

REMINISCENCES OF DR. WILLIAM L. JELLISON

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My birthday was February 28, 1906. I was the sixth member of a family of seven. I have one younger and an older sister who are still alive. We are all that remains of our family of seven. I went to a rural school--a one room school. There was one teacher for all eight grades. Later, the school was reduced to four grades. One of my teachers, a Miss Durning, had a master's degree from a university that included a lot of biology. She encouraged me in biology and in entomology. Living on a farm, I was in contact with such things from the time I was able to walk. I went to Flathead County High School. As far as I know, I was the only graduate there that was a freshman for three years. I lived in the country--I missed a lot of the diseases that the city kids had, and when I got into high school, I contracted many. I had to quit two times and go back to the farm to regain my health. The third time I went straight through with very little missed time. I stayed out one year after high school and worked on the farm, worked for neighbors, and worked in the orchards at Flathead Lake to save a little money. I started off to school with only about \$200 but with a lot of ambition. After doing manual labor for a year, I said, there must be some other way.

I went to Bozeman, and although I had known a few people who had gone to Montana State College, I had never seen the place. I stayed there for four years. I finished at Bozeman with about as much money as when I started but without calling on home for help. I took work in microbiology over there with some entomology. Dr. C.B. Philip was one of my instructors in entomology, but I was not a major in that field. As graduation neared, there was a call from Dr. Ralph J. Parker at the RML [Rocky Mountain Laboratory]. He wanted somebody for a laboratory assistant. He came to Bozeman and interviewed my teachers. They suggested that I was the person to come. I had two fraternity brothers who were already working in the Laboratory for the summer. Several of them had spent a year's time at the Laboratory. Dr. Parker wanted someone in a hurry--he didn't want to wait until graduation. So, the professor told him that if I wanted to go to the laboratory, the college would arrange for my graduation. I went to RML, worked at the lab two weeks, went back for graduation, and then returned to the Laboratory. After a year and a

half, I had had enough of it. It was interesting work, but I wanted more education, so I resigned and got a fellowship at the University of Minnesota in entomology and in scientific work. Within six months I time--the fall and winter quarters--I changed my mind again. It was a severe winter in Minnesota. Minneapolis corners are pretty cold on nights when one is waiting for street cars.

When the Rocky Mountain Laboratory called to ask me back for a special mission, I immediately accepted and returned. After that I worked at the laboratory but took time off every few years to attend graduate school. When my mentor in Minnesota went to China for a year, I went to Stanford University and sat in the office of Dr. Gordon Ferris, one of the world authorities on lice. No classes were being taught in entomology there, so I signed up heavily in bacteriology and related work. After that I went to Johns Hopkins School of Hygiene as a guest student without being a candidate for a degree. I stimulated a mild embarrassment there. We had a class in helminths, and I prepared a set of flash cards containing the life history of these helminths. I drilled the other students. It wasn't a big class--six or eight. When it came time for exams, everybody passed with a high grade, which was exceptional for graduate students. An investigation was started and everyone but me was interviewed as to what happened--who had the examination card, how did they get this information, how did they know what was coming? I guess they all told him the same story--that Jellison had coached them. Nothing came of that except they found out that with flash cards and a little drill people can learn those complicated life cycles. It was a wonderful experience there in contact with some of the great men. Another time, I went to the Harvard School of Public Health. In addition to taking courses, I worked some in the department. One of my first assignments was to clean up a cluttered basement room that had been used for storage. I disposed of things and cleaned the room. They painted the walls and made it into a student office room and a student work room. Among other things at Harvard was [Hans] Zinsser's library. He was a world authority on rickettsial diseases up to that time. He was already deceased when I was there, but he left a considerable library at the Harvard School of Public Health. I got to working with that, organized it, sorted it chronologically and by subject matter, and before I left, they had it bound into a series of beautiful books--reprints on rickettsial diseases. That was considered the Zinsser Library from then on. Before I organized it, the Zinsser Library--of which they were very proud--was just a collection of pamphlets and file boxes. I have a copy of Zinsser's book *Rats, Lice and History*. It is one that is quoted very often. He says that typhus is not dead, and when human stupidity reaches the proper stage again, typhus

will break out. He was right on that. I went to a summer session at Duke University to study mycology, in which I had been interested. I had good lectures there and enjoyed that. So, I had a variety of backgrounds, contacts with the greats and near-greats in biological sciences--all of it stimulating.

When I first worked at the RML, I washed dishes at the Laboratory, because there was no dishwasher on duty. Some of the individual labs did their own dishes and had them sterilized, but I did a lot of dishwashing. I was soon put in charge of running bacteriological tests--agglutination tests--and I advanced slowly and acquired some knowledge of the work. As time went on, I was given more and more liberty for my own work. I tried to keep my desk clean so that if there were a field assignment of any kind. I was prepared to go on that. Before the war, Dr. Mason Hargett had been sent to South America to the laboratory that manufactured yellow fever vaccine and was coached in the manufacture of this vaccine. He and his assistant Mr. Burrus were sent out to the Laboratory to establish a unit for the production of yellow fever vaccine in preparation for possible wartime operations. Dr. Parker assigned me to help Dr. Hargett get started.

Things went along pretty smoothly. I came back from a field trip in North Dakota, where they had had an outbreak of equine encephalitis. I walked into Parker's office and the secretary, Miss Holly whispered to me, you are going to China, Dr. Parker told me that there was a call from Washington D.C. and that the U.S. Public Health Service was organizing a mission to work on disease control, particularly on malaria, on the Yunnan-Burma railway. They had already established a truck road through the mountains--trucks for hauling supplies into China. China was completely cut off on the seaboard from contact with the outside world. Over the highway that had been forged, we were hauling supplies into China. It was in desperate need of American equipment and supplies.

There was a party of sixteen. They debated first whether to send a military delegation of sanitarians and doctors for the project--send them in uniform--or whether to send a public health service delegation. They finally decided it best to send a Public Health Service delegation, and M.D.s, sanitarians, entomologists, and engineers were picked for this mission. A senior member of the Public Health Service and I left San Francisco on November 19, 1941. We flew in a Pan American flying boat to the Orient. I had previously been up in the air for only about a half an

hour with one of my cousins in the Flathead Valley who was pilot. Here I was on an overnight trip on Pan American from San Francisco to Hawaii!

When we landed in Hawaii, screens were put over the window so we couldn't see out. But after we were there for twenty-four hours, we couldn't help seeing the lineup of Navy vessels in Pearl Harbor. We were entertained in Hawaii by Dr. Eskey [sp], a Public Health Service man. From there we went on to Midway, Wake Island, Manilla, and, finally, Singapore. There we transferred to British Overseas Airways and flew to Rangoon, which was the end of our flight. We stayed in Rangoon for a few days, where a military delegation, much like our own, was unloading supplies for China. There were about eight or ten ranking military people, including a doctor. We got our equipment together. We were issued two small Studebaker cars and started our journey up the road from Rangoon to Lashio. The driver, a native boy from over there, had been out most of the night before, and as we got going along the highway, he would catch himself from falling over asleep at the wheel. I told Dr. Victor Haas, our chief riding in the back, to stop the car and let me take over and drive. In Burma, automobiles drove on the left side of the road. I had never driven in traffic on the left, but I felt we couldn't risk this sleepy driver. We finally got safely to Lashio, where we were to establish headquarters. We were in Lashio for a while before going out onto our regular assignments. One morning one of our members went to visit the British administrator in Lashio. He came back and told us that the Japs had just bombed Pearl Harbor. Only about half of our crew had arrived. Some of them were in Pearl Harbor the morning of that attack. They were sent back to the states and it was months before they finally reached us. We were later sent out on our mission along the railroad line which was being constructed. Col. Henry Johnson, an elderly man, and I were sent to the middle section, the most remote one. We had to walk, and it took us five days. Here was a line of railroad construction without a tool bigger than a shovel and with nothing on wheels but a couple of wheelbarrows. Cuts and fills through the mountains were made by forced labor--people carrying baskets or loading baskets of dirt on horses. There were two American engineers, entirely separate from our party. They were assigned to the same mission, but as engineers. We stayed with our assignment there and reconnoitered the place. The malaria season had not set in. There were thousands of workers on the railroad, and the company did not supply food for them. People from their native village, wherever it was--a hundred kilometers back in the hills someplace--had to supply the food for their men that were working

on this construction.

We had a radio available, and finally a jeep came in. It was for us, and we would drive the jeep up and down what construction was smooth enough, in order to charge up the batteries. We could listen to the BBC in London in the evenings and get the news. I took down notes and then typed them out and passed them on to the Chinese engineers who were in the village. We listened to the progress of the Japanese along the east coast of Asia. The Japs had surrounded Singapore, the Japs had taken Singapore, the Japs were moving up the coast, the Japs were near Rangoon, the Japs had taken Rangoon, the Japs were moving up the Burma Road. There was a Chinese army there under Stillwell that was supposed to be operating to stop them, but they were moving up about thirty-five miles a day. We packed our chit bags, had them alongside our beds with our boots, and were ready to walk out on a minute's notice. We waited and waited. Finally, Dr. Manjay [sp], a senior member of our delegation, arrived in in a jeep and said, "Get the hell out of here. You can go anywhere you want, but don't try to go back to the Burma road, because it is jammed with traffic. There are hold ups, and the cities along the route have been bombed." We decided to go overland, the way we came in. This took us three days of hiking instead of the five it took coming in. Then we got on trucks and were hauled into Kunming. Our mission was finished. Lashio had been taken. It was the source of the railroad supplies, so no further traffic could go through. We went to the AVG, the American Volunteer Group in Kunming hostel, and we were billeted for a day or two with the aviators there. Pretty soon we were flown over the hump to Burma--to Assam. Our pilot, Captain Paine [sp], was about half way on the trip when he turned off his radio. They told him not to try to come into Dinjan, because the weather was so bad that he couldn't land. He just turned off his radio and kept on flying. When he landed they bawled the hell out of him. That airfield was the only operating base in the vicinity of Dinjan, and the weather had cleared up enough to land just ten minutes before we arrived. He got a real reprimand anyway.

We stayed there overnight. I was billeted with Captain Henry Byroade, an aviation engineer for the U.S. Army. There were about thirty officers and about thirty enlisted men already in Dinjan. We had nothing to do there. They offered us hospitality and a day's rest, and then we went on by air transport to New Delhi. Our mission had collapsed--we were headed home. There

happened to be a general in India, General Raymond Wheeler, who had had experience in the tropics in Panama. He recognized the mistake in sending trained doctors and entomologists and sanitarians home when Americans were just coming into India. He wired Washington, and we were stopped in New Delhi. Pretty quickly we found ourselves reassigned to bases that were being built up to receive incoming Americans. I found myself back in the same bungalow where we had rested on our way through and close to Major Byroade, with whom I was associated for the rest of the mission over there. After we got settled, Dr. Haas made headquarters in New Delhi while our new mission was being organized; we found that millions of dollars' worth of hospital and medical supplies had been shipped to us. They were supposed to have gone through Rangoon and up to us in Lashio. The ships could not get into Rangoon because it was occupied by the Japs. The ships were unloaded at Calcutta, and authorities tried to send the supplies as far as they could. They sent them up the railroad to the Dinjan area, where they were unloaded into warehouses. We knew nothing about this. Dr. Haas explored in warehouses that had been hastily built, and he found these millions of dollars' worth of hospital and medical supplies stored away. He gave us freedom to draw on those as we needed for dispensing to the Army. It was very fortunate--there were all kinds of pills, and there happened to be four or five hundred rolls of screen wire that could be used for mosquito-proofing barracks. Col. Johnson and I had been living together for three or four months, and we were pretty fed up with each another. I don't think I even said goodbye to him when I left New Delhi. About two days later, I came back to the bungalow, and Dr. Johnson had the bunk right alongside of me. He had had experience in malaria control, fortunately. I had not. He was an engineer and he could take care of our vehicles--some of which were pretty shabby. Soon Col. Johnson was assigned the task of building a military hospital there on the tea plantation.

The British were building billets for the incoming Americans with bamboo and thatched roofs but with great holes in the walls and no screens on the windows--and we were in one of the worst malaria areas of India. Professionals over there--some associated with our party--said we could not operate here during the malarial season. They predicted that we would have to move out and give the area over to the mosquitoes, coming back when cold weather came, and the malaria season was over. We never were interrupted a day, because we devised a method of mosquito-proofing these bamboo buildings with Hessian cloth. Hessian cloth is the stuff gunny

sacks are made of and which is produced by the ton in Calcutta. Box car loads of Hessian cloth were sent up to our area, and we hired native people to mosquito proof these bamboo batches. The British wouldn't mosquito proof, but they built the batches and turned them over to us. I was given an order to hire native contractors to partially mosquito-proof them. Johnson's theory was that if you fix one window, you have shut off some mosquitoes., if you fix two windows, you have kept out twice as many. Actually, if you close the thing in and put in a screen door, then you really have some protection against mosquitoes. The British sprayed once a day, and this effected some control. By that time *Atabrine* [anti-malaria drug] was not available in quantity, but an American chemist had cracked the formula for *Atabrine* and before the war was over, it was supplied in great quantities.

I was there for eighteen months of duty as malaria control officer for an area nearly the size of Montana. Some of the bases I never even saw. I would send off a contractor and a supply of Hessian cloth to these bases. I told them to do the work and submit me a bill. I would turn it into the office and they would pay for it. Some of them no doubt cheated me--I know that some of the contractors became very rich doing that work. I figured it cost about seven American dollars per soldier for the work that we did. In all that time, so far as I know, we lost only one man in the area to malaria. He had orders to go home when he was taken ill. He didn't report his illness to the dispensary because he feared that it would probably delay his departure. So, he stayed in his own tent and died of malaria. Some of the other PHS officers doing the same kind of work were assigned to the new Ledo Road, and they got instructions to go ahead with this mosquito-proofing, too. One of my friends, a Dr. Brown from Michigan, was a malaria control officer up there with the same job of mosquito proofing quarters for soldiers. Towards the end of my assignment I was tired out, because it had been a lot of responsibility. A delegation came down from the Ledo Road and said that they were having trouble up there with sickness. They described it, and I said, "You've got scrub typhus up there. My associates had been working for months in the South Pacific on scrub typhus. I had read about scrub typhus, so I knew something about it. When they described the initial lesions, I was able to identify it. They asked me to come and work with them, but I said, No, I am expecting orders to go home in a day or two. I've had it. I want to go home. The orders did come through, and I went home. After I was home for about eighteen months, I went to a medical meeting in St. Louis. One of the Generals in the Army

Medical Corps asked me when I was going back to Assam and Burma. I said, "I'll go whenever Glen Kohls goes. He has just returned from a mission in the South Pacific on scrub typhus-- whenever he goes, I'll go. Pretty quickly we had orders to report to Washington and take off for Assam. The two of us flew over there and joined the typhus commission. The typhus research group had already sent some doctors and entomologists over there to study the scrub typhus problem. Some of them got into Myitkyina just a few days after the last Japs were chased out of Myitkyina. They were right on the edge of activity. We established a laboratory there and went to work. There was some dissension in the group as to what disease we were actually dealing with. No one had completely isolated the strain of the disease. Dr. Gilliam, a U.S. Public Health Service man, had come to check on the situation. He got the disease himself and was flown home. I was going to Washington, D.C. at that time by boat, and by the time I got to New York, Gilliam was recuperating. When I got to Washington, I found out that Gilliam had brought back scrub typhus from over there in himself.

There was still some argument about whether they were dealing with real scrub typhus. One of the leaders in the party said, "There is a lot of BS to this chigger thing that we were dealing with up here." The actual outbreak was over near Ledo, Assam, where Chinese soldiers had left their camps to help chase the Japs out of North Burma. The campaign was going favorably, and they were returning to their camps which were overgrown with weeds. They had left supplies of food and grain for livestock. They had also left garbage out, the grass had grown up, and these old camp areas were swarming with rats. Rats and chiggers go together. The epidemic broke out among these Chinese going back to their old camps. There were dozens of them coming into the hospital with scrub typhus.

The chief of the laboratory was gone on a mission of some kind, to Washington, and Glen Kohls had been put in charge. I asked him to leave Gene Hughes from our laboratory with me go to work on this thing. Gene Hughes set out rat traps--he was up at four o'clock in the morning to cover his rat traps before the ants got busy and picked the chiggers off the rats. We picked chiggers from the animals, put them in vials, and sent them back by air to Myitkyina, where they had mice and other animals available for inoculation. Within days more than twenty isolations of scrub typhus were confirmed by Dr. Davis and other people working in the

laboratory. This was the first concrete evidence that it was real scrub typhus. The theory that this was not scrub typhus--not chigger-borne disease--just faded away. Gene Hughes is responsible for that. I went on a few of his early morning trips, but mainly I stayed in camp. We were working in what was the hottest area possible. We put out a cage of metal around an area and put white mice in there and the white mice picked up chiggers. We could see these little red chiggers in the ears of white mice. We picked up chiggers that way.

There was one fatal case of scrub typhus on which an autopsy was performed. Gene Hughes and I were present at this human autopsy. I don't know whether we saved any material or not. A few days later, however, the doctor who performed the autopsy had orders to go home. We understand he died on his way home from scrub typhus contracted from the autopsy.

A few weeks later I was back at the typhus hospital where many patients were being treated. Lt. Tierney from the Navy was there. They had found down in Egypt that typhus could be treated with Para-Aminobenzoic acid, a chemical that was very effective in the treatment of what was apparently epidemic typhus down there. It was effective against rickettsial diseases. Tierney was there to test it. He took me into the corridor in the hospital and showed me the two groups into which patients had been divided. One group got Para-Aminobenzoic acid, and the other did not receive any medical support other than the usual. Here were people in good condition. They were optimistic, they were cheerful, they were in good shape. On the other side were very ill patients. As the war wound down, Col. Thomas Mackie, who was really in charge of the expedition to North Burma and Assam, developed the idea of going into China and helping to control disease along routes of evacuation and movement of citizens and military in China. He wanted to get permission from Washington to do that. The rest of the party was not very enthusiastic about it, and after the truce was finally declared, things folded up with unbelievably rapidity over there. Whole tent camps were taken down, packed up and the men sent out by air. We were among those that were soon headed home from that mission.