

**Elizabeth Casper Interview**  
**August 1, 1985**

This is an interview with Miss Elizabeth Casper at her home in Hamilton, Montana, on August 1, 1985. The interviewer is Victoria Harden.

Harden: Miss Casper, would you begin by giving us a brief summary of your background and how you came to be at the Rocky Mountain Laboratory?

Casper: I attended a three year school of nursing at the Hotel Dieu, in New Orleans. When I finished, World War II had just started, so I got in the army unexpectedly. Nevertheless, I was solidly in the army and remained there until the end of the war. After the war, the Army was discharging nurses, so I came back and worked at a VA hospital for a few months. There were a lot of problems with nursing after the war, however. There were nurses who had been to war and nurses who had stayed home. There were nurses who were mad about something, and there was always bickering in the VA. I guess I was not ready to settle down and do this. I worked for the VA at Oteen, North Carolina, where they were doing the original trials with PAS and INH.

Harden: Which were?

Casper: Anti-tuberculosis drugs. The VA hospital at Oteen was a tuberculosis hospital. I was not directly involved in this study, but I knew what was going on and it was exciting being there. I did not stay long there, however. Before getting out of nursing school, I had wanted to go to Panama. I tried to reinstate my application but was told I could not do that, and I was not willing to fill out all those papers again. Then they suddenly sent me a telegram advising that I was accepted and that I could leave. So I spent three and one-half years in Panama.

Harden: Where were you in Panama?

Casper: At Colon Hospital. This was the Atlantic side counterpart of Gorgas Memorial Hospital. It was under the administration of the Panama Canal authority. I stayed there three and one-half years, doing hospital nursing. Then I met a doctor and his wife from Georgia. He had been to school at Emory. They pestered me about going back to school. I continually refused, but I guess I really did want to do it, because I got my GI Bill straightened out as well as some other things I needed. One day the chief nurse, who had heard I was leaving, asked me if it were true. I gave her a date, came back to the states, and went back to school.

Harden: Where did you go to school?

Casper: I went to Emory.

Harden: Did you go to Emory? That is my alma mater.

Casper: I got a B.S. from Emory and enjoyed being back in school. I had intended to work for the VA after returning from Panama, but they would not let me in at the salary that I thought I deserved unless I had some credits. So I decided to go back to school and get the credits. Once I had begun, I just kept saying, "Well, one more year," and then it got too close to the end not to finish. I still had some time left with the GI Bill, so I decided to get my Master's. I was interested in psychiatric nursing, but I ended up in public health. I went to the University of North Carolina. After I got the degree, I realized I had to work two years in public health if I ever wanted to advance in the public health field. So I went back to Atlanta, actually Decatur, to the DeKalb County Health Department. After the first year, I was offered a job at the CDC. I really was tempted, but I said, "No, I must have those two years." I said I would do it the next year if it was still available. It was, and I went to CDC, into the epidemic intelligence program. Then I was sent out to the Los Angeles Health Department. This was a few months after the polio fiasco.

Harden: That was 1955?

Casper: Yes. I did a lot of record keeping and checking on polio cases. A doctor from the CDC's Epidemic Intelligence Service was there, too. We worked together. I was actually tied in with the Los Angeles Health Department, but he wasn't, and they did not have much control over him. We would get information about cases that had occurred and try to pinpoint the lot numbers of the vaccine. The problem was still going on--they were still giving the vaccine. We followed all cases that occurred, identifying vaccinated cases and non-vaccinated cases. I was there two years. When I left there, I made a major change. I was in the Public Health Service and had a parting of the ways with the CDC. I went with the Division of Indian Health in South Dakota--a generalized public health nursing program there. I worked on the reservation. I had heard of the Rocky Mountain Laboratory for a long time, but I could never find much information about whether the laboratory employed nurses. I had a friend who was working in South Dakota on the reservation. She went back to school in Ann Arbor, Michigan, and her roommate was a nurse from the Rocky Mountain Lab. I told her, "Now tell that nurse that if she leaves that job I want it." Not too long after that, I got a phone call from that same nurse saying, "I am leaving, do you want this job?"

Harden: How many nurses were employed at RML?

Casper: Just one. There has never been more than just one.

Harden: I see. What did you do as a nurse at RML?

Casper: Actually, it took some time before I had the job. I came over to see about the job because I had been at CDC and had some experience in epidemiology--not a great deal, but some. They offered me the job, but I had a little trouble getting out of the Division of Indian Health. I needed a lateral transfer in the Public Health Service. It was delayed, but eventually they ran out of excuses, and they let me go. I came here in 1962. I worked with Bob Philip, who was an epidemiologist.

Harden: He came here just about then, too, I believe.

Casper: Yes, he had not been here too long. The idea was that we would do some epidemiological work. It is expensive to do these things, however, and gradually the money petered out. Then I became more involved in lab work than in epidemiological studies. We did manage to do some epidemiological studies. I am the only nurse in Montana that has been in all the packing houses, I am sure. We did this and did tularemia work.

Harden: There was something else, too, on which Dr. Owen told me you worked. She said you did most of the work on one study.

Casper: We worked on a skin test for tularemia. We tested trappers throughout Montana. I skin tested I don't know how many trappers. In those days there were still telephone operators out here, so it was easy to do things. I would call up a little town and say, "Who is the mayor there? I want to borrow City Hall for a little while." And the operator would tell me, "I'll get him for you and you can talk to him." He may have been a service station operator or the like, but she knew him. There usually wasn't a listing for "Mayor" in the phone book. This worked just great, and I set up these little clinics. I would send letters to the trappers in that area before I arrived. They would come in, and I would relieve them of some blood and skin tests them. Bob had done this skin test in Alaska. We worked out a better dilution so that the patients would not have too bad a reaction yet the test would still be quite reliable.

Harden: Would they react immediately or did they have to come back?

Casper: They had to come back.

Harden: How long did one of your screenings take?

Casper: We read the skin test in 48 hours. If the trappers didn't come back to have it read, I would spend the next day finding them so that I could read it. Actually there were not that many--not up in the thousands--but we did test a high percentage of

trappers. We found quite a high percentage of tularemia among these trappers, and many of them did not know they had had it.

Harden: Is there a vaccine against tularemia now?

Casper: There is. The Russians developed a good vaccine. It has been adopted here.

Harden: Is it used widely among groups like trappers who are more likely to become infected with tularemia?

Casper: No, it is not. I don't think anyone makes it, because it is still experimental.

Harden: So there is no protection against tularemia, just antibiotic treatment?

Casper: The treatment is quite good. Tetracycline or streptomycin I think. But it needs to be diagnosed. It would be very good if trappers could have this, but most drug companies don't want to do it because there is no money in it.

Harden: I was trying to recall what the incidence of tularemia is.

Casper: I am sure it is very low, because more than 50 percent of the cases are never diagnosed.

Harden: That must mean that there are a fair number of subclinical cases, also.

Casper: Yes. I remember one interesting case. There was a little boy, about five or six months old, maybe a year old. There was some controversy, I believe, between his parents and grandparents. He was just not well, and his family kept taking him to the doctor. Finally, the local physician sent a sample of his blood to the Rocky Mountain Laboratory, and the tests showed clearly that he had tularemia--you don't get false positives on this test. We went in to test the family and found that the whole family had it. They had been sick with a sore throat. We never found the source but it evidently was water-borne. Dr. Jellison, I believe, proved a number of years before that this rather mild form was water-borne. You can go to certain streams near Hamilton and culture tularemia. So I am sure there is a lot of tularemia among people who believe they are drinking nice, cold, clean stream water. Even running water in the mountains can be contaminated. But everyone here considered the water perfectly safe if it moved fast. Now they are all afraid of a new disease, giardiasis. It is getting in the city water supplies, in the streams. It is a diarrhea and can be quite bad. "Hunter's diarrhea" they call it, because people on hunting, camping or river trips frequently get it from the infected water.

Harden: Is it caused by a bacterium?

Casper: No, it is a protozoa. They treat it with Flagyl. The treatment is almost as bad as the disease.

Harden: Was there any other special area in which you worked?

Casper: With Bob Philip, I did quite a bit of epidemiological work on trachoma, because he was working on chlamydial organisms. One day we got a sample from a doctor in which we found trachoma organisms. The patient lived on a reservation in eastern Montana, on the other side of Billings, on the Lama Deer Reservation. She was a child named "Wounded Eye." The original case came from a group of girls who were using mascara--trading brushes, etc. I believe it occurred at a boarding school. We traced it back then to the reservation. This was a very exciting thing. Dr. P. Thygeson from the University of California came out here. He was an expert on trachoma at the time. It was said at that time that trachoma and inclusion conjunctivitis were different things. But we had this very mild trachoma, and it was finally shown that the same organism was involved as in inclusion conjunctivitis. When the scientific counselors came out sometime after this, however, the chlamydial infections were not viewed as especially interesting, so everybody who was working on them--Bob Gerloff was another person working on this--switched to Rocky Mountain spotted fever, or the spotted fever group of organisms. We did quite extensive work in this field. I had done epidemiological follow ups on many cases that happened in the past. But at that time we did not have a really good test, we did the Complement Fixation (CF) test. We did not have the fluorescent antibody test at that time, but we worked one out. Actually, we used some of the work we had done on the chlamydial cases, and it worked very well. We then had a really good fluorescent antibody test. In many places, like New York and North Carolina, they were still using the Weil-Felix test, but it did not give good results--there seemed to be no correlation between the test results and the clinical symptoms of spotted fever. We did some work on Shelter Island, on the tip of Long Island. There were people with a very high reaction to spotted fever antigen. By that time we had done a rather lengthy study on all the spotted fever isolates that were available--those that Bob had here or other people here had saved for many years or that had been isolated elsewhere. We did an extensive cross-testing of 72 isolates in a micro immunofluorescence test. Twelve serologic patterns were found. Later, in testing tick isolates from western Montana canyons, only four serotypes were observed and only one, as far as we were ever able to determine, caused illness in man. This is *R. rickettsii*. The four serotypes in Montana were *R. rickettsii*, *R. rhipicephali*, *R. montana*, and 369-C. The last of these has since been named *R. belli* after John Bell.

Harden: Is this the classification system using the R, S, U, and M strains of spotted fever?

Casper: No, that must have been something else. Our classification included a 369-C and some others like this.

Harden: About what year did you do this?

Casper: This was in the late 1970's.

Harden: That is much later than the period about which I was reading when I found the other classification of rickettsial strains.

Casper: Some people did not really believe our results, but we examined many ticks in Montana and studied isolates from them. They all fell into these four groups. There had been a hint of this earlier. A visiting scientist working on it got the same results, but we thought he had mixed up the samples as he was very sloppy with his labeling. Later, we found out that he was probably right all along, but he didn't even think he was right! These were the four classifications, and they all seemed to fall into one of them. Other studies seem to prove this is correct. Bob Philip did some electrophoresis work on this. I was retired by then, but it supported our findings. Bob Anacker, who is still at the lab, also did some work on this. He told me a couple of years ago, "Well, you all must have been right. It seems to be working out."

Harden: There are other strains of spotted fever-like organisms in other parts of the world, aren't there?

Casper: Yes, there are other strains. We tested strains from Russia, from several countries in Africa, one from Australia, and one from India. We also tested typhus strains from Poland, Ethiopia, Canada, and the United States.

Harden: Did you ever know about a woman named Elizabeth Brandt in Germany who died during the 1920s while she was doing spotted fever research? She is the only woman about whom I have read who died from a laboratory-acquired infection.

Casper: I don't remember reading any of her work.

Harden: I thought I would ask and see if it "rang a bell" with you. Is there anything about the Laboratory in general--the programs or how the laboratory changed over the years--about which you would like to comment?

Casper: I came here in '62, and I think it was within two years that we had a maximum number of employees at the lab. I'm not sure--maybe it was a few more years.

Since then, there has been a gradual decline in numbers. Things got pretty tight, but when I left, they were really tight. Since the reorganization, the whole emphasis has been changed. It began, I'm sure, back at NIH. They decided not to have all these tenured scientists. They were using new Ph.D.'s and they didn't keep very many.

Harden: When did you retire?

Casper: In 1981, I think. It was four years ago, because I had to retire when I was 64. It was the end of the month following my birthday.

Harden: So you were in the Commissioned Corps of the Public Health Service?

Casper: Congress passed a new law the month after I retired. I should have contested it!

Harden: In the book on the early history of the NIH, which I have just completed, I discuss an effort to give Public Health Service commissions to nurses during the 1920s. President Coolidge vetoed this, however, and I believe it must have been World War II before Public Health Service nurses got commissions.

Casper: When I went in the Army in '42 or '43, I went in as--I can't remember what they called it. They were paying nurses either \$70 a month or \$90 a month. But Congress passed a bill at that time that made the nurses rank equivalent to the Commissioned Officers. Then a nurse could go in as a second lieutenant and get paid as a second lieutenant. Before this, they got all these nurses in at some low salary--not that second lieutenants are paid so well. This law was retroactive back to the time I came in, so suddenly I had all of this money--I was rich. I bought two evening dresses! I only had my uniforms and the two evening dresses.

Harden: Can you think of anything else on which you would like to comment or to point out to me?

Casper: I think that the reorganization came a little bit too soon, because I think we really were ready to get the answers to some questions which probably will never be investigated now. There are no rickettsiologists coming along. It is the end of them, I fear, and we will never find out some of these answers. For example, when the tick is infected, the tick eggs are infected, so when they hatch out, you would think that all the new ticks would be infected. Yet no one knows what controls the spread of spotted fever organisms in nature. Something does. I think we were very close to finding some of these answers. There was a man, Gene Hughes, who had worked with ticks the entire time he had been at the lab. When

he retired, he volunteered to collect ticks for us. We were examining and labelling the ticks according to the canyon in which they had been found. On the west side the ticks are infected; on the east side they never are. It has always worked out this way. Gene brought us some ticks, and we tested them by an immunofluorescence test that had to be read in the dark. It became rather boring, looking at negative tick after negative tick, but all of a sudden I came across these beautiful fluorescent things. These ticks were terribly infected. It was found that these were the ticks that Gene had brought in. Practically all of these ticks had spotted fever organisms, *R. rickettsii*. These were not any of the spotted fever-like organisms, they were the real *R. rickettsii*. The next year, we went back to the same canyon. It was very close to Hamilton. We divided the area into grids, got ticks, and labelled them from each section that we got them. We never found one tick infected with *R. rickettsii*. We combed that area thoroughly the next year also, but for some reason there were no infected ticks. Probably what happened was that the eggs didn't hatch. They hatch in the laboratory.

Harden: It is a fascinating problem.

Casper: I'm sure you know that the spotted fever vaccine was taken off the market several years ago. Some people still wanted it, however. I very carefully vaccinated a scientist who came here from London. He was working with a big batch of spotted fever organisms and he wanted to be vaccinated. Usually, you know, we just gave one dose and then we let it go, because we knew it would not do too much good, but he wanted it and he wanted to be protected, so he had three doses. And he still got spotted fever.

Harden: When was this? Was he then treated with antibiotics?

Casper: Yes, he was treated. He used to ski with us, but he wouldn't go one weekend. When I came back, he was very ill. I got him fluids, etc. The next day, however, the doctor he had been working with, Dr. Anacker, went to see him and came back and said, "You know, I think he has a rash. I am going to make an appointment with the doctor." So, I took Tom to the doctor, and Dr. Petty called me in and said, "I want to put him in the hospital. He has to have spotted fever. He is too sick to have anything else." They put him in the hospital and treated him and he was out of the hospital in three or four days.

Harden: It seems to me that it was repeatedly shown that the vaccine did not prevent spotted fever, but that it did reduce the mortality.

Casper: Certainly, this was so during Dr. Parker's day, when they ground up the ticks. I don't know, I think the vaccine got less and less effective over the years. Later,

they grew the *rickettsiae* in eggs, but possibly this did not make too much difference. With Tom, we could not demonstrate any antibodies to the vaccine at all. With some people you could, but with other people you couldn't. We were using mainly the CF test at that time; we didn't do fluorescent tests on all these people. But for Tom, we had blood samples before he was sick, while he was sick, and after he recovered. His illness had to be spotted fever because of the way his antibody titer shot up. I could hardly wait until he got well so that I could relieve him of a pint of blood! We sent it to the CDC for their test. The CDC always paid a good price for spotted fever blood. Of course, spotted fever blood with a high antibody level was scarce--although I don't know why they couldn't go to North Carolina and get lots of it. Another question has to do with Colorado tick fever. It occurs only in the Rocky Mountain area, as far as is known. So far, it has been associated only with *D. andersoni* ticks. But where it occurs in Colorado, people have been quite sick. It is a virus disease, and there is no treatment. You just have to survive it. There have been only one or two deaths from it.

Harden: Is there a vaccine against it?

Casper: There was one developed but it was made with mouse brain tissues. Leo Thomas did it. You hate to use mouse brains in vaccine. When I came here, he had a study going at Montana State Prison. I went over to help bleed the patients. Even after several years the vaccine was still effective. Bob and I finally developed a test with which we could spot the organisms in about 80% of the cases, early in the illness. The virus was in the red blood cells, and we could spot this with a fluorescent antibody test. We also could find it in the ticks. In the ticks, we could find it about 80% of the time; in people, it wasn't quite 80%. For several years we examined ticks that people sent to us. This was a very interesting program. There was not a great deal of interest in Colorado tick fever outside the Rocky Mountain area, because this is the only area in which it occurs. There are still doctors who don't know the difference between Colorado tick fever and spotted fever. There are also some strange beliefs about these illnesses. Last year a doctor told my landlady's grandson that he would have the symptoms of Colorado tick fever for three years in a row and then he would be well. Can't convince her that it is not true. Sure enough, he reported this year that he was sick and stayed in bed for three days.

Harden: The power of suggestion.

Casper: I'm sure he'll be sick next year and then he will be well. In many flu-like illnesses, the symptoms are the same. We did have quite good tests for examining

the ticks. Dr. Carl Eklund did a great deal of work on this with animals. He did a quite extensive study of Colorado tick fever in humans, helped by the nurse who was here before I came. Her name was Mary Casey.

Harden: Was she the only other nurse who ever worked here?

Casper: She was the only other nurse who was here except for a year when she went off to school, and I can't remember that nurse's name. Mary, however, was quite famous in the valley. She knew everybody. Even after I had been here quite a few years, people would still ask me, "Who are you? Where do you work?" I'd finally say, "I took Mary Casey's place." Then they understood! They never asked me anything more. Finally, one day, I told someone I took Mary Casey's place, and this lady said, "Who is Mary Casey?" Then I knew I had arrived. Mary did, mostly by herself, a family study program, but I don't know entirely what it involved. She did throat cultures, stool cultures, blood samples, etc. The study was never really completed and written up as far as I know.

Harden: I am familiar with this line of study. I think it just petered out.

Casper: The people who started it lost interest in it.

Harden: Many thanks, Miss Casper, for talking with me.

*End of interview*