they could hold their organizations together. There was no other work. They had more of their key men here now than could possibly be employed in their respective capacities. My hopes fell just as fast as they had risen!

It was about time for the trucks to return from Los Angeles. I went out and sat by the roadside until after eleven o'clock, waiting for them, but they didn't come. I learned later that they had already gone. So I went back to the garage for the rest of the night. Next morning I decided to try hitchhiking back home. I walked out to the edge of town and picked what looked like a good station. Both back toward town and up ahead, men were standing by one's and two's trying to thumb a ride. They didn't bunch up. Some folks will stop to pick up one or two but not a crowd. I watched the road and every once in a while a car would stop and pick up one or two on the town side of me.

Finally, it was my turn. An old man in an old jalopy stopped and said he was going my way for some fifteen or twenty miles but was then turning off to a mine he had there. If I wished, he would gladly take me that far. Where he left me, away out in the middle of the desert, I stood for hours trying to thumb a ride. The traffic wasn't heavy, but there were plenty of cars with only one or two persons in them, that could easily have picked me up, but they zipped right by at fifty or sixty miles an hour. Eventually, I got tired of standing and started walking. I came to the top of a hill where all cars would have to be going slowly, and thought maybe cars would be less averse to stopping when they were going slowly, but it didn't seem to help any. About four-thirty in the afternoon an Italian with a load of cement in an old

rattletrap Dodge truck picked me up. He lived in Moapa and had been to Vegas for his cement. It was almost dark when I reached Moapa. I had been an entire day, and had made about forty-five miles. I could have walked almost that far if I had just walked instead of waiting, hoping for a ride. Hitchhiking in the desert in the daytime was not easy, as I had just learned, and I knew it would be far worse at night. Moapa was a bus stop, so I waited for the bus. I reached Anderson's Ranch, our junction, just at daylight. I was known there so had no trouble at all to get a ride home in time for breakfast.

I had no idea where Bedford was; but thought that since Kaiser was a heavy weight on the dam, maybe Bedford could help me. I sat right down and wrote him a letter in care of the Oakland office. A few days later I got a letter from him from El Paso, Texas. He was sorry that he could not use me there. There were hundreds of idle men there who had had pipeline experience. Bedford was laying pipelines, so he could not bring in inexperienced men. He had nothing to do with the dam but maybe Kaiser could help me.

Mail was very slow in that part of the West in those days, and it took a letter a long time to reach its destination. I think it was the very next day after I got Bedford's letter written in El Paso, Texas, that I got a telegram from him from Douglas, Arizona. They had just signed a contract to lay a pipeline down into Old Mexico and he could use me now. He would pay me $200 a month and traveling expenses. I knew the reason for that. Below the Border a knowledge of Spanish was worth far more than pipeline experience. I wired him immediately that I would be there just as soon as possible.

There wasn't enough money in the store to pay my fare, so I started out to borrow it. It seems incredible today, but there wasn't a man in the whole neighborhood with twenty-five dollars available cash. My competitor had a checking account in the Hurricane Bank and wrote me a check. According to the map, it was only about five-hundred miles, the way a crow would fly, to where I wanted to go; but, the crows were not carrying passengers. There was no direct road, and the Grand Canyon lay directly across the route I wanted to take.

I had Kenneth take me in the car, first, to Hurricane which was several miles out of my way, to cash my check; then, to the nearest bus stop at Anderson's Ranch. The building was closed but the bus schedule was on the outside. The next bus was not due till far into the night and a cold wind was howling down out of the northwest. I couldn't face up to waiting for a bus there, so had Kenneth take me on to the next stop. It was in a store.

While I waited, a man I was acquainted with came along and gave me a ride into St. George. St. George, at that time, had the distinction of being the largest city in the United States not located on a railroad, a seacoast, nor a navigable river. It wasn't a very big city at that—maybe four or five thousand. It wasn't even on a through paved highway, but it was on the old Mormon Trail from Salt Lake City to San Bernardino, California. Sometime in the night I got the bus. We pulled into Las Vegas at three forty-five in the morning. Again I had to spend the rest of the night sitting on a chair in the hotel lobby.

In the morning, I got out and stirred around town to see how I could get on with my journey. There just wasn't any transportation going my way. I found five other men who wanted to go to Needles, California. We all chipped in and hired a Cadillac to take us there.

From there, a succession of desert roads went clear through to my destination, but there was no public transportation. The best I could do was to take the Los Angeles train that night to Cadiz, a junction point away out in the California desert. The conductor on the first train told me I would find it rather lonesome out there waiting for my other train. While there was a depot with the door unlocked, there was no night agent and no fire and the night was cold. The conductor gave me a newspaper, and told me that when I saw the headlight on the train, to light the newspaper and do my own flagging.

His statement that it was lonesome out there was quite an under-statement and the howl of the coyotes in every direction didn't help it any. We reached Phoenix, Arizona, the end of the railroad, about ten o'clock next morning and I found a bus to Douglas. We passed Boot Hill, where many a man who died with

his boots on lay buried, and stopped for supper in Tombstone—the world-renowned tough town where only a few years before Wyatt Earp had made himself famous as a law enforcement officer—and reached Douglas about nine-thirty that night.

Next morning, I hunted up Kaiser's office; but, as it was Sunday, the office was closed. I went to Methodist Sunday School and Church. In the afternoon I went sight-seeing in Agua Prieta, just across the Border. On Monday morning, I went again to the office, and met Edgar Kaiser, Henry's oldest son. He told me to just stick around until afternoon. He had to go to Mexico and would take me. In Naco, Mexico, he introduced me to a Mr. Kennedy, the superintendent of the Mexican job, who was to be my new boss. He, in turn, took me on to Cananea, the headquarters of the job. I had traveled more than a thousand miles to get five hundred.

Our job was to lay an eight-inch gas pipe from the Mexican Border near Naco, to Cananea, Mexico, where there was a very large copper mine and smelter. The ditch for the pipe was being dug with a huge ditching machine, but as it neared Cananea the ground became so rough and rocky the machine could no longer dig it. My particular job was to round up a bunch of Mexican laborers and dig it by hand with picks, shovels, jackhammers, and dynamite.

I soon discovered that my breed of Spanish was not exactly what they use "below the Border". My first day on the job I got a bunch of Mexicans together and told them in my very best Spanish, that next morning at six-thirty I would send a truck to the depot to haul them to work. I overheard one ask another, "What does he mean by cameon?" The other answered, "Un trockee." Another asked, "What does he mean by paradero?" "El depot." In Cuba, they use the unadulterated Spanish. In Mexico, they use the same grammar, but this close to the Border they use a lot of mispronounced English words, and they don't know the Spanish words. They, also, use a lot of Indian words, so I had to add many new words to my vocabulary.

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In all the years I was in Cuba, I saw very few drunk Cubans, and never did see one drunk enough to be in the gutter. Everybody drank a little but not

not enough to get drunk. If a man was seen dead drunk, everybody said he was an American. That was, alas, too often true, but not nearly always. Many sailors got drunk and jumped ship. If he didn't speak Spanish, the Cubans promptly labeled him an American. This gave us a very bad reputation. The dead drunks were about ten-to-one Europeans. We paid our Mexicans by the lineal meter; divided the ditch into sections; and, assigned each section to a group of men known as a Cuadrilla. At first, we paid them when they finished each section; but there was always so much drunkenness and absenteeism after each payday, that if we had any more work pushing, we learned to give them a new assignment without paying them. When that was done they could really have a big drunk. Many times when I went downtown early in the morning after payday, I would find some of my men lying in the gutter—dead drunk. The Cubans and Mexicans are both descended from the Spaniards. Why is there so much difference in their affinity for liquor? Could it be because of the Indian blood in the Mexicans?

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For measuring task-work, running the instruments, etc., I needed two helpers. I hired the son of an American storekeeper there for one of them. The Secretary of Labor came to me and asked me to hire his brother-in-law for the other. I hesitated because political employees aren't usually much good, but Kennedy said I had better hire him, as it wouldn't be a good idea to get the Secretary of Labor sore at us. He proved to be a very good man, yet wholly unintentionally, he gave me the worst "burn" I ever had in my life.

When I stopped to pick him up one morning, he told me that the Secretary of Labor had sent to Guimas and got a nice big sea-turtle. It was nice and fat now, and they were going to kill it that day and have a dinner party. They wanted me and my assistant to attend. I asked if the party was to be at noon or at night.

"At noon."

"Then I can't come."

"You come into town everyday for dinner anyway, and it won't take any longer to come here than to go to the restaurant."

"Yes, but I am not dressed for a party."

"You are dressed all right. I am coming just as I am, and you are dressed better than I." So I consented. My American assistant was wiser. He either found or made a plausible excuse not to attend.

When I went into the dinner, a young man was playing the phonograph. Soon the Secretary of Labor came in and gave him some money to go buy some liquor. When he returned he had quite an assortment—beer, rum, tequila, aguardiente, vermouth, and a few more. Then the guests began to arrive—the Mayor, the President and Secretary of the City Council, some of the members of the City Council, and various other dignitaries—all well-dressed. There was I in khaki and high boots. Then they began passing the drinks. I refused everyone, but it became quite embarassing.

Finally, they announced that the soup was on. They seated me beside my assistant. The first spoonful was liquid fire. With tears in my eyes and my mouth on fire, I sat wondering what to do next. My assistant, seeing that I was not eating, whispered to me that he was afraid I didn't like the soup. I told him I was sorry, indeed, but we Americans didn't eat our food as hot as the Mexicans did theirs. He said he liked his food plenty hot, or better yet have a plate of food in front of him and a saucer of chili peppers beside his plate, then follow each mouthful of food with a chili. He was sorry I couldn't eat the soup. The meat would be here soon and it wouldn't be so hot. When the meat came, my assistant ordered a saucer of chili and ate just as he had said he liked to eat—a bite of food and a chili pepper. Maybe the meat wasn't as hot as the soup, but it was still so hot I couldn't eat it, and his burning mouth didn't cool mine off any. I made my dinner on coffee and tortillas, but I had already eaten so much chili that my mouth burned for three hours.

The real sting came that evening when I went into the office. Tom Stroud, a Texan, was head of the office, and his assistant was an English-speaking Mexican. When I went in they were having real conniption fits. The evening paper had arrived and they had just read the flowery account of the excellent turtle dinner the Secretary of Labor had given a very prominent group of dignitaries. It mentioned the excellent condition in which the turtle was served;

named the various kinds of liquor served; then enumerated the very honorable list of guests. Toward the end of the list was N. K. Williams, representing the Western Gas Company. They read that last name just as I entered, and one of them exploded, "What in thunder is that Quaker doing at a feast where they serve all that liquor?" I didn't know I was representing anyone there but myself, and was already dreadfully sorry I was doing that. Right then and there I made up my mind that if I was ever again invited to a Mexican banquet, I was going to either be sick abed, or have a previous engagement.

Shortly before we finished the job, I got a long distance call from Birdie. Mrs. Taylor had found a man who would make her a larger down-payment than we had made, and she would give us our money back if we would turn the camp back to her. I told her to accept the offer, by all means, but to reserve the right to stay for a week or two. We would soon be through here in Mexico, then we were going to a job in Montana. I would drive by and pick them up. She asked if she might take the children for a trip to Grand Canyon while they waited, and I told her to go ahead.

Mrs. Taylor didn't do quite what she said. She charged the fifty dollars a month we had paid as rent, and gave her a note for the five hundred dollar down-payment we had made, but did pay cash for all the supplies we had on hand. She never did pay but $125 on the $500 note. I am not saying she was crooked. She was in very poor health and times were really tough. We lost all track of her soon after she paid the $125. She may have died. In spite of the loss, I am satisfied that we did the right thing to let go of the camp. Birdie could not have run it alone, so I would have had to give up my job—and the job was worth more than the camp.

After we finished our job, it was arranged for me to drive a company car through to Montana. I intended to go through Utah and get the family. Just about an hour before I was ready to start, a telephone call came from Bedford, in El Paso, Texas. He wanted me to come by El Paso and pick up three drivers and take them to Borger, Texas, where they had just finished a job. There we would leave the car and drive four pick-up trucks to the new job. That sure messed up my plans, but orders are orders! We spent a night

in Clovis, New Mexico, and I called Virgin, Utah, and asked them to call Birdie to the telephone. We lived about a quarter of a mile away. I told her of the change of orders; told her to store what things she didn't absolutely need; buy a luggage trailer to haul what she did need and meet me in Elliston, Montana.

When Bedford was routing us from Border, Texas, to Montana, he remarked that it looked to him like as good a way to route us as any was through Yellowstone National Park. It wasn't likely they would have things organized, ready to start work by the time we got there, so we might as well go that way and take a day off to see the Park. I picked up the three drivers in El Paso, and we traded our car for four pick-up trucks in Borger, according to orders. We spent a night in Colorado Springs and took a longing look at Pikes Peak. It now had an automobile road to the top, but the summit was all covered with snow. An inquiry brought the information that the road was closed and would be till the snow melted. A few miles before we reached Cody, Wyoming, we ran into a very heavy rain on a dirt road, and night caught us before we reached Cody. We had some very anxious moments, but made it safely. We reached the Park on June fourth, which is supposed to be summertime—and was, down in Mexico. However, we drove through several big snow drifts before we reached the lodges. None of them were open for business as yet. Even the roads in some parts of the Park were still closed. Since none of the lodges were open, we had to make a hasty run through that part of the Park that was open and go to Gardener, Montana, for the night. The next day we reached Deer Lodge where Bechtel-Kaiser was establishing headquarters and the following day Birdie and the children arrived from Utah.

The job here was to lay a twenty-six-inch pipeline, to bring natural gas from Cut Bank, in the northern part of the state—some one hundred and seventy-five or two hundred miles—to the mining town of Butte and the smelter at Anaconda. In order to get the job completed in one summer, the Gas Company broke it up into several contracts. Bechtel-Kaiser's section began at the little town of Elliston. It ran some twenty-odd miles as a twenty-six-inch pipe, then forked— a twenty-inch line running to Butte

and a sixteen-inch line going to Anaconda.

About the first snag we hit was the Labor Union. All this was mining country and was completely unionized. Before the headquarters was fully established, the Union Organizer from Butte came up to see Bill Fudge, Bechtel-Kaiser's Superintendent, who had also been a Superintendent in both Cuba and Texas, and informed him that he could hire nothing but local common labor and no skilled labor that didn't hold a Union Card. Fudge told him that was all right with him about the common labor if they had enough of it; but it would have to be a lot. As to the skilled labor, they had brought a lot of it with them from previous jobs, and couldn't very well fire them now. After some argument, Fudge wrote out a list of the skilled labor they were going to use and handed it to the Organizer—pipe layers, both acetylene and electric welders, cat skinners, bull-dozer operators, crane operators, ditching machine operators, and truck drivers. The Organizer looked the list over and shame-facedly admitted that their miners' Union carried none of these tradesmen but truck drivers. They had them! They were good ones and Bechtel-Kaiser would most certainly have to hire them, or they would shut the whole job down.

"That is too bad, because our trucks are big ones; have to be operated in very difficult places and it requires a special skill to handle them. We brought our truck drivers with us. They know their work; have been with us a long time; and we have no intentions of firing them to put a greenhorn on, who would most likely tear up this very expensive equipment; hold up the job; and possibly kill himself."

"All right. If that's the way you feel about it, we will just shut down the whole job."

"I don't think you have a truck driver in your whole Union that can operate one of these trucks in the places they have to go."

"We most certainly have."

"Well, go get one and I will give him a trial somewhere that he can't tear up our equipment nor kill himself."

As stated before, this was 26-inch pipe. It came in forty-foot lengths. The trucks were Mack Bulldogs of their very largest makes. The front end of the

pipe rode on the truck and the rear end rode on a two wheeled "dolly" that was hitched to the truck with about a thirty-foot coupling pole. The Organizer went back to Butte and brought out his truck driver. They arrived just as a company driver came in for a load of pipe. The railroad car had been spotted where a truck could not drive alongside of it, load and drive out. Fudge called to the company driver and told him to get off of his truck. Then he said to the Organizer, "There is your truck. Have your man back it in beside the freight car so it can be loaded." The Union driver looked the situation over and said no one on earth could do that. Fudge said, "Just watch." And he told his driver to back it in. The Union driver watched, then shame-facedly admitted that it could be done but he couldn't do it. The Union put out a lot of propaganda that we couldn't work our men but eight hours a day but gave us no more real trouble.

The specifications called for the pipe to be laid in a ditch five-and-a-half feet deep. The company put two enormous ditching machines—leapfrogging past each other—to digging the ditch. This was pretty rough mountainous country with lots of rock. There was only a small percent of the line where the machines could dig down the full five-and-a-half feet. Fudge told me to round up a bunch of laborers; give them picks and shovels and have them dig the high spots down to the full depth. There was no trouble about hiring men. The woods were full of them. There was also a lot of digging to do, so I soon had a gang of about seventy-five men. Then I got a jar!

The company brought Jim Doyle, who had just finished another job, and put him in as Fudge's assistant. Before I ever saw him or even heard of him, he went down the line firing every young man I had on the job. Then he came to me; introduced himself; and told me what he had done. He said there were plenty of mature men available. The company wanted all mature men—"no kids". I was very much displeased, but there wasn't a thing I could do about it. I can't look at a man and size up his character, nor his ability, nor willingness to work; but, when I have a gang of men at work, I can watch them a little while and very quickly tell who is earning his money and who is not. Some of these "kids" he fired were far better workers than

some of the "mature men" he left me.

After that, I was very much worried about son Kenneth. He was just under seventeen, small for his age, but an unusually good worker. He had already missed a year of college after he finished high school, for lack of money. I had put him on here, hoping he could earn enough to enter college in the fall. To this day I don't know if someone told Doyle that Kenneth was my son, or if he just didn't get around to where Kenneth happened to be while he was on his firing spree. Be that as it may, he didn't fire him. Very soon thereafter, one morning when I came on the job, he told me he would have to have the company pick-up I was driving to send the ditching machine teeth to Helena to be sharpened. I left the pickup and proceeded to make my rounds on foot.

Very soon Doyle hunted me up and asked if I had a man I could send to drive the truck. A very lucky idea struck me. I told him I could send my son, and called Kenneth. It became his regular job every time the teeth needed sharpening. It was so far that it was more economical for him to wait the hours it took to sharpen them, than to leave them and return for them. Kenneth could read or sleep and get paid for it, and it always took more than a normal day. Not only that, but both Fudge and Doyle soon formed the habit of passing our camp sometime in the afternoon, and leaving a note for me with Birdie. "Send the Kid" on all kinds of night errands, so he got in a lot of extra time, without back-breaking work.

Not many days after Doyle fired my "kids", Fudge came by and told me the ditching machines were striking a lot of solid rock up ahead. He was sending ten "Jack Hammers" and the air compressors to run them in the afternoon. "Jack Hammer" is the trade name of a certain make of air-powered rock-drill. All miners are experienced Jack Hammer operators. Fudge told me to pick ten miners out of my crew, and ten helpers, known as chuck tenders. Go up ahead and start drilling rock next morning. I had learned the art in Mexico.

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Speaking of chuck tenders reminds me of a little incident that happened while I was working on Hoover Dam. The employment agent wanted experienced men on all jobs, if possible. So every afternoon he posted

a list of the kind of jobs that would be open next day. One day "Chuck Tender" appeared on the list. A young man told them he was an experienced chuck tender, and signed up for the job. The agent told him to catch the transport for the dam next morning, and someone there would put him to work. When he got off the transport, he inquired for the dining hall. The man he inquired of said, "What do you want with the dining hall at this time of day? This is the time to work, not to eat."

"Well, I signed up as a chuck tender, and I want time to get the tables ready before the gang comes in to eat."

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Naturally, I took Kenneth along as one of the chuck tenders. To re-drill and re-shoot rock is a very expensive process, so it is necessary to be sure to drill it deep enough the first time. The only way to be sure is to measure every hole. I put my nephew, Loren White, who had just arrived from Indiana, on as checker. I soon discovered that some of my miners were plain time-killers and got a new idea: Loren was measuring all the holes, and it would take but little more work to make a record of every man's work. We paid our labor by the hour. As times were very hard, everyone was anxious to earn all he could. I offered one hour extra time everyday to the man that drilled the most feet of hole that day. It surely helped. One day Fudge came along and told me the pipelayers were gaining on me. The days are long in Montana in the summertime, so he told me we would put on two eight-hour shifts. I was to bring out half of my experienced crew next morning at four o'clock and leave the other half for the afternoon shift. I needed to recruit men to fill out my crew. He would put a foreman on the other crew. Between seven o'clock at night—when I got in from work—and two-thirty next morning—when I had to start for the job—just doesn't leave much time for recruiting. Consequently, I went to work quite short handed.

Imagine my surprise next morning at four o'clock when I arrived on the job, miles from anywhere, to find two young men sitting on a log waiting for me. They were college students and lived at Missoula, some seventy-five or eighty miles away. They had heard of the pipeline, and had come all the way down

here looking for work. They had been all over the job the day before looking for work, and no one would hire them. Someone had told them that a new shift was starting here this morning and they were here as a last hope. They definitely were of the age that Doyle classed as "kids", but they wanted work. I needed men, so I hired them and risked Doyle's wrath. Word will get around and soon I had all the "kids" I could use. They were all young and ambitious. Some of them were already in college, others wanting to go.

Jack Hammers paid ten cents more per hour than tending chuck, so they all wanted Jack Hammers. As the miners dropped out, for one reason or another, I let their chuck tenders take over and they all strove for that daily bonus. When I got "kids" on the Jack Hammers, they averaged almost twice as much hole drilled as the miners. I never showed the record to Doyle, but did show it to Fudge. I suspect he told Doyle. At least he didn't fire any more of them. One Sunday, the father of one of the boys I had found sitting on the log drove down from Missoula to see his son and to see how he was getting along. The son introduced him to me and he promptly started in to thank me for what I was doing for the boys. I told him the boys were very good workers, and were earning their own way, so I needed no thanks. "Yes, but you are the only one on the whole job that would even give them a chance to show what they could do."

The job was winding up just about time for college to begin, so we began investigating railroad and bus fares. The bus fare from Deer Lodge, Montana, to Gainesville, Florida, where Gordon was in college, was eighty-odd dollars. All the professional hobos on the job told Kenneth how foolish he would be to pay fare, when it was so easy to ride the Milwaukee Railroad for nothing. I had had one youthful experience of bumming a ride on a freight train, which didn't turn out too well. Besides, I didn't think much of the moral principle of the thing, but I didn't set my foot down hard. Birdie also argued against it. Kenneth said, "But I need the money so much more than the bus company does." One day Loren told Kenneth that since the job was winding up that if he would ride the Milwaukee, he, Loren, would ride with him as far as Indianapolis, Indiana. So that

night Kenneth went to his mother and said, "I'll make a deal with you. If you will let me bum my way, I will write you a postcard every day and send you a telegram when I get past Chicago."

She surely surprised him. "Well, if you are going to bum your way, I expect you to get out of here tomorrow night."

I had to go down to the company office, and told the boys they had better ride down with me to find out what time the through freight passed. I was talking to the Company Purchasing Agent, Mr. Morgan, and had just told him about the boys' plans, when they came walking up. They hadn't been able to find out one thing about trains. Morgan said to wait a minute. He walked over to the phone and called the railroad agent. He asked what time the through freight was due; waited a moment, then said, "No, I am not expecting any freight on it but I have a couple of boys here that want to go east on it." He listened a little bit then said, "Your train goes through at four o'clock in the morning."

I took the boys with their hand grips down to the railroad yards and saw them safely onto a moving train. They rode that same train clear through to Milwaukee, Wisconsin. I had lived in the South, and there had been some pretty serious scandals there because county sheriffs had arrested men for riding freight trains and had put them in chain-labor gangs. I exacted a promise from Kenneth that he would not bum his way south of Indianapolis. From there he tried hitchhiking; didn't find it very good so bought a bus ticket and arrived just in time for the opening of school.

Birdie had an aunt and some cousins at Bozeman, Montana, so when our work was done we went over there for a short visit and returned. I had a talk with Edgar Kaiser about more work. He said they didn't have any just now but Winston Brothers, who had just finished the pipeline section next north of them, had signed a contract to build a dam at Cle Elum, Washington. He gave me a personal letter of recommendation to the Superintendent at Cle Elum and we went there. Just before we arrived, the City of Cle Elum put an injunction against building the dam because it would flood their waterworks pump house. I rented a tourist

cabin; put the children in school; and sat down to wait for the injunction to be dissolved. The winters up there are long and cold. Our tourist camp burned wood and the landlady had very little on hand, so I took the job of cutting her winter's supply by the cord. She furnished a crosscut saw and an ax. I met another man there looking for work and we cut her a goodly supply. I finally decided that that lawsuit might be quite prolonged and wrote Bedford to see if he could help me. Birdie had an aunt and cousin in Bellingham, right up in the northwest corner of the state. She suggested we go up and visit them while we waited to hear from Bedford, so I left a forwarding address at both the Post Office and the Telegraph Office and went.

We had been there two or three days when I received a telegram from Bedford in Boulder City, Nevada. He said they could use me on Hoover Dam. Naturally, I didn't lose much time getting there. At the Six Companies' Office they told me I would have to get a clearance through the Employment Office in Las Vegas and take a medical examination before I could go to work. The first few months they worked on the dam they lost several men with the heat. The work was in a canyon—several hundred feet deep—and the sun shining on the canyon walls was reflected right down into the bottom of the canyon. Temperatures of one hundred and thirty degrees in the shade were quite common in the summertime. After a few months, the company hired a doctor; and no one was allowed to go to work until the doctor certified him as being in good health. A man has to have a good heart to be able to work in that high a temperature. So far as I know, they never lost a man from heat after they put the doctor on. They did lose a lot of men from accidents, most of them caused by carelessness either by the man, himself, or by someone he was working with. A lot of it went back to the company itself, always hurrying the men to work faster to earn more money for the company.

One case of that came under my immediate observation. They had a very careful gantry-crane operator in the tunnel. He wasn't getting the work done as rapidly as they thought he should, so they fired him and put on another. The new man had been out of work a long time. He knew his predecessor had been

fired for being too slow, and was so anxious to make good it made him nervous. He ran over a concrete finisher and killed him.

Another great source of accidental deaths was the highway. When I went there the only road was a dirt trail that wandered all over the desert. Then the Government built a good paved road from Las Vegas to Boulder City. From Las Vegas to Railroad Pass, about twenty miles, it was as straight as the flight of an arrow. There was a sag in it so that you could see the entire twenty miles from either end. Yet when the road had been built twenty-eight months, there had been twenty-eight deaths—an average of one a month. Liquor, gambling and prostitutes were not allowed on the Reservation, so all who cared to indulge had to go to Las Vegas. They would tarry too long; then try to catch the transports going to the dam in nothing flat; the car would go out of control and roll over, killing some and crippling others. One other case—two men in a car negotiated the highway all right, but missed the transport in Boulder City. They headed on down to their job at the lower portal. That road was very steep and crooked and the driver was probably drunk. Be that as it may, they drove too fast around a curve; the car went over the canyon wall and both were killed.

There were many wild rumors of hundreds of men killed on the job and some of them just buried in the concrete of the dam. There was absolutely no foundation for such rumors; and, definitely, no one was ever buried in the concrete. One government inspector somehow got himself in the way of the big, eight-cubic-yard concrete bucket when they went to dump it and was killed, but they fished him out and gave him a decent burial.

I saw two of the fatal accidents; both of them were a result of the victim's own carelessness. One of them ran out in front of a big eight or ten-cubic-yard truck and was run over. The driver didn't have a chance in the world to stop. The other was a high-scaler. High-scalers hung over the canyon walls, seated in what were known as boatswain's saddles, prying the loose rocks off the canyon walls before anyone started to work at the bottom. Each high-scaler had a pulley at the top of the canyon wall;

lowered himself to where he was to work and tied himself fast with what was called a boatswain's knot. This man tied his knot so that it slipped and he dropped to the bottom of the canyon. I tried to find out how many men were actually killed on the dam. The best figure I could get was somewhere around ninety. I don't know whether this included those killed on the highway or not. At any rate, it was far too many.

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This calls up the fact that it isn't always the man with the dangerous job that gets killed. When I was working on some construction jobs in Cuba, some of them were dangerous and I had a few narrow escapes. My sister-in-law, Robert's wife, begged me to leave Cuba; go back to the States; return to teaching and get out of my dangerous work. Robert had a nice safe job, Business Manager of Penn College, our Alma Mater. One morning at four o'clock, he heard the fire siren screaming; looked out of the upstairs window and saw that the college was on fire. He rushed over and went into the office to save some important papers. He was leaving the building and was just outside of it when the fire burned through the timbers that supported the four-ton bell. In crashing down it forced the brick wall out, smashing him flat. That was in 1916—forty-three years ago. I stuck to my dangerous job and am still kicking around.

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Mr. Carter, a very good friend of mine, and a fellow Deacon in the Boulder City Community Church, went all through the heavy fighting in the Battle of the Marne in World War I. When work started on Hoover Dam, he was one of the first high-scalers over the canyon wall. When the high-scaling was all done, he went into one of the tunnels as a miner, always considered dangerous work. When the dangerous work was all done, he took a nice safe job handling the hooks in transferring the big eight-cubic-yard concrete buckets from the electric cars to the High Line cable across the canyon, for lowering onto the dam. One evening after his day's work was done, he was walking to the transport to go home. A playful truck driver drove up close behind him and blew his horn to see him jump. He jumped right in front of the electric concrete train! They picked him up in

a basket! I was one of the pallbearers at his funeral.

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When I walked out of the Six Companies' Office in Boulder City as a new employee, the first man I met that I knew, was Tom Stroud who had been our Office Manager in Mexico. After a little conversation, I told him I had a job but that I had my family with me and would have to find a house. I had been told there was not a vacant house in Boulder City, and very few, if any, in Las Vegas. "I don't know of anyone I would rather see right now than you. I have been assigned a company house, and am going to get married, but I can't marry until my intended gets her divorce. If you want to move in and board me, that will be your rent." Naturally, we moved in.

Tom's intended was boarding several miles beyond Las Vegas. The desert roads were bad; Tom was working seven days a week so he didn't get to see her as often as he would have liked. He persuaded Birdie to board her, too. The house was only a two bedroom house. It already had seven occupants, but Tom got a cot; put it in the front room for her to sleep on and she moved in. (Our house wasn't the only house in Boulder City that was over-loaded.) That way Tom and his intended saw so much of each other, I think they both began to question whether they were intended for each other or not. Just about the time her divorce came through, she got a letter from her husband begging her to come back. She talked it over very frankly with Tom and even discussed it with us. After due deliberation, Tom took her to the train and kissed her good-bye. A few days later Tom got a letter from her. She and her husband were remarried; old sores were healed and they were very happy. About two years later Tom found another and married.

In the office they told me that all the engineering jobs were taken. The best they could do for me was foreman of a labor gang erecting the Gravel Plant.

The first part of building the dam was to drill and blast out four diversion tunnels through the canyon walls around the damsite to by-pass the river during construction of the dam. The canyon walls were solid Malapai rock. Each tunnel was blasted out fifty-six-feet in diameter, then lined with three-feet of concrete, leaving the finished tunnel fifty-

feet in diameter. The work was carried on twenty-four hours a day, seven days a week. The day was divided into three eight-hour shifts: graveyard, day, and swing. The graveyard shift began at twelve midnight. It was said that they named it that because so many men were killed on that shift. Men get so sleepy they either go to sleep or get sleepy and careless then accidents happen. I know from experience that I was never able to get enough sleep in the daytime but that I would get so sleepy about four or five in the morning I could hardly get along at all. Many times I have fallen asleep while standing up. I never did learn why the last shift was named swing.

They were just getting a good start digging the tunnels, when we finished erecting the Gravel Plant. They had done just enough to learn that their truck drivers, just as my miners in Montana, were a bunch of time-killers. It was so easy for a truck driver to drive his truck off somewhere in the dark to take a nap on the night shifts. The company painted big numbers on the sides of all of the trucks; put checkers in the ends of the tunnels to see that all trucks were fully loaded and to record the time each truck passed the checking point. If a driver didn't come by at his regular turn, he had to have an excuse—and it had better be good! They gave me the checker's job on the swing shift. That was where I learned to sleep sitting up. Boulder City was eight miles horizontally and two thousand feet vertically from the dam. The grade was so steep and the transports so heavily loaded, that the drivers couldn't get them into high gear. They had to labor all the way up in one of the lower gears, and it got very monotonous. After a hard night's work, I was ready to sleep almost anywhere.

When the tunnels were holed through, they put me in the gas station to dispatch gas to the trucks hauling concrete to line the tunnels. One night in February, the river went on a rampage. It wasn't supposed to rise until June and it caught us wholly unprepared. It washed my gas station away; filled all the tunnels with water and completely shut down the work for several days.

When work started again, they gave me a one-ton truck to drive on the graveyard shift. I had to go

to work early to haul a load of men down to work on the graveyard shift, then haul a load from the swing shift back up to Boulder City where I reported to the garage for orders. I spent the rest of the night acting as messenger boy—hauling anything anybody wanted hauled to anywhere. My worst assignment came at 2 o'clock one morning. I was at the river garage when a telephone call came from across the river where they were just starting to dig the Arizona spillway. The order was to go up to the Boulder City garage; get two big hydraulic jacks and take them to the new job. I had to drive down that more than 2,000 feet—vertically—over a very steep, crooked road to a bridge they had just built downstream from the lower portal; cross the river and drive up to the new job. It was dark and there was no road. The trees had been cut to clear for a road; the power shovel had climbed up, leveling just what was necessary for it to get over; and no other vehicle had even attempted to go up. It was unbelievably rough, and in some places I had to put the practically empty truck in compound gear to get up. I delivered the jacks all right, then I had to drive down. This was even more dangerous than driving up.

One morning, quite by accident, I met Bill Fudge. He asked how much I was getting for driving truck and I told him. He said they had only been running two shifts at the gravel plant but were now preparing to run three. As yet he had no one to run the sand-classifier. It paid more than I was getting; and, if I wanted the job, I could have it. I took it.

There was an enormous deposit of sand, gravel, and rock about eight miles upstream and across the river from the gravel plant. They had built a standard-gauge railroad, including a bridge across the river, to the deposit and equipped it with standard equipment. At the plant the material was dumped by the train load into a long hopper. Under the hopper was an endless belt conveyor which carried everything to a scalping plant where everything over five inches in diameter was scalped out; sent through a crusher and returned to the conveyor. The conveyor carried everything to a series of screens where it was separated into cobbles, sand, and three sizes of gravel. The sand passed to the classifier which I operated one shift everyday. My job was to see that it was

washed clean and graded to the proper modulus. If the modulus was too fine, I turned on more water and washed more of the fines out and pumped it out into the desert. When the modulus was too coarse, I ran a part of the sand over a screen that took out the pea gravel. That was stored for building floors. The classifier was the bottleneck of the whole operation and I controlled the speed at which everything went through the plant. If I tried to put it through too fast, the classifier plugged up and stopped everything. We had to take the fire hose and wash out everything; and in so doing, we invariably got wet all over. That was very uncomfortable in cold weather and stopped the whole works for about an hour, usually calling down the foreman's wrath. If it didn't go through the plant fast enough, the plant foreman would come around and bawl me out. Many is the time he bawled me out when it was not my fault. I was doing the best I possibly could under the circumstances.

It was then that I discovered it was much better to be a big duck in a little puddle than to be a little duck in a big puddle. When I came West, hoping to get work on this dam, I thought it would be something great to work on such a big job. On most of the jobs I had in Cuba, I was the boss. Whether I supervised a few men or several hundred, they did the manual labor. There were about five thousand men on this job and bosses were over bosses. I was just one of the five thousand on the bottom; doing the work myself; taking all the abuse the bosses wanted to heap on me; and, frankly, I didn't like it. Many is the time, after an uncalled-for bawling out, I would have chucked the job in the boss's face if I had had someplace else I could find a job—but there just weren't any other jobs. Never in my life did I work so long on a job I liked so little as on that classifier. It was in no way related to engineering, but did pay more money than common labor. I worked on the dam three years and two months, and by far the larger part of the time on the classifier—fourteen months of it on the graveyard shift, seven days a week.

Hoover Dam was the first really big dam ever built. It was 726-feet high, 660-feet thick at the base, and 45-feet thick on top. It backed up a lake

holding 33 million acre-feet of water. Since it was built, Shasta Dam and Grand Coulee Dam were built. They each have more concrete than Hoover Dam, but Hoover Dam still holds the record both for height and for water stored.

In June 1932, Son Gordon graduated from the University of Florida School of Engineering. He, at once, headed for Hoover Dam, bringing Elizabeth and Kenneth with him. Before he arrived, I just happened to remark one day in the presence of Mr. Patch, the head of the Government Laboratory, that I had an engineer son coming out. He promptly told me he had a job for him. I then told him I had another son coming out who also needed a job.

"Sorry, I can't help him any."

When they arrived Gordon went right to work, and I went with Son Kenneth to see McAdams, the Employment Agent. He just gave us the run-a-round for about three weeks. I got tired of waiting on him and went to Bedford.

"Did he ever work for either Bechtel or Kaiser?"

"He worked on the Montana job."

"All right, I will see what I can do."

In two or three days he was at work, which certainly proved the statement we so frequently heard there, "In order to get a job on Hoover Dam, it isn't half as important what you know as whom you know."

In September, Elizabeth bought a car and she and Kenneth went back to Florida—she, to teach; he, to study. Sometime next winter, quite by accident, I met McAdams in the barber shop. He said, "Williams, where is that son of yours working now?"

"He has been in college since September."

That was all that was said. In June, when Kenneth came back, I went with him to see McAdams. "I haven't anything for him today. Since he made good last year, let him go down to the Vegas Office on Monday. I may have something." He got a job, and again the following year. His jobs in Montana and on Hoover Dam put him through college, right in the worst part of the depression.

In May, 1934, one of the concrete inspectors was killed and I was lucky enough to get the job for Vera's husband, Bob Walker, an Electrical Engineer. They came out to join the workers on the dam. In September, their daughter, Marjorie, my first grandchild, was born.

It was while working on the dam that the greatest tragedy of my life occurred. It was very hot in Boulder City. Not nearly as hot as on the dam, but entirely too hot for comfort. The women and children didn't have to take medical examinations. One day an eight-year-old girl, running and playing, got too hot and went to the refrigerator to get a drink of water. She fell over unconscious and died before morning. That started a great exodus of women and children.

Birdie was sure she could not stand the heat. There was no way to know if some of our children would run and play, get too hot and drink cold water. She took them to Los Angeles, where it was cooler. One of the reasons that brought us out of Cuba was to get Osteopathic treatments for Birdie's back. We had spent a lot of money on Osteopath bills and her back was wonderfully improved, but recently she was complaining of it again. After she got settled, I sent her more money than she needed to run the house and wrote her to go get her back worked on some more. Instead, she turned the children loose in the streets; went to a trade school; learned to operate a power sewing-machine and got a job in a garment factory. I didn't know it until later, but the neighbors referred to the children as "Those Wild Indians".

When it cooled off in Nevada, I wrote her to come home. She wrote me that she wasn't coming home and for me to get a divorce. She wrote quite a long letter of explanation, which was very enlightening, but definitely not satisfying. She said she had never loved me as a wife should love her husband, although she had not been unhappy all the time. She said she was very much flattered when I, a College Professor, began paying attention to her, a mere High School girl. When I proposed she had gladly accepted. During the two years I was in Cuba, after we were engaged, she had kept company with another man and discovered that she loved him far more than she did me, but she thought it would be a sin to break the engagement. Besides, there was a lot of glamour about going to a foreign country where she would have a chance to do missionary work. She reminded me that after she was in Cuba, while we were waiting for her father's official consent to our marriage, I had told

her it would hurt but if she didn't think she could take it in Cuba, I would send her back. It would be far better to break off before the marriage than afterward. She had regretted many times that she hadn't accepted my offer. When I wouldn't let her go to her sister when she was on her dying bed, she lost all respect for me. Now that she could earn her own way, she was through with me.

It almost floored me. I knew before we had been married very long that she didn't love me as a wife should love her husband. After she spent a year-and-a-half back in Nebraska with her mother and returned to Cuba, she had settled down. No man ever need ask for a better wife than she was for several years and we went through many tough times together. Just why it would be a sin to break an engagement and would not be a sin—after twenty-seven years of married life—to break her marriage vows and destroy her home, when four of her children were at an age to desperately need both a father's support and a mother's care, she never did explain.

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Her sister's death had been an unusually sad affair. It happened the second winter we were in Florida. The sister was dressing her children for Sunday School one morning in Kansas, passed too close to an open gas heater and caught her dress on fire. She ran out-of-doors and rolled in the snow. That put the fire out, but she died a month later. Her husband wasn't much of a letter-writer anyhow; and, with the extra care and worry, he didn't get around to writing us about the accident for several days. As soon as we got the word, Birdie wanted to go out there to help—a very commendable trait that she always had—but it seemed to me that in her zeal to be with and help her sister, she was overlooking some very important facts of life closer home. Her sister lived away out in northern Kansas and it was the dead of winter. Her mother was already with her and her husband's brother, a practicing physician, had left his practice in Nebraska to come down to try to pull her through. Our baby had what was called three-months colic. In spite of all the doctor's medicine, he never went to sleep at night until I walked the floor for from two to four hours, with his head on my shoulder.

I felt that for her to take that long trip into the cold north and try to care for the baby alone would be endangering both her health and the baby's life. Also, we had four more children—three of them in school. What would she do with them? I couldn't care for them and hold my job. Jobs were very scarce; and, if I gave up this one, I would most likely have trouble finding another. Jessie had four children and I felt like it would be utterly impractical to crowd nine children and six grownups into one ordinary-sized house where there was sickness. Furthermore, our children were used to the tropics, and would run a good chance of catching pneumonia up there in the cold. Then, too, I had no money to pay her fare; didn't know where I could borrow any; nor how I could ever pay it back if I did borrow it. My salary was barely large enough to live on. She was so insistent that I wired her brother-in-law and asked him if he thought it would be advisable for Birdie to go with a sick baby. His answer was noncommittal. He said the weather was very cold and he thought it would be pretty rugged for a sick baby. I interpreted that to mean that he considered the trip would be rather hazardous, and thought she accepted it the same way. I sympathized with her very deeply. It had only been a little over three years since my brother, Robert, was killed. I never dreamed that she had held me personally responsible for her not going when the conditions were so strong against the trip.

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I tried for more than a year to persuade her to change her mind, but without success. I finally sued for a divorce on the grounds of desertion. Also, which she didn't ask me to do, I sued for the custody of the four dependent children. When she got the official notice of the suit, she really blew her top. She wrote that if I didn't give her the girls I wouldn't need any divorce. She would most certainly commit suicide, and I could come to bury her. She wound up her letter by saying that if I wanted to see her and talk it over, to wire her and she would come up Friday night after work. I didn't think she would commit suicide, but there are some things you just can't take a chance on, so I wired her to come. When she arrived I told her I wanted Esther, the youngest. Just as if she were trading horses she said, "All

right, you take Esther and I will take John"—the oldest of the four. We got into the car together and went down to see my lawyer; changed the suit according to agreement; she signed a waiver and went back to Los Angeles. I went on to work. The next Court Day I got my divorce, but continued to send her money for the children's support until such time as I could take my two. The Court Decree gave me Richard and Esther as per our agreement, but it didn't work out that way.

I continued working on the classifier until computations showed we had enough material processed to finish the dam, then they closed down the gravel plant. I went to McAdams and asked for another assignment. He said they were now laying off men, not hiring more; and he could do nothing for me. I went to Los Angeles to look for a job, but the depression was still on and there just were no jobs. With money I had saved on the dam, I finally bought the lease on a parking garage and went into business for myself.

Some time earlier, my sister, Luella, and family had moved from Cuba to Los Angeles. I rented a house and got Luella's daughter, Carlota, to keep house for me. When I called on Birdie to get Richard and Esther, I ran into vigorous objections. John wanted to come with me and Esther wanted to stay with Birdie. John was fifteen years old and had been roaming the streets of Los Angeles unrestrained, so I was afraid he would give Carlota trouble. They both begged so hard that I finally broke down and told John that if he would make his peace with Carlota and mind her, I would take him and leave Esther. It was about the best thing that ever happened to John. Carlota was about seven years older than he and a steady, well-balanced girl, very small for her age. The two became real pals and she straightened him out of the kinks as no ordinary method could have done.

When I was dickering with the owner of the lease on the garage I took over, he told me it was netting him $175 per month and showed me his books for November and December to back it up. It didn't occur to me and he didn't mention it, but November and December are months in which a lot of people come into town to shop. When all parking places on the streets are taken up, they have to go into the parking lots and garages, so he really had done a good business those two months. I took over January first. Imagine my surprise when

at the end of the first month, with all my garage bills paid, I had, not one hundred and seventy-five dollars, but a mere seventy-five dollars to pay house rent, carfare, Carlota's wages, feed four of us and clothe three. In addition to parking cars, my predecessor had leased a part of the garage for various enterprises. I continued with the same leases. A room in one corner was leased to a car painter, another corner to a battery business. In the front, an auto mechanic who owned a tow-car was running an auto repair shop. His rent was one-half of all he took in, including towing, less actual cost of repair parts. I tried every way I could think of to increase my business, but with little success. The former owner told me that a big room on one side was rented for a storeroom and the renters wanted to continue the lease. I asked him who the renters were, so I could collect the rent. He said he would collect the rent and pay me.

One morning when I went to work, my front door was broken open and the door to the locked storeroom was also broken open and the room was empty. It had been used as a storeroom all right, but it was to store Moonshine liquor. The liquor was made far out in the mountains and stored here for distribution at night. Someone had gotten wise and broken the place open and "Hi-jacked" all the liquor. I had been harboring Moonshine liquor without the slightest suspicion of doing so. I never saw the Moonshiner but my predecessor told me he didn't want to rent any longer. I, definitely, didn't want to rent to him any longer. I wouldn't have rented the garage in the first place if I had known what was going on in there. This cut my income thirty dollars a month which made it absolutely impossible for me to go on. I had a conference with my mechanic and we decided that he was not so busy but what he could look after parking the cars. He was pretty well acquainted around there and felt sure that he could rent the now vacant room to someone for a legitimate business. If he had what I was getting added onto what he was getting, it would make him a pretty fair living. So he bought me out and I started all over again.

I met a representative of the Rio Grande Oil Co. They had just leased a filling station in Eagle Rock, a northern suburb of Los Angeles, that had been

closed down because of too stiff competition. They were going to reopen it and offered to let me operate it for them. My rent would be one cent a gallon for all gas sold. Any profit from greasing, oil, and accessories was mine. The owner of the filling station had a vacant house that had always been the home of the station operator. So I closed the deal for the station; rented the house and moved in. The station was located on Colorado Boulevard, the main drag through Glendale, Eagle Rock and Pasadena—lots of traffic and fast traffic. Cars didn't stop unless they wanted gas. One block away in one direction and two blocks in the other were stations selling gas for less than it cost me. They had big signs out advertising their prices. Some of the cheap gases had done serious damage to cars. Others seemed to be all right. Result: I got the cars that had been damaged and the cars of people who knew about damage to cars. Those willing to take a chance on cheap gas patronized my competitors. The business was far from satisfactory, though better than the garage. No business was good in those times so I hung on.

When school was out, Birdie had no one to take care of the girls while she worked; so she asked if Carlota couldn't take care of Esther and she sent Mary to Vera in Boulder City. So I had three of the children. Then Carlota took sick and went home. John was a pretty fair cook and big enough to both wait on the trade and grease cars, so we went to keeping batch. John liked cooking and running the station much better than washing dishes and general housework. I ran the station while he did the cooking. He ran it while I did the rest of the work, including washing and ironing the uniforms which the company required John and me to wear.

Elizabeth was still teaching in Florida but came West for a visit during the summer. About time for her to return to Florida, she came to me and asked if she might take Richard and Esther back to Florida with her. She said she knew where she could rent a cottage near the schoolhouse and the children would be in school when she was. She was quite sure she could care for them better than I could. After due deliberation I let them go and John and I carried on.

Business got no better and sometime after the first of the year I learned that the Government had

let the contract to dig the All American Canal, and that the headquarters was in Yuma, Arizona.

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The first time I ever heard of Yuma was while I lived in La Gloria, Cuba. One of my neighbors, Dennis Daily, had been a soldier in the Regular Army in his youthful days and had spent some time there while chasing Indian Chief Geronimo. He told me, "That's the hottest place in the United States. Two of our soldier boys died out there and went to Hell. Two weeks later they came back for their blankets. They were cold!"

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That didn't sound like a very inviting prospect, but neither was my filling station. I figured that after three summers on Hoover Dam I could most likely take it and asked the Gas Co. to find a man to relieve me. They didn't find him right away but eventually did. I moved my household goods to Luella's basement and got her to take John to board, then hitchhiked to Yuma. I asked Chief Engineer Roy Williams for a job, and presented my credentials. He looked them over and said, "That's a mighty nice set of credentials you have, and we can use another man. I will introduce you to our Construction Engineer and take the matter up with him."

The Construction Engineer was Grant Bloodgood, who had been in charge of all the Survey Crews on Hoover Dam while I was there. We had never met but his son was in my Sunday School class at Boulder City, so we both knew who the other was. One of the first questions he asked was, "Where do you live now? The State of California requires us to employ only California residents on this job."

"Fortunately, I learned that California has some strict labor laws, and registered to vote just as soon as I was eligible."

"Fine. If we give you a job, you will have to move to Arizona. Our headquarters are here. By the way, how old are you?"

"Fifty-six my last birthday."

"That's another complication. You are too old for a classified position in Civil Service, but maybe we can give you a temporary appointment in an unclassified position." After a little more conversation, he said, "I am very busy this morning. Can you come

back this afternoon? I can tell you this much. If you want it, we can give you an unclassified, temporary appointment but I don't know just how much we can pay you nor where we can fit you into the project." When I returned in the afternoon he said, "I am sorry, but the best I can offer you is one hundred and thirty-five dollars a month as levelman. You can run a level, can't you?" It had been a long time since I had done any kind of engineering work for so small a salary and longer still, since I had held the official title of levelman, but it was better than anything I had found in Los Angeles—so I accepted. "Report next Monday morning to Dick Lawrence at the government garage."

I broke my last twenty-dollar bill to pay a week's board after I got the job. Dick put me on the survey gang for a few days so he could see what I could do and, also, so I could get the hang of the work to be done; then he put me on the graveyard shift as inspector on the digging. Thus, it so happened that because some Bureaucrat up in Washington thought that a man over forty-five was too old for a classified appointment, I, the oldest and most experienced man on the job, with far more experience than my foreman, was doing exactly the same work as the other inspectors and getting much less for it—a very unjust and uneconomical arrangement.

The Contractor on our section had a big Monegan walking dragline with a ten-yard bucket on it and two Bucyrus-Erie conventional draglines with four-and-a-half yard buckets. The survey party—working on the daytime—set the center and cross-section stakes for the machines to dig by. The inspectors worked in shifts. They had to go to each machine twice during each shift; set the bottom stakes of the cross-section just as close to the digging as possible, and put grades on them so the operator could see how deep to dig.

At first, we changed shifts every two weeks and about the time a man got himself adjusted to his sleeping hours he had to change shifts and start over again. We inspectors put our heads together and decided to do something about that. Peck had a sick wife and two little girls. He had a woman who cared for them in the daytime, but she wouldn't care for

them at night. He always had trouble finding anyone who would and it cost him more money. So he very much preferred to work the day shift. Davis said the graveyard shift was the coolest and he had a cooler in his house, so he could sleep in the daytime. He preferred to work graveyard. Counts said he naturally preferred the day shift but had no real excuse to keep him off the night shifts. He said that if it suited everybody else he would take the relief shift and spend the rest of the time on the survey party. That left me the swing shift. I much preferred that to changing every two weeks. As to the heat—it lacked some ten or twelve degrees of getting as hot here as in the Hoover Dam Canyon. There was a lot of irrigation in the Yuma Valley that put moisture into the atmosphere and made the heat more oppressive. All-in-all, it was a toss up as to which was harder to take.

I had learned in Los Angeles that I could keep batch much cheaper than I was paying for board, so began looking for a place to put it into practice. I found an unfinished house that I could buy for $100.00 down with small monthly payments. As soon as I could save the $100, I planked it down; had Luella ship my household furniture down from Los Angeles and moved in. If it had been in a cold, wet part of the country, you might well have said I had moved into nothing. The outside walls, roof, floor, and outside doors were in. The studding was in for partitions, but no inside walls nor windows. There were barrel marks all over the floor. The dirt on the floor was so thick and packed down that I had to take a hoe to scrape it off.

Naturally, my curiosity got the best of me and I began to inquire what it was all about. I learned that the former owner was a carpenter. He owned this lot and mortgaged it to get money to build. He started building and what he did was well done. Then one day he started to visit his daughter in San Bernardino, California. That was before the days of paved roads. Some days later, his stalled Model-T Ford was found miles out in the desert on the trail to San Bernardino. He was dead beside it. No one knows if he died of thirst, or if he got overheated trying to get his car out and died of heart failure. The

mortgage was foreclosed and the house left standing there. Some enterprising Moonshiners saw an isolated house just suited to their purpose and took over without even a "by your leave". They carried on a prosperous business till Uncle Sam's agents caught up with them. When I took over, all that was left was the dirt and the barrel marks on the floor where the mash barrels had stood.

About the end of May, Son John graduated from high school in Los Angeles; promptly joined me and we set bravely to work rehabilitating the place just as fast as I could earn money to buy materials. To begin with, we had to use a kerosene lamp and carry all our water about a block-and-a-half. I asked the City to put in water. They said I was too far away. If I liked, they would put in a meter at the nearest house and I could go on from there at my own expense. I did, but it took time to earn money to buy the pipe. I asked for a permit to wire the house for electricity. The City said that would have to be done by a licensed electrician. The licensed electricians wanted fifty or sixty dollars for the job, which I didn't have. Finally, the City decided they had no right to keep me from wiring my own house but it would have to stand city inspection. I told them it would, and it did. My swing shift came in very handy. It gave me five or six hours a day to work on my house. John was very good help, so long as I was there to work with him. When I left him work to do and went to work in the afternoon, he didn't do a thing until I got back. About the end of June, I got a letter from Birdie. Vera had left Boulder City and she had no one to leave Mary with. Could I please take her, too? I took her and it worked fine for a little while. Mary was a good cook. It gave John and me more time to work on the house. We used materials faster than I earned money to buy it, so we ran out of work.

Soon John and Mary got to quarreling in the afternoon so badly, that I wrote Birdie she would have to make some kind of arrangement to care for Mary. I just couldn't leave the two together. She wrote back that she had a lot of work around her place that she just couldn't find time to do. Would I please send John and keep Mary? I did. You just can't leave a thirteen-year-old girl all by herself with nothing to do in an isolated house from two-thirty in the afternoon

till one or two o'clock in the morning. One of the neighbors, the Olmsteads, had a daughter, Faye, just about Mary's age. I made arrangements for Mary to either stay at Olmsteads, or Faye to stay with her until bedtime. Then I locked the front door and took the key and the girls used the back door. Mary bolted it from the inside when she went to bed.

One night when I got home I heard a very unusual noise over in one corner. When I investigated, I found it was emanating from a nail keg. When I lifted the cover, I found some fifteen or twenty toads. While I was contemplating the scene and wondering what it was all about, a voice came out of the darkness. "Don't turn our frogs loose. We are going to raise them." Next morning Mary showed me a pamphlet put out by a commercial firm in the South that supplied frog legs to hotels. It was a complete treatise on frog culture—from the egg to the frying pan. It told how to dig a frog pond and how to care for the frogs to get best results. They would sell you a pair of frogs at a reasonable price, then buy all the frogs you could produce—also, at a reasonable price. The girls reasoned, "Why pay good money for frogs and start in with only one pair, when there were so many frogs right at hand that could be had for the catching? They could start in a big way while they were at it." They had begun by corralling a liberal supply of frogs, then valiantly started to work with pick and shovel to dig a frog pond. It was all quite amusing to me, but the girls were dead serious. I had to explain that our soil was an alluvial deposit—very porous and wholly unsuited to make a pond that would hold water. The water table was only six or seven feet deep here. It would be possible to make a frog pond here by taking all the dirt out to below that depth, but that would be entirely too big a job for two thirteen-year-old girls. Furthermore, I didn't want a frog pond in my backyard. Then again, the frogs they had caught were not frogs at all, but toads. There was no method of care known to science whereby you can raise commerical bullfrogs from common garden toads. I must say that the girls had the "courage of their convictions"—and were not afraid of work—to tackle that big a job, but they were quite put out when I threw cold water on their project.

Not many days after the toad incident, Mary tired of her monotonous job of doing nothing and wanted to go with me. I hated to keep her up till one or two o'clock in the morning but there was a lot of time she could sleep if she could sleep on an office bench or the car seat, so I took her. For getting around over the desert and hauling our surveying instruments, we had a stripped-down Model-A Ford with seven-inch tires and a light-weight, homemade truck body that we called a Sand Flea. Right away she wanted to learn to drive it. Since there was no road for her to run off of; no traffic for her to meet and nothing she could hit bigger than a grease wood, I let her try it. The only thing she could hit was soft spots in the desert. I tried to teach her to shift gears when the engine began to labor, but she would forget; then I had to take over and get it out.

One day when I started to get out, she said, "Let me get it out." She had watched me do it, so knew how. We always carried plastering lath for engineering stakes. She shoveled the loose sand out from behind the hind wheels; then shoved some lath tight under the wheels; got in and backed the Flea onto the lath. Then she shoveled the loose sand out where the hind wheels had just been; laid some lath in the ruts; got in; set the Flea in low gear; took a running start and went out. Getting the Flea out by herself sure helped her memory. She soon learned to shift gears before it was too late. She enjoyed driving so much that she went with me everyday and acted as my chauffeur until school began and I sent her back to Los Angeles. By that time, she was an excellent desert driver, with a skill many old drivers never do acquire. Soon after Mary left, John came back. He was through High School and I succeeded in getting him a job as a helper on the big dragline, which he held till the digging was all done.

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When I work on a job I like to learn all I can about it. This was a very interesting job, both geologically and historically. I read all the books I could find on it and talked to the Old Timers.

The Gulf of California today extends some six hundred and fifty miles, southeast to northwest. In

past geological ages, it was about two hundred miles longer and extended up into California to where the city of Indio now stands—almost due east of Los Angeles. When the northern Ice Cap began to melt at the end of the ice ages, the escaping water wandered over hill and plain till it found the sea about one hundred and fifty miles southeast of Indio, thus marking the course of the Colorado River. This entrance is also just a few miles southwest of Yuma, Arizona. It hit the Gulf of California broadside. The present estimate is that the Colorado River carries a million tons of silt through the Grand Canyon every twenty-four hours. This silt built a delta in the side of the Gulf, until eventually it cut the Gulf in two, forming a big inland sea north of the delta. In the course of time the dry desert atmosphere completely dried up the water, leaving about a million acres of very fertile land and an enormous salt flat—all below sea level—where both Indians and wild animals came for salt. That was the situation when white men first came to this part of the country.

Near the end of the last century, an "Engineer with Vision" passed this way and, seeing this immense fertile plain so badly in need of water, was struck with a great desire to do something about it. He made some investigations and found that the whole thing was below sea level. Hence the whole Colorado River, though several miles away, was available to irrigate it with. He then went East and got some capitalists interested. They formed an irrigation company; acquired great quantities of land; surveyed it into small tracts and advertised it for sale all over the United States, Canada and Europe. They put a big corps of engineers in the field surveying irrigation ditches. They assembled great numbers of men, horses, mules, and scrapers and started the biggest irrigation project of modern times. As settlers arrived, they settled them on the land and gave each man employment on the project until such time as they could deliver water to his particular tract. The country was settled more rapidly than any other since the opening of the Oklahoma Strip in 1889.

In the process of building the delta, as one channel got silted up till the bottom was higher than some of the surrounding country, the Colorado River

shifted its channel to a new location. Its last major shift was just a few miles west of Yuma, Arizona. The delta had built entirely across the Gulf of California cutting it in two and the river was flowing into the northern part or inland sea. During some flood the river overflowed and cut a new channel into the Gulf south of the delta. When the flood subsided the river followed the new channel—abandoning the old one—and eventually silting it up near the junction. The rest of the channel remained open as a dry river away down through Mexico and back up into California. The Mexicans called it "El Rio Alamo", or Cottonwood River, probably because of the many cottonwood trees that grew along it. This channel was just a natural canal for bringing Colorado River water into Imperial Valley and saved the irrigation company a lot of money. They installed the Hanlon Gates on the west bank of the Colorado River, then dug a channel into the open part of the Alamo River. The water followed the channel down into Imperial Valley where it entered the newly dug irrigation ditches and was spread over thousands of acres of thirsty land. Everything went well for a while. The settlers prospered. The Southern Pacific built a railroad into the Valley.

As I mentioned in connection with my work in Utah, all running water carries silt and the faster it runs the more it carries. The Colorado River is very swift and carries great quantities of it—so much that it cost the Imperial Irrigation District half-a-million dollars a year to keep their irrigation ditches clean until the Government built its desilting works north of Yuma. The grade in the Alamo River was much flatter than in the Colorado, so when water was turned into it, it promptly began to drop its silt and fill up the channel.

To add to the irrigation company's troubles, the sources of the Colorado River in the cold north freeze up in winter, and the thousand miles of its course through semi-desert country adds but little to its water content, so the water in the river gets quite low during the winter months. With the combined low water in the Colorado and the high bottom in the Alamo, the time soon came when they couldn't get enough water during the winter months through the Alamo River to irrigate all the land they had under

irrigation. Crops were dying and farmers were getting discouraged. Something needed to be done—and done quickly.

One of the engineers got a big idea. A few miles below the junction, the Alamo swung back to the southeast in a big bend toward the Colorado. He dug a canal connecting the two rivers at their closest points and there was plenty of water for everybody. A catastrophe had been averted! Just before time for the spring rise he filled up enough of his canal to form a plug and turned the water again through the Hanlon Gates. When the water began to run low, he took out his plug. This worked fine for two years.

Then in February, 1905, there came a flash flood, just as there did while we were working on Hoover Dam. As the river rose, water rushed into the canal without let or hindrance. It tore out the banks of the canal and all the head gates into the lateral canals. It wound up in the big salt flat that had been the bottom of the inland sea before it dried up. When the flood subsided, the water refused to take its former channel to the Gulf. It poured the full force of the Colorado River into the salt flat that was later named the Salton Sea—which name it bears to the present time. The irrigation company tried in vain to turn the water back into its former channel, till it went broke and threw up its hands. As this land was all below sea level, unless the water was checked the railroad would lose all its investment and every farmer in the valley would lose his life's savings, so the railroad took over and tried their hand, until they too were going broke.

They appealed to the Government in Washington. Theodore Roosevelt was President and he got Congress to appropriate money to help out. The Government did not take over the work. They left that in the hands of the railroad company, and they helped pay the bills. The Railroad tried every method known at that time. The method that seemed most promising was to start in on one side and drive a row of sheet piling across the channel. As the channel narrowed, the water became swifter and deepened the channel till it was almost impossible to hold piles in place while they were driven. It, also, washed the far bank out—widening the stream on that side.

Engineers and Superintendents succeeded each

other in rapid succession. Some were fired because they couldn't stop the river. Others resigned because it couldn't be done. Finally they got a young engineer who didn't know it couldn't be stopped and he stopped it! He disregarded all time-honored methods and invented one of his own. Nearby was Pilot Knob, a landmark—or rather a guidepost for many miles of surrounding desert. It had millions of tons of rock in it. He was working for the railroad company and all railroads have broken-down flat cars standing on sidings all over their system. He asked the company to bring him every broken-down flat car in their entire system that could possibly limp to the job.

He shot off the side of Pilot Knob, in chunks as big as a steam shovel could handle, and put a steam shovel to loading flat cars. He built a railroad spur right up to the edge of the chasm, and one by one shoved his cars loaded with rock—cars and rock—into the chasm. As soon as his pile was as high as the end of his track, he added more track and started all over again. This operation was much faster than driving sheet piling. As much of the water passed between the rocks, it did not restrict the flow enough to make the far bank crumble as the sheet piling had done. When he got his track entirely across, he began using side-dump cars. He loaded them with finer material and dumped them on the upstream side of his structure. The water running through the structure washed the material in between the rocks until all the crevices were completely filled, forming a dam that turned the river back into its old channel to the Gulf.

I have never seen the above statements in print, as to how the channel was finally closed but heard it from Old Timers. I was sufficiently skeptical about this unusual method, that I checked with several Old Timers who claimed they were there, and they were unanimous in confirming the method.

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The Alamo River swings far down into Mexico and returns. For a period in the early part of the present century, revolution in Mexico was the normal state of affairs. Every time there was a revolution, the rebels shut the water out of Imperial Valley. The condition became so serious that sometime in the

twenties, the residents of California petitioned Congress to dig a new canal—wholly within the United States. The pressure was made strong enough that the digging of "The All American Canal" was made a part of the Boulder Canyon Act, which authorized damming the Colorado River. In California there is a range of sand hills between the Colorado River and Imperial Valley that extends several miles below the Border. It is to get around these hills that the Alamo River swings down into Mexico. A canal, all on American soil, had to go right through these sand hills. To take the water out of the river at the Hanlon Gate would involve the digging of a canal of really gigantic proportions.

To avoid so much digging, the engineers went upstream about twenty miles from Yuma and built Imperial Dam to raise the water level in the Colorado River. They raised the water as high as they could and get supporting ground for a canal to carry it on. They put the canal intake at the dam, then skirted the Mesa to the Mexican Border where they turned through the sand hills. In spite of all that the water level had been raised, we still had to make a cut one-hundred-twenty-five feet deep at the summit. From the edge of the sand hills down into the Valley, the descent was so rapid that had the canal been dug on the natural slope of the land the water would have run so swiftly it would have torn away the banks and made maintenance practically impossible. So, the canal was laid out on required hydraulic grades. When the bottom of the canal got too close to the surface, they put in a twenty-five or fifty-foot power-drop and went on from that—thus preparing to let the water exert its energy generating electric power rather than tearing out its banks.

After the digging was all done, I was one of the inspectors building concrete structures at these drops. When the weather got really hot, the Government wouldn't let the contractor pour concrete except on the graveyard shift. On both sides of the structures, downstream from where the turbines were to go, were drainage wells. These were made of concrete—three feet square. On the sides near the bottom were reverse filters to catch the water that seeped into the canal banks above the drop and to return it to

the canal below the turbines. The tops of the wells were at ground level and they were usually kept covered. One day someone on the day shift uncovered one of them and left the cover off. At that time I was working swing shift and was very busy getting everything ready so that the graveyard shift could put in its full time pouring concrete. There were lights at both ends of the structure—but none in the middle. I had occasion to go from one end of the structure to the other and dropped into the open well like a nickel in the slot. It was so dark I couldn't see anything. The well was so narrow I couldn't turn over so I went down feet first. In going down I contacted some form wires that had been cut off too long, and got two cuts that had to be sewed up. Apparently I landed on my right knee on one of the filters. My right shinbone was crushed into several pieces from just above the ankle to clear up into the knee joint. I yelled and men came running.

They pulled me out with a rope tied around me just under the arm pits. Without any first-aid whatsoever, they laid me on a ply board and carried me across the canal and up the high, steep bank on the far side. They put me in a car and hauled me thirty-five miles to the hospital. At the first canteen we passed, the driver stopped and bought a bottle of ice-cold Coca Cola and insisted I drink it to ease the pain. The doctor said, when told about it, that it was the very worst thing I could have done.

Desert coolers do their cooling by evaporating water. There was just enough water in that well to thoroughly soak my clothes. The mercury stood at just about 100 degrees and the desert air was very dry. The evaporation cooled me off so much that by the time I reached the hospital my teeth were chattering just as if I had been out in a blizzard half-clad. When we reached the first telephone, the driver stopped and phoned a doctor. The doctor, in turn, phoned the hospital so that when we arrived at the hospital there was a wheel-stretcher where we could drive alongside of it and a nurse handy with a loaded hypodermic to ease my pain.

When the doctor came, he sewed up my two cuts, using local anesthetic. He then took my blood pressure and said I was so deep in shock that if he gave me an anesthetic to operate on my leg, I wouldn't come out of it. So he packed my leg in sandbags; covered me up with woolen blankets and called a special nurse to look after me. With the dope the nurse had given me, I promptly went to sleep. I woke up some time in the night, hot. One hundred degree temperatures and woolen blankets just don't go together in my book. I started throwing the cover off and told the nurse I was hot. She got her thermometer; took my temperature and told me that being hot was all my imagination. I was far below normal. She put the cover back on and gave me a shot to put me back to sleep.

When the doctor came next morning, he again took my blood pressure. He said I was still far from being ready for an operation and called another special nurse for day duty. By the time he got my system ready for an operation, my leg was so badly swollen he couldn't do anything with it. I had to lie with my leg packed in sandbags for eleven days before he could operate. The big bone was so badly crushed to pieces that all he could do was to use a fluoroscope and mold it into the best shape he could, then put a cast on it. As the little bone was intact, he thought that would hold it so put no tension on it. It didn't. The leg healed five-eighths of an inch shorter than the other one, and I have had to wear a high right heel ever since.

I was just about ready to go on vacation when this happened. I used up all my annual leave, all my sick leave, and all the sick leave they could advance me. Then they told me I would either have to go back to work or go on compensation. I told them that if they would give me a job in the office I would go back to work. I was still on crutches. If I let my foot rest on the floor, the blood rushed to it. It swelled up and the pain became intolerable. The doctor told me to put on my field boot; lace it tight and prop my foot up level with my chair. I did as directed and went to work. The first few days the pain was almost intolerable but the pain gradually left me. I asked the doctor how long he thought I would have to stay in the office. He said, "About three months."

When I told Cramer, the Office Chief, what the

doctor said, he laughed and said, "Boy! You are sunk! When I came into the office it was for three months. That has been more than three years and there is no end in sight. What chance do you think you have?"

My knee didn't heal as it should. The doctor took an X-ray of the joint, and said that the injury in the knee had been more serious than he thought. Scar tissue had formed between the ends of the bone in the joint. He started treating it electrically—treated it for one year. It got some better, but lacked a lot of getting well. At the end of a year, he dismissed me as permanently partially disabled. Then the question of compensation came up. When injured permanently, men are entitled to compensation. According to law, when a man is permanently disabled, his compensation is based on the difference between what he could earn before the accident and afterward. I was a better field man than office man, but since they put me in the office with no reduction in pay, I had no claim, despite the fact that I couldn't walk without limping for more than three years and never was able to do field work.

Maybe it was just as well. During the war, several of the men went down to the coast and got jobs at almost twice the salary they were getting in Yuma. I most likely would have done the same thing if I had been able to do field work. Since I was not, I stuck to my job. When the war was over they all lost their jobs. They were all younger men and sooner or later they all found other jobs; but at my age it would have been practically impossible to find one. About a year and a half after the accident, President Roosevelt by Presidential decree, froze all temporary employees into regular Civil Service, so I held my job till I reached the age of retirement in 1951.

During the summer of 1940, my sister, Luella, after writing me a letter, picked up a card and wrote, "Why don't you marry Mrs. Hattie Kinsey?" I had known her for thirty years and knew she was a widow. I hadn't seen her for ten years; and, if I had heard from her at all, it was in a very round-about way. Most certainly I had never thought of her as a marriage possibility. Now that Luella had suggested it, I knew she would make me a good wife if I could get

her, but felt very sure she would not leave her beautiful home in Cuba for anything I had to offer her. On second thought, it occurred to me that that was a matter for her, not me, to decide. I sat right down and wrote her a letter. I enclosed Luella's card and asked her what she thought about it. She thanked me very much for the offer, but said it wasn't that simple. Like the folks mentioned in the Bible who were bidden to a wedding feast, she began to plead excuses. But, she didn't say "No"; and, in as much as she hadn't said "No", I wrote again and tried to convince her of the weakness of her excuses. It took more than a year, but just as long as she didn't lay down a flat "No", I kept on writing.

The really big item among her excuses was her sister, Ina. She lived on a farm in Indiana and was going blind. Hattie had promised to go take care of her when she needed her. I told her how foolish it would be for her, after living so many years in the Tropics, to go back to the cold North to spend her winters on an isolated farm, in a house with no modern facilities. She would really be endangering her life. A better way would be to come out to Arizona and marry me; and, when Ina needed care, she could come out to Arizona and live with us and escape the winters.

My real break was Hattie's daughter, Myrtle. She had just lost her husband, and was foot-loose. She said, "Mother, if you want to marry Mr. Williams, go right ahead, and when Aunt Ina needs help I will go take care of her." So Hattie Kinsey came out to Yuma, Arizona, and on Oct. 11, 1941, we were married and have now spent seventeen very happy years together.

Two years later, Ina got so bad she needed help. Myrtle kept her word. During the following winter, Ina's husband died and left those two women alone, miles out in the country, living in an old house with no modern facilities and with no transportation. Ina had had a horse but he had died. She had no car. Neither of them knew how to drive, anyway. They had to depend on the Rural Mail Carrier to bring them what groceries they didn't have in the cellar, and on the kindness of neighbors for transportation. Somehow they got through that winter, but Myrtle had had

enough. On the approach of another winter, she persuaded Ina to go out to Arizona and spend the winter with us in a warmer climate.

That was during the war and people were in great demand. Myrtle had had experience as a telephone operator, so promptly got a job at the air base at $125.00 a month. Ina was very happy all winter; but, when spring came, she began telling Myrtle it was time for them to get back to Indiana to make garden. Myrtle had no intention of leaving her nice office job and $125.00 a month salary to go back to Indiana to dig in the dirt for anything Ina could afford to pay her. She didn't have nerve enough to tell Ina so. So she just "drug her feet".

One morning at breakfast, Ina got quite insistent on the urgency of getting the garden planted. Myrtle didn't say a word. Finally I said, "Ina, did it ever occur to you that you wouldn't need a garden if you weren't there to eat it?" Apparently she got the idea, for she never mentioned garden again. She settled down and made her home with us as long as she lived, which was almost nine years, and we made her a comfortable home. We often speak of how lucky it was for Ina that Hattie decided to marry me instead of going back to Indiana and trying to take care of her there under the conditions.

Another instance of the smallness of this world—the office had been figuring the cross-sections and quantities of the canal, but were short-handed, so were getting behind. Lawrence, our boss, told them that we inspectors had plenty of spare time, so if they would send us the plans we could do our own figuring. Davis, on the graveyard shift, was a young engineer. This was his first job out of college and Lawrence wasn't sure he knew how to figure them. Since I was the one who made contact with him, Lawrence told me to check with him; and, if he didn't know how, to teach him. The canal here had a 125-foot bottom, and I told Davis that we couldn't use the same formula on these big sections that we used on railroad sections. Then I asked him what formula he used to figure railroad cross-sections. "To tell you the truth, I never figured any."

"I worked on a lot of railroads in Cuba and have figured miles of them."

"Did you say Cuba? I had a friend that went there soon after graduation and was there for several years."

"Where was he located?"

"I don't know exactly, but think he worked around over the Island quite a bit."

"What was his name? I may have known him?"

"William G. Ames."

"He was my boss for several years, but I haven't heard from him since he built the Sugar Mill at Clewiston, Florida. He offered me the job of Superintendent of Construction there, but I was Chief Engineer for the Kelsey interests, at a good salary where I could live at home, so I turned it down."

"When I was in the University of Arizona, at Tucson, I worked in the Tuberculosis Hospital there as an orderly on the night shift to help pay expenses. He had T.B. and he and his wife came out there. He, being an engineer, and I, studying to become one, became very good friends. I married one of the nurses and he and his wife gave us our wedding supper. He came out too late and died just about a year ago now."

The Government Civil Service gave its employees twenty-six days a year annual leave with pay. During the war we couldn't get gasoline to go anywhere, and besides, the Government discouraged our using our leave. Just let it pile up. In the spring of 1945, the European war was over and it looked like the Japanese war might be soon. Hattie hadn't seen her sons in Cuba for four years. I hadn't been there for fifteen years. I had a lot of leave piled up; so I told her that if the Japanese war ended this summer, we would use up my leave on a trip to Cuba. The war dragged on till I gave up all hopes of going this year.

Then suddenly it was over and we could get all the gasoline we wanted. My car was a 1935 Ford-V8, badly in need of repairs. I went to see my garage man to see if he could give it a hurry-up valve grind and install new pistons. "I haven't time now, but for $160 you can get a completely over-hauled engine from Sears and Roebuck."

"Well, if I get one, will you have time to install it?"

"It would still be an old car, and you are going to want a new car as soon as you can get it, aren't

you?"

"Probably."

"Well, $160 will buy a lot of gas and oil."

"Do you think it would stand up to make so long a trip?"

"We learned during the 'Okie and Arkie' days that these old Fords really surprise you as to what they can do." It was all so sudden Hattie wouldn't believe we were going until I sold the cow and rented the house. Then it was too late to make any preparations.

On August 24th, at three o'clock in the morning, Ina, Myrtle, Hattie and I took off, hoping to get out of the desert before the sun got too hot. We hadn't gone two miles when our headlights knocked off. We had to wait till it got light enough so I could see to drive. My tires were not very good, so I decided that thirty-five miles an hour was as fast as it was safe to drive and I held to it. Our first port of call was to visit Son John, who was in the Air Force at the White Sands Air Base at Alamogordo, New Mexico. Next we stopped to visit Myrtle's uncle, Daniel Kinsey, at Okmulgee, Oklahoma.

Then, to my old home in Kansas. There, we visited several acquaintances—some of whom I had seen fifteen years before on our way west. Others I had not seen since we left Kansas in 1892. I called on one man who was just my age. His father was one of the local preachers. I asked if he was Arthur Pickering. When he said he was, I said, "You would hardly be expected to remember me after fifty-three years, but I used to live here; went to church here and we were in the same Sunday School class."

He looked at me a moment, then said, "Take your dark glasses off so I can get a good look at you." After staring at me a few seconds he said, "You lived about two miles southwest of the church."

"Right."

"Your name is Williams. You are Noah Williams. I remember those wide eyes."

I thought that was indeed a remarkable identification after so many years and considering the fact that we were only thirteen-year-old boys when we parted.

Next we drove to Hopewell, Kansas, to visit the

Doggetts. Keith, Edith, and little son, Mike, had lived with us, and his mother had visited us in Yuma, while Keith was taking his desert training, preparatory to going over-seas. From there we went to Minneapolis, Kansas, to visit Myrtle's aunt, Myrtle Ward, and a whole flock of cousins. There were so many cousins they called a hasty family reunion for our special benefit. In Oskaloosa, Iowa, home of my Alma Mater, we visited my brother Robert's widow, Jessie, classmates, schoolmates and friends. In Chicago and suburbs, we visited three of my nieces. Around Westfield, Indiana, my old home, we visited old friends. They were really thinning out. Near Charlottesville, at my sister, Zona White's, we had a family reunion. Around Warsaw, Indiana, Hattie's old home, we visited her relatives. All told we spent a month in Indiana.

Ina thought the trip to Cuba would be too hard for her, so she stayed with her sister, Dora, in Warsaw until our return. Maude Willtrout, a lifelong friend of Hattie's, had long wanted to go to Cuba so she decided to take Ina's place. When her brother-in-law learned she was going, he took a look at our old car and said to her, "Do you mean to tell me you are going to Florida in that old thing? You are taking your life in your hand. It will never make it."

We visited Ina's grandson in North Canton, Ohio; then crossed over into Canada at Buffalo, New York, and viewed the Niagara Falls from the Canadian side. We went around the west end and north side of Lake Ontario; and down the north side of the St. Lawrence River, past the Thousand Islands, to Montreal, Canada, where we visited my brother, Lloyd, whom I had not seen for thirty-nine years. I never had seen his wife and daughter. He was now head of the Mathematical Department of McGill University.

From there we went down through Vermont, Massachusetts, Connecticut and New York State, to Maplewood, New Jersey, where we visited Hattie's daughter, Ruth Martin, and family. While there we went into New York City to see the high spots, including Harlem, Skid Row, and Radio City, where we saw a dancing horse perform.

Next we went to Goshenville, Pa. to see my ancestral home. It is a stone house, two and a half stories high, and was built by my first ancestor in

America, Robert Williams, in 1702. It was still owned by a Williams, a far distant cousin, and was in pretty good repair, including the latch string locks on the doors.

Our next stop was at Rehoboth, Maryland, where we visited Grant Mahan and sons, Walter and Edgar, and Ira Ebe and son, Paul—all neighbors of ours when we lived in Omaja, Cuba, thirty-odd years ago. Edgar Mahan had an automobile accident while he was in high school and has been paralyzed from the hips down ever since. His father spent a fortune taking him to specialists, but all to no avail. He had now been bedfast for more than twenty years. He couldn't even turn over in bed without help, yet he had learned the jeweler's trade and was earning enough that he had to pay income tax. He would get someone to turn him over, face down in bed. He would then prop himself up on his elbows; and, with a big tray, holding all his work, between his elbows he would work by the hour.

We crossed Chesapeake Bay on the ferry. We visited my daughter, Vera, and family in Jacksonville, Florida. In St. Augustine, we visited the old Spanish Fort Marion and the Fountain of Youth. We took a sight-seeing tour in an old-fashioned, horse-drawn surrey, with a Negro driver in top hat. Near Lake Wales we visited the Cypress Gardens and Bok Tower. In Ft. Pierce, we visited son, Kenneth, and family. He had got tired of the cold north and bought a dairy here in sunny Florida. In Jupiter, Kelsey City, West Palm Beach, Boynton, and Delray we visited friends and acquaintances of long ago. In Ft. Lauderdale, we visited son, Gordon, and family. They were visiting his mother-in-law, Mrs. Campbell, preparatory to going to Brazil. From there Maude wrote to her brother-in-law, "Pop and the old Ford got us here all right."

During the war, all boats had been taken off the Cuban run and put on the European run. They had not yet been returned, so there were no boats going to Cuba. We left our car with Mrs. Campbell; took the bus to Miami; and caught a plane for Havana. It was my first airplane ride. It is fine for speed if you are in a hurry, but no good at all for sight-seeing—and when I go places I like to see things.

We spent a night in Havana, then took a bus to Hattie's son, Charles', place near Ciego de Avila. We spent six weeks in Cuba, visiting Hattie's two

sons and old friends. To me it was just like going home after a long absence. I took a ride over the North Coast Railroad, that I had located in 1911, 1912 and 1916, and helped to build in 1916. It was all solid jungle then. Now it had been cleared for miles on both sides and was either in cultivation or pasture. I visited in La Gloria—another of my old homes; the new rice plantation at Senado, Santiago, The Shrine of The Virgin of Charity of El Cobre, Holguin, my original farm at San Lorenzo and neighbors there, and the American Colony at Omaja, where I had lived for a few years. While at Omaja, I erected a monument at my father's grave.

Back in the U. S., son, Richard, just out of the Army, met us at the airport with my car. At Ft. Pierce, Myrtle left us and went by train to Warsaw, Indiana, to get her Aunt Ina. They joined us again at the home of Ina's grandson, Ansel Coons, in Dallas, Texas. Along the road, we passed some used car lots that had some pretty good-looking cars. Hattie said, "Let's stop and see if we can't trade this old thing in for a decent car."

I said, "This car runs. I have no idea what those cars will do; but, with the great scarcity of cars there has been, you can rest assured there is something wrong with them or they would not have been traded in." We didn't stop.

In New Mexico, we spent a day in the Carlsbad Caverns, the largest known cave in the world. In Lordsburg, N. M., we ran into quite a snowstorm and had icy roads for more than half a day—and had no chains. By driving carefully we had no accident. On Jan. 9, we reached home, having been gone four and a half months. We had traveled more than ten thousand miles in the old Ford, besides what we had traveled by airplane, bus and train. Maude promptly wrote her brother-in-law, "Pop and the Old Ford got us here; and, furthermore, he has had less trouble with it than you have had with your Buick in the last year."

With Ina, Myrtle and Maude—all three—with us the old house just wasn't big enough for us, so I bought a new and bigger house on the Yuma Mesa. I hated to move out of the old house, for it really seemed like home. I had lived there the longest I had ever lived in one house in my life—nine years

and eight months.

My work for the next two and a half years was pretty much routine in the office. I took no vacations and now the Government made a ruling that we couldn't pile up leave as we did during the war. We had to either use it or lose it. The old Ford was getting older all the time, so I decided that I should have another car before we took another trip. I went first to the Ford dealer to see about a new car, then to the Chevrolet, Plymouth, Dodge, and Oldsmobile. Not a one of them would promise me a car inside of four months and that would throw my vacation into the winter.

Then, I remembered that I had read somewhere that my old friend, Bedford, was now General Sales Manager for the new Kaiser car. I wrote him and asked if I could get immediate delivery on a Kaiser and if I could take delivery at the factory and save the freight. He wrote that I could get immediate delivery at the factory and save the freight, all right; but that according to their contract with their dealers, I would have to make the deal with my local dealer. I had bought my Ford direct from a man that needed money very badly. I paid him $200 cash. Now, after six years use, I got $250 on a trade-in on a new car. I, also, got $250 off the local sales price for the freight. So on July 9, 1948, Hattie, Ina, and I headed east by train. In Chicago, we separated—Hattie and Ina going to their sister's in Warsaw, Indiana, and I to Kaiser's automobile factory at Willow Run, near Detroit, Michigan.

On my arrival there, they promptly treated me to a turkey dinner, then took me on a guided tour in a little tractor-drawn train—four miles through their assembly line. I had a nice visit with Bedford, whom I had not seen for about fifteen years, and with Tom Price, who had been head of the gravel plant at Hoover Dam when I worked there. He was now Vice-President of the Company for Procuring Materials. After my visit, I returned to the office and asked where I should go to get my car. "The car with an Arizona License on it, standing just outside the office door is yours. Your bag is in the trunk and here is your key." I asked for a guide to get me out of the maze of roads around the factory and out onto the highway where I was on my own.

I reached Warsaw that same evening. We spent just about a month in Indiana, visiting around Warsaw, Sidney, Westfield, and Noblesville. We took a trip down through southern Indiana and to the Wyandotte Caves. We attended a Williams reunion at my sister, Zona's, near Charlottesville, and a Tomlinson reunion at Noblesville—the first I had attended since 1892. Brother Lloyd was at Zona's and went with us on some of our visits. It was he who suggested the trip through southern Indiana. Maude Willtrout, who had gone to Cuba with us three years before, joined us for the trip west.

After leaving Warsaw, we spent one night with a cousin, Abbie Wagoner, near Delphi, and a few days at Oskaloosa, Iowa, visiting my sister-in-law, Jessie, and schoolmates.

We stopped for a visit at Central City, Nebraska, where I had taught just 45 years before. I found a few of my old pupils but most of them had died or moved away. We spent one day touring the Badlands in South Dakota and another around Lead with a schoolmate, Stephen Berry, who had been City Engineer of Lead for several years. We visited Mt. Rushmore, then west down to Denver and visited Maude's brother-in-law, and took in the City. In Riverton, Wyoming, we visited engineers from Yuma, who had been transferred up here to open up a new project.

We reached Yellowstone National Park about three P. M. and every cabin in the Park was taken, so we had to sleep in our car—and we didn't have any blankets. We drove down into the lowest part of the Park, but still it was desperately cold. Along sometime in the night, Maude said she was ready to give this whole Park back to the Indians. Next morning, after the sun got things warmed up and we were taking in the sights, she said she had changed her mind. The Indians couldn't have it after all. We spent most of the day there but took good care to get outside the Park in time to find a cabin before dark.

In Helena, Montana, we visited the Manleys, whom we knew in Yuma. In Post Falls, Idaho, we visited Hattie's and Ina's nephew , Howard McGinley. In Washington, we visited Grand Coulee Dam, largest concrete dam in the world and Dry Falls, a relic left by the retreating glacier at the end of the ice ages. In Corvallis, Oregon, we visited my son, John, and my

daughter, Elizabeth. He was in college and she was teaching in the college. Next,we visited Yosemite National Park and the big trees. Having read of the famous Yosemite Falls, highest in the United States, we were quite surprised to find no falls at all — just a high, blank, rock wall. When I expressed our disappointment to one of the Rangers,he said, "O, The falls don't fall in the fall, because they spring from springs that spring in the spring." Quite enlightening if you don't get confused trying to untangle it. The big trees were up to expectations.

In Los Angeles, we spent a few days visiting my sister, Luella; Hattie's daughter, Myrtle; my daughters, Mary and Esther; and a couple of Penn College schoolmates. When we got home, I figured up expenses. Our new car had run 7,400 miles. By hauling two paying passengers, the whole trip, train, board, cabins, and everything, my out-of-pocket cost was just $2.72 more than the $250 I had saved on freight.

I had been home just a week when I got an official letter stating that word had come from higher up to reduce forces in Yuma, and that I was one of the ones to be reduced. I could be transferred if I could find a place in the government works to be transferred to. Otherwise, I would be laid off in thirty days. I immediately started writing letters to everywhere I could think of, even made a few long distance telephone calls, looking for a place to land. One morning, at eleven-thirty, a teletype came to the office asking if I was available for transfer to Ephrata, Washington, at the same salary I was getting and transportation at government expense. They wanted their answer by three o'clock that afternoon.

I hadn't seen a real winter for forty-six years but I had only two and a half years to go till retirement. To go into the cold north at this time of year was indeed a bitter pill. I only had a very short time in which to make up my mind. I got on the long distance telephone and tried every possibility I could think of, but all to no avail. Then, I went into the Personnel Office to check up on the possibility of retiring now. I could retire now on a pension of $53.00 a month, which was entirely too little to live on. If I worked on till retirement age, I would have two and a half years' more salary and my pension would be raised to $73.00. A little figuring showed me

that with the money I could save out of my salary and the rents I would collect from my houses, I would have some five or six thousand dollars more in the bank at the end of two and a half years than I had now. The twenty dollars more pension might amount to quite a nice sum if I lived very long. On the other hand, if I quit now, I would have to start eating up my savings immediately.

I phoned Hattie and told her I had shocking news, so she had better sit down to take it. I explained the situation to her and asked if she thought she could take the cold after so many years away from it. She said she could take it if I could. The whole thing was up to me. At three o'clock I went back to the office and told them I would go.

I took my new car down that same evening and ordered a heater for it. I hastily arranged my affairs; shipped what goods we wanted to take with us; put my house in the hands of an agent to sell and headed north. The second night out, my radiator froze up. I had to have it thawed out. I tried to buy some anti-freeze, but could find none. So I had it filled with alcohol.

Next morning, in the high country just out of Baker, Oregon, we had driven but a little way, when it began snowing. The road became very slick. We very narrowly escaped sliding over a twenty-foot cliff into an icy mountain stream. A little later we came to a long curving hill with a bridge at the bottom. I had never driven on an icy mountain road. No one had ever told me to keep my foot off the brake. I tried to go down very slowly and used the brake for that purpose. The car skidded quite rapidly and hit the bridge and wrecked the whole left front corner; smashed the headlight; bent the fender down onto the front wheel and bent the wheel, the axle, and the frame. I pried the fender up off the wheel and managed to limp back three miles to Le Grande where I got repairs. It took till nearly noon next day. Before I left there I bought a pair of chains, and surely needed them till I got out of the mountains. In Ephrata, I reported to Philip Noble, who had been my boss a part of the time I was in Yuma.

There had been an army air base at Ephrata, with a big hospital. After the war, all this was turned over to the Bureau of Reclamation. They had worked

the wings of the hospital over into apartments for their employees. These apartments were not handsome, but they were steam-heated and quite comfortable. I was assigned to one of them. That winter was said to be the coldest they had had for fifty years. We had sixty inches of snow; and, as it didn't melt, it just piled up. Where the snowplow cleared the road, it piled the snow so high we couldn't see over when riding in our car. It looked as if we were driving in the bottom of a canal. We had sixty-seven consecutive days that the mercury didn't get up to thawing, and nine consecutive, and others, not consecutive, that it didn't get up to zero. That's cold weather!

My work was office work, and the office was just ten minutes walk from our apartment. In cold weather it was much easier to walk that ten minutes than to crank the car. So I walked. I told Hattie that if I had to get up in a room that was at outside temperature; build a wood fire; and work out-of-doors all day as I had in my youth, I didn't think I could take it. With steam-heat at home and oil-heat at the office, by wrapping up well for my morning and afternoon walks, I didn't suffer a great deal.

Generally speaking, the second winter wasn't as bad as the first. We had one blizzard that was simply terrible! Shortly after noon the head office called to say that the blizzard was getting bad and for everybody that had any distance to go, to get going while they could. The time would not be charged against them. When I got home the snow was blowing in around the north door like a snowstorm. I took a case knife and some old rags; caulked around the door like caulking a boat and plugged up the key hole. About six o'clock the electricity went off, and as the oil for the furnace was pumped by electricity, the heat went off soon afterward. We piled all the cover we had on the beds and went to bed. We sure felt sorry for the power company employees who had to get out in that blizzard to look for the trouble and repair it.

Evidently they found it while we slept, for next morning we had both heat and electricity. The wind had abated. It was clear and cold. There was twenty miles of heavily travelled road over open, rolling prairie between Ephrata and Moses Lake. Fearing there might be tragedy there, our manager sent the wrecker,

with chains on, to patrol the road. It was well he did. Some cars were on the road, but stuck in snowdrifts. Others had skidded off the road into the side ditch and had no possible chance of getting back under their own power. As I remember it, the driver told me he rescued more than twenty cars. Had he not gone, some of the stranded people would most likely have perished before morning. In the county next east of us, two school children going home from school got lost and confused. Their bodies were found next day, only a few hundred feet from their home.

The job I was working on was the Columbia River Project. It contains one million twenty-nine thousand acres of land. Some of it is first-class land, but by far the greater part of it is second-or-third-class. The whole country is a high plateau, but it was deeply scarred by the glaciers during the ice ages. The retreating glaciers left a heavy moraine over the whole thing. Over a large part of it the layer of soil above the rock and gravel was very thin, so it was impossible to grade it for irrigation. The whole thing was really a challenge from an engineering standpoint.

The first challenge was to get water onto the land at all, it is so high. The Grand Coulee Dam raises the water level three-hundred-fifty feet above its original level. To get the water onto the plateau, it was necessary to pump the water two-hundred-eighty feet higher yet. To accomplish this, they built the world's biggest pumping plant, consisting of twelve centrifugal pumps, each twelve feet in diameter. Each pump pumps twelve thousand gallons a second, enough water to supply a city of seven-thousand people. It takes a lot of water to irrigate that much land. They built two dams across Grand Coulee, forming a big lake. They planned to fill this lake in the spring, when there is plenty of both power and water, then use out of the lake during the summer when water and power are low.

In addition to the system of canals needed to distribute the water over the country—most of which had to be concrete lined—there were at least two long tunnels, a few dams and lakes, and various inverted siphons to get the water across the canyons the glaciers had left behind. By far the largest

siphon was the Soap Lake Siphon, to take the water under Grand Coulee to the lands on the west side of the Coulee. It was more than two miles long and twenty-five feet in diameter. The lowest point in the siphon was 238 feet below the water surface in the canal just above the siphon, giving a hydraulic pressure of just over one-hundred pounds per square-inch at the bottom. That pressure entirely around the circumference of a twenty-five foot tube is a tremendous bursting pressure. To withstand this pressure, they welded heavy steel plates into a tube twenty-five feet in diameter and encased the whole tube in thirty inches of reinforced concrete. The reinforcing was made up of two concentric grills of two-inch square reinforcing bars—the heaviest reinforcing steel I have ever seen.

At this writing, this job is not yet complete, but the estimated cost is around four hundred dollars an acre; and, with constantly rising prices, it will probably be much more. My attitude on this job was much the same as my attitude on the Zapata Swamp job in Cuba. I was glad to be on that job, both for the experience and for the money it paid me, which I very much needed at the time. I had put into my Zapata Swamp report, "This project is financially unfeasible so long as Cuba has so much unused land that needs no drainage." That job did not have the Federal Treasury behind it and is still not done. This job has the United States Treasury behind it and goes merrily on being constructed. I was glad to be on this job because it was a great engineering experience; but does it make sense to pay four hundred dollars an acre to put more land into production when we are spending billions of dollars to put producing land out of production?

In the Coachella Valley in California, a part of the All American Canal Project, the cost per acre is practically the same as here, but that is practically a frost free climate, where they raise dates, grapes, citrus fruit, and all kinds of winter vegetables. They have the city of Los Angeles and all the Metropolitan area just over the ridge to consume all they produce. I helped take the farm census in the Coachella Valley one year. The returns on their crops are very high, reaching $800.00 an acre for carrots. With returns so high and payments spread

out over several years, the farmers were glad indeed to pay the price and get the water.

Here, in Washington, the winters are long and cold and markets are far away. There is positively no crop they can raise here in this climate that will give returns comparable to those of the Coachello Valley. The experts decided that $75.00 an acre, spread over several years, was all the farmers could afford to pay. I agree with them. That is what the farmers will pay and the rest of the cost will be paid by sale of electricity from Grand Coulee Dam. Yes, the electricity will pay for it in time, but wouldn't it make a lot more sense to apply that income to our national debt; stop a lot of interest; stop paying to keep so much land out of production so we can eat up some of our surplus and leave the reclamation of high-cost, low-production projects to the generation living when they are needed? You can charge the whole mismanaged mess to Politics and "Pork Barrel".

My fifteen years with the Bureau of Reclamation terminated April 30, 1951. Shortly before that date, I wrote to Hattie's son, Ralph, in Cuba, that we were going to retire in Florida and would make the trip to Florida by car. If he would come out to go with us on the trip, we would do him good. So he and his wife, America, a Cuban, flew up and joined us.

Ina was now 91 years old and almost blind. We took her to Spokane; put her on a plane for Los Angeles; then called Myrtle and told her when to meet the plane. That was her first plane ride. I went aboard the plane with her and put her in the Stewardess' care. She made the trip without incident.

Then, we started for Florida, in a round about way—going places and seeing things. First, I took them around to show them the Project, to Grand Coulee Dam and Dry Falls, and through the apple orchards around Wenatchee and over the Cascade Mountains. Although it was May, there was still plenty of snow in the mountains, and America had never seen either snow nor high mountains.

Ralph was in the dairy business—in a crude way, in Cuba—and wanted to get all the ideas he could on modern dairying. So we went to see the big Carnation Dairy farm, just west of the Cascade Mountains. We visited son, John, in Corvallis, Oregon, and John Breu,

at his new home in Paradise, California. We had all known him for many years in Cuba. We visited Yosemite National Park with all its falls and big trees. Having worked so long on Reclamation Projects, I wanted to see some of the other projects, so we visited the Tracy Pumping Plant and Shasta and Friant Dams, in California. America remarked that it made no difference where we went nor what we saw during the day, we always wound up at a dam at night.

We visited relatives and friends in Los Angeles and vicinity for two weeks. We had just reached daughter, Elizabeth's, in San Diego, when America came down with the mumps. While she was sick, we visited more dairies, the zoo, and some of the old Spanish Missions in the vicinity. When she was able to travel, we went on.

We visited the beet-sugar factory at Imperial, California, and some of the hydro-electric plants along the All American Canal. In Yuma, Arizona, where we had lived so many years, we visited friends, agricultural projects, packing houses, Imperial Dam with its desilting works, and took a look at the new construction works being installed on the Wellton-Mohawk Project. From there we headed for Parker Dam, the Las Vegas Night Clubs with their Gambling Halls, and Hoover Dam—the world's highest.

The road ran miles and miles—just a paved ribbon of highway through the Arizona, California and Nevada desert. The vegetation was greasewood and an occasional choya, barrel, or saguaro cactus clear back to the mountains on both sides. Every once in a while we would see a flattened out jack rabbit's hide, either in the road or beside it. Finally, Ralph remarked, "After looking at this country, I know why so many jack rabbits commit suicide. They can't see any place to get a living, so get discouraged."

We visited the Grand Canyon of the Colorado River in northern Arizona—one of the world's biggest pieces of architecture. It is some ninety miles long; varies from seven to fifteen miles wide at the top and is a mile deep.

Zion Park, farther north, consists of a series of deep canyons, carved through red and white sandstone in a very high tableland. It is indeed difficult, if not impossible, to tell how much of this cutting was done by water and how much was done by glaciers. There are many glacial marks on the canyon walls which vary in height from 2,500 feet to 3,500 feet.

Bryce Canyon, still farther north and east, was discovered by a Mormon farmer who lived down on the Paria River. One of his cows went astray and he went looking for her. When he saw the place she had led him into, he remarked, "This is a hell of a place to lose a cow." His name was given to the canyon. It is not nearly as large as Grand Canyon nor as majestic as the canyon walls of Zion Park; but it is probably the most fantastic conglomeration of spires, cathedrals and pinnacles ever carved out by nature. It was certainly a wonderful sight.

From there we headed east across the Utah desert. At Marshal, a pumping station and section house on the railroad, we stopped for lunch in a little restaurant. The restaurant owner was also the waiter and his wife was the cook. Seeing how very dry it was, Ralph asked, "Mister, about how often does it rain here?"

The man looked like he was thunderstruck that anyone would even think of such a question—let alone ask it. "Man, I know a bullfrog here nine years old, and he hasn't yet learned to swim." At Ralph's request, he put the statement in writing and had it attested, but he didn't produce the frog.

In Colorado, we went over an 11,000-foot pass. In spite of the fact that it was late June, everything was covered with ice and snow. America got out of the car to go to the restroom. She had never walked on ice, and her feet suddenly shot from under her and went into the air. She might have been badly hurt, but as she landed on her natural cushion she was only bruised.

Near Garden City, Kansas, they had just had some very heavy rains and there was "water, water everywhere". There were many washouts and we had to hunt detours around them—some of the detours quite long ones. Suddenly a very severe dust storm came up out of the southeast—probably from Oklahoma. I have been in many dust storms in the desert, but this was my first and only experience of being in a dust storm in the middle of a big lake of water!

At Hopewell, Kansas, we visited the Doggetts, who had lived with us in Yuma, Arizona, while he was

in the service. At Minneapolis, Kansas, we visited Ralph's Aunt Myrtle Ward and in Ottawa, we visited Oliver Taylor, a cousin of mine. Before we reached my sister, Zona's, at Charlottesville, Indiana, Ralph felt his jaws swelling up with mumps, so we had to stay there a few days until he was able to travel. We visited Hattie's and Ralph's relatives around Warsaw, Indiana, then headed south. In Jacksonville, Florida, we visited my daughter, Vera,and family and on July 3, 1951, we reached Son Kenneth's, at Fort Pierce, Florida.

With our windings and wanderings, we had traveled a little over eight thousand miles and had taken just two months to do it. Next day we took Ralph and America to Miami to fly home. We returned to Fort Pierce for the purpose of house hunting. We finally found a furnished house at 208 South Twenty-fifth Street that suited us, so we bought it and moved in, hoping to grow old gracefully. As soon as we were settled, Hattie wrote Myrtle to put Ina on a plane and send her to us. We met the plane in Saint Petersburg.

But you can't tie a wanderer in one place, any more than you can keep a good man down. 1952 was the fiftieth anniversary of my graduation from Penn College. The class put on a reunion back at our Alma Mater. Ina was so poorly Hattie couldn't leave her, so I went alone by bus. Out of a class of twenty-four, eighteen—or just three-fourths—were still living but only six got to the reunion. We had a very pleasant time, and decided to write to all members of the class to see if we could get them to write brief histories of their activities for the last fifty years. They asked me to take on the job of writing for the letters. In some cases it took a lot of prying, but I finally got letters from all but one—Gertrude Spencer Lacey. She very likely was unable to write, for she died within a very few months. It was after reading my letter that some of my classmates urged me to write my life story and gave me the idea.

In June 1953, Ina died, at the age of ninety-three, and we took her back to Indiana for burial beside her husband. Then, we went to New Jersey to visit Hattie's daughter,Ruth,and family. We also visited New York and Washington, D.C.

1954 was the fiftieth anniversary of Luella's

graduation from Penn College. She went to her class reunion, then on back to Indiana for a visit. We took the occasion of her trip East to call a family reunion, too. The Williams assembled in Indiana at Zona's from Los Angeles, California, Florida, and Montreal, Canada. It was the first time we had all been together for fifty-two years.

Not having anything in particular to do, we decided to take a little joy ride after the reunion, and asked my sister, Ruth Anna, to go with us. First, we visited Hattie's relatives around Warsaw, Indiana, then went to Son Gordon's near Chicago. Knowing I was coming, he scheduled me to make a ten minute after-dinner talk to his Engineering Club in Chicago on the subject, "The Zapata Swamp in Cuba, and My Work in It". I gave the talk. One of the engineers remarked to Gordon, "Engineering sure was rugged when your dad was young."

Ruth Anna had a daughter near Chicago. She preceded us that far and joined us at Gordon's. Our next call was at the home of a classmate, Fred Everett, near Oskaloosa, Iowa. We spent a few days there visiting old friends, then visited another classmate, Myrtle Glaze Ellis, at Greene, Iowa. Next, we visited the Kenneth Tedins in Rosholt, South Dakota. They had lived with us during the war. He was a cadet in the Air Force, in training at the Yuma Air Base, and she was a stenographer and "Hello" girl in the office of the Bureau of Reclamation where I worked. Then we went to Sheyenne, North Dakota, where I had worked fifty-six years before, just to see the place. The town had grown immensely. The Indian Reservation just across the river, which was wild prairie when I was there, now had a house on every quarter-section. There was a bridge across the river and a paved road running north across the Reservation, but the ranch itself had changed surprisingly little. The old wooden pump in the barn had been replaced with an electric pump. Since the farm work was now done with machinery, the horse stalls in the barns were now replaced with cow stanchions and the house had a coating of asbestos shingles over the weather boards. That was about all the changes I could note.

From there we went to the Garrison Dam across the Missouri River in North Dakota. It is the largest

compacted earth dam in the world. It is 210 feet high, a half mile thick at the base, 2¼ miles long at the crest and will contain, when completed, seventy million cubic yards of earth. The lake formed above the dam is second in size only to the lake above Hoover Dam.

From there we went to the Devil's Tower, in northeastern Wyoming. From a distance it looks like an enormous tree stump, perched on a small hill out on the plain. It is solid granite; rises some 865 feet above the hill on which it rests; is more than 1,000 feet thick at the base and averages about 275 feet in diameter at the top. The area on top is approximately an acre-and-a-half. They say that Mrs. Will Rogers is the only white woman who was ever on top of it. This is one of the real mysteries of nature. The only one of its kind on earth. Geologists have an explanation of the formation of almost every phenomenon on earth, but they are stuck here. Yes, they have various explanations for this one, too, but they can't agree. All their explanations are quite fantastic, but so, too, is the tower. The fact that they are agreed on is that it was formed some time, some how—for there it is.

Just west of Buffalo, Wyoming, at Camp La Costa, we visited a classmate, Bessie Smith Muir. Her husband is a guide for hunting and fishing parties in the Elkhorn Mountains. She served us mince pie made with elk meat. From there we went up to Yellowstone National Park, which both Hattie and I had visited before. We went on up to Glacier National Park, which to me is the most colorful of all the parks—the glaciers, fantastic shaped mountains, the plants called Bears Hair, the many flowers and the green color of the lakes. In the park, was the first time Hattie ever ate snow from the roadside on her birthday, July 8th.

Soon after leaving the park, we visited the Hungry Horse Dam—the fourth in size in the U. S. both in height and in amount of concrete in the structure.

Again, we stopped to visit Hattie's nephew, Howard McGinley, near Post Falls, Idaho. Abandoning the pleasure of sightseeing for a little while, we went to Wenatchee, Washington, where Hattie had had two eye operations for glaucoma, and had her eyes checked. Back in Ephrata and vicinity, we viewed the

changes in the landscape where water had been brought to the desert and visited several of the men I had worked with.

Going down the famous Columbia River Drive, we visited the McNary, The Dalles, and Bonneville Dams, and the Multnomah Falls. In Portland, Oregon, we hunted up Wiley Kinsey, a long-time acquaintance of Hattie's and a cousin of her first husband. In Newberg, Oregon, we visited Rev. C. C. Haworth. He was a schoolmate at Penn College, my predecessor at Nebraska Central College, and the preacher that married Birdie and me in Holguin, Cuba. At Philomath, Oregon, we visited Son John and family. Leaving there we went through the logging country and saw many big logs on their way to the mills. We were held up more than an hour in one place because a loaded log truck had gone over the bank into a river. Two wreckers were blocking our road while getting it out of the river.

In Walnut Creek, California, we visited the Manleys, whom we knew in Yuma, Arizona, and had visited in Helena, Montana, in 1948, and Anna Ramsey Harris, a classmate at Penn. In Oakland, California, we visited Ruth Anna's son, Merlind Schlemmer, her daughter, Edith Brown, and George Havas, an Engineer, who had worked with me both in Cuba and on Hoover Dam. In Campbell, California, we visited Daughter Elizabeth and family.

Hattie had been suffering for some years with arthritis. When we reached Los Angeles, her daughter, Myrtle, was quite sure a series of hot baths would cure her—so we went to the Hobo Hot Springs on the Kern River and put in about two weeks just bathing and resting with no apparent results. Myrtle took her to a specialist. He said her trouble was caused by her tonsils—so he took them out.

Los Angeles is the gathering place for people from the East when they get tired of cold weather. We had a lot of friends there to visit besides the members of our own family. We spent one Sunday at the Quaker Meeting in Whittier, where we had dinner with Herschel and Pearl Dean Coffin, classmates at Penn, and visited with several other old acquaintances.

We took a boat trip to Santa Catalina Island, a big granite mountain that pokes its head above water, some thirty miles almost due south of Long Beach.

It is about twenty miles long, and ten or twelve miles wide. It is so nearly all granite that it has no agricultural land whatsoever. Its only industry is a granite quarry and tourists. The most colorful thing on the Island is the clothes some of the tourists wear. My most interesting experience there was a trip in a glass-bottom boat where we viewed the marine life on the ocean floor and watched divers feeding the fishes for our entertainment. All told we spent two months in and around Los Angeles.

In Yucaipa, we spent a night with Olda Barnett, a Penn classmate, a real estate dealer and a Justice of the Peace. We visited Palm Springs, the desert playground, and winter home of movie actors and millionaires. We had a look at the date gardens around Coachella and the Salton Sea. We spent a couple of days visiting around Yuma, Arizona.

Then, Myrtle joined us for a trip into Old Mexico. Our first point of interest was Casa Grande (big house), in southern Arizona. This is the biggest adobe house ever found by white men. It has eleven big rooms; is four stories high; and the walls are more than two feet thick. The material was not molded into bricks, as modern adobe houses are built, but the walls were brought up in layers and molded by hand. The fingerprints are still visible on inside walls. It was evidently a combined citadel, watchtower, and storehouse. The first written account of the place was by Father Kino, a Jesuit Missionary, who visited the place in 1694, and gave it its name. It was already in ruins at that time. There had been a number of one-room, adobe houses surrounding the big house and the whole group surrounded by a high adobe wall. In the vicinity were other groups of houses, each group also surrounded by an adobe wall, but this was the only watchtower.

The whole layout is on what is now a desert plain, but at one time was irrigated and cultivated. They had canals bringing water in from the Gila River. The largest had approximately a twenty-five-foot bottom, was fifteen feet deep, and about twenty-five miles long. So this must have been a prosperous country at one time. What became of the people? Why did they leave? There is no certain knowledge, just observant guesswork. There are no signs of any battles nor an invading army, so we will have to look elsewhere for

our answer.

All these western waters are heavily impregnated with minerals. Unless irrigated lands have drainage ditches to drain off the mineral-laden water, the soil becomes impregnated with the minerals and waterlogged, until crops will no longer grow. There are no signs of drainage ditches here, so the archaeologists have concluded that that is just what happened. When the people could no longer raise food to live on, they scattered among other friendly tribes.

The United States Park Service has erected a very large steel and galvanized iron shed over the present ruins to protect them from the weather. The thing that intrigued me most of anything about the whole set-up was a hole about the size of a pitchfork handle, running through both of those thick walls in the downstairs east room. You could stand outside and look through the first room into the second, or you could stand in the second room and look out-of-doors. The Ranger told us that one day in the spring and one day in the fall the sun shone through this hole, and the archaeologists thought the Indians used that event to mark their planting season. Whatever the significance, how did they get so small a hole straight through two so thick walls so far apart? Furthermore, how did they get the direction so the sun would ever shine through both walls? We think we are pretty smart and the Indians pretty dumb, but it is my guess that not one man in a million could do it today.

We entered Mexico from El Paso, Texas, to Ciudad Juarez. The road was a good, paved road all the way to Mexico City and had been recently built. We passed through several small mining towns and a few irrigated farms; but, for the most part, it was semi-desert cattle country. Good for cattle because it was either too dry or too rocky for anything else.

In Mexico City, we promptly hired a guide for $100.00 a day. That sounds like a lot of money, but translated into American money it was only about $8.00—and he was well worth it! About the first thing he did was save us a big share of his salary by taking us to a cheaper hotel, back off the beaten trail. I just turned the steering wheel over to him and he was both guide and chauffeur.

The first place we visited was the Monastery of

San Agustin de Alcolman, built in 1538 and supposed to be the oldest church in the Western Hemisphere. It is built of stone and still in use. We then went to the Pyramid of the Sun, which, the guide told us, covers more ground than the biggest pyramid in Egypt. Close to it is the Temple of the Sun, which is a very large open court surrounded by a high wall. Along the wall are various built-up platforms, which are supposed to be sacrificial altars. The whole thing is built of lava rock, of which there is abundant supply right at hand.

The guide told us that, until quite recently, people thought the Pyramid was just a natural hill. Then, the archaeologists got to digging around and found out what it really is. It is the supposition that the Spaniards, considering it an Idol to be worshiped, made the Indians carry dirt and completely bury the whole thing and hide its identity so it could no longer be worshiped. It sure took a lot of dirt to cover it and a lot of work to carry it to the top of the Pyramid. The archaeologists had the whole thing uncovered, then dug several tunnels into its base to see if there was anything of value buried there. As far as they dug it is all made of the same lava rock.

What is probably the biggest and highest of the "Sacraficial" platforms is decorated with a row of serpents' heads up each corner. These serpents' heads are perfectly formed, even the teeth and eye sockets. The guide told us that the eyes were precious stones and that the Spaniards gouged them out as a part of their loot. The Indians had no metal tools. How did they make those heads so perfect?

In Mexico City, we drove around among the buildings of the University of Mexico; went through the Palace of Fine Arts and Chapultipec Castle, which King Maximilian took over for his palace and which is still used as a Presidential Palace. We went through a factory where they tool leather and make saddles, bridles, purses, etc. out of the tooled leather. We visited the store where they sell the enormous wreaths for funerals, weddings, etc. We visited a workshop where they were making ornaments of silver, copper, and brass.

We saw them making rope from maguey fiber and the owner presented each of the ladies with a needle

and thread. The needle was the hard point that grows on the end of the leaves, and the thread was a few of the fibers that grew attached to the hard point and ran down through the length of the leaf. When your thread is used up, you can't rethread your needle. You have to get another needle with the thread attached. The maguey is a very important plant in the economy of Mexico. It is a species of cactus of the century plant variety. The Mexican makes rope, needles and thread of the leaf points and fiber; and pulque and tiquila, from the pulp in the leaves. Both pulque and tiquila are very popular brands of liquor. Hard liquor is a very prominent part of Mexico's economy. France, Italy, and Spain drink their wine and Germany drinks her beer; but I don't know of a country on earth that drinks more hard liquor than Mexico does.

A few miles southeast of the city, is Xochimilco. The Spaniards described it as islands floating on rafts in a big lake. If the islands ever were floating, they have long since settled to the bottom, but still protrude above the water. They are intensely cultivated in all kinds of flowers. The place has become a veritable tourist attraction. Between the islands are canals, making it a kind of Venice. On the canals are hundreds of gondolas, all decorated with fresh flowers, ready to take the tourists for a ride touring the canals. While the tourists ride the gondolas, salesmen in little boats ply among the gondolas, selling everything that can be carried in a little boat. Our guide bought us a basket lunch, and we ate it on board the gondola while taking in the sights. On the banks we saw many children, seven to nine years old, carrying baby brothers or sisters strapped to their backs while the mothers plied the salesman's trade.

Back in the city, the guide took us through one of the most richly ornamented churches in all Mexico. Great quantities of gold and silver ornaments and vases, and lots of goldleaf spread around the place. We saw penitents dismount from private cars, taxis, and buses in the street; get on their knees where they dismounted and walk on their knees to the altar—which in some cases must have been a hundred feet or more. The guide said, "Do you see this beautiful church,

with all its rich ornaments of gold and silver? The people who paid for it live in mud huts." In Mexico, as in most Catholic, heathen, and semi-heathen countries, there are but two classes—the rich and the poor. There is no middle class and it is always the poor who pay!

We saw a bakery deliveryman riding his bicycle with two big baskets of bread balanced on his head and another on the handle bars. He rode his bicycle in and out through heavy traffic just as though it were easy. We saw a street parade of all kinds of giants and fantastic animals.

But, strangest of all, we saw men throwing bulls by their tails. The guide said, "You have often heard people say they wouldn't trust a certain man as far as they could throw a bull by the tail. Well, I am going to take you to where men are actually throwing bulls by their tails." He took us onto the balcony of a private house, overlooking a big open space. In the far corner was a corral with a lot of bulls in it. Running out from one gatepost was a long brick wall. The bulls were turned out through the gate, one at a time. As the bull emerged, a horseman rode up beside him and kept his horse's head about a jump ahead of the bull's head so the bull couldn't turn away from the wall. A second horseman rode up behind the bull; reached over and caught him by the tail; drew the tail taut over the pommel of his saddle; threw his right leg over the bull's tail; then gave it a hard kick just as he swung his horse away from the wall. The bull usually went down in a heap. I never did learn the object of the game. They charged no admission, and the only spectators they had were people like ourselves, looking on from private balconies. Maybe it was just a challenge to see if the man had what it took to throw the bull.

Then we went to my first, last, and only bullfight. I can't see how human beings can be so cruel to dumb animals. It is the most cruel game invented since the French used to "Draw and Quarter" their victims by hitching an unbroken colt to each of the victim's hands and feet, then start the colts out toward the four cardinal points and encourage them to pull and jerk till they tore the victim's limbs from his body.

This show started by a man standing beside the chute the bull was to come out of, with a big rosette of ribbon in his hand. The rosette was firmly attached to a big barbed hook similar to, but much larger and stronger than, a fish hook. As the bull came out of the chute, the man sank the hook firmly into his side, pinning the ribbons securely onto him. The idea being that the pain will madden him and make him want to fight. Then two or three men with big red capes start in to tantalize him. They will contrive to get the bull to charge them, then hold the cape out for him to charge while they step out from behind it. Sometimes the bull gets his man. Most generally he doesn't.

The game at this point is to make the bull wear himself out. Two or three horsemen stood around to attract the bull's attention. The horses had their right sides well padded so if the bull charged, his horns could not gore them. The horses were blindfolded, so they could not see to dodge the bull. It was the rider's job to always keep the horse's padded side toward the bull. One bull hit a horse so hard he knocked him over and unseated the rider. When the horse got up he had no rider to guide him and couldn't see the bull to dodge him, on account of his blindfold. He got up with his unpadded side toward the bull, and the bull gored him so badly they had to lead him off the field.

They had several handles about the size of pitchfork handles and approximately three feet long. In one end of each handle was a heavy, barbed spike. When the bull began to get tired a man would take one of these in each hand, and as the bull charged him he would step aside and plunge them deep into the bull's back. This was done four times. If they all stuck—which they seldom did—the bull would have eight of these long handles flopping around and tearing at his flesh as he fought. When the bull is thoroughly worn out, the matador comes out with his sword. He stands in front of the bull, and as the bull charges, he runs his sword down between the bull's shoulder blades. Two of the matadors that day were either not quick enough or not accurate enough. The bull gored one so badly they had to carry him off the field. The other was more dextrous. He dropped his sword; grabbed the bull by the horns; pulled his body tight against the

bull's head; went up and came down with the bull's head; landed on his feet; got another sword and killed the bull. They killed six bulls that day. Men came on with three mules and dragged the bulls off the field. Our guide told us we wouldn't want to eat hamburger for a long time. He said they made hamburger out of the bulls.

One morning we got up early and drove to Cuernavaca (Cow's horn) for breakfast. That was where Cortez established his Capital. We went through the palace he built and viewed many fine paintings there. It is now the City Hall. We wound up our trip at Taxco, one hundred miles below Mexico City. That is on the road to Acapulco, a famous coast resort. We were told that the road was very bad, so we turned back. Taxco is a fairly large silver mining town with many churches. The guide told us that they had an ordinance there prohibiting the erection of any building in any other than colonial style, so there were no modern buildings and the streets were all paved with cobblestones. We went through a very old art institute and ate lunch in an adobe building that was built for a mission but is now a hotel.

We came back to the United States by way of Laredo, Texas. That part of the country is much lower than the other road. It has much more rainfall, much more agriculture and, to my great surprise, many more mountains. The trip was very uneventful until the day before we crossed the Border. It rained much of the day. When high in the mountains, we were in the sunshine and could see the clouds and rain below us. On the mountain side, we were in the clouds in the form of fog. Down in the valley, we were in the rain.

A big flood a few months before had taken out the International Bridge at Laredo, so we had to cross the Rio Grande on a pontoon bridge. They wouldn't let us back in the United States until they vaccinated all of us. We three world travelers had all been vaccinated before so our vaccinations didn't take, but Ruth Anna was pretty sick for a few days. (As soon as we got back into the United States, Myrtle took a bus back home.) In San Antonio, Texas, we visited Ina's grandson, Ansel Coons. His wife took us for a sight-seeing trip through the town, through

the Spanish Governor's Palace and through the Alamo, where so many brave Texans and Pioneers died. It is now a museum and a very interesting place. In Jacksonville, Florida, we visited my daughter, Vera Walker.

We reached home Oct. 15th. We had been gone four months and 19 days and had driven 14,625 miles.