

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Conrad Hage

INTERVIEWER: Betty Cooper

DATE: March 1982

BC: This is Betty Cooper and I am doing an interview today with Conrad Oli Hage, at 3404 - 10th St. S.W. which is his home and it's March 18th, 1982. Mr. Hage, could we just have some of your background to just put at the front of the tape. Where you were born, the date of your birth?

CH: Yes, I was born Sept. 13th, 1901 in Bella Coola, British Columbia. Bella Coola is north of Vancouver Island and in from Ocean Falls. It's a Norwegian colony moved in there in 1894 I think it was, from Minnesota. Many of the settlers had come from Norway but they didn't like the flat prairie of the Red River Valley so they thought they would seek a home that was very similar to theirs in Norway.

BC: That certainly is like a fjord isn't it?

CH: Yes, it is. It's about 50 or 60 miles in from the . . .

BC: From the inner passage there at the top end of Vancouver Island.

CH: Yes, in from Ocean Falls and there's a long inlet that goes in there to the mouth of the Bella Coola Valley.

BC: Now why was your family, were they settlers there as Norwegian settlers?

CH: No. That Norwegian colony had a president by the name of Reverend Sikestead, who had brought the colony in there, had visited the valley a few years before and he was very much taken with the idea of bringing in these colonists to this valley. He was their minister. After making a trip to Victoria on business he took sick and they had no doctor there and he died. So they were looking for a replacement and my father was chosen to replace him as the minister and president of the colony.

BC: What church was your father minister in, it wouldn't be . . .?

CH: ???

BC: I see. So could we step back a little further bit then and get a little bit on your mother and father? Were they born in Minnesota or had they come out from Norway?

CH: Yes, my mother was born in Madison, Wisconsin of Norwegian parentage. Her parents had both come from Norway and they were married in a small place outside of Madison but my mother was born in Madison.

BC: Your father . . . ?

CH: My father came over from Norway, he decided to be a clergyman before he left Norway and he continued his college preparation in Minneapolis. I think he was at Minneapolis for 6 or 7 years before he graduated. It was when he was there that he met my mother. Her home had been in Morris, Minnesota but they made frequent trips to Minneapolis. They were married in 189. . .can you stop it?

- #048 BC: Of course, or we can just wait while you look up the dates. When they go back that far sometimes you aren't always quite clear.
- CH: My father graduated in May of 1896 and they were married in November of the same year. He took a charge then at Amery, Wisconsin, shortly after they were married.
- BC: Were you an only child?
- CH: Oh no, we were a family of 7.
- BC: Were you the eldest?
- CH: No, I was the third. We were 3 boys and then a sister and then a brother who died in infancy and then 2 more sisters. So actually we grew up as a family of 6, 3 boys and 3 girls.
- BC: You were just about school age when you left Bella Coola, you were 6 or 7.
- CH: Yes, but I didn't attend school in Bella Coola. We left Bella Coola in 1907 and I started school in Seattle.
- BC: You moved to Seattle did you?
- CH: Yes, well, in a suburb of Seattle called Ballard. At that time I couldn't speak English. Because Norwegian was spoken at home by my parents.
- BC: And the whole colony would all be speaking Norwegian I guess.
- CH: Well no, one of the colonists was well versed in English so they had an English school. I suppose English and Norwegian, so my 2 older brothers, they attended school there.
- BC: What was it like, moving to a country that didn't speak Norwegian, did you have any problems? Can you remember problems in that when you were a little fellow?
- CH: I don't recall any specific problems other than I couldn't speak English. But both father and mother, they were both well versed in English so I don't think it was much of a drawback for . . .
- BC: Once you were aware you had to use it then you used it rather quickly. Now did you go to school then in Seattle?
- CH: Yes, we were there until 1911. We were only a block from the school.
- BC: So that would be your elementary and then where did you move? As a minister's son, you would move, they get called to various parishes so you would move fairly frequently.
- CH: Yes, well Dad, he had a little Viking blood in him I think. So he decided that he had a call to go to Saskatchewan, which he accepted and we went to Watrous, Saskatchewan in 1911.
- #088 BC: So were you ever out of Canada again after that? I mean, to live permanently?
- CH: With the family? No. From Watrous we moved to a town about 50 miles away, Gauvin. Dad had several places that he called on, Norwegian settlements actually, so most of his sermons were spoken in Norwegian.
- BC: Are you still bilingual?
- CH: Yes, a little.
- BC: But in those days you'd be very fluent in Norwegian and English if your father was using it all the time probably.
- CH: As a matter of fact, for one of my matriculation languages I qualified in Norwegian at the University of Saskatchewan.

BC: That would be rather different wouldn't it, were there many?

CH: Well, there's a Norwegian college at Outlook, Saskatchewan and it was one of the professors there that set the exam. Later they had a professor in Norwegian at the University of Saskatchewan.

BC: Can we jump back just a little bit to 1911 and you're in Watrous and you went to school regularly then?

CH: 1911 we were at Gauvin.

BC: Gauvin, right.

CH: Excuse me, I guess it was '11 when we got to Watrous and we moved from Watrous to Gauvin and we were there until 1914. From Gauvin we moved north to Quill Lake or post office 30 miles north of Quill Lake. That was in the Norwegian settlement, there was still homestead land available in that area, as a matter of fact, Dad took up a homestead and we made that our home until he passed away.

BC: So he homesteaded but still kept up the ministry?

CH: Oh yes. And my 2 older brothers, they also homesteaded there and did the farming. At that time, when we were first on the homestead, we had a team of oxen. Then of course we got horses later on.

BC: This seems to be really in a fairly isolated spot, how did you do for education? I'm looking at the fact that you went to university, you had to have entrance exams, how did you manage with your education, correspondence school?

CH: Well, that was started with a hop, skip and jump sort of thing. They had a schoolhouse there at this place but they only had school during the summer months when we first moved there. I remember several years that we just had school during the summer.

#125 BC: This was because transportation was so difficult in the winter time for children to get there daily?

CH: No, I wouldn't say that. But the grants from the government didn't permit them to carry on, to have school to pay the teacher for the whole year.

BC: Your summer months would be from May to September, type of thing?

CH: Something similar to that, yes. It varied from year to year. I wrote my grade 8 examination in an adjacent school and from there, there was no high school you see. So my first year at high school was in Saskatoon. So I was there from New Year's to Easter, that was my first year high school. Then after that we went to Wadena and attended the high school at Wadena.

BC: So you'd have to board away from home.

CH: Oh yes, Wadena was 50 miles away from home. And my 2 older sisters, they started high school too in Wadena.

BC: So you did manage to get all of your high school education then did you, or was part of it at home?

CH: Well, when I got my grade 11 I went to Normal School. I had done a little teaching as a supply teacher when I was still just going to high school.

BC: Most unusual.

CH: Well, at that time it was in very remote country and there were schools that couldn't

afford to have a teacher so the inspector asked me if I would fill in a couple of falls, or summers actually, which I did before I went to Normal School.

BC: What grades were you teaching? Up to grade 8 would it be?

CH: Up to grade 8, yes.

BC: And how old would you be at that time?

CH: Well, because of my having interruptions in my education I was older than most students when I took my grade 11.

BC: But you'd still be pretty young to be teaching with just high school?

CH: I was 18 or 19.

BC: So you went in and you decided you were going to be a teacher?

CH: Yes, and I went to Normal School in Saskatoon in 1921 and then again in '22 and got a ??? certificate and taught in rural schools in the general area where I'd grown up until 1925. I thought I'd like to, when I went to high school I was very fond of the sciences and I thought if I could get qualified for a high school science teacher I'd go to university. So I went to summer school in 1925. . .

BC: Where was that?

CH: In Saskatoon. I took a course in physics and then I made up my mind that I would go back to university and get my bachelor's degree as a science teacher.

#177 BC: Did you find, when you went back to school for the summer school and took physics, was the professor, was he influential in helping you to make that decision?

CH: He was a very helpful man.

BC: Do you remember his name?

CH: Professor Harrington.

BC: You have to go for 4 years of course, to get your university degree, were you able to do that part uninterrupted?

CH: Yes. I had taught in several schools before I decided to go on for further studies but I hadn't saved very much money. As a matter of fact it was very, very little at that time because. . .

BC: Would you be getting very much to begin with?

CH: That's right, not very much. So I was very fortunate to contact a friend that I'd met when I went to high school in Saskatoon, my first year at high school, Leonard Snell. He was going through for a minister with the United Church, or at that time it was the Presbyterian Church. I contacted him and he said, a good place to stay would be at St. Andrew's College, on the campus. It's their theological college but they could accommodate about 90 resident students. I was fortunate to get in there. So I made my home there all the time that I was, as a matter of fact I spent 5 years at the university and I stayed at the college all that time. We had the same cook and that was one of the big drawing cards.

BC: How much did it cost you for a year's tuition, can you remember?

CH: It was around \$250 tuition.

BC: And your board and room?

CH: I don't recall just how much it was for board and room. But it was between \$30 and \$50 I should think, at that time. So it meant that I had to get work for the summer. I was very fortunate to get on as a cream grader with the provincial government.

BC: What is that?

CH: Grading cream. Testing for grades of cream.

BC: Was that in Saskatoon.

CH: It was in different creameries around the country. You had to take a course in Regina so we were qualified cream graders.

BC: How would you grade cream?

CH: Mainly by test, there's an acid test but largely taste. So when the farmers brought their cans of cream in you'd grade them as to whether they were sweet or sour and also whether there were any off colours, any tastes or anything from what. . .

BC: What the cows were eating.

CH: What the cows would eat, especially some of the weeds carried through into the milk.

#238 BC: That was your first summer then?

CH: Several summers.

BC: Several summers. You didn't get back home too much then?

CH: No. Just in the fall. As a matter of fact I missed my brother's wedding and also my sister's wedding.

BC: And you weren't there to help with the harvest, as most prairie boys were?

CH: No, not at that time. I'd had my stint at that earlier. Having grown up on the farm, before I went away to high school.

BC: This was obviously chemistry that you were into at this point. . .

CH: That had nothing to do with it.

BC: Oh I see, it was just because you were going and you had the job.

CH: As a matter of fact, after I graduated I was offered a job with the Department of Agriculture because of my association with them as a cream grader. But at that time I thought I would try geology. In my last year, as I told you earlier my purpose in going to the university was to become a science teacher. The course that I took was a course that they called natural science. It was for high school science teachers. When I graduated in 1929 I could not get a school of any kind, let alone a high school science teacher. But I'd taken one course in geology at that time and I liked it and there was a friend of mine that had been on a geological survey party and he said, why don't you try and get on a geological survey party for the summer of 1929. And I did. I applied and I got a job in southern Saskatchewan, led by Dr. F. H. McLaren. To me it was just like taking another course in geology.

BC: A post graduate course really.

CH: Like a post graduate course. Because of his interest in helping the students. As I had worked on the farm I was qualified to do pick and shovel work as it were, because on the prairies the outcrops were weathered very badly and he liked to get the fresh samples so he liked to get trenches dug on the hillside so that he could get fresh samples.

BC: This is what your job was, could you just describe that first summer job, your first real

taste of geology was it not?

CH: It was my first exposure to field geology. We were a party of 5, the cook and the chief, ??? McLaren and he had 2 assistants that had been with him before and then we were 2 more.

#293 BC: Do you remember the names of any of those other assistants?

CH: Not right off hand.

BC: No, well, maybe if you remember them later on we can come back to that.

CH: All right. So the area was south of Moose Jaw, in the Wood Mountain area, just in the north end, we started at 12 Mile Lake and worked east to ????. It was all camp, we lived in tents you see, cook tents and sleeping tents and the party chief, he had his own tent. The rest of us, the sleeping tent accommodated 2 students.

BC: What was he looking for as a surface geologist, was he looking for minerals or was he looking for archeological type. . .?

CH: Oh no. Actually it was mapping the strata that had been deposited there at one time, fresh water sediments. But these deposits had various characteristics, some are shale, some are sand, some are intermittent sands and shales, ??? coal seams. In this area where we started were clay beds. As a matter of fact there is a town there called Clay Bank and it was around there that they had some claims had been staked for the clay deposits and some clay had been sent out. So in that area where we first started or that we covered later in the summer, had some economic value in that they were these various types of clay for brick and also for pottery purposes.

End of tape.

Tape 1 Side 2

CH: In addition to the clay deposits there was also coal and coal seams were used for mapping purposes too because you get relationship between the distance between the various coal bands, coal seams from area to area. So they formed marker beds for mapping purposes. In the area that we worked in there was large numbers of coal seams, of lignite coal. As a matter of fact, they had been mined around the Estevan area, south and east of there, prior to the time that I was out on the survey party.

BC: How deep of a trench would you have to dig?

CH: Oh, for our trenching it would be only just to get through the weathered part of the surface.

BC: Oh I see, you used the contour of the land to. . .?

CH: Yes. Maybe just a foot or two, maybe some places three feet but a foot or two would be about the maximum. And then we'd have to fill them in again of course when we were finished with them. And then we'd take samples of these various clay beds. . .

BC: And then did you work on those samples when you got back to headquarters, or what happened?

CH: No, this was the time when I was a student only, off for the summer months.

BC: Yes, but you didn't get any wintertime work, helping to tag them or anything?

CH: No. After the first summer on this field party, I hadn't just made up my mind just what to do so I went back home on the farm. I couldn't get a school so I went back home on the farm for the winter. Then I made a trip back to Saskatoon and interviewed Professor Mossley, who had been appointed to be the head of the geology department of the University of Saskatchewan.

BC: It was just beginning then?

CH: It was just started and I talked to him about it and he said, if you would like to come back you can take more courses than geology and we need somebody to be a lab technician for work in the lab. They had to mount a lot of maps on linens and set up samples of minerals for the students. So then I thought this over and decided to go back another year and. . .

BC: This would give you another under graduate degree or was this working at the Master level then?

CH: This would be, I would be taking mainly geology. I had only one course in geology. So my time in that year, this was in. . . I graduated in 1929 and this would be in '30-'31. So most of these courses in geology were Mossley's first time as a teacher. So he was a man that had been trained as a hard rock geologist, working on the igneous rocks and in the mining areas. As a matter of fact, he came from the Survey, he had worked for the Geological Survey in Ottawa for a number of years. Edmunds, it was from him that I took my first course in geology, but at that time he was associated with the ??? department at the university, in the department of agriculture. So Mossley. . .

#052 BC: Looked at it from a different angle really.

CH: Yes. So now, they are going to celebrate their 50th Anniversary of their geology department this year.

BC: And you were the first student I guess, were there many others that joined in that first year?

CH: Well, there were others that had taken this one course in geology but I was, they say that I was the first student in geology but that's not quite right because there was a boy by the name of Norman Peeble???, he was specializing in chemistry but he had been working out on a geological survey party before, so he was taking courses in geology and he decided to take more courses and he could graduate as a geo-chemist. So I stayed there for one additional year and then after that, I went to the University of Wisconsin.

BC: Now you were going through in your geological degree?

CH: I had intended to maybe go there and get my PhD in geology.

BC: Why did you choose Wisconsin?

CH: It was a well known . . . well, I was advised by Professor Mossley that it was a good school. A lot of the students, a lot of the Geological Survey staff had graduated from the University of Wisconsin. So he advised me that it would be a good school to go.

BC: Had you at this point, well, you'd obviously changed your idea from being a science teacher, but was your ambition then to qualify yourself enough so that you could be part of the Geological Survey staff?

CH: Yes, that was my plan.

BC: Your first geological survey work really was done, the year that you couldn't get. . . your

graduating year.

CH: That's right.

BC: Because you'd been with the agriculture until then, am I correct?

CH: No.

BC: If we could just recap then. You were with the department of agriculture in the summer as a creamery grader and then you went with the Geological Survey, still as an undergraduate?

CH: Yes.

BC: And that really changed your mind?

CH: No, I went with the Geological Survey the summer that I graduated, that would be 1929. And the summer of 1930 I also spent with the Geological Survey.

BC: And went back into school that fall?

CH: No. 1930 I was out with the Survey with W. A. Johnston as a glacial geologist and just he and I.

BC: Oh, we haven't talked about that.

CH: That was in 1930.

#095 BC: Yes, we didn't get to talk about that.

CH: He had problems that he was working on, it was the water supply of Regina and Moose Jaw. He needed somebody to drive the car while he was doing some observations from the car.

BC: Oh, so this would be a different kind of geological experience for you.

CH: That's right. You could map the ??? and the eskers and what had gravel deposits and sand deposits and the edge of glacial lakes and areas that had good soil and poor soil and ???. And then in addition to that he was working on as I said, the water supply of Regina and Moose Jaw. So we spent some time there, or in and around there, where they drilled wells for water supply in Moose Jaw. And we mapped the sand dunes around there from whence the water supply originated. Then while he was writing his report in Moose Jaw I got a chance to read a book on glacial geology, which I enjoyed very much and which helped me later on a great deal. Then we ended up by Lake Winnipeg area, north of Winnipeg. We had some assignments there so we had a most interesting summer.

BC: How was he to work for, what was his first name?

CH: W. A. Johnston.

BC: Mr. Johnston, as the head of your 2 man survey team, how did you enjoy working for him?

CH: Oh, very much. He was a very nice man and he had a Model A car for transportation. I'll always remember driving across the Regina plains after a rainstorm, because there were very few gravel roads and out with the shovel and dig the mud from around the tires so we'd make a mile or two before we had to repeat and do the same thing over again. Or maybe get on a gravel road. But as I said, after leaving Moose Jaw and Regina we went on mapping the area, the gravel areas, eskers and what we call ??? deposits and edge of moraines???. In that way we could outline also, the glacial lakes, which formed very good farming areas, the soil for agricultural purposes. I remember when we got over into

Manitoba and he wanted to make some observations on some outcrops, he was going to collect some fossils in the ??? mountains, in the Dauphin area. So this was off the beaten path and it meant hiking. He was quite a frail man physically and it was quite a walk off the road to these outcrops. We had to take a lunch with us and apparently he wasn't too familiar, this is wooded country. So we started in and we found the outcrops all right and we stopped and had our lunch, I just ate part of mine because he was getting quite exhausted so I thought, here is a little reserve if I needed it. And coming back we sort of disagreed as to where to go, what direction to get back. He was quite insistent that we follow him, which was contrary to my sense of direction. So we went in that direction for awhile and he said, well Con, I think you're right. So as a matter of fact, he was wrong and I was familiar, had been in the woods quite a bit and had no trouble with my directions. But anyway, I was scared that I'd have to carry him out, he was really exhausted by the time we got done and got out.

#167 BC: So he listened to you a little better after that did he?

CH: Well, that was the only time that we had to get very far from the car.

BC: Did you have any other interesting experiences in that summer?

CH: ??? in that Swan Lake. . . anyway, it's north of Dauphin up there and these mapping beaches, which was, that had been the remains of Lake Agassiz. The railroads had used them, they were sort of natural gravel ridges, so they were the highways and the trains had constructed their highways on these gravel ridges and beaches. And that's the first time I'd seen anything like that. As you know, this Lake Agassiz is a very, very large lake, it takes in a lot of the river valley and very good soil and it also extended way up into the area north of where I used to live, up around Carrot River and Melfort area.

BC: So you were learning a great deal about the geological surface of Canada?

CH: That's right.

BC: And having learned a little, you obviously wanted to learn more, which is what took you down to the university so we can maybe go on into there now.

CH: That fall I went to the University of Wisconsin in Madison, Wisconsin. It was a coincidence, there's where my mother was born. I had intended to stay there to get my PhD but funds were such, I couldn't stay on.

BC: Did you have any help from the university in going there, were there scholarships available, things like this?

CH: When I went, I don't know but I had an offer for the following year to get a small scholarship but even that wouldn't have been enough. So I couldn't see my way through to continue so I was advised by a professor that if I wanted to have some record of having been there, to take my Masters degree, which I did. From University of Wisconsin.

BC: And you could finish that second year, you were able to . . .

CH: No, this was the one, just the one year.

#209 BC: Oh my goodness, yes. What was your thesis on?

CH: It was a sort of a lab thesis on ??? minerals in rocks. So I couldn't see my way clear to go back.

BC: One of many thousands of young men who were not able to continue their studies through the Depression time.

CH: I suppose, it was very, very difficult.

BC: How many would have been in that university at that time, how many were enrolled would you think?

CH: Well I was in the graduate. . .and it was quite a large university, state university you see. There were a lot there that, well even in the graduate school there were about 10 Canadians, as you say, in the graduate school in geology.

BC: Do you remember any of them?

CH: Oh yes.

BC: Who was there?

CH: I have some written down here. I just remember a few here, there was ??? Henderson, he still lives in Ottawa, Matt Hedley, he lives in Victoria, retired from the Department of Mines in Victoria. Ed Kindle, he lives in Ottawa and he's retired from the Geological Survey. I also should mention that ??? Henderson is also retired. Now these were . . .

BC: Your classmates.

CH: They were there when I was there. And then there were several in addition to that.

BC: So the contacts you made there were contacts you would have continued throughout your working career.

CH: Yes, I spoke to Dr. Henderson when I was in Ottawa at Christmas time and Matt Hedley I saw about a year ago. I didn't see Kindle.

BC: Were you in contact with them throughout your time, not only with. . . they went with the Geological Survey?

CH: Oh yes, they were with the Survey when I was there, saw them and worked with them there. Now the following year, I got a job with the Survey under Dr. G. S. Hume.

BC: This was again, a summer job, a temporary job at this point?

CH: Yes. He was in the gas and oil, specialized in mapping for oil and gas.

#255 BC: So this is what brought you into the oil patch really was your association with. . .

CH: I am really indebted to Dr. Hume for what he did for me, to recommend me for summer employment with the Survey. Then also, later on, to . . .??? joint party for 1 or 2 years and then I had a chance to have a party of my own.

BC: Can you tell me what Mr. Hume was like?

CH: When I knew him he was a widower. He'd just lost his wife and he had one child, which was a very severe blow to him because he was very fond of his wife.

BC: This would be about 1931.

CH: Yes, '31, I worked with him in Alberta, the Alberta area. But I was going to say, we did make a trip out to Lloydminster at the start of the season. That was where I met Eric Harvie for the first time, was out at Ribstone??? Creek. They were drilling some wells east of Wainwright, in the Ribstone area. I think his wife had some money invested in some.

BC: This would be 1931 then would it?

CH: Yes.

BC: So you were working with Mr. Harvie then at that time?

CH: No, I just met him.

#292 BC: Do you remember what the well was and if it was successful.

CH: Well, it was the heavy oil. As it is now, but it was shallow drilling and they had a small refinery at Wainwright and it was sort of what we call Ribstone Creek area.

BC: And had they just started their work there or do you remember?

CH: I think they had drilled there, there wasn't anything new at that time. Those wells had been drilled over a number of years but the oil was heavy and production wasn't very large. Then from there we went back in the Turner Valley area.

BC: So except for Lloydminster, Turner Valley was your first really introduction into the Alberta oil patch?

CH: Yes, in 1930 I had seen Turner Valley, that is I remember having lunch in Turner Valley with W. A. Johnston before he went south to Manyberries. The first part of the assignment was down south of Medicine Hat in the Manyberries area. He was reporting on the soil in a project for a grass growing area. My recollection there isn't too good.

BC: It doesn't matter. It was really to see what area would be good for farming then, for putting into grass was it.

CH: Yes, that's right, the type of soil for various types of grass. But then Dr. Hume, coming back now to Turner Valley, he worked north and west of Turner Valley. He had been in there the previous year and they were finishing up an area that he'd worked in before. And Charlie Michener, he had been with him the year before and he was one of the study assistants. He was the son of Senator Michener that lived here in Calgary.

End of tape.

Tape 2 Side 1

CH: Now 1932, after we spent the winter at Madison at the University of Wisconsin I got a job with Dr. Hume again, as an assistant mapping in the foothills of Alberta. Some of the places we went was Fisher Creek and also Bragg Creek, I remember having a camp there right at Bragg Creek.

BC: Where all the houses are now.

CH: Met the Fullerton's and there's where I had my first dance I think, was at that round dance hall there at Bragg Creek.

BC: Did we really finish about your work in Turner Valley, the first year you were with Dr. Hume? You sort of stopped at Lloydminster and we didn't go into some of the work that you did, you were finishing up work in Turner Valley, in the north part of Turner Valley right, northern end?

CH: Well that was in 1931.

BC: Yes, yes, but I don't think we quite finished what you did there. Did you find anything that year in Turner Valley which perhaps was of use to the oil people as they continued to expand and look at what there was in Turner Valley?

CH: No immediate benefit for the. . .Dr. Hume may have advised some of the people

operating there but for mapping purposes, no, we continued on preparing these geological maps, extending the geological mapping north and west of Turner Valley.

BC: Maps that I'm sure in future years, became very valuable.

CH: Oh yes. As a matter of fact I think maybe Dr. Hume maybe advised some of the people that were interested in drilling at that time. Like Mr. Brown and others.

BC: At that time you were carrying all the equipment, you were still at the assistant stage were you not?

CH: We were doing plane table work. Well, I wasn't doing plane table work, one of the boys was doing plane table work and would make notes and things on the depth of the rocks and whatever, tracing these various formations. And mapping any breaks in them, like representing faulting or anything that would be an indication that there might be some disturbances at depth with respect to quality.

BC: Yes, could we just take a moment Mr. Hage and talk about what it was like being on one of the geological survey crews in 1931? I think it would be most interesting. How many were in your party and what were all your jobs?

CH: There is a certain similarity with respect to the camp that I was on in Saskatchewan. We were just operating out of a van there which was accessible to a road somewhere so we could get in and out and get supplies in with the car. I think though, as the work went on, like for instance the following year it was just continued, what we did in 1931 and then Mr. Fullerton, he moved us in the wagon across country, so we could come in with the car from another direction.

#051 BC: But you would have how many on your survey team? There was Dr. Hume who was the head, you were one of the assistants. . . ?

CH: Yes, Charlie Michener. Then a man that operated the plane table and then a rodman. So we were 4.

BC: 4 and your party chief?

CH: Yes.

BC: And what kind of clothes would you wear to. . . ?

CH: Well we always had to carry a cape or something for rain because of the showers in the afternoon. The weather was much like it is now and then we'd get a knapsack and then have small little bags for taking samples of rock.

BC: What did you wear on your feet?

CH: Just walking shoes.

BC: You didn't wear boots, like hiking boots?

CH: Oh yes.

BC: I have a picture you see, of people going with the boots to the knee and then what we call Mounted Police pants, the sort of jodphur type, is that what you wore?

CH: Well, I think I have worn those in my day.

BC: But it wasn't necessarily the fashion of the geological survey man?

CH: Oh no, we had no uniforms. Just cowboy outfits.

BC: All right. Let's then look, if we could go now into 1932 when you were with Dr. Hume again and you were in Bragg Creek. What were you looking for there and what were you

looking to do there?

CH: As I said before, it was a systematic mapping of the foothills, geological maps.

BC: Did you find anything when you were mapping that was different, exciting, that Dr. Hume thought, oh, now this is something we didn't know about?

CH: Not at this stage. Maybe I might come around to that maybe later. But I was going to say that after finishing Bragg Creek we had another assignment which was over to Waterton and then from Waterton over to the Flat Head Valley. That was with packhorses. Since I had spent quite a bit of time on the farm and being familiar with horses I was more or less the packer's assistant. Arnold Warton??? from Water Valley, he was the packer. He and I picked up a pack string from Black??? Head.

BC: How many horses would there be in the string?

CH: We each had riding horses and then about 10 pack horses so we had plenty of horses. We picked them up east of Blairmore and took them down to Waterton, up the . . . what's the name of that river.

BC: Not the Old Man River?

CH: No, a tributary of the Old Man River. And went in the back way to Waterton, came up the Carbondale River and then over to Waterton. We did some work at Waterton for a couple of weeks before we went on over to the Flat Head.

#101 BC: There had been no surveying before that in that area, to any extent?

CH: There had been boundary maps, that is where they survey the boundaries but for geological maps, I don't think that there were, there weren't too many geological maps. But we didn't do any mapping actually, between the Waterton area and the Flat Head valley.

BC: You just got there.

CH: Yes. It had been surveyed with the boundary??? survey and they had a geologist and we had a copy of that survey. And they were drilling over at the Flat Head valley at that time. Frank McMahon was operating a diamond drill rig at that time in the Flat Head.

BC: Did you know him before then, or. . . ?

CH: No, I just met him there. He was operating a diamond rig and there were gas seeps, as a matter of fact there were oil seeps. Very light gravity oil seeps at that time, in the Flat Head. When we were there they collected, it came up with the water and they put, from a barrel over one of these rings, the water would come to the top and I think while we were there they skimmed off the oil off the top of the barrel and I think they accumulated about half a barrel of light gravity oil that you could use in the Ford cars.

BC: Then they were using them right then?

CH: Yes, without any form of distillation.

BC: What would it do to the car, wouldn't hurt it at all?

CH: I don't think so.

BC: Couldn't do much to a Ford in those days. So did you stay there very long while you were working there, were they there all the time that you were doing. . . ?

CH: Oh yes, they were there, the McMahon's I think it was Columbia Oil and Gas. So we stayed at their camp while we were there so we didn't have to put up any tents. But there

was good range for the horses. We went north up to . . . I should refresh my memory. . . on the divide but there's another pass farther north which we went over, North Kootenay Pass I think it was called, and went down then to another tributary and then we came down close to Blairmore. I remember the fish were moving in the Flat Head River, we call them landlocked salmon, these big trout.

BC: It was that time of the year.

CH: Yes, they were moving in the river, spawning time. I went out fishing one afternoon, a Sunday I think it was. I caught a small trout and it wasn't long until it was swallowed by one of these big ones.

#150 BC: Just like you see pictures of but don't think it really happens. So you had 2 fish for dinner.

CH: I didn't get the big one. I pulled it out of his mouth.

BC: What time of year would that be then?

CH: That would be in the summer time.

BC: How long did it take you, from when you left Waterton until you came back into Blairmore, how many months would you be away?

CH: Well you see, we'd already done some field work in the Bragg Creek area before we made this trip. So I should say it would be about 6 weeks time, something like that, that we spent on this country. But that was close to the end of the season when we got back into the Blairmore area.

BC: Then what did you do in Blairmore, that was just the end of it?

CH: That was the end of that season.

BC: And that was the end of your job then for the moment was it?

CH: That was the end of the job for 1932.

BC: And this was depression time so there wasn't very much. . . did you think of going back to teaching at all at that time, or was it still impossible to get teaching jobs?

CH: I did get a school that fall for a short time. But I still was interested in continuing with the survey parties. 1933 was a very bad year for the Survey, they didn't get money from the government to send out many parties. That's one reason that I got on a party up in the Ominika??? country with Dr. F. A. Kerr.

BC: And where is that exactly

CH: It's right north of Vanderhoof.

BC: In British Columbia.

CH: Yes, it's directly west of Peace Pass in the Rockies, directly west, across the Rocky Mountain trench.

BC: You were very lucky to get a job that summer I guess?

CH: Yes, that's right.

BC: Dr. Hume was not out surveying that year?

CH: He and Dr. Wickenden, who was already on the permanent staff, had a party of their own in the Morley area. And they had no assistants, just the 2 of them. They did their own cooking and I think they got some Indians or some farmers, ranchers in there to move their camp whenever they were ready. I think they had a car that was stored here in

Calgary so they had transportation to go and get groceries. But the 2 of them mapped an area out there.

BC: That's quite something isn't it, to do it all on your own?

CH: That's right, yes. And that was in 1933.

BC: So you worked with a different member of the Geological Survey that year?

CH: Yes. Actually they were doing placer mining on a big scale up there and it involved, our assignment, Kerr's assignment was to try and follow any pre-glacial drainage channels. Black creek they called it that they were working on, by hydraulic methods and washing the gravel and recovering the gold by sort of a placer method.

#204 BC: When you went out there, you would again go out in June and stay there til September.

CH: Yes, we were out, as I recall, we went in the latter part of May, June and July to the middle of September.

BC: Bu you were away from the oil again weren't you?

CH: That's right, that summer, yes. And as I recall, later, at the end of the season, since I had a ticket to Prince Rupert I went on to the coast and down into Bella Coola.

BC: Where you'd been born. Did you recognize much of Bella Coola when you went back?

CH: No. Then from there I went down to Vancouver and then back home on a train.

BC: You were fortunate that you had a farm that obviously would be growing enough food that you could park there in between jobs at this point.

CH: Well that was home, my parents home.

BC: Yes, they were still on the farm were they?

CH: Yes.

BC: They can always use an extra hand of course, except at the table. So you're still sort of stalled in your career at this point aren't you? Those times were difficult for men trying to get ahead.

CH: 1934 you see, I was home on the farm, as a matter of fact I had rented Dad's farm because there were no schools available even then.

BC: So you rented it and you worked it that year?

CH: Yes.

BC: Were you single all this time?

CH: Yes.

BC: Fortunately, because you seemed to be out of town so many months of the year. It would be difficult for a wife to struggle along with you away so much. Hard for you to meet girls too.

CH; Well, that's to follow.

BC: I know, I've met your wife, a lovely lady.

CH: That takes us up pretty well to 1934 then. 1935 the Geological Survey got a government grant of \$1 million.

#248 BC: What had their regular grants been, except for the year when they didn't get one at all, but nothing like that?

- CH: No.
- BC: That must have been very heartwarming to them.
- CH: So in 1935 they got this full million dollar grant plus their budget.
- BC: So this was a special, one time only type of thing, was it?
- CH: Yes.
- BC: Why did they get that?
- CH: To stimulate the oil exploration and mining. They sent out a lot of parties in the mineral areas and also in the oil and gas areas.
- BC: So is this when you joined the Survey?
- CH: I had an offer to go back with the Geological Survey, with a sub party under Hume, which I accepted.
- BC: Jumped at I'm sure too.
- CH: Yes. That was in sort of ground water supply and also mapping the geology as well.
- BC: Whereabouts was this?
- CH: This was in east central Alberta. This was in 1935.
- BC: What areas would you be covering in east central, for people looking at a map today?
- CH: It would be east of Camrose, Coronation area, in that general area.
- BC: And up around Provost, in there?
- CH: Yes.
- BC: There's certainly been oil activity through the years up through there has there not?
- CH: Yes. Actually, our party, Dr. Hume had several others working in the general area under him. Dr. Rutherford, from University of Alberta, he had a party out in the Red Deer area and then Dr. Ward, the paleontologist at the University of Alberta, he had a party out north of Rutherford's, then I had a party east of where they were working. Also we went into Saskatchewan, around Kerrobert area.
- #301 BC: So this would really give the Survey an opportunity to take quite a leap forward, to have so many parties out in that year. Do you feel this was a turning point in the long career of the Geological Survey, this stimulation?
- CH: Well, they certainly had to increase their staff quite a bit. It was a recognition that they could help the industry somewhat. We were also trying to get information from these well records about the lay of the land structurally.
- BC: The well records that the companies had you mean.
- CH: No, we would interview farmers about their. . . in that area there were a lot of deep wells drilled. So from that we were able to get a certain amount of information from the farmers as to the depth of their wells.
- BC: When you say deep wells, these are the water wells, how deep would some of them be?
- CH: They would vary from 50' to several hundred.
- BC: So you were up in the Camrose, Coronation area, what were you doing, can you remember about your work up there at that time?
- CH: We had another party, we used tents again and had a cook and operated independently from any. . .
- BC: Do you remember the people that were in that party with you, you were the party chief at

this point, who was in your party, do you remember any names that are still recognized today in the geological circle?

CH: No, I don't. Not in the work in Saskatchewan, later on . . . there was a boy from Medicine Hat that I should recall his name. He's got a big hardware store down there. If my wife had been here she could. . . because she had contacts down there.

BC: Obviously didn't stay in the geological . . .

CH: No, actually he was going through for an engineer and he continued as an engineer. As a matter of fact he worked for the city of Medicine Hat for a number of years.

BC: And at the end of this summer. . .

CH: Then I went back to Ottawa at the end of this.

BC: You were a permanent employee this time or still temporary?

CH: No, I was temporary. . . well, full time, I mean . . .

BC: Full time temporary, there wasn't an official job for you.

CH: ??? They took me back to Ottawa and I worked over then, the information that I gathered during the summer.

BC: This would be very interesting for you then wouldn't it?

CH: Prepared a map. As a matter of fact Dr. Hume and I prepared a report on the geology of east central Alberta. I didn't bring a copy of it.

BC: The report, how useful has it been to people in years since?

CH: Well, they still ask me about it. It was not a spectacular report but it had a certain amount of well data in it and we got a certain amount or structural maps from it.

End of tape.

Tape 2 Side 2

BC: All right, whenever you're ready.

CH: I think maybe I'd mentioned earlier that in 1934 the Geological Survey didn't send out very many field parties, especially to western Canada. Dr. Hume who had spent a summer with Dr. Wickenden in a 2 man field party around Morley. And in 1935 the government had a change of heart and made a grant of a million dollars, in addition to their budget that they had for geological exploration work.

BC: That would be a lot of money in 1935.

CH: It certainly was. And as a result of that they were really short staffed. So they contacted a number of us that hadn't worked the previous year to find out whether we'd be available to go out on geological field work. Which I accepted and gave up my farming endeavours in Saskatchewan and accepted a party under the guidance of Dr. G. S. Hume. The area that was assigned to me was in east central Alberta. The area was outlined on the map and we were to investigate the water resources, along with the geological data that we might find from outcrops.

BC: The main purpose then, was to find water, you weren't really looking for oil bearing rocks at all?

CH: Well, yes, it was a combination of the two. One reason was that there weren't that many outcrops on the plains, it's mainly confined to the banks of the streams and rivers. So they

thought that if they had the information from the deep wells, especially knowing something about the underlying bedrock that it would be worthwhile to do the two together. Because the country had been glaciated at one time so most of the surface deposits were of glacial origin. But when the deeper wells were drilled it would penetrate the glacial material and get below into the underlying bedrock, which consisted of shales and sands and some gravels. Which the aquifers for the water would be quite extensive in that case. That was one of the reasons why we were obtaining the data from these deep wells. In addition to the geological information, it would give the municipalities on where the farmers might find water potable water for their farm.

#049 BC: Of course this was 1935, at a time when the drought was on in a great part of the prairie.

CH: That's right.

BC: Had it affected this particular part of Alberta, this was around Provost was it not.

CH: Yes. I think generally the water supply of the towns was in jeopardy in quite a few place. Many places the shallow aquifers were from glacial outwash material or eskers and the surface deposits, whereas just the odd well that had been drilled here and there had been able to get good water at a greater depth, which would come maybe from the bedrock. Although in some areas of course, the bedrock water wasn't that good, especially if it had contact with marine shales.

BC: It would have a bad taste?

CH: Salty taste, yes.

BC: So during that summer, you were in a party, one of a number of parties that was working throughout the prairies.

CH: Yes, in this area there were professors from the university, Dr. Warren and Dr. Rutherford, they had parties out, in around Red Deer area. And Dr. McKay, he covered a large area in southern Alberta and also southern Saskatchewan. He had several parties and they published a lot of water supply papers as a result of the 2 years field work that they did.

BC: You published too, as a result of the work that you did with Dr. Hume, did you not?

CH: Yes. We published a memoir on the geology of east central Alberta. But in addition to that we published water supply papers that covered numerous municipalities. I just forget now the number offhand the number that we published but I have them all listed. I can't get them all now.

BC: No, but perhaps we will. We can put an addenda, I think it would be very important because a lot of your work has been published by the Geological Survey people. In doing this work with the Geological Survey, which was most interesting to you, the surveying or the compiling of reports when you got back?

CH: I'm an outdoors person so I like the field work. But the reports were written mainly in the wintertime and we did the field work in the summer. Of a necessity, a lot of the field work couldn't be done in the wintertime so it worked very well together.

BC: So that together you really could then be working all year round, which you might not have been able to do, as indeed some of the oil people, the geophysical people for

instance who only worked in the summertime, in the earlier years, they then wouldn't have work in the winter.

CH: Well, up to a point but later on they did a fair amount of geophysical work in the wintertime, especially in areas in the north where they couldn't get their equipment into the areas that were muskeg areas, so that had to be done in the wintertime.

#098 BC: So it changed very many things about surveying and looking for deposits in the earth didn't it? Once you had to work in winter conditions it would bring a lot of different equipment, different kinds of. . .

CH: Yes, in interpretation of the geophysical work, why, it's very important that they have some idea of the subsurface geology, what their reflection horizons are and they can follow these horizons along as marker beds in their geophysical work.

BC: Let's look at after 1935, now you were working for the Survey but you still weren't there full time with them were you, you'd just been called back again, so you were still sort of part farm boy and . . .

CH: Not from the spring of 1935 I remained on their staff until I retired. When I started I had the position of temporary assistant geologist, then assistant geologist and then geologist.

BC: When did you stop being temporary?

CH: The date doesn't just come to mind.

BC: No. Often temporary jobs in government last 2-3 years.

CH: That would be about it. When I had my own party, I was classified as an assistant geologist and that lasted about 5 years and then I was promoted to geologist before I left the Survey in 1945.

BC: Before we leave 1935, those 2 years, 1935, '36, can you think of any interesting incidents that happened while you were collecting all this data? Stories that perhaps went beyond just your work with the Survey, some of the things that happened as you were collecting your material.

CH: There's nothing really that comes to mind for those 2 years. The first year that I was out in the Survey, the summer of 1929 we had a paleontologist had visited our camp, Dr. Charlie Sternberg. His specialty was studying the dinosaurs and collecting dinosaur fossils along the Red Deer River, especially around Drumheller and that. But he also had other assignments to collect fossils elsewhere, to assist in the dating of the surface rocks. That occurred, one of these areas in 1929 when I was working for Dr. McLaren, he visited our camp and spent several weeks with us looking for fossils in southern Saskatchewan, in the Moose Mountain area. As a result of making that contact a friendship developed that lasted throughout his lifetime. He died just recently in Ottawa at a ripe old age.

#152 BC: Did he find any special areas where there were a lot of dinosaur bones, was he fortunate enough to make a major discovery?

CH: His hunting ground for that was around the Red Deer River, down river from Drumheller. But he would find fossils where nobody else could.

BC: Sort of a sixth sense he had about them.

CH: He grew up as an assistant to his father. They were Americans and they'd done a lot of

- collecting in South Dakota and Wyoming. So his father actually, started collecting for the Survey, I don't know just when but it was before I joined the Survey.
- BC: When you were working, you would work in the day and then you'd have to compile your notes at night I presume. What would be the routine of being part of a survey, a work party in 1935, what would be your routine, a daily routine?
- CH: If you were in charge of the party you would do a certain amount of preliminary field mapping when you were still in the field and it would entail a compilation of the day's work every night. So after supper, and as the days got shorter, you always had the Coleman lamp for your light at night. So there was a fair amount of compilation work at night and preparing for the next day.
- BC: Those notes would be pretty precious then?
- CH: Well, they were permanent records.
- BC: Did you ever lose any?
- CH: No, I don't think we did, not that I recall.
- BC: I can remember hearing a story of some young man who was going down in a canoe and they all blew out.
- CH: That would be possible. I can't recall having a tragic accident like that.
- #190 BC: It would be tragic too wouldn't it? What about mosquitos, they would be pretty rampant around where you were working wouldn't they, that time of year?
- CH: Oh yes. It's pretty hard to get away from mosquitos but I was exposed to mosquitos at an early age, before I went to university, teaching school. So much so that I developed an immunity to mosquito bites. But blackflies, they were worse than the mosquitos. I never used a net for mosquitos, although I would often use a mosquito repellent. But they never bothered me.
- BC: What did they use in those days to repel the mosquitos, citronella?
- CH: That's one, yes. And if they were really bad you maybe used pine tar. Well, that's maybe for blackflies. I wasn't exposed to blackflies until the following year, 1937. I was up at ????. There they were a lot of blackflies. I should correct that, that was in 1938.
- BC: Where were you in 1937?
- CH: 1937 I was in southeast Manitoba, around the Niscenti??? of Central Manitoba Mines. Close to a lake called Beresford??? Lake. I was then an assistant to Dr. C. S. Stockwell. That was sort of my first contact with the blackflies. This was in the pre-Cambrian strata. Central Manitoba Mines was a gold mine and I spent the summer with him because there was a lull in the oil exploration work for a number of years. The staff for a number of years, those of us who had been doing study on sedimentary rocks were asked to cover pre-Cambrian areas for ore deposits and mineral deposits of various kinds. This year I was with Dr. Cliff Stockwell.
- BC: Did he stay with the Survey til his own retirement from the Survey?
- CH: Yes, he's retired and I think he still lives in Ottawa as far as I know.
- BC: You only worked with him that one summer?
- CH: Yes.
- BC: And then 1938 you say you went to. . .

CH: Gurney Gold.

BC: Yes, where is that?

CH: It's east of Flin Flon on a railroad that goes up to the nickel mine, up beyond . . .

#249 BC: Not Fort Churchill?

CH: No, it was on another railroad. This was a mine, Gurney??? Gold Mine. They were running out of ore and had asked the Survey for some help in doing some more mapping in around the mine. At this time, I had thought of, I had as a matter of fact, had been back, to MIT to continue studying for my PhD. Because most of the staff had their PhD and it would mean, well, there was a better chance of promotion later on if I had my PhD.

BC: So you'd taken some time there?

CH: So I was assigned to this area around the mine and did some work in the mine.

BC: Did you find them more gold?

CH: Well, they had a mine geologist. I don't think I found much additional ore for them because he was a good geologist, Dr. Joe Spivac. He was thinking about going back to college to get his PhD and he thought of using the information from the mine for his thesis.

BC: Oh, so you were both really looking to do theses from there.

CH: That's the way it turned out. I wasn't aware of that until I arrived on the scene. As it turned out, the information that I had wasn't acceptable as a thesis at MIT because I didn't have enough background information or I didn't have enough samples, rock samples to provide the study that they required. He got his PhD and I didn't.

BC: Out of the same pile of rocks, eh. But he wasn't with MIT though.

CH: No, the University of Chicago.

BC: Which may be why.

CH: Oh no, I don't think so.

BC: Would you not get yours then because he had already started his ahead of yours?

CH: Oh no, that had nothing to do with it.

#299 BC: Because they were in different areas really?

CH: No, he'd worked in the mine for a longer period than I had and he had more of a background on mineral deposits I think too.

BC: Were you down in the mine working?

CH: Oh yes, but then I did surface work around the mine. I was going to say, I had as an assistant, Jack Armstrong. As you may recall he was with Imperial Oil after I came . . . yes, he went back to school. . . I should go back a little farther. At the close of our season, field work, in 1938, he stayed on at the mine and spent the winter at the mine. Then he thought that he should go back to school and do more. He'd already graduated, he had a bachelor's degree and he thought he would go into geophysics. Which he did and he worked as a geophysicist for Imperial Oil. After Leduc was discovered here in '47 he was transferred back here with Imperial.

BC: Where was he prior to that?

CH: I can't recall but he worked for Carter Oil in the States. So his work here with Imperial, I

think he came as a geophysicist but he rose quite rapidly up the ranks and got into the administrative part of the company.

BC: What was he like, what do you remember of him as one of your assistants?

CH: He was a very friendly person, very, very friendly and a very capable man.

BC: What type of work did he have to do?

CH: He was an assistant. He was a good canoe man and I hadn't done much canoeing and we had a few lakes to cross and use for transportation purposes in the area around Gurney.

End of tape.

Tape 3 Side 1

BC: Is there anything else that you can think of in your early work with Mr. Armstrong.

CH: Well, after leaving Gurney I hadn't seen Jack for a number of years, until I had left the Survey in 1945 and moved to Calgary. As a matter of fact, I had just returned from working for Shell in Wyoming. We lived in this house, we bought this house and moved into this house in January of 1950 and the following year or very shortly thereafter, Jack Armstrong, who was with Imperial Oil here then, he and his son-in-law, Keith, built a house up on 8A Street, which is just 2 blocks from here.

BC: His son-in-law, or his brother-in-law.

CH: Armstrong's brother-in-law, yes. They were young fellows and very ambitious. As I recall, Jack helped Keith build his house just a few blocks from him down on 38th Avenue. Keith continued in the construction work and was very successful in. . .

BC: I think he's built a third of Calgary in the last 30 years or 25.

CH: Yes. Whereas Jack Armstrong, he confined himself to geophysical and geological work with Imperial Oil.

BC: And he built quite a career for himself too.

CH: He certainly did.

BC: all right. Now let's move on into your career. We have so much to cover. You stayed with the Survey until '45 so you were with the Survey all through the war years. Now this would cause some particular problems wouldn't it, from 1939 on. Or would you like to cover 1940, we haven't really got 1939-'40.

CH: No, we've skipped over that.

BC: Yes, we'd better go back.

CH: We've skipped over something here.

BC: Yes, we were just at 1938. '37 was with Mr. Armstrong, so '38 I think is where we better look at.

CH: I think I said something about '38 didn't I, up at Gurney Gold. Then in 1939 I'm back in the foothills again, working for Dr. George Hume.

BC: This would be in the Turner Valley area?

CH: Well, it's west of Calgary here. I was given an assignment west of Calgary to complete a couple of the sheets that Dr. Hume had started earlier. It was called the Wildcat Hills sheet. That's the one west of town. It was Wildcat because it was a wildcat well that was started there a few years earlier and it got the name of the Wildcat Hills. Then I finished

that sheet and then later on in the summer, I went down to Pikisko??? Creek and finished the sheet for him there.

- #044 BC: This would be quite a difficult task to be trying to fill in gaps, because when you're going all in one it's so much easier isn't it, than sort of skipping off and going down and trying to join up? Were there any problems?
- CH: There would be a certain amount of overlap to make sure. I had his maps and I just had to continue mapping from where he left off. I had worked with him previously in that same area before so I was fairly familiar with the basic rock formations. But it was during the time that I was doing this work, mapping this Pikisko sheet, I had a little difficulty with the interpretation of the rocks. I came up with the interpretation that a fault was involved with the interpretation of the rocks and furthermore, the fault had been folded. So it was only with very careful and detailed work that I discovered that this fault had been folded after the rocks had been moved. That was one of the first times I think that a folded fault had been noticed in the foothill mapping or in this area. I must say that up in the . . . there was some mention of folded faults up in the Nordegg area by American geologists at an earlier time. But Dr. Hume was very much interested in the fact that I discovered this folded fault on this Pikisko sheet that he had started. As a result of that he wrote a paper on the folded faults in the foothills in this area. I don't have a copy of this paper here but in the following year I had a party of my own to the north of the Pikisko area, the Dyson Creek area, where I discovered a folded fault. As a matter of fact, I found a window in the fault.
- BC: What does that mean, for people who are not familiar with your work?
- CH: I should say, the older beds were overlying younger beds and . . . now, how can I make a brief reference to it. The fault was observed by erosion of a stream erosion and they could map the fault all around in this valley. So it was exposed and there were older rocks above the fault, with younger rocks showing up in this, we call it a window, because you can. . .
- BC: Because you can see it, of course. This must have been a very exciting year for you to. . .
- CH: As a result of that I wrote a paper actually, and presented it to the Royal Society. I called it Folded Thrust Faults in the Alberta Foothills west of Turner Valley.
- #094 BC: Would this be very important, I'm sure it would be, to the oil people who were looking for oil in there, to have this information?
- CH: It's more of a theoretical type of information. But it does show that you have to have detailed work to interpret the structure of the rocks so that you get the correct interpretation.
- BC: At the time you were doing this, was there a lot of petroleum activity in this particular area at all?
- CH: No, this was just, there wasn't that much work done by oil companies.
- BC: Had they started drilling and trying to find oil in that area? Or did they come over to that part of Turner Valley later?
- CH: This was long after Turner Valley's day you know.

- BC: Right. I presumed you were looking to see what else there might be there, is that what you were doing?
- CH: This is part of mapping, completing the mapping of the foothills area so that information would be available to oil companies when they wanted to make their own interpretation of the geology.
- BC: This is what I meant, since that time, were your maps useful to them in determining what there might be there?
- CH: I should think so. Although there are no oil fields around in this area.
- BC: That's as important to know, it's good to know where they aren't as well as where they are.
- CH: Yes.
- BC: Saved a few millions of dollars.
- CH: There's a diagram that shows the outline of a fault and that is the window that I was referring to. On this, there's a little creek that come up there and that exposes that fault. So that means that is more or less a thin sheet that overlies, and overridden, younger beds.
- BC: Right.
- CH: I think I missed some here or maybe I should mention, before we go back, a little continuation of this work that I did in this Dyson Creek area. There's a map showing the outline of these beds, or the outline of this fault. It goes around like that and. . .
- BC: And that's between the Elbow and the Sheep Rivers, right?
- CH: Yes. This area up in here, right across here, that shows the boundary between the Bragg Creek sheet and the Dyson sheet. Now this had previously been mapped, I was tying in on to this sheet, this had been mapped previous.

#141 BC: The Bragg Creek one had?

- CH: The Bragg Creek sheet. Now this is the Dyson Creek sheet. Now when I come up here I find that this had been mapped as ??? River, which is upper cretaceous rocks and on investigation I find that these lower cretaceous rocks that were here continued on into the Bragg Creek sheet. So that meant that this had to be revised. Which we did. Dr. Hume at that time was working for the assistant to the oil controller, working here in Calgary. So I got in touch with him and he came out and he asked me to revise this Bragg Creek sheet, the southern portion of it, to conform with my interpretation of the geology of the Dyson Creek sheet. I think that covers that pretty well. Maybe I should go back a little more.
- BC: Should we move into 1940. We really have to do this year by year because each year brought something different to what you were doing in your years with the Geological Survey.
- CH: Yes, well, thanks very much. I think I did overlap here a little bit so this will be going back a little bit. So in 1940 I was assigned the Beaver Mine sheet, which is just west of Pincher Creek, also in the foothills.
- BC: You were the party chief, or the head of this crew.
- CH: Yes, I had my own party there.
- BC: Who was in that party?
- CH: I had Stan Pearson, who was then attending the University of Alberta. His home is in

Pincher Creek, his father had a plumbing business there.

BC: Stan Pearson then moved up very rapidly through Gulf, through his career.

CH: Yes.

BC: What was he like in those days?

CH: He was a very active young man. He took great pride in his physical stamina, unlike a lot of my students that I had. They called me a slave driver but with Stan he admired my ability to climb and enjoy the climb. He sort of admired my ability to put in a good day's work. We also had . . . I don't know whether Glen Fox was with us on this summer or the . . . yes, I think it was, he was one of my assistants that year. Glen Fox now works for Pan Arctic. He worked for Imperial Oil for a number of years. I think after he got his PhD I think he also worked for Carter Oil Co. in the States. But then he came up here and worked for Imperial before going on to . . .

#198 BC: And what can you remember of Mr. Fox that year as an assistant?

CH: He was a dedicated geologist right from the very start. Actually, I think Glen had graduated and was working towards his bachelor's degree before he went on and got his PhD later. So he was a dedicated geologist.

BC: Did you run into any particular problems during that year, was there anything special that you remember about your work with the Survey that year?

CH: We worked in this Beaver Mines area or centre, there's a Beaver Mines post office which is west of Pincher Creek. It was the site of a large coal operation there at one time. Matter of fact, the remains, well there was a small amount of mining going on there for local use. But at one time, I don't know just what year it was they had a small railroad, a railroad that went from Pincher Creek out to Beaver Mines, just for the purposes of exporting the coal. The trestles across some of the ravines were still standing when we were there in 1940.

BC: But the railway had long since ceased to operate?

CH: Yes. But there was still some of the old buildings around. In the mapping down there we picked up the odd bit of lead, which was quite unusual. We didn't find any great amounts but in along the stream beds we would pick up a little bit of lead, which had apparently come from the north, from the Rocky Mountains. There was some evidence of. . . well, I say the Rocky Mountains, in the range just north and west of Beaver Mines there was some evidence of a lead deposit, but it was just small, it wasn't worth mining. But there had been, at depth, there would be some lead in that area.

#243 BC: So then, that takes us, we're now into the war years really, aren't we, from 1940 on. were there any particular problems that you found working for the Geological Survey during the war years? Shortage of supplies or shortage of personnel?

CH: I think I've mentioned, after finishing the Beaver Mines sheet, I mapped the Dyson Creek sheet in '41 and then in '42, I finished the Dyson Creek sheet and did some more mapping in southern Alberta, the Cowley sheet and that. In 1943. . .

BC: During this time you would have had people working with you as assistants. Was it more difficult to get them then because of young men having to go to war?

- CH: No, I don't think. . . well, I should say in 1940, Stan Pearson joined the Army, I think it must have in '42. So didn't do any geological work until he came back after the war and got a job with Gulf Oil Co. And he was associated there with Oscar Erdman, and they did then, on their own, field work up in northeast B.C. for Gulf Oil.
- BC: And some of these other young men, but you didn't find it difficult, there were enough people going through university that you could recruit?
- CH: Yes, maybe they were younger boys that were too young maybe, to be interested in going to join the army. But I was a sort of a victim of circumstances because, after finishing the mapping in southern Alberta, I had thought of maybe going back and continuing my studies at the university to get my PhD. And I had discussed this problem with professors at MIT and also with the Survey and they had both agreed for me to do what work was necessary in that southern Alberta area to provide me with a good thesis problem. But the war was still on and one of the Survey staff was assigned to map the geology along the building of the Alaska Highway, which was under consideration. The initial work had been started on it. This man, Dr. Hugh Beech, he was assigned this project, to do the geology along the southern portion of the Alaska Highway. But he changed his plans and decided to leave the Survey, which left sort of a vacuum on the geological staff, to continue the work along the Alaska Highway.

#324 BC: Which indeed would have priority because of it being connected to the war.

CH: With the war effort. And they asked me if I would discontinue my project in southern Alberta and accept the assignment of Beech's work along the Alaska Highway. Which I did.

BC: So once again your PhD had to go on the back burner.

CH: That's right. And there it remained.

BC: That would have been quite a decision for you.

CH: Well, it was a war effort really, so I looked at it that way. And it was a challenge really, because the area was a newer area and a lot of it hadn't been mapped previously or hadn't been studied very much. The B.C. government had done some reconnaissance work through part of the area, but as far as the Geological Survey went, there was still a lot of work to be done.

End of tape.

Tape 3 Side 2

BC: We were talking about your assignment along the Alaska Highway.

CH: Yes, the report that I published on this summer's work is called Geological Investigation Along and Adjacent to the Alaska Highway, Between Fort St. John and Fort Nelson, B.C. It was to study the stratigraphy, the structure and investigate the possibilities of the oil and gas in the area. But the main purpose of this investigation centred around the study of the stratigraphy and structure. Because this was unknown at this time to the general public or it was new information for anybody interested in investigating the oil and gas possibilities of the area.

BC: And this was on the right of way where they had decided the Alaska Highway was going to go.

CH: Yes, along the road and adjacent to it. This entailed, for transportation, we had a Canadian Army truck for travel along the highway and then we used pack horses when we had to digress from the highway to the area west of it, into the hills, on the Halfway River and the Sikkani area and the Bucking Horse River area. Then farther on I got the services of a trapper to take me down Prophet River which paralleled the Alaska Highway, before we got as far as Fort Nelson.

End of tape

Tape 4 Side 1

BC: In 1943 you were involved, through the Survey, with the Alaska Highway. Could we talk about that?

CH: The highway had started in, I think it was 1941 or '42. Getting the Survey through, some of the old timers at Dawson Creek, a surveyor by the name of McCusker. He had retired, he was a topographic surveyor but he had retired west of Fort St. John. Then the army came through and obtained his services to scout a trail or a suitable route from Fort St. John through to Fort Nelson and beyond. So construction, sort of the tote road had been gone through with bulldozers and in 1943 they were actually starting the construction of the highway in various stages. Most of these contractors came in from the United States. They were small companies subsidiary to larger construction companies. So there was a lot of things going on all at once because they were building it in stages. Like the old saying, time is of the essence, so they employed a lot of people on the construction of the road. Most of the material came from Edmonton and went on through Athabasca, on to Grande Prairie, High Prairie and to Dawson Creek and Fort St. John. The Canadian government thought they would like to get some idea of the oil possibilities in the southern end of the highway and the mineral possibilities farther north. So I was assigned the first southern portion of the highway, from Fort St. John to Fort Nelson. That was the southern leg and then. . .

BC: That's where they were going to be looking for oil and gas possibilities.

CH: That was the area that had the most potential. That and the next portion was from Fort Nelson to Watson Lake. Dr. M. R. Williams from the University of British Columbia was assigned that leg of the highway. Dr. Williams was familiar with the north and he had done work along the Liard and the Mackenzie River for several seasons in the early 20's. The final leg of the route that was to be investigated was from Watson Lake to Whitehorse and Dr. Cliff Lord had that portion of the highway, on and off. That area entailed mineral possibilities mainly, along that route.

#048 BC: How did you get in there, what was the transportation like to get to where you were going to start working?

CH: We started off in Edmonton. We met in Edmonton and we had Canadian Army trucks. That was our vehicle of transportation along the route, along the highway portion of it. So

we each had a truck for our conveyance and transportation and to bring in supplies. Then off the highway I arranged to get a string of pack horses from Mr. McCusker who had this ranch west of Fort St. John. We had arranged that they would meet us later along the highway, with the horses. That entailed about 6 weeks work off the highway.

BC: It must have been a pretty busy highway, even if it had just been constructed.

CH: It was the spring of the year you see and the roads weren't that good. When these huge trucks were heavily laden there was not much left of the road actually. So we went sort of in convoys. The first stop after Edmonton was Athabasca then on to High Prairie, then to Dawson Creek and Fort St. John and that was. . .well, the Peace River. There were no bridges on the Peace River and of course, the ferries, there were 2 ferries, the contractors had a ferry and the B.C. government had a ferry.

BC: How big would these ferries be?

CH: They were large enough to take several big trucks on you see. And they would be laden trucks and in the spring of the year they had to be on the lookout for debris coming down the river. So it was quite a problem

BC: It would be quite an adventure.

CH: We were held up at Athabasca for awhile and then again at High Prairie and at Dawson Creek, because of the number of vehicles ahead of us. We couldn't just pass, when the convoy started we just had to fall in line. Especially from Dawson Creek north.

BC: Was it a hot spring and summer?

CH: Not as I recall. An average summer. But then in the spring there was a fair amount of rain so the road wasn't that good. So we finally, after waiting at these various places. At Fort St. John we had to wait until the river crossing was suitable, the amount of debris coming down the river had sort of eased off. So we were notified that so many trucks could go ahead and take us. Our assignment actually started at Fort St. John. Our first camp was just at Charter Lake, which is just out of Fort St. John and just off the highway. Because we wanted to investigate some of the rock exposures along the Peace River so we would have some idea of the underlying bedrock or what might be expected along the route. So that took a little while to get started.

#096 BC: Do you remember the other people that were on your crew with you at that time?

CH: I just don't recall right off. I know there's a man here in town, Bernard Letour, he remained with the Geological Survey and his specialty was in coal. After, when he was stationed here. I just heard recently that he had retired from the Survey and now had a consulting on his own, along for coal supplies. Because there's been quite a bit of interest in coal in various places here in the west. The other boys I haven't had any contact with them.

BC: When you got to Fort St. John you set up your first camp and then where did you work from there?

CH: We worked just along the. . . from Fort St. John camp we went up the Peace River a piece to the various outcroppings along the Peace River and down river. So that took a little while and we travelled up the highway and did part of the work along the highway and came back to our camp at Fort St. John.

BC: Did you find anything in those beginnings that you thought, oh this is exciting or promising?

CH: Our main work to start with was what we call stratigraphy and that is to get some idea of the section of the strata. Around Fort St. John there's a shale section that outcrops along the river there, which is mainly shale and there aren't that many marker beds. It's overlaid by a sandstone outcrop and that was one of the marker beds that we established early. Also some marker beds within the Fort St. John formation. That would take us up along the highway about 20-30 miles. So our next stop would be beyond the area that we researched out of Fort St. John.

#130 BC: This is where you started out on your horses?

CH: Not immediately. We had a camp there and yes, we met the packer there at a given time. He didn't follow the highway, he had a trail of his own along the Halfway River. But even there at our camp . . . I was just trying to think, I just don't recall the name of the river, whether but there was a small river right there where we camped. It was the stopping off place or a junction with a trail that would come in from the west, from Halfway River and a mountain, the first rise was Pink Mountain. So there was an old pack trail that went from the highway out to Halfway River. So that was our destination after we left the highway but we did some work along the highway before we started off with the horses. We even went up as far as the Sikkani River and the Bucking Horse River from our camp, which is, the name came to me, the Beaton River. While we were there, there were some other parties that were on their way in. Oil companies parties to investigate the oil possibilities along the highway and off the highway, similar to what we were doing.

BC: Had you had indications that it was probable that there would be a gas or oil field there?

CH: There had been some drilling around Dawson Creek and gas had been discovered. Especially around Pouce Coupe. The McMahan brothers were keen on developing a gas supply in around Fort St. John and Dawson Creek, for export to Vancouver. So even at that time there was gas in that area but deeper drilling followed not too long after the building of the highway. As a matter of fact, there are oil and gas bills very close in to Fort St. John.

#170 BC: Why would it be later that they would drill the deep wells. Was it because of the research that you found that they thought, oh we'll. . .

CH: Not necessarily. Because the strata at the surface there is quite flat lying and it entails more detailed work, plane table or survey work to get the detailed information that is necessary to drill a deep hole. So in that respect our work was more of a reconnaissance type. At this point I might give you the title of the report that I submitted to the government for publication. It was called Geological Investigation Along and Adjacent to the Alaska Highway, Between Fort St. John and Fort Nelson, B.C. That was the title of the preliminary report that I eventually wrote. So our emphasis was on stratigraphy and the structure. The structure means the rise and fall of the strata. As you know, anticlines are generally very favourable for locating a well or drilling or investigating the oil and gas

possibilities that will result in the accumulation. . .

BC: Some kind of a trap.

CH: Trap for the oil or gas. So in that area from Fort St. John, right even in and around there, there are several oil and gas fields.

BC: And right up to where you, from the north to the south, throughout all of that, did you find indications?

CH: No, well, I think they knew that there are some fields in there. But east of Fort St. John are also, like at the mountains there is a field, quite large, there was an oil field called Boundary Lake, which lies just at the boundary between B.C. and Alberta. Then north of there at Milligan Creek.

#212 BC: Was this surveyed at the time?

CH: Oh no, these are subsequently. There was very little deep drilling, there was practically no deep drilling in 1943 when we were doing this work. That came later. But the report may have been used by oil companies. As a matter of fact I know, from comments that I heard, that our report was very useful for people wanting to continue the exploration for oil in the area there north and west of Fort St. John.

BC: That would be very satisfying I'm sure.

CH: Yes, this was one of, you know, when you get into a new area and start from scratch as it were, you get a certain satisfaction that you don't get from just reviewing somebody else's work. So it was a very stimulating summer.

BC: Then you would spend the winter writing your report and then back out again, in the next spring again.

CH: I might mention that while we were camped on the Beaton River there was a party going in for Mobil Oil. They were travelling as we were. They had a truck for the highway and they also had horses, a pack string of their own. This party was in charge of Dr. O. A. Hays from Rutgers University, an American. He was an older man and he had done a lot of field work in the States but this was his. . . well, very few had ever been in this country up along this highway. This highway was opening up a completely new area. So we were both getting our supplies out of Fort St. John. As a matter of fact we put him up at our camp there for awhile until he got established with his party. There we parted company. We went west and he stayed at the Beaton River and was going up the highway to do work along the highway.

#257 BC: Do you know if Mobil eventually drilled there?

CH: No, not up there. I was just going to say that our names were sort of similar so during the first part of the summer our supplies got mixed up. He went out to Fort St. John, or he sent his truck and a couple of his fellows in to pick up their supplies and we were getting our supplies from the same person. These came in to Fort St. John, they came in from Edmonton and they were in a sort of depot and they got the supplies mixed up. So he got a . . . as a matter of fact, he got my shipment as well as his own. But I didn't know this until after we'd been out in the Pink Mountain and Sikkani area and we were running short of supplies. At this time, meat and other things, sugar, were all rationed. So we were

in a bind actually. So I had to find his party. First of all I went out to this trappers camp where our supplies were supposed to be left. I got there and our supplies weren't there. The trapper said, well, Mr. Hays was in and he's left, didn't take everything with him. So I asked him if I could see some of the cases that they left and sure enough it had my name on it. But all our things weren't there, he'd taken some of our meat, practically all our meat he had taken. So I scouted around and found his camp and sure. . .

BC: How in the world would you find him, just out in the bush?

CH: He was along the highway and I don't think I had that much trouble finding him. So he understood what a bind we were in so he did everything he could to help us, to reimburse us for what. . .

BC: They'd already eaten probably too.

CH: Yes.

BC: With all the extra meat they probably ate high on the hog until you caught up with them eh?

CH: When we left Beaton River, our packer who was a trapper in that area, he said, don't worry, you don't have to worry about meat because there's a lot of caribou in there. But he was unable to find one at the right time. There was an Indian that we met on the Halfway River that sort of came to our rescue. He was alone, well, he had 2 horses and the night before he had shot a moose and he had half of the moose on the pack horse. I made a deal with him for a hind quarter of moose so that was sort of a god send to us.

#326 BC: From the Alaska Highway, did you go back there the following year, in '44, or was that when you went up to Norman Wells?

CH: No I went back to Ottawa in the fall of '43 to write up my report and I thought I was in Ottawa for the winter. The man that had been up at Norman Wells, by the name of Dr. Stuart, he'd been at Norman Wells as a liaison officer between the U.S. Army Corps of Engineers and the Canadian Army. Major General Foster, he was stationed at Edmonton. Dr. Stuart, he was an older man and he didn't want to go up there for the winter. So I was asked if I would go up to Norman Wells for the winter and do his work as acting liaison officer between the U.S. Army Corps of Engineers and Major Foster, as well as representing the department of Northern Affairs that kept track of the drilling at Norman Wells. Being a bachelor at this time, I said, sure I'd go.

BC: It would be rather exciting to go, that was quite a long way north.

CH: January 1944 I went up to Norman Wells to continue the work that Dr. Stuart had done the previous summer.

BC: What was it like in Norman Wells in January of 1944?

CH: I suppose weather in the north doesn't change that much. It's right along the banks of the Mackenzie River and to the west you can see the Mackenzie Mountains. So it's in a broad valley. The mountains to the east is the Norman Range.

End of tape.

CH: The Canol project was a result of an agreement between the governments of the United States and Canada. And between the U.S. government and Imperial Oil. Imperial Oil was involved because they owned the oilwells and the leases in and around Norman Wells. This project was the result of a military necessity because the Japs, they were scared of the Japs interfering with shipping along the west coast. So this was an emergency project to provide oil for the interior in Canada, in case of military necessity. So the American government consulted with Stefenson, who was a Canadian explorer and spent several years in the north, especially in the Arctic Islands. He suggested that they use the oil from Norman Wells and pipe it to Whitehorse and refine it and to the Alaska Highway, where they could refine it at Whitehorse and be available for transportation into Alaska and south along the Alaska Highway. Well, Stefenson, he had never been in the Mackenzie Mountains but the U.S. government thought it was a good idea so they started this project.

BC: Were they providing a lot of the money?

CH: Oh it was practically all, it was a U.S. government operation so they supplied the money and transportation of bringing in things to Norman Wells was very expensive. They had to use the river barges for a lot of the heavy equipment. Then of course, the lighter equipment was flown in by air.

BC: And when they started to build because of Mr. Stefenson's suggestion, did they find that the pipeline was as easy to put down as they'd thought?

CH: After they started they had some idea because I should think they would have aerial photographs. But they had, instead of one divide they had to cross, they had three divides which involved pumping stations and far more equipment than they had initially thought it would be I think. So from that point of view it became quite costly. The line itself was only about 600 miles in length, from Norman Wells to Whitehorse. In addition to building a highway to get the supplies in, the pipe and all, they built a telephone service. That was another branch of the Corps of Engineers that built the telephone from Norman Wells over to Whitehorse, along the road. So all the camps along the road had telephone communication.

#044 BC: You were in Norman Wells most of the time but you did move out from Norman Wells too.

CH: Well, I thought it would be nice to get some first hand information. I was provided with weekly reports from the U.S. Army Corps of Engineers but I thought to get first hand information, this was a new experience for me so they hadn't assigned me with any method of. . .that is, our Canadian government hadn't provided me with any form of transportation so I discussed it with the Corps of Engineers, the man in charge of the engineers and he said, you could maybe hitchhike with the mail truck. Which I did. Carried my own sleeping bag. And you know what good meals are provided in these construction camps, the cook was always ready to put down an extra plate so I didn't suffer on these three trips that I made from Norman Wells to the watershed of the Mackenzie Mountains.

BC: This would be quite a thing, hitchhiking along a brand new road. Didn't you think that

perhaps you might be left somewhere stranded, sleeping bag and no food?

CH: Oh no. These construction camps weren't that far apart. Well, they were miles apart but I had no qualms about that so I wasn't at all nervous. But it was nice meeting the various people, caretakers in these camps. I remember at one camp I was shown some mineral specimens that one of the men had found not too far from the camp at Peale River. So he persuaded me to go with him to see if we could find this mineral deposit. He apparently thought he had a pretty fair idea where it was and we just had one pair of snowshoes between us. We spent a day looking for this outcropping of this ore showing but we didn't find it. But in a case like that, that was sort of a little foolhardy to start off down on a river, the two of us without having too good equipment.

BC: Was he hoping to find gold, was that the kind of ore that he thought he might run into?

CH: Yes. I had a letter from him years later from Portland, Oregon and he wanted to know if there were any more reports about this mineral deposit. But to my knowledge, all I could tell him was that Shell Oil had a survey party in that area one summer but I didn't know what they had found.

#083 BC: Norman Wells didn't have that huge a production of oil at that time did it, or did it?

CH: No. It had sort of a long history, since it was first discovered, the oil seepage along Bosworth Creek, this small tributary of the Mackenzie was known way back in Alexander Mackenzie's time. The Indians used the tar that accumulated around the seepage for water proofing their canoes. But Imperial Oil thought that it would be worthwhile to drill a well close to this seepage so in 1920 they drilled to a depth of 783'. They found oil at a small rate of 10 barrels a day. They deepened this well from time to time and in 1922 they deepened it to 900' and increased the production to 20 barrels a day. In 1924 they drilled it to 10,025' and increased the production to 125 barrels a day. In 1932 they increased it to a production of 240 barrels a day. Now they set casing at the bottom of the hole in all these cases. So at that time they didn't perforate the casing so by putting the casing they may have shut off some of the oil from the higher shallower portions, the upper part of the hole.

BC: This wasn't in an oil reservoir at this point?

CH: No, it was coming from fractured shale. It wasn't until 1942, when they started to drill for this pipeline project that they encountered the reservoir, which was a limestone reef. So they were very fortunate that they found out that they had a good reservoir and then they started further drilling. Out on the river there were 2 islands, one is called Bear Island and another, Goose Island. As a matter of fact, I think on Bear Island, years ago, Imperial had drilled a shallow well there and it was much like the first well at Norman Wells. Now when they started to drill for the Canol project and deepened it they found out that the reef extended there, there was a reef similar to the Norman Wells field both on Bear Island and Goose Island. So there they had a reservoir, from the gravity of the oil and the pressures of the well, they concluded that the field extended from Norman Wells, underneath the river and included Bear Island and Goose Island. So there they would have had a reservoir that would supply the oil for this pipeline that they were constructing for

military purposes and to the refinery at Whitehorse.

#136 BC: What kind of oil was it that they had at Norman Wells?

CH: It was an oil that had what you'd call a high pour point. That is, it would flow at very low temperatures. At 60 below zero it would flow practically the same as summertime. So if there was a leak in. . . I noticed travelling along the highway where they had discovered a leak or where a leak showed up on the creek bed or something, there would be a pool of this oil. It would just flow just like water. So they were fortunate that they had that type of oil for operating in that cold climate, because of the 60 degrees below zero. And that small diameter of pipe. If it had been a different type of oil it would have been impossible to operate.

BC: It certainly shows that they were right in picking that in the time of need. Wasn't it fortuitous that it all came together, providence more than anything?

CH: Yes.

BC: Now when the war was over what happened to the Canol project, to the pipeline?

CH: Well, the war was over, the U.S. government had no reason to continue operations so the pipeline was abandoned. The salvage crews went in from mainly Canadian companies I think, and when they decided to abandon it they just left everything. The tractors, the bulldozers and the trucks and everything was just left.

BC: They didn't even sell it off?

CH: I don't just know the details. I think they had bids at various camps that they auctioned off, it was quite difficult to get the supplies out because it meant that they had to get it, either, on the west side of the Mackenzie Mountains it went out to the Alaska Highway, that portion of it. But on the eastern slopes it would come out to the Mackenzie River. I just don't know how much, what percentage was left. I think on the west side of the mountains they were more fortunate there to get it out easier than on the east side. But I have no direct knowledge.

#179 BC: What about the refinery, what happened to it?

CH: Oh, at Norman Wells. . .

BC: No, I mean the one at Whitehorse.

CH: Oh, the one at Whitehorse. They just closed it and they trucked the refinery down to Edmonton, and reassembled the refinery there. But the refinery at Norman Wells of course, they have added to that. It's now a supply of oil for the plains in the north. That's why it was built, for northern use. So it's still, now with all the activity in the north, they are very fortunate to have this supply of airplane fuel and fuel for tractors and equipment.

BC: Besides hitchhiking up and down the 600 mile stretch of the Canol project, did you have any other experiences up there that are memorable to you?

CH: Yes. I had a trip up there when I was there through the courtesy of Major General Foster. I remember 2 of his staff from Edmonton were going to make an inspection trip of some airstrips that they had surveyed earlier in the summer. Just to see how, well not accessible, they would know that but they thought it would be a good idea to just make a flight over these proposed airstrips. So Major General Foster, he suggested that they ask

me if I would like to accompany them from Norman Wells to Aklavik and over to Old Crow. I think it was in appreciation for the reports that I had written him about the construction of the pipeline and the operation in general. So when they came to Norman Wells I accepted their kind offer and went with them. Would you like to hear something about it?

#216 BC: I would just love to hear, I think this would be most exciting.

CH: I might mention that the man in charge actually was Wing Commander Stuart. He was accompanied by a Group Captain Patriarch. Their goal was to go to Aklavik and then to Old Crow, which is in the Yukon, on the Porcupine River and then back to Norman Wells. We left Norman Wells on March 24th, in the early morning, around 10:00 I think it was. We came to Aklavik shortly after lunch at 1:30. We were flying a Norseman. I don't know whether you know much about the Norseman, it's a single engine plane that was used in the north by these bush pilots they called them. But a very reliable small plane. At Aklavik a storm came up and we had to stay over there a day and we got to see the sights of the town, which was an Indian school, a school for Catholic children, Anglican children and RCMP there and the Indian agent, a man by the name of Livingstone and his wife. The time really wasn't wasted in that respect.

BC: Who did you stay with, there wouldn't be a hotel there?

CH: I stayed with Livingstone. Stuart and Patriarch, I think they stayed with the Mounted Police. The pilot, I think he stayed with the store keeper. There was no hotel there. Now I was sort of pleased to see the town because I was sort of interested in the geography and the physiography and the geology of the country that we had travelled over. Even at Aklavik I was very pleased to stay with Mr. Livingstone and his wife, because he was very much interested in providing a better living for the people in the north. He had some cows there, milk cows and he had a garden and he had a plot of grass.

#270 BC: And this was in March? Where were they at this, well, they would be all covered with snow at this time?

CH: Yes, but he had. . .

BC: A shed for them.

CH: He had about 4 cows and he had to bring in grain for them but they had a certain amount of hay that was raised right there.

BC: That was most interesting though, wouldn't it be?

CH: It was to me because I had no idea that they would be able to. . .well, I had no idea how long the summers were. Well, I knew they were long summers but how things could grow and how cattle could forage in that country. So it was really an eyeopener to me. Dr. Livingstone, as I said, he had 4 cows and a couple of yearling. He had these cattle for a period of 6 years and by doing that he had demonstrated that he could raise a certain amount of fresh meat, have cattle and have vegetables and that it would afford a better living for the people. At that time you see, there was a limited transportation into the area. They relied mainly on things coming in in the summertime by boat. Anything like fresh fruit and things like that would have to come in by air and at that time it would be most

costly. So that was one contribution he made. But later on, after they started drilling for oil, things could be brought in much more cheaply, well, easily anyway. So right now at this time I don't think people would bother with having any cattle at Aklavik but it certainly showed his interest, how if it was necessary, how it could be done.

#319 BC: Which is something that would be interesting for you because I'm sure you never thought that you'd see live cattle walking around up there.

CH: That's right. Then after we were there, the next day we went over to Old Crow. There, which was Sunday, they were just coming out of church, there was an Anglican mission there. I've never seen a nicer dressed group of Indians anywhere than what I saw there at Old Crow. It was isolated, they had very little contact with the outside. They had a Hudson Bay store there and I think there was an independent store. I don't think there was an RCMP officer there either. The RCMP would come in from Aklavik. So it was a real experience to me to visit Old Crow.

End of tape

Tape 5 Side 1

CH: A few more comments about this trip that we had up to Aklavik. Because I really enjoyed that trip so much. First of all, flying in, we saw the Mackenzie Delta for the first time. Myriads of lakes and it's so large, you couldn't, well, I suppose it wasn't clear enough, that hindered me from seeing maybe the exact size of the delta. And at this time the Indians were trapping muskrats. They say the season had just started and it ended in about 2 months and they would trap muskrats in the thousands at that time, and getting about \$2.50 a pelt. So the Indians there at Aklavik had a gold mine, just from trapping muskrats in the Delta. They would go out in family groups. That was one of the things that impressed me most. And then the Richardson Mountains. I could see the structure of the Richardson Mountains as we flew through the pass over to Old Crow. The structure of the rocks was much more simple than the structure I could see farther south in the Mackenzie Mountains and in the Rocky Mountains. That impressed me a lot. And then the valley itself, besides the lakes and the delta, the oil possibilities that sort of came to mind. In areas like the delta where it extends way out. In other parts of the world that localizes the material for accumulation of oil. So this flight showed ??? and then over on the west side of the Richardson Mountains there was the Porcupine Valley and I sort of considered that to be a good place to prospect for oil. And, years later they did go in and there were several wells drilled in there and they did find some oil and gas in there. But it hasn't been, to my knowledge, it hasn't been developed yet. If there had been a pipeline to the south it's possible there would more of an impetus to develop it further.

BC: You feel that there's still a lot of oil to be found in that Mackenzie Delta then?

CH: Oh yes. Well, they have, since I was there they have found gas and oil in several wells. Well, fields really. But they have no market for the oil from the Delta.

BC: But you still feel there's more fields to be found?

CH: Yes, I think so. And that was one thing that impressed me most. And it gave me what

you'd call a feel for the country. And it helped me, in later years, when I was working for Dome Petroleum and we did exploration work, mainly east, around Anderson River and east of Aklavik. We didn't drill any wells at that time when I was with Dome in that area but Imperial has made several discoveries, along with Shell and I think Mobil. So there's big potential up there.

#044 BC: You could feel that when you were there in '42?

CH: Yes. So I was very pleased that I had that opportunity to have this flight up to Aklavik and over to Old Crow. I was very grateful to Major General Foster for that opportunity to go with his staff on this flight. I think that would be sort of my general feeling for. . .well, it was one of the highlights of my trip to Norman Wells, in addition to seeing the pipeline route and everything that it entailed. Before I left there though, the government were opening up the land around Norman Wells and area, for exploration. During the war, at the beginning of the pipeline project exploration was frozen as far as land went and seismic exploration. But there was word out that they were going to open it again for leasing and for oil exploration. Imperial were sending out several seismic crews beyond Norman Wells. Sort of in anticipation for this land being open for leasing. Well, one of the officers of the U.S. Engineers, who was a petroleum engineer but he was with the Corps of Engineers there, he didn't think that was just right, that Imperial should have a head start on other companies. So he approached me and discussed it with me and he was in earnest. I told him, I said, if you have any grievances about this and you don't think it's right I'll pass on your remarks. Which I did. He knew I think, more about what was going on maybe, than what I realized at the time. He thought that the Americans should be in there and there shouldn't be any discrepancy for further exploration. I don't know how right he was because they had spent a lot of money in the building of the Canol pipeline and I don't think that really, when it came down to it that he was justified in his conclusion. But anyway, I passed it along to my. . . I think it was, I think I passed it on to Major General Foster and he took it from there. Now I don't know whether he did anything further about it or not. Imperial certainly were trying to get the jump on other companies for exploration work.

#093 BC: Later on did the others get a chance to get in there as he had hoped that they would?

CH: Oh yes.

BC: But not before there had been quite a lot done.

CH: I didn't follow it up really. But that was one instance where one of the U.S. Army Engineers thought that they had a little head start on other companies.

BC: After you left Norman Wells, you were still with the Survey, you went back to Ottawa I guess, did you?

CH: Yes. I left there, actually, before the river broke up.

BC: Was it necessary to leave before the river broke up?

CH: No. I was wanting to actually get back and prepare for. . .they wanted me to stay all summer up there but I preferred to do geological work, mapping areas instead of just

reporting on the progress of the pipeline. So I asked to be relieved of my duties there and went back to Ottawa to continue the mapping the area east of Fort Nelson. Went down in an area there, along the Liard River and into Trout Lake. But when I got back to Ottawa Dr. Campsell, who was the Deputy Minister of Mines and Resources at that time, he tried to persuade me to stay on, on sort of projects for foreign service. I don't recall, it was through the Secretary of States, he had to approve me for the job to go up to Norman Wells. And when I interviewed Campsell when I came back he sort of put the bee on me again and wanted me to stay with that part of the government service. But I was too fond of geological field work to give that up.

#127 BC: So what did you do then when you got back?

CH: I got ready to take this field party out and down. . . this would be for the summer, 1944, down the Liard River. Went back to Fort St. John again and loaded our things up in a truck and Fort St. John and went to Fort Nelson. We had 2 what they call freighter canoes and 2 small canoes. He took us to Fort Nelson and we put these in the river at Fort Nelson and took our supplies with us, for the summer, from there.

BC: You took all your supplies from there, to be gone for the whole summer?

CH: Yes. And we had these 2 freighter canoes, and then we had 2 small canoes actually for going up the smaller streams, the tributary streams. We didn't use them actually, until we got to the Liard River and then we used these small canoes to go up the tributary streams. But for going down river we strapped a small canoe alongside of the big canoe, we had a pole, a sort of catamaran type of boat, so that swift waters, it wouldn't be as hazardous going over rough waters. Although I had 2 good assistants. I left the navigation to them.

BC: Who were your assistants, do you remember?

CH: No, I don't recall really just now, but they were both from Winnipeg. So they'd done quite a bit of canoeing before.

BC: I think, being geological assistants, you have to be more than a geologist, you have to really be an outdoors man.

CH: I have the names in the reports that I wrote but I neglected to review them.

BC: We can check with the report anyway.

CH: Yes, okay.

#160 BC: And in that summer, the summer of '44, were there any significant areas mapping that you found very useful later on?

CH: We didn't really. . . as I said, we started from Fort Nelson but the previous year a geological party had started out from Fort Nelson and gone up the Liard from the junction of the Fort Nelson River. So we didn't start our survey until we entered the mouth of the Fort Nelson River and went down. Actually, our first. . . no, we stopped before we got to Fort Liard and went back into the hills up on what they call La Biche Range there and backpacked back from the river. So we got some idea of what the deeper strata were like there, that was sort of a start. Then we went down farther, to Fort Liard and from there we backpacked again, into the mountains as it were, north and west from Fort Liard. There's a mountain that you can see right from Fort Liard, it's called Pointed Mountains, a trapper

that was living there, he said that the Indians have an Indian name for it which means Pointed Mountain so I just called it Pointed Mountain and we mapped that. It's in a sort of an anticlinal structure. Amoco, they went in later and they drilled a well on it and discovered quite a large gas well. But we didn't notice any gas seepages or anything like that when we were in there. We got back from the river and saw areas that nobody actually had been in before. There had been geologists that had gone down the Liard River on their way to the Mackenzie River but they hadn't gone back into the hills the way we did. We stayed awhile, went up a tributary stream that comes in from the east, that comes into the Liard just a short distance from Fort Liard, on the way down. Then from Fort Liard we continued on down and mapped along the river, both sides of the river, using our smaller canoes to get back from the Liard. Met several trappers and we met a trader that lived close on the Liard, below the mouth of the South Nahanni River. Have you ever heard of Turner and the book that he has written about the Nahanni, the book called Nahanni. Well, he helped us quite a bit when we were there. We stayed with him or had a camp close to his house, below the mouth of the Nahanni. He, at that time when we went down, he lived off the Nahanni, at the mouth of the Metela??? River. He had his wife with him there and his 2 children. So he was of great help to us. As a matter of fact, he helped us with making arrangements to get into Trout Lake or he told us what we might expect in at Trout Lake. He had a cabin about 30 miles, on the Liard, below the mouth of the South Nahanni. We left our canoes there and we had previously arranged to have CP Air come in to his cabin and take us in to Trout Lake, where we stayed about a month

#241 BC: This would be on a plane that would land on the lake?

CH: A float plane, yes. As a matter of fact, I have a picture of Mrs. Turner and her 2 children standing beside her cabin. She was a wonderful woman you know, to bring up a family of 2 way back in the wilderness.

BC: How many miles would they be from other settlers?

CH: There were a few trappers, white trappers. There was one, he was German and he was married to a squaw and there was a Norwegian in there that was married to a squaw. Maybe 10-15 miles from their place.

BC: How many square miles do you think that you would cover, or linear miles, in that particular year with your survey? What was your territory, what were you expected to cover?

CH: We went down the river about 200 miles. This again, was a reconnaissance type of survey. Then we went into Trout Lake, flew into there. There was a U.S. weather station in there and that sort of helped a little bit to have someone to speak to. But we traversed all around the lake and camped here and there and walked back in the country from the lake, looking for outcrops. Because immediately close to the lake there were very few outcrops to be seen. Then we had, the CP came in again. As a matter of fact, we had intended to take the canoes with us into Trout Lake, these small canoes, but the pilot of the plane said I think you can get the canoes that you want in there. So we just took one canoe, he strapped one canoe on the plane, the side of the pontoon and then we rented a

canoe from an Indian that lived there on the lake. So he had only one canoe to contend with.

#284 BC: Yes, I would think trying to take off and land in some of those lakes with all your equipment could be a little. . .

CH: Yes, and especially if there's wind. Of course, we had supplies you see. He had to make a couple of trips to get us. I had 2 assistants and the cook and myself, so we were four and then our supplies and our extra canoe. So there was quite a bit of gear to take, and our sleeping bags and a couple of tents.

BC: They'd be much heavier in those days than the tents you find today.

CH: Yes, that's right, it could be.

BC: When you were finished that year you went back to Ottawa again? Were you back there writing up your reports again?

CH: Yes.

BC: And was that your last year with the Survey?

CH: Yes. That fall I got married.

BC: Oh yes, that was after you were through, you were married in Ottawa were you?

CH: Yes. Married in Ottawa, on November 18th, 1944.

BC: So that would make a difference as to your plans for the future?

CH: Well yes, when you have somebody that's not satisfied with the salary that I was getting with the Survey.

BC: Do you remember what you were getting with the Survey after all those years?

CH: About \$2,200 a year, maybe it was \$2,400. When you're offered twice that amount of money to go with an oil company, it was quite a temptation. I had been approached before but when I was single it didn't have the same appeal to me because I liked the work and that was that.

#319 BC: Too, with the Survey, you were out in the wilderness for 4 months at least, of the year, weren't you? Which you wouldn't necessarily want to do when you were newly married.

CH: I had been out quite a few summers and it sort of grows on you. You don't give maybe as much consideration to the wife and family as you would if you were single you know.

BC: So what company did you go to?

CH: I joined Shell out here in Calgary, came to Calgary in the spring of 1945. That was after I'd written up my reports. So I came out here as a field geologist with Shell. So my wife and her mother, she's an only child, so her mother came with us. But they didn't come until the fall, until I'd finished field work for Shell. My first assignment with Shell was up in the foothills north of Jasper, north of Entrance, Alberta. That was in the sort of what you'd call the foothills country. We had pack horses and a cook. Fred Kidd, who had been with Shell one or two seasons before, he was my assistant. So we had a cook and we were well looked after. And we were out there all summer, until into September.

BC: Was your job really very similar to what you'd been doing in the Survey, only for an oil company?

CH: That's right. I think that's a good summation of it. Mapping, geological mapping and studying the sections and determining the structures, the faults and the folds and getting the dips of the strata. Nobody had drilled in that area before at that time. So it was an interesting summer and Fred Kidd was my assistant. Oh yes, I mentioned that. He had been with Shell for a number of years.

End of tape.

Tape 5 Side 2

CH: Fred just stayed with Shell. As a matter of fact he ran as an MLA for the Cochrane area. So he served a term in the legislature in Edmonton. Have you heard of him?

BC: Oh indeed.

CH: His father had a trading post at Nordegg. So he and his brother they were brought up with horses and had been out handling horses and putting packs on horses.

BC: So he would be very useful.

CH: His brother, his name was Jim, he went with Amerata Petroleum. I think he's likely retired now, I saw him about a year ago. Very fine boys.

BC: Was he a geologist too?

CH: Yes, he was a geologist. Now maybe we can break there.

End of tape.

Tape 6 Side 1

BC: Mr. Hage, I wonder just to get us started today, if we might just begin with your change of employer to Shell. This was in 1945.

CH: It was Les Clark who was exploration manager with Shell here, he persuaded me to leave the Survey and join Shell Oil.

BC: Where had you met Mr. Clark before?

CH: I don't know if I had ever met him before. He came to Ottawa and he knew of me, I think maybe through Dr. Hume. Shell at that time were interested in Jumping Pound and were drilling and had drilled a gas well there on a structure that had been mapped geophysically. The surface work had been done by Dr. Hume and Shell had employed a geophysicist to do the subsurface study on it. It was Heiland Exploration.

BC: I think that was Mr. Norm Christie who was involved in that.

CH: No, this was a different man, this man was with Heiland and they were engaged by Shell.

BC: It doesn't matter.

CH: I know the man, he's passed on since. So I left the Survey in the spring of 1945 and came out to Calgary as a field geologist for them. I left my wife in Ottawa and she was to come out, move our things out in the fall. My assignment was in the foothills north of Jasper. I had as my assistant, Fred Kidd, who had been with Shell before and in fact, I think he had been up in that area with the company on a previous occasion. Fred Kidd, his home was at Nordegg, his father had had a store there. So he was familiar with horses, pack horses and proved to be a very able assistant, as well a good geologist.

BC: He remained with Shell?

CH: Yes, he stayed with Shell for quite a few years. Finally he decided to go into politics and ran as an MLA for Cochrane and he served one term with the Conservative government.

#039 BC: Was this the only time that you worked with Mr. Kidd?

CH: Yes, just that one summer. Because Shell's operation, they were sort of. . . had thoughts about staying in Alberta because they had drilled a number of wells out on the plains but they didn't think that the prospects were as good as they had hoped for. So they decided to move some of their staff east to the Maritimes. I think Fred was one of those that went east to do geological work in the Maritimes.

BC: Was this in '45 or was this later?

CH: No, this was later.

BC: When you came to Shell did you work with Basie Ash?

CH: No. Was he from Los Angeles.

BC: I think he was from one of the Shell companies. There were really 4 Shell companies, were there not, Shell Texas, Shell California, Shell Oklahoma and I believe, Shell New York.

CH: Oh yes. I was connected with the California group.

BC: Was there much rivalry between them? There have always been sort of discussions of the rivalry at that time between parts of the same company.

CH: I wasn't aware of that at the time, about the organization of Shell. I had more or less confined my interest to the Geological Survey and didn't know too much about the various oil companies.

BC: And you were out in the field quite a lot of the time so didn't get too involved with office politics I guess?

CH: That's right.

BC: Sometimes a healthy thing to do. With the work that you did north of Entrance, Alberta, were there any promising discoveries that you made through your survey work that year for Shell? Were there wells drilled subsequently in that area?

CH: Not as a result of our work. Shell didn't go ahead with any drilling.

BC: But I mean in later years, in the 50's, 60's, they didn't move back in there at all.

CH: When I was with Dome we drilled a well up there and got some oil but it didn't prove commercial. That was in the shallower horizon. Now, I haven't followed that up to find out whether they've gone back there or not. I might mention that during that summer on this field party, in the latter part of August, we had a heavy snowfall. We had a string of horses, I think there were about 20 horses. Why we had so many I don't know but they had acquired them from previous years as mainly pack horses. We were up at a very high elevation and on the 22nd of August we had a snowfall of about 22" and then it turned cold and there was a crust on the snow. As a matter of fact, it was almost hard enough to carry a man but a dog or coyote or a wolf could easily run on top. But we had to break the crust for the horses, they couldn't, it was too hard for them to plow through. So we had to move down to lower elevations and continue our work at lower elevations. But that's the only time that I've encountered such a heavy snowfall, I think it snowed for about 2 days.

But we were up fairly high. But we continued then at a lower elevation and the field season was sort of cut a little short because of it. When we moved down we saw several places where the wolves had killed deer. The deer, they couldn't stay on top because with their small feet they would go right through the crust whereas the wolves they would run on top.

#097 BC: Next year, with Shell, in 1946, you went up to the Peace River country.

CH: Yes. We were assigned to cover the, more or less, the greater part of the Peace River country. And I had as my assistant that year, Ian Crawford, who is still with Shell and lives about 3 blocks from our place.

BC: Was he a university student at that time?

CH: Yes. He was from Edmonton but his father had been a mining inspector and Ian just told me recently that he was born at Coalman and they lived there when he was a lad.

BC: Can you tell me anything about Mr. Crawford in those days and your subsequent workings with him in Shell? As your assistant, that was while he was still at university.

CH: Well, he didn't go back to school to do any post graduate work. But he stayed with Shell and as far as I know, this is the only place that he's worked. Now, I'm not too. . . he stayed with the exploration department.

BC: Did you have any further dealings with him?

CH: No. Not with the company.

BC: Tell me about this trip to Peace River because this was rather exciting. You had some rather interesting geological discoveries there did you not?

CH: We travelled over a rather large area, it was mainly along the Peace River, right from the foothills to as far east as right down almost to Lesser Slave Lake and Fort Vermillion, which is on the river. Now on the river we used a river boat. We hired a young lad at Peace River Crossing who had a boat, I don't recall whether he rented the boat. Anyway, he operated the boat and Ian and I, we had just a Ford car for getting around. A lot of the areas we worked through was farming country and there were roads. But we were interested in outcrops which are only visible along the streambeds and the river beds. And we did a lot of walking that year, there were just the 2 of us. We carried a tent with us but we ate all our meals, or most of our meals we would get in restaurants or sometimes we would stay in a hotel. So we covered quite a few miles. One of our sort of observations was the discovery of what you'd say, almost like a fossil oil field. It consisted of a thickness of sand about 50' thick. This was along the Smoky River and oil stained. At one time it had been an accumulation of oil but through erosion, the upper part had been eroded off and then the stream had cut through it so it was exposed. But I'd never seen anything just like this before. I've seen sort of oil staining in the sands but never to the degree of seeing sort of a saturated oil sand. It's somewhat similar to what you see up there at Fort McMurray, now with the tar sands. But in this case it had been a lighter oil and there was no tar involved. But still they retain the staining of the sand. And in that area there have been since, several smaller oil fields found.

#156 BC: I understand when you were up there that you followed the old channel of the

Peace River did you not?

CH: The Peace River as we know it today, flows in and out of the old channel. So it seemed to me that there was a river there prior to glaciation. But glaciation blocked the river bed, filled the old channel in places and it created lakes then, behind the front of the ice sheet and as the ice retreated the river made new channels in places. Some places it was still in the old channel.

BC: Had this been mapped before, this particular phenomenon?

CH: Not in this area. It was useful for seismic work because it helped them to understand why they didn't get good reflections at one place and not in another. In the bedrock where the sands were present, the old bedrock ??? they'd get better reflections. Whereas if they get up into the old channel that had been filled in their reflections were very poor. Then we mapped too, because of that we made sort of a map of the Peace River showing the old and the new channels of it, just to assist the seismic people.

BC: A very interesting map.

CH: It was. I had done a little work along that line. I'd spent a winter at University of Wisconsin and taken a course in glacial geology. So it was very useful to have had.

BC: The next year, you were in the B.C. foothills still were you not?

CH: Yes, that was 1947.

BC: And who was with you as your assistant that year?

CH: Jack McCaskell???. He was an engineer. I suppose he hadn't done any geological field work. I think he'd maybe taken some geology at the university. But at this time Shell were thinking about leaving the country. The expression is, they say they were planning to pull out. So they were cutting down on their staff here. But they had a commitment I think, with the Northern Foothills people. That's a group of oil companies that explored geologically on a sort of joint basis. They pooled the information to cut down cost. It was called the Northern Foothills Agreement. So Jack McCaskell and I were assigned an area in the Moberly??? Lake area, which is between the Pine River and the Peace River and south of Hudson Hope. This is west of Dawson Creek, sort of in the foothills area. So we worked up there, just the 2 of us all summer. But we had a camp and rented horses up there and had a cook and slept in tents. But it was a small party.

#220 BC: You didn't discover anything there with which to persuade Shell to stay?

CH: No. We completed our assignment that we had as far as geological mapping went. We produced a map and showed the faults and various formations. When I got back to Calgary the exploration district manager for Shell was there from Los Angeles. After talking about my summer's work I mentioned to him that I didn't think that Shell should leave, because of the oil discovery that had been made at Leduc.

BC: Leduc had already been discovered at this time had it?

CH: Yes, it had been discovered in February of '47. They'd even, at that time, drilled a second well, which didn't get anything. Instead of getting the limestone, the Devonian reef that produced the oil, instead they drilled a shale section. And I remember his answer to that was, this could be just a one well field. There's nothing to say that it's going to be a big field. Now I think that he should have known at that time that it was something more

about reefs and the structure of reefs, that it could explain the second well by the fact that they drilled just off the edge of the reef. But he said, I think we'll just go right ahead with out plans. Although you see, he took instructions from the Hague. I think it had been decided over there before, that they would pull out.

BC: Do you remember his name, that gentleman's name?

CH: His name was Dr. Edwards.

BC: I remember reading, a number of years after Leduc, that Shell had let some property go.

CH: They had a lot of acreage in around Leduc, or between Leduc and. . . along Redwater, they had a lot of acreage in there.

BC: Do you know who got that acreage, do you remember?

CH: No. I don't recall at this time. When I went to work for . . .well, this is a couple of years later I worked for Barnstall Oil Company and they were one of a group of 4 companies that had bought land from Eric Harvie, which turned out to be in the Redwater field.

#276 BC: I remember them saying that Shell paid \$1 million for land that they sold for \$50,000 or something like that. Did you ever hear that kind of a story?

CH: That could very well be. I've never heard that before but Shell may have had that acreage that Harvie picked up, I'm not sure about that.

BC: There were holdings there that later proved productive though, that Shell had at that time that they let go.

CH: That's right. They had a big block under lease.

BC: How did you feel about this, the fact that they were pulling out just when things were really popping?

CH: As I told you, most of my work had been done in the west and I had hopes, when I left the Geological Survey to go with Shell Oil, I thought that the prospects for finding more oil in the west here were very good. If it weren't for that I wouldn't have left the Survey.

BC: So you would have been rather disappointed?

CH: Yes.

BC: You did stay with Shell though, did you not?

CH: Yes, they were transferring me to Casper, Wyoming. I spent one summer doing field work in what they call the Wind River basin, which was just out from Casper. Doing geology down there, I enjoyed that very much because it was unglaciated and there was very little vegetation, almost like a desert country. And all the bedrock is exposed, that is, it's a sort of a paradise as far as doing field geology.

BC: Before we go into your work down there I'd like to just mention a couple of names to you that you may have worked with while you were at Shell during that period. Did you work with Alex Clark?

CH: He was the manager there. Alex had been up here previously, for I don't know just how long but it was when Alex was here that they drilled the Jumping Pound gas field. When I went to Casper Alex was in charge of the operations there in Casper.

#324 BC: So he was your boss down there?

CH: He was my boss there. And then he left Shell a few years later and came up here and

worked for, well, eventually worked for Home Oil. Calgary and Edmonton was the word I was trying to fish up, that was the land holding company up here. And he just died you know, just a short time ago, he died here in Calgary.

BC: What do you remember about him in your working days with him?

CH: He was a sort of easygoing type of man. A very fine fellow to work for. I remember how well I was treated by him and his wife when I went to Casper and that relationship retained all the time I was there.

BC: Did his easygoing manner hinder him at all in the oil patch, which doesn't necessarily treat easygoing people kindly?

CH: He didn't have the push that Les Clark have. He was the man that I worked for when I left the Survey, they were 2 different personalities.

BC: No relation?

CH: No relation. But Alex Clark, he was a micro-palaeontologist. He did his early work in California on micro-palaeontology. They were used for identifying horizons in the rocks down there. Whereas Les Clark, he was more interested in climbing mountains and getting out and seeing the outcrops and studying the rocks and structures.

BC: Could you recall anything about Bill Gussow?

CH: At this time I didn't know Bill Gussow, he came into the picture later. But oh yes, as a matter of fact, I saw Bill, he comes to Calgary here quite frequently. At one time he was a past president of our local society here.

BC: Where is he living now?

CH; He lives in Ottawa. He worked for Union Oil Co. for a long time and then after that he was consulting. He even consulted for the Japanese government.

End of tape.

Tape 6 Side 2

BC: . . . wanting to work in Alberta. But you did go work then, to Wyoming. Why did you decide to stay with them and go to Wyoming?

CH: I felt, after talking to Dr. Edwards, I really felt badly that they didn't stay. So I was more or less convinced that Shell would return to Alberta to continue their work here as we had.

BC: You thought it was just a temporary setback?

CH: Yes. But when Shell thought it over they decided to come back but from a different district. Instead of Dr. Edwards, he was from the California division and now when they were coming back it was from the mid-continent, under Mr. Robinson, who had spent his time in the mid-continent area. When I approached him, he stopped off actually, in Casper on his way up here to look the situation over, and also I think, to look me over but I didn't hear from him. Well, I think maybe he stopped over twice. I told him that I would like to come back if he felt so inclined to bring me back. Time went by and in the meantime, I heard from Les Clark, he offered me a job to come back.

BC: Les Clark had left Shell, because originally he brought you into Shell?

CH: Yes.

BC: Who was he with by this time?

CH: He had left Shell to work for a group of companies from California, known as Barnstall, Seaboard, Honolulu and Los Nidos. They offered him a job as exploration manager, to set up a company. They had bought what was looked upon as proven acreage from Eric Harvie. It hadn't been drilled but it was a pretty good idea that it was as good as proven acreage. After considering his offer, and not having heard anything from Mr. Robinson, I decided to resign from Shell in Casper and come back with Les Clark as a geologist with Barnstall.

BC: How did Shell react to this?

CH: Oh very fast. I had a job offer immediately to return, to come back with Mr. Robinson. But since I had already sent in my resignation and accepted a job with Les Clark, with Barnstall, I just let it ride.

#040 BC: Who else was involved, what other people were involved in this group at that time, that you were working with, other than Les Clark? Were there sort of heads of each of these organizations?

CH: Mr. Powell, he was the manager.

BC: That would be Gene Powell, is it?

CH: Yes, that would be Gene Powell.

BC: Did you work closely with him?

CH: Yes, he was the manager of the company.

BC: What do you recall of him?

CH: He was a very pleasant man, very nice. He had a pleasant way with his staff which permeated the whole office. Although I just more or less worked under Les Clark as far as my geology was concerned. But he was very nice.

BC: Where did he eventually go?

CH: He went to Husky Oil. I don't know whether he is still living or not.

BC: But you didn't keep contact with him after?

CH: No. He was here with Husky but then he left, he resigned from Husky and went back to California. I haven't heard.

BC: How long were you with this Barnstall and Seaboard group?

CH: I might just say, before I answer that question, I might say that Sunray bought Barnstall and Seaboard then, took over the operation. And all of us, they took over Barnstall's staff here, including Les Clark and Gene Powell. So we were now all employees of Seaboard.

BC: Was this fairly soon after you came up?

CH: It would be a year or so after.

BC: Why would they do that?

CH: Barnstall I guess, had a better offer. I really don't recall just why they decided to sell out. But a year or so later, Les Clark accepted a position with Pacific Pete, so he left.

BC: What was the position he went to at Pacific Pete?

CH: Exploration manager for Pacific Pete.

BC: So who took over as exploration manager where you were?

CH: Tucker, who was a geophysicist, he and I shared the responsibility of exploration manager. And I was sort of the chief geologist and he was the chief geophysicist.

BC: And it had grown a fair bit from when you first went to them, I'm sure.

CH: Oh yes. With Les Clark, he operated as if he was in a major company. We were looking for reefs here and there and all over the province. So we were all very, very busy, in exploration and drilling wells. Up in the Wabesco??? area, which was way north of Lesser Slave Lake. You name it, we were there.

#087 BC: How successful were you in your drilling operations?

CH: Up there it wasn't reefs up there, it was more or less heavy oil and gas, which at that time weren't too commercial. The gas came in later. Other companies benefited more from that than Seaboard.

BC: Seaboard was taken over at some point.

CH: Seaboard was a subsidiary company of Texaco. So they were taken over by Texaco here. And Honolulu, they sold I think, to Pan American. I think maybe at that time it may have been called Staniland.

BC: Was it Amoco?

CH: Amoco, yes, I think they bought Honolulu.

BC: What time was this, were you still with them when all this changing was going on or had you left them by this time?

CH: I had left them for the final break-up. I resigned to start a consulting practice of my own.

BC: And this was in the early 50's?

CH: Yes, this would be '52.

BC: ??? Turner, who is a well known political figure, he was with Honolulu at that time. Was he there when you were there?

CH: No.

BC: At the time that they were taken over, I believe he worked for. . .?

CH: Yes, he was with Honolulu. No, that was after I left.

BC: What was the reaction of the people that were working there as the sands were shifting underneath them, as other people took over? For instance, Mr. Clark, who was suddenly under another umbrella. Was this disturbing?

CH: I don't recall it as such. Everything seemed to go on more or less on an even keel. Mr. Powell, he was a remarkable man and some of the people that were with Seaboard that went over to Texaco, they're still with them. I have in mind, Scotty Bayman??? for instance, he was a geologist that Les Clark hired there. He is still with Texaco. And Roy Baker, a friend actually of Scotty's from University of Toronto. I think I'd like to say a little thing about my work in Casper because it had a real relationship to the work that I did here when I came back. As I had told you, it was a geologist's paradise. And they had vertical aerial photographs of all the country. They produced maps in the office in the wintertime of the areas that they wanted to check on. We made mosaics of the pictures and produced our map. But before, we studied the pictures first under a stereoscope with pairs of pictures, on a parallel bar that was actually patented by Shell. You can put the pictures, and they would move around sort of in a horizontal way and we would then

mark on one of the pictures the characteristics of, the outline of the outcrop, the dip of the beds and structural features of that kind. And then we'd assemble these pictures and produce a map. Then when we had the map assembled they'd photograph these pictures, reduce them in size and then use them for field work. So we'd take these maps out in the field with us and check the depths and then put on additional criteria about the strata. So you would end up by having a real good geological map. Now in addition to that I was also introduced to the electric logs and the interpretation of these electro-logs, to get the interpretation of the strata that ????. These are logs produced by electrical methods from the drill hole. That was something too, that I hadn't done before.

#161 BC: Was it a fairly new. . . ?

CH: It was coming in, yes, into use. But my work with the Survey up here didn't entail. . . well, it entailed studying of samples but not these new type of logs, like electric logs and analyzing the rocks from the behaviour of the logs. So I really gained from this work that would enable me to do better subsurface work up here when I came back with both Barnstall et al.

BC: When you decided to go on your own in 1952 to consult, why did you make that decision?

CH: There were 2 reasons. Actually it started from a little disagreement in the office with a personality differences that came up. Not from a local man but from head office type of personnel. I decided then to leave the company and consult.

BC: The disagreements would be in interpretation, this sort of thing, or just simply a personality clash that made you feel . . .

CH: I think you could say both.

BC: Of course, Mr. Clark had already been gone too, and so the company would have quite a different look to you, perhaps. But going out as a consultant, there weren't that many consultants around in those days. There are a lot today but not 1952, 30 years ago. Were there many consulting firms?

CH: J. C. Sproule, Cam Sproule, he was the largest company. I did work for him, for instance, field work for him here in Alberta. And Sanderson, he was another consultant and Joe Irwin was another consultant. So there weren't too many consultants but there were a few.

#205 BC: What companies did you work for during that time?

CH: I worked, as I said, I worked for Cam on an assignment up there, in the Clearwater area, in the sort of foothills, along the Clearwater River. And I worked for British Petroleum, assessing some of their reservations and acreage.

BC: Did this necessitate your going out again, into the field once more?

CH: Yes. But I more or less took everything that. . . well, I wasn't choosy about just limiting my activities. So I just more or less accepted what came along, to keep me busy. I just had a girl and a part time draftsman, for doing my drafting, to complete the reports that I wrote. And I even did work for a company called Grouseman???. I made a decision to a friend of Jack Webb's, who had this company, Grouseman and they had acreage up in the Peace River country, up along the Alaska Highway.

BC: That would be up where you had been.

CH: I had been. So I went back and did work for them. At that time companies had these reservations and they had to submit reports on them. Assessment work as it were, like you do assessment work for a mining company or on claim acreage, these reservations. But they had taken out, he had to do either drilling or geological field work and things like that. I was kept busy.

BC: That's not the way they do it today?

CH: I don't suppose there are as many reservations as there used to be. The acreage, if they drilled, usually it resulted in the drilling of a well. But if it was a wildcat well and it was a dry hole and they didn't find what they expected to find, they would give it up. If there was enough acreage that was relinquished and the government made it known, the status of the acreage, somebody else might have another idea and acquire it as a reservation. So the land picture would change in that respect. But there would be more and more that would be held as leases, but then with leases you had to pay a lease rental on them. You'd think twice before holding a big block of leases that hadn't been tested for oil and gas at one time.

#263 BC: Can you remember what the going rate was for consultants back in 1952, what you would charge?

CH: About \$100 a day, I think, was a good figure.

BC: There were also geologists at that time, they weren't consultants but they were independent people who did well sitting.

CH: Well site geologists. No, I never had any connections with that when I was consulting.

BC: You didn't have any well site geologists working for you?

CH: No. I was just a one man operation. I felt that if I was to continue as a consulting geologist that I would have to build up a staff, or have a staff of help in the field and do well site work as well. Which I didn't like to get into that position where I had to build up a staff. So then I was giving thought to discontinuing and going back to work for an oil company when I had a lease from Dome Petroleum. They were anxious to get the space I had for their own use.

BC: You mean the space in the building?

CH: The space in the building, this was a building on 9th Avenue. They also. . .

BC: Do you remember the name of the building or where it was? It's probably not there today.

CH: No, it isn't there, it was on 9th Ave. between 4th and 5th St. There was a liquor store in there and this was part of the building that the liquor store was in. It had been, at one time, they made billiard tables in there. It had been sort of an old factory and they required the space and they also wanted a geologist. So they offered me a job.

BC: You came with the space or the space came with you more like it.

CH: So I went working for them

BC: Who hired you, who asked you to come with Dome?

CH: Jack Gallagher.

BC: Had you worked with him?

CH: No, I hadn't worked for Dome. Dome, at that time, wasn't a very big company. They only

had a little better than 25 people as their staff. Ed Tovell was in charge of the drilling and Charlie Dunkerly was in charge of the engineering. Then Maurice Strong was there assisting Jack Gallagher.

#326 BC: Did you work with Mr. Strong very closely?

CH: Well, he was more or less in charge of the agreements and the land, more or less the land picture. He had no knowledge from the geological or exploration point.

BC: So you really were not working too closely with him?

CH: No.

BC: But you did work fairly closely with Mr. Gallagher then?

CH: He was the geologist you see. He'd worked for Standard Oil of New Jersey for years as a geologist and an assistant to their exploration manager. On foreign work. So he had a real good background for his job.

BC: What was he like to work for?

CH: Very nice, very good. He's very ambitious as you know but he was a very pleasant man to work with. But very, very, very ambitious.

BC: Ambitious for Mr. Gallagher or for Dome or for both?

CH: He took the overall picture I think. He had the ambition to make Dome into a big company. That was my summation of it and I think, as I recall, I think he expressed that to me at one time. So he was always on the lookout for new plays and new ideas. We had operations all over the west, from Manitoba, Saskatchewan, Alberta and the Northwest Territories and British Columbia.

BC: And the Arctic Islands.

CH: That's right.

BC: I'm going to stop the tape and go on to another tape and the I thought, that might be a good thing to just go through, some of your work that you did with Dome in these various places.

End of tape.

Tape 7 Side 1

CH: So at Resolute, there was a company that was doing aerial photography work, out of Resolute. A man by the name of Diverney???, which I had known in Ottawa when I worked for the Geological Survey was in charge of this. So a deal was made with him for him to take us in his DC-3 to continue the flight north to Issacson and fly over one of these domes and on across Norwegian Bay and back to Resolute. Stayed overnight there again and saw some more of the sights around Resolute and then he took us back to Churchill and from Churchill we got commercial flights out.

BC: How big would these domes be that you were flying over?

CH: They were large. They had been eroded, they had. . .

[Not sure what that was about, seems out of place to the rest of the tape]

BC: Just to get us rolling again, Mr. Hage, if you could just start with your going to Dome, why you went and what happened in 1955?

CH: I can tell you how I became a Dome employee. I had rented space from Dome in their Derrick Building, which was on 9th Ave. and almost the corner of 5th St. and 9th Ave. I had been there a couple of years and they needed office space. As a matter of fact, they had asked me to vacate it because they needed the space. They also needed a geologist so one of the Dome men asked me, why not apply for the job as the senior geologist with Dome. Which I did. They accepted my offer to work for them and they got their space and me as well.

BC: Did you move out of that particular office and give them that space and go into the geology or did you just stay there and change hats?

CH: At that time I think it was just sort of a partition at the end of the building and I think they reorganized it and they remodelled it. But in the same building was Great Plains Petroleum. I don't know whether you've heard of them or not. That was started by DeGaulier and McNaughton, who was a consultant geologist. That was Nick Nichols, who was a Canadian and he was in charge of their operations here but he came to a tragic death in Hawaii, drowned to death on a holiday. His position was taken over by Dave Mitchell, who is still with Alberta Energy Co.

#045 BC: Nova?

CH: No, not Nova, Alberta Energy. It's 50% owned by, controlled by the Alberta government. Would you be interested to know who were there when I . . .

BC: I'd love to, that's what I was going to ask you. Dome wasn't very big in those days.

CH: No, there were only about 20 employees, and that included the secretarial staff as well. I think I could maybe mention some of these.

BC: That would be very interesting.

CH: Of course, there was Jack Gallagher, the exploration manager, or the president of the company. And he sort of acted also as exploration manager because he had done a lot of exploration work for Standard Oil of New Jersey on foreign assignments so he was well qualified for doing exploration work. And he was a graduate geologist from Manitoba.

BC: As the senior geologist you would have worked quite closely with Mr. Gallagher then, right from the beginning.

CH: Oh definitely, oh yes.

BC: How did you find him to work with?

CH: He was very nice. Did you ever meet him?

BC: I haven't met him, no.

CH: Some refer to him as Smiling Jack because he's always got a smile on his face and he's genuine in his appreciation for a job, I shouldn't say well done, but he's very cooperative and very nice to work for. Maurice Strong was his assistant, then there was Charlie Dunkerly.

BC: Let's just talk about Mr. Strong first. You would have worked closely with him too?

CH: When I joined Dome Maurice Strong was on a trip around the world but he had been with the company for a year or two before he went on this trip. A trip around the world, he was

very much interested in the developing countries. I think he had an assignment with Texaco to visit certain places so it wasn't just a pleasure trip that he was on. But he came back in the winter after I joined Dome and he was Mr. Gallagher's assistant, looking after farmouts and land deals. Contract work. He's been an employee of Richardson's and he was a wizard when it came to deals and things of that nature.

BC: Do you remember any of the particular deals that he did when you were there that were spectacular.

CH: He dotted the i's and crossed the t's on all of them but I can't just recall right now, any spectacular one. But they made a lot of deals in the early stages because they were acquiring land in various ways. You see, there would be, they would take a farm out from a company, that involved an agreement. So he was kept busy along that line. He wasn't a trained lawyer but he knew what a good deal was.

#095 BC: Knew where to read the fine print.

CH: They said that he never gave anything away. From the point of view of Dome.

BC: Yes, he worked very well for the company then?

CH: Oh yes.

BC: No wonder he was working right beside Mr. Gallagher, he would be very useful.

CH: Yes. And then there was Charlie Dunkerly, who was vice-president. He was an engineer. He came to Dome from California Standard, which now is called Chevron. He was in charge of the drilling and production work. Under him Charlie had Ed Tovell, he was the drilling superintendent and he was in charge of the drilling, our production wells and also wildcat wells and he was very efficient at his work.

BC: Were you doing a lot of drilling in those days?

CH: Oh yes . . .

BC: For a small company. . .

CH: Well, the company grew very fast. I think I should say this is one of the necessities for a company to grow is to have a good land picture as an asset for oil and gas prospects. Especially land that had potential for oil and gas. Since they took a farm out from Staniland up in northeast B.C. to drill their Bucking Horse well. That was on a large block of acreage but maybe we could come back to that at a later time. I'll mention some more here.

BC: Right, I'll just make a note of that.

CH: Darryl Long, he was there, he's a geologist and he was with the company when I joined them and had been for about 2 years. He was a very able man, he was I think, a geologist from New Brunswick, I think he graduated from University of New Brunswick at Fredericton and he had a brother I think, that was on the staff there at the University of New Brunswick.

BC: Is he still with Dome?

CH: Darryl, he died several years ago. But he had left Dome some years before retiring age. As a matter of fact, he left Dome before I left Dome. But he was very good. . . I think I'll come back to that later on too, especially with respect to their work in Manitoba and

southern Saskatchewan. And Dave Colin, he was the office manager. Dave had been up at Yellowknife working for one of the mining companies there, Giant Yellowknife I think they called the company. He was from Fort William but he was Gallagher's right hand man too when it comes to personnel and office staff and being an office manager and personnel man in a growing company. . .

#146 BC: A very responsible job.

CH: Yes. In later years he looked after Mr. Gallagher almost like a private employee for Mr. Gallagher. Now in addition to that we had Tom Cran, he was in charge of purchases for the company, supplies and equipment. In the field Charlie Dunkerly and Harry Howard. He was the production engineer in Manitoba and Saskatchewan. And Neil Fluker, he worked out of Calgary and he worked also for Mr. Dunkerly in drilling.

BC: These people have all stayed with the oil industry?

CH: Oh yes. Mr. Howard, unless he's retired, he was with the company just not too long ago. And the lawyer was Bernard Kelly who is now secretary of the law society. You've seen him on TV here recently on their Petrasuk case.

BC: And he was there when you were there?

CH: Yes. When I joined Dome. And then Bud Hall, he's still around but not with Dome, he was in charge of the land.

BC: Is he still an active landman today?

CH: I don't know just what his position is but that's what he. . . I don't know whether he has a company of his own or not. He's single so he hasn't settled down as it were.

BC: You can be a little more mobile.

CH: And then there was another production man, well site man, was Jim Hartley. He was an older man and he died quite a number of years ago. Now that was about, when I joined Dome. . . I might mention though, Jack when he started, his first employee was a secretary, Ethel Cairns. She had worked with him I think, at Imperial. So she was with him until she retired just about the time I retired. She may have retired in '68 or '69, I'm not sure which. And then Margaret James, she was then Margaret Woodward, she was Charlie Dunkerly's secretary and she stayed right on until she retired just a few years ago. Of course, there was the draftsmen and other secretaries.

#187 BC: It's interesting how many stayed quite a long time with the company.

CH: There's good reason for that you know. In addition, they had a sort of company retiring plan in which, when I joined them, they had a pension plan where the company matched their employees contributions. Well, as time went on the company put their portion into this plan in Dome shares. Then later on, they put the employees contribution into Dome shares, so as the company grew and the price of Dome's stock went up, the employees benefited. That worked very well and it encouraged the people to stay. Some of these girls that were in the secretarial staff, they stayed on and were worth quite a bit of money because they had Dome shares. But what's happened lately of course, is the reverse, which must have been quite a blow to them because the price of Dome went down so drastically.

BC: We hope that reverses before too long.

CH: That's right. Then that just about completes the main. . .

BC: Where were they working at the time that you joined them in '55, where were they exploring, mainly?

CH: I mentioned that they had production in southwestern Manitoba and southeastern Saskatchewan. They acquired acreage there through a farm out from California Standard. Darryl Long, he was very good at working up subsurface, the material from the wells and the logs in several plays. So they were very successful in developing extensions to the fields in that area. And then in southeastern Saskatchewan, likewise, they were in there very early. There I think a lot of that was acquired by purchasing land that was up for sale.

BC: This would be at the yearly sales?

CH: Well, more frequently than that. And then they had production at Redwater, which I think they had bought proven production at Redwater. And also at Drumheller. These purchases were made jointly with Western Leaseholds which was a company that Eric Harvie was interested in. Or Don Harvie worked into the position as manager of this company. But they had this close relationship with Harvie.

#246 BC: And that was in 1955?

CH: Yes. I want to mention about Harry Suey???. He's a geologist that was with Dome when I joined the company. Harry had joined in the spring and I joined in September. Harry was hired by Charlie Dunkerly who wanted somebody to sit on wells in Manitoba and Saskatchewan. Harry developed into a very good subsurface geologist and he's still there in charge of quite a number of the staff. His area I think, is on the plains here of Alberta mainly.

BC: Do you think he came right from university?

CH: Yes, I think he did. He's a graduate of the Oklahoma University and I think it's likely this was his first job.

BC: What was well sitting like in those days. They don't do much well sitting today, do they?

CH: Oh they do, oh yes.

BC: Do they, in the same way?

CH: Well sitting is collecting the samples from the well. It's required by the regulations of the Conservation Board that looks after this drilling of all the exploration wells and carries out the functions of the government, to collect samples and the cores so they'll be available as a record of the well. That's the job of a geologist to look at the samples, usually at 10' intervals. They're washed and bottled in little vials and in addition to that there's something in a sample bag. So there's a complete record of the well. And they're examined under the microscope and described by the geologist right on the well. And if there is any indication of oil stain of the sands, it's noted. Oh yes, it's quite important that they have a geologist on all wells.

#294 BC: It wouldn't be quite as primitive as it was in the 50's though I would think. They seemed to be sort of out in the bush and sitting on wells for weeks at a time. Is the

job just about the same today?

CH: I should think so. They usually have a trailer as a sort of office and the geologist sleeps in one end of the trailer. So it's his sleeping quarters as well as his office and they're usually well constructed and heated well. And they eat in the cookhouse so there's not too much hardship actually, sitting on a well. From the point of view of hardship they're looked after pretty well. It's getting in and out to the well site, which is sometimes quite difficult.

BC: Were there some other people there in the personnel that we didn't. . .

CH: Oh, I must yes, mention Allen Bryant. I hired him as a geologist. He was a graduate from a university in England and he did very well with the company. He was transferred to be in charge of Dome's, the exploration manager at their Denver office and he was there for several years. Now he's retired and lives at Sidney on Vancouver Island. He's now doing consulting work. Then I also hired Ed Wolf as a geologist and he was with the company for quite a few years. He has a company of his own now and lives here in Calgary.

BC: What's his company called, do you know, do you remember? It doesn't matter if you don't.

CH: Hydrodynamics or something like that. [Enter into] the name of the company but he has an interest in oil properties in and around Alberta. So he's done very well.

#343 BC: Your work with Dome, how different was it from the work you'd done previously with Shell for instance?

CH: With Shell I did field work, quite similar to what I did with the Survey. With Dome it was more administrative work. I was very seldom in the field with Dome except on the occasion when they took out a reservation out there at McMurray on the tar sands or the bituminous sands. With that it's just like taking a reservation elsewhere where you had to do a certain amount of assessment work to keep it in good standing. At McMurray you had to do core drilling or evaluate the bitumen content, sort of a coring program. Mr. Gallagher thought they should have a company representative to see how the operations were going so I spent several months one winter up there, watching them core and looking at the core.

BC: So you did some well sitting yourself?

CH: Oh yes. Well, that wasn't really well sitting, it's a little different. So as far as I know. . . it wasn't the best of the . . .

End of tape.

Tape 7 Side 2

CH: Well, that wasn't really well sitting, it was a little different. It wasn't the best of the places that have been found up there but still, we saw a lot of bituminous material and cores. This past winter I still used some of my jackets, my clothing I used up there.

BC: Came in very useful I'm sure.

CH: I sat on several wells for them. On one occasion I went out just before Christmas so the younger fellows could be home with their family. We got a gas well Christmas Eve, it came in.

BC: Where was this?

CH: That was up north of Fort St. John.

BC: And do you know the year?

CH: It was in the 60's, no, excuse me, in the early 60's. And yes, it was quite a thrill because it just came in on Christmas Eve and the next day we had a big flare, it came in with quite a show. And I wanted to get home myself, so on Christmas Day I took the samples and went to Fort St. John and left them there and stayed overnight in Fort St. John. The next day I drove home and had a late Christmas with my family.

BC: Yes, it would be, 2 days late at least. Now going from there, I thought we might just talk about some of the areas that Dome was involved in at the time that you were with them, that is between '55 and '69. That covers quite a wide span. I have a few names here just to kind of get you recalling and perhaps you might remember some of the work that was done or the kind of terrain that they ran into. I've got Redwater at the top of the list.

CH: That was proven acreage right in the Redwater field. So there wasn't much real preparation work there. The same would apply to Drumheller. I'm not sure how Drumheller was found, discovered. I don't recall what prompted them to drill the Drumheller well.

#036 BC: That was perhaps before you got there was it?

CH: Oh yes. [big pause to #050] Before I joined Dome they had taken a farm out from Staniland. Staniland is a word formed from Standard Oil of Indiana and later on they changed the name to Amoco. They had a big reservation up in northeast B.C. off the Alaska Highway, in the ??? area. They offered this to Dome as a farm out. So Dome drilled it for an interest in the acreage there. It was a deep test, to the Devonian, to a depth of I think, it was over 10,000' they drilled this hole. Charlie Dunkerly was in charge of this. I don't know just who sat on the well, whether he was there or they had a geologist. I don't recall either, I didn't ask Darryl whether he sat on the well. They drilled through various formations, sands, limestones and dolomites. They did tests but the formations were, the porosity was very poor so it was unsuccessful from the point of view of oil or gas. Because of the tightness of the formation.

BC: What was the name of this well? This was the Bucking Horse?

CH: This was the Bucking Horse.

BC: So it was unsuccessful?

CH: Yes, from the point of view of getting oil and gas.

BC: Did it have other value to people from drilling it?

CH: They acquired a fair amount of land from Staniland. Pacific Pete, they were drilling in adjacent areas and they found gas which extended into Dome's land. One of the fields there was called Judney???

BC: Oh yes, that's in the same area?

CH: Yes, well, farther east. But I think it was on the same block of land.

BC: I have another name here from B.C. Boundary Lake.

CH: Oh, Boundary Lake is east of Fort St. John, at the boundary between B.C. and Alberta. That was oil, a discovery had been made before I joined Dome.

#090 BC: Was it made by Dome?

CH: No. But Dome acquired land there so they had a fair amount of production there. They acquired land on the terms of the discovery well. I'm not sure whether it's still producing or not but it produced for a long time.

BC: So it was a good discovery. And I have another name, while we're still in B.C., Milligan Creek and Beaton River. Were you involved with those at all?

CH: They were shallower gas wells, north of Fort St. John. I can't recall too much about them

BC: In moving into Manitoba, there are a couple of names I have here Mr. Hage, one is Virden.

CH: Yes, that was actually right there in the southwestern corner of Manitoba.

BC: Were you involved with those?

CH: No, that's where Darryl Long. . .

BC: That's where the well sitting came in. Just about the time you came then?

CH: They had been drilling in there actually, before I joined them too. There's where they relied on Darryl Long for his interpretation of the subsurface structures and the possible extensions of the fields.

BC: In Saskatchewan were you involved with any of these after your coming? One was in Weyburn or Parkman or Steelman?

CH: They added a lot of production to the. . . and Dome got into the processing of the natural gas down there. So they built a big plant there for taking the liquids out of the gas before it was put in the pipeline. So they produced oil and gas you see. My recollections aren't too vivid.

BC: Many of these were done before you got there were they?

CH: No this carried on after I. . .

#132 BC: Looking at your time in Dome what do you think were the most significant events that took place in those 15 years, geologically speaking?

CH: That's a difficult question to pinpoint. We were busy all the time. Each area had its problems though. We took a farm out from Union Oil up in Alberta, in the Red Earth district and we drilled quite a few wells there. That is what they call a granite wash play, it overlies, it was a nob??? on the top of the pre-Cambrian and granite wash is the. . . the reservoir was from the weathered granite. So the production was just about at what you call the basement. That was quite a challenge.

BC: It would be indeed.

CH: Adjacent to that was Lean??? Lake, which we discovered as heavy oil. But nothing was done with that at that time. It's sort of more likely a reservoir similar to the McMurray tar sands.

BC: So it would be difficult to extract?

CH: There wasn't the demand for that, up there in that isolated area, there wasn't the demand for that heavy oil. I just want to say that Mr. Gallagher was always on the lookout for newer areas to explore. One year he was attending a ??? ministers conference in the Maritimes, I don't know now whether it was Halifax or Charlottetown. He got talking to someone or he heard mention that the Arctic Islands, that the Survey were looking into

the mapping of the Arctic Islands because salt domes had been discovered. Salt domes are sometimes associated with oil accumulations because of the structure around them. When he came back from that conference he asked me to investigate these reports from the Arctic.

#178 BC: Do you know what year that was? I have ??? in 1961, would that be the time that the meeting was?

CH: Oh no, it was earlier than that. I would say maybe '59 or so. So he asked me to go to Ottawa and speak to some of the geologists that had mapped this area in the Arctic Islands. There were 2 men, Dr. Thor Stenson??? was one, Tim ??? was the other. So I was received very well by them there because they were interested to see that somebody was interested in the work they had done. So they showed me their maps. But I soon found out that I wasn't alone because other companies were also interested in the Arctic Islands and the geology. I was able to report, with Mr. Gallagher I wrote a good report on what I had seen. I spent some time and they had written some reports as well were available for distribution. So I became very familiar with the geology of the area because up there, in the Arctic Islands, there is no vegetation to speak of. It's very, very barren country, and has very little soil. So the rocks are very well exposed and aerial photographs were available too so you could stick them under the stereoscope as well. So I prepared maps from the aerial pictures and that. So that took a fair amount of time. After talking to ??? I suggested a certain area that might be quite favourable. And that was a reef development up there as well which had outcrops, it had bitumen in it, in the pore spaces. So the object was to try and find an oil accumulation where the rocks were under cover and you would have a . . .it would contain oil.

#233 BC: Did you go up with a seismograph crew at all?

CH: No, that was done later. With the help of a geologist that worked up there I decided on an area that would be more or less favourable for such a structure you see. We were aiming for a reef that would be ??? and be a trap for the oil. So we chose a location on the south side of Melville Island at a place called Winter Harbour. But before this, the government had opened the area for reservations, where companies could file on blocks of acreage. So this came about quite quickly. We weren't in on as quickly as some of the others. But we got what we thought was fairly good acreage, in this area that I thought had possibilities.

BC: So you drilled on it, did you?

CH: So we decided to drill a well. That was quite an undertaking because you had to bring the rig in by ship. And that would have to be, the rig would have to be taken from Alberta, it was taken from Edmonton to Montreal by train and then from Montreal it went by boat in the spring, in the summer, up to Winter Harbour. So ??? in one season. Ed Tovell was in charge of this operation, getting the drilling contractor which was Peter Bawden. We just made a contract with Peter Bawden to drill this well so it was his responsibility actually, to get the rig and all the equipment necessary on the ship.

#291 BC: But he did manage and you did drill?

CH: Oh yes. Yes, this well was located 575 miles north of the Arctic Circle and 1,765 miles from the U.S.-Canadian border. That would make it over 1,500 miles north of here. And this well was spudded in September in 1960. They drilled all winter. They used a DC-3 airplane to bring in the supplies for the camp. Allan Bryant sat on the well and he spent Christmas ???

BC: ???

CH: I think he stayed right through, until the well was abandoned in April.

BC: Was it abandoned without having discovered anything.

CH: That's right. There was a little bit of gas I think, discovered in the upper strata but we didn't strike the reef that we had hoped for. Instead of that we drilled an off reef shale section. So we were very disappointed in that respect. But from ??? point of view it was a success because they were able to drill right through the winter, without any difficulty.

BC: Not being too cold? Did they have to use, would they use flares for light or what would they do? Because it would be dark all the time.

CH: When they serviced the rig you see, with this DC-3, they had it land right close to the rig and they put up flares apparently, so that it would guide the plane in.

#335 BC: Working at a time when it was darkness all the time, did that cause any problems in the morale of the crew do you know?

CH: The drilling crews, they alternated. I don't recall now just how long they were in but they alternated, they took men in and out. Sort of to keep up the morale. But Allan Bryant, he had no alternative but to stay the whole time.

BC: From that, although the well itself was perhaps not successful, I would think that quite a lot would have been learned about drilling in the Arctic from that.

CH: You're right. Because this was the first well that had drilled under those conditions and it showed how successful it could be with good management. We had a good driller, Peter Bawden took an interest and he had a good staff. Ed Tovell was an experienced drilling superintendent and from his point of view he managed it very well.

BC: If only nature had cooperated.

CH: No, if I'd only chosen the right spot.

BC: In the end it usually comes back down to the geologist, rightly or wrongly, doesn't it?

CH: Yes.

BC: If the well was successful everyone takes part of the credit but if . . .

CH: It's a dry hole, it doesn't do much for the morale, I can assure you that.

BC: Did they do anymore?

End of tape.

Tape 8 Side 1

CH: Just to continue about Dome, Winter Harbour #1, I must say we drilled to a depth of 12,593'.

BC: Quite a deep well.

CH: When you think of it, it certainly was. And under the conditions. It was drilled practically

in darkness, a good part of the time, most of the time in darkness. And the supplies would come in from Edmonton, almost 2,000 miles.

BC: Quite a difference from when you first started out with the Geological Survey isn't it, the changes and the reach?

CH: That's right. So in my day I've flown over this area before it was drilled, but I wasn't on the ground there at all. I might mention that when we made a . . . after, before we started to drill up there or before we decided to drill Mr. Gallagher wanted to see the terrain for himself. So he arranged to have a group got together and made a trip. It was Imperial, they didn't have a geologist but there was British Petroleum and Dome, California Standard and a geologist with Dominion Exploration Co. from Winnipeg and one or two more. We chartered a Canso???, a plane that can land on either land or water and then flew from Churchill to Resolute. We made that our headquarters at Resolute. The RCMP had a station there and the meteorologist and they provided sort of hotel service there for people coming and going. From Resolute we made one trip west as far as across Melville Island and up to Beau??? Bay where we spent the night and had a walk around. That is a U.S. weather station, well, maybe Canadian and U.S. weather station. So we saw some of the outcroppings. So then the following day we went back to Resolute. On the way back the pilot said we were going to land at Winter Harbour but he said, he couldn't take a chance because one of his engines wasn't working properly. So we had to come back to Resolute. So when he got back to Resolute he started work on his motor and he found that the only thing to do would be to get a replacement for it, which had to come in from Winnipeg. At Resolute there was a company that was flying, doing aerial photography work, out of Resolute. A man by the name of Diverney, which I had know when I was in Ottawa with the Geological Survey was in charge of this. so a deal was made with him for him to take us in his DC-3 to continue the flight north to Isaacson and fly over one of these domes and on across Norwegian Bay and back to Resolute. And stayed overnight there again and saw some more of the sights around Resolute and then he took us back to Churchill and from Churchill we got commercial flights out.

BC: How big would these domes be that you were flying over when you talked about the domes you wanted to fly over?

CH: They were large. They had been eroded, they had. . .

[Another weird little gap in the tape]

#073 CH: I retired from Dome in the late fall of 1969. As a gift I was presented, they had a little reception for me and as a gift they presented me with 2 airplane tickets to Vienna, along with a cheque that would look after our expenses.

BC: What a lovely parting gift. It shows a measure of the respect they had at Dome for you and your work.

CH: Yes, thank you very much. These tickets could be turned in for others if so desired. As it turned out we used the value of the tickets for a different type of transportation but we went to Vienna and other places. We flew to Portugal, to Lisbon and there we took Eurail passes and travelled 9,000 miles on these Eurail passes for 2 months. We travelled

through Portugal, Spain, Italy, up to Vienna and on to Switzerland and then down to Germany, down the Rhine and up to the Scandinavian countries and up to Christiansoon??? where my father came from. And from there we went down, took the boat to Bergen from Christiansoon and then a train to Oslo. And then from there to Amsterdam and to Paris and from there to England. That's where our Eurail passes ended.

BC: So what an exciting time for you. The first long, long holiday I'm sure, that you'd taken in your many years as a practising geologist.

CH: I was going to say, Christiansoon is where my father came from so I chanced to visit his birthplace. Yes, this was the first time that I'd ever been to Europe.

#112 BC: But after you'd retired, you didn't quite retire from Dome then did you, because you did some special consulting work for Dome?

CH: Jack Gallagher was a man of many ideas. He had a knowledge or somebody had cemented a proposition to him, or the company was for sale, Crownlight Industrial Minerals. They had a deposit of diatomaceous earth out at Quesnel. Now diatomaceous earth is used for making fertilizer and there are other clay products from this deposit. He asked me to go out there and investigate this deposit of diatomaceous earth, which I did. I was out there on several occasions. It was broken up with small faults so it wasn't just straight forward mining. Another one of his projects that he asked me to investigate was the uriferous coal deposits, in southern Saskatchewan and southeastern Alberta. Now part of this was field work, which I did alone.

BC: All by yourself, you mean you didn't. . .

CH: Mapping. Well, mapping outcrops. With the use of a Geiger counter for detecting any uranium that might be present in the coal outcrops. After preliminary work of this type we made a contract with a drilling company to air drill, a special drill, to drill and sample the coals. This area that we undertook this investigation was around Willowbunch, about the central part of Saskatchewan, west of Weyburn, in the eastern part of the Cypress Hills. So that took about 2 months we were sampling, making samples. We would use a Geiger counter during the drilling as well. But the samples from the holes were taken at certain specific intervals and sent to the lab for analysis.

#152 BC: This took you pretty well full circle didn't it, in your career?

CH: Yes, as I told you at the beginning of this interview, my first field season with the Geological Survey was spent in this very area. From 12 Mile Lake east and we stayed at the same place, Willowbunch. Well, in 1929 it was a camp but it was just outside of Willowbunch. So this was started in 1929 and here I was, in 1971, as my last geological assignment.

BC: Still tramping around outside. There are not many people who could have that kind of a record. I think it's pretty wonderful.

CH: In a way it was unique that I should end up right there where I started. Of course, this project was a little different to looking for oil and gas but still it was a geological assignment that I enjoyed very much.

BC: I'm sure you would. Just before we finish the interview, I know we've sort of come full circle, I want to talk about some special people that you've worked with through the years.

CH: Oh yes. I think I mentioned Dr. George Hume's name to you before but I just want to say that I was associated with him when I worked for the Geological Survey. I started to work for him in 1931 as a student assistant. That association continued until I retired from the Survey after 14 years. He was a kind man with high moral standards. When I met him first he'd just lost his wife and his daughter very close together so he was a man that knew sorrow. He was a very energetic man, hard working and was an authority out here on the early development of the oil and gas. During the war he was assistant to the oil controller. I think I mentioned that to you before, when I was reviewing my work in the field. But he remarried shortly after I got to know him, in Ottawa, and he had 2 children with his young wife, married a girl much younger than he was. He had a long and distinguished service with the Geological Survey. Now when he retired from the Survey he accepted a position out here with West Coast Transmission. West Coast worked very closely with Pacific Petroleum.

#206 BC: And he worked with them until he retired from them I guess?

CH: Yes, I think he took a heart attack out here and I think he was still in their employ when he died.

BC: But he's one of the real pioneers in the Survey.

CH: Yes. He had done so much, I don't know whether I told you or not but one of his early assignment was the Mackenzie Valley and he spent 2 or 3 summers up along the Mackenzie River. Then he worked around Drumheller area, east of Drumheller. No, excuse me, I said Drumheller, I should have said Wainwright, in the Wainwright area of Saskatchewan. Before he did work in the foothills. So he had a wonderful background for doing his administrative work that he did with the government before he retired. There are others that I'd like to maybe mention that I had been associated with when I was with the Geological Survey.

BC: You can just talk about them, I think that would be wonderful.

CH: J. C. Sproule, who had an outstanding consulting service out here. He was at one time employed by the Geological Survey.

BC: Did you work closely with him at all, when he was with the Survey?

CH: No, not when I was with the Survey. It was after that I was doing some consulting work I did some report work for him.

BC: What kind of a man was Mr. Sproule?

CH: He too, was a hard working man. Very opinionated, if he thought something was right you'd have a hard time to persuade him that you had other ideas.

BC: Did you ever have an occasion where you and he had different ideas?

CH: No, not really, I shouldn't say. I lose heart very quickly when it comes to an argument. And Hugh Beech was an associate of mine when I was with the Survey. As a matter of fact, we shared an apartment together for 2 years I think, in Ottawa. He has since died.

#255 BC: Did he not write on the history of the oil in Alberta at one point?

CH: Oh yes. He worked for the Survey, matter of fact, did his PhD thesis on an area west of Calgary, in the Moose Mountain area, which is west of Bragg Creek. Then Dr. Wickenden, he's now retired and he lives on Vancouver Island, very close to Victoria. I was a very good friend of his when I was on the Survey.

BC: He worked for the Survey also?

CH: Oh yes.

BC: Did he spend all his life with the Survey?

CH: Practically. He was in charge here of their western office for a number of years. As a matter of fact, their offices were here in Calgary in the Customs Building, on 11th Ave. on 1st or 2nd St. East, they had their office there. Later on they built a new building out by the university and he was there. Maybe they built that after he retired, I'm not quite sure. And Joe Spivac, he was a good friend of mine too. He worked for the Geological Survey and I met him first up at the Caperney??? Gold Mine up in northern Manitoba. He left the Survey and worked for Mobil Oil.

BC: Was he working for Mobil at that time?

CH: No.

#295 BC: Oscar Erdman was one of your associates too was he not?

CH: Oscar joined the Survey just before I left. So I didn't see too much of Oscar in Ottawa but I became better acquainted with him out here, after he joined Gulf Oil Co.

BC: Did you work with him at all?

CH: In the field, no, just on a sort of social basis. I might mention another man on the Survey, Fen??? Henderson, who still lives in Ottawa and works for the Survey. I met him first at the University of Wisconsin, during the Depression years, in 1932. As a matter of fact, I had a chat with him last winter when we were visiting our son in Ottawa at Christmas time. I must mention Sternberg. I met him in 1929, he was collecting fossils for Dr. H. McLaren when we were mapping the area south of Shaunavon, in the Cyprus Hills area. I kept in touch with him over the years and he just passed away, he was over 90 when he died. And Dr. Bert McKay, he did a lot of work mapping for the Survey in around Rocky Mountain House area, and that section of the foothills. After he retired he worked for the Ottawa Historical Society. As a matter of fact, he became president of that and made sort of a second career, after he retired as a geologist. He passed away when I was in Ottawa at Christmas time. I think that I can mention quite a few more but. . . Oh yes, I might mention John Grey, who lives just a block and a half from us, up here on 10th St. I spent part of a summer with him up in the Ominika country, north of Vanderhoof. He was working for the Topographic Survey that summer.

BC: And you were with the Geological Survey?

CH: Yes. He was just a young student.

End of tape.

- CH: He didn't stay with the Survey very long, he joined the California Standard Co. And I think he worked with them, continued until he retired just a few years ago. As I say, I think there are others that I can mention but. . .
- BC: I'm sure in your long career there have been so many people whose paths have crossed with yours that it would be impossible to list them if we had 10 tapes.
- CH: There were a lot of them. It has been a fine group of people to work with and be associated with. Especially you see that in the geological society that we have here. When I first came out here in 1945 there were just a small group of geologists that would meet and discuss geological problems. Now the society has changed its name from the Alberta Geological Society to the Canadian Geological Society and our membership now approaches 2,000.
- BC: Quite a change. Looking back on your career Mr. Hage, is there any particular point that stands out in the work that you have done? That you enjoyed the most or took the most pride in, any one particular or 2 or 3 particular?
- CH: Now you've put me on the spot again. I've enjoyed. . . as I told you earlier, I took a course at the University of Saskatchewan, I graduated to become a science teacher but I never did teach a course in science after I graduated because it was right at the heart of the Depression and I couldn't get a school. So I say that I was a geologist from after the first field season in 1929 until I retired. And throughout all those years I must say that I really enjoyed doing geological work. I think I enjoyed the field work more than I did the administrative work. Because I like the outdoors and you were on your own and you have more freedom and you rely more on your own initiative and develop your own resources as it were, than administrative work. Now don't get me wrong, I always, even when I was working for the oil companies, I enjoyed working with the geologists and I have many friends still that are working with the oil companies.
- BC: It's a place where you could be continually discovering.
- CH: There was always something new you see. It doesn't have to be your own discovery but you enjoy hearing about what other people have been done. It's just like writing another chapter in the book.
- BC: It's been delightful talking to you about your career and you've written many chapters for others to enjoy. Thank you so much for your time Mr. Hage.
- CH: It's been a pleasure, thank you very much.