

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Cal Evans

INTERVIEWER: David Finch

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DF: Today is the 16th day of August in the year 2001 and we are with Dr. Cal Evans at his offices here in Calgary at Suite 406, 999 - 8th St. S.W.. My name is David Finch. Could you start by telling us when and where you were born, I'm sure you'll get that one right.

CE: Yes, I think I can remember that. I was born in 1935 on a ranch in west central Alberta. It wasn't really Withrow but that was the nearest big town, it's between Eckville and Rocky Mountain House.

DF: What were your folks doing?

CE: My dad was a steam engineer, a farmer, a rancher and he also owned a sawmill. So he worked the farm in the summertime and used the steam engine to drive the sawmill in the wintertime.

DF: That's why he was a steam engineer.

CE: He was not a train steam engineer, he was a stationary steam engineer. My earliest memories are of that huge steam engine pulling out stumps and clearing land and driving the sawmill. I was particularly fascinated as I recall, by the fly-ball governor that whirled around on the top of the boiler.

DF: How did that work?

CE: Well, that's what I asked my father and he would take great glee in explaining to me how the whole steam engine worked and particularly the fly-ball governor. It has two little balls that whirl around in a horizontal plane and of course, the faster the engine went the faster the balls whirled around and the greater the centrifugal force. Through a very clever system of levers, the centrifugal force of the balls closed off the steam to the cylinder and kept the engine from running away. At the age of about 6 I had that all figured out.

DF: So it was a check and balance system.

CE: Yes.

DF: That's neat. I've always seen those but I never knew what they were for, that's great. Tell us about your education if you would.

CE: Okay, well, our ranch or mixed farm really, was a long ways from any school so my first three years were taken by correspondence. My mother taught me how to read and write, the spelling, I'll take responsibility for my own poor spelling but we'd do multiplication tables while milking the cows. My dad, being an engineer and very clever with machinery, I think really instilled in me my first interest in physics, although of course, I didn't know it was physics at the time. Following the first three years by correspondence Dad sold the ranch and decided to pursue a career in the trucking industry and in sawmills. As a result we moved around quite a bit, we spent a few years in Calgary, a year in Portland, Oregon, some time in Dayton, Washington and as I recall, by Grade 9

we were back in Alberta again. He had a berth of timber to cut out at Seebe. So again, I took Grade 9 by correspondence and worked in the sawmill during the days.

#039 DF: So the steam engine wasn't used for cutting or wasn't used for felling, it was used in the lumber mill.

CE: Yes, that was while he had the ranch. He didn't take the steam engine along with him of course.

DF: No. Did he ever do any threshing?

CE: Oh yes, the steam engine was used for threshing as well.

DF: Because that was pretty much the only way to do it in those days wasn't it?

CE: Yes. Although we did, I think in the later years on the farm, have a John Deere tractor and it was a little more handy for threshing, although it didn't have the power of the steam engine.

DF: What was the fuel on the steam engine?

CE: Well, in the winter time when it was running the sawmill the fuel was trim blocks from the back end of the mill and my job was to carry these trim blocks from the trim saw around to the front end of the mill and fire them into the boiler.

DF: And what is a trim block.

CE: Logs are cut generally 6 or 8" longer than an even number of feet because there's some cracking and splintering and so on. So when a log is cut into lumber the lumber has to be trimmed to a proper length, generally 8', 10', 12', 14', 16 feet. So there's little blocks that vary from 2" to perhaps 10" that are cut off from each end of the board, which would normally be waste but we made good use of it because we fired the steam engine with it.

DF: So you say that was your fuel source in the winter, how about the summer?

CE: Summer coal was the major source. My father had a truck and we would come down to Drumheller and haul coal back up. In fact we would hire mine props down to Drumheller and coal back. Interesting times, we were, I was going to say, poor as dirt, we didn't have much money but neither did anybody else so I guess we didn't realize we were poor. But in terms of values other than money, family relationships and a learning environment, we were incredibly rich.

DF: So how about your further education?

CE: Okay, well high school, I worked my way through the latter years of high school as a refrigeration mechanic, enrolled at University of Calgary. It wasn't called the University of Calgary then, it was the University of Alberta, Calgary branch. I believe that year was now 1956, enrolled in physics. I switched to honours physics and geology in the second year when I went to Edmonton to U. of A.

#071 DF: So why did you enroll in physics?

CE: I think it was the fly-ball governor on that damn steam engine that pointed me in that direction. I'm very interested in physics, physics is really the science that leads to the understanding of the world since all other sciences really stem from the principles of physics.

DF: So how did you get into geology?

CE: Well, 1956 was a boom year. There was discoveries being made, Pembina was being discovered and developed, lots of ads in newspapers for geologists and geophysicists and while I was working out at Seebe I guess, is where I developed an interest in geology. I could see these obviously marine beds in the mountains around me and I could see fossils that were obviously marine fossils and be darned if I could figure out how they got way up there. So I actually, part way through my Grade 9, I asked if I could take a course in geology in Grade 9. I'd like to put in a word for the correspondence program in Alberta. It was absolutely excellent and I owe a great debt of gratitude to the teachers who put those courses together and patiently administered them. It was wonderful. Then I worked my way through university, summers as a refrigeration mechanic. One summer I worked for Shell as a junior geophysicist on a seismic party out at Panther River. That was a very interesting summer.

DF: What did you do?

CE: I was on a training program so I spent about half my time in the field, with both the survey crew and the shooting crew. So I learned how the surveyed things in and how they went about shooting seismic in the mountains.

DF: What were their records like?

CE: Records in those days were very different than they are now. This was before the days of digital recording so everything was recorded optically and Shell had a very clever camera set up, where they could, through differences in the rate of movement of the paper through the machine, they could correct for different velocities and produce a fairly decent seismic records. Nothing compared to what you could do today but it was good enough to discover Panther River field, Burnt Timber Creek, Fallen Timber Creek, the major gas discoveries in the foothills. I was very impressed with Shell and in fact, I still am.

#104 DF: What you just said there about Shell having its own, was that proprietary?

CE: Oh yes.

DF: Yes. I've heard that story before, many companies had their own tweet, different products and it was much later that the standardized equipment came along.

CE: I think standardized equipment came with digital. So the equipment was standard but even with digital of course, it's the programs that are proprietary. Shell still does an excellent job with their proprietary programs. I'm wandering from my story. I was very impressed with Shell and I guess Shell probably liked what they saw in me and at the end of my 4th year they offered me a job as a geophysicist. I was just leaving home to go down and sign up on this wonderful job. For 4 years we had scraped by on very little money and I was sure looking forward to a regular pay cheque and living a little higher standard of life. Just leaving the house to go down to sign up and a fellow on a bicycle with a funny little hat arrived and he said, are you Mr. Evans, I said, yes, he said, I have a telegram for you. Well, my goodness, I'd never received a telegram in my life so I thought, well, maybe I'd better read this before I go down and sign up. And it was a telegram from Imperial Oil informing me that I had won their graduate research fellowship, three years, all expenses paid, any university in the world. Well, it's a terrible decision to have to

make. You can imagine how badly I wanted to terminate education and get on with earning a decent living. However we did make the decision to accept that and suffer through three more years of being a student. By the way I was married at that time and my wife participated in that decision. That would have been 1960.

DF: Your wife's name?

CE: My wife's name is Doris. We had one son at that time, my oldest son Tom. So we stayed in Edmonton one more year, I took a Masters, did some work out at Jasper, mapped the area around Jasper as a thesis area and got my Masters degree.

DF: Can you tell us about that mapping, was that. . . ?

CE: It was mainly structural mapping. I worked on what is called the Old Fort Point formation, which is the oldest of the pre-Cambrian rocks in the Jasper area. It appears right in the Jasper townsite and extends several miles in a northeast, southwest direction. It was a neat little project. As a summer job, and in conjunction with that, I worked with Henry Charlesworth. Henry is a professor at the University of Alberta and he had a contract to map the whole Miette Valley, from Jasper clear out to Tete a Jeune for the Research Council. So I was his assistant and packed an awful lot of rocks up and down and awful lot of mountains.

#149 DF: Were you using choppers or. . . ?

CE: Oh heavens, no. We used Henry's Volkswagen to get to a point on the highway and then we walked from there.

DF: That was it eh?

CE: That was it, yes. I remember Henry had awful long legs and he could go up those mountains in a big hurry. I had the disadvantage of a pack full of rocks on my back, but I was in pretty good shape by the end of the summer. But it was a very interesting summer. From there we . . .

DF: What did you write your thesis on then?

CE: The Old Fort Point formation in the Jasper area.

DF: Okay. And what did that thesis tell the world that was new?

CE: I think just that these ancient pre-Cambrian rocks were there. And that wasn't particularly new, that was known but I did quite a bit of work on the structure of the rocks, the boudinage??? features,

DF: The boo. . . ?

CE: I'll look it up and spell it for you later. How structural deformation deforms the individual beds and how you get thickening and thinning on the anticline rests and arms. A fair amount of quantitative work. I built a special machine for the, special stage for the x-ray diffractometer to measure the orientation of individual platelets and how they varied. It was a neat little thesis but not earth shaking at all. Then I had two years left on my fellowship so Henry very kindly made arrangements for me to meet a colleague of his at Oxford and we ended up going there for two years to do a PhD.

DF: So how is it you came to win this scholarship?

CE: I believe I had the highest graduating marks in geology from across Canada, something like that I guess.

#176 DF: You're being too modest.

CE: Well, I certainly didn't know anybody at Imperial Oil. My only work in the industry had been with Shell. So I'm sure it's given out on a purely impartial basis. .

DF: So what did the farm boy think of Oxford?

CE: Well, I don't think either Oxford or this farm boy will ever be the same. It was a marvellous experience for me. I think that the people at Oxford must have thought I was quite mad the way I went about working to complete that program in 2 years when normally it takes 3 or 4. But of course, I didn't have much choice because at the end of 2 years I was out of money. It's a great incentive. I worked on the Louisian basement rocks in northern Scotland. I had never seen metamorphic rocks or igneous rocks in place, having grown up on the prairies. But I could keep seeing these strange pebbles that are used as ballasts on the railways and I couldn't help but wonder what in the world these rocks were and how they formed and where they come from. Of course, all you see on the railway is the little broken rock. So I didn't think my education would be complete until I actually saw some basement rocks of the earth. I saw lots of them in Scotland and they're awful hard to break off. I worked on the geo-chemistry and isotope geology. I did field work for 2 years, lived in a mountaineering tent in the rain.

DF: Where was this, in Scotland?

CE: In Scotland yes, right up on the northwest coast at a place called Loch Inver. Worked out the sequence of events. . .that's l-o-c-h-i-n-v-e-r.

DF: Two words or one.

CE: The town is one word, the bay is two. And the river that runs into the bay was called the River Inver. So the thesis went very, very well and I did manage to add one more episode of mountain building to the already complicated British history. They didn't really need that but it was new. The area that I worked was worked 10 years previously by two geologists, Sutton and Watson. Sutton was a man, Watson was a lady and they indeed married and each became a professor at different universities in England. So of course, they were my thesis examiners. That was a very stressful period getting ready for exam but they were really very kind and of course, I had the advantage of isotopes, which had come along in the meantime. So I could not only point out the events but I could tell them exactly, or more or less exactly, when they happened.

#219 DF: So tell us about isotopes, how do they help you?

CE: Minerals are made up of course, of different atoms, different elements. Some of these elements are radioactive, not dangerously radioactive, but they decay over time slowly. For example, potassium has a number of different isotopes, one of them in potassium 40. Potassium 40 decays with a long half life and I've forgotten exactly what the half life is but it decays very slowly over time to Argon 40. So when a system becomes closed, when the temperature cools to the point that the crystal can trap Argon, you essentially set the clock. And by measuring how much potassium is there and how much argon is there you can tell how long the crystal has been closed. Now argon being a gas of course, it escapes quite easily in any subsequent reheating or recrystallization. So I needed some other system for these very ancient rocks and I chose to work with rubidium-strontium.

Rubidium decays to strontium and again of course, when the crystal becomes closed it becomes a closed system but the rubidium-strontium clock is much more difficult to reset. It takes a lot more heating and geological activity, crushing or whatever, to reset the rubidium-strontium clock. So I was able to determine the age of the most ancient rocks in Britain, they're about 2.2 billion years old. And also, by a combination of rubidium and potassium, determine the number of subsequent events that had affected those rocks. So quite a bit in that thesis was indeed new and it was quite controversial in Britain at the time but it has indeed stood the test of time. At the end of the thesis, as I was approaching the time when I was running out of money and set to go home, I got a call from Professor Wager, who was the professor of geology at Oxford at the time. A very famous geologist, Professor Wager, he was with Hillary on the Everest expedition and we had a number of Everest rocks there from that. He also did just a gargantuan effort on the Scareguard, east Greenland intrusion. Anyway I was called up to his office and he said, young man, we are very impressed with the work you have done here in Oxford. I would like to offer you a teaching position with the university. This of course, is a tremendous honour. Most students would give a certain part of their anatomy to have such an offer, but unfortunately I had to turn it down because I had already accepted a job with Imperial Oil. I told the professor this and he said, young man, how much did they offer you. I told him it's \$800 a month. Well, he turned pale because that was probably a little bit more than he was making and I'll never forget his next words as long as I live. He said, young man, you're not embarking on a geological career, you're creating academic prostitution. So you're sitting here talking to a prostitute. The only two acceptable professions for a geologist graduating from Oxford, at that time, was to go to work for the Geological Survey or to teach at university. Any other profession and particularly working for industry, was something that other universities did but not people from Oxford. I wasn't aware of that unwritten rule but he informed me in no uncertain terms. I think it's interesting though, that it was Canadians with their, perhaps, more practical approach to geology that made the initial discoveries in Great Britain and the North Sea and really did a lot of good for both England, and indeed, Oxford. So I came to work for Imperial Oil as a research geo-chemist, that was 1963.

#289 DF: So when in that education cycle did you get offered a job by Imperial?

CE: Nearing the end of my stay in Oxford, nearing the end of my scholarship.

DF: What was it like to live in Oxford with a family?

CE: It was very interesting. We of course, as usual were poor as dirt, we couldn't afford a car. My wife and I each had our bicycles. But at the same time we were a part of the academic community and expected to maintain certain standards and so on. There's a lot of unwritten rules in England about what one should do and about what one shouldn't do and who one should associate with and who one should not associate with. Well, this farm boy from Canada of course, bloody well did what he thought was right and what he wanted to do and made friends with people who were friendly. I think, well, one incident I'll relate. A neighbour lady who sort of took us under her wing and informed us how we should behave and what the standards were for members of the academic community,

visited us one winter evening and it was cold, it was about as cold as they've seen in Oxford, freezing cold and I left the tap dripping a little bit. Having lived in a house trailer in Edmonton while I was going to school, I knew that if I let the tap drip a little bit the pipe wouldn't freeze. The water pipes in Oxford are on the outside of the house, they go up the outside of the brick house. She would get up and walk over and turn the tap off and then we would continue our conversation. After a few minutes I would get up and turn the tap on. Finally she brought this to a head by pointing out that Britain had a very small watershed and that water was a very precious commodity and that we must not waste water, we must conserve water. I tried to explain that this water pipe runs up the outside of the house and unless we have some movement of water in that pipe, it's going to freeze. Water pipes in Britain do not freeze young man. So okay, anyway, the next morning I got up to leave. The water pipe on the outside of her house was burst and spewing out water and the workmen were there trying to shut it off. While I was watching this I noticed a movement of the curtain, she peeked out of the window, saw me and very quickly closed the curtain again. All kinds of incidents like that. The Brits, god bless them, are wonderful people, they have, by and large, wonderful traditions but some of the traditions I think, are a little too inflexible. Needless to say, we had a very, very happy time in Oxford, we enjoyed ourselves. We made a large number of friends, in fact I still go fishing with some of the friends that we made over there at that time.

#340 DF: Amazing. So then you came back to Canada and where did you come to work for Imperial Oil?

CE: Right here in Calgary. Came back and joined their geological research group and worked as a geo-chemist. I didn't really know anything about the geo-chemistry of oil. My education did not prepare me for that job, other than perhaps, it taught me how to think. Maybe that's what university education does. Anyway I again, worked very, very hard getting up to speed on organic systems and what organic matter was and what oil was and what kind of research would be useful to an oil company. And for 5 years I worked as a geo-chemist. Probably, perhaps the outstanding accomplishment of my career was the geo-chemical research that I did here. I hasten to add that very little of what one does with an oil company is an individual effort. Most things are team projects, and you get key input from some individual who might not realize that's key input but it puts you on the right track and it's the missing link to a puzzle that you can put together. I must back up, at that time, this was now 1963, the year that Kennedy was assassinated I believe, natural gas was of little or no value, what we were really looking for was oil. Anything that could be done to steer us in the direction of oil as opposed to gas was of very significant value for the company. I had of course, studied metamorphic systems in rocks, in hard rocks. I recall a very famous paper by a geologist named Harper who wrote, Regional Facies of Metamorphism and mapped the metamorphic facies of minerals in Great Britain. And it occurred to me that organic matter, went under metamorphic changes, at much, much lower temperatures than the minerals and rocks but it still did metamorphose. If you've ever cooked a turkey in the oven you know that organic matter does react quite readily to heat. So I set off to try to understand this, what happened in the subsurface when rocks

are buried and reach high temperatures and found to my utter amazement that it was very clearly defined. That you have a set of rocks, a set of sediments, when they're first buried that have not generated oil, oil has not been generated but they do generate gas. In fact gas starts to be generated in swamps, almost at the surface. With additional burial you start to generate the wet gas, not just the methane but the ethane, propane, butane and wetter gases and gasolines. And indeed, you start to generate oil but you have to reach a certain temperature, it's a temperature, time relationship, before organic matter will generate oil. That was very interesting. Then at the other end of the scale, I noticed that organic matter turned black and the only gas that was present was again, methane, that the wet gases and the oil had disappeared, it hadn't cracked down to form methane. So we have three major metamorphic facies, we have an immature facies which is only gas, we have a mature facies where you get both gas and oil and you have a metamorphose facies where any pre-existing oil has been converted back to natural gas and bitumen. That was a great theory and I set out to prove it by actually mapping it in the western Canada basin. Imperial was very supportive in this research and had a huge amount of data and of course, I could get all the analyses I wanted, just a wonderful research environment. I finally produced the paper for Imperial Oil and for the Exxon affiliates and in due course, they very generously gave me approval to publish it. That was one of the papers that won the Best Paper Award in the CSPG and indeed, in the AAPG. So that was I think, probably my contribution to science was bringing geo-chemistry in the sense of knowing the chemistry of the substance we're dealing with and how it changes with time and temperature, bringing that into the box of tools that geologists can use.

#433 DF: Now, when you say mapping, I've talked to a lot of people like you and you tend to understate what's involved, like that's a big, big job. Tell us about the details.

CE: Yes it is. Well, of course, I'm working in the subsurface so this wasn't crawling around on mountains and breaking off rocks. What I instituted in Imperial, myself and my colleagues of course, was a program of collecting cuttings from wells. Every 30' as the well went down, we would collect cuttings, drill cuttings and actually can them. We would can them just like you'd can jam. And that was to preserve the gas that was present in the cuttings and the gas would slowly diffuse out of the cuttings and then we could measure and analyze the gas from these cans. So it was not very romantic, it was just a heck of a lot of hard work.

DF: So you were only using Imperial's cuttings or were you using Conservation Board collected materials and so on?

CE: The canned cuttings were only from Imperial, I don't know of any other company that .

DF: Nobody else was canning them, yes.

CE: That canned them. And of course, a lot of people wondered what in the world we were doing with these cans. But we were trying to get a firm definitive map of the metamorphic facies of western Canada. I should mention that other types of organic matter, the solid organic matter, a colleague of mine Frank Staplin, who is a palaeontologist, noticed that the organic matter in micro-fossils that he was looking at also underwent colour changes that coincided with the metamorphic passage that I was

mapping. And this opened up then, another whole line of attack on the problem because now we could use everybody's cuttings and core and just look at the colour and the reflectivity and so on of the organic matter. So that's what I did as a research geo-chemist. We have a train going by, I love trains, I grew up beside a train track and it's interesting to watch Canadian commerce going by right outside my office window here.

#486 DF: Have you ever been up to Stettler to go out on that steam train?

CE: No, I haven't done that.

DF: I'm sure you would love that. They've got a wonderful old steam engine there, they take people out on tours. My grandfather worked for the CNR, out of Meer so our family kind of likes trains too. So I need to see the big picture, how long were you with Imperial?

CE: I worked for Imperial until 1981 and at that point, I was seconded from Imperial to Exxon, in fact, Esso Europe and I spent 5 years again, back in London working for Esso Europe. At the end of that time I left the Exxon family, left the biggest oil company in the world and started the smallest one.

DF: What was the motivation behind that?

CE: At that time there was not a lot of opportunity in western Canada. That would have been 1986 and my next stop would have been New York. This cowboy just wasn't cut out for New York and so I decided it was time to leave and indeed, the leaving was very friendly, there's no animosity with Imperial. It was a wonderful company, I had a wonderful time with them. I was Executive Vice-President of Esso Resources when I went to London in 1981 and I had a wonderful time in Europe working for Esso Europe. I was Exploration manager there, looking after the affiliates all the way from the Barrent??? Sea of Norway, all the way to the Ivory Coast of Africa. Saw the inside of a lot of airports.

DF: And a lot of aeroplanes too I suppose.

CE: Yes.

End of tape.

Side 2

DF: So tell us more about what it's been like to be an independent.

CE: Well, it's very different of course, because there's no big mother bank account to fall back on. A group of us old fellows started this little oil company called Pemoco when oil prices were about \$30 a barrel and plunging from about 30 down to, I guess about 10. That would have been in 1986. Raising money in that environment was extraordinarily difficult. Even though we had a good story to tell people we talked to said, boy we'd sure like to raise money for you but if I mention oil to my Board of Directors I'll get fired. However we persevered and we did find a few brave souls that would back us and we had a few dollars of our own. We put a plan together how we would run and operate this company. Our objective was not to become the largest oil company in the world, we wanted to be highly profitable, we wanted to remain small, we wanted to remain private and we wanted to enjoy ourselves. We've accomplished that and. . .

DF: What has been your strategy for doing that, it sounds like everybody would like to do that?

CE: We set out some basic rules on how we would go about doing things. For example, we would not co-mingle investors funds with our own. Investors funds are held in a separate trust account until they're used. We charge new investors a 10% promotion fee to come in on any new plays or new acreage. After that they're straight up with us. We would never put an investor into a play that we didn't invest in ourselves. We have 7 shareholders, all with complimentary skills. We run the thing ourselves, we have a staff of two people here in Calgary, a secretary and a production accountant. So we probably have the lowest G & A of any company in town and probably the lowest operating costs.

DF: And G & A stands for?

CE: General and Administrative expense. We don't spend a lot of money on rent, we don't spend a lot of money on writing memos to each other. I haven't made a view graph since I left Exxon.

DF: Good for you. What kinds of petroleum products do you go after, are you exclusively oil or . . . ?

CE: Yes, we are. We perhaps missed the boat on gas but gas is really a very different product to deal with. It's easy to find but much more difficult to market profitably so we have concentrated on oil. We have tried to keep out of the big boys way by concentrating on Saskatchewan and we've carved out a little niche in southeastern Saskatchewan that has been very good to us and we've worked hard on it, we probably understand it better than most other people although we're still willing to learn from anybody that can teach us. And we've done just extraordinarily well there.

#038 DF: Is there something about the geology there that intrigued you or what's the attraction to that area?

CE: Well, yes, the geology is indeed intriguing. Quite different from what we had expected when we went in and I think the opportunities were there for us to get in. We do very little exploration, since we're limited in our funding. We have only our personal resources

and those of a small group of investors so we haven't a lot of money to spend on exploration but our forte is to purchase properties and do very careful reservoir engineering and try to enhance the production that we can get from them. And although we still operate on a pretty modest scale compared to the big guys, we did spend \$10 million earlier this year to buy a neighbouring property to ours. And we produce, I think, about 4,000 barrels a day at the moment.

DF: So you're probably not quite the world's smallest oil company.

CE: No, I can't quite claim that any more. But we're the happiest.

DF: That's great. Now can you tell us how you came to be associated with the CSPG, or probably the ASPG when you first knew it?

CE: That's right, it was the ASPG. In fact, it became the CSPG during my term as President. The ASPG in I think about 1960, under a President called Dr. Woodward, started a very ambitious project. In '61 they held a symposium on the western Canada basin, it was an oil symposium but they did ask all the people to submit papers. The idea being to create a comprehensive atlas of western Canada. Two of my colleagues, when I joined Imperial in 1963, Perry Gleister and Bob McCrossan were working almost full time on that project for CSPG, of course, being paid by Imperial Oil. They were the editors of this mammoth book called the Geological History of Western Canada. Just a huge undertaking at that time. By the end it had 42 contributors, it ranged from the initial idea in 1960 to final publication in 1964. So the research department at Imperial was very much in tune with CSPG and it was just the thing to do was to join and support this organization. I think that still stands as probably the most important work that the CSPG has ever done. Now it's done a lot of good things since, but that was a real milestone. I volunteered or was asked to serve on a number of different committees and so on and so forth and eventually I was elected Vice-President and proceeded to be President of CSPG during a very troubled time, that was 1973 I believe. '73 was an interesting year. There's an ancient Chinese curse that says, may you live in interesting times, 1973 was an interesting time. It was the year of the Yom Kippur War and the year of the Arab embargo. Oil prices had remained virtually constant in dollars of the day at about \$2.70 as I recall, which meant of course, that they were actually declining in real terms. All of a sudden the Arab embargo of 1973, doubled and may have even tripled the price of oil virtually overnight and caused great consternation and it was the hot topic of conversation everywhere, not only in oil companies but caused a great deal of public concern and indeed, political concern. We had a very busy year in the CSPG and we took on one additional project as a result of this public concern. We put together a group to provide an assessment of the western Canada basin undiscovered oil potential and indeed, the oil potential of all of Canada and presented our findings to a parliamentary committee that was concerned about Canadian security of supply and so on and so forth. It was a good study.

#099 DF: What were the major recommendations?

CE: I think our purpose was more to present an informed and scientific opinion of the facts. It's really up to politicians to use those facts in the public interest.

DF: I guess where my question was going was, the western Canadian sedimentary basin was

well established.

CE: It was very well established.

DF: So did your report cover other areas?

CE: Yes indeed. I think if I could sum it was we wanted to assure the Canadian public that we had an ample supply of both discovered and undiscovered conventional oil in the western basin that would last us some considerable time, not forever but some considerable time. That there was the likelihood of major discoveries in at least one, if not more, of Canada's frontier area and as a third layer of security we had huge, huge reserves of heavy oil. But that we were not running out of oil, we could assure people that there was no way we would run out of oil but we would run out eventually, of cheap oil. And that higher priced oil would bring huge Canadian reserves into play, reserves that we knew were there in the tarsands and the heavy oil deposits but also, very likely, discoveries that would be made in the future in the frontier areas that would still have to have higher prices to be economic. So we weren't running out of cigars, we were just running out of 5 cent cigars.

DF: Good point. That's interesting that that study came out at that time because by 1980 with the implementation of the National Energy Program, the government was making some really powerful decisions about where industry would go in the future wasn't it?

CE: Yes. 1979 saw the Iranian revolution, the huge price shock and was followed, I believe in 1980 with the infamous National Energy Policy. It sounded perhaps, to some people at the time, that a made in Canada price for oil was the right thing to do but like so many of these initiatives, they really do the opposite to what they're intended. By putting a tax on Canadian oil leaving Canada it effectively lowered the price in Canada. But what the government I think, did not realize is that the oil industry is highly mobile and it didn't have to stay in Canada. I can still remember drilling rigs lined up at the U.S. border, miles and miles long, line-ups or trucks with rigs leaving Canada to go explore for oil in the United States. And of course, with the industry shutting down and with the high prices in other countries, there was great demand for both equipment and people. That of course, triggered my move to London to work there as an explorer since it was much more economic for Imperial and its affiliates to find oil offshore and in places other than Canada than in Canada where prices were controlled and depressed. So it essentially shut down the oil industry in Canada. Which is of course, the opposite to what one wanted.

#145 DF: So did Imperial ask you to go to London or was that. . .?

CE: Yes.

DF: Now, I'm sorry to do this, I'm jumping around a bit but there were some other major economic downturns in the industry, one was in the early 1960's but at that point you were still at Oxford.

CE: No, as I recall the downturn in 1960 was just at the time I graduated. '56 when I decided to pursue a career in the oil industry and educate myself for that was a boom year. '60 by the time I graduated was a bust. Most of my fellow students found work as teachers, high school teachers. I know a large number of high school teachers with geology degrees. And as I said I was very fortunate to have been offered a job and they thought I was

absolutely crazy not to take it at that time. But that's the way it was. That's my recollection.

DF: Do you remember what the downturn was in 1960?

CE: I think it was just part of the normal boom and bust cycle of the industry. It had followed a 4 or 5 year wave length. Some say it still does, who knows.

DF: Maybe even shorter these days.

CE: Yes.

DF: Can you tell us about some of the old timers at Imperial, did you ever work with people like Ted Link?

CE: No, I didn't know Ted but I knew Doug Layer, for example, Bill Twaits. Jack Armstrong was President during much of the time I was with Imperial. Jack was a rough tough geophysicist who was running a seismic party down south and met a Mormon girl who completely reformed him. Wonderful, wonderful man, Jack. I had a lot of respect for him. Vern Taylor was still there, Vern was one of the people involved in the discovery of Leduc. I was 12 years old in 1947.

DF: Do you remember that?

CE: Oh yes, indeed. It wasn't too far from the ranch. What a wonderful thing. It's hard to imagine Alberta coming out of the Depression with no oil. Things were tough, this was a very economically depressed part of the world. Oil was just a wonderful thing and so many spin offs from oil that we don't even think about. The exploration for oil drove roads into the wilderness where there were no roads, it paved roads where roads were in terrible shape and it opened up huge areas for farming and ranching and so on. A lot of, not only direct economic benefits, but a huge number of indirect benefits to the Alberta economy. It provided jobs for farmers who would work part time in the oil industry and then use their earnings to bring their farm or ranch holdings up to an economic standard, a standard where they could be economically sustainable.

#188 DF: Oil subsidized a lot of ranches hasn't it?

CE: Yes indeed.

DF: Yours too.

CE: Well, it paid for mine.

DF: Did you ever know Stan Harding?

CE: No, I didn't.

DF: He was with Imperial for awhile too. Now, I did send you out a copy of the first page of the annual report that you wrote for the CSPG. Are there any other things that you'd like to mention about the year you were President?

CE: Yes. I think I've set the political setting and so on. We, first of all, changed the name of the society from the Alberta Society to the Canadian Society and I don't take any credit for that at all, that was set in motion by the previous President, Dick Slaven. All I had to do was follow up with the paperwork and bureaucracy and so on and so forth to make it happen. There were some issues with the Saskatchewan Society and the Manitoba Society as to how they would fit into us becoming the national Society and whether they were part of us and so on. But they got ironed out. So I guess '73 was the year that the Society

did change its name. We initiated the memoir series. Memoir 1, if I remember right was, Future Petroleum Provinces of Canada. And it was based on a symposium held previously and we again, called on the excellent editorial skills of Bob McCrossan he was the fellow that was involved with the atlas as you recall, to be the editor of Memoir #1 of the Society. As I recall, Memoir #2, we also published that year and it had to do with the Permo-Triassic Boundary. Len Hills, who was the editor of the Bulletin also took on the job of editing that. I think we held a symposium, since oil was, security of supply was obviously a public interest thing, we held a symposium on Oilsands, Fuel of the Future I think was the symposium. I think, if I remember right, Dave Martin was the Chairman of that, which was very well received. So it was a very busy year. Probably the highlight though was, George Grant from Chevron and myself, marching down to Ottawa and presenting the Canadian Oil and Gas Assessment. And I think that had never been done before. Oil companies tend to treat assessment as fairly sensitive data and it wasn't easy to draw this out but they recognized that the public really did need to know what the true picture was and not believe the hysteria that was going around.

#233 DF: Right. Did you do this as part of the Canadian Petroleum Association or as CSPG?

CE: No, as CSPG.

DF: To go directly to the politicians with anything is not typical of what the Society has done over the years. How did you feel about that quite overt, direct communication with the politicians?

CE: That of course, was one of the issues within the Society, whether we should be doing that or whether we shouldn't. CPA of course, had made submissions, but CPA, rightly or wrongly, was perceived by the public and the politicians as a self-serving organization. The CSPG, being a technical society, with no, at least, direct economic stake, although there was a job stake but no direct economic stake in the problem, we felt would be perceived more as a truly scientific and unbiased source. And I'm not suggesting that CPA was biased, but there was the perception that perhaps they were biased. We were very well received in Ottawa and I think history has shown that the report that we made was reasonable, was balanced. And I think there's probably still controversy within the Society as to whether it has any right to meddle with public opinion and so on. I personally believe that the Society not only has a right, it has an obligation to share its science with the public and probably more so now than ever. What I see happening around me now is people using pseudo-science for their own economic purposes, stirring up all kinds of hysteria, creating public concern with science that is basically wrong, ill-founded or ill-informed. And co-opting to these groups, well meaning, but ill informed public. I think the Society has an obligation to share its science with the public and let people know what we know.

DF: It's done that in many ways over the years hasn't it?

CE: Yes.

DF: Any direction you think the Society can go in the future?

CE: No, I think it has charted a very even course. I think there are projects that it could and

should undertake. There are controversies that it has special knowledge that would be useful to the public if it chose to share that knowledge. But I think the Society is in good hands.

DF: You mentioned earlier this example of you going into geology in '56 and then getting a job right in '60 when things fell apart. That seems to be a recurring problem, when there's a boom everybody goes into something, but then by the time they get out, half a dozen years later at the maximum, the industry is down in a trough again. Has the CSPG or . . . how can this be rectified?

CE: I'm not sure it can. I think it is recognized. It's very hard to predict ahead of time the timing of the boom and bust. In fact, it's sometimes difficult to know whether you're in one or not. So there's a number of societies that do put out manpower studies, CSPG certainly could do that, in fact they have done it from time to time but that's more within the purview I think, of APEGGA. APEGGA puts out salary surveys and manpower studies and so on, on a fairly regular basis. And it isn't just geologists and engineers that have this problem. I notice that the medical association is taking a fair amount of heat recently for not having enough doctors around. But part of free enterprise is supply and demand and again, it depends on informed opinion and students being given a clear picture of the situation and they have to make up their own minds what they want to do. It's probably important for them to have a fall back position. If there's not jobs when you graduate with your bachelor's degree, be prepared to go ahead and take a Masters or even a PhD, or pursue some other profession until the opportunity comes around.

#307 DF: Good advice. As a Canadian you've worked for Imperial Oil, which is part of an even larger corporation, Exxon. I've talked to people who were Americans who came to Canada and they seem to have certain attitudes about the Canadian oil industry. How about you, how have you seen yourself as a Canadian, as part of a larger organization?

CE: That's a very interesting question. Canadians own I believe, about 30% of Imperial Oil and I believe Exxon owns about 70% or thereabouts. There's no question that a 70% shareholder exerts a fair amount of pressure on the Board of Directors. But there's also no question that Imperial operates as a Canadian company in the Canadian interest. I think an example of that might be, I'm having trouble with the year now but it would have been before 1973, before the first Arab price shock, Exxon urged Imperial to get rid of these silly heavy oil assets. We can buy all the oil we'll ever need from the Arabs at. . .

DF: Venezuela and Peru.

CE: Yes, at \$2.50 a barrel. It's going to take you \$10 a barrel to produce that stuff, why do you continue to pay royalties and rent on those lands. That's a waste of money, that will never happen. Jack Armstrong prevailed on Exxon and informed them that they didn't own all of Imperial Oil, that Imperial Oil was a Canadian company and it had Canadian shareholders and that the heavy oil deposits were a very strategic Canadian asset that Imperial should maintain and his argument won the day. It's a to and fro thing. Certainly Imperial has benefited a great deal from the Exxon relationship. We had access to a large amount or research that went on down there that we could never have afforded to do on

our own. And indeed, a lot of the research we did up here, Exxon paid for. They actually provided the funding for our own research program.

DF: Did you ever work in the States?

CE: No, I never worked in the States.

DF: So London and here?

CE: That's right.

DF: Did you feel you were part of a large international company?

CE: Certainly when I worked in London I did because I was making at least weekly plane flights to New York. No, I think, certainly as a research scientist in Imperial I didn't feel that I was taking my marching orders from the U.S., although I did share my research with them and they indeed, did fund my research. So yes, I was part of a larger scientific community but as you move up in management you realize that Exxon does indeed provide direction, not authoratively but suggesting areas that we should work in. As indeed, a shareholder would normally do.

#368 DF: If you wouldn't mind changing hats from your Imperial hat to an independent hat, I did my Masters thesis on Turner Valley and I know that Imperial at times was at logger heads with the independents, for example about the marketing of western Canadian oil. They could get it cheaper offshore so why should, for example, they wanted to build a pipeline from Turner Valley, independents wanted to build a pipeline from Turner Valley to Winnipeg but Imperial came out against that. In your current position as an independent, do you ever see your interests at logger heads with those of the bigger companies?

CE: Of course, we're so small that that wouldn't even be a fight.

DF: Okay, well, Home Oil for example,

CE: Yes, was also small.

DF: It was big enough that it was constantly going to Ottawa and lobbying and indeed, in 1960, most people forget about a different national oil program where all the markets west of the Ottawa valley were protected for western Canadian oil. Basically, an artificially high price for western Canadian crude.

CE: That's correct.

DF: Because it could have come in more cheaply from offshore.

CE: That's correct. As I recall there was considerable leakage from time to time and we protested that. No, I don't think we have any great fight with larger oil companies. Probably the most recent example might be, not in oil but in gas, the completion of additional pipelines has now of course, elevated the price of natural gas in western Canada to world levels simply because we now have a chance to market it. The Alliance Pipeline of course, was opposed by certain groups and very much promoted by the independents who wanted a world market for their gas. It's a shame to have such a wonderful product as natural gas and not be able to sell it. Now as a consumer you hate to see the price go up but that's all right, we can find it and deliver it as cheaply here as they can anywhere. So perhaps that's as it should be. I think whether we like it or not, we are a trading nation in a global community and we simply have to steel ourselves to meeting

that competition.

#414 DF: What have you enjoyed most about your career?

CE: I think a lot of things. The joy of discovery I think, is wonderful. The satisfaction of putting a group of people together and achieving a result is very satisfying. And probably the . . . well, you can see the pictures on my wall of some of the things that we worked on in Europe and indeed, in the Canadian Arctic. Probably my most satisfying discovery though, was not the trillions of cubic feet at Slipener or the natural gas at Taglu, but a very small field in France. The Paris basin is a terribly difficult seismic problem to overcome and as exploration manager I felt I should help them by bringing in the proper manpower, the proper skills, first of all, to try to understand what the problem is and then bring together the people with the expertise that might have a chance to solve the problem. With France, not that I have anything against French, the French are wonderful people and I thoroughly enjoyed working with them but this has to be done rather diplomatically. With the Germans or Dutch you pound the table and say, it's going to be this way, with the French you say, have you thought of this and, do you think this would be a good idea. You reach consensus diplomatically with the French. At least with the French that I was dealing with. But anyway we managed to bring together a team of geophysicists from Exxon in the U.S., the research group and they solved that problem. The French affiliate discovered a field called Chaunoy, which is not large, it was only 50 million barrels, that's significant. But it's on the outskirts of Paris, tremendously valuable and my opposite number in the French affiliate was awarded the Medal of Honour, it's equivalent to Knighthood in England, Legion of Honour. So that was, I think, tremendously satisfying. One starts one's career by making sure and doing the best job you can of providing the right answers to questions and that is very important. But as one progresses through his career and into management you realize that answers are very important but asking the right question is absolutely critical.

#476 DF: Any regrets?

CE: Oh, yes, of course. Not personal but there certainly have been failures. I think a major failure was our inability to build the Mackenzie Valley pipeline. We had the technical expertise, we had the reserves, we had the market. We vastly underestimated the importance of the politics of that situation and we frankly did a very poor job of gaining the political backing for the Mackenzie Valley Pipeline. That was a terrible blow to me because I had worked very, very hard in the Beaufort basin to make those discoveries. We spent a huge amount of money, a huge amount of manpower and we did a tremendous amount of research on the environmental aspects of the pipeline and we just got blown completely out of the water because we approached the whole thing on the basis of logic rather than politics. Most people feel that the high Arctic is an extremely sensitive environment and you still hear that. In fact it isn't, the high Arctic is a very robust, tough environment. The sensitive environment is way south, it's in the area of Norman Wells where the permafrost is just barely frozen and it's close to ground that is not frozen and any slight change in temperature causes a major difference in the permafrost. And that's

where we had concentrated our research was in the truly sensitive areas. But very few people realize that it's the southern margin of the permafrost that is the very sensitive area and that needed the study and the high Arctic is a very robust environment. I've watched antelope scratching their horns on oil rigs, the caribou. So the high Arctic is not where the problem is, the problem is farther south and in people's minds and to a large extent in Ottawa.

DF: Well, as we just about run out of tape here, I'd like to take this opportunity on behalf of the CSPG and the Petroleum Industry Oral History Project to thank you so much for letting me come and interview you today. It's been a great pleasure and a great honour and we'll end the formal part of the interview at this time. Thank you very much.

CE: Well, thank you David. This has taken my back and let me enjoy again a lot of memories that were beginning to slip away, so it was a pleasure to do this. Thank you.