

PETROLEUM INDUSTRY ORAL HISTORY PROJECT TRANSCRIPT

INTERVIEWEE: Dr. Colin Hayter Crickmay

INTERVIEWER: Betty Cooper

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Tape 1 Side 1 – 54:00

BC: This is Betty Cooper speaking. I am talking to Dr. Colin Hayter Crickmay. His address is 525 Salem Avenue Southwest in Calgary, [Alberta]. Dr. Crickmay, could we start our interview by getting some of your background, like when you were born, where, and a little bit about your family.

CC: Yes, I think so. I was born in Vancouver, the 6th of April 1899. I was brought up in Vancouver and in the general neighbourhood of Vancouver. Actually, my father had a property in North Vancouver which is a separate city now. That's where I grew up.

BC: In those days, North Vancouver was a pretty small, little village, I would think.

CC: Yes. As a matter of fact, my father's house was THE first genuine residence other than Indian huts that was put up over there.

BC: What part of North Vancouver? Where was it located?

CC: ??? The location was 15th Street East. Now that's about half way up the seashore to the mountains.

BC: So you grew up in the mountains?

CC: Yeah. Coal Harbour was...

BC: What was the name of it, do you remember?

CC: Chesterfield School. The only other school of any prominence that I went to was ??? [unclear] W. B. Lord Prichley ??? School in Victoria, BC. I went as a boarder.

BC: This would be like for high school?

CC: Yes, it would be the, as far as I was concerned, the equivalent of high school. They call it the University School in a rather free and easy way because it wasn't anything like a university. In fact it started in with the equivalent of grade one, in fact there was even a kindergarten class there.

BC: What did your father do?

CC: He was a custom builder in Vancouver. He had to go from our home in North Vancouver over to Vancouver every day.

BC: Did he go by ferry in those days?

CC: Yes, he went by ferry.

BC: Did you have any brothers and sisters?

CC: Yes, three brothers, two sisters.

BC: Were they older or younger than you?

CC: They were all younger. One of them is still living, my oldest sister who is next to me in age, just two years younger than I am.

BC: She is living where – in Vancouver?

CC: No, not in Vancouver. Out in the coastal area, somewhere between the town of Richmond and the city of Vancouver.

BC: Lovely part of the Fraser Valley. You went to the University of British Columbia...

CC: Yes.

BC: ...and when did you enroll in university? What year?

CC: 1916.

BC: And what area did you originally enroll in?

CC: Faculty of Arts.

BC: At that time, had you decided you were going to be a geologist?

CC: No. No. That was decided later on, mostly because I met good friends among the mountain climbers, which was one of my interests, and some of them were interested in geology. They would point out geological things to me as we climbed through the hills, and that roused my interest in the subject. Before I was, no let me see, I made a mistake here. My university career was broken into by WWI because I had reached the age when I might be drafted. So I thought, well I won't wait until I'm drafted; I'll jump in and enlist. So I enlisted in the 6th Field Company Canadian Engineers and I was with them for about eight months. In fact, I was already put on a draft to go overseas when news came that the war was over and that was that.

BC: So it would be 1918 that you enlisted? That's when you had come of age.

CC: Yeah. In November 1918. I was...what do you call it...

BC: ...demobbed, I guess. (laughter)

CC: Yes. It turned out, so to speak. I went back to college again just as soon as I could (0:05:33)

BC: And did you continue on with your Arts program that you had started?

CC: Yes. Well, I don't know that I had any program. However, I was in the arts school, as it was called, and simply added the suitable courses to my plan so that I could become, in due course, a geologist, knowing that I had to do post-grad work to get anywhere.

BC: So was it really in your university years that you did a lot of mountain climbing? Or was it from an early age?

CC: Yes, I think it was in my university years. I hadn't done any climbing, to speak of, before I was a college student.

BC: Having lived on the side of a mountain, you probably didn't... it didn't attract you quite the same as when you got away from it.

CC: Well, I didn't have any acquaintances who were interested in that kind of thing, so I was just attracted to a lot of things in the meantime. But when I went to college, I found there was a group of people interested in climbing mountains.

BC: Which mountains did you climb? Were they all the Coastal Mountains?

CC: Yes, part of the Coast Range, the mountains immediately back of North Vancouver. Grouse Mountain, Crown Mountain, Mount Seymour and various names of that sort.

BC: Now when you got out of the University of British Columbia, when you graduated with your B.A., with a major in geology, I guess is what you graduated with?

CC: No actually, I wasn't majoring in geology. I took enough geology to get pretty well informed so that I could go into graduate work without any difficulty. But my major field I had already declared at an early stage as biology so I was taking zoology and botany and things of that sort.

BC: Did you find that these two complemented each other when you decided to devote your life to being a geologist?

CC: Well, yes. Since I was interested in the science in depth of living things, both plant and animal, when I got into geology, I found that that can be quite a useful field, the field of paleontology. So I went in for that in a large way, the study of fossils.

BC: Where did you take your master's?

CC: I never took a master's degree.

BC: You went straight into your PhD program?

CC: After I got my B.A., I went straight into a post-graduate program leading toward the PhD degree which I finally got from Stanford University. I had already spent my first year of post-graduate work at Yale University in the state of Connecticut. From there I went to Stanford University to take work under

a professor who was an outstanding scientist and who I had heard of in a very favourable way. I decided, well I'd throw my allegiance toward him and hope he takes suitable care of us students, which he did.

BC: What was his name?

CC: James Perrin Smith.

BC: Who at that time was very well known?

CC: Yes.

BC: That is why you... Why did you start at Yale then? Why didn't you go straight down to Stanford? Or were you not able to?

CC: Well, I went to Yale first because I was influenced by a Yale, former Yale student who was in the faculty at UBC. He advised me that Yale was one of the best universities in North America to go to for post-graduate work. So I went there, and they favoured me to the extent of giving me a scholarship which paid my tuition costs.

BC: What would the tuition costs be at that time, do you remember?

CC: Roughly \$200 a year.

BC: And how did you finance the rest of it? Did you work in the summers as people do now?

CC: Yes. Before I even left the University of British Columbia, I made a connection with the Geological Survey of Canada and was able to get summertime work with them which didn't pay very much. Nevertheless, it was interesting and gave me a way of applying what little I knew about geology to the work that was being done in their surveys.

BC: Do you remember the first year you worked with the Survey?

CC: Yes, that was in the back of Britannia Mine, British Columbia, Britannia Mine being right on the coast. We worked back in the mountains from there. We didn't cover any great area but it seemed enormous to me at the time because it was mountainous and hard to get 'round, you see.

BC: What year was that?

CC: That was the summer of 1919.

BC: Who was the head of that party at that time, do you remember?

CC: Dr. Schofield.

BC: And the following year, where did you work with the Survey?

CC: In the country inland from the little town of Stewart, BC which is way up north, near the Alaska border. In fact, we were frequently going across the International Boundary from Canada into Alaska

because we were right on it, so to speak. Some places to get to certain destinations where we had to go to look at something, we had to go through the page ??? of Alaska to reach the desired destination.

BC: Were you with Dr. Schofield at that time, too?

CC: No. As a matter of fact, although Dr. Schofield was in charge of the work back at Britannia Mine, he was not with us in the field to speak of, although he paid us a couple of visits. But that's all. We were under a temporary chief who was just a young fellow who had never had a chief's job before. We did what work we could and turned in notebooks at the end of the season, covering the ground we'd seen. Very much the same thing up in the country back of Stewart except that the boss of that party was just a little bit more of a job. His name was Dr. Hanson. We worked all summer under him. He was with us in the field right at the start. That was very similar work and very similar sort of country, very mountainous. In fact, even rougher country than the Britannia Mine area because back of Stewart, that went further north and we ran into things like permanent snowfields and glaciers and whatnot. It was quite something that you had to take great care of or you'd never come back alive.

BC: What was it like working out in the bush in those early days? That's sixty years ago. What kind of equipment did you have?

CC: All I had was a notebook and a geologist's hammer. Another thing that I made a point of taking along was a bottle made of plastic, transparent material, I don't know what it would be called, and I had that filled with a strong acid with a very powerful poison added to it. The idea was if a bear ever chased me up a tree, why he'd get that right on his nose and into his eyes.

BC: Did you ever have that experience?

CC: I never had it. But I carried the stuff with me all the time. I said I'm not going to be killed just yet a while, by a wild animal. There were such things as bears, black bears, brown bears, and grizzly bears up in that country. I was generally frightened of them so I was glad I had taken this along. But I never did have to use it.

BC: Did you find many other animals around there that you perhaps wouldn't see the same today because it is getting a little more civilized? Did you see grizzlies yourself?

CC: Yes. Not many, mind you, just one or two in the whole summer.

BC: What would you wear? What kind of clothing would you have available? You didn't have down-filled jackets in those days.

CC: No. As a matter of fact, it got very warm up there in the summer. You didn't have to dress as you would, let's say, if you were on the arctic ice or anything of that sort. It was very warm in the summer. It got cold toward the end of the summer, and it rained almost continuously in the month of September. Half of that time I was still up there. I had very much the same clothes that I've got on right now. Dark trousers and ??? shirt and a waterproof coat over that, and a hat to keep a person's head dry if he's rained on, which I was plenty!

BC: What kind of boots did you wear?

CC: Mountain climbers' boots, that is they were about 12" high, I think they were, 12" high with, they came about half way up a person's leg, and very strongly made, the sole and heel...

BC: They may have had those hobnails?

CC: Yes. Some of them have. ??? wouldn't slip and slide and hurt himself.

BC: Climbing boots today seem only to be ankle height, the climbers you see, they just seem to have a lower boot. But yours were the tall hiking boot.

CC: Yes. They were very useful because I had to walk through a lot of snow that summer. Actually, there didn't seem to be any season of the year when it *didn't* snow up there. Mind you, it also rained, but now and again if a sudden very cold bank of air came down from the north, rain would turn to snow. We had snow on our tents so steady that now and again we had to go out and shake the tent to make the stuff fall off.

BC: You packed your tent with you too, of course.

CC: Well, we used pack horses to carry our equipment.

BC: Did you walk then or did you ride through the bush?

CC: I always walked. Too much nuisance riding horseback. All and well if you're making a continuous journey, but when you just move from spot to spot to spot to spot and having to stand and look at things and crack rocks and measure structures in the rocks and so on, you've got to go on foot all the way to it.

BC: It would be difficult, would it not, in country like that, so overgrown with trees and bushes, when you were looking for a surface indication, it's sometimes hard to see the rock for the trees.

CC: Well, in a way yes, 'though I don't remember anything different. I found practically everything I was sent out to look for.

BC: What were you looking for up there?

CC: Well, rock outcrop, you see, which I had to locate on a map and describe in my notes and bring them back to the main chief to...

BC: What was the purpose of the survey – just to map the country, or were they looking for mineable minerals?

CC: Well, I didn't really know what the purpose of that particular survey was. It was just my second year on that kind of work and I was too young and inexperienced to know what it was all about. I just gathered all these facts for them and turned them in. That was that. Although I imagine what they wanted was a description of the occurrence across the country of the area's different rock formations and possibly relationships with ore deposits that might still to be found.

BC: Certainly behind Britannia Beach they would be looking for an extension of oil deposits.

(0:21:20) BC: Now after... When you went to Yale, you went there for the one year. Then the following year in 1923, were you back with the Survey again? Did you work with the Survey again?

CC: Yes. I went out with them every summer until 1925, I think.

BC: Where were some of the other... Was it always in B.C.?

CC: No, no early in my connection with the Survey, they sent me out to southern Alberta. I spent two years as an assistant on a party which worked southern Alberta. Finally, the Geological Survey gave me a job to do on my own which gave me the opportunity to write my own report. That was the summer of 1924.

BC: Where were you then?

CC: 1923 and 1924. Harrison Lake area of British Columbia. I wrote that up and made my Doctor's thesis out of that as I wrote up a report for the Geological Survey and I wrote up a report to turn in to the Stanford University faculty to [determine] whether or not I was ready to begin the degree.

BC: What were you particularly looking at in there? What was the thrust of your thesis?

CC: That was an area, let's say, here's the Coast Range. Harrison Lake is east of the Coast Range but it's still among mountains, what they call the Cascade Range, in fact, an enormous length of forty miles long and average two and a half wide. It has a very complicated geological structure of the various ancient formations coming to the surface. The old Triassic formation comes up here, then next to it the Jurassic formation, great thicknesses of volcanic rocks and black slate and such right on top of a great green sandstone formation of Cretaceous age, that's the youngest one that's in there. They all had fossils in them and, of course, that gave me suitable work [tape goes blank for 10 seconds] ...given a scientific job on which to earn my degree.

BC: You'd certainly be very busy with that variety, wouldn't you?

CC: Yes.

BC: Could we step back a bit into your time in southern Alberta? This is before Harrison Lake.

CC: Yes.

BC: What part of southern Alberta were you working in? Right along the border?

CC: Well, we were supposed to go down as far as the border but I hardly ever got that far. Generally, some other person was sent down there. I was kept mostly on the rivers. We were not working as far north as Calgary. Lethbridge was our centre from which we went out after organization of the plans for the fieldwork. We spent some time in Medicine Hat and surrounding country. It was that area that was about as far north as... well just short of the Bow River in this area. But down there at Medicine Hat and Lethbridge, the entire river between those two we mapped. In fact, I went down the thing on a raft.

BC: What an exciting time.

CC: Then they got us some kind of a boat which wasn't much of a boat, I'll admit, but it was a good more manageable than a raft. It was very useful going down. We'd see something on the other side, let's say, and we'd paddle across and make a landing, examine the rocks there, and get notes, and collect specimens if necessary.

BC: Were you looking for oil and gas deposits at that time?

CC: I think they probably had that in view, but we weren't specially instructed to do anything of that sort.

BC: Did you find any indications in the areas you were working that there might be oil deposits?

CC: Only in places where oil had already been discovered, that is there were several places in southern Alberta where oil had already been touched. We had to locate those spots very carefully on the maps so that they work in with the geological scheme that had been worked out.

BC: Who was the head of the party at that time? Who was your party chief there?

CC: Probably, the first year I was out there, we had a party chief who should never have been employed in such a job. He was a very poor type of man. His name was Whittaker. All he did, I think, was upbraid us and quarrel with us and make life miserable for us.

BC: Was he a geologist?

CC: Well uh, of a sort, yeah. He was a very poor type of person. But to have a job of that kind, he should never have had a gang of gentlemen working under him because anytime that he wasn't listening, all we said to one another was what a beast he was.

BC: Who else was working with you at that time? Do you remember any of the other people that were in your party?

CC: I remember them although at the moment I can't recall their names. They were just young fellows, young students like myself. The second year I was in southern Alberta, we had a much more putable ??? just in charge. He had the name of William Dyer – D-Y-E-R. He was a good man to work for. He took care of things in a much more sensible way and he found out a great more and he used us to find out a great deal more so that it was very much an improvement over my first year's experience in southern Alberta.

BC: What part of southern Alberta were you in the second year?

CC: The same general area. It was considered we hadn't done it up well enough the first season in there, so we were sent back. And this fellow, Whittaker, I don't know what on earth happened to him. Anyway he died somehow or other. And Dr. Dyer was appointed to take his place.

BC: So it was much better for you as a young geologist. You felt you learned a lot from Dr. Dyer, did you?

CC: Yes.

BC: Did you keep up your contact with him through the years?

CC: Uh yes. We... Anytime I published a paper, I'd send him a copy. And he used to send me copies of his publications. As a matter of fact, he didn't live very long. He got some ailment which knocked him off in his forties, I think.

(0:30:17) BC: You were in Harrison Lake in 1923. Now your last year with the Survey, was it 1924 or 1925?

CC: 1924

BC: And where were you that last year?

CC: That's when I worked Harrison Lake.

BC: That was Harrison Lake. But then the summer of 1925, you were going down to Stanford University at that time. So did you go down and work at the university during the summer?

CC: I don't... No, I travelled around. I bought an automobile and travelled around the United States and parts of western Canada. [muffled] ...anything my curiosity represented to me worth going after.

BC: You had a little holiday for the first time in a number of years. By this time you had been living away from home most of the time, I guess. Were you?

CC: Yes, to quite an extent, yes.

BC: When you went down to Stanford, can you remember any of the – other than the name of the professor who “drew” you down there – can you tell me a little about your time in Stanford? Did it live up to your expectations?

CC: Well, in some ways yes, and in some ways, no. Some of the professors there were bad as the devil [??? 0:31:49]. However, the head of the department was a very good man, Professor Blackwelder was his name. And I must admit I learned a great deal from him. He was quite a scientific genius. He didn't seem like somebody who should be *directing* a university department. I mean, he was much too scientific for that. I said to myself, even though I was just a student at that rate, “He's being wasted. He's not an executive, he's a scientific genius.” That was just my own private view. Nobody else agreed with me, except one other student there who thought very much the same.

BC: Did he stay... He stayed in an academic career throughout his life?

CC: Yes.

BC: When you say he influenced you a great deal and you learned a great deal from him, in what way do you think that he influenced your future career?

CC: Well, he would point out to me, again and again, that just taking what is commonly believed was not a good policy. Geologists think such-n-such a thing; well then, think about it yourself and see if you can come up with something different. And then, when you come up with it, try a different conclusion. Then

start to attack that conclusion. Try to knock it to pieces. If it doesn't fall to pieces, then it is something good, perhaps. You should write it up and tell your geological public what you have found, what you think you've found.

BC: You did this throughout your life, too, didn't you?

CC: I've been doing that ever since, yes.

BC: How many papers have you published all together?

CC: Oh something like just over eighty.

BC: And how many of those would you say were perhaps at odds, to a certain extent, with generally believed ideas?

CC: I think most of them were.

BC: Seventy-nine out of the eighty, eh?

CC: I mean, not outstandingly so, but here and there I would find some idea that was not generally accepted. Well, I challenged the geological world to do something a bit better. Now and again they tried it, but pretty often they tended to regard me as a sort of scientific rebel, not worth taking into account. So they just let me go.

BC: After, were you really ahead of your time, do you feel, Dr. Crickmay?

CC: In some ways yes. Now and again, I'd meet somebody who would pay me the compliment of saying, You're ahead of the whole science in that particular respect. But more often than not, people would refer to me as that Old Rebel Crickmay. I was very tired of hearing that response.

BC: And you probably got it from the time you were quite young because you started publishing quite young.

CC: Yes. Well, let's see, I was twenty-six when my first paper came into print. There was nothing controversial about it because it was very simple.

BC: What was it about, do you remember?

CC: Well, it dealt with ??? (0:35:47) fossils.

BC: In the statements that you put forth, Dr. Crickmay, in these controversial statements, can you think of any that were sort of landmark statements which have since become accepted where they weren't accepted then?

CC: Well I don't know about acceptance. I don't know to what extent the ideas that I'd given out have been accepted. Nobody's really come out flat and strong and said, "This is a great advance that we have to accept." I've never had that.

BC: Maybe you're still too young.

CC: (laughter) Eighty-three!

BC: It takes a while, you know, to be recognized.

CC: I've heard several older geologists speak of geologists who were much older than they were, and say, "Right until the last they were there, advancing the thinking or knowledge that now they are."

BC: Takes a long time in the scientific world, doesn't it, because you have to do as you did. You had to examine and deduct, and then try to tear it down, before you come to a conclusion.

CC: Yes.

BC: When you were at Stanford, did you stay there summer and winter, too, until you got your PhD or were you away in the summer time?

CC: I was away always in the summer. As long as I was working for the Geological Survey of Canada, I went straight to the area where they assigned me a job and worked at that for the summer season, then back to Stanford University again in September to go through the college year.

BC: Were there not Canadian schools that would offer the same sort of post-graduate work at that time?

CC: Well, there were, but there was much less variety of interest in the science of geology in this country than there was in the United States. Toronto was about the... University of Toronto and McGill were about the only universities that were on the par with the universities like Stanford and Yale, Harvard, Chicago. So if you got opportunities by doing grad work in the United States that you hardly get in this country.

BC: Which is why you went down.

CC: Yes.

BC: You finished Stanford in 1925 with your PhD.

CC: Yes.

BC: What happened to you then?

CC: Well, for a year I got no appointment anywhere. I spent that winter in Vancouver doing scientific work on my own.

BC: What sort of work would that be?

CC: Well, there were various things that had been left undone while I was still a graduate student. And I finished up several of them and got them off to prospective publishers. But immediately after that, I got

an appointment as a university teacher. I was made assistant professor at the University of California at Los Angeles, UCLA we call it. I was there for four and a half years.

BC: Was it fairly new then, was the geological department you were teaching in?

CC: Yes. The geological department was brand new. UCLA existed for two or three years on a very small scale, but they were expanding enormously every year. My being there was the result of the expansion. They appointed a geologist from the eastern United States to take charge of the department. He looked around, made enquiries, and he heard about me and offered me the job. That's how I got it.

BC: You didn't have to go around the universities, looking for employment. It came to you, really.

CC: Yes.

BC: Had you thought, as you were going through geology, that you would end up teaching it? Would that have been part of your scheme of things?

CC: No, I felt sure that I would join the Geological Survey as a field geologist. But I don't know what was the matter, but they never seemed to want me permanently. So when I got a chance to take an interesting job teaching geology, I took it.

BC: You did work for them for a number of years though, the Geological Survey?

CC: Yes.

BC: You never asked them why they wouldn't give you permanent employment?

CC: As a student, I used to get work with them every summer just for the summer field season. I think they offered me, or tried to offer me a job with them after I was down there at UCLA as a professor. They didn't push it very hard. I think it was sort of a faint suggestion came through if I wrote a nice letter, I might perhaps get considered. But I couldn't be bothered. I was tired of fooling with them, so I just let it go and kept on with my teaching down at University of California at Los Angeles.

BC: At that time there would be quite a lot of work in the oil business down in California, would there not?

CC: Yes.

BC: Was this part of your responsibilities at all as a geology professor?

CC: No, I never got into it back then. I was always interested in pursuing some scientific problem while I was a professor, so every summer I spent somewhere in the field.

BC: Would this be in the United States during those years that you were with UCLA?

CC: Partly, yes. Largely, in fact. One of my great interest was in the mountains of northern California, a special area in there which had been worked on about eighty years previously and had been left sort of a blank after that. I was determined to get in and straighten things out, and that I did.

BC: How thrilling to be able to do that. What was it that had been left undone?

CC: Well, none of the fossils that had been found there had been scientifically described as yet. The geologists who found them, they just sort of let it go with a tentative application of possible names on the fossils so as to make up some kind of a list.

BC: Where they sort of stored somewhere?

CC: Yes they were. They were in the hands of the United States Geological Survey, Washington DC. But what I determined to do – oh, by the way, some of them, a great number of them, had been lost. So that determined me to go and make my own collection, which I did. And I spent three summers altogether in that special area in northern California.

BC: Were you under the United States Geological Survey? Were you working for them then, or were you on your own?

CC: I was on my own, except that the State of California gave me a small money grant to help things out.

BC: At about this time, you got married too, did you not?

CC: Yes. As a matter of fact, I spent my first year at UCLA and at the end of that year one of my students became my wife.

BC: Is that right!? Well! So she was a geologist, too?

CC: Well, she had never taken any special training in geology, but she had a course or two in it. I had been given down there the job of taking all the students, all the beginning students in geology, out on three fieldtrips each semester – the fall term and the spring term. I had to take out something like 200 students, but you can't take them all out at once. You take out say two busloads of students, show them various things, and then back home again. Get them to write up what they saw. So I met all the students who were taking geology.... [tape goes silent at 45 minutes]

Tape 1 Side 2 – 36:00

BC: ...before she was married?

CC: Matthews.

BC: Matthews. And her first name?

CC: Mary.

BC: Mary Matthews. And she was from California, was she?

CC: Well, she was a native of there. Her folks had come from Pennsylvania to Los Angeles. That's why she was in the University of California at Los Angeles.

BC: Now sometimes when a geologist gets married, a geologist, like yourself, who's used to taking every summer trekking up and down the mountainside, that activity either lessens or ceases. You continued, obviously, going out on geological surveys after you were married. So did your wife come along with you?

CC: The year we were married, we travelled around a great deal. I had various areas that I wanted to look at with a scientific point of view, following up the B.C. coast. So she came along. We went by CPR steamer, hired a small boat, and rowed around the islands to the north end of Vancouver Island and the mainland coast.

BC: You rowed around them?

CC: Yep.

BC: Wasn't that a little dangerous?

CC: Yes. Well no, it wasn't dangerous because we were not exposed to the ocean, you see. We were still in the Inland Passage. I collected a whole lot of material there and wrote that up, and that became the basis of a scientific paper. Later on the same summer, we went up into the interior of British Columbia and travelled almost a thousand miles by car on the highways through the interior and then back again to Vancouver. That meant visiting a number of places where geological observations could be made.

BC: Such as? What places would you touch in that part of the country?

CC: Notably the area around the small town of Edgemoor.

BC: What was so particular about that?

CC: Well, sedimentary formations in there had a lot of fossils in them, and ??? knew for a long time that the Geological Survey of Canada were thinking about or seemed to think. So I said, I'm going to show them what can be done! So I got huge collections from there and wrote it up and the State of California published it for me.

BC: That would have been... No wonder they didn't ask you back. You were too independent. (laughter) With those collections, because you'd collect all these fossils, now what happened to that collection after you had made your survey and you had written up your paper? Where are they housed?

CC: They are almost entirely in the National Museum of the United States.

BC: Is that in Washington D.C.?

CC: Yes.

BC: How did they get there?

CC: Well, I took them with me when I went back down to California and I studied them a little bit more in my spare time down there, which you always had a lot of when you were a university teacher. Finally I

thought, these have got to be put in a place where they're safe. And since I had more or less broken relations with the Geological Survey of Canada, people I naturally worked through or acquaintances that I had recently made in Washington and asked them if they wished to receive my collection because it wasn't in safe keeping. And they assured me that they would, so I sent them along.

BC: Have you ever gone to visit your collections?

CC: No, I haven't.

BC: It would be interesting...

CC: I haven't had the opportunity to.

BC: Wouldn't it be interesting to go and look at them again?

CC: It would be, very.

BC: Were there any particular findings that you found around Ashcroft that had not really been known before?

CC: Yes, for instance it was not known, it was not in print for instance, that the Jurassic formation, that is the formations of Jurassic age, were ??? (0:05:10) separable and could be interpreted as to what they meant, their fossils described, and all this kind of thing. So that's what I did. I made the theory around Edgecroft much better known than it had ever been known before.

BC: How exciting for you.

CC: It was.

BC: Did you find having your wife around, did she become your geological assistant then?

CC: (laughter) Well, in a way yes.

BC: That sort of relationship would have to get a lot more work done. Perhaps you had a built-in assistant there with you.

CC: Well, I had at least companionship.

BC: Right. You continued your life, as always throughout many of your geological expeditions, she has spent part of the time, and I believe your family has gone along, too.

CC: Yes. On various occasions, we've had one or another of the children.

BC: Your first child was born. James was your first child?

CC: Yes.

BC: He was born in 1928, so you would still be working up in the northern California that summer on this, wouldn't you?

CC: Yes.

BC: Surely he didn't go as a baby?

CC: Well, when we first took him there, let's see, he was born in May. I worked that summer up there alone, well not entirely alone, I had a young fellow with me from the university. But the following year, my wife came along and took our eldest son who was a bit over a year old. But he was very capable at getting around, in fact almost too capable. It was in some ways a dangerous place there, poisonous snakes in that country. We got a good place to camp where it was free from wild creatures of any sort. But we didn't want him going off to the edge of this area and getting into the bush where he might have been bitten by a snake. So if my wife was very busy doing something, cooking or washing clothes or something of that kind, then he just had to be tied up to a tree.

BC: (laughter) Your youngest geologist didn't become a geologist?

CC: No, he went into an entirely different type of work.

BC: Have any of your – you have five children – have any of them gone into the scientific area? Geology?

CC: We have a son who became an engineer, but none of them gone into geology.

BC: Two in the family is enough. Now when you were at Stanford, you were really on your own each summer. What classes, what groups... Were you teaching undergraduate students at Stanford?

CC: No, no I never did any teaching at Stanford.

BC: I'm sorry. At U.C.L.A. I'm sorry. At U.C.L.A. did you have undergraduates or graduate students?

CC: Actually, I worked with the graduate students, but most of my work was teaching undergraduate students. We had such an enormous number that were interested in general geology that the head of the department couldn't take care of the entire crowd, so that some of us, notably myself, had to accept two or three classes and lecture to them on general geology, a beginning course.

BC: Did you enjoy teaching?

CC: Yes.

BC: You went from U.C.L.A. to University of Illinois?

CC: Yes.

BC: You were an assistant professor there also?

CC: Yes.

BC: Why did you change?

CC: Frankly, because the last year we were at UCLA, the weather was so hot that I said to myself, I can't stand this climate any longer. I almost baked to death. In fact I used to spray myself with water from the garden hose just to try to keep cool. This was weekends when I was out of school. At school I just suffered from the heat. For another thing, the University of Illinois came through with a very great increase of pay, and I fell for that and went.

BC: Did they approach you to come? Did they recruit you?

CC: Yes.

BC: What were your responsibilities at the University of Illinois?

CC: Very much the same sort of thing. I had to teach a number of beginning classes of beginners in geology. Then they knew that I was an expert on fossils, so they had me take care of that subject also.

BC: During the time that you were there, or indeed when you were teaching at UCLA, did you have many Canadian students go through your courses?

CC: Not really but there were several.

BC: Are there any that have since come back here that you can remember, that you can put a finger on and say that have done well in the geological area up here?

CC: No, I don't think I can.

BC: Now, in the summers, you must have been working again in the summers doing work on your own, or did you do some for the University of Illinois?

CC: No, I didn't do any summer work for them. But I used the summer for either field work or just plain family.

BC: When you travelled, did you find you always travelled looking at the rocks? Were you able to take your eyes off them once in a while? Did you travel to see another rock formation or did you travel to see the world?

CC: Yes, for instance, we went, on one Canadian trip, we parked at Yellowstone National Park and did a great bit of traveling around there, looking at rock formations and also at the springs and waterfalls and one thing or another, which were interesting to me, very much.

BC: Doctor Crickmay, you were at the University of Illinois until 1933, which was smack into the middle of the Depression. Then you left there and went up to Mission [in British Columbia] to farm. Why?

CC: Uh, the head of the department at University of Illinois, head of the geology department, decided that he didn't have enough money to go on paid leave, so he kicked me out.

BC: Good heavens! And there was nowhere else that you could go?

CC: I made various enquiries around as soon as I knew I was in danger of losing my job. Mind you, that was the depth of the Depression, 1933. Everything was at its extreme low.

BC: And you didn't get tenure, of course. You hadn't been there long enough.

CC: No. So I just had to get out and find something to do. And since I had been brought up in the area where we had all kinds of farm animals to look after, I thought that might be a simple occupation for me to put in time at. I had enough money to buy a small farm.

BC: What size was your farm?

CC: Fifty acres. We didn't like the house that was already on it, so we built another house. Built a little barn, tore down the old one and decided just to keep that place where we could stay alive and look after our children.

BC: And you had how many children? You had three by that time?

CC: Uh, we had two children by the time we went to the farm. The other one was born soon after we took over the farm.

BC: Why would you choose Mission? You had been down in the States for so many years?

CC: I'm not sure why I chose that area. I think it was partly because there was quite a lot of adverse feeling in the United States community against Canadians who were trying to get some advantage out of the United States at a time when everybody was literally broke. Nobody had any money to spare. So I said to myself, I'm not going to weigh on them. I'm going to look after myself. When I found I could get this fifty acres fairly cheaply.

BC: What was "fairly cheaply", do you remember what you paid for it?

CC: I think just under \$2,000. In any case, I'd used up most of my savings, of course, but I still had enough so that we weren't ??? (0:16:16) dying of starvation or anything of that sort. I also had a little ambition. I wanted to ??? got brown Swiss dairy cattle from British Columbia.

BC: So you were ahead of your time by about 45 years.

CC: So that's what I did. I made the acquaintance of several breeders of brown Swiss in the western States, the middle western States, I should say, because I think that state of Iowa was just about as far west as I bought any dairy cattle. Anyway, I had them shipped out there and set up where to look after the cows and hogs.

BC: Did you have a dairy farm then? Did you have enough that you... How many head did you have?

CC: I think we had ??? figured it out about four cows milking at any one time.

BC: So what did you do? Did you start your dairy then? Or did you sell the milk direct?

CC: I hitched up with the, we call it the BC Milk Producers Association. All I had to do was run the accumulation of milk out to a landing stage at the corner of two main roads, and their trucks picked it up and shipped it out to Vancouver or wherever their headquarters was located. Maybe it wasn't in Vancouver; maybe it was in Westminster. Anyway, that brought us in a few dollars every month.

BC: Why did you want brown Swiss? You were ahead – I said 45 years, but of course that's an exaggeration. But certainly the exotic breeds of cattle had only been brought in, you know, certainly in the last, say, twenty years, into Canada to any extent. Why did you want brown Swiss?

CC: I was just fascinated by what I heard about them as desirable dairy cattle.

BC: Did they come up to your expectations?

CC: Yes. Yes, I thought they were very fine.

BC: Were you not frustrated, as a scientist, to become a farmer? To retire so young, 34 years old and already you were into farming?

CC: Yes I was. As a matter of fact, I used to write a book of scientific stuff on the side and store it up and get it ready for publication sometime if I ever found anyone who'd be interested in it. But I said to myself, well I've got a young family. I've got to look after them. This is one way to do it without running into the misery of the pain in the unpleasant conditions in a small town where things were going against you. It seemed very pleasant out there on the farm we had, so we lived there until another opportunity came along after conditions had improved. I got back into scientific work again.

BC: With the coming of the war, you didn't have to get back into geology during the war time at all?

CC: No.

BC: Because they were doing a lot of, well certainly using geologists to look for oil. The geological survey, of course, was doing a lot of that.

CC: Yeah.

BC: And some of the oil companies were looking. You didn't try to get into that?

CC: As a matter of fact, I did. I got an opportunity – I can't remember what year that was – in any case, I got an opportunity with some American enterprisers who came up there who wanted a Canadian geologist. At that time I was considering giving up farming and going back into geological work. What I did was take a job at Equity Opportune ??? (0:21:27) that lasted the summers.

BC: Who was this with? What company?

CC: I can't remember what they were called. In fact, I don't know whether I ever really knew their name. They were a weird outfit. They were always working, playing tricks and so on, and they ??? (0:21:47) I think.

BC: Did they pay you?

CC: Oh, they paid me. They never cheated me.

BC: But where were you working? What part of the country were you surveying?

CC: To start with, we went up into norther British Columbia. Then they had me over here in Alberta.

BC: Whereabouts in Alberta?

CC: Well, all over southern Alberta. Just tearing around in automobiles at every which place ???
(0:22:19)

BC: What were you looking for? Were you looking for oil at that time?

CC: Yes.

BC: Did you find any evidencing of oil deposits?

CC: Yes, that's why they have several places, too. And whether they developed it or not, I didn't know. They finally fell out with me, and at the same time I got an offer from Imperial Oil which I said, now this is going to be good, I'll take this, and get away from these ??? Which I did. I stayed with them until retirement.

BC: You started working full time for Imperial, did you?

CC: As a matter of fact, my first work with Imperial was just summertime employment. But then that was recognizable because I said I had a farm out there at the coast and I've got to spend the winter there. But their boss here finally talked me into selling my farm and taking on permanent employment with them, which I did.

BC: What year [was it] when you finally became a permanent employee? Before or after Leduc?

CC: After. I think I've got it down there.

BC: Yeah, I think 1948 is when you sold the farm. Here it is: Moved to Calgary, 1948.

CC: That's it. That's when I moved.

BC: And this is when you moved right to this house?

CC: Yes.

BC: Now, you worked with Imperial. So I'd like to go through some of your Imperial years, if we could. You worked with them in 1945 as seasonally, and 1946 and 1947 as summer work, right?

CC: Yes.

BC: Now where you working in 1945, for instance?

CC: Peace River.

BC: In Peace River?

CC: General Peace River area. Large piece of territory covering there. We had special transportation. After all, they owned several planes and they'd pick us up on such-n-such an area and fly us quickly to another place with our camp equipment, we'd work there, and then they'd fly us out.

BC: This is all surface geology work that you were doing?

CC: Yes.

BC: Did you have a crew? Is this how you went out? Or was it just you and an assistant?

CC: I generally had two assistants.

BC: Can you remember any of them, like in 1945. Do you remember who your assistants were?

CC: I just can't recall.

BC: That's a long way back.

CC: I just can't recall their names.

BC: No, no. You had a number of assistants, I'm sure, who got their start with you. Did you have school assistants? Was this with students coming out or studying? Is that who you used as assistants?

CC: Yes, they were people in college who had applied for work of that type during the summer.

BC: Now, you were in Peace River in 1945. Can you recall any particular things that happened to you then? Any little anecdotes on discoveries or indeed the camping along the way, what it was like? What was the Peace River like in 1945, in the middle of winter, or middle of summer?

CC: I don't know exactly how to make it sound distinctive in any way.

BC: Was it distinctive?

CC: Well, that's it. I just don't... It just seemed like we got pretty well the same old stuff, you know, and then go along the banks and tributaries and those kinds of things.

BC: How did you travel?

CC: Mostly with the help of a small canoe-type of boat. We would be met by a float plane which would pick us up and take us on to the next area where we were, say two weeks ??? (0:27:17).

BC: When you were working in the Peace, since that time have there been wells drilled on property that you walked over and surveyed?

CC: Yes, I think they have. I'm not quite sure. I just haven't followed that.

BC: What about in 1946, what did you do in the summer of 1946? Where were you then? This is still prior to Leduc.

[long silence]

CC: I think what I just described to you is 1946, now that I come to think of it.

BC: I'm sorry, 1947. No, '46, yeah.

CC: My first year with them, that's right, my first year with them they sent me down to Norman Wells.

BC: Oh did they?

CC: And I was given a couple of assistants, a canoe, and [temporary?] service by a floatplane who would carry us to various spots where they wanted mapping done. They would take us up the river as far as was possible for a plane to land and set us down there. Then we'd slowly work downstream, mapping the whole thing.

BC: Would this be north of Norman Wells?

CC: Mostly south and southeast. And we did some work on the Bear River, which is east, of course. And we had several bits of work on rivers that were further south.

BC: You weren't involved at all up there when the Canal?? project was being worked?

CC: No, I didn't come anywhere near that.

BC: Mmm-hm. Now the summer of 1947 was a rather special summer because this was after Leduc. You went out to sort of survey all of that area, did you not? As I understand it. Like Redwater was already being built but you were surveying all the North Saskatchewan River.

CC: With reference to my old notebooks, I don't know which summer at which.

BC: Do you remember going out into, well in the summer of 1947, do you remember going out to look at the surface reflection for Leduc to see if indeed it could have been... Leduc was discovered with geophysical method...,

CC: Yeah.

BC: ...and then there was this, sort of, looking after the fact if indeed could it have been reflected or geological.

CC: No, we didn't dive into that kind of thing. One summer, I think it was 1948, they sent me out to the B.C. coast, all that area between Vancouver and Vancouver Island, all the little islands and such like. We

had to map and see if there were indications of structures out there that might contain oil. I spent a whole summer out there.

BC: Oh, tell me about that. That sounds interesting.

CC: We were just given a canoe as a means of getting around. For the summer ??? we had two canoes. I had three helpers.

BC: Do you remember who you had ??? (0:31:26) Was Mr. Brown one of them?

CC: That's right.

BC: Jack Brown?

CC: He was one of them. ???

BC: He worked with you a couple of times, didn't he?

CC: Yes. In any case, that was one of my summers that I worked for Imperial Oil.

BC: Was this the second time you looked at those islands, then? You did once earlier on when you were down at UCLA. Did you not go up there?

CC: Yes. But this, of course, for Imperial Oil was much more thorough and business-like, of course, because they wanted no stone left unturned, so to speak. We had to really put in a lot of hard work to get done what they wanted done. But it wasn't unfamiliar to me.

BC: Did you find enough indications of oil that would interest them to drill out there?

CC: I don't think they found anything that wasn't already discovered. I recommended certain areas very highly, but they were already discovered. But I could see there were some good possibilities there.

BC: Do you find this frustrating, or did you find it frustrating, as a scientist, to be spending so much time and really, it was just proving what had already been proved once?

CC: Well no. You have to do a lot of that kind of thing and you have to be prepared to make arguments. [very muffled???] (0:33:34-40). ...argumentative stuff in committee meetings...

BC: Why did you take a canoe around there? Why wouldn't you take a motor boat?

CC: Well, I think they wanted to do it on the cheap.

BC: Now, I have a note here. In 1949, that's when it was, 1949 when you were looking at the North Saskatchewan River. I think Mr. Brown was with you at that time.

CC: Yeah.

BC: And you started at Rocky Mountain House. Do you remember that year?

CC: Yeah.

BC: Tell me about it.

CC: Well, we simply made a ??? survey for Rocky Mountain House down past Edmonton and, in fact, on down to [??? mantle clock chimed 3 o'clock] ...Saskatchewan. We had surveyors ??? map the whole thing, shot by shot, to bring the whole thing on, bigger.

BC: Did you do a lot of fossil collecting out of there, too?

CC: No.

BC: Oh, I see. Now, what did you eat when you went on these trips? Because this would be... how long would you be out on this trip? This would be canoes, too, I presume?

CC: Yeah.

BC: You'd take off for the whole summer?

CC: Well, we'd have frequent opportunities to connect with some small country area where there was a grocery store.

Tape 2 Side 1 (only) – 9:00

CC: Because the scientific journals were just too slow in accepting what I sent them. I felt they were trying to put me off as long as they possibly could because they didn't want to ?? That's what it felt like. I went and took this matter up with Imperial Oil management, and they said, oh well, that was simple. We can print the things; if you want to distribute them, that'll be just fine.

BC: For instance, you had done quite a lot of work on the Devonian formations.

CC: Yes.

BC: I think in here I may have as many as half a dozen: Devonian Time in Western Canada; Elucidation of Western Canada Devonian Formations; Significant New Devonian Fossils from Western Canada; The Older Devonian Formations [Formers?] of the Northwest Territories. Now, how did your interpretation of Devonian Fossils from Western Canada, for example, differ from perhaps the publishers of journals or other geologists?

CC: Well, these things that I got out in this form were something that had just never been tackled before. So there was really no one to differ with me on the basis of work he had previously done. This was the beginning, so to speak. This was one of those fields that I got into.

BC: Now the new Devonian fossils from Western Canada, as an example, what was new in this particular one? Do you want to sort of talk from it perhaps? That might be helpful.

[break in the tape]

BC: When you went to Imperial, Dr. Crickmay, who hired you?

CC: J. B. Webb.

BC: Can you tell me about him?

CC: Well, he was a geologist who had joined Imperial long before I had any connection with them. And he worked up in their rank from his original position, whatever it was, to be general manager here in Alberta. It was he who ran the whole show here.

BC: You reported directly to Mr. Webb then?

CC: Yes.

BC: What kind of a man was he to work for?

CC: Well, he was a very fine, friendly chap. I had known him long previous to that. We were both on a geological survey project together one summer, many years before. He was working through the depression year of the early 1930s came out of it as an employee of Imperial Oil. But he worked up and up and up and up in Imperial Oil until he was running the whole show, as far as this part of the world was concerned.

BC: Right. What year were you working with him on the geological survey, can you remember?

CC: I cannot remember. It must have been way back... In the late 1920s or something like that.

BC: Whereabouts were you working with him?

CC: Here in Alberta.

BC: Who else was working at Imperial in the geological department when you joined it?

CC: In the geological department of Imperial Oil?

BC: Right. Any of the co-workers that you worked with?

[silence on the tape for 4 minutes]

Tape 3 Side 1 – 31:00

BC: Some of the many papers, perhaps we can look at your index you have here which represents fifty years of publications and research work by you, from 1925 until 1975. And perhaps as we look through the list, if you might just mention some of the important points that you feel came out of these papers. Particularly, as I know, quite a number of your papers were ahead of the time and not necessarily accepted at the time of publication by all your fellow scientists. Am I right in suggesting that?

CC: To some extent. These papers on the first page, for example, had to be accepted. There's no disputing them. And they're not on the, or in the field of geology that most of my work has been in. These are in Paleontology, Study of Fossils.

BC: Yes, this would be from 1925. We're going past 1929. Perhaps as we turn over, you could get to the one where you feel it starts coming in with the first of the area. Now this one where you have Fossils, Fossils Harrison Lake, that was your doctoral thesis, was it not?

CC: Yes it was. Mostly paleontology.

BC: Yes. Through to 1932.

CC: Here we suddenly get into something different. This is The Study of Scenery. The Significance of the Physiography of the Cypress Hills.

BC: This was 1932. So could you talk about how you came to write this paper? What happened?

CC: That was, well my thoughts on visits to the Cypress Hills which were conducted during a summer's employment by the Geological Survey of Canada.

BC: Now, what did you find so significant about the Cypress Hills that perhaps nothing had been written about up to that time?

CC: Well I found that the flat, or flattish top of the Cypress Hills is an upland plain, and it showed evident signs of having been made by running water at a much lower level. Cypress Hills were evidently uplifted along with the rest of the country, I suppose, and they were made hills by the streams, long since gone, that cut down the country around them.

BC: So you feel that at one time, the top of the Cypress was the bottom of a valley, type of thing?

CC: Yes. Well, not necessarily a valley, perhaps part of a great plain, cut down by streams of ancient age and left with a certain amount of a river sediment up there, way up high above any stream, any existing stream.

BC: This would be quite startling to geologists.

CC: Well, I wonder that other geologists hadn't seen what I saw and written it up long before I got there.

BC: Was the Cypress Hills of particular significance because I've heard say that that is the Cypress Hills, the flora and fauna today are different because it wasn't touched by the last ice age. Is that correct?

CC: That's so, yes. Oh, there's not very much difference, but it's perfectly obvious that the ice age glaciers or ice sheets didn't reach the top of the hills because there's no sign of any glacier influence up there.

BC: So this great river or plain that this, the top of the Cypress Hills was part of, could have come from an ice age many... back further, perhaps?

CC: No, it originated prior to the ice age altogether. Altogether previous to it.

BC: Oh I see.

CC: And was cut out by streams of an age long gone by.

BC: What significance would that have, for instance, when we're looking for minerals in the Cypress Hills area? This significance?

CC: Well, there again I don't know that it would have any importance in that area. Now in some places, for instance if such a thing occurred somewhere in the middle of the interior of British Columbia, I would say it would be a wonderful place to prospect for gold. Placer gold.

BC: But not up in the Cypress Hills?

CC: But out there, out in the plains, why if there'd been any gold involved in that stream work, it would have been discovered long since.

BC: Or moved on down.

CC: Yes.

(0:06:11) BC: Now let's go through then, on some of the others here. This is Canadian. This is another study for a Canadian discovery.

CC: Well, these things are fossil work.

BC: Right.

CC: Here again, I got into a little bit of the study of scenery. The Later Stages of the Cycle of Erosion.

BC: This is 1933, right?

CC: Which was published in the geological magazine, *An English Geology*, the periodical.

BC: And what was the significance of that particular paper or article?

CC: Chiefly the insistence upon the kind of scenery that represented the latest stages, as it states there, of the erosion of the land by rivers. Later stages are notably different from the earlier stages. The earlier stages consisted of cutting of narrow valleys. And as those valleys are widened, they finally widen so much that they, their floors are spread until they represent the entire surface of the continent. And the higher ground in between rivers has just disappeared by being undercut, by wandering streams, streams that instead of keeping a single course, wander sideways like this.

BC: Now, can we go... These are... In 1933 you were doing quite a lot of information to do with some of the American parts. And then in Wyoming. And here we come in 19... Now there's a little spread here from 1936 to 1942. That was a period when you were writing but not necessarily publishing because of the depression. But some of these would be work that you did... Now, there's one here, I noted, in 1942,

and this is work you did in geology with Dr. Hume and Mr. Hage. It's a map. Could you mention this? It's Kitscoty, Alberta.

CC: Yes. These two other names here were simply the two big chiefs who were in charge of a great number of individual geologists with small parties of their own, of which I was one.

BC: This was the Geological Survey of Canada?

CC: Yes. And these two people – Hume and Hage – were simply representatives of the survey and were in charge of us and went around from party to party in the field to see how we were getting along and give us necessary instructions.

BC: And where were you working that summer, the summer of 1942? You were working with the Geological Survey that summer.

CC: Yes, in eastern Alberta.

BC: Southeastern Alberta?

CC: Well, not south, no. About the middle part of eastern Alberta. This place.

BC: For Innisfree.

CC: Yeah, both these Kitscoty and Innisfree, are both east central Alberta, say, and out to the east border of Alberta. In fact, we went into Saskatchewan a little.

BC: During that summer, you were looking for petroleum deposits at that time, were you?

CC: Partly, yes.

BC: Were you successful in finding any evidence?

CC: Yes, though I don't think any of the evidence has been the result of a successful discovery. We turned in lots of evidence, but it just wasn't important enough to lead to anything.

BC: Would it be because at that time perhaps it would be too expensive to try and extract the petroleum products from there? Either problems with the terrain...

CC: No, because...

BC: ...or was it just small pockets?

CC: Anything was on a simple scale in those days. Nothing cost much. Even petroleum exploration was done relatively cheaply.

BC: Who was on the parties with you? Who were your assistants, do you remember?

CC: Off-hand I couldn't remember them.

BC: We mentioned Dr. Hume and Conrad Hage. Did you work with them at all?

CC: You know, I knew Hume as a temporary party chief the first year I ever worked for the Geological Survey out on the coast of BC. He just happened to be in charge of a party. It was in an area where he was anything but well at home. It was an area that was unfamiliar to him altogether, but he was a satisfactory boss of the party and took charge of the party in place of the man who was supposed to who was engaged in some sort of official reorganization in the Geological Survey and couldn't give his time to anything as little important as field work. (laughter)

BC: Did you follow Dr. Hume's career through the years? Did you keep in touch with Dr. Hume?

CC: Nothing to speak of, no. He was interested in entirely different things from what I was interested in.

BC: His area was what, then?

CC: Essentially the study of stratigraphy and, to a minor extent, paleontology.

BC: What about Mr. Hage? Did you... Do you have any recollections of him?

CC: Well, he left the Geological Survey after a while and got into private practice as a geologist, working for the oil exploration concerns. But I never had anything much to do with him after that.

BC: Did you have anything to do with him during the survey? Can you recall anything about him, any stories or recollections of Mr. Hage?

CC: No, nothing to speak of.

(0:14:28) BC: Going on now into 1944, and we're into the Peace River. This would have been work you did in 1944 in the Peace River area?

CC: Yes.

BC: This is a preliminary map. What were you doing up there? What were you looking for in 1944?

CC: Well, there's just geological exploration, that's all it was.

BC: And was it any part of the Peace River area where they are now working in the oil exploration? Did you find any significant discoveries there? Or suggestions of?

CC: No. We were not far enough west for that.

BC: Whereabouts were you then?

CC: Well, from Peace River town on down the river.

BC: So we move on then – I'm just going down these, Dr. Crickmay, and please stop where you find things that are of particular interest. Here we have... we're starting now into some information on the Devonian. Now the Devonian came into prominence with the discovery of Leduc, did it not?

CC: Yes.

BC: So then, is that when you started looking into the Devonian area?

CC: Yes. In fact, this date here, 1950, that's quite a jump from 1944. That's the first paper that I published after joining up with Imperial Oil as a permanent employee. From there on, you'll see in this list that an awful lot of things I did were the result of oil company exploration.

BC: Now, why were you looking in the Devonian area particularly for Imperial Oil? What was your assignment?

CC: Oil had already been found in the Devonian in the Leduc area, the original burrow there. From then on, attention was given everywhere to the Devonian, Devonian system, with the idea that further discoveries might be expected. As you can see, going down this list, one after another I have reference to Devonian, upper Devonian here, Devonian Brachiopod.

BC: The Leduc discovery was, has been credited to geophysical work. Now there was some... there was certainly a lot of geological work in there, too, and there was some post-Leduc geological work. Were you involved with that at all to see if some of the surface geology could indeed have interpreted Leduc?

CC: No, I wasn't. No, my earlier work was the oil company. Let's see if I can... I was hoping to find something here that's I'm... In any case, they had me go and do field work in various areas where they wanted a bit of geology mapped out. So I was sent to northern Alberta and even into Northwest Territories.

BC: When would you have gone into northern Alberta? In the early 1950s?

CC: Yes.

BC: What part of northern Alberta did you concentrate on?

CC: Well, there wasn't any such thing as concentrating. I was given a large area to cover in perhaps a light, superficial way. But the main thing was to gather information covering an enormous area in a single season.

BC: How many, approximately, square miles might you try to cover in a season?

CC: Oh, perhaps a thousand.

BC: You weren't walking on those ones.

CC: Well, we did a lot of airplane travel. We'd be taken by a floatplane, let's say, and put down on some lake or even a pond. Quite a lot of our travel was not in ordinary planes at all. It was in helicopters so they could land almost anywhere, you see. Then we'd be given instructions to work so many miles this

way, so many miles that way, and confine our movements to a certain, what you might call, an avenue of approach. Then instructions would be left with us to be at a certain place on a certain date, and the plane would come back, pick us up, and take us to somewhere else.

BC: What were some of the parameters that you were to work within? What were you to concentrate on?

CC: You mean the size?

BC: You said there were certain things that you were to look for? What were the major points, things that you were looking for?

CC: Well, they'd perhaps give us from the mouth of a certain river up fifty miles. And we would concentrate on the river banks and any river-side hills that showed geologic formations in outcrop. Let's see, fifty miles long and perhaps two miles wide.

BC: You had a lot of notes by the time you got to the end of that summer.

CC: Yes. Though perhaps not as many as you might expect because very often we would go mile after mile without seeing any geological formation. There would just be no outcrop for a long distance.

BC: So then you'd just keep traveling down the river, looking for it?

CC: Yes.

BC: Is that typical of this kind of work? Or was it typical of that area?

CC: Well, I think it's quite typical of this kind of work. You can't expect to find continuous formations. You find an outcrop here, let's say, and then you go perhaps a quarter of a mile to another one, and maybe after that, there's a considerable gap and you may go four or five miles before you see another one. Then again, you come in to some area where the whole bank of the river is continuous outcrop for several miles.

BC: Now what would you do? Can you just describe what you would do when you were up in the Peace there? When you came along and you came to an outcrop, what was the procedure? You had yourself and how many assistants?

CC: Sometimes one assistant, sometimes three. Now the idea of the odd numbers was that if you had one assistant, all you needed was one canoe. If you had more than one assistant, why you'd have to have two in order to manage another canoe. That was a method of work.

BC: So you would find an outcrop, and then what would you do?

CC: Well, if it was possible to measure a section of the strata that composed the thing, that was described in detail in our notes. Let's say there was between one- and two-hundred feet of thickness of beds in the bank of a certain river, we'd simply describe the whole thing in detail from top to bottom. That would be our notes on that.

BC: What kind of instruments were you using? This would be the late 1940s, early 1950s. And are they different from what they use today?

CC: Now I don't know whether there is anything very different today, but the instruments that we used were a measuring stick, a compass, barometer. That's where you had to make a considerable climb. Let's say you went from the level of the river up to the top of the hill, and perhaps that was some hundreds of feet. Well, anything you found on the way up would be recorded by a reading on the barometer to give the height above the river level at that particular section.

BC: Do you remember who was with you on that trip? Do you remember your assistant's name?

CC: That would take me some time to think of them.

BC: Okay. We don't worry. If you do remember them, it would be nice to record them.

(0:25:52) BC: Now, the work you did looking at the Devonian area, which did occupy quite a bit of your time, didn't it, your first years with Imperial? What point did you find from studying in detail the Devonian area? Did you come up with any special suggestions or ideas? Did you discover anything different in the structure or what had been the inhabitants?

CC: No, generally it was a matter of checking the local occurrence of something that was known already in general. Let's say the lower part of the Devonian was mainly limestone, the upper part mainly coral reef formation and various other details like sand, sand beds and shale beds. I don't remember any of the sections in detail, but all that kind of thing.

BC: I have a note here with a 1953, perhaps it would be this one, Warrenella (sp?). I have a note here that there were three new formation names given. Alexandra, Grumbler, and Trout River. Could you explain what that means?

CC: Those were simply local names that were applied to the formations. The formation had to be given a name, so they used the local geographic name.

BC: It hadn't had a name before that?

CC: No.

BC: Why hadn't it been named before?

CC: Well, I suppose it hadn't been described in detail. The old original exploration geologists would simply say that there was a section of 1,000 or 1,500 feet or whatever it was and consisted of this, that, and the other thing, and let it go at that. They didn't name in detail individual formations. Like the layer of shale a hundred feet thick was not considered important enough in the old original exploration days to name.

BC: It would be considered important enough today, though?

CC: Yes.

BC: Why was there that change in importance?

CC: Well, simply getting down more detail. You can imagine people first going into new country, they don't try to describe everything that they see there. They give a broad, general description and let it go at that.

Tape 3 Side 2 – 30:00

BC: But this would be very important for geologists looking as they became more concentrated into that area, to be able to look for these particular...

CC: Yes, definitely yes.

BC: Why would it be important?

CC: Well, when you are looking for oil, for instance, the details of the section, the series of formations that make the section, the details are of the greatest importance because you have to have a certain formation to yield oil, let us say. If the whole section is simply limestone without any porosity in it, well there's not going to be any oil. But if you get layers of ancient reef, even a section which shows no oil, nonetheless, in another place the same section in that particular part of it would have oil perhaps.

BC: And prior to your more detailed geological work, these were not set out quite so clearly?

CC: Right.

BC: They would just say, this is the Devonian.

CC: Yes.

BC: Whereas, yours would say if it's a hundred feet of shale here and narrows to something else in another, then you can look for some change.

CC: Yes. Now that kind of thing was not started, by any means, at the time of my work. It was already going from the work of people like Dr. Hume and Professor Warren of the University of Alberta who was a person in the study of western geology.

BC: Did you know Dr. Warren?

CC: Oh yes. Yeah. He was a friend of mine.

BC: Could you tell me about Dr. Warren?

CC: Well, I don't know what I could tell you except that he was Professor of Paleontology and Stratigraphy at the University of Alberta, in Edmonton, and did a great deal of exploration work for government organizations like the Geological Survey of Canada. I met him on numerous occasions where we'd, let's say, both be doing more or less the same sort of work in neighbouring areas and we'd meet and compare notes.

BC: How important was he to the geological development of mapping in Alberta?

CC: Well, I think he did a great deal of it. I don't recall a list of his works of this sort.

BC: No.

CC: I'd have to look that up, which would take some time and some hunting.

BC: What was he like? You knew him to work with him. He was older than you.

CC: Slightly, yes. I'm not sure how much older he was.

BC: Can you think of any particular incident where you perhaps met when you were on adjoining areas? Any recollection of a meeting that took place?

CC: Well my memory is just not good enough to think of the details like that. I know that on numerous occasions I would visit with him and we'd go through the work we were both doing, just so as to compare notes. He was always, well, very hospitable. He'd ask you to stay with him over the evening... [tape goes blank for several seconds] ...neller, but the details I just can't remember. My memory isn't good enough.

BC: That's alright. I just thought there might be something that sort of stood out in your mind. I can remember Dr. Warren on such-n-such an occasion etc. But if you can't, that's quite alright. Not to worry.

BC: Let's look through some of these other papers that we have here. This is Elk Point, The Sedimentary Basin. This is 1954. It was written actually for the American Association of Petroleum Geology. Was that a paper that you presented, or...?

CC: Yes, yes. They Elk Point being one of the big formations in the Devonian, a prominent thick formation. Let's see, we're still on...

BC: You're still on the Devonian. Yes, you spent several years writing it. Elucidation of some western Canada Devonian formation. This is again trying to explain the reasons. Now, this sounds very erudite. A Preliminary Enquiry Into the Formulation and Applicability of the Geological Principle of Uniformity. Could you explain what that is about? Perhaps not quite in geological learned terms, but why did you feel this was necessary, that it was necessary to publish this?

CC: All these papers in here deal with this.

BC: Is it one of them? Oh, good. We can just dig through them. I'll just get it for you. I'll just stop the tape for a minute. Alright, you have the paper there in front of you now. How did you get into this?

CC: My interest in the work of rivers [???]. I'd been very familiar with rivers throughout my fieldwork. A number of jobs that I had, both for the Geological Survey and for commercial concerns that were interested in geological developments, had me on this river, that river, and so rivers were something very familiar. And I observed what the river was doing as well as what I was supposed [tape goes blank for a few seconds]... the wages, so to speak, and finally I decided that I had so much that was not

entirely in agreement with what the textbooks said and what most of the geologists thought, that I just had to write it down and get it published. So what I did was to write this thing up and get it printed on the private presses of Imperial Oil Limited here in Calgary.

BC: Tell me, why... What was different? What were you suggesting that is different from most of the textbooks?

CC: Well, very few textbooks had anything like enough emphasis on what is known as lateral erosion. That is, the river wandering to and fro in its course, like this, and cutting away at a bank. Let's say a river goes around a curve like this, well the outer shore of the curve is being cut away so that the river wanders further and further over that way. And an opposite curve like this and it goes wandering over to the other direction. As a result, the great part of the river work is not cutting down, like we were told when we were beginners in geology. Yes, that does happen in some cases, especially where the river goes down a steep slope, it mostly cuts its bed on down and deepens its valley. But where it no longer is in a narrow valley but on the flat, then most of its movement is lateral, one side or the other pushing its banks [blank...] In fact, it can go back and forth over the same ground that it's already covered. I began to see that, and lots of people denied that I was correct in thinking of that as being the most important thing of all. So finally I got out this paper to get it down in print so that they could read it and, if they wanted to, throw it out of the window, so to speak, well let them. But in the meantime I had all my declarations in print. That was good enough for me.

BC: Why did you feel this was very significant? More significant than the generally thought of just the river cutting down? Geologically, what was the significance?

CC: Well because most of the evidence of river work was that of horizontal erosion, that is lateral out one side or the other. The making of canyons and deep narrow valleys was something that occurred only in freshly uplifted ground, like for instance the elevated area of Arizona which has the Grand Canyon of the Colorado River in it, something which had been cut down in a comparatively short time. When I say short time, I mean geologically short time, like perhaps only a million years. Whereas some of these other streams, like the lower part of the Mississippi, for instance, has been going back and forth across the middle part of the United States for perhaps ten million years.

BC: So this would make a difference when you started looking for what's underneath there, wouldn't it, because of the changes of the river, the sediments that settled down would change, would be different than what you might expect?

CC: Well, there's never a great deal, never a great thickness of sediment in these rivers that have moved laterally because the fact of their having reached a certain level generally means that they stay at that and move only laterally and not any further down, to speak of.

BC: So this would have significance, too, then? The fact that it wasn't cutting down more?

CC: Yes.

BC: Has this theory since been accepted more widely?

CC: Well, by some people, but not by any means by everyone. I once, they didn't know I was listening, I once heard some people saying that, it's hard to believe what that fool Crickmay says. And what they had in view was the new ideas that I had published on the work of rivers.

BC: As someone who was looking and breaking new ground, did you find this a frustrating thing through your career, Dr. Crickmay?

CC: Well, no I didn't bother so much about it. Where there was disagreement, I just said, well there's no good fighting about this. If they want to be backward, let them be backward! I can't be bothered.

BC: Did you have many people who have published further papers refuting your claims at all?

CC: No, not many. I think most geologists don't want to be declared on one side or the other. Now, if they don't know much about it, I can understand them feeling that way. But if you have heartily agreed with me and if you have sort of expressed a wondering doubt, no one that I recall has been profoundly and emphatically contrary to my ideas.

BC: So this was a significant publication for you then, wasn't it?

CC: Yes. Oh I've expressed the same ideas more or less in others ??? (0:16:17)

BC: Here you have the activity of the river in northwestern Canada. That would be looking at the same sort of thing, would it?

CC: Yes.

BC: What river were you writing about then? This is a river.

CC: There are so many rivers that have provided that evidence for me that I can't offhand remember which one is what. I could look it up.

BC: We could perhaps look it up after. Now we're up to the older Devonian fauna of the northwest.

CC: Yeah.

BC: I notice several of your publications have little stars beside them. Does that mean that they are special to you?

CC: Like this?

BC: Yes.

CC: No, that refers to this: Publications marked with that contain serious errors and other blemishes contributed by printers and editors.

BC: Well my goodness. Do you mean that some of your papers were edited before they were published?

CC: Yes.

BC: Now this one here you have, The Misinterpreted Middle Devonian of Saskatchewan, published in 1961 by the Alberta Society of Petroleum Geologists. What was there that they changed from your original paper? Can you remember?

CC: Offhand, no I can't.

BC: Perhaps we could look that up. Would you remember if we looked up your print? Here's another one where the fauna of the Cooking Lake formation in 1962, again it seems to have been corrected. Would that be because they didn't agree with what you had to say?

CC: Yes, I think that was it.

BC: As the writer, did you question the editorial prerogative?

CC: Well, you don't have a chance to, you see. You send these things to a certain organization, like in this case the Alberta Society of Drilling Geologists...

BC: Both of those starred ones are the same.

CC: ...and they, their editor does what he wants with it, and then they bring it out in print. And you have to face the fact that they were allowed to bring it out without asking you whether you agreed with the changes they have made.

BC: How did this make you feel, as the person who was writing these articles?

CC: Well, I was pretty sore. I was really angry at the time, but now I can see there's no sense being angry. They had it their own way and the only thing that I could do is if anybody raises a question about my having said something there that isn't entirely in agreement with what I'm saying now, well I'll say, well look, I didn't say that. That's what the editor said, and he was nothing but a fool.

BC: Did you keep your originals? Do you have copies of the original, unaltered...?

CC: In some cases, yes. Not always. But I have... Anytime I found anything like this, I made a correction in a subsequent publication if I was able to.

BC: Did you, for instance, on this one, The Misinterpreted Middle Devonian, you don't know if you corrected it somewhere else? "An Interpretation of the Misinterpretation of the Misinterpretation" almost! (laughter)

BC: What do you feel was the most significant pieces of work that you wrote, Dr. Crickmay, aside from the book, which we'll get to in a moment? But that you were particularly interested and pleased with?

CC: Oh goodness, I don't know.

BC: Your work on the Devonian certainly has taken up a number of papers, probably about fifteen it looks to me like, as a rough count.

CC: I think when I was young enough to be delighted with that sort of thing, way back in the beginning of this first page of these things, the papers on the Jurassic. I made a number of statements contradicting what other people had said about the Jurassic, and I had positive evidence to prove that what I was saying was right.

BC: For instance? What were some of your statements?

CC: Well, for instance, I'd give an accurate, and in fine detail, account of the Jurassic section and it would be in competition, so to speak, with somebody who had just muddled the whole thing up and let it go at that.

BC: And were those opinions of your accepted?

CC: Well there again, you hardly ever know whether that kind of thing has been accepted. You know, when they hang around you, they are polite and don't say anything against it. But you don't know what they're saying against you behind your back, so to speak.

BC: It would have to be, if indeed some of the professors at the universities were then using your papers as part of their instructions, would seem one way of endorsement, wouldn't it?

CC: Yes.

BC: Do you know if, for instance, you were at Stanford, and you were at UCLA, and you were at the University of Illinois. In any of those establishments, have they used any of your papers as part of their reference library, that you know of?

CC: Well, I've contributed to their library. I've contributed these things to libraries of most of the universities where I've been acquainted.

BC: Is there a set of your presentations available in any of the Alberta libraries?

CC: I'm not sure what you mean.

BC: But I mean, this, you have an unedited version, the whole, all your sets, you have over eighty publications, papers. Did you present them to the University of Calgary library also?

CC: Yes.

BC: Which is very good, because it does give a record everywhere of them. Now I would say of the publications that you published yourself, at least 50% of your publications were outside the stamp of approval, weren't they? Of your peers, your petroleum geologists' organizations or your geological journals or this sort of thing? Did you submit them first to these areas before you decided to publish them yourself?

CC: Yes. And I ran into a lot of opposition.

BC: What kind of opposition?

CC: Well, they'd just say, this is unsuitable for us. And they sent it back to me.

BC: Did they say why?

CC: Generally no.

BC: Why did you feel that it was unsuitable? That they didn't accept it?

CC: Well, they would say so. They would say, we can't think that this is suitable for our acceptance.

BC: Would that be because they were theories that they didn't agree with?

CC: I think perhaps that was it.

BC: It obviously couldn't be because of your ability to write a good paper. You've proved that many, many times. If we look through here, you have the Cypress Hills, and then again into Devonian. Here is one here, 1967 – A Long Overdue Correction, published by the author. What was "long overdue"?

CC: Gosh.

BC: I don't know... We'll just stop the tape for a minute.

CC: We had an employee in the same kind of work that I was doing but she handled a somewhat different field, micro fauna, essentially. Diane M. Loranger, at least that's the way we pronounce her name. It's a French name, I suppose it should be pronounced Loranger but it was never called that. She was in the same department that I was. She tried to bring out certain things in publication and some contrary things were said about her work. I brought this little note out to speak against it. For instance, see in this article that I'm talking about, the first error I found, I call Error #1, Loranger's work is said to have been published privately. I butted against that by saying nothing has ever been published privately. A publication may be printed privately, but if published, the concrete term "privately" is inapplicable, and in this case, adds confusion where none need be and seems to serve only a false assumption that the fact of publication might be suspect. Now that's the kind of thing that I'm saying here. Some other things were wrong. It was said to be published "April" 1963. The date "April" is wrong. Another thing in regard to date here... I just couldn't sit by and allow them to say wrong things about an associate of mine without protesting, so I got that thing out and handed it around to a number of people.

BC: Where had the malignment on her work originally appeared? Would it have been in a geological publication or...?

CC: The editor in the Bulletin of Canadian Petroleum Geology.

BC: Oh, so it was in the Volume 14 of that.

CC: Yes, he, the editor, changed her paper in certain ways to make it fit in with his ideas. And each one of them was something wrong.

Tape 4 Side 1 – 23:00

CC: ...quite sure what you're...

BC: I'm sorry, did you... have you found in your work, because you've published quite a lot, that editorial prerogative is the word I'm trying to say. Have you found that editorial prerogative has sometimes made publications not quite what they should be?

CC: Yes. On several occasions. Each one of these star marks indicates cases where what I had written was changed by the editor to make it fit in with his ideas.

BC: Have you ever been one of those that has, perhaps, brought it up with your professional association that editors should not be allowed to do that? Or has this not been part of what you've done? Have you ever complained to anyone?

CC: Yes, I have. But it hasn't gotten me anywhere.

BC: So then you just took to publishing and you found a friendly publisher in the employer that you worked for, Imperial Oil. They never... You edited your own work that was published through Imperial, was it?

CC: Not entirely, but pretty much. They were very open-minded and free from prejudice. A good example is that book, *The Work of the River*. That went from one publisher to another before I got someone who had the nerve to publish it.

BC: Let's talk about the book. We'll go from your writings because most of the others, as we can see, going right through until 1975, unless there are particular ones you can see that you'd like to comment on... This one on *Ramparts, Beaver Tail and Other Devonian Formations*, for instance. Was that important?

CC: Well, I suppose in some ways. Northern stratigraphy, that is Devonian of the Mackenzie Valley, Mackenzie River Valley.

BC: And what did you find that was different that would cause you to publish something?

CC: Oh, minor differences, I don't remember offhand what.

(0:03:19) BC: Alright, now let's go into your book, *The Work of the River*, which was published in 1974 and it was published in England by...

CC: MacMillan.

BC: ...by MacMillan Press in England. Now, is this the culmination of a lot of work you'd done in your papers, or is this a brand new thing that you decided to work on?

CC: No, it's a write-up of all the minor papers that I had written on the work of running water.

BC: And you said you had trouble getting this published?

CC: Yes.

BC: Tell me about it.

CC: Well, I just sent it to this publisher and that publisher and that publisher and that publisher, and they all sent it back saying they didn't want it.

BC: Was it because it was too scientific, do you think?

CC: Uh, I don't know what their objections were. They never give you their objections. So you cannot always be sure what the trouble is. But I certainly wasn't willing to change the thing to make it sound nice and pleasant to an editor who had utterly different notions from what I had about science. So I was just refused here and refused there.

BC: Did any of them say, yes we'll publish it IF you make these changes?

CC: Uh, no. They didn't try to bargain, so to speak, but they would state what their objections were in some cases.

BC: So how come MacMillan in England finally published it? What did they say when you sent it to them?

CC: Well, I think they were just a little more broad minded than the people running the other concerns. They decided to take it.

BC: Do you consider *The Work of the River*, do you consider this a controversial book, do you?

CC: Well, to some extent. It shouldn't be, however. Sooner or later everybody's got to have to catch up with what I've got in there. Otherwise they're just going to be behind hand.

BC: What do they need to catch up on, Dr. Crickmay?

CC: Well, let's say the importance of stream work, for one thing. I was told that stream work was very minor, that there were other things that had much more influence on the shape of the face of the earth than rivers, which is utterly wrong, of course.

BC: Why do you feel it's utterly wrong?

CC: Well, because I can see what rivers have done, and they couldn't. They would have such wild ideas about what mainly shaped the face of the earth, whereas I could see that if you go here and you go there and you see something different from what you've been used to, you can always find some connection with the work of the river. Let's say you have, as an example, the top of the Cypress Hills, they are to a large extent as flat as a pancake, and with a slight dressing on top of fresh river sand and gravel. So obviously they were shaped with a river that left the last of its settlement there when it cut down lower and left a part of its valley bottom now making the top of hills.

BC: People, other geologists, have not done as extensive work, many of them, on looking at the river quite this way?

CC: No.

BC: What do geologists generally feel re the work of the river? You say it's just insignificant. What do they feel is more significant?

CC: I don't hear very much. I think most of them shut up when I'm around because they don't want to get into a violent argument. But a few of them who heartily agree with me have said, you've hit the nail on the head! Mack-it! (??? 0:08:47) Keep it up! This kind of thing, words of encouragement, but that's been from a very few.

BC: What do you think, when you're looking at the study of geology and the work of the river involved in that study, why do you think it is so important that people understand the significance of the river?

CC: Well, simply because the rivers have shaped almost 100% of the face of the globe, and anything that is that important ought to be taken fully into account.

BC: If we look at Alberta and this part of Canada as an example, how important would the study of the work of the river in the preceding ages, be as far as helping in determining, for instance, petroleum deposits, this sort of thing?

CC: Well, there wouldn't be any connection there because the petroleum are so much more ancient than anything connected with the face of the globe at the present day. Let's say, about the oldest surface features are just a few million years old, whereas the deposits that contain the Alberta oil are something like 300,000,000 years old. And they've been through all sorts of geological changes, ups and downs and erosion by surface process and this kind of thing.

BC: Would the erosion by surface process during those millions of years also have been the work of rivers of those times, do you feel?

CC: Could be in great part, yes.

BC: Have you dug into that area at all?

CC: No.

BC: It might make a rather interesting study for someone, wouldn't it?

CC: Yes. I don't know whether there's enough information gathered to get anywhere with that, however.

(0:11:18) BC: In looking back over your more than fifty years, Dr. Crickmay, there are a couple of things that I'd like to ask you. First of all, the geologists or the people that you feel were the greatest influences on your career as a geologist? Who would you... Do you have any people that you would, could pinpoint?

CC: Yes, I could. One of the first to give me inspiration was a private individual who wasn't considered a geologist, Mr. S. S. Buckman. He was an individual who was interested in paleontology and stratigraphy of the British Jurassic System. He never featured much as a geologist among geologists because he just kept to himself in that kind of work.

BC: Where was he? Was he in the States?

CC: No, British. I don't know whether he ever left England. I made his acquaintance by correspondence. In fact, since I began to find out about him, I made a point of writing to him and telling him straight without hesitation... [tape goes blank for a few seconds]. I considered him the greatest authority that had ever said anything about the Jurassic System. Well that's of course quite an enormous compliment. But I didn't hesitate to say it. From then on I was on a friendly basis with him. Now there are one or two others that I had similar favourable opinion of. One was a professor at Yale University who had originally been with the United States Geological Survey, but Yale took him on as a young assistant and he stayed with Yale until he retired. Even after that, he stayed there till he died. I made his acquaintance as a result of being at Yale for one year. From then on, I regarded his influence over my thinking as something thoroughly worthwhile and not to be gone against.

BC: What was his name?

CC: Schuchert – S-C-H-U-C-H-E-R-T.

BC: And do you know what his first name was? Or did you always just call him Professor Schuchert?

CC: What was his first name...? Well, I can find that for you.

BC: Sure, fine, thank you. And anybody else? [ten second silence...] You might think of one or two later. The other thing I wanted to ask you about was, in your years as a geologist, there's been quite a change in the role of the geologist and the work of the geologist, has there not? The specialization of geologists today as from when you first started?

CC: Yes, I guess so.

BC: Could you comment at all on the role of the geologist as it has evolved over your fifty years of involvement with it?

CC: I don't know that I can think of anything to say on that.

(0:16:41) BC: What about Imperial Oil, when you went to Imperial Oil – who hired you at Imperial Oil?

CC: J. B. Webb. W-E-B-B.

BC: And that was Jack Webb?

CC: Yes.

BC: Can you recall anything about Mr. Webb?

CC: Well, he was a very fine man. I mean, he could reach out and dig into your private thoughts to a great extent, not in any way insulting you, but generating additional friendship, which was quite something, I thought. Because so many top executives treat you just like, say, the ancient Romans treated their slaves. He was the extreme opposite of that. He would show up among a crowd and immediately be one of them, which was more than I can say for any other chief executive I've ever had anything to do with. Generally they try to be a little bit like that but don't succeed. Webb was succeeded here by a rather poor sort of man who was the opposite extreme, in fact.

BC: Do you remember what his name was? Or did you want to mention it? (laughter)

CC: I'd just as soon not mention it. (laughter) I'm liable to say something dirty about him and get into trouble.

BC: What about your other colleagues that you worked with at Imperial Oil? Can you recall any of them?

[break in the tape]

BC: This young lady that you were talking about that you removed to write a misdirection. Did you work with her?

CC: No because she was engaged in a different type of paleontology than I was. She was micro whereas I went after the larger fossils which didn't require any micro work. And curiously, since I left Imperial Oil, I've never seen her. I don't know whether she's still here working for them or what she's doing.

BC: Who else? Can you think of anyone else that you worked with there at that time? Mr. Shaw?

CC: I never had much to do with him although I always got along very well with him. I'm trying to think of a fellow that I was mostly cooperative with, and I can't recall his name. Too old. My memory's gone to pieces. (laughter)

BC: Well, it's probably because we've talked too long and that makes you... it tires your head out.

CC: No, I don't think so. In fact, it has the opposite effect on me, it wakens me up to the problems of the game.

BC: Oh?

CC: Darn gone-it! No, I can't remember his name.

BC: When you decided to... When you left Imperial, you retired from Imperial on what date? Did you retire at the nominal 65 or did you stay there for quite some time?

CC: They kept me on for five years more.

BC: What did you do? What were you doing those five years?

CC: Going after the same sort of problems that I had when I was on full-time work for them. But I didn't have any responsibility of bossing juniors in my group, which I had before.

BC: Who were some of the juniors you were bossing? And what are they doing today?

CC: Now you're again asking too much. (laughter)

BC: (laughter) You were too interested in the science to worry about people's names, I can see that.

CC: Well one of them was J. H. Craig. [long silence]

BC: Perhaps what we can do, Dr. Crickmay, is leave this and then you can perhaps sit down and think of a few of the names that you were working with, and I can pop back another time. That will give you a chance to dig into maybe some little anecdotes about them. Would you like to do that?

CC: Yes.

BC: Because I think that would just give us a nice finish to the interviews to get some of these people. And if you don't recall them, maybe Mrs. Crickmay will. Wives are often very good at that. I know Cedric is always turning to me.

[someone walks in the room and the interview is terminated at 23 minutes]

Tape 4 Side 2 – 31:00

BC: Just as I wind up of all that we've been talking about, I wondered if we could perhaps talk about some specific people and a summary, by you, of some of the things. Now I have some names you've given me here, Dr. Crickmay. One of them is Robert T. Hill.

CC: Yes.

BC: Could you talk about when you worked for him and what you did together?

CC: Well, I never worked for him, but I made his acquaintance in southern California when I was a teacher there. I think he was probably the most famous geologist that was ever one of my acquaintances. One of the outstanding geologists produced by the United States, and I know quite a lot about his own private history. He was an orphan of the American Civil War, the war of the 1860s. He had been greatly interested in forms of science and, of course, the Civil War and the crash of almost everything in the southern States – he was a southerner – just about produced disaster for him. But since he was a young boy then, he was able to outgrow the horrors of the war and finally grew up and went into the employment of a United States federal organization, The Geological Survey. By the time I knew him, he'd outgrown his period of employment with the Survey and was living in southern California the last few years of his life. For some reason or other, he took a fancy to me and would invite me to come and just converse with him in his room where he lived. As a matter of fact, he lived in a hotel in Los Angeles, not very far from where I was located. So I dropped in on all sorts of occasions. We talked and he told me of the history of the various things that we were interested in, from the actual history of the United States to the history of scientific work. It was very illuminating to me, and I was more than delighted to find someone of that sort, whom I'd never met before, suddenly become exceedingly friendly and sympathetic in my own junior ambitions.

BC: He was quite an influence on your life and your direction in geology then?

CC: Not so much in the direction of work that I took, but nonetheless I was already interested in the things that he was interested in, and the result was that we were able to go along together, he like an old grandfather and me like a young fellow in his twenties.

BC: What a fortunate occurrence for you.

CC: Yes.

BC: Can you think of any sort of specific contribution he made to the world of science? Certainly as a teacher, he obviously made a great contribution because he inspired people like yourself. But were there any specific discoveries in the geological area that he helped uncover?

CC: I don't know if I can say there were any specific discoveries that I know about, but he was *the* great pioneer of exploration, geological exploration in the state of Texas. That's where he... [tape goes blank for several seconds], and how he ever got into it after being made an orphan as a result of the Civil War, I don't know. But...

BC: So he probably had a great deal to do with the exploration for oil and gas in Texas.

CC: Yes, I think so. Yes, he had been concerned with that. He finally preferred the milder climate of the southern California, so he went to Los Angeles to live. And I was fortunate in meeting him. As a matter of fact, my first job was at the University of California at Los Angeles, and while I was there, doing that work, he was engaged by the University as a special lecturer. I was able to do all sorts of small favours for him, like getting him this and that in the way of material and accommodation and all this sort of thing.

BC: So you really learned while you worked with him?

CC: Yeah.

(0:06:10) BC: You have another name here that you feel you learned from, and that's Elliott Blackwelder.

CC: Yes, now he was Head of the Department of Geology at Stanford when I was doing my last two years of post-grad work. I found he was very inspiring in the field of geological processes. That is, he could tell you about different parts of the face of the earth and what went on here, what went on there, what went on there, the influences that they'd all had on shaping the scenery and on the effect on the people that lived in the country.

BC: Was he involved at all in the oil and gas exploration?

CC: He may have been to some extent, but that wasn't his main interest by any means. He was chiefly interested in the handling of students and the training of them.

BC: And another man here, Charles Schuchert.

CC: He was Head of the Department of Geology at Yale University. I went there in 1922 to 1922, over the winter, and that's how I met him and I took his course, the last course he ever gave, as a matter of fact, because he had retired the previous year and they just begged him to give this course over once again without any further responsibility except just to give the course. Somebody else had to become head of the department following his retirement, and that's the way that worked out. So I followed very carefully his teaching there.

BC: What was the special lecture that they want... What type of lecture was it that they were so anxious for him to continue so people like yourself could benefit?

CC: He started with geology and ancient geographical history of the continents and the face of the earth in general.

BC: And after that one year with you, he did finally retire? They couldn't persuade him back?

CC: Well, they didn't want him back. As a matter of fact, they figured he'd had enough. I don't think he would have accepted any further time in employment than that. After all, it's hard work to do that job right. So he was in complete retirement after that, but on occasion we would see him in various parts of the United States where he'd go somewhere to visit and perhaps give a talk to some group that was interested in hearing him.

BC: What was his specialty? What was his special area? Was it historical significance?

CC: Historical geology and paleogeography, as it's called.

BC: What influence did he have on your direction? Other than learning from him, did he have any other influence on you?

CC: Well, yes. He interested me in paleogeography enough so that I took that up as one of my lines and wrote a paper on it which I dealt with the one geologic period that he had worked on least, mainly the Jurassic. He had a good account for what was known at the time but I went at that particular period as a specialty, leaving all the other geologic periods out of my consideration. I wrote quite a long paper on the thing and got it published with the Geological Society of America.

BC: Did you stay through the rest of your time – thank you – with that particular area, or did you branch out from there again? Was it just for the purposes of this paper that you concentrated?

CC: Oh yes, I had various interests in science and geology. Paleogeography was only one of them.

BC: So he certainly did have an influence on you if you would then go back and say, Ah! Here's the part he didn't touch. We must know more about this. He really inspired you to go and dig further. The sign of a marvellous professor.

(0:12:14) BC: You have another name here, William J. Miller.

CC: He was simply head of the department that I went to work for my first teaching job at the University of California at Los Angeles – UCLA as they call it. And he was head of the department and he had been advised to hire me, so I got the job that way. The only sad thing about that is I was fool enough to leave

that job and move to the University of Illinois where one former department head had wanted me. Most of the rest of them didn't. Finally I was let go in the depth of the Depression.

BC: So that was... It's too bad. If you had stayed there, of course, I might not be talking to you here today. You'd have done all your work down in the United States probably. Your life would have taken quite a change.

CC: Well, that could possibly be.

BC: And certainly many papers of great interest to Canadian oil and the petroleum industry might not have been written. You would have been concentrating down in California. So out of every bit of bad comes good. (laughter)

(0:13:38) BC: Another name here, a well-known name up here of course, is T. A. Link.

CC: Yes, well he was the real head of Imperial Oil. When I got interested in oil geology and got a job with them, he was sort of the ultimate boss that I had to look up to and take advice from and learn from.

BC: Did you work with him directly?

CC: No, no I can't say that. He was just a high executive. He wasn't down in any of the lower positions where we might have worked together as chief and helper, or anything of that sort.

BC: What was your impression of Ted Link?

CC: Well, he was one of the most capable and clear-seeing geologists that I ever had anything to do with, I think. He was also equal to any situation. I mean, nobody could play any crude tricks on him because he'd see what you were doing before you even got started. (laughter) He was not only a good scientifically trained person, but also he was a good business man and was very quick to see what was coming, so to speak.

BC: When you say he was the "real" head of Imperial Oil, you mean that he really, although he wasn't the president, he made the ultimate decisions in exploration?

CC: Yes. Yes, as far as petroleum engineering was concerned and geology, scientific aspects, all scientific aspects of the game, he was tops.

BC: Did you ever work with Don Mackenzie, who worked with Ted Link?

CC: No, I never did.

BC: He was in a little different area from you, but I think he went to Toronto working for Ted Link later.

(0:16:20) BC: You have a J. B. Smith down here that you learned from, too. Who... Could you tell me about him?

CC: He was a chief in the field of paleontology, fossil study, at Stanford University when I went there. He had had a very broad experience and was already a way along in his scientific career when I went to

Stanford, which was in 1923. That was the autumn of 1923. So he was my chief, so to speak, when I was there in my last two years of post-grad work. I found him quite an inspiring teacher. There was hardly any subject that you could mention that he hadn't had some contact with [blank for 30 seconds]. As long as you were the kind of person who could work hard at what you were doing, why you got along well with him.

BC: So he obviously was a very good peer model. If he could touch on every subject, he inspired you to delve into many areas.

CC: Yes.

BC: Did any of these people that you met when you were taking your educational part of your training, did they publish books that were used at textbooks? Did they subsequently publish textbooks that have been used from the geological study since?

CC: Yes, most of them published something of that sort. Now Professor Miller, the one on my list there, published a general geology textbook for the use of students beginning their connection with geology. The others on that list published mostly very special things like Schuchert, for instance, was an expert on paleogeography and he published a work on the ancient geography of North America from the earliest known geologic time up to the recent. Blackwelder published mostly scientific articles. If he published any books, I don't recall them. And Smith was famous for his big scientific works on this branch of fossils and that branch of fossils. He probably published more than any other person on that list in the highly specialized field that he was in.

BC: So you were very fortunate in that you learned from a number of very fine scholars.

CC: Yes.

(0:20:35) BC: You also worked with a number of people whom you admired and learned from.

CC: Yes.

BC: I have some names here that you put down. Perhaps we could discuss them. Mr. S. J. Scofield.

CC: He was an officer of the Geological Survey.

BC: Was he Canadian or American?

CC: Canadian. I was born and brought up in this country.

BC: Oh, I know that. But you did do some work down in the States, too. You've been in both.

CC: Yes. Never for the United States Geological Survey, however. Any student in geology in this country would always try to get summer employment with the Geological Survey, and that's what I did and was fortunate in getting it right through my college training. Scofield was one of the best of the chiefs in charge of the field party. Also I had him as my professor in the University of British Columbia. About that time he left the Geological Survey and took over as chief of the geology department out there.

BC: You worked with him on a party did you one summer?

CC: Yes.

BC: And which party was that, just to recap? Where were you working with him? Was this the ones in B.C.?

CC: Yes. First in the country around Britannia Mines.

BC: Oh yes, I remember.

CC: And another one was... oh that mine on the border between B.C. and Alaska.

BC: Oh I see, way up there.

CC: I can't remember the name of it. The head of Portland Canal, anyway. Silly of me that I can't remember the name of it.

BC: I think we have it though, actually. I think that you have it in... A little earlier on you mentioned that and I think we have the name there. So I'll go back over our tapes. (Just wait until [the clock] stops chiming ten.)

BC: Another name you have here is M. Y. Williams.

CC: Yes. He was one of the professors at the University of B.C. He had been with the Geological Survey a good many years, but he left them and became a professor out there in Vancouver. My second or third year working for the Geological Survey, he was in charge of the fieldwork. That was quite a tremendous summer. We went in a small canoe down various rivers. Finally, by way of the Mackenzie River, way down stream, mapping as we went, you see. That was one of the greatest summers of fieldwork that I ever put in, I think.

BC: You really were covering territory if you were up in the Mackenzie. And were you down in other parts of...?

CC: Well, we started in northeastern British Columbia on a small river up there. As a matter of fact, I've got those names down there somewhere.

BC: Oh yes. As we talk about the rivers... Because this probably, going on the Mackenzie River and all this, you say was the finest, one of the finest summers in your life – did this... The study of rivers became, has become a lifelong study of yours, isn't it? Using the rivers to... And is this where it all began, with that summer with Mr. Williams?

CC: I think very likely. Although I had been interested in rivers ever since I was a small boy. But scientifically, I think that's where I first got a really keen attitude toward the scientific characteristics of running water and what it did and all about it.

BC: In all your canoeing and adventures up and down rivers, looking at the geological information you could glean, you never stopped doing gold mining? Did you ever think... Because that's certainly a product of the rivers, isn't it?

CC: Yes. Well, I was never in a place where much of that could be done. As a matter of fact, in southeastern Alaska, I fooled around a little with a... I think I had a frying pan, or something like that, which I put the gravel in and shook it around with water and let the gravel pour over. Always you'd get... if there was any gold in your shovel full, well there it would be left in the pan. I saved two or three tiny pieces of gold that way. (laughter)

BC: Would it all add up to an ounce even?

CC: Oh no, no. Not that much. Something like a twentieth of an ounce was what I ever got out of it.

BC: What about Mr. F. H. McLearn?

CC: Oh, yes I worked for him one summer on the Queen Charlotte Islands. He went there to straighten out some of the scientific results that had got by earlier explorers, which had become very much mixed up and confused. Some of them had made mistakes that they ought not to have made. He went there to straighten it out. It was very illuminating to be with somebody who could see clearly what was wrong with other people's scientific work and how to be NOT influenced by what they had said, but see the facts of nature and come to your own conclusions. And he straightened that out.

BC: What were some of the wrong conclusions that had been drawn from earlier work in the Queen Charlottes?

CC: Well, the exact line of division between the two great formations that are up there – the Jurassic formation and the lower cretaceous formation. That was not in the right place at all in some of the older work. But he got it straightened out relatively easily and exactly.

BC: Had it just been sort of an oversight, or wrong interpretation?

CC: Well, these other geologists, the former geologists that worked there, didn't know one fossil from another. So they didn't realize that when they came from this little patch of shale into this little patch of sandstone, between the two of them was a great boundary between the Jurassic system and the cretaceous system. That's really what it amounted to.

BC: Mr. McLearn must have had a great influence on your life because your life has been continually looking at the facts and not being influenced by what someone else happens to have said, hasn't it?

CC: Well, (laughter) I don't know if that's so.

BC: Because so many of your papers, you have been quite forward thinking.

CC: Yes.

BC: Do you think you learned that from Mr. McLearn?

CC: Quite likely. He was one of the most scientific geologists that I ever had anything to do with. He would size up a problem that we came across, and then tackle it in various directions.

Tape 5 Side 1 only – 31:00

BC: If we can just go on with some of these people that you worked for and worked with. Mr. Walter Dingle.

CC: He was the big chief in Imperial Oil when they took me on. I never had very much to do with him, but partly through him that I was selected as an employee to work for them.

BC: Was he head of the exploration department at that time?

CC: Yes.

BC: Mr. J. B. Webb.

CC: J. B. Webb was the manager in western Canada. He was located here in Calgary. As a matter of fact, he had been an old friend of mine, long before either of us had any connection with Imperial Oil.

BC: Friends through geology? Or friends through other means?

CC: We became acquainted in the first place on a geological survey party working in southern Alberta way back around 1925 or so. [muffled] ...to a company that was run by a person who was a close friend of mine. So I perhaps had some little advantage there in getting the job.

BC: Can you remember any anecdotes about Mr. Webb and your working relationship with him?

CC: Well offhand no. I'm afraid I'd be wasting time if I just sat here and thought and tried to recall. We had spent a summer together as fellow assistants to a geologist here in southern Alberta. We got along unusually well together, so I regarded him as an old-time friend when I started looking for a job with Imperial.

BC: He was a geologist and another dedicated, thorough geologist?

CC: Yes.

BC: And you have here also, Fred McKinnon. Another name that's well known.

CC: Yes. McKinnon was a much younger geologist who had gone up in the employ of Imperial Oil and had become sort of the junior executive with quite a number of geologists working under him. He was one of my first acquaintances as a local boss, so to speak. He was way down under J. B. Webb as far as rank was concerned. But nonetheless, he was just one above me because I was the newcomer.

BC: You worked together, then, for some time?

CC: Yes.

BC: Do you remember him well? Again, just sort of looking at anecdotes of things that... plays you might have worked on together, this sort of thing. Have you any recollections of any of...

CC: Well, no because, after all, he didn't go into a field with any of us. He was just, sort of the central boss for field parties.

BC: And J. W. Young.

CC: By the way, about McKinnon, I might say that two or three days ago I ran into him at this party that the Imperial crowd put on for old timers here in Calgary, just a few days ago.

BC: Wow.

CC: It was rather interesting to see a fellow you'd worked for, after both of you were long since retired. Now your other question there...

BC: Yes. J. W. Young.

CC: He was head of the Imperial Oil laboratory out in the Manchester area of Calgary. When they decided to move all us scientific crowd, who worked on fossils, out from the downtown office, we were sent out to his building out there in the Manchester area. I found him, well a most agreeable local boss. He didn't have to receive any of my scientific work but he was like our host, so to speak, as the head of the building. We were all close friends with him, so to speak.

BC: When you moved from downtown with all your fossils, you must have had quite an impact on his lab.

CC: Well...

BC: How many fossils did you take out to the lab with you?

CC: Oh, thousands upon thousands. In fact, I had I think about four huge chests, these tall chests, let's say, about a little higher than the height of the piano there, with sets of drawers about that deep.

BC: About three inches deep.

CC: On the average. As a matter of fact, the lowest two were deeper than that so the larger specimens could be kept safely in there. They were all carried out, and I was given over a space of I think three offices for myself and those that were associated with me, and a laboratory where we could store all these fossils and have table space for working on anything of that sort with other accommodation that's necessary, like well gas line laid on if you wanted to boil anything. Naturally, sinks and water supply.

BC: With the fossils, would these have been fossils that you had gathered on your geological work?

CC: No, no.

BC: Or are these fossils that other crews did and brought in and you analyzed?

CC: They were mostly fossils that had been taken from well cores so that they... Let's say a certain thing was gotten from 2,160 feet. Well, that meant that the formation that contained that thing, that was known to contain that particular fossil, was located at that depth. And all this kind of thing was kept in a great compendium of information.

BC: So you would really have, in your lab, depending what wells you were responsible for, in these chests would be the fossils that would relate to a particular well.

CC: Yes.

BC: And you could go back to them. And you probably could still go back to them today and they would be there, I presume?

CC: Yes.

BC: Very detailed work.

CC: Yes.

BC: You would have to be very sure that your chests weren't overturned on your way to being moved, because with a fossil in the wrong drawer, and you're liable to have the wrong information.

CC: We were pretty careful about them. I put a spot of white paint on every specimen and then wrote a little number on that, indicating where it came from, you see. That is, the particular well, like Leduc #4 at a depth of 3,021; that kind of thing.

BC: Did you ever know a Mr. Henderson, Bill Henderson who worked for British American Oil as a surface geologist?

CC: The name is dimly familiar to me. I don't remember anything special about him.

BC: Now, he would be working at the same time you were. I just wondered if you did know him. I have another name here. The last of the names here is a Mr. W. Landes. L-A-N-D-E-S.

CC: Yeah. He was an old employee of Imperial when I joined them. And when he was brought back from foreign work to Alberta, he was put in charge of the special scientific group that I was working for. Now I can't remember what his rank would be called. But anyway, he was manager of that little department in the field of exploration.

BC: He was a Canadian, too, I presume?

CC: Yes.

BC: Now, the next note that I have here that I had suggested we might like to talk about, and you mentioned it just a little while ago, your work on the rivers; because the river, really, has been... the stream of the river has been the stream of your life, really, geologically speaking, hasn't it?

CC: Yeah.

BC: And perhaps we could go briefly through the many rivers that you have traversed, and about some of the idiosyncrasies of them. The first one that you have here is Fort Nelson, the Fort Nelson. The Fort Nelson, the Liard, and Mackenzie in 1922.

CC: Yes. That was the first summer when I had any great amount of water traveling. Now I was fortunate in being an experienced canoeist at that time. Ever since I was a boy, I'd paddled canoes around some in the sea off Vancouver and some on local lakes and rivers, like the Fraser River and the Pitt River and so on. So I was experienced in that kind of work. So when we went down the rivers of the north in the summer of 1922, it was quite a familiar thing to me to be on rivers. We went up into northeastern British Columbia and got on a small stream, whose name I don't remember. That took us into the Fort Nelson River. It took us into the Liard, and it took us into the Mackenzie. We went down the Mackenzie as far as Norman Wells, just a little below Fort Norman.

BC: And then did you have to go all the way back up again?

CC: No, no. We went out of there by riverboat. That was before the north country was well fixed up with air travel. I don't know when air travel really took over, but at the end of that particular summer, 1922, the way to come out of that country was by river steamboat. You know, the paddlewheel boats. So we came up that way up to Great Slave Lake and then up the, what's it called, the Slave River. Then there's a break there in the middle of the length of the Slave River, there's a break of fearful rapids. You can't go through with a boat or they'll... And there you go across about ten miles, eight or ten miles of land. Then you start on another boat and go on up until you reach...

BC: How did you go from one boat to the other? By horseback or were there stagecoaches or...?

CC: As a matter of fact, we walked.

BC: Walked, did you!

CC: We could have gone by motor truck. There wasn't anything in the way of stagecoach travel fixed up as yet when I was there.

BC: No bus lines at all.

CC: No. No, there wasn't enough travel to support a real bus line. They just hadn't got organized to the point of having anything. Oh, you could hire something the equivalent of a taxicab and drive over, but they charged quite a lot and we, being young assistants on the survey party, didn't have enough money of our own. And the Geological Survey didn't consider us worthwhile paying for it, so we walked over that.

BC: You've also worked... you studied the Peace and the Fraser and the North and South Saskatchewan [rivers]. Did you find in studying these rivers, specific differences in the way they performed which was interesting to you geologically?

CC: Yes, to some extent. As a matter of fact, a good many of these rivers performed quite differently in different parts of their own quarters. Like some parts of the Fraser River were almost exactly like certain parts of the Peace River.

BC: In what way?

CC: That is, they were broad-channeled with frequent gravel bars and sand bars, and that kind of thing, in the bed of the stream. And, oh, gentle curves in the channel.

BC: You never think of the Fraser being gentle.

CC: No. Well the great part of the Fraser that is known to most people is the lower part, of course, where it comes through the Coast Range. There it's a violent stream that goes very rapidly and, in places, over tiny falls. It's quite a different thing from these inland rivers that have been smoothed down, so to speak, to a gentler gradient.

BC: Do you think that's why the Peace was named the Peace? Is it a peaceful river?

CC: I don't know the source of that name.

BC: But is it a peaceful river?

CC: In the main, yes. Of course, all these streams are something you've got to watch out for. They're liable to come suddenly to a place where it's far better to be out of it than in it.

BC: So you would stay close to the bank rather than midstream?

CC: Well, we knew enough in general about the course and details of the rivers that we knew where to run freely down them, and where to stay close to a bank where we'd have to stop and pull out and portage.

(0:18:22) BC: The result of this culminated in your book, *The Work of the River*. There are certain things that you looked at in the context of this. Perhaps, could we talk about those? About your book and just recap some of the... You wrote it because you felt there needed to be a rethinking of geological attention to the river.

CC: Yes.

BC: What was the first point you felt your study indicated?

CC: Well now it's so long ago, I can't remember what was first.

BC: Perhaps we could just go by the point you have jotted down here and look at the... If you just wanted to take them and talk from the points? "The great unequal activity of surface processes."

CC: Yes, now that was something that I considered was not adequately handled in any of the geological textbooks offered to students at that time. So I insisted on that particular point as being something to take into account.

BC: Right here.

CC: Oh, yes. Another thing here – the distinction of activeness and stagnancy. A great many geologists had the idea that geological processes were going on *all* the time, everywhere, which is not the truth. There are some places where surface process has come to a temporary end through lack of slope or lack of water supply, or something of that sort or a combination of the two, so there is no such thing as activeness in geologic process in that particular area. So that's what's called stagnancy in the science of geology. Activeness being the opposite to it. Now there's, of course, all sorts of degrees of activeness from the gentle activity of a mild stream to the tremendous activity of a stream like, well say, the Fraser River where it goes through the canyon and where it's knocking off great chunks of rock all the time and carrying on downstream, piling them where it goes out to a gentle gradient. That's that end. Oh yes, here's some words I ought to explain. Anagenesis and catagenesis. Simply scientific terms meaning the building up of surface form, like the rising of a hill through internal activity in the earth's crust that slowly brings it up, and catagenesis, which means the cutting down of the earth's surface under the influence of erosion.

BC: This is where the rivers would be always taking the tops off the hills, generally speaking.

CC: Yeah.

BC: And this was a point that you also felt needed clarification?

CC: Yes. Chiefly because it was handled roughly and carelessly in all of the textbooks that I knew about.

BC: Did you feel that they were giving inconclusive result out of inclusive information? Or what was it?

CC: Well, they just didn't impress on the student the real detailed happenings.

BC: And with not doing that, what could it do to the geologists if they didn't know these specifics? Would it interfere with his ability to interpret?

CC: Just be ignorant on that one point, well, if he wasn't working on that particular sphere of geology, well it might never matter. He'd probably go through life dishing up results on, let's say, mining occurrences or oil occurrences without any need to refer to that kind of thing. But I wasn't interested in specialties of that sort. So this kind of thing struck me as something that had been neglected and just let go. So I figured, since I saw it and couldn't find adequate treatment of it in any textbook, it was up to me to get busy and write it up.

CC: The... Number 3 here... Something that had never been adequately discussed is what I call "side to side obliquely downward erosion." That is, the cutting down of the river, not just straight down as it flow away its bed, but from one side in one part of its course to another side in another part of its course.

BC: As it kind of meandered.

CC: Yes.

BC: So it was very important to look at both sides of a river?

CC: Yes. That's something which hadn't been adequately treated in textbooks, and this process that's spoken of here – pan planation, which simply means plaining the surface of the earth down to a general

even level. And finally the last one, the idea of involvement of scenery being the door to the river. Yes, most of the textbooks would talk about this, that, and the other thing, and not enough about the contribution of the river activity. So I made a point of stressing that and, as I have it said here, I made the river out to be the “most potent surface agent in all nature.”

BC: Well, that’s quite a statement, too. And I’m sure there’s nothing that can change the nature of things more than the river changing its course.

CC: Right. Yeah.

BC: You have... Your career has spanned a great many different areas, and you’ve worked with and in different areas. What would you say, in looking at your career, to you was the most significant and interesting part of your geological career?

CC: Well, I think my study of river activity is the most...

BC: And how many years did you spend studying the rivers before you were able to put it into a book? Right from the very beginning, I presume.

CC: Yes.

BC: And your book was published in what year, Dr. Crickmay?

CC: 1975. As a matter of fact, I first got really serious about the influence of river activity in the summer of 1922 when I went down these rivers that I mentioned here – the Fort Nelson, the Liard, and the Mackenzie. I was just a graduate student at that time. I just got my degree in 1922 from U.B.C. so I was just a promising boy, so to speak.

BC: Right.

CC: But I’d already had a lot of experience with rivers previous to that, private experience like hunting trips and things of that sort, then just pleasure trips by way of rivers and lakes. Consequently, I was interested in that but I was never so impressed before as I was that summer on those enormous rivers of the north and the opportunity of seeing what they were doing here and what they were doing just a little further on, and so on. That really opened my eyes to the enormous volume of river work. And I said to myself, geologists and engineers have just been careless about this. They haven’t cared a hoop about it and they haven’t developed the subject. It’s up to me to pursue it as much as I can. I wrote various attempts at writing a book on the subject from that summer on down to the 1950s when I got really going on this book, *The Work of the River*. The long delay from the 1950s to 1975 was simply the result of this publisher and that publisher and that publisher, and so on, refusing the thing. They didn’t want it.

BC: Why not? Because they didn’t believe or because they didn’t think it would be popular?

CC: I just don’t know.

BC: Well, it’s very fortunate for the geological world that there was a publisher who did eventually publish it for you, a culmination of many years of work and a fitting climate to our interview, I think, Dr. Crickmay, to be talking about that. I would like to thank you for your sharing of so much of the

information that has been your life with us. It will be a great help, I know, to other geological students and other researchers. Thank you.

CC: Well and good.

End of interview