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**Prepared in collaboration with Dr. Fortier, by Ian A. Brookes**

**YVES OSCAR FORTIER**

**B. A., B. Sc., M. Sc., Ph. D., F. R. S. C., O. C.**

**Une Vie en Service du Canada**

**Prepared in collaboration with Dr. Fortier by  
Ian A. Brookes, Ph. D. (Department of Geography,  
York University (rtd.), June 1998 - June 2000.**



## CONTENTS

Interview Transcript, Version 1.0

Interview Transcript, Version 2.0  
(edited by Y.O.F.)

Additional Text by Y.O.F.

Other Career Material

Service, Awards, Honours

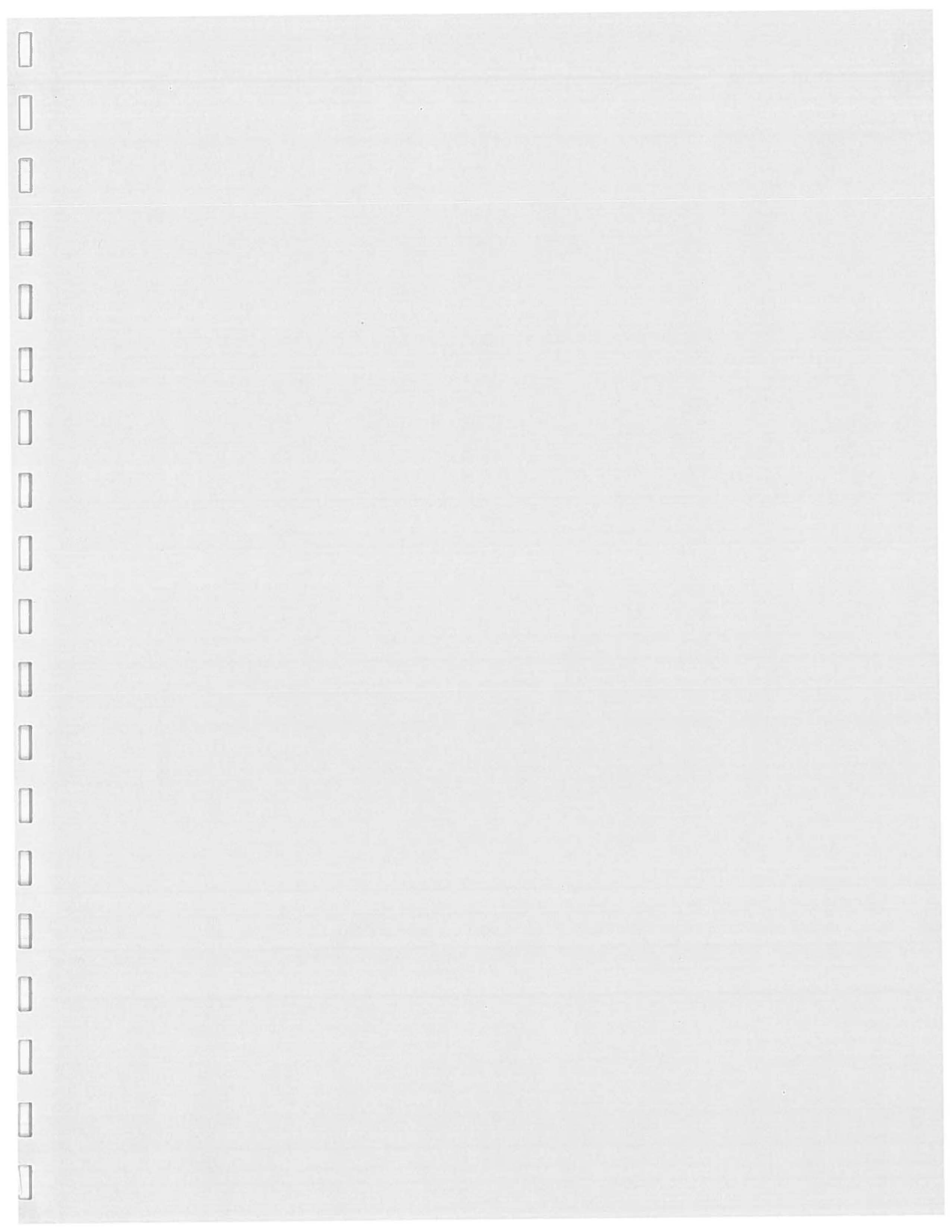
80th Birthday Family Testimonial

Correspondence with I.A.B.

[above items are on disk enclosed;  
transcribed interview is on tapes  
enclosed]



YVES O. FORTIER (b. 1914) AT HIS HOME IN OTTAWA  
JUNE 16 1998



INTERVIEW (VERSION 1.0) WITH YVES O. FORTIER, DIRECTOR OF THE GEOLOGICAL SURVEY OF CANADA (1964 - 1973), AT HIS HOME IN OTTAWA, JUNE 12, 1998, CONDUCTED BY IAN A. BROOKES, GEOGRAPHY DEPARTMENT, YORK UNIVERSITY, TORONTO.

Tape transcribed by Ms. R. Mantini (Humanities, York Univ.) and I. A. Brookes

[...?] =inaudible

[word] = insertion to clarify context, meaning

“fillers”, such as “er, ah, you see, and the like”, etc. have been deleted from the transcript.

This is Version 1.0, the original transcript unedited. V. 2 is the version edited and amended by YOF.

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### Tape 1, Side 1

Leading from unrecorded comments on the form of the interview, Dr. Fortier begins talking about his geological education:

F: I'll tell you about the Thirties, now. When, in the middle Thirties, I was thinking about geology, I had been fascinated by the early geologists who saw so much in Nature. And, that is, they were not narrow-minded. They were broad in outlook. That fascinated me, and also the fact that fundamentally they were explorers, because in many parts they were the first white men to ...

B: Sure...

F:... and this did affect me greatly. Well now, as one in Quebec City, and the people in research, for getting [into] university, now, went by and large en masse towards the classical professions. And I wanted to get away from that. This is what directed me. And I was influenced by a few personalities in Quebec.

B: Such as who?

F: Well, there was the professor who taught me at, I don't know if you know about the 'seminaire de Quebec'; it is the old-fashioned classical 'ecole', where you get the French 'baccalaureat'. There was a professor there who taught, who introduced me to geology, and he influenced me. And then, later on, there was...

B: What was his name?

F: Ah, Father Laverdiere.

B: Ah, yes.

B: You know, is he the father or grandfather of Camille?

F: Oh, no! He was a priest, an RC priest (laughs)

B: Oh, yes.

F: As far as I know he didn't father anything, except intellectually! (laughs). No, but there was also A.O. Dufresne, the Deputy Minister of Mines in Quebec. This was the time of Duplessis. He influenced the Quebec government to arrange a system of bursaries, of grants to influence people going towards the mineral resources - mining engineering, and geology. This gave me the means to start at the university and going to Queens, leaving Laval and going to Queens. And I started in mining engineering, but there I gradually moved towards - I and a couple of other colleagues - to what was called Geology Option in Mining Engineering. That gets towards the exploration, rather than the actual digging out.

B: Who at Queens influenced you?

F: Well, at Queens there was especially Dr. [?]Hawley in Mineralogy, but it was called Economic Geology. He was studying mineral deposits, but he influenced me greatly there.

B: So, what was your field experience as an undergraduate? Did you have to do a thesis?

F: Well, yes. I started as a student assistant, surveying in the Eastern Townships as assistant to Dr. Stockwell. Fundamentally, studying the prospect for chromite; chromium was very much needed, wanted ...

B: Oh, yes, yes.

F: ..in steel-making.

B: That was in the ultramafic bodies?

F: Yes, it was a matter of looking at ultramafic bodies and finding out what was the petrographic horizon, if you will, facies that hosted the chromite.

B: Had they been finding...had they been finding placer deposits before, of chromite?

F: Placer deposits? Not that I know of. Gold, there was gold placers in the Eastern Townships, but I'm not aware that there were...

B: Because they've been finding them in Newfoundland, with the ophiolites there.

F: Is that right?

B: Yes, in fact, in commercial quantities, yes.

F: Oh...

B: On the west coast of Newfoundland. Yes. Mostly in submerged glacial deltas which have been drowned by rising sea-levels; so it's all under water now.

F: Oh, I see.

B: But they're massive bodies of sand that are full of chromite.

F: And I also worked for... that was my introduction to the Eastern Townships, and the... looking for chromite under Dr. Stockwell. Then, the following year was with Dr. Ambrose.

B: Right

F: He went to Queens. We started systematic mapping... searching... from the International Border going northward. And this is how I, as a result of my work under Dr. Stockwell, I wrote my Master's degree on chromite. But, for Dr. Ambrose, in mapping up... I took the Mt. Orford area for my Ph.D. thesis at Stanford. Then from there I was appointed temporarily to the Geological Survey [of Canada], and I started in the NWT, in the Shield.

B: Yes, yes; I see in Zaslow's book he has a reference to your work in the Ross Lake area, was it?

F: Yes, Ross Lake.

B: Is that the Yellowknife area?

F: Yes, it's about 18 miles northeast of Yellowknife. I wish I could go back there, you know. My role at the Survey is, I mean, "do this, and run and do something else, and run and do something else..." But,

B: What were the logistics of a project like that? Did you fly in with a float plane?

F: Yes, except the...No! No, we canoed! We canoed from Yellowknife to the area. Mind you, we were resupplied by float plane. And at the end of the season we came back to Yellowknife. Mind you, in those days, people were not too lavish with funds, you know. And then, one of my experiences at the Survey is, was, the impact of the Dirty Thirties, you know. Even the Chief Geologist was scrutinizing my list of stationery requirements. He was [...?] how many pencils... but, you know, this chap, this geologist, was an idol of mine. But I could realize the impact the Dirty Thirties had on... and I see many signs of that in the older geologists who were there during the Dirty Thirties.

B: So, what would be the budget of a season like that? About \$500, or something like that?

F: Really, I have to... I cannot tell you my salary... and I'm at a loss... I could probably find it.

B: (Laughs) Don't worry, don't worry!

F: It was pitiful, compared to what it costs now.



B: What about..., did you have Indian guides?

F: No, no, no, no...I was the head of the party there, and the student assistants...

B: You didn't have air photographs, even at that...

F: Oh, I think... The first year at Ross Lake, using photographs... I was introduced to Ross Lake originally by Dr. Jolliffe. The year before, Dr. Jolliffe, hanging over the side of the plane and taking photographs of the area, and this is what we were using to record data, to orient ourselves, you know. It was a handicap in a way, because there was no proper base map of the area for the data [to be plotted] on these things, you see. It took quite a while afterwards to translate the material on the photographs to a base map.

B: What year was that?

F: That was 1943.

B: So, it was another 6, 7 years before the photographs came out, the air photographs, '49 or something like that, '47?

F: There were some old obliques [air photos], of course.

B: Right.

F: I couldn't tell you. I have to refresh my memory there. You know I've been a Jack Of All Trades and I've touched so many regions of Canada that it's difficult to know fully all the details from[...] when you're pulled from one project to another, you know. From Yellowknife I had a project in Great Bear Lake. That was [...] there'd been a group of projects there and my task was to finish some of these areas. It was a bloody mess, and I didn't... I questioned very much the observations that they'd done before, and it was impossible to redo the whole damned thing. But it was, you know, 'felsenmeer' on the rock...

B: Broken rock, eh?

F: All over the place, you know... migmatites, and all that. And to try to walk on it, and detect very fine variations in the rock! I questioned very much the observations that were made, you know... contacts between the lavas and the like... I could see that. So I was not very happy about this. Then I was...the following year, I was introduced to the Arctic Islands. You see, we had a few geologists who were finding younger... First of all, when I went to Great Bear Lake, and I did... I must tell you that when I joined the Survey I was really busy, because, for instance, coming from Ross Lake in 1944, I went back to the Eastern Townships to finish the project til the snow fell. In 1943 I went to, with a sidekick, Jim Harrison, to Gananoque, til the snow fell, too!

B: Gananoque?

F: Yes.

B: Oh, to do the Grenville?

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F: Well, the problem was to look for double-ended quartz crystals that had a piezoelectric effect [and] were required for radio work, you see. So, going out to Gananoque, going back to the Eastern Townships after a season out west, you know, didn't give you much chance to follow up your main thing. You had to do it; it was wartime, and this is how my time was spent in these early days.

B: Did you have to write a summary report for the annual...

F: Yes.

B: Yes.

F: Some of them were called Preliminary Papers; yes, in 19... let's see now... oh! In 1948, after coming from Great Bear Lake, we were using a Geiger Counter. I was organized with some seasonal group, something like five, in the Bancroft area, where we, that was in the Fall again, you see, so you were kept very busy indeed. But, in '47 [laughs], I was supposed to go to... near Bylot Island to... What was it called?

B: Pond Inlet?

F: Yes. I was supposed to go there to study at the request of the Department of Northern Affairs... the Coal Measures. They supply, for the local domestic supply for the... You know what... in those days the access to the Arctic was very difficult, there was no organized flying at all. And there was the [...?] supply boat, the 'Nascopie'. Well, the Chief Geologist realized that the Dominion Observatory was doing Magnetic survey in the northwest of the island, using a Canso [aircraft] operated by the RCAF, and this is what really was requested for the National Defence, for it depended in part, at least, on the magnetic field variation. Although, when you get near the Magnetic Pole you don't use that... Well...

B: Yes, this has always been a concern of Canadian science. You remember the early work of Lefroy?

F: Yes.

B: In the 19th century...

F: And the thing that amazed me. you know, so many interesting things, eh? When we were active there, the North Magnetic Pole was on the southeast of Victoria Island!

B: Prince of Wales?

F: Prince of Wales, yes. Now it's beyond...

B: Cornwallis?

F: Oh yes; oh yes; it's beyond Bathurst, you know.

B: Is it?

F: Yes, I'm amazed how fast it [changes?]. Anyway, so we thought that with the



influence of the Air Force I would be part of the operation in another season, then, when the Canso could land, they would drop me there, and I would come back in the 'Nascopie'. Well, the 'Nascopie' foundered off Baffin Island and so I stayed with the group, and it was rather an exciting time.

B: Were you in radio contact?

F: With the aircraft?

B: No, with... on the ground. Did you have radio contact with anybody on the outside?

F: No, well, the operation was based at Cambridge Bay on Victoria Island. There was communication there. When we learned the 'Nascopie' had sunk, you see, well I didn't want to go and spend the winter at the [...?], stay there for a winter. I was not prepared for that either, and what would I do? So, I stayed with the group, and that led me to do some observation on the northeast coast of Victoria Island, on King William, and Prince of Wales. King William's where the...

B: OK, the pole is...

F: And so I flew over the Boothia Peninsula and the likes. I reported on that. Well, this was my introduction to the Arctic Islands.

B: It was accidental?

F: Well, I was supposed to go to Pond Inlet, you see. But [it is accepted?] and I agree[...] I find that you read about accounts of early explorers, the English explorers, suddenly finding yourself among that, it's very interesting.

B: There's a new three-volume set of books from the University of Nebraska on the exploration of North America, and there's one chapter in there, very full chapter, by a geographer who used to teach at Bishop's University, called Ross; his name is Gill Ross.

F: Oh, yes.

B: He's done a Ph.D. long ago on whaling in the Arctic; but this chapter is on the exploration. I'll send you the reference to it, maybe even a copy of the chapter, because you'd be very interested in that. Could we pass on to Operation Franklin?

F: Well, yes.

B: So...

F: From there, we worked in southern Baffin Island. Operation Franklin - I'll tell you one thing about how it came about. I had suggested to the Survey that I spend the summer of 1950 around Cornwallis Island, because I had seen, everything was testified in those days, even a photograph, you know...

B: You mean 'classified'?

F: Yes, yes; it was not publicly released. But I realized that Cornwallis Island was at the boundary between the fold belts and the plains. By, gosh, this is a prolific region for petroleum. I advertized that, and my chief said "OK, you go ahead and start a project, then".

B: Is that from analogy with Alberta?

F: Yes, oh yes, from Iran, and the likes.

B: So, you'd been reading very widely by this time?

F: Oh, yes.

B: Lees and Falcon in Iran?

F: Yes, well, anyway, this is where I introduced [...] science into [...?]. I'd considered... I remember asking the advice of a famous RCMP officer in the NWT...

B: Larsen?

F: Larsen, yes. He was very nice. But anyway he got this big canoe, a 20-foot canoe, put in the bomb-bay of the Lancaster and flown there, this is how we went around..

B: No! Go on! With a motor?

F: Oh, yes, it had an outboard motor. But we also had another chap, a student in geology, who had also spent a year on Devon Island, for the Hudson Bay Co., as assistant to the local factor. So we succeeded at that. And, by gosh, it reinforced the notion that [that] was a country with great potential. And the funny thing about it was when we were there we had occasion to, with the Air Force, to fly over Ellef Ringnes and see all these circular structures - salt domes, gypsum, and all that; some people say that there's salt there also [Laughs]. So, we sent Bill Harwood to Ellef Ringnes to investigate these things, and he came back with... he said they were salt domes. Well, we cultivated this. As a matter of fact the magazine 'Life', in the old edition had... we had sent a picture of North America, making a simile of the salt domes with the oil deposits of Texas, you see, as a potential [...] of Arctic Canada. Well, this influenced the powers that be; we got to investigate these things in the Arctic.

B: But did you have permission of the Survey to do that?

F: I don't know![laughs]

B: [laughs] You send off an article to 'Life' magazine?

F: Well, of course, I mean, what the hell? You see, after all, don't forget that one rule we had, among many, is to promote the sovereignty of Canada. You see, they were having some hassle when it came time to establish the met stations in the Queen Elizabeth Islands. The Americans were very forceful and the likes, and they wanted to do as they pleased in a way. And you know the answer as to why the thing was established from Resolute Bay right around Melville Island...they tried... they decided when they had the shuttle going up

to establish weather stations, I think they were motivated from the point of view of defence. The only good level island; the ice was certainly impossible, they could not reach it. So that's how they decided to dump everything on Cornwallis Island. Well, anyway, what I wrote was that to defend sovereignty, and I... the establishment of resources and so forth is one way that you occupy the land among a number of things. And so, the Department of Northern Affairs requests the Geological Survey to hasten the geological inventory of the Arctic. Of course, I was assigned to do it.

B: Is this part of Diefenbaker's 'Northern Strategy' as well, because he...

F: Look, look! Careful about Diefenbaker's 'Northern Strategy', because I'll tell you one thing; do you know who... there used to be the old Ministry of the Interior; Camsell used to be the Deputy Minister of that. And that included what is now four ministries, departments. And, er, I get lost here, why did I want to go back there?

B: Because of the 'Northern Strategy'

F: Well, the 'Northern Strategy' you see, Diefenbaker, yes. St. Laurent created a separate Ministry of Northern Affairs and the first minister of Northern Affairs was Jean St. Laurent - ah, Lesage, Lesage!

B: Ah!

F: [...] So there was a consciousness in the Canadian administration of the need to focus a Ministry on the affairs of the North, you see. And therefore, I have a hard time to buy Diefenbaker's grand vision of the North. I'll tell you why Diefenbaker had decided [...?]. He had a Minister of Agriculture... oh, what was his name, now?

B: Hamilton?

F: Hamilton, you see. He was quite a guy, see. Hamilton had a brother who was a geologist, and he was in the oil industry. And, as far as I'm concerned, any inspiration largely to Diefenbaker was Baillie Hamilton. But, as far as I'm concerned, the matter of the Ministry of the North and all predates Diefenbaker. One man who could tell you all about this was the former secretary of the Cabinet who taught at Carleton University here, who was then Deputy Minister of the North. He could tell you quite a bit about this matter of Diefenbaker. But I've been on a tangent, you see. But, anyway, I... my role with some exploring was to promote the North and what it contained. We succeeded in getting Northern Affairs to demand an increase [...?]. This is how Operation Franklin came to be. It was... I'd been a student of air photographs for a long time, and I'd studied quite a few of the photographs in the Arctic Islands. And the bedrock is shown there in an exemplary fashion.

B: No vegetation, or...

F: No vegetation; you see the... I find the minimum influence of glaciation, as far as deposits. So, I came with the concept, instead of travelling like this to get everything, let's locate the strategic spots, whereby they give you the key to the succession. So, fundamentally, Operation Franklin was just like a geodetic survey, to locate points of control of the geology. And so, the thing was

designed to... I had a fantastic crew on it, and my Chief Geologist really supported me.

B: Who was that?

F: Hansen, George Hansen.

B: Ah, yes.

F: I got, I tell you, an idea of how much he supported me. You know, at that time that was the most expensive project the Survey had ever conducted

B: By far.

F: Huh?

B: By far.

END OF TAPE 1, SIDE 1

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Tape 1, Side 2:

F: The contract for the helicopter... I had a hard time to get an operator, you see. There was not one map covering the Queen Elizabeth Islands, and there was no control. Well, I made one. They had control somehow of individual islands. I made a mosaic, and on this I took the operational radius of capability of the helicopters, and so I decided a pattern of operation with four substations, and from each substation [...] land parties, two people, a geologist and his assistant ( all qualified people). And so we...

B: What was their mode of transport? Did they work with dog teams, or...?

F: No. Oh, no, no, no. We had, first of all, the summer...a year before, I sent to the north a huge shipment of petroleum and all that, for aviation, and some dry goods. In the Spring of '55 I got a DC-3 with skis, and we distributed this stuff to one base in southern Ellesmere Island, one at Isachsen, and the other one on Melville Island. And in between also, halfway ( we were going to go counterclockwise around these rocks by these bases) and halfway then we deposited some fuel in case of mishap and we used them quite a bit. Now the actual work is from Cornwallis, first of all, well, early in the Spring we had a couple of guys with dog teams who went to Somerset . But the crux of the thing is that from any one of these bases we would send some geologists some stock... supplies. They were self-contained, they

[gap in tape, believed to be only momentary. Probably says: "...didn't have ..."]

any dogs, any transportation. They were just dropped where it was the most geology to be observed.

B: A cliff, or something?

F: Cliff on Ellesmere Island, or on Bathurst Island, where you get a beautiful display of these folds, and could locate where you get the maximum amount of formation. So this is how we dropped everything all around us to get the broad picture. The mapping was filling in from air observations, from air photographs. But the control was put on the ground by the individual; and the advantage of this thing is not only did you get a display of geology but you got the *depth* of geology, the immense volume of sedimentary rock you see.

B: Was the control from astronomical observations?

B: The horizontal control?

F: For the [geological] observations?

B: Yes, because you said the islands were not controlled with respect...

F: There was a control; I've forgotten how the control for each individual island... but from one island to another there was no control, you see. But I based myself on some broad map of explorers to make this mosaic. I think I still have it. But I had to do this, first of all, to plan the thing, but also to *sell* the operation to the air operator in his helicopter. I must go on a bit of an aside here to tell you what support I got from the Survey. The bill for the helicopter was something over \$200 000. The Air Force had control... well, I had... I spent a year at National Defence College returning from Cornwallis, I think in 1950, '51. I made some friends there with senior members of the Armed Forces and one of them became Commander of air transport, you see. He says "If we can help you sometime, let me know".

B: Yes, those were the days, eh? When you could make these contacts.

F: Yes, I know...contacts, contacts.

B: Now, what were you doing at the Defence College?

F: It's a mystery to me!

B: [laughs]

F: It's a mystery to me. The National Defence College, which has been abolished now, it was for people at the brigadier level. They... but there were about 20 students or 30 students, but five of them were civilians. There were one or two from the [oil?] industry and four from the Department, from the government. Why I was selected I don't know. Maybe it was because I had been designated by the Survey to be the Arctic expert and from the point of view of the military [...] or some such, you see. I had something to contribute [?] and in the end I got] thinking. But that was fantastic; that was the only sabbatical year I ever had in my life. That was fantastic.

B: I bet your wife was pleased, eh?

F: Well, I don't know; we were in the process of raising a young family. It was hard on her, because she has to stay in Ottawa here, and I had to go and live in Kingston. I used to motor back. But, anyway,... Oh, yes... The Air Force had...

was willing to airlift the helicopters to... and these are big helicopters, Sikorskys... but Lo and behold, just as we were ready to go, there's a bill for it - \$25 000, you know. In those days \$25 000 was a lot of money, but by Gosh, my Chief Geologist, Hansen, says "we'll look after that". I was amazed, you know. But I think the result we got from it have made it worthwhile. Another thing...but you've heard enough of that story... I'll tell you one thing: I had sent all the geologists and assistants some cooks and radio operators in the North, where they were in Resolute Bay. No, I went to Toronto to see about the airlift of the helicopters. I arrive over there, everybody had a long face. The helicopters would not budge [fit?] in the aircraft. It was a 620, that was the number.

B: The Constellation?

F: Er...

B: Aircraft?

F: It was a big... what was the number? I have it all written. I need to refresh my memory. Mind you, it was only 1955, you know [laughs], but, you know, the president of the company was with me. He said "Yves, let's try it anyway; let's tell these guys to try to see if it will fit". By God, it did fit. I died a thousand times there, with all these people there, waiting for these helicopters... dependent on it. But then we made it.

B: So, you dismantled the helicopter, the rotors, the tail?

F: The tail, the rotor, everything; but anyway, it went... everything went fine with no mishap. The only thing is, I regret, because we had [...] we could not occupy the Melville Island base. We were too busy from other areas.

B: Melville Island's the one next to...

F: West of Bathurst.

B: Oh, OK, Yes.

F: It's a big island. I would like to go there because Stefansson had reported that... you know, he had travelled with the Eskimos there... and there's some tar-sand there on Melville Island.

B: In the Cretaceous?

F: Yes.

B: OK, yes. So you wanted to set up the central base on Melville?

F: One of the satellite bases.

B: Oh, OK; the central base was Resolute?

F: Oh, yes.

B: It had to be.

F: Oh, yes.

B: And the radius... I mean, the survey took you took southern Ellesmere?

F: Oh, all the way to Eureka.

B: Oh, my God!

F: And then one chap crossed Axel Heiberg. Oh, no, we took him...there's a publication about that.

B: Oh, yes, the Memoir.

F: Yes, the Memoir. [for a minute I remember?...] oh, no, we took in... we went up to Eureka and right across Axel Heiberg, and Ellef Ringnes Island, Lougheed, and then Devon Island...

B: And you didn't go by helicopter from Resolute to Ellesmere?

F: Yes.

B: Yes? What's the range of one of those?

F: 200 miles.

B: So there were fuel dumps along the way?

F: Oh yes; that's it, that's it.

B: Yes, sure; I'm sorry. I'm not used to this kind of logistics!

F: I'll tell you one thing, I had to learn a heck of a lot, you know, because the Survey had started using helicopters for work, especially in the Barrens, small helicopters, when they were traversing with helicopters rather than walking around. But this was at the stage of early use of helicopters; but this [Franklin] was quite a different use of helicopters. We deposited people there, a team, for up to two weeks...a week, two weeks. We kept moving them around, leap-frogging, so to speak, all around the circuit.

B: But, before you went into the field, did you all get together around a big table to discuss the work?

F: Oh, there was lots of preparation, you know, lots of preparation.

B: So you had all the chief geologists and assistants all in a meeting together?

F: No. A few geologists. Ray Thorsteinsson was still at the University of Kansas. Oh, no. But we, I, made a manual; we made a number of manuals, and the likes; and the winter before we went the permanent members of the staff studied all the air photos and made a sketch map just based on air photos. And from this we got the location of where to place the field parties for a week or two weeks. There was communication. I had this idea of the grand scheme...



Mme Fortier brings coffee

F: This is my wife, Trudi.

B: Pleased to meet you; I'm Ian Brookes...

After coffee

B: I just wondered if you had any incidents in the field on Franklin that you remember particularly well...dangerous or humorous.

F: Well, you know, I had a very powerful crew there. Ray Thorsteinsson, Tim Tozer, Digby McLaren, who became at one time the President of the Royal Society, Fred Roots, who was [future] adviser to the Ministry of the Environment.

B: Head of Polar Shelf later on [after Franklin].

F: Yes, the original Head of Polar Shelf. Oh, I've got a number of them. All in all, things were pretty harmonious, and I have a very fond souvenir of our relations. But, there was one character who was very difficult to handle. If he'd had a grand piano with him, he would have insisted that the grand piano travelled with him on all the aircraft, the helicopters. That type of thing.

B: What did he want on the helicopter?

F: Well, baggage, you know. There's limits and capabilities and he had to realize what the requirement of the exercise is. But he wanted more. This type of human relation, but it was not a difficult one.

B: Do you want to mention his name off the record?

F: No, no.

B: If I close up?

F: No, no, I'd rather not.

B: OK

F: But as an amusing thing, I remember I was travelling quite a lot in helicopters, servicing, and so forth, and acting as navigator, and there's this day I was travelling with the chief pilot, and we got stranded in very heavy fog. So, we landed on the beach and were snoozing there, and lo and behold, what do we see coming out of the fog? A polar bear! The polar bear came to the aircraft and started sniffing, very near our faces, on...

B: on the bubble?

F: Yes, but he didn't like it, or he was uninterested and moved on. We had a station one time on Ellef Ringnes, and the cook managed to burn the cook tent and everything. But these are...

B: Yes, par for the course.



F: There is no...I cannot really point to any [strikingly amusing?] thing. For instance, one thing,... Isachsen is a weather station. In those days there was no question of an aircraft landing on a landing site because, you know, you know better than I, that the ground becomes a quagmire and the permafrost on top starts melting. Well, there was a guy there who had [an] acute appendicitis problem. So the Air Force says "well, there's nothing we can do about it". So we took our helicopter and went and got the guy... as a matter of fact...

B: Where did you have to take him? Cambridge?

F: We took him back to Resolute Bay, and there, of course, there is a permanent landing field, and so he was taken down south. Oh, one thing is that... one of the pilots... I had three pilots, and one of them, my God!, he got a very bad attack of kidney stones. We had to dispatch [the job] to a newcomer [pilot]. The newcomer was a daredevil. I think that he was raised in the ranching country, running after stray cattle. He insisted on flying very near to the topography, up and down, just a few feet above. Son of a gun... I was his navigator then... we had two tanks. One of them...the red light was on. It meant empty. After quite a while the second one became red, and we keep on going. And you know what he did? He unscrewed the bulb so that he would not be distracted [laughs]. Well, these are little incidents, you know.

B: So, you were heading for a depot? He was heading for a depot?

F: Oh, yes, indeed! We made it [laughs]. No, but there was no mishap at all. We had a prime contractor who had made a reputation in BC in establishing power transmission lines and the like...

B: So, when it came to writing the Memoir, was that a very laborious process?

F: It was a very complicated process, because each man wrote his own part . And to me, my role was to put the thing together, to draw the big picture, and I did a limited amount of field work compared to those guys. But, I saw quite a bit of country from a helicopter, by moving people around and so forth. We had, before going up north, we had made some preliminary maps from air photo interpretation. So, all together it was about 16 000 photographs. Coming back, I studied every one of them on the basis of my observation, and also on the basis of what had been done on the ground by the various teams. So, it was a matter of coordinating, and pushing the individual. You see, much of the data, like some of the palaeontological information for biostratigraphy had to be done by specialists who were not part of Operation Franklin. Well, you had to push on that, and some other analyses...

B: Was that done at the Survey, or did you farm some out?

F: All at the Survey. The Survey had at that time a very well organized Division of Palaeontology. It had people of world-wide reputation. The... for instance, the Jurassic, Triassic, and the Permian and [...] Devonian, and the Ordovician and all this, were all... had their own specialists. It needed that, because there was so much work going on in Canada, depending on the biostratigraphy.

B: Right

F: Fundamentally, we called them palaeontologists, but they are biostratigraphers, because it's a matter of geological dating and correlations.

B: Was the Calgary office established by this time?

F: Oh, wait a minute, now... Oh, yes, yes.

B: So, some of it may have been done there as well?

F: Oh, wait a minute... No, no, no, no, no.

B: OK, much later, was it?

F: Yes, oh boy, I've got a role to play...it was, yes, it was around '65, '64, '65...

B: OK.

F:... that it was established, and Operation Franklin in '55, and then the...[for] two or three years. It was a slow process, but we succeeded, and the report on Operation Franklin was the most expensive report the Survey had ever produced. But, it served its purpose. I tell you one thing, the Canadian Institute of Mining and Metallurgy, which had a petroleum section, had its western annual meeting in... was it Regina or Edmonton? I was asked to give a major talk there about Operation Franklin. As a result of that, there was a land-grab by industry and the first hole was drilled, right after, as a result of that talk.

B: Before the publication?

F: Oh yes. Well, you see, you don't keep these things to yourself, or waiting for the slow process. You're already setting publicly for such a meeting so that parties interested in it, they do something about it.

B: What would happen today?

F: Well, the thing is, the old spirit of promoters... the Geological Survey was a promoter of the land. And the ideas, you don't keep things to yourself, but you release it as soon as possible, provided, that is, publicly, as much as possible.

B: But I have heard of examples of GSC publications being delayed for political reasons.

F: I've never heard of that. I've never heard of that.

B: I'm wondering if there were some Directors who would have been told by the ADM not to release that publication yet, because there'd be too much speculation...

F: No. There was a difficulty once in BC while I was Director. Keith [...?] came across some mineralization; he was concerned that some of his assistants would communicate it to some members of the industry. That would have been a no-no. There was quite a bit of debate. It was decided to establish a date, a very early date, whereby the news would be released. But there was quite a bit of hassle about that. The part of the... this was in BC... and there were some

members of the public who were very resentful. They thought that the whole thing was a political concern from our Deputy Minister. But, everything was above board. See, sometimes the publication in print is an elaborate thing. It takes lots of time. Why retain... handicap release of the news? Why not do it the fastest way possible?

B: I'm just looking for the date of the Memoir. [long pause] '63, right?...was the Memoir. No, no, sorry...

F: No, no.

B: Yes, '63.

F: Operation Franklin in '63? No, I didn't realize that.

B: There are only...

F: I didn't realize that...[long pause}... There were some preliminary reports...

B: Oh, yes, you had some Reports of Activities.

F: Yes, '63, I didn't realize that! Because the manuscripts were ready way before that.

B: Yes, well, that's very common, isn't it, in the Survey?

F: And you see, the point is that if you have something of value that promotes your aims, that is to indicate potential of the land. Well, you... my talk in Saskatchewan, you see, was in that line.

B: What year was that? Do you remember? '58?

F: It was around '56.

B: Oh, really, so the industry...

F: We're talking about 40 years ago!

B: Right. But the industry didn't have your maps until seven years after your talk.

F: No, they had a map of Cornwallis Island, though.

B: Is that where the hole went down? That's where they drilled?

F: I think so, yes.

B: Well, you don't think that this delay [in publication] was caused by political...

F: No, no, no, no. It's funny, I think I'm an honest guy. I was Director of the Survey for nine years. I'm not aware at all that the publication was stopped because of political...

B: No, somebody would have mentioned it to you.

F: Mind you, though, Vic Prest was involved in this. Oh, it was funny. But, for purposes of national security, things were... you'll laugh... because I went away for the Survey; I was part of a group that went to the Privy Council with the [...] over there.

B: Vic Prest?

F: Vic Prest had gone with the Arctic supply ship in the '50's, touring, and came back. He made a map of, an indication, strike and dip signs on his map, you know. In those days, that was before '55, in those days there was a security blanket over the North. Somehow, before the map could be published, it had to have a release from the security committee of the Privy Council. The map went there, and they see these things there, they said "Oh, we don't know what that is, we should refuse publication". So, after a while, we were bloody mad, so we went over there and we said "all that this does is show which way the rocks are, that's all". So, we succeeded. But this is one of the rare incidents I know about political concern for the publication because of the security angle, through ignorance. But I don't know any of the political reasons why things were delayed. But, I'm surprised about that; in '63 [publication of Franklin Memoir].

END OF TAPE 1, SIDE 2

Tape 2, Side 1

B: Now, we're going to talk about the state of the Survey when you took over?

F: Yes, well...

B: In '60, '64?

F: '64, yes. I succeeded Jim Harrison, who had been former president of the International Union of Geological Sciences (IUGS), and had been President of the Royal Society, and, ah... he, Jim was the most successful promoter of science and, so, things are in good shape; and he also laid all the groundwork for the foundation of the Calgary institute[ISPG]. He laid a foundation, therefore, for the western outpost of the Survey, a wee bit in the image of the U.S. Geological Survey.

B: Yes.

F: I was responsible for converting it into an institute for promoting local teamwork. So, lots of people who were there, they didn't feel all the time that they had to report to the 'mother house'.

B: Oh, I see, yes. So you spent time in Calgary?

F: Myself? No, no, no. I did slip out there fairly often; and, ah, we got a very good man to be director there. But, things were pretty good. I reorganized the Quaternary geology. It used to be groundwater also. The groundwater was taken away from us. At this I was bloody mad [laughs] because I had decided groundwater was largely managed by Quaternary geologists. But there's more

to groundwater than just geology. There's got to be a bit of hydrodynamics anyway...

B: Mmm.

F: So I separated the thing; and one other thing that interested me... Peter... who just died a few weeks ago... er...damn... excuse me, but I hate it when a name won't come... age!...ah, so we have nurtured a group called 'Groundwater Geology'.

B: He was a hydrologist, this Peter...

F: [calls to Mme Fortier in another room] Trudi! Peter who died a few days, ah, a few weeks ago...

[Mme Fortier replies: "Meyboom"]

F: Meyboom! Peter Meyboom, yes!

B: Oh, yes, yes, yes.

F: He reached very high because he eventually became Deputy Minister of Fisheries. Yes, very brainy chap. Well, all that group was summoned to the Head Office once; and there was Secretary [?] Steenburg, the Deputy Minister or Director General; no, I've forgotten what name...

B: Steenburg? Steenburg?

F: OK. And he says, "we are creating a new branch of water [went] through surface water, groundwater, and oceanography.

B: Oceanography, which I guess is the Inland Waters Directorate, I think.

F: Among that.

B: Is it Department of Environment?

F: No, no, no, no; it used to be with us...

B: But it switched into Environment.

F: Yes, but before that he says to me "whether you like it or not" he said, "we're taking groundwater away from you." And I think too on this matter of the Great Lakes Directorate...

B: institute, yes.

F: Institute. I had built up a small group of geologists and geochemists to study the solid earth, but below that where the water is, and the interaction...well, that was taken away from me. So, this really embittered me, because I had nurtured these things.

B: Yes.

F: But, I see the rationale of it now. So, but when you build something, then the thing...

B: is taken away from you...

F: is taken away, it hurts at the time. Well, then, over the years, you see the rationale of it.

B: You know, I was impressed by Zaslow's comments on your Directorship. He...he refers to you as "a thoughtful and concerned Director". Do you have any comment on that?

F: Well, yes. I enjoyed very much contact with the staff. I appreciated what they were doing and I also tried to promote more...

B: Coordination?

F: Not only coordination, but also to regard what else could be done, and what else could be shaved off, and new things . And I listened to suggestions, too, whether it was engineering geology, or marine geology, or prospecting through the Quaternary make-up, "float"...

B: In your Directorship the Quaternary Division, Terrain Sciences, it expanded tremendously.

F: Oh, yes, it did. Yes, and more so afterwards, but it did. I got John Fyles as Director [Division Chief]. He was pretty darned good. There was a good bunch there.

B: Bruce Craig and...

F: Bruce Craig, yes

B: Oh, er, Nelson Gadd, and...

F: Nelson Gadd...

B: Archie Stalker...

F: Ah, but John Scott...

B: Oh, right...

F: A very able engineer, you know. I, as a matter of fact, John Scott had been with [?Ames], and ,well, he made a first, and , if I remember well, he made a short stay at the Survey, then he went to [?Ames], then...

B: This is in Iowa?

F: Harvard was after him. And, I got to talk with him, I think I convinced him to come back to the Survey and he became one of the people in the Quaternary, and eventually retired as one of the Directors General for, right now, it's a

mish-mash of things. You see, when I left the Survey, I thought we had a very large staff , and that I should have the title of Director General, because we had something like, at least six divisions. It was refused to me. Well, now they have, er, eventually, they got an ADM, head of the Survey, with two Directors General, and Six Directors !

B: But the ADM was Davidson? Alan Davidson?

F: No, no. Davidson had nothing to do with Science and Technology, or with the Geological Survey. No, I, er, Davidson... a very able chap.

B: Yes.

F: He went to Parks, you see, to...

B: He had a background in Geography or Geology, though, didn't he?

F: Er, in Geography...

B: Geography, yes.

F: He studied at, I didn't know this, he studied at Queens.

B: OK

F: He was an ADM in the Department [EMR], but he had nothing to do with the science sector. Jim Harrison had, was looking after the science sector. But, the tug of war, the tug of war with the Geographical Branch was really at the Head Office. Very much so, and this was before my time.

B: Yes.

F: No, I was Director then, but it was jim Harrison who was concerned, with Davidson, about the fate of the Geographical Branch.

B: So you had something taken away from you, but you also gained a lot.

F: Yes, we gained. But it's too bad that the Geographical Branch was destroyed in a way. But, the thing is, they, they tried to tackle too much: physical, the economic aspect, the land-use, and so on and so forth; this was a concern of different domains of the federal administration, and, of course, on the physical side, there was duplication with the Survey. So, it was a matter, then, of... that part is to pull them together. And when you talk about Terrain Sciences, you might be a geophysicist, a geologist, a hydrographer, come what may.

B: Yes, yes. During your Directorship, the new edition of EG 1 was published.

F: Yes.

B: And that was a high point of...

F: Yes.



B: Did you have much...

F: I'll tell you one thing; Bob Douglas [editor of EG 1] was a super geologist, and he was head of the... I had made him head of the Regional Geology Division. He was pushing hard. But, it seemed to me that the Survey was not using him to his great capability as a geologist. So, I [laughs] I was instrumental in his becoming the... essentially, editor of EG 1...

B: Oh, right.

F: I think myself... I pat myself on the back for so doing. Because, yes, I think he made a super job of it.

B: It's a...many people have noticed about that volume that...it was published in '72, right? Er, no, '70.

F: No, no. I think it was published after I left the Survey [in '73]. It became public after I left the Survey, because I remember well my successor and I, we went to the Minister's - Donald MacDonald, on Parliament Hill, and presented him with a copy of the volume. I've got a sheet on that upstairs.

B: Yes. It's very significant that the theory of Plate Tectonics was publicized, became generally accepted, about 1968, with the papers in the Journal of Geophysical Research. And so most of the writing for the chapters of EG 1 was done before that. So, by the time it became published, there's this huge hole in the...in the discussion.

F: But, I tell you one thing. If you look at the last edition of the Geological Map of Canada, now this is a super piece of work.

B: Yes, yes.

F: Now, what's his name, the chief editor of it?

B: oh, Gee...[laughs]

F: John...oh, a great friend of mine, damn it. You can see there the impact of the

B: Of the 1970 edition?

F: Oh, later than that!

B: No, I mean you see the impact of the earlier edition on the later...

F: You see the impact of the edition, ... of the...come here, I'll show you.

B: Yes, OK

[we go upstairs to look at a map on the landing wall]

F: But, er, take my word for it...[points] that is the influence of plate tectonics; there's another, there's another area, there's this area over here. No, this is a splendid thing, and...



B: Yes, you think they basically talking about...

F: [recalls name] John Wheeler! John Wheeler!

B: Wheeler, that's right.

F: Oh, an amazing guy! I brought him to Ottawa for a while; he'd been back in the West Coast. He became Chief Geologist for a while. This is a [...?]. The year, it just came out last year.

B: No...

F: It just came out last year.

B: 1996

F: '96, eh?

B: Yes.

F: Yes, because in '97 I had a meeting here in April, and they just put it out publicly; I...this is a splendid piece of work. I gather there's one of the Pleistocene geology...the Quaternary... I must get a copy of that.

B: It's called 'Surface Materials'.

F: I haven't looked at it, really.

B: Bob Fulton edited it.

F: Yes, I'm surprised; Bob's done very well. I remember when he joined the Survey . He studied at Toronto. He went to Egypt for a while.

B: He's told me about that; I've worked in Egypt as well, so...

F: Did you? Yes...

B: ...we have that in common.

F: I find this map... I was...the way...[background noise]. The thing that amazes me is the time division. All this [points] is biogenic...all this is biostratigraphic, you know. It's just amazing, the progress ; And I like [background noise] the major classification of the terrane, from the sequence - the volcanic rock, intrusive rock, and the metamorphic rock.

B: So, this is radiometric...

F: This is radiometric, this way and that way. Yes, mind you, there's always a connecting link, cross-cutting relations here too, you see. You can cap [...?] dated sediment...

B: Yes, very clever. The legend...

F: I find it a very clever thing [background noise], so, I, once in a while, I go by here and remind myself I was once a geologist!

B:[inaudible]

F: No [inaudible]

B: [inaudible]... astrobleme?

F: Yes [inaudible]

B: [inaudible]... you flew over the Haughton one?

F: Yes, I... as a matter of fact, I stopped there once in 1955. I just looked at it for an hour. I didn't ... I missed the boat one that one; but I did study it.

B: It hadn't been recognized yet?

F: Pardon me?

B: It hadn't been recognized yet?

F: Oh, no; oh, no. In '55 we thought it was one of those dome things.

B: Yes, yes, OK.

F: I find this a splendid thing.

B: Yes, it is. It'll be a long time before that's improved.

[we return downstairs]

F: ...ah, it was a splendid thing[...?] after, what, three or four days...[...?] And lo and behold, I'm so bloody mad that the press did not catch that up. I got...

B: When was that?

F: That was in the Fall, 19-- ah, 1996, at the Museum of Science.

B: Oh, the Science Centre?

F: The Science Centre, yes.

B: Yes, of course, a geologist was head of that for a while, er... Emlyn Koster...

F: Yes, I've been getting in touch with him ever since.

B: Oh,er...

F: 'course, he's in the States now, eh?

B: Yes.

F: But it was very well supported. But to my amazement, the daily press failed to

report on this [...?]

B: Yes.

F: It was a fantastic thing .

[this disjointed conversation took place while we were going downstairs and settling in again for the next topic. It concerned a public meeting on the Earth Sciences at the Ontario Science Centre]

B: I wanted to ask you a little bit about Prague [Int. Geol. Cong., 1968]. Can you carry on for a few more minutes?

F: Yes [laughs]... well, in Prague [laughs]... it'll take me five minutes [laughs]. I went to Prague with the idea of inviting the Congress to hold its [next] meeting in Ottawa, in Canada I should say, not Ottawa. And I had been given a lodging away from the Congress, and somehow a colleague of mine, Charlie Smith, who became my boss...I was his boss then, but then he became my boss.

B: Yes, he worked in Newfoundland, too.

F: "Yves" he said, "why don't you come and join me"? So I moved there before the opening of the Congress; and the first night I was there, around four o'clock, we heard a heck of a commotion in the night. What the heck goes on there? Plane after plane after plane flew over Prague. And then we look out the window, and there was tanks going to town, with no lights, in the dark. Then we met some of the residents. They could not speak English, nor could we speak ...

B: Czech

F: Czech. And the... they were all in despair, and the like. And they say "well, it's an invasion of the country" and the like. So Charlie and I, we walked to the [Congress] Centre. As we walked...the Centre was there, let's see [points]... the Centre was there; there was a round park there, of a few hundred feet in diameter, and we were kept on the side of it. As we were going around that park, eh, those helicopters came down and Russian soldiers with machine guns on the other came running around . It gives you a jolt! [laughs]. And the... everything was paralyzed. The meeting had already started, that was?...the meeting was started on... was it a Sunday or a Monday?..Oh boy! Well...

B: Was it at the University?

F: It was at the Centre. Or was it the University? It was in the summer, you see; there was no students. Thank God for that, because, you know what happened in Hungary; there was an upheaval there, caused by the students, fundamentally, all the students were there. And it was the military who could direct the operation. And there was a massacre because of that. But, in Prague, the students were not in town, so there was no organized resistance at all. The...things were rather quiet in all, as far as [...?] concerned. But there was an emergency session of national representatives, and I made sure that Bob Folinsbee was going to be the head of the Congress [in Canada], therefore he should be a head delegate over there, and I was to be his assistant.

B: Oh, yes.

F: But Bob Folinsbee was caught away from the Centre, because he was on the other side of the river. So I spoke for Canada and I had made...we decided to close the Congress, for it was impossible to operate. Everything was paralyzed. And I excused the fact that the invitation [to Canada in '72] was being made under very sad circumstances, and we pined for the organizers who had lost the fruit of all their labours. I invited them to come to Canada and...in Canada I can be assured that everyone would be most welcome![laughs].

B: We won't have any October Crisis again?

F: No. The funny part about it, you know, was a matter of evacuation; it became a matter of evacuation. Charlie Smith was a great organizer, and, it doesn't matter what, his organization permits him to take command. He went to the..er, Damn!...the Department of External Affairs had asked their ambassador to come to Ottawa, not for parliamentary reasons, but for consultation. And he had left a young Charge d'Affaires in command over there, and the message said everything was going to be normal. And I felt very mad about this, because many people in Ottawa, in Canada, want[ed?] to go [to Prague]. As the Director of the Survey, when he ended up being in Ottawa next time...[?]. Anyway, he asked me how things sounded in...'cause there'd been some grumbling about trouble...

B: Before you went?

F: Oh, yes. I got in touch with External Affairs. I said, "look", I said, "I've got responsibilities to advise some of my colleagues in earth science". Oh, there's no [counsel or counsellor?] for a geologist. So I was instrumental in saying to a number of Canadians to go ahead over there [to attend the Congress]. Well, the, really, the Canadian embassy was left headless. So, Charlie Smith took over the management of the evacuation of Canadians. He did a splendid job. At one point he said "Yves, you help me". He said, "you go and buy 200 (or some such) a 150 train tickets and you stand at the station, and as Canadians come, you distribute these things". He says, "with the help of the embassy staff, I'll see that everybody gets transportation to the railroad".

This is how we...but the rumours that were going on was out of this world, you know. At one time, there was a rumour that the American troops were on their way to...rumours. Another rumour is everybody wondered if you left by bus, by car, or by train - the airport was taboo - where they were being partly disrobed, examined, and all that.

I just thought about it; Bob Folinsbee, big guy, lots of pictures for him, taken by him. So, when we heard about this rumour, he endured murder by putting in his feet, in his shoes, two rolls of film, so he wanted to make damned sure they wouldn't...Who would look in your shoes to find out if you've got some state secret or something [laughs]. He endured [...?] murder[laughs] to try, because of the[...?] you see, to carry this.

To my amazement, Jim Harrison - I told you about Jim Harrison - had brought to Prague a suitcase and all. He was at the [Congress] opening, but he had to go to Vienna for an opening [of a meeting] on Remote Sensing, and the role of satellites, and the like with another chap, Larry Morley; fantastic guy.

B: Yes, I know him.

F: Fantastic guy. So, all this invasion took place when Jim was Director General. Lo and behold, I got a phone call from him [in Prague], when they said that all means of communication were cut, and all that, there's Jim Harrison phoned me, I think at the embassy, and asked me if I could retrieve his suitcase. And, you know, a few weeks before going to Prague, I had a hernia operation. I was not too solid. But I said "I will" to Jim and... We got on the train dragging my suitcase and Jim Harrison's suitcase, and it seemed to be damned heavy. I said, "maybe he's got rocks in there; I wanna make sure about that"! Well, we got into the part [of the train] where Charlie Smith, Bob Leggett, I think, Bob Folinsbee, and who else? I said' "look", I said, "I don't feel I can carry this thing any more; let's find out if there's rocks there". There were two 40-ouncers of gin in there! "Well", I said, "I'll be damned if I'm going to carry this". We had a party! [laughs].

B: He could have got more in Vienna anyway!

F: But it was amazing after, you know... there was some...

B: You must have got out by train to Vienna?

F: I beg your pardon

B: You got out by train?

F: We got a train to Frankfurt, Germany.

B: Oh, really?

F: Yes, Air Canada was very nice there; they saw that we had hotels and reservations to come back to Canada. But, Bob Leggett, Charlie Smith, and I, we wrote a virulent letter to Mr. Sharp, the Minister of External Affairs, about the conduct of External Affairs. It was no small matter there.

B: Yes.

F: Giving us poor information before the Congress and leaving the Embassy over there headless. People... the guy at External Affairs was more concerned in giving political information to Ottawa on this, rather than giving...

[ Tape 2, Side 1 ends. There is no second side to Tape 2. The following is reconstructed from notes, to conclude this section of the interview]

F: ... some of his time to look after the welfare of Canadians.

B: So, you took the train to Vienna and then the plane to Frankfurt from there?

F: We took the train from Prague directly to Frankfurt, and we took the plane to Canada from there.

B: So Harrison never got his suitcase?

F: He got his suitcase, but he didn't get his gin!!

B: You left his suitcase in Frankfurt?

F: No, I brought it all the way to Ottawa.

B: Oh, I see.

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PART TWO OF INTERVIEW WITH YVES FORTIER, AT HIS HOME IN OTTAWA ON NOVEMBER 18, 1998 (conducted to deal with topics not covered in the first part)

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B: Can you say something about your involvement in Tunisia first?

F: Well, in Tunisia, the UN was looking for a Canadian who could study a request from Tunisia for support in mineral exploration, in an old mining area, [...] related to zinc. My former chief proposed to the UN that I might be of some help. Although I do not have much special expertise. At the time I was Head of the Economic Geology Division of the Survey. That was before I became Director. So I went there for three weeks.

B: What year was that, about 1950?

F: No, no, it was later.

B: Later... '55 maybe? No, that was Franklin wasn't it?

F: Around '60 [ '66]. It had been a difficult thing because they wanted a French-speaking person. That's one of the factors why I was chosen. But not from France, because there were some difficulties in Tunisia, ...had gotten its liberation, its freedom...

B: Right, independence.

F: Independence, yes. [?] John Hanley was an old French geologist who was there, as advisor to the government on mineral exploration. I found him and told him I was ill at ease that the UN would not accept his word, but sent a Canadian there who was new to the whole panorama. There was an old gentleman there, who had been there for decades. I had a very nice rapport with him, but still, I was ill at ease. I must confess that I made some positive recommendations; today I would have made a different approach. Instead of going to drill from what I saw on the ground, I would have advised to use some electrical survey. I think that this would have been more informative on the larger area, rather than drilling, which is limited in its scope.

B: You mean airborne?

F: Not necessarily, no. In those days the airborne electromagnetic [survey] was not too common. But, I would certainly advise that, in our days, it would be

more rewarding.

B: So what were you thinking about in Tunisia? Was it vehicles, using vehicles?

F: Yes, but on selected lines, by walking the prospective area, and the likes. This would have given you more coverage than a drilling campaign. But, I must confess, I never got any news as to... They got the grant from the UN, but I never heard about the results. I'd been preoccupied with many other things; when the job is done you move on.

B: Was that your only foreign experience, professionally?

F: As far as work, I think it was the only one, in the field.

B: Yes, because you had international committees.

F: Oh, yes.

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B: So, what about the Stanford topic? I wanted to know...you didn't say why you went to Stanford.

F: Oh, Willis Ambrose [at Queens] took his bachelor's degree at Stanford. He made quite a name for himself.

B: Was he American?

F: No,no,no,no. He was from Manitoba. He was a professor of Geology at Stanford, but he was also a member of the Geological Survey [of Canada]. I worked with Willis for two summers. When I got my Master's degree from McGill, he said,"why don't you go to Stanford? It's a wonderful school, highly qualified faculty, the environment is splendid and it's a difference in scenery from Eastern Canada". So I went.

B: Who did you work with there?

F: Well, the director of my thesis was Aaron Walters. He left just a year after I left Stanford, and he went to Johns Hopkins.

B: Who else was around that we'd know - famous people? I suppose Lawson was already gone, right?

F: Oh, no, no. Lawson was at Berkeley, and another famous one...of course, Lawson is well-known in Canada.

B: Pettijohn?

F: Oh, gosh; small man, short; I see him now.

B: What was his field?

F: His field was tectonics. There was a famous fight between him and Lawson



about the Golden Gate bridge and the soundness of the anchorage of the bridge. Bailey Willis! He still had an office at Stanford. He was quite a remarkable individual for his age.

He was driving - I don't know if you know Stanford, but there's a long 'allee' from Palo Alto to Stanford. I was walking. Here comes Willis in his rat trap car, and asks me if I want a lift, see. So I accepted. We moved a few hundred feet, and there was three comely young ladies going toward Stanford. He stops and says to me, "Get out and let the girls in"! [laughs].

I took quite an array of courses. I was influenced by the fact that...I'd been working in the summer for the Quebec Department of Mines and the Geological Survey. In those days, geologists were called to work in so many areas, in so many types of fields. So, I took...fundamentally, I didn't take a specialty. I broadened my education quite a bit. My first degree at Queens was in Mining Engineering with a Geology Option. I decided while I was at Stanford to really broaden my familiarity with the realm of geology. So I took some palaeontology, I took some sedimentology, I took surface geology, I took, of course, mineral deposits. Aaron Walters was a petrologist, and I focussed somewhat on petrology in my thesis. But, I must confess, instead of just taking courses over there related to petrography, I decided to broaden my familiarity with geology.

B: Did you go back to Stanford at all? When you came back to Canada, did they invite you back, say, as Director of the Survey, to talk with your alma mater?

F: No, I stayed away from Stanford because Aaron Walters left and [? Skate and Muller] died. The head of the department died. They were all strangers to me. It's like...I don't go back to the Geological Survey any more, because it's all foreign faces.

B: You probably remember some of the commissionaires, eh?

F: [laughs] Well...

B: They're the people that stay the longest.

F: It's funny you know, because we often go to... near Stanford, just a few kilometres; my wife's sister, a very nice place there, so we visit. But, it does not appeal to me to go there and say, "well, I'm a former graduate..." and somehow make myself known. They're all new ones.

B: They have so many successful alumni that I thought they would have a lecture series, where they would invite you back to talk about something in your career. Maybe it's only the less well-known places that do that, because they need the...

F: No; as a matter of fact, when I was there... I don't remember that there was invited speakers. The only thing was... where I gave a talk, was at the, what was called the Leconte Club, which was... once a month the academic world of San Francisco Bay would get together. So, I was asked to give a talk there. This is where I had the encounter with Andy Lawson. I was very scared, because I was told that he could be very rough on youngsters. But he... I don't know, maybe because he was a fellow Canadian, he was very nice to me. And you know his history, eh? He ran away with the daughter of a former Director of the Survey. There was something like... a huge gap in age. By Jove, he was in



his early seventies, and they got a child! I was talking to him at the club, and I congratulated him. He says, "There's nothing to it. Happens everyday"!

B: Did he work for the Survey?

F: Yes.

B: I thought he just came up to Canada to do...he was working with the Huronian rocks?

F: Yes.

B: OK, yes; I hadn't followed his career, I just know his work.

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B: Well, we're jumping around a bit, but I just wanted to fill in some gaps. How about the work with Larry Morley? How did he come into...? He was at the Survey?

F: Oh, yes. Right now he's a candidate for the Order of Canada. He's a fantastic guy. He really founded the Division of Geophysics in the Survey. In Operation Franklin, Larry became aware that I was mounting this operation. He says, "I think we're going to survey your area, aeromagnetically, you know." So he did. I wasn't [...] in his time about the origin of the [Queen Elizabeth] islands...

B: What... sorry to interrupt you, but what raised the question to start with? Do you remember? The question about the origin. What was peculiar about...?

F: Because the island arc, and all this business. Of course, little was known about the geology in those days.

B: theoretical...

F: So...Lobeck had quite an influence on me, and the western geomorphologists in the United States. I somehow studied the pattern of...I don't know if you read the article we wrote...I studied the pattern of the islands,, and it was quite obvious that there is no dislocation of the geology from island to island; the orogen, the trench carries on. But Larry had something to contribute to that also, from the point of view of the magnetic line. One thing that didn't come out of this article is that he interpreted the data just off the northwest shore of the islands, where he says there is a real magnetic intensity there in the rocks. That's how he said...I forgot he wrote that, probably he did...but not subsequently, the work that was done, the chap who worked so much in northern Ellersmere Island...he thinks that there is a...

B: Oh, not Kerr?

F: No, no.

B: Christie?

F: No, no, not Bob Christie [may have been thinking of Trettin]. The technical term... there is a 'suture' of the North American plaque [plate] and another plaque [plate] which has not been named. The geology of Prince Patrick

Island, of Lougheed, etcetera, is relatively simple. But then, if you go a wee bit beyond this, you get quite a different magnetic signature. Larry Morley...his contribution was this type of thing - the deep structure underlying the islands. That's how we joined in the article. I found it useful, myself, that his amazing work showed the simple linkage from island to island; like Parry Island, for instance.

B: Yes, but you had two explanations: they were normal river valleys or they were rift valleys.

F: There could be rift valleys, but I'm still concerned; I believe myself that there is an imprint of an old hydrographic system. I maybe wrong, but...

B: The trouble is, yes, now we know from the seismic surveys in the channels, and some drill holes as well, that the pre-Tertiary surface is way, way down, beneath several kilometres of post-rifting sediments laid down in the channels, which...That information wasn't available in the '60's. Subsequently, the displacement...at least in the south, say Lancaster, Prince of Wales...

F: But, there's one thing I really should have brought up in the report of Operation Franklin; from Boothia Peninsula and Somerset Island and northwesternmost Baffin Island there's an important imprint there of north-south alignment. This is reflected in the structure of Cornwallis Island and on the edge of Bathurst Island.

B: Things come up like this, eh?[gestures]

F: Yes, it goes up, and I think it links with, eventually, the Amund Ringnes trend. I found during Operation Franklin in northwest Devon Island some Tertiary deposits. The deposit there is lined up as if it was in a small trough on a limb of the trend. If there is a major dislocation along...I think it would be rather minor, in terms of a lateral movement anyway, because this structure is, all in all, fairly old.

B: Yes, but it would pre-date the channels, this north-south 'graben', so this doesn't really solve the difference in opinion between the rift valley hypothesis and the drainage...major valley [hypothesis], because, if you have Late Cretaceous - Early Tertiary faulting...you have the Eureka Sound Formation, which is in the graben, the north-south graben; then after that, you could have the east - west Jones Sound, Lancaster Sound forming this way [hands move left/right]; it's east - west, but the movement is, yes, vertical. So...

F: It would, but you see, there is other areas where again you see the trace of an old hydrographic system. The sound between Banks Island and Victoria Island, it looks very much like an old valley system.

B: Did you notice any of these large river systems on the islands themselves when you were looking at the photographs?

F: Oh, no, not that I recall.

B: I think it's the satellite images that pick these things up, because there is one...my colleague in Terrain Sciences who is working on Devon in the

Quaternary, he worked on Prince of Wales, and he has a satellite image on [the cover of] his Bulletin that shows this huge meandering channel that goes across Prince of Wales; it's just chopped off by the edge of the island, so that definitely suggests faulting. [...] faulting, too, because it's next to Somerset.

F: You know, I feel ill at ease, because I belong to a period of geologists that were all over the place. You cite some of these chaps from Terrain Sciences who've been working for twenty years in the Arctic. One chap I introduced to the Arctic, Ray Thorsteinsson, really became famous in stratigraphic geology of the islands. He spent all his career...he's still at it! His mind's still at it, in the Arctic Islands. Well, I spent five seasons in the islands, all over the place, Precambrian Shield, and all that. I was in the Eastern Townships; I was in the western Shield, and so on and so forth. I belong to a breed that does not exist anymore - a Jack of all Trades.

So, I look back at some of the things I did touch and I say, "Gee, I wish I had the opportunity to pursue these things. It's like in my thesis area in the Eastern Townships, Mont Orford, there's a belt of ultrabasic rock there, related, geographically linked to, some marine volcanics, and the likes. Some black shales, schists, [...] with graptolites. You know I often wondered for years...now this linkage is amazing...it resembles a preferred geologic environment for this emplacement of this unit. Sure enough, now they've done some work...

B: on plate tectonics.

F: On this thing, this suture, the ultrabasics...you know, they had escaped me because I took other duties, and one regrets...

B: No, but these workers now are also referring to your work as some original observations.

F: Indeed, but you know, scientists, researchers, are [...] in the most of their work. In terms of renown. The opportunity to study a situation or a geological landscape, and to get out of it the utmost; I find this an opportunity I never had. I would have liked most dearly to go back at it, you know, to "suck it dry"[laughs].

B: Well, to satisfy yourself that you knew what was going on...So, Larry is up for the Order of Canada now?

F: Well, I hope so. I think he's a very generous chap. Do you know Larry?

B; Yes, he taught at York University in Remote Sensing for several years, and he established programmes there. He was a real innovator.

F: He was in the Survey. We were together for a long time. I became his Director, and then he got highly involved with this Remote Sensing, you know. And Canada owes him a debt for what he's done. Of course, he saw all the requirements. I encouraged him, but the whole field demanded some financial disbursement, that if we had retained this new endeavour within the Geological Survey it would have capped financially many other areas of activity. So, it was with the blessing of Jim Harrison, who was then ADM of Science and Technology, it was decided that Larry would form a new branch in the Department of the Environment.

B: So, the Canada Centre [for Remote Sensing] was Larry's baby?

F: Oh, yes. If you're interested in him, I've got...I will send you some recommendations I've made about his election to the Order of Canada. Very deserving, very imaginative, bright chap. Even the Americans were consulting him... the Director of the United States Geological Survey had a very nice rapport with Larry; he found Larry an inspiration. He got involved with the NASA people, and with the Department of the Interior of the United States. So much so, that he got access to the plan and also the use of the facilities like the... Canada profitted too from him having access to the remote sensing capabilities of the United States. Canada, of course, in those days, could not afford to have its own programme of satellites...resource [inventory].

B: When is this? In the early '70's?

F: Wait a second, now [long pause] it was, yes, I think so.

B: Yes, I would guess it would be in that period. That was a very prosperous time. You would think that Canada would have developed the capability.

F: Well, he succeeded in getting these dishes, in Newfoundland, Saskatchewan. But, he demanded a lot more; as a matter of fact, he got a full-fledged Branch to meet the requirements of the endeavour.

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B: OK; can we pass on to another topic?

F: Go ahead.

B: This topic of public education at the Survey, that...you were Director from '64 to '72, right?

F: '73,

B: '73. It was in that period that booklets and geological maps, tectonic maps, glacial maps were printed at page-size, distributed for free at the bookstore in GSC. I wondered if this was any effort on your part to say that we serve the public, and therefore, let's publish this material. Do you know how that came about?

F: Anything that served both the public and geology got my thorough support. I'll give you an example: I don't know if you've ever heard of Peter Meyboom. He started the Survey in groundwater; very clever chap. He spent a few seasons in the Prairies, and he came out with the idea of the micro-system of groundwater. He followed that with the study of the vegetation, where the groundwater reached the surface, by the type of [...?]. Then he studied the original chemistry of the water, very saline water in deep circulation, leaching the salts. So, he started thinking about the scope of the circulation of the groundwater. Lake Winnipeg, Winnipegosis. This is the broad system [that] had its origin in the Rockies. So, I said, make a map and we'll publish it, simply to give perspective to the general public. Well, this is the type of thing that I promoted. But, there were many other things that came from the ranks. We

pushed that because it was a service and for us too. It shows that the area of Science can serve the public.

B: Did you used to have this Forum in February that they have now for the public to visit?

F: No. There's quite a few new things now.

B: I was just trying to think of any other educational projects.

F: Well, there was the rock system; that was an old thing.

B: Oh, the box?

F: The rocks and economic minerals, yes. That was an old thing; I think it's stopped now.

B: Yes, but was that related at all to Ann Sabina's...

F: It was before Ann Sabina.

B: Was it?

F: Oh, yes. Oh, yes. That's an old thing; an old endeavour, that thing.

B: How far back do you think that goes? Before the War?

F: Oh, yes.

B: So there were sets of rocks available for schools, going way back

F: For people going prospecting and who [...] the rock.

B: Anything else on that topic?

F: I'm trying to think.

B: Symposia on geology and Canada, or in the Public Service? Any symposia?

F: Well, one thing I was responsible for is to bring to Canada the International Geological Congress. That gives stature to Canada on the one hand; on the other hand, it puts the realm of geology in the mind of the public.

B: The revision of EG 1 as well - was that a pet project of yours? Or was that something which...because it hadn't been done since 1957, before it came out, the big one that Douglas and...

F: No; Douglas, I selected Douglas.

B: Yes, but whose project was it? Was it Douglas' idea to revise EG 1?

F: No, no, no. I must confess that my predecessor, Jim Harrison, decided it's time to revise it,. They had selected an editor, and he was sick and aging, and I think that he had not kept pace with what's new. So, I decided that Bob

Douglas, who was a splendid geologist and a chap with the scope, would be prime editor material. The periodic publication of the new edition...there's been quite a number of these things.

B: Well, I mean it was 1970 it came out; then it was 1988, another 18 years before... That was...

F: Almost a generation; but it's in sections [now] because it's too big...

B: The DNAG...Do you have some of those volumes? You've looked at some of them?

F: I've got the one on the Arctic. I'm a small man, but...

B: But you keep up.

F: Oh, I've got upstairs on the wall the geological map [of Canada], and I reflect on what's new.

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B: When you retired, did you take up any geological activity, like a hobby? Are you interested in local rocks?

F: I must confess that I've been all over the place as a field geologist. Then I was given, after Operation Franklin was published, I became Chief of Division, shortly, of regional geology, and the first formal Division of Mineral Deposits or Economic Geology. Then I became Director. All these took one hundred per cent of my time.

B: A hundred and ten per cent!

F: Well, really...nights, weekends at it, and the likes. It was demanding. Not having a specialty, it's very hard to give it time. So, I was spent. I left the Survey in '73, when I was called to Head Office to be Senior Advisor in Earth Science, and I spent two years at that. I kept busy preparing some texts there. Then, I was really near the end. It didn't last very long. I didn't like it one bloody bit! When I found out that things were a little too complex, we were stepping on each other's toes. When I retired I think there was seven ADMs , and I recommended strongly four or five; there were too many; there were duplications.

B: I suppose some, a lot of people had reached that point in their career when it's promotion time, so they had to be ADMs.

F: As a matter of fact, to me, when I became Director, and when I became ADM, I was surprised, because I had not thrown my hat in the ring. But, I must confess I was spent, so I decided to go and sail. The difference in life, and I spent months, we got ourselves a sailboat, which we put in the Caribbean. We met some very interesting Canadians there; Stuart Griffiths and the likes. We enjoyed life away from the turmoil of the Civil Service, the Administration. So, I still have quite an interest in geology. I receive periodicals. I feel a little ashamed. I'm a member of the Geological Society of London and [...?], and I look at the [Canadian] Journal of Earth Sciences, and GAC, but I've given up



membership in many societies because I couldn't suffice...

B: Yes, subscriptions are so heavy; it's so much, the volume is incredible these days; so much stuff coming out.

F: Stuff coming out. You see, it's demanding of time, and you have to sort out what is fundamentally new in the landscape, or is it progress in a narrow field?

END OF TAPE 3, SIDE ONE

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TAPE THREE, SIDE TWO

YOF then talks about leisure activities, such as reading news periodicals like 'The Economist', which he reads avidly now, when the tape starts...

B: ... from the world..

F: From the world. In my view it looks like politics, but from [an] economic point of view, you see, it's rewarding, and of course, they have a whole section on the economy per se. But when they talk about Indonesia and all the turmoil, human rights, and so on and so forth, it always comes to, oh boy, what's going to happen to the economy. So, it's a new world, in a way, from rocks!{laughs}.

B: Yes, but you're more interested in the economy now that you're living on a pension, eh?

F: [laughs] Yes.

B: With money invested somewhere, then you'd want to know...

F: But, er, I'm a collector of books, and [...?]. I see something interesting, and I say, "oh, my gosh, I must gain some knowledge of that". So, I buy, but sometimes I don't read thoroughly the book.

B: But, you don't see the other people that you were close to when you were working?

F: Well, last year I found out that there's a club of old retirees that had some senior position in the Survey. So, I started meeting with them once a month; we meet at the pub, with a lunch.

B: How did you find out about that?

F: Because an old sidekick of mine, Charlie Smith, informed [me] that this was going on, and so I went. But they're a wee bit preoccupied with the old house, but I think they can have an impact. Well, the Survey needs old friends as it used to have years ago, and right now it seems to lack an external voice, and I think the Survey needs to make some friends. You know, just to give you an example, there is an Association of Prospectors and Developers. Years ago the Geological Survey was playing a major role in the programme of the Association... they demanded the Survey's contribution. So, the Survey was well regarded. I find that the Survey has lost this intimate contact.



B: Now, with all the retirements and the early retirements it's even worse, because now you have people in their 50's who've gone.

F: There are shocking things right now, because the powers that be, the heads of Departments anyway, are very pragmatic, you know; the return on the work was [must be?] immediate, the economic return must be immediate, and I find, myself, that it deprives the country of work of long-term value. I was horrified to read lately about...oh, what's his name?, the fellow who found out about the impact that brought about the end of the dinosaurs...

B: Oh yes, what's his name; Solomon, or something, his name is...

F: He joined the Geological Survey after my time, but...

B: Hillebrand? Hildebrand!

F: Yes. This is scandalous, you know. And another thing, too, and this is the original forte of Larry Morley: palaeomagnetism. It helps you to fix events, and the like. "No", they said, "it's no good", you know...it's shocking; pretty soon at the Geological Survey it'll be: "where the rocks are all pink, and where they are all black, and that's it"! It's really shocking.

B: Back to the 19th century, pre-Logan...

F: Well, you know, it was in the middle of the '60's, Brock, a former Director of the Survey, said, if you want to be a member of the Geological Survey you have to have a Ph.D. Well, this was demanded, establishing a standard of work. But right now, you wonder if that standard is wanted!!

B: As Director, did you have a set of favourite stories about Logan or Selwyn, or... all these...was there any kind of folklore handed down about these very early days?

F: Well, there were some about A.P. Low, who was in disagreement with his senior sidekick. He'd spend the winter up in...

B: Labrador...

F: Labrador, and then he snow-shoed all the way back to Ottawa to make representations to settle the problem, and back. That was his character.

B: Do you know why J.B.Tyrrell...I mean...he didn't work for the Survey; he did this project in the Barren Grounds, and then it was finished, eh?

F: Yes, it was finished. I never...I don't know if Zaslow touches on that...

B: Maybe he had more interest in the commercial...

F: Well, yes, he became wealthy, somewhat wealthy, so he, he was...

B: But he didn't revisit the Shield at all...one of the...

F: But, you know, he's a name in Canadian geology; but it's a miracle in some

respects, but I wonder if his impact on geology today is up to the reputation he acquired. I shouldn't talk like that!

B: Well, they're still studying Logan and Dawson, and all these people now; the history of geology is still a very active field. The GSA [Geological Society of America] was just in Toronto...two weeks ago...and there was a whole symposium, with Logan and Dawson, and somebody from the History Department at Wilfrid Laurier University was giving a paper on Logan - his time, his work.

F: Amazing...he's a saint! [laughs].

B: St. Edmond!

F: I, er, I have a quarrel with Zaslow [author of a history of the GSC, 1842-1972]. He spent four summers at the Survey; he was hired [commissioned?] when Jim Harrison was Director, and when I became Director he spent two more years there. He never interviewed me. He was under the aegis of the scientific editor [of the GSC] and I can see how he was greatly influenced by that editor...he questioned some of the things that I did in terms of organization. I'll give you an example. I was not the lead scientist by any means, but I nurtured anything that was progressive; and then the geochemist was really pushing to establish a major programme; well, they start thinking about identifying elements from airborne, er, vantage [point]. Larry Morley was doing the same thing in another Division. Well, lo and behold, I said I cannot give all my attention to these two competing things. So, I decided to put them in one Division and let the Chief of the Division sort things out. Well, Zaslow questioned the idea of putting geophysics and geochemistry in one Division. But, fundamentally, they were after the identification of... specific identifications. But, why didn't he come and ask me why I did it? I passed the problem on to somebody who was right there to deal with it, if you will.

B: Particularly in a definitive work like that.

F: Now, I don't know why Zaslow stayed away from me. He says that I spent four years at McGill. That's not the case; just one year, maybe. No, he talks about the most able Director of the Survey for a certain period. Well, he was a very able palaeobotanist; he was a very gentle and courteous man, but I'm not aware that he did great things. I have my own pet [theory?], myself...Director....I knew. I thought he was a guy for.. had a great view for the future, and after the war, reconstruction.

B: He [Zaslow] has some very favourable things to say about you as well, in his..."Under the thoughtful and concerned guidance of Yves Fortier the Survey, by 1972, seemed to round a corner...a stability, of function and status appropriate to its present-day situation".

F: Well, he had to say something. It's fine he said that, but tell me one thing; he spent four summers working at the Survey, talking to people. I know he talked to Larry Morley. He talked to Peter Harker. And he never said "Boo" to me. For instance, he made an error about Larry Morley. Maybe a student he hired. He made a list of people who belonged to the Survey. He said Larry Morley joined the Survey in the late '60's. Far from that, Larry Morley joined the Geological Survey, I think it was in the early '50's.

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B: Talking of Larry Morley again, do you remember his work in the North Atlantic?

F: Oh, yes.

B: The magnetic stripes? So, what was..?

F: It was so simply done, you know. He's a genius. He was with Andre Larochelle, who's dead now. They were both interested in palaeomagnetism, and they consulted [something?]...I did not know...I asked Larry about that a few years ago; I said, "Larry, where did you get your data"? I asked him, "who advised you to go and [find...?] in the Atlantic? "Oh", he says, "nothing of the kind. We consulted old mariners' records". There've been so many crossings of the Atlantic; apparently, the navigator recorded the magnetic data. So, Larry and Andre used all this data. They came up with this fantastic theory. It was the same with Tuzo Wilson; he was so amazed, he felt that Larry Morley should get a Nobel Prize. Because, it was a major thing really. But, there is quite a story about that. They sent in a paper to 'Nature'. 'Nature' refused to publish it.

B: Yes, the reviewer didn't like it. I've heard Peter Wyllie in Chicago, a petrologist, talk about this in one of his books. It's the same in the Pacific, when one of the early papers on magnetism in the Pacific was written by Raff and Mason, the British geologists. Mason was the geophysicist at Imperial College. He got a ride back [from the SW Pacific] on an American destroyer. I think Hess was the second-in-command or something, or he was assigned to this boat. So, Hess also used these magnetic data. But, Mason took a [magnetic] record right across the Pacific, from New Zealand to San Francisco, and discovered the same thing. That this had this oscillation going on. It didn't have the stripes. So they started in the same way in the Atlantic and the Pacific.

F: That was uncanny, the way that Larry and Andre did it. You know, you had to be interested in the palaeomagnetism, because of the periodic reversal of the pole, that's all. They looked at the stripes. Then they followed the symmetry on the side of the mid-Atlantic Ridge.

B: They had the Icelandic volcanoes to check the specific...

F: Oh, indeed. Of course, the magnetic imprint had to be on new-formed material, to catch [...?]; clever, and so pragmatic, so simple.

B: So elegant.

F: Yes, that's the word! Indeed. No, I think very highly of Larry Morley . I hope he's successful.

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B: So, what is the name of this club for the retirees?

F: "The Anarchists"! It sounds like an undergrad type of thing. They're fun,

over beer, wine. But, I'm a bit worried. Rather than being exclusively social, it's turning to be a wee bit political as far as the old Department and the Survey is concerned.

B: But you don't think that a letter to the Minister from such a group will have some impact?

F: As former employees we're all interested in our trade, you know. As a matter of fact, last year I heard a talk from the Chief Scientist from the Survey who was retiring. He was talking about the struggle he had.

B: Who was that?

F: Oh, Damn! Excuse my age! But, anyway, he was saying, "you know, I had an interview with the Deputy Minister and the Minister's reaction was: 'oh, you're simply trying to increase [feather?] your nest', rather than listening". You know, in the public administration there are too many lawyers [laughs]...in politics anyway.

B: I wondered whether you heard about this group [while you were] at the GAC [Geological Association of Canada] when it was in Ottawa, because you were honorary Chairman or something at that meeting. Do you think it was Charlie who recommended you to...

F: Yes. Mind you, I was a little disappointed, because I did nothing. I thought somehow they would have...

B: Yes; an address by the former Director.

F: An address or some such, even a two-minute address. I was scared to be asked impromptu to say something, and I had prepared something based on what I had read in 'The Economist'. At the last dinner I was sitting with Koster [then GAC Past-President], and I showed him that. He said, "Yves, why don't you give that"? I was not called on to give it and when do you get up and give a little speech?

B: You should be introduced.

F: Yes, so I was quite disappointed in the fact that I was not asked to chair a major session, or something like that, and maybe I should have used more imagination. Maybe I'm getting too old for imagination, but...

B: Somebody wasn't minding the store.

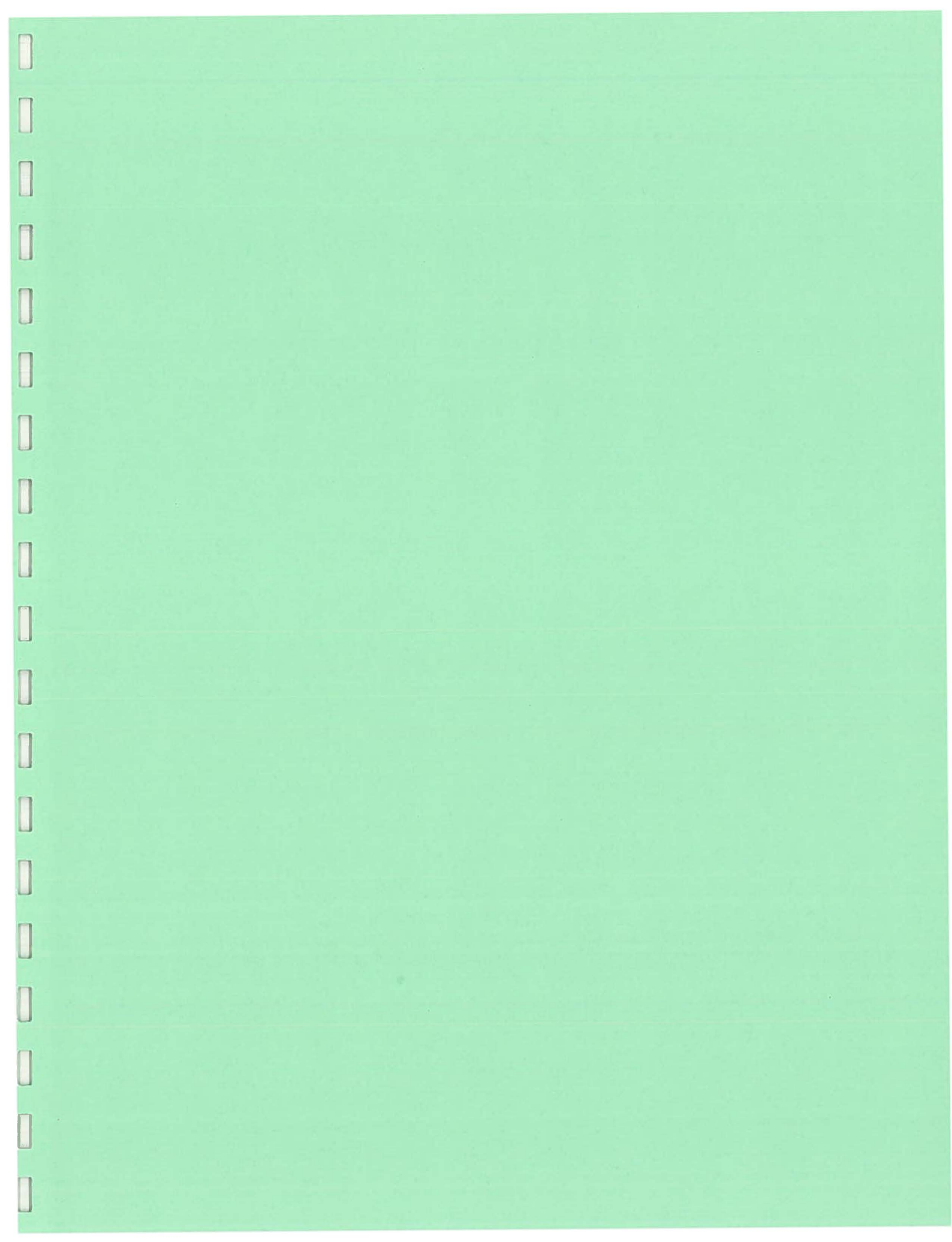
F: But, I'm doing something about it. I will not divulge it to you. I hope everybody will profit from it. I think...I'd like to test you...

B: Shall I turn this off now?

F: Yes.

END OF TAPE THREE, SIDE TWO, AND OF INTERVIEW

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**INTERVIEW (VERSION 2.0) WITH YVES O. FORTIER, DIRECTOR OF THE GEOLOGICAL SURVEY OF CANADA (1964 - 1973), AT HIS HOME IN OTTAWA, JUNE 12, 1998, CONDUCTED BY IAN A. BROOKES, GEOGRAPHY DEPARTMENT, YORK UNIVERSITY, TORONTO.**

**Tape transcribed by I. A. Brookes and Ms. R. Mantini (Humanities, York Univ.)**

[...?] = inaudible

[word] = insertion to clarify context, meaning

“fillers”, such as “er, ah, you see, and the like”, etc. have been deleted from the transcript.

The following transcription is Version 2.0, and shows the unedited version in plain text, Dr. Fortier's editing in **bold**.

Added to the total package is an “additional text” written by Dr. Fortier after he had seen the original transcript, together with related documents provided by Dr. Fortier.

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**Tape 1, Side 1**

Leading from unrecorded comments on the form of the interview, Dr. Fortier begins talking about his geological education:

**“My selection of geology as a career” [ see Additional Text F.1]**

F: I'll tell you about the Thirties, now. When, in the middle Thirties, I was thinking about geology, I had been fascinated by the early geologists who saw so much in Nature. And, that is, they were not narrow-minded. They were broad in outlook. That fascinated me, and also the fact that fundamentally they were explorers, because in many parts they were the first white men to ...

B: Sure...

F:... and this did affect me greatly. Well now, as one in Quebec City, and the people in research, for getting [into] university, now, went by and large en masse towards the classical professions. And I wanted to get away from that. This is what directed me. And I was influenced by a few personalities in Quebec.

B: Such as who?

F: Well, there was the professor who taught me at, I don't know if you know about the ‘seminaire de Quebec’; it is the old-fashioned classical ‘ecole’, where you get the French ‘baccalaureat’. There was a professor there who taught, who introduced me to geology, and he influenced me. And then, later on, there was...

B: What was his name?

F: Ah, Father Laverdiere.

B: Ah, yes.



F: Laverdiere. He was a palaeontologist, but ah, a very liberal person.

B: You know, is he the father or grandfather of Camille?

F: Oh, no! He was a priest, an RC priest (laughs)

B: Oh, yes.

F: As far as I know he didn't father anything, except intellectually! (laughs). No, but there was also A.O. Dufresne, the Deputy Minister of Mines in Quebec. This was the time of Duplessis. He influenced the Quebec government to arrange a system of bursaries, of grants to influence people going towards the mineral resources - mining engineering, and geology. This gave me the means to start at the university and going to Queens, leaving Laval and going to Queens. And I started in mining engineering, but there I gradually moved towards - I and a couple of other colleagues - to what was called Geology Option in Mining Engineering. That gets towards the exploration, rather than the actual digging out.

B: Who at Queens influenced you?

**“On to post-graduate activities” [see Additional Text F.2]**

F: Well, at Queens there was especially Dr. [?]Hawley in Mineralogy, but it was called Economic Geology. He was studying mineral deposits, but he influenced me greatly there.

B: So, what was your field experience as an undergraduate? Did you have to do a thesis?

F: Well, yes. I started as a student assistant, surveying in the Eastern Townships as assistant to Dr. Stockwell. Fundamentally, studying the prospect for chromite; chromium was very much needed, wanted ...

B: Oh, yes, yes.

F: ..in steel-making.

B: That was in the ultramafic bodies?

F: Yes, it was a matter of looking at ultramafic bodies and finding out what was the petrographic horizon, if you will, facies that hosted the chromite.

B: Had they been finding...had they been finding placer deposits before, of chromite?

F: Placer deposits? Not that I know of. Gold, there was gold placers in the Eastern Townships, but I'm not aware that there were...

B: Because they've been finding them in Newfoundland, with the ophiolites there.

F: Is that right?

B: Yes, in fact, in commercial quantities, yes.

F: Oh...

B: On the west coast of Newfoundland. Yes. Mostly in submerged glacial deltas which



have been drowned by rising sea-levels; so it's all under water now.

F: Oh, I see.

B: But they're massive bodies of sand that are full of chromite.

F: And I also worked for... that was my introduction to the Eastern Townships, and the... looking for chromite under Dr. Stockwell. Then, the following year was with Dr. Ambrose.

B: Right

F: He went to Queens. We started systematic mapping... searching... from the International Border going northward. And this is how I, as a result of my work under Dr. Stockwell, I wrote my Master's degree on chromite. But, for Dr. Ambrose, in mapping up... I took the Mt. Orford area for my Ph.D. thesis at Stanford. Then from there I was appointed temporarily to the Geological Survey [of Canada], and I started in the NWT, in the Shield.

B: Yes, yes; I see in Zaslow's book he has a reference to your work in the Ross Lake area, was it?

**“GSC career begins on a continuous basis” [see Additional Text F.3]**

F: Yes, Ross Lake.

B: Is that the Yellowknife area?

F: Yes, it's about 18 miles northeast of Yellowknife. I wish I could go back there, you know. My role at the Survey is, I mean, “do this, and run and do something else, and run and do something else...” But,

B: What were the logistics of a project like that? Did you fly in with a float plane?

F: Yes, except the...No! No, we canoed! We canoed from Yellowknife to the area. Mind you, we were resupplied by float plane. And at the end of the season we came back to Yellowknife. Mind you, in those days, people were not too lavish with funds, you know. And then, one of my experiences at the Survey is, was, the impact of the Dirty Thirties, you know. Even the Chief Geologist was scrutinizing my list of stationery requirements. He was [...?] how many pencils... but, you know, this chap, this geologist, was an idol of mine. But I could realize the impact the Dirty Thirties had on... and I see many signs of that in the older geologists who were there during the Dirty Thirties.

B: So, what would be the budget of a season like that? About \$500, or something like that?

F: Really, I have to... I cannot tell you my salary... and I'm at a loss... I could probably find it.

B: (Laughs) Don't worry, don't worry!

F: It was pitiful, compared to what it costs now.

B: What about..., did you have Indian guides?

F: No, no, no, no...I was the head of the party there, and the student assistants...

B: You didn't have air photographs, even at that...

F: Oh, I think... The first year at Ross Lake, using photographs... I was introduced to Ross Lake originally by Dr. Jolliffe. The year before, Dr. Jolliffe, hanging over the side of the plane and taking [took] photographs of the area, and this is what we were using to orient ourselves (phrases reversed), to record data, you know. [ delete -It was a handicap in a way, because] [T] there was no proper base map of the area for the data [to be plotted] on these things, you see. It took quite a while afterwards to[ record those observations on the photographs] translate the material on the photographs to a base map.

B: What year was that?

F: That was 1943 [to 1945].

B: So, it was another 6, 7 years before the photographs came out, the air photographs, '49 or something like that, '47?

F: There were some old obliques [air photos], of course.

B: Right.

**[following two responses re-cast in Additional Text]**

F: I couldn't tell you. I have to refresh my memory there. You know I've been a Jack Of All Trades and I've touched so many regions of Canada that it's difficult to know fully all the details from[...?] when you're pulled from one project to another, you know. From Yellowknife I had a project in Great Bear Lake. That was [...?] there'd been a group of projects there and my task was to finish some of these areas. It was a bloody mess, and I didn't... I questioned very much the observations that they'd done before, and it was impossible to redo the whole damned thing. But it was, you know, 'felsenmeer' on the rock...

B: Broken rock, eh?

F: All over the place, you know... migmatites, and all that. And to try to walk on it, and detect very fine variations in the rock! I questioned very much the observations that were made, you know... contacts between the lavas and the like... I could see that. So I was not very happy about this. Then I was...the following year, I was introduced to the Arctic Islands. You see, we had a few geologists who were finding younger... First of all, when I went to Great Bear Lake, and I did... I must tell you that when I joined the Survey I was really busy, because, for instance, coming from Ross Lake in 1944, I went back to the Eastern Townships to finish the project til the snow fell. In 1943 I went to, with a sidekick, Jim Harrison, to Gananoque, til the snow fell, too!

B: Gananoque?

F: Yes.

B: Oh, to do the Grenville?

F: Well, the problem was to look for double-ended quartz crystals that had a piezoelectric

effect [and] were required for radio work, you see. So, going out to Gananoque, going back to the Eastern Townships after a season out west, you know, didn't give you much chance to follow up your main thing. You had to do it; it was wartime, and this is how my time was spent in these early days.

B: Did you have to write a summary report for the annual...

F: Yes.

B: Yes.

F: Some of them were called Preliminary Papers; yes, in 19... let's see now... oh! In 1948, after coming from Great Bear Lake, we were using a Geiger Counter. I was organized with some seasonal group, something like five, in the Bancroft area, where we, that was in the Fall again, you see, so you were kept very busy indeed. But, in '47 [laughs], I was supposed to go to... near Bylot Island to... What was it called? **[this response restated in Add. Text F.3]**

**"Start of Arctic Islands Activities" [see Additional Text f.4]**

B: Pond Inlet?

F: Yes. I was supposed to go there to study at the request of the Department of Northern Affairs... the Coal Measures. They supply, for the local domestic supply for the... You know what... in those days the access to the Arctic was very difficult, there was no organized flying at all. And there was the [...?] supply boat, the 'Nascopie'. Well, the Chief Geologist realized that the Dominion Observatory was doing Magnetic survey in the northwest of the island, using a Canso [aircraft] operated by the RCAF, and this is what really was requested for the National Defence, for it depended in part, at least, on the magnetic field variation. Although, when you get near the Magnetic Pole you don't use that... Well...**[this response restated in F.4]**

B: Yes, this has always been a concern of Canadian science. You remember the early work of Lefroy?

F: Yes.

B: In the 19th century...

F: And the thing that amazed me. you know, so many interesting things, eh? When we were active there, the North Magnetic Pole was on the southeast of Victoria Island!

B: Prince of Wales? **[check]**

F: Prince of Wales, yes. Now it's beyond...

B: Cornwallis?

F: Oh yes; oh yes; it's beyond Bathurst **[Island]**, you know.

B: Is it?

F: Yes, I'm amazed how fast it [changes?] **migrates**. Anyway, so we thought that with the influence of the Air Force I would be part of the operation in another season, then,

when the Canso could land, they would drop me there, and I would come back in the 'Nascopie'. Well, the 'Nascopie' foundered off Baffin Island and so I stayed with the group, and it was rather an exciting time. **[restated in F.4.]**

B: Were you in radio contact?

F: With the aircraft?

B: No, with... on the ground. Did you have radio contact with anybody on the outside?

F: No, well, the operation was based at Cambridge Bay on Victoria Island. There was communication there. When we **[I]** learned **[that]** the 'Nascopie' had sunk, you see, well I didn't want to go and spend the winter **[there]** **[delete - at the [...?], stay there for a winter. I was not prepared for that either, and what would I do?]**. So, I stayed with the group, and that led me to do some observation on the northeast coast of Victoria Island, on King William, and Prince of Wales. King William's where the...

B: OK, the pole is...

F: And so I flew over the Boothia Peninsula and the likes. I reported on that. Well, this was my introduction to the Arctic Islands.

B: It was accidental?

F: Well, I was supposed to go to Pond Inlet, you see. But **[it is accepted?]** and I agree~~...~~ I find that you read about accounts of early explorers, the English explorers, suddenly finding yourself among that, it's very interesting. **[YOF thinks this should be omitted]**

B: There's a new three-volume set of books from the University of Nebraska on the exploration of North America, and there's one chapter in there, very full chapter, by a geographer who used to teach at Bishop's University, called Ross; his name is Gill Ross.

F: Oh, yes.

B: He's done a Ph.D. long ago on whaling in the Arctic; but this chapter is on the exploration. I'll send you the reference to it, maybe even a copy of the chapter, because you'd be very interested in that. Could we pass on to Operation Franklin?

F: Well, yes.

B: So...

**"Operation Franklin comes about", [Additional Text, F.5]**

F: From there, we worked in southern Baffin Island. Operation Franklin - I'll tell you one thing about how it came about. I had suggested to the Survey that I spend the summer of 1950 around Cornwallis Island, because I had seen, everything was testified in those days, even a photograph, you know...

B: You mean 'classified'?

F: Yes, yes; it was not publicly released. But I realized that Cornwallis Island was at the boundary between the fold belts and the plains. By, gosh, this is a prolific region for

petroleum. I advertized that, and my chief said "OK, you go ahead and start a project, then".

B: Is that from analogy with Alberta?

F: Yes, oh yes, from Iran, and the likes.

B: So, you'd been reading very widely by this time?

F: Oh, yes.

B: Lees and Falcon in Iran?

F: Yes, well, anyway, this is where I introduced [...] science into [...?]. I'd considered... I remember asking the advice of a famous RCMP officer in the NWT...

B: Larsen?

F: Larsen, yes. He was very nice. But anyway he got this big canoe, a 20-foot canoe, put in the bomb-bay of the Lancaster and flown there, this is how we went around..

B: No! Go on! With a motor?

F: Oh, yes, it had an outboard motor. But we also had another chap, a student in geology, who had also spent a year on Devon Island, for the Hudson Bay Co., as assistant to the local factor. So we succeeded at that. And, by gosh, it reinforced the notion that [that] was a country with ~~delete great~~ petroleum potential. And the funny thing about it was when we were there we had occasion to, with the Air Force, to fly over Ellef Ringnes and see all these circular structures - salt domes, gypsum, and all that; some people say that there's salt there also [Laughs]. So, we sent Bill Har[ey]wood to ~~delete Ellef Ringnes~~ Isachsen to investigate these things, and he came back with... he said they were "salt " domes. Well, we cultivated this. As a matter of fact the magazine 'Life', in the old edition had... we had sent a picture of North America, making a simile of the salt domes with the oil deposits of Texas, you see, as a potential [...?] of Arctic Canada. Well, this influenced the powers that be; we got to investigate these things in the Arctic.

B: But did you have permission of the Survey to do that?

F: I don't know![laughs]

B: [laughs] You send off an article to 'Life' magazine?

F: Well, of course, I mean, what the hell? You see, after all, don't forget that one rule we had, among many, is to promote the sovereignty of Canada. You see, they were having some hassle when it came time to establish the met stations in the Queen Elizabeth Islands. The Americans were very forceful and the likes, and they wanted to do as they pleased in a way. And you know the answer as to why the thing was established from Resolute Bay right around Melville Island...they tried... they decided when they had the shuttle going up to establish weather stations, I think they were motivated from the point of view of defence. The only good level island; the ice was certainly impossible, they could not reach it. So that's how they decided to dump everything on Cornwallis Island. Well, anyway, what I wrote was that to defend sovereignty, and I... the establishment of resources and so forth is one way that you occupy the land among a number of things. And so, the Department of Northern Affairs requests the Geological Survey to hasten the geological

inventory of the Arctic. Of course, I was assigned to do it.

B: Is this part of Diefenbaker's 'Northern Strategy' as well, because he...

F: Look, look! Careful about Diefenbaker's 'Northern Strategy', because I'll tell you one thing; do you know who... there used to be the old Ministry of the Interior; Camsell used to be the Deputy Minister of that. And that included what is now four ministries, departments. And, er, I get lost here, why did I want to go back there?

B: Because of the 'Northern Strategy'

F: Well, the 'Northern Strategy' you see, Diefenbaker, yes. St. Laurent created a separate Ministry of Northern Affairs and the first minister of Northern Affairs was Jean St. Laurent - ah, Lesage, Lesage!

B: Ah!

F: [...] So there was a consciousness in the Canadian administration of the need to focus a Ministry on the affairs of the North [~~delete you see~~]. And therefore, I have a hard time to buy Diefenbaker's grand vision of the North. I'll tell you why Diefenbaker had decided [...?]. He had a Minister of Agriculture... oh, what was his name, now?

B: Hamilton?

F: Hamilton, you see. He was quite [~~delete a~~] **an imaginative** guy [~~delete see. Hamilton~~] and had a brother who was a geologist [~~delete - and he was~~] **active** in the oil industry. And, as far as I'm concerned, any inspiration [~~delete - largely~~] to Diefenbaker was [~~delete - Baillie~~] **through** Hamilton. But, as far as I'm concerned, the matter of the Ministry of the North and all predates Diefenbaker. One man who could tell you all about this was the former secretary of the Cabinet, **Robinson**, who taught at Carleton University here, who was then Deputy Minister of the North. He could tell you quite a bit about this matter of Diefenbaker. [~~delete - But I've been~~] **I am now** on a tangent, you see. [~~delete - But, anyway, I...~~] **M** [m]y role [~~delete - with some exploring~~] was to promote the North and what it contained. We succeeded in getting Northern Affairs to demand [~~delete in 1953-54~~] **an increase delete[...?] in GSC Arctic Island geological exploration**. This is how Operation Franklin came to be. It was... I'd been a student of air photographs for a long time, and I'd studied quite a few of the photographs in the Arctic Islands. And the bedrock is shown there in an exemplary fashion.

B: No vegetation, or...

F: No vegetation; you see the... I find the minimum influence of glaciation, as far as deposits. So, I came with the concept, instead of travelling like this to get everything, let's locate the strategic spots, whereby they give you the key to the succession. So, fundamentally, Operation Franklin was just like a geodetic survey, to locate points of control of the geology. And so, the thing was designed to... I had a fantastic crew on it, and my Chief Geologist really supported me.

B: Who was that?

F: [**Dr.**] Hansen, George Hansen.



B: Ah, yes.

F: I got, I tell you, an idea of how much he supported me. You know, at that time that was the most expensive project the Survey had ever conducted

B: By far.

F: Huh?

B: By far.

## END OF TAPE 1, SIDE 1

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### Tape 1, Side 2:

#### Operation Franklin begins, [Additional Text, F.6]

F: The contract for the helicopter... I had a hard time to get an operator, you see. There was not one map covering the Queen Elizabeth Islands, and there was no **[no geodetic control linking the islands, but air photography control of individual islands . I made a mosaic map of the region by combining the individual island maps from airphotos. I plotted on the mosaic map the requirements of the Operation and the operational capabilities of the Sikorsky helicopters].** **[delete - control. Well, I made one. They had control somehow of individual islands. I made a mosaic, and on this I took the operational radius of capability of the helicopters, and so ]** .I decided a pattern of operation with **[delete - four] three substations, and a main one at Resolute Bay** and from each substation [...] land parties, two people, a geologist and his assistant ( all qualified people) **were landed. They established camp for a week or so from which to make the required geological foot traverses.** **[delete - And so we...]**

B: [now redundant] What was their mode of transport? Did they work with dog teams, or...?

F: **[delete - No. Oh, no, no, no. We had, first of all, the summer...a year before,]** In the summer of 1954 I sent to the north a huge shipment of petroleum and all that, for aviation, and some dry goods. In the Spring of '55 I got a DC-3 with skis, and **[delete - we distributed ]this stuff was distributed** to one base in southern Ellesmere Island, one at Isachsen, and the other one on Melville Island. And in between also, halfway ( we were going to go counterclockwise around these rocks by these bases) and halfway then we deposited some **fuel in case of mishap [delete - and we used them quite a bit].** **[delete - Now] T[t]he actual work [delete - is] started from Cornwallis [Island] [delete -, first of all, well,]** early in the Spring **[delete - we had]** when a couple of guys with dog teams **[who]** went to Somerset ; an excellent venture. **[delete - But the crux of the thing is that from any one of these bases we would send some geologists some stock... supplies. They were self-contained, they**

[gap in tape, believed to be only momentary. Probably says: "...didn't have ..."]

**[delete - any dogs, any transportation. They were just dropped where it was**



the most geology to be observed].

B: [redundant] A cliff, or something?

F: [delete - Cliff on Ellesmere Island, or on Bathurst Island, where you get a beautiful display of these folds, and could locate where you get the maximum amount of formation. So this is how we dropped everything all around us to get the broad picture. The mapping was filling in from air observations, from air photographs. But the control was put on the ground by the individual; and the advantage of this thing is not only did you get a display of geology but you got the *depth* of geology, the immense volume of sedimentary rock you see.

B: Was the control from astronomical observations?

B: The horizontal control?

F: For the [geological] observations?

B: Yes, because you said the islands were not controlled with respect...

F: There was a control; I've forgotten how the control for each individual island... but from one island to another there was no control, you see].

[ continuing on the topic of map-making for Op. Franklin -But I based myself on some broad map of explorers to make this mosaic. I think I still have it.]

But I had [delete - to do this,] first of all, to plan the thing, but also to *sell* the helicopter operation to the air operator [delete - in his helicopter]. I must go on a bit of an aside here to tell you what support I got from the Survey. The bill for the helicopter was something over \$200 000. [delete - The Air Force had control... well, I had...] I had spent a year (Sept '50 - Aug.'51) at [the former] National Defence College returning from Cornwallis, I think in 1950, '51. I made some friends there with senior members of the Armed Forces and one of them became [delete - Commander] head of [A]air [T]ransport Command, [delete - you see]. He [delete - says "If we can help you sometime, let me know"] had casually offered to help when the Arctic work needed it.

B: Yes, those were the days, eh? When you could make these contacts.

F: Yes, I know...contacts, contacts.

B: Now, what were you doing at the Defence College?

F: [delete - It's a mystery to me!] A wonderful sabbatical year, educational beyond rock-breaking. I was exposed to topics, personalities, and regions quite foreign to a geological career.

B: [laughs]

F: [delete - it's a mystery to me!] The National Defence College, which has been abolished now, it was for people at the brigadier level. They... but there were about 20 students or 30 students, but five of them were civilians. There were one or two from the [oil?] industry and four from the Department, from the government. Why I was selected I

don't know. Maybe it was because I had been designated by the Survey to be the Arctic expert and **my work was possibly of interest to the military.**[delete - from the point of view of the military [...] or some such, you see].**[delete - I had something to contribute [? and in the end I got] thinking. But that was fantastic; that was the only sabbatical year I ever had in my life. That was fantastic.]**

B: I bet your wife was pleased, eh?

F: Well, I don't know; we were in the process of raising a young family. It was hard on her, because she has to stay in Ottawa **[delete - here]**, and I had to go and live in Kingston. I used to motor back. **[delete - But,] A[anyway,...[delete - Oh, yes...]** The Air Force **[delete - had]**... was willing to airlift the helicopters to... and these are big helicopters, Sikorskys... but Lo and behold, just as we were ready to go, there **[delete - 's a] an unexpected bill from DND** for it - \$25 000, you know. In those days \$25 000 was a lot of money, but by Gosh, my Chief Geologist, Hansen, says "we'll look after that". I was amazed, you know. But I think the result we got from it have made it worthwhile. Another thing **about the airlift...**but you've heard enough of that story... I'll tell you one thing: I had **already** sent all the geologists and assistants some cooks and radio operators **[delete -in] to** the North, where they were in Resolute Bay.**[ delete - No,] when** I went to Toronto to see about the airlift of the helicopters[. ], I arrive**[d] at Malton** and **[delete - over there,]** everybody had a long face. The helicopters would not **[delete - budge] [fit?]] fit** in the aircraft. **[delete - It was a 620, that was the number.**

B: **[delete - The Constellation?**

F: Er...

B: **Aircraft?**

F: It was a big **transport aircraft the rear of which opened to receive cargo...** what was the number? I have it all written. I need to refresh my memory. Mind you, it was only 1955, you know [laughs], but, you know, the president of the company was with me. He said "Yves, let's try it anyway; let's tell these guys to try to see if it will fit". By God, it did fit. I died a thousand times there, with all these people **[delete - there, waiting for these helicopters... dependent on it.] at Malton and principally those at Resolute.** But then we made it.

B: So, you dismantled the helicopter, the rotors, the tail?

F: The tail, the rotor, everything; but anyway, it went **[delete - ... everything went]** fine with no **major** mishap. **[delete - The only thing is, I regret, because we had [...?]] Incidentally,** we could not occupy the Melville Island base, **as we ran out of time. [delete - We were too busy from other areas.]**

B: Melville Island's the one next to...

F: West of Bathurst.

B: Oh, OK, Yes.

F: It's a big island. I would like to go there because Stefansson **[delete -had reported that... you know, he]** had travelled with the Eskimos there... and **[deleted - there's**

some tar-sand there on Melville Island] had reported on the use they made of the local tar sand.

B: In [is it] the Cretaceous?

F: Yes.

B: OK, yes. So you wanted to set up the [central] sub - base on Melville?

F: One of the satellite bases.

B: Oh, OK; the central base was Resolute?

F: Oh, yes.

B: It had to be.

F: Oh, yes.

B: And the radius... I mean, the survey took you took southern Ellesmere?

F: Oh, all the way to Eureka.

B: Oh, my God!

F: And then one chap crossed Axel Heiberg. ~~Oh, no, we took him...there's a publication about that.~~ Others occupied that island.

B: Oh, yes, the Memoir.

F: Yes, the Memoir. ~~for a minute I remember? oh, no, we took in~~.. we went to **Devon Island**, up to Eureka on **Ellesmere Island** and [right] **one party walked** across Axel Heiberg, and (we also took in - IAB) **Ellef Ringnes Island, Loughheed, Isachsen and Bathurst Island (including Cameron Island)** ~~and then Devon Island...~~

B: And you didn't go by helicopter from Resolute to Ellesmere?

F: Yes; **to the sub-station on southern Ellesmere, whence north and west.**

B: Yes? What's the range of one of those?

F: 200 miles.

B: So there were fuel dumps along the way?

F: Oh yes; that's it, that's it.

B: Yes, sure; I'm sorry. I'm not used to this kind of logistics!

F: I'll tell you one thing, I had to learn a heck of a lot, you know, because the Survey had started using helicopters for work, especially in the Barrens, small helicopters, when they were traversing with helicopters rather than walking around. But this was at the stage of early use of helicopters; but this [Operation Franklin] was quite a different use of

helicopters. We deposited people there, a team, for up to two weeks...a week, two weeks. We kept moving them around, leap-frogging, so to speak, all around the circuit.

B: But, before you went into the field, did you all get together around a big table to discuss the work?

F: Oh, there was lots of preparation, you know, lots of preparation.

B: So you had all the chief geologists and assistants all in a meeting together?

F: No. A few geologists. Ray Thorsteinsson was still at the University of Kansas. Oh, no. But we, I, made a manual; we made a number of manuals, and the likes; and the winter before we went the permanent members of the staff studied all the air photos and made a sketch map just based on air photos. And from this we got the location of where to place the field parties for a week or two weeks. There was communication. I had this idea of the grand scheme...

#### **Mme Fortier brings coffee**

F: This is my wife, Trudi [y].

B: Pleased to meet you; I'm Ian Brookes...

#### **After coffee**

B: I just wondered if you had any incidents in the field on Franklin that you remember particularly well...dangerous or humorous.

F: Well, you know, I had a very powerful crew there. Ray Thorsteinsson, Tim Tozer, Digby McLaren, who became at one time the President of the Royal Society, Fred Roots, who was [future] adviser to the Ministry of the Environment, **Jack Souther, an eventual authority on BC volcanism... a future explorer of Hudson Bay geology by small submersible; and the list includes many other geologists of fine repute.**

B: [**Roots**]Head of Polar Shelf later on [after Franklin].

F: Yes, the original Head of Polar Shelf. Oh, I've got a number of them. All in all, things were pretty harmonious, and I have a very fond souvenir of our relations. But, there was one character who was very difficult to handle. If he'd had a grand piano with him, he would have insisted that the grand piano travelled with him on all the aircraft, the helicopters included. That type of thing.

B: What did he want on the helicopter?

F: Well, baggage, you know. There's limits [**delete - and capabilities**] **to their load-carrying capacity for an over-extended radius of operation**, and he had to realize what the requirement of the exercise is. But he wanted more. This type of human relation, but it was not a difficult one.

B: Do you want to mention his name off the record?

F: No, no.

B: If I close up?

F: No, no, I'd rather not.

B: OK

F: But as an amusing thing, **let me tell you about one of the excellent pilots we had. This charcater, who in winter operated a bar in Florida insisted on every flight he made to load his helicopter with his standard bed mattress in case of some set-back.** I remember I was travelling quite a lot in helicopters, servicing **our ground parties**, and so forth, and acting as navigator, and [~~delete - there's this~~] **one** day I was travelling with the chief pilot, and we got stranded in very heavy fog. So, we landed on [~~the~~] **a beach** and were snoozing there, and lo and behold, what do we see coming out of the fog? A polar bear! The polar bear came to the aircraft and started sniffing, very near our faces, on...

B: on the bubble?

F: Yes, but he didn't like it, or he was uninterested and moved on. Another incident involved a temporary station [W]we had [~~delete - a station one time~~] on Ellef Ringnes, and the cook managed to burn the cook tent and everything. [**But these are...**]

B:[**Yes, par for the course.**]

F: [**There is no...**] I cannot really point to any [strikingly amusing?] thing. For instance, [**one thing,...**] Isachsen [**is**] **has** a weather station. In those days there was no question of an aircraft landing on a landing site **in the summer** because, you know, you know better than I, that the ground becomes a quagmire and the permafrost [**on top**]... **melts [ing]**. Well, there was a [**guy**] **met. man** there who had [an] acute appendicitis problem. So the Air Force says "well, there's nothing we can do about it". So we took our helicopter and went and got the guy... [**as a matter of fact...**]

B: Where did you have to take him? Cambridge?

F: We took him back to Resolute Bay, and there, of course, there is a permanent landing field, and so he was taken down south **by the RCAF wing a/c.** [**Oh, one thing is that... one of the pilots...**] I had three pilots, and one of them [, **my God!, he**] got a very bad attack of kidney stones. We had to [**dispatch [the job] to get** a newcomer [pilot]. The newcomer was a daredevil. I think that he was raised in the ranching country, running after stray cattle. He insisted on flying very near to the [**topography**] **ground**, up and down, just a few feet above. Son of a gun... I was his navigator then... we had two tanks. One of them...the red light was on. It meant empty. After quite a while the second one became red, and we keep on going. And you know what he did? He unscrewed the bulb so that he would not be distracted [laughs]. Well, these are little incidents, you know.

B: So, you were heading for a depot? He was heading for a depot?

F: Oh, yes, indeed! To a sub-station. We made it [laughs]. No, but there was no mishap at all. We had a prime contractor [**Okanagan Helicopter**] who had made a reputation in BC in establishing power transmission lines and the like...

B: So, when it came to writing the Memoir, was that a very laborious process?

F: It was a very complicated process, because each man wrote his own part . And to me, my role was to put the thing together, to draw the big picture, and I did a limited amount of field work compared to those guys. But, I saw quite a bit of country from a helicopter, by moving people around and so forth. We had, before going up north, we had made some preliminary maps from air photo interpretation. So, all together it was about 16 000 photographs. Coming back, I studied every one of them on the basis of my observation, and also on the basis of what had been done on the ground by the various teams. So, it was a matter of coordinating, and pushing the individual. You see, much of the data, like some of the palaeontological information for biostratigraphy had to be done by specialists who were not part of Operation Franklin. Well, you had to push on that, and some other analyses...

B: Was that done at the Survey, or did you farm some out?

F: All at the Survey. The Survey had at that time a very well organized Division of Palaeontology. It had people of world-wide reputation,**[The... for instance, the Jurassic, Triassic, and the Permian and [...?] Devonian, and the Ordovician and all this, were all... had their own specialists] covering all major geological periods.** It needed that, because there was so much work going on in Canada, depending on the biostratigraphy.

B: Right

F: Fundamentally, we called them palaeontologists, but they are biostratigraphers, because it's a matter of geological dating and correlations.

B: Was the Calgary office established by this time?

F: **[Oh, wait a minute, now... Oh, yes, yes.]. Yes, but on a very limited scale, relative to its future elaborate scale, in the sixties.**

**[ delete - B: So, some of it may have been done there as well?**

F: **Oh, wait a minute... No, no, no, no, no.**

B: **OK, much later, was it?**

F: **Yes, oh boy, I've got a role to play...it was, yes, it was around '65, '64, '65...**

B: **OK.**

F: **... that it was established, and Operation Franklin in '55, and then the...[for] two or three years. It was a slow process, but we succeeded, and] The report on Operation Franklin was the most expensive report the Survey had ever produced. But, it served its purpose. [I tell you one thing,] The Canadian Institute of Mining and Metallurgy, which had a petroleum section, had its western annual meeting in... was it Regina [or Edmonton?] I was asked to give a [major] talk there about Operation Franklin. As a result of that, there was a land-grab by industry and the first hole was drilled [, right] soon after [ as a result of] that talk.**

B: Before the publication?



F: Oh yes. Well, you see, you don't keep these things to yourself, or waiting for the slow process of **publication**. You're already sett[ing]led publicly for such a meeting so that **interested parties [interested in it, they do something about it.] attend to hear the 'good news'**.

B: What would happen today?

F: Well, the thing is, the old spirit of promoters... the Geological Survey was a promoter of the land. And the ideas, you don't keep things to yourself, but you release it as soon as possible, provided, that is, publicly, as much as possible.

B: But I have heard of examples of GSC publications being delayed for political reasons.

F: I've never heard of that. I've never heard of that.

B: I'm wondering if there were some Directors who would have been told by the ADM not to release that publication yet, because there'd be too much speculation...

F: No. There was a difficulty once in BC while I was Director. [**Keith [...?]**] [**Someone**] came across some mineralization; he was concerned that some of his assistants would would communicate it to some members of the industry. That would have been a no-no. There was quite a bit of debate. It was decided to establish a date, a very early date, whereby the news would be released. But there was quite a bit of hassle about that. [**The part of the... this was in BC... and**]. There were some members of the public who were very resentful. They thought that the whole thing was a **self-interested** political concern from our Deputy Minister. But, everything was above board. **You see**, sometimes the publication in print is an elaborate thing. It takes lots of time. Why [**retain... handicap**] **delay** release of the news? Why not do it the fastest way possible?

B: I'm just looking for the date of the Memoir. [long pause] '63, right?...was the Memoir. No, no, sorry...

**From here YOF notes that he really should check on the dates of release of the preliminary Maps before commenting on delays in release if information and politics.**

F: No, no.

B: Yes, '63.

F: Operation Franklin in '63? No, I didn't realize that.

B: There are only...

F: I didn't realize that...[long pause}... There were some preliminary reports...

B: Oh, yes, you had some Reports of Activities.

F: Yes, '63, I didn't realize that! Because the manuscripts were ready way before that.

B: Yes, well, that's very common, isn't it, in the Survey?

F: And you see, the point is that if you have something of value that promotes your aims, that is to indicate potential of the land. Well, you... my talk in Saskatchewan, you see, was



in that line.

B: What year was that? Do you remember? '58?

F: It was around '56.

B: Oh, really, so the industry...

F: We're talking about 40 years ago!

B: Right. But the industry didn't have your maps until seven years after your talk.

F: No, they had a map of Cornwallis Island, though.

B: Is that where the hole went down? That's where they drilled?

F: I think so, yes.

B: Well, you don't think that this delay [in publication] was caused by political...

F: No, no, no, no. It's funny, I think I'm an honest guy. I was Director of the Survey for nine years. I'm not aware at all that the publication was stopped because of political...

B: No, somebody would have mentioned it to you.

**F: [delete - Mind you, though, Vic Prest was involved in this. Oh, it was funny. But, for purposes of national security, things were... you'll laugh.... because I went away for the Survey; I was part of a group that went to the Privy Council with the [...?] over there.] An experience of Vic Prest [senior member of Pleistocene geology sub-division] presented a different aspect of barred publications for security reasons...**

B: Vic Prest?

**F: Vic Prest had gone with the Arctic supply ship in the '50's, touring, and came back. He made a map of [, an indication,] his observations of strike and dip [signs on his map, you know. In those days, that was] Before '55,[in those days] there was a security blanket over the North. Somehow, before the map could be published, it had to have a release from the security committee of the Privy Council. The map [went there, and they see these things there, they said "Oh, we don't know what that is, we should refuse publication". So, after a while, we were bloody mad, so we went over there and we said "all that this does is show which way the rocks are, that's all".] was refused publication because the Privy Council did not understand the meaning of the symbols on the map, thinking they might give away strategically valuable information.**

So, we succeeded. But this is one of the rare incidents I know about political concern for the publication because of the security angle, through ignorance. But I don't know any of the political reasons why things were delayed. But, I'm surprised about that; in '63 [publication of Franklin Memoir].

**END OF TAPE 1, SIDE 2**

**Tape 2, Side 1**

**[My Directorship of the GSC - see Additional Text F.8]**

B: Now, we're going to talk about the state of the Survey when you took over?

F: Yes, well...

B: In '60, '64?

F: '64, yes. I succeeded Jim Harrison, who had been former president of the International Union of Geological Sciences (IUGS), and had been President of the Royal Society, and, ah... he, Jim was the most successful promoter of science and, so, things are in good shape **when I took over**; and he also laid all the groundwork for the foundation of the Calgary institute [ISPG]. He laid a foundation, therefore, for the western outpost of the Survey, a wee bit in the image of the U.S. Geological Survey.

B: Yes.

F: I **[was responsible for converting it into an institute for promoting local teamwork. So, lots of people who were there, they didn't feel all the time that they had to report to the 'mother house'.] I elected to dedicate the Calgary institute to the Western Sedimentary Basin, the Foothills, and the Arctic Islands sedimentary geology. I chose to call it an Institute to give it an aura of responsibility.**

B: Oh, I see, yes. So you spent time in Calgary?

F: Myself? No, no, no. I did slip out there fairly often; and, ah, we got a very good man, **Dr. Digby McLaren**, to be director there. **[But, things were pretty good.] Amon g other things**, I reorganized the Quaternary geology. It used to be groundwater also. The groundwater was taken away from us. At this I was bloody mad [laughs] because I had decided groundwater was largely managed by Quaternary geologists. But there's more to groundwater than just geology. [There's got to be a bit of hydrodynamics anyway...] Hydrology plays a role, but our groundwater group was forced to migrate to Inland Waters. I therefore lost contact with peter meyboom, who I had stolen from the Alberta Research Council.

**[See Quaternary Activities - Additional Text F.9]**

**[delete - B: Mmm.**

F: **So I separated the thing; and one other thing that interested me... Peter... who just died a few weeks ago... er...damn... excuse me, but I hate it when a name won't come... age!...ah, so we have nurtured a group called 'Groundwater Geology'.**

B: **He was a hydrologist, this Peter...**

F: **[calls to Mme Fortier in another room] Trudi! Peter who died a few days, ah, a few weeks ago...**

**[Mme Fortier replies: "Meyboom"]**

**F: Meyboom! Peter Meyboom, yes!.**

**B: Oh, yes, yes, yes.]**

**[He reached very high because he] Peter eventually became Deputy Minister of Fisheries. Yes, very brainy chap. Well, all that group was summoned [to the Head Office once; and there was Secretary [?] Steenburg, the Deputy Minister or Director General; no, I've forgotten what name...] by Dr. Steenburg who gave the GSC no choice of retaining groundwater.**

**[delete - B: Steenburg? Steenburg?**

**F: OK. And he says,"we are creating a new branch of water [went] through surface water, groundwater, and oceanography.**

**B: Oceanography, which I guess is the Inland Waters Directorate, I think.**

**F: Among that.**

**B: Is it Department of Environment?**

**F: No, no, no, no; it used to be with us...**

**B: But it switched into Environment.**

**F: Yes, but before that he says to me "whether you like it or not" he said, "we're taking groundwater away from you." And I think too on this matter of the Great Lakes Directorate...**

**B: Institute, yes.]**

**F: Institute. I had built up a small group of geologists and geochemists to study the solid earth, but below that is the water, and the interaction...well, that was taken away from me. So, this really embittered me, because I had nurtured these things.**

**B: Yes.**

**F: But, I see the rationale of it now. So, but when you build something, then the thing...**

**B: is taken away from you...**

**F: is taken away, it hurts at the time. Well, then, over the years, you see the rationale of it.**

**B: You know, I was impressed by Zaslow's comments on your Directorship. He...he refers to you as "a thoughtful and concerned Director". Do you have any comment on that?**

**F: Well, yes. I enjoyed very much [contact with the staff. I appreciated what they were doing and I also tried to promote more...] being Director and especially dealing with a splendid and most able staff.**

**B: Coordination?**

**F: Not only coordination, but also to regard what else could be done, and what else could**

be shaved off, and new things . And I listened to suggestions, too, whether it was engineering geology, or marine geology, or prospecting through the Quaternary make-up, 'drift'...

B: In your Directorship the Quaternary Division, Terrain Sciences, it expanded tremendously.

F: Oh, yes, it did. Yes, and more so afterwards, but it did. I got John Fyles as Director [Division Chief]. He was pretty darned good. There was a good bunch there.

B: Bruce Craig and...

**Vic Prest had long been Section Head. He had a lot to offer as a dedicated Quaternary researcher [notes illegible]**

**[This discussion of Quaternary Activities is reworked in Additional Text, F.9]**

F: Bruce Craig, yes

B: Oh, er, Nelson Gadd, and...

F: Nelson Gadd...

B: Archie Stalker...

F: Ah, but John Scott...

B: Oh, right...

F: A very able engineer, you know. I, as a matter of fact, John Scott had been with [?Ames], and ,well, he made a first, and , if I remember well, he made a short stay at the Survey, then he went to [?Ames], then...

B: This is in Iowa?

F: Harvard was after him. And, I got to talk with him, I think I convinced him to come back to the Survey and he became one of the people in the Quaternary, and eventually retired as one of the Directors General for, right now, it's a mish-mash of things. You see, when I left the Survey, I thought we had a very large staff , and that I should have the title of Director General, because we had something like, at least six divisions. It was refused to me. Well, now they have, eventually, they got an ADM, head of the Survey, with two Directors General, and Six Directors !

B: But the ADM was Davidson? Alan Davidson?

F: No, no. Davidson had nothing to do with Science and Technology, or with the Geological Survey. No, I, Davidson... a very able chap.

B: Yes.

F: He went to Parks, you see, to...

B: He had a background in Geography or Geology, though, didn't he?

F: ... in Geography...

B: Geography, yes.

F: He studied at, I didn't know this, he studied at Queens.

B: OK

F: He was an ADM in the Department [EMR], but he had nothing to do with the science sector. Jim Harrison had, was looking after the science sector. But, the tug of war, the tug of war with the Geographical Branch was really at the Head Office. Very much so, and this was before my time.

B: Yes.

F: No, I was Director then, but it was jim Harrison who was concerned, with Davidson, about the fate of the Geographical Branch.

B: So you had something taken away from you, but you also gained a lot.

F: Yes, we gained. But it's too bad that the Geographical Branch was destroyed, in a way. But, the thing is, they, they tried to tackle too much: physical, the economic aspect, the land-use, and so on and so forth; this was a concern of different domains of the federal administration, and, of course, on the physical side, there was duplication with the Survey. So, it was a matter, then, of... that part is to pull them together. And when you talk about Terrain Sciences, you might be a geophysicist, a geologist, a hydrographer, come what may.

**[End of Quaternary Axctivity see Add. Text, F.9]]**

B: Yes, yes. During your Directorship, the new edition of EG 1 "The Geology of Canada" was published.

F: Yes.

B: And that was a high point of...

F: Yes.

B: Did you have much...

F: **[I'll tell you one thing;]** Bob Douglas [editor of EG 1] was a super **structural** geologist, and he was head of the... I had made him head of the Regional Geology Division, **which had deprived the GSC of his superb geological abilities.** He was pushing hard. **[But, it seemed to me that the Survey was not using him to his great capability as a geologist.]** So, I **[laughs] I** was instrumental in his becoming the [... **essentially,** ] editor of EG 1...

B: Oh, right.

F: **[I think myself... ]** I pat myself on the back for so doing. Because, yes, I think he made a super job of it.

B: It's a...many people have noticed about that volume that...it was published in '72,

right? Er, no, '70.

F: No, no. I think it was published **immediately** after I left the Survey [in '73]. **[It became public after I left the Survey, because]** I remember well my successor Digby McLaren and I, we went to the Minister's - Donald MacDonald, on Parliament Hill, and presented him with a copy of the volume. **[I've got a sheet on that upstairs.]**

B: Yes. It's very significant that the theory of Plate Tectonics was publicized, became generally accepted, about 1968, with the papers in the Journal of Geophysical Research. And so most of the writing for the chapters of the **'73 edition of EG 1** was done before that. So, by the time it became published, there's this huge hole in the...in the discussion.

F: **[But, I tell you one thing. If you look at]** Well, the last edition (1996) of the Geological Map of Canada [, **now this**] is a super piece of work.

B: Yes, yes.

**[possible to delete the following section with no loss of content or meaning]**F: Now, what's his name, the chief editor of it? See **"Begin again"** ]

B: oh, Gee...[laughs]

F: John...oh, a great friend of mine, damn it. You can see there the impact of the

B: Of the 1970 edition?

F: Oh, later than that!

B: No, I mean you see the impact of the earlier edition on the later...

F: You see the impact of the edition, ... of the...come here, I'll show you.

B: Yes, OK

**[we go upstairs to look at a map on the landing wall]**

F: But, er, take my word for it...[points] that is the influence of plate tectonics; there's another, there's another area, there's this area over here. No, this is a splendid thing, and...

B: Yes, you think they're basically talking about...

**[Begin again]**

F: [recalls name of editor of Geol. Map of Canada 1996] John Wheeler! John Wheeler!

**[see Add. Text, F.10]**

B: Wheeler, that's right.

F: Oh, an amazing guy! I brought him to Ottawa **[for a while]** to head the **Division of Regional Geology**; **[he'd been]** after I left he went back in the West Coast. He

became Chief Geologist for a while.[This is a [...?]. The year, it just came out last year.]

[ delete - B: No...

**F: It just came out last year.**

**B: 1996**

**F: '96, eh?**

**B: Yes.}**

F: Yes, because in '97 I had a meeting here in April, and they just put it out publicly; I...this is a splendid piece of work. I gather there's one of the Pleistocene geology...the Quaternary... I must get a copy of that.

B: It's called 'Surface Materials'.

F: I haven't looked at it, really.

B: Bob Fulton edited it.

F: Yes, I'm surprised; Bob's done very well. I remember when he joined the Survey . He studied at Toronto. He went to Egypt for a while.

B: He's told me about that; I've worked in Egypt as well, so...

F: Did you? Yes...

B: ...we have that in common.

F: I find this map... I was...the way...[background noise]. **On the latest geol. map of Can,** the thing that amazes me is the time division. All this [points] is biogenic...all this is biostratigraphic, you know. It's just amazing, the progress ; And I like [background noise] the major classification of the terrane, from the sequence - the volcanic rock, intrusive rock, and the metamorphic rock. And then the radiometric dating dividing the Precambrian

[the following can also be deleted without loss]

**B: So, this is radiometric...**

**F: This is radiometric, this way and that way. Yes, mind you, there's always a connecting link, cross-cutting relations here too, you see. You can cap [...?] dated sediment...**

**B: Yes, very clever. The legend...**

**F: I find it a very clever thing [background noise], so, I, once in a while, I go by here and remind myself I was once a geologist!**

**B:[inaudible]**

**F: No [inaudible]**



**B: [inaudible]... astrobleme?**

**F: Yes [inaudible]**

B: [inaudible]... you flew over the Haughton one?

F: Yes, I... as a matter of fact, I stopped there once in 1955. I just looked at it for an hour. I didn't ... I missed the boat on that one; but I did study it.

B: It hadn't been recognized yet?

F: Pardon me?

B: It hadn't been recognized yet?

F: Oh, no; oh, no. In '55 we thought it was one of those dome things.

B: Yes, yes, OK.

F: I find this a splendid thing.

B: Yes, it is. It'll be a long time before that's improved.

**[we return downstairs, talking as we go about publicizing science and YOF refers to a meeting - see below]**

F: ...ah, it was a splendid thing[...] after, what, three or four days...[...] And lo and behold, I'm so bloody mad that the press did not catch that [**up**]. I got...

B: When was that?

F: That was in the Fall, 19-- ah, 1996, at the Museum of Science.

B: Oh, the Science Centre?

F: The Science Centre, yes.

B: Yes, of course, a geologist was head of that for a while, er... Emlyn Koster...

F: Yes, I've been getting in touch with him ever since.

B: Oh,er...

F: 'course, he's in the States now, eh?

B: Yes.

F: But it was very well supported. But to my amazement, the daily press failed to report on this [...?]

B: Yes.

F: It was a fantastic thing

**[this disjointed conversation took place while we were going downstairs and settling in again for the next topic. It concerned a public meeting on the Earth Sciences at the Ontario Science Centre]**

B: I wanted to ask you a little bit about Prague [Int. Geol. Cong., 1968]. Can you carry on for a few more minutes?

**[see Add. Text, F. 12]**

F: Yes [laughs]... well, in Prague [laughs]... it'll take me five minutes [laughs]. I went to Prague with the idea of inviting the Congress to hold its [next] meeting in Ottawa, in Canada I should say, not Ottawa. And I had been given a lodging away from the Congress, and somehow a colleague of mine, Charlie Smith, who became my boss...I was his boss then, but then he became my boss.

B: Yes, he worked in Newfoundland, too.

F: "Yves" he said, "why don't you come and join me **in my apartment located on the major road to the airport**"? So I moved there before the opening of the Congress; and the first night I was there, around four o'clock, we heard a heck of a commotion in the night. What the heck goes on there? Plane after plane after plane flew over Prague. And then we look out the window, and there was tanks going to town, with no lights, in the dark. Then we met some of the residents. They could not speak English, nor could we speak ...

B: Czech

F: Czech. And **[the... ]**they were all in despair, **[and the like. And they]** saying "well, it's an invasion of the country" and the like. So Charlie and I, we walked to the [Congress] Centre. As we walked...the Centre was **[there, let's see [points]... the Centre was there; there was]** around a park there, of a few hundred feet in diameter, and we were kept on the side of it. As we were going around that park[, eh,] those helicopters came down and Russian soldiers with machine guns on the other came running around . It gives you a jolt! [laughs]. And **[the...]** everything was paralyzed **at the Congress Centre**. The meeting had already started, [ that was...the meeting was started on...] it was a Sunday or a Monday **[..Oh boy! Well...]**

B: Was it at the University?

F: It was at the Centre. **[Or was it the University?]** It was in the summer, you see, so there were no students. Thank God for that, because, you know what happened in Hungary; there was an upheaval **[there, ]**caused by the students,**[ fundamentally, all the students were there]** and it was the military who directed the operation. And there was a massacre because of that. But, in Prague, the students were not in town, so there was no organized resistance at all. Things were rather quiet in all, as far as I was concerned. But there was an emergency session of national representatives, and I made sure that Bob Folinsbee was going to be the head of the Congress **[planned in Canada]**, therefore he should be a head delegate over there, and I was to be his assistant.

B: Oh, yes.

F: But Bob Folinsbee was caught away from the Centre, because he was on the other side of the river. So I spoke for Canada and **[ I had made...we]** it was decided to close the

Congress, for it was impossible to operate. Everything was paralyzed. And I excused the fact that the invitation [to Canada in '72] was being made under very sad circumstances, and we pined for the organizers who had lost the fruit of all their labours. I invited them to come to Canada and...in Canada I can be assured that everyone would be most welcome! [laughs].

B: We won't have any October Crisis again?!

F: No. The funny part about it, you know, was a matter of evacuation of the **Canadian delegates** [; it became a matter of evacuation]. Charlie Smith was a great organizer. [, and, it doesn't matter what, his organization permits him to take command]. He went to the[er, **Damn!...the**] Department of External Affairs [**Canadian Embassy**] where [had asked] their ambassador [to come] had been recalled to Ottawa, not for parliamentary reasons, but for consultation. And he had left a young Charge d'Affaires in command over there [, and]. The message said everything was going to be normal. And I felt very mad about this, because [many people in Ottawa, in Canada, had want[ed?] to go [to Prague]. As the Director of the Survey, when he ended up being in Ottawa next time...[?]. Anyway, he asked me how things sounded in...'cause there'd been some grumbling about trouble...] see F. 12 for clarification.

[B: Before you went?]

F:[Oh, yes.] I got in touch with External Affairs. I said, "look", I said, "I've got responsibilities to advise some of my colleagues in earth science".

[delete - [Oh,] There's no [counsel or counsellor?] for a geologist. So I was instrumental in saying to a number of Canadians to go ahead over there [to attend the Congress].

Well, the, really, the Canadian embassy was left headless. So, Charlie Smith took over the management of the evacuation of Canadians. He did a splendid job. At one point he said "Yves, you help me". He said, "you go and buy 200 (or some such) a 150 train tickets and you stand at the station, and as Canadians come, you distribute these things". He says, "with the help of the embassy staff, I'll see that everybody gets transportation to the railroad".

[This is how we...but] The rumours that were going on was out of this world, you know. At one time, there was a rumour that the American troops were on their way [to...rumours]. Another rumour is everybody wondered if you left by bus, by car, or by train - the airport was taboo - where they were being partly disrobed, examined, and all that.

I just thought about it; Bob Folinsbee, big guy, lots of pictures [for him,] taken by him. So, when we heard about this (disrobing) rumour, he endured murder by putting in his feet, in his shoes, two rolls of film, so he wanted to make damned sure they wouldn't...Who would look in your shoes to find out if you've got some state secret or something [laughs]. He endured murder [[laughs] to try, because of the[...?] you see,] to carry this.

To my amazement, Jim Harrison - I told you about Jim Harrison - had brought to Prague a suitcase and all. He was at the [Congress] opening, but he had to go to Vienna for an opening [of a meeting] on Remote Sensing, and the role of satellites, and the like with another chap, Larry Morley; fantastic guy.

B: Yes, I know him.

F: Fantastic guy. So, all this invasion took place when Jim was Director General. Lo and behold, I got a phone call from him [in Prague] from Vienna, when they said that all

means of communication were cut, **[and all that, there's ]**Jim Harrison **[phoned me, I think at the embassy, and]** asked me if I could retrieve his suitcase **in Prague**. And, you know, a few weeks before going to Prague, I had a hernia operation. I was not too solid. But I said "I will" to Jim .We got on the train dragging my suitcase and Jim Harrison's suitcase, and it seemed to be damned heavy. I said, "maybe he's got rocks in there; I wanna make sure about that"! Well, we got into the part [of the train] where Charlie Smith, Bob Leggett, I think, Bob Folinsbee, and who else? I said' "look", I said, "I don't feel I can carry this thing any more; let's find out if there's rocks there". There were two 40-ouncers of gin in there! "Well", I said, "I'll be damned if I'm going to carry this". We had a party! [laughs].

**[the following few lines can be omitted with no loss of content]**

**[delete - B: He could have got more in Vienna anyway!**

**F: But it was amazing after, you know... there was some...**

**B: You must have got out by train to Vienna?**

**F: I beg your pardon**

**B: You got out by train?**

**F: We got a train to Frankfurt, Germany.**

**B: Oh, really?]**

F: **[Yes,]** Air Canada was very nice there **in Prague**; they saw that we had hotels and reservations to come back to Canada. But, Bob Leggett, Charlie Smith, and I, we wrote a virulent letter to Mr. Sharp, the Minister of External Affairs, about the conduct of External Affairs. It was no small matter there.

B: Yes.

F: Giving us poor information before the Congress and leaving the Embassy over there headless. People... the guy at External Affairs was more concerned in giving political information to Ottawa on this, rather than giving...

**[ Tape 2, Side 1 ends. There is no second side to Tape 2. The following is reconstructed from notes, to conclude this section of the interview]**

F: ... some of his time to look after the welfare of Canadians.

B: So, you took the train to Vienna and then the plane to Frankfurt from there?

F: We took the train from Prague directly to Frankfurt, and we took the plane to Canada from there.

B: So Harrison never got his suitcase?

F: He got his suitcase, but he didn't get his gin!!

B: You left his suitcase in Frankfurt?

F: No, I brought it all the way to Ottawa.

B: Oh, I see.

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**PART TWO OF INTERVIEW WITH YVES FORTIER, AT HIS HOME IN OTTAWA ON NOVEMBER 18, 1998 (conducted to deal with topics not covered in the first part)**

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[See Additional Text, F.13]

B: Can you say something about your involvement in Tunisia first?

F: [Well, in Tunisia,] The UN was looking for a Canadian who could study a request from Tunisia for support in mineral exploration, in an old mining area, **especially** related to zinc. My former chief proposed to the UN that I might be of some help. Although I do not have much special expertise **on zinc**. At the time I was Head of the Economic Geology Division of the Survey. That was before I became Director. So I went there for three weeks.

B: What year was that, about 1950?

F: No, no, it was later.

B: Later... '55 maybe? No, that was Franklin wasn't it?

F: Around [**'60** [**'66**]] **1963**. It had been a difficult thing because [**they wanted**] a French-speaking [**person**] **geologist was needed**. That's one of the [**factors**] **reasons** why I was chosen. But not from France, because there were some difficulties in Tunisia, **having recently** gotten its liberation, its freedom...

B: Right, independence.

F: Independence, yes. [**delete -** [**?**] **John Hanley**] was an old French geologist who was there, as advisor to the government on mineral exploration. I found him and told him I was ill at ease that the UN would not accept his word, but sent a Canadian there who was new to the whole panorama. There was an old gentleman there, who had been there for decades. I had a very nice rapport with him, but still, I was ill at ease. I must confess that I made some positive recommendations; today I would have made a different approach. Instead of going to drill from what I saw on the ground, I would have advised to use some electrical survey. I think that this would have been more informative on the larger area, rather than drilling, which is limited in its scope.

B: You mean airborne?

F: Not necessarily, no. In those days the airborne electromagnetic [survey] was not too common. But, I would certainly advise that, in our days, it would be more rewarding.

B: So what were you thinking about in Tunisia? Was it vehicles, using vehicles?

F: Yes, ~~but on selected lines, by walking the prospective area, and the likes]. By ground survey, walking selected lines in the prospect area.~~ This would have given you more coverage than an immediate drilling campaign. ~~But, I must confess, I never got any news as to...~~ They got the grant from the UN, but I never heard about the results. I'd been preoccupied with many other things; when the job is done you move on.

B: Was that your only foreign experience, professionally?

F: As far as **fieldwork**, I think it was the only one ~~-, in the field.~~

B: Yes, because you had international committees.

F: Oh, yes.

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[See Additional Text, F. 14]

B: So, what about the Stanford topic? I wanted to know...you didn't say why you went to Stanford.

F: Oh, Willis Ambrose ~~at Queens]~~ who eventually went from GSC to Queens, took his bachelor's degree at Stanford. He made quite a name for himself.

B: Was he American?

F: No,no,no,no. He was from Manitoba. ~~He was a professor of Geology at Stanford, but he was also a member of the Geological Survey [of Canada].~~ I worked with Willis for two summers. When I got my Master's degree from McGill, he said,"why don't you go to Stanford? It's a wonderful school, highly qualified faculty, the environment is splendid and it's a difference in scenery from Eastern Canada". So I went.

B: Who did you work with there?

F: Well, the director of my thesis was Aaron Walters. He left just a year after I left Stanford, and he went to Johns Hopkins.

B: Who else was around that we'd know - famous people? I suppose Lawson was already gone, right?

F: Oh, no, no. Lawson was at Berkeley, and another famous one ~~...of course,], Bailey Willis. [delete - Lawson is well-known in Canada].~~

~~B: Pettijohn?~~

F: Oh, gosh; small man, short; I see him now.]

B: What was his field?

F: His field was tectonics. There was a famous fight between him and Lawson about the Golden Gate bridge and the soundness of the anchorage of the bridge. Bailey Willis! He



still had an office at Stanford. He was quite a remarkable individual for his age. He was driving - I don't know if you know Stanford, but there's a long 'allee' from Palo Alto to Stanford. I was walking. Here comes Willis in his rat trap car, and asks me if I want a lift [, see]. So I accepted. We moved a few hundred feet, and there was three comely young ladies going toward Stanford. He stops and says to me, "Get out and let the girls in"! [laughs].

I took quite an array of courses. I was influenced by the fact that...I'd been working in the summer for the Quebec Department of Mines and the Geological Survey. In those days, geologists were called to work in so many areas, in so many types of fields. So [, I took...] fundamentally, I didn't take a specialty. I broadened my education quite a bit. My first degree at Queens was in Mining Engineering with a Geology Option. I decided while I was at Stanford to really broaden my [familiarity with the realm of geology] **geological perspective**. So I took some palaeontology, [I took ] some sedimentology, [I took] surface geology, [I took, of course,] mineral deposits. Aaron Walters was a petrologist, and I focussed somewhat on petrology in my thesis. But, I must confess, instead of [just taking courses over there related] **limiting myself** to petrography, I decided to broaden my familiarity with geology.

B: Did you go back to Stanford at all? When you came back to Canada, did they invite you back, say, as Director of the Survey, to talk with your alma mater?

F : No, [ delete - I stayed away from Stanford because Aaron Walters left and [? Skate and Muller] died. The head of the department died. They were all strangers to me. It's like...I don't go back to the Geological Survey any more, because it's all foreign faces.], because of distance and faculty renewal.

B: You probably remember some of the commissionaires, eh?

F: [laughs] Well...

B: They're the people that stay the longest.

F: [It's funny you know, because ] We often go near Stanford, just a few kilometres; my wife's sister has a very nice place there, so we visit. But, it does not appeal to me to go [there and say, "well, I'm a former graduate..." and somehow make myself known. They're all new ones.]. I have however maintained a closer relationship with Queens U.

B: They have so many successful alumni that I thought they would have a lecture series, where they would invite you back to talk about something in your career. Maybe it's only the less well-known places that do that, because they need the...

F: No; as a matter of fact, [when I was there...] I don't remember that there was invited speakers. [The only thing was... where] I gave a talk [, was ]at the [, what was called the] Leconte Club, which [was] gathered... once a month the academic geological world of San Francisco Bay. [would get together]. [So, I was asked to give a talk there]. This is where I had the encounter with Andy Lawson. I was very scared, because I was told that he could be very rough on youngsters. But [he... I don't know,] maybe because he was a fellow Canadian, he was very nice to me. And you know his history, eh? He ran away with the daughter of a former Director of the [Survey] GSC . There was something like... a huge gap in age. By Jove, he was in his early seventies, when I met him, and they got a child! I was talking to him at the club, and I congratulated him. He says, "There's nothing to it. Happens everyday!"



B: Did he work for the Survey?

F: Yes. **He thus courted his young wife-to-be.**

B: I thought he just came up to Canada to do...he was working with the Huronian rocks?

F: Yes.

B: OK, yes; I hadn't followed his career, I just know his work.

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**[See Additional Text, F.15]**

B: Well, we're jumping around a bit, but I just wanted to fill in some gaps. How about the work with Larry Morley? How did he come into...? He was at the Survey?

F: Oh, yes. Right now he's a candidate for the Order of Canada. **In July 1999 I learned he had been made Officer of the Order.** He's a fantastic guy. He really founded the Division of Geophysics in the Survey. In Operation Franklin, Larry became aware that I was mounting this operation. ~~He says, "I think we're going to survey your area, aeromagnetically, you know."~~ **So he did. I wasn't [...?] in his time about the origin of the [Queen Elizabeth] islands...]. We presented a paper to the Royal Society of Canada on the geology and geomorphology of the Queen Elizabeth Islands.**

B: What... sorry to interrupt you, but what raised the question to start with? Do you remember? The question about the origin. What was peculiar about...?

F: **[Because the island arc, and all this business. Of course, little was known about the geology in those days.] Much was being written about island arcs in those days. Of course, little was known about the geology of the Arctic Islands in those days. That they have nothing in common with island arcs motivated me to start on the paper.**

**[B: theoretical...]**

F: So...Lobeck had quite an influence on me, and the western geomorphologists in the United States. **[I somehow studied the pattern of...I don't know if you read the article we wrote...]** I studied the pattern of the islands, and it was quite obvious that there is no dislocation of the geology from island to island; the orogen **[, the trench carries on] continues from island to island.** But Larry had something to contribute to that also, from the point of view of the magnetic line. One thing that didn't come out **[of] in this article, that Larry pointed out later, is that the really intensely magnetized rocks lay offshore to the NW [he interpreted the data just off the northwest shore of the islands, where he says there is a real magnetic intensity there in the rocks. That's how he said...I forgot he wrote that, probably he did...but not subsequently, the work that was done, the chap who worked so much in northern Ellesmere Island...he thinks that there is a...].** Eventually, GSC work (Trettin et al.) in northern Ellesmere located crystalline terranes and a regional tectonic set-up that suggested to some workers the occurrence of accreted terranes.

**[B: Oh, not Kerr?**

F: No, no.

B: Christie?

F: No, no, not Bob Christie [may have been thinking of Trettin]. The technical term... there is a 'suture' of the North American plaque [plate] and another plaque [plate] which has not been named.] The geology of Prince Patrick Island, of Lougheed, etcetera, is relatively simple. But then, [if you go a wee bit] beyond this you get quite a different magnetic signature, as Larry Morley has pointed out [Larry Morley...his contribution was this type of thing - the deep structure underlying the islands. That's how we joined in the article. I found it useful, myself, that his amazing work showed the simple linkage from island to island; like Parry Island, for instance.]

[see F.15]

B: Yes, but you had two explanations: they were normal river valleys or they were rift valleys.

F: There could be rift valleys, but I'm still concerned; I believe myself that there is an imprint of an old hydrographic system. I may be wrong, but...

B: The trouble is, yes, now we know from the seismic surveys in the channels, and some drill holes as well, that the pre-Tertiary surface is way, way down, beneath several kilometres of post-rifting sediments laid down in the channels, which...That information wasn't available in the '60's. Subsequently, the displacement...at least in the south, say Lancaster, Prince of Wales...

F: But, there's one thing I really should have brought up in the report of Operation Franklin; from Boothia Peninsula and Somerset Island and northwesternmost Baffin Island there's an important imprint there of north-south alignment. This is reflected in the structure of Cornwallis Island and on the edge of Bathurst Island.

B: Things come up like this, eh?[gestures]

F: Yes, it goes up, and I think it links with, eventually, the Amund Ringnes trend. I found during Operation Franklin in northwest Devon Island some Tertiary deposits. The deposit there is lined up as if it was in a small trough on a limb of the trend. If there is a major dislocation along...I think it would be rather minor, in terms of a lateral movement anyway, because this structure is, all in all, fairly old.

B: Yes, but it would pre-date the channels, this north-south 'graben', so this doesn't really solve the difference in opinion between the rift valley hypothesis and the drainage...major valley [hypothesis], because, if you have Late Cretaceous - Early Tertiary faulting...you have the Eureka Sound Formation, which is in the graben, the north-south graben; then after that, you could have the east - west Jones Sound, Lancaster Sound forming this way [hands move left/right]; it's east - west, but the movement is, yes, vertical. So...

F: It would, but you see, there is other areas where again you see the trace of an old hydrographic system. The sound between Banks Island and Victoria Island, it looks very much like an old valley system.

B: Did you notice any of these large river systems on the islands themselves when you

were looking at the photographs?

F: Oh, no, not that I recall.

B: I think it's the satellite images that pick these things up, because there is one...my colleague in Terrain Sciences who is working on Devon in the Quaternary, he worked on Prince of Wales, and he has a satellite image on [the cover of] his Bulletin that shows this huge meandering channel that goes across Prince of Wales; it's just chopped off by the edge of the island, so that definitely suggests faulting. [...?] faulting, too, because it's next to Somerset.

F: You know, I feel ill at ease, because I belong to a period of geologists that were all over the place. You cite some of these chaps from Terrain Sciences who've been working for twenty years in the Arctic. One chap I introduced to the Arctic, Ray Thorsteinsson, really became famous in stratigraphic geology of the islands. He spent all his career...he's still at it! His mind's still at it, in the Arctic Islands. Well, I spent five seasons in the islands, all over the place, Precambrian Shield, and all that. I was in the Eastern Townships; I was in the western Shield, and so on and so forth. I belong to a breed that does not exist anymore - a Jack of all Trades.

So, I look back at some of the things I did touch and I say, "Gee, I wish I had the opportunity to pursue these things. It's like in my thesis area in the Eastern Townships, Mont Orford, there's a belt of ultrabasic rock there, related, geographically linked to, some marine volcanics, and the likes. Some black shales, schists, [...?] with graptolites. You know I often wondered for years...now this linkage is amazing...it resembles a preferred geologic environment for this emplacement of this unit. Sure enough, now they've done some work...

B: on plate tectonics.

**F:[On this thing, this suture, the ultrabasics...you know, they had escaped me because I took other duties, and one regrets...]. The concept of Plate Tectonics evolved after my Mont Orford work and I never had the opportunity to return to the region because of the evolving duties I assumed.**

B: No, but these workers now are also referring to your work as some original observations.

F: Indeed, but you know, scientists, researchers, are [...?] in the most of their work. In terms of renown. The opportunity to study a situation or a geological landscape, and to get out of it the utmost; I find this an opportunity I never had. I would have liked most dearly to go back at it, you know, to "suck it dry"[laughs].

**[B: Well, to satisfy yourself that you knew what was going on...So, Larry is up for the Order of Canada now?**

**F: Well, I hope so. I think he's a very generous chap.] Do you know Larry?**

B; Yes, he taught at York University in Remote Sensing for several years, and he established programmes there. He was a real innovator.

F: He was in the Survey. We were together for a long time. I became his Director, and then he got highly involved with this Remote Sensing, as you know. And Canada owes him a debt for what he's done. Of course, he[saw all ] identified the major requirements to

**do justice to a new national field of endeavour.** I encouraged him, but the whole field demanded some financial disbursement, that if we had retained this new endeavour within the Geological Survey it would have **handicapped** financially many other areas of activity. So, it was with the blessing of Jim Harrison, who was then ADM of Science and Technology, it was decided that Larry would form a new branch in [**the Department of the Environment.**] **EMR.**

B: So, the Canada Centre [for Remote Sensing] was Larry's baby?

F: Oh, yes. If you're interested in him, I've got...I will send you some recommendations I've made about his election to the Order of Canada. Very deserving, very imaginative, bright chap. Even the Americans were consulting him... the Director of the United States Geological Survey had a very nice rapport with Larry; he found Larry an inspiration. He got involved with the NASA people, and with the Department of the Interior of the United States. So much so, that he got access to the plan and also the use of the facilities like the... Canada profitted too from him having access to the remote sensing capabilities of the United States. Canada, of course, in those days, could not afford to have its own programme of satellites...resource [inventory].

B: When is this? In the early '70's?

F: Wait a second, now [long pause] it was, yes, I think so.

B: Yes, I would guess it would be in that period. That was a very prosperous time. You would think that Canada would have developed the capability.

F: Well, he succeeded in getting these dishes, in Newfoundland **and** Saskatchewan. But, he demanded a lot more; as a matter of fact, he got a full-fledged Branch to meet the requirements of the endeavour.

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[See Additional Text F.16]

B: OK; can we pass on to another topic?

F: Go ahead.

B: This topic of public education at the Survey, that...you were Director from '64 to '72, right?

F: '73,

B: '73. It was in that period that booklets and geological maps, tectonic maps, glacial maps were printed at page-size, distributed for free at the bookstore in GSC. I wondered if this was any effort on your part to say that we serve the public, and therefore, let's publish this material. Do you know how that came about?

F: Anything that served both the public and geology got my thorough support. I'll give you an example: I don't know if you've ever heard of Peter Meyboom. He started **at** the Survey in groundwater; very clever chap. He spent a few seasons in the Prairies, and he came out with the idea of the micro-system of groundwater. He followed that with the study of the vegetation, where the groundwater reached the surface, by the type of [...?]. Then he studied the [**original**] chemistry of the water, very saline water [**in**] **through**

deep circulation, leaching the salts **from deep-seated salt beds**. So, he started thinking about the scope of the circulation of the groundwater. Lake Winnipeg, Winnipegosis. This is the broad system [that] had its origin in the Rockies. So, I [said] advised him to make a map and we'll publish it, simply to give perspective to the general public. Well, this is the type of thing that I promoted. But, there were many other things that came from the ranks **which we promoted [We pushed that] because [it was a service and for us too. It shows that the area of Science can serve the public.] they were part of a public service, of the image of science in public services.**

B: Did you used to have this Forum in February that they have now for the public to visit?

F: No. There's quite a few new things now.

B: I was just trying to think of any other educational projects.

F: Well, there was the rock system; that was an old thing.

B: Oh, the box?

F: The rocks and economic minerals, yes. That was an old thing; I think it's stopped now.

B: Yes, but was that related at all to Ann Sabina's...

F: It was before Ann Sabina.

B: Was it?

F: Oh, yes. Oh, yes. That's an old thing; an old endeavour, that thing.

B: How far back do you think that goes? Before the War?

F: Oh, yes.

B: So there were sets of rocks available for schools, going way back

F: For people going prospecting and who [...?] the rock.

B: Anything else on that topic?

F: **[I'm trying to think.] Publications on the technology of prospecting.**

B: Symposia on geology and Canada, or in the Public Service? Any symposia?

F: Well, one thing I was responsible for is to bring to Canada the International Geological Congress. That gives stature to Canada on the one hand; on the other hand, it puts the realm of geology in the mind of the public.

B: The revision of EG 1 as well - was that a pet project of yours? **[Or was that something which...because it hadn't been done since 1957, before it came out, the big one that Douglas and...]**

F: No; Douglas, I selected Douglas.

B: Yes, but whose project was it? Was it Douglas' idea to revise EG 1?

F: No, no, no. I must confess that my predecessor, Jim Harrison, decided it's time to revise it,. They had selected an editor, and he was sick and aging, and I think that he had not kept pace with what's new. So, I decided that Bob Douglas, who was a splendid geologist and a chap with the scope, would be prime editor of material. The periodic publication of the new edition [**..there's been quite a number of these things.] permits us to keep up with knowledge gained of the land and earth sciences in general.**

B: Well, I mean it was 1970 it came out; then it was 1988, another 18 years before... That was...

F: Almost a generation; but it's in sections [now] because it's too big...

B: The DNAG...Do you have some of those volumes? You've looked at some of them?

F: I've got the one on the Arctic. I'm a small man, but...

B: But you keep up.

F: Oh, I've got upstairs on the wall the geological map [of Canada], and I reflect on what's new.

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[See Additional Text F.17]

B: When you retired, did you take up any geological activity, like a hobby? Are you interested in local rocks?

F: I must confess that I've been all over the place as a field geologist. Then I was given, after Operation Franklin was published, I became Chief of Division, shortly, of regional geology, and the first formal Division of Mineral Deposits or Economic Geology. Then I became Director. All these took one hundred per cent of my time.

B: A hundred and ten per cent!

F: Well, really...nights, weekends at it, and the likes. It was demanding. Not having a specialty, it's very hard to give it time. So, I was spent. I left the Survey in '73, when I was called to Head Office to be Senior Advisor in Earth Science, and I spent two years at that. I kept busy preparing some texts there. Then, I was really near the end. It didn't last very long. I didn't like it one bloody bit! When I found out that things were a little too complex, we were stepping on each other's toes. When I retired I think there was seven ADMs , and I recommended strongly four or five; there were too many; there were duplications.

B: I suppose some, a lot of people had reached that point in their career when it's promotion time, so they had to be ADMs.

F: As a matter of fact, to me, when I became Director, and when I became ADM, I was surprised, because I had not thrown my hat in the ring. But, I must confess I was spent, so I decided to go and sail, **spending up to half the year on our sailboat in the Caribbean. [The difference in life, and I spent months, we got ourselves a sailboat, which we put in the Caribbean].** We met some very interesting



Canadians there; Stuart Griffiths and the likes. We enjoyed life away from the turmoil of the Civil Service, the Administration. So, I still have quite an interest in geology. I receive periodicals. **[I feel a little ashamed.] [I'm a member ] . I was elected Honorary member of the Geological Society of London and of La Societe geologique de France [...?], and I look at the [Canadian] Journal of Earth Sciences, and GAC, but I've given up membership in many societies because [I couldn't suffice...] of matters of economy and diversity of new interests.**

B: Yes, subscriptions are so heavy; it's so much, the volume is incredible these days; so much stuff coming out.

F: Stuff coming out. You see, it's demanding of time, and you **[have to sort out ] are challenged to identify what is fundamentally new [in the landscape, or is it progress in a narrow field?]**

**END OF TAPE 3, SIDE ONE**

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**TAPE THREE, SIDE TWO**

YOF then talks about leisure activities, such as reading news periodicals like 'The Economist', which he reads avidly now, when the tape starts...

B: ... from the world..

F: From the world. In my view it looks like politics, but from [an] economic point of view, you see, it's rewarding, and of course, they have a whole section on the economy per se. But when they talk about Indonesia and all the turmoil, human rights, and so on and so forth, it always comes to, oh boy, what's going to happen to the economy. So, it's a new world, in a way, from rocks!{laughs}.

B: Yes, but you're more interested in the economy now that you're living on a pension, eh?

F: [laughs] Yes.

B: With money invested somewhere, then you'd want to know...

F: But, er, I'm a collector of books, and [...?]. I see something interesting, and I say, "oh, my gosh, I must gain some knowledge of that". So, I buy, but sometimes I don't read thoroughly the book.

B: But, you don't see the other people that you were close to when you were working?

F: Well, last year I found out that there's a club of old retirees **[that had] who held some senior position in the Survey. So, I started meeting with them once a month; we meet at the pub, with a lunch.**

B: How did you find out about that?

F: Because an old sidekick of mine, Charlie Smith, informed [me] that this was going on, and so I went. But they're a wee bit preoccupied with the old house, but I think they can have an impact. Well, the Survey needs old friends as it used to have years ago, and right now it seems to lack an external voice, and I think the Survey needs to make some friends. You know, just to give you an example, there is an Association of Prospectors and



Developers. Years ago the Geological Survey was playing a major role in the programme of the Association... they demanded the Survey's contribution. So, the Survey was well regarded. I find that the Survey has lost this intimate contact.

B: Now, with all the retirements and the early retirements it's even worse, because now you have people in their 50's who've gone.

F: There are shocking things right now, because the powers that be, the heads of Departments anyway, are very pragmatic [**you know**]; the return on the work was [**must be?**] immediate, the economic return must be immediate, and I find, myself, that it deprives the country of work of long-term value. I was horrified to read lately about...oh, what's his name?, the fellow who found out about the impact that brought about the end of the dinosaurs...

B: Oh yes, what's his name; Solomon, or something, his name is...

F: He joined the Geological Survey after my time, but...

B: Hillebrand? Hildebrand!

F: Yes. This is scandalous, you know. And another thing, too, and this is the original forte of Larry Morley: palaeomagnetism. It helps you to fix events, and the [**like**] **spatial relationships of major and minor components of regional geology**. [“:No”, **they said, “ it’s no good”, you know...it’s shocking;** ]. Pretty soon at the Geological Survey it'll be: “where the rocks are all pink, and where they are all black, and that's it”! It's really shocking.

B: Back to the 19th century, pre-Logan...

F: Well, you know, it was in the middle of the '60's, Brock, a former Director of the Survey, said, if you want to be a member of the Geological Survey you have to have a Ph.D. Well, this was demanded, establishing a standard of work. But right now, you wonder if that standard is wanted!!

B: As Director, did you have a set of favourite stories about Logan or Selwyn, or... all these...was there any kind of folklore handed down about these very early days?

F: Well, there were some about A.P. Low, who was in disagreement with his senior sidekick. He'd spend the winter up in...

B: Labrador...

F: Labrador, and then he snow-shoed all the way back to Ottawa to make representations to settle the problem, and back. That was his character.

B: Do you know why J.B.Tyrrell...I mean...he didn't work for the Survey; he did this project in the Barren Grounds, and then it was finished, eh?

F: Yes, it was finished. I never...I don't know if Zaslow touches on that...

B: Maybe he had more interest in the commercial...

F: Well, yes, he became wealthy, somewhat wealthy, so he, he was...

B: But he didn't revisit the Shield at all...one of the...

F: But, you know, he's a name in Canadian geology [; **but it's a miracle in some respects, but I wonder if his impact on geology today is up to the reputation he acquired. I shouldn't talk like that!**]

B: Well, they're still studying Logan and Dawson, and all these people now; the history of geology is still a very active field. The GSA [Geological Society of America] was just in Toronto...two weeks ago...and there was a whole symposium, with Logan and Dawson, and somebody from the History Department at Wilfrid Laurier University was giving a paper on Logan - his time, his work.

F: Amazing...he's a saint! [laughs].

B: St. Edmond!

[ **Morris Zaslow's History of the GSC, see Additional Text F.18**]

F: I, er, I have a quarrel with Zaslow [author of a history of the GSC, 1842-1972]. He spent four summers at the Survey; he was hired [commissioned?] when Jim Harrison was Director, and when I became Director he spent two more years there. He never interviewed me. He was under the aegis of the scientific editor [of the GSC] and I can see how he was greatly influenced by that editor...he questioned some of the things that I did in terms of organization. I'll give you an example. I was not the lead scientist by any means, but I nurtured anything that was progressive; **[and then]** the geochemist was really pushing to establish a major programme;**[well, they]**, started thinking about identifying elements from airborne detectors [, er, **vantage [point]**]. Larry Morley was doing the same thing in another Division . Well, lo and behold, I said I cannot give all my attention to these two competing things. So, I decided to put them in one Division and let the Chief of the Division sort things out. Well, Zaslow questioned the idea of putting geophysics and geochemistry in one Division. But, fundamentally, they were after **[the identification of... specific identifications] identical goals. [But,] Why didn't [he] Zaslow come and ask me why I did it? I simply passed the problem on to somebody who was right there to deal with it, if you will.**

B: Particularly in a definitive work like that.

F: Now, I don't know why Zaslow stayed away from me. He says that I spent four years at McGill. That's not the case; just one year, maybe. No, he talks about the most able Director of the Survey for a certain period. Well, he was a very able palaeobotanist; **[he was]** a very gentle and courteous man, but I'm not aware that he did great things **as Director. I have my own pet [theory?], [myself...] Director [...I knew]. [I thought he was a guy for.. had a great view for the future, and after the war, reconstruction.]. He had a progressive view for the future.**

B: He [Zaslow] has some very favourable things to say about you as well, in his... "Under the thoughtful and concerned guidance of Yves Fortier the Survey, by 1972, seemed to round a corner...a stability, of function and status appropriate to its present-day situation".

F: Well, he had to say something. It's fine he said that, but tell me one thing; he spent four summers working at the Survey, talking to people. I know he talked to Larry Morley. He talked to Peter Harker. And he never said "Boo" to me. For instance, he made an error about Larry Morley. Maybe a student he hired. He made a list of people who belonged to the Survey. He said Larry Morley joined the Survey in the late '60's. Far from that, Larry

F: Now, I don't know why Zaslow stayed away from me. He says that I spent four years at McGill. That's not the case; just one year, maybe. No, he talks about the most able Director of the Survey for a certain period. Well, he was a very able palaeobotanist; [he was] a very gentle and courteous man, but I'm not aware that he did great things as Director. I have my own pet [theory?], [myself...] Director [...I knew]. [I thought he was a guy for.. had a great view for the future, and after the war, reconstruction.]. He had a progressive view for the future.

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[Larry Morley and his work on the North Atlantic palaeomagnetism, see Additional Text F.19]

B: Talking of Larry Morley again, do you remember his work in the North Atlantic?

F: Oh, yes.

B: The magnetic stripes? So, what was..?

F: It was so simply done, you know. He's a genius. He was with Andre Larochelle, who's dead now. They were both interested in palaeomagnetism, and they consulted [something?]...I did not know...I asked Larry about that a few years ago; I said, "Larry, where did you get your data"? I asked him, "who advised you to go and [find...?] in the Atlantic? "Oh", he says,"nothing of the kind. We consulted old mariners' records". There've been so many crossings of the Atlantic; apparently, the navigator recorded the magnetic data. So, Larry and Andre used all this data. They came up with this fantastic theory. It was the same with Tuzo Wilson; he was so amazed, he felt that Larry Morley should get a Nobel Prize. Because, it was a major thing really. But, there is quite a story about that. They sent in a paper to 'Nature'. 'Nature' refused to publish it.

B: Yes, the reviewer didn't like it. I've heard Peter Wyllie in Chicago, a petrologist, talk about this in one of his books. It's the same in the Pacific, when one of the early papers on magnetism in the Pacific was written by Raff and Mason, the British geologists. Mason was the geophysicist at Imperial College. He got a ride back [from the SW Pacific] on an American destroyer. I think Hess was the second-in-command or something, or he was assigned to this boat. So, Hess also used these magnetic data. But, Mason took a [magnetic] record right across the Pacific, from New Zealand to San Francisco, and discovered the same thing. That this had this oscillation going on. It didn't have the stripes. So they started in the same way in the Atlantic and the Pacific.

F: That was uncanny, the way that Larry and Andre did it. You know, you had to be interested in the palaeomagnetism, because of the periodic reversal of the pole, that's all.

F: "The Anarchists"! It sounds like an undergrad type of thing. They're fun, over beer, wine. But, I'm a bit worried. Rather than being exclusively social, it's turning to be a wee bit political as far as the old Department and the Survey is concerned.

B: But you don't think that a letter to the Minister from such a group will have some impact?

F: As former employees we're all interested in our trade, you know. As a matter of fact, last year I heard a talk from the Chief Scientist from the Survey who was retiring. He was talking about the struggle he had.

B: Who was that?

F: Oh, Damn! Excuse my age! But, anyway, he was saying, "you know, I had an interview with the [**Deputy**] Minister and the Minister's reaction was: 'oh, you're simply trying to increase [feather?] your nest', rather than listening". You know, in the public administration there are too many lawyers [laughs]...in politics anyway.

B: I wondered whether you heard about this group [while you were] at the GAC [Geological Association of Canada] when it was in Ottawa, because you were honorary Chairman or something at that meeting. Do you think it was Charlie who recommended you to...

F: Yes. Mind you, I was a little disappointed, because I did nothing. I thought somehow they would have...

B: Yes; an address by the former Director.

F: An address or some such, even a two-minute address. I was [**scared to**] **concerned that I might** be asked impromptu to say something, and I had prepared something based on what I had read in 'The Economist'. At the last dinner I was sitting with Koster [then GAC Past-President], and I showed him that. He said, "Yves, why don't you give that"? I was not called on to give it and when do you get up and give a little speech?

B: You should be introduced.

F: Yes, so I was quite disappointed in the fact that I was not asked to chair a major session, or something like that, and maybe I should have used more imagination. Maybe I'm getting too old for imagination, but...

B: Somebody wasn't minding the store.

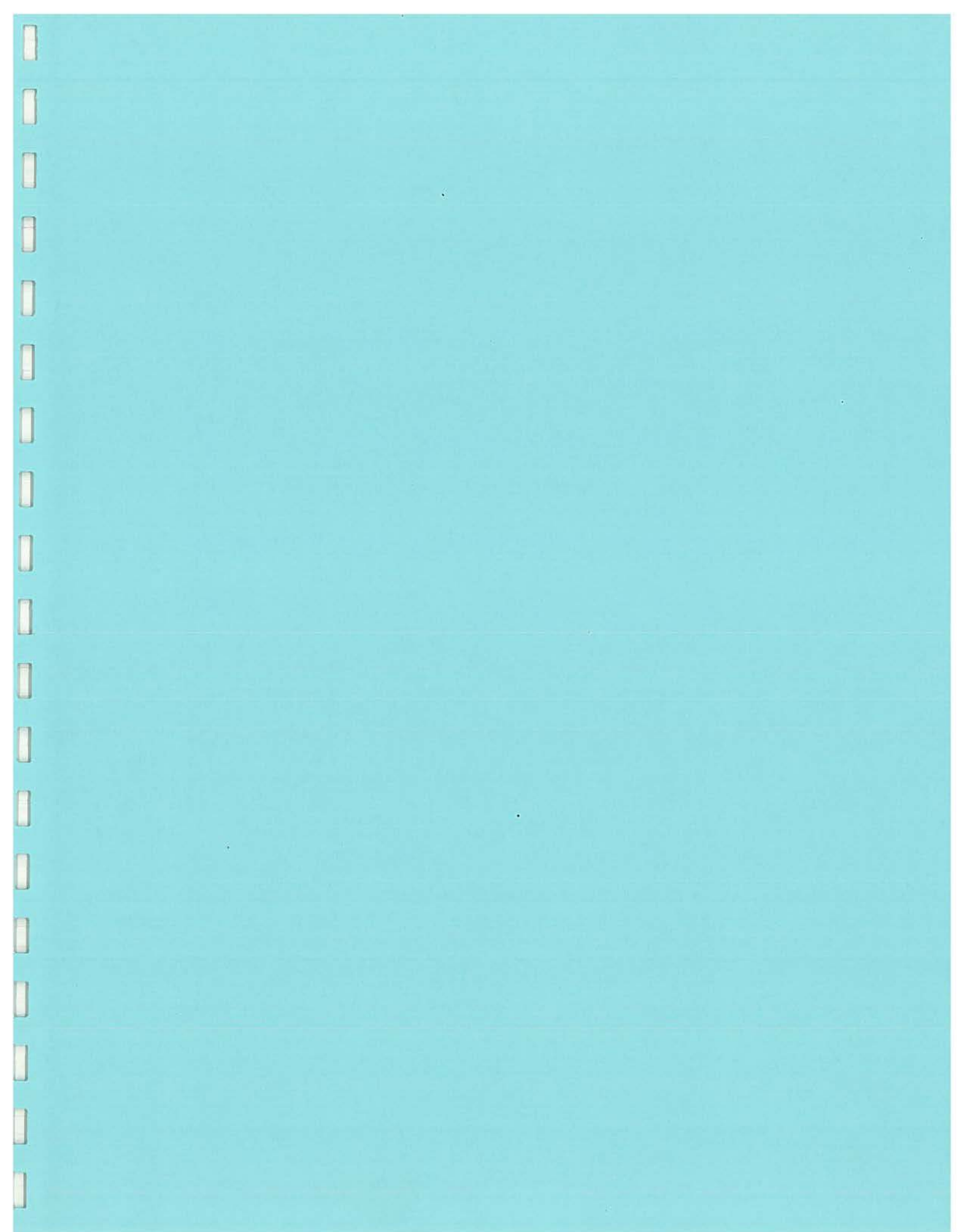
F: But, I'm doing something about it. I will not divulge it to you. I hope everybody will profit from it. I think...I'd like to test you...

B: Shall I turn this off now?

F: Yes.

**END OF TAPE THREE, SIDE TWO, AND OF INTERVIEW**

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Additional Text, Nos. F.1 - F. 20 provided by Dr. Fortier, as expansion and clarification of interview transcript (3rd February 2000).

#### F.1: My selection of geology as a career field

I grew up in a family that enjoyed many facets of outdoor life, but with relatives in careers of medicine, legal concerns, and religious dedications, based largely in Quebec City. In my mid-teens I owned my own canoe based in the countryside and went exploring nearby rivers and lakes, with a companion or alone. Late in my pre-university years Father J. W. Laverdiere introduced me to geology, its investigations conducted in the great outdoors. It was a factor in electing a career in contrast to the great majority of students at the old-fashioned classical ecôle, Le Séminaire de Québec, where choice for the future was largely limited to the proverbial classical careers. Subsequent to one year spent at Laval University, where Father Laverdiere still taught me and was my first leader in summer field work, the government of the Province of Québec established a system of bursaries or scholarships to promote the professional contribution of young Québécois to the mining industry. This was the initiative of Dr. A. O. Dufresne, Deputy Minister of Mines, who advised me and many others to attend Queens University, with reputed faculties in the mineral professions. With my then limited knowledge of the realm, I then elected to study mining engineering as the basis for a remunerating career, and Laval did not have at that time the required faculty establishment. One summer spent at a gold mine and another spent in a geological field party in northwestern Québec convinced me that geology was my future and I took up the geology option of the mining engineering course in my third year at Queens. A following summer of geological field work in the Appalachians



confirmed my choice. Further, on reading the activities of the Geological Survey of Canada's early exploring geologists I obtained enthusiasm for the scope of observation on the varied natural phenomena. It was truly back to the great outdoors for me.

#### F.2: On to post-graduate studies

Dr. E. R. Hawley, among many competent Queens faculty members, probably had the greatest impact on me, for he combined mineralogy and mineral deposits in his activities. After spending four years in Kingston, I opted to attend McGill University towards obtaining a Master's degree. On leaving Queens I spent a first season on a GSC field party, as assistant to Dr. C. H. (Cliff) Stockwell, who was directed to study the geology of chromite in the Eastern Townships of Quebec. The mineral of chromium, so necessary to the production of steel for the War effort, had for years been imported from overseas. What field observations I did make on my own, coupled with laboratory studies later of samples collected, enabled me to present successfully a Master's thesis on chromite. In the summer of 1941 I was senior student with Dr. J. Willis Ambrose, who commenced systematic geological mapping north of the US boundary near lake Memphremagog. The main objects were belts of ultrabasic rocks, the prospective hosts of chromite, and associated regional features. Dr. Ambrose convinced me to pursue my post-graduate studies at Stanford University, where I started in the Fall of 1941 a two-year stay towards a Ph. D. degree. Such a degree was a requirement for permanent geological employment. In the summer of 1942 I led my own geological survey of the Mont Orford area, which became the subject of my Ph.D. thesis, the presentation of which was delayed by the task load of a Wartime Technologist with the GSC.



### F. 3: GSC Permanent Career

In the late spring of 1943 I became senior assistant to Dr. A. W. Jolliffe's field party in the Ross Lake area, three canoe days northeast of Yellowknife, NWT. I do not know the reason for the formal choice of the Ross Lake 1-inch map area, but two aspects of it intrigued me. There were no vertical air photographs available before 1943, and no existing base map for the required scale of geological mapping, as only a photographic enlargement at 1/4-inch to the mile was at hand. In 1942 Dr. Jolliffe took air photographs of the area over the side of a small aircraft. Ultimately, the lack of a proper base map, combined with the display of intricate folds was one of two major delays in publication. Another intriguing aspect of the areas was that Dr. Jolliffe had concentrated on the mineralogical composition of a great display of pegmatite dikes in the northwestern part of the area. The dikes radiating from a granite body, largely devoid of inclusions, display an internal zoning arrangement changing with distance from the parent granite intrusion, as well as changing assortments of minerals, including beryl, tantolite, columbite, and cassiterite. Somehow Dr. Jolliffe had been aware of the potential economic value of these minerals in this area; consequently, the task of mapping the area was almost exclusively mine and the investigation of the pegmatites was Dr Jolliffe's, as well as other data that called for his services outside the map-area.

I was chief of the party in the Ross Lake area in the summers of 1944 and 1945. My yearly salary was on the scale of around \$2000. The field budget was minimal. In my request for field operation needs, dollars, equipment, etc. I became aware of the hard impact of the "Dirty Thirties" on older GSC staff. Among my list of stationery equipment, the Chief Geologist questioned me as to

the number of pencils required. Other times, other attitudes! For instance, the then Director of the Bureau of Geology and Topography summoned me to his office to ask me if it was advisable to publish a French version of the new edition of the Geology of Canada! Incidentally, I have repeatedly been asked if we used guides in our fieldwork. Never in my work. Referring earlier to the delay in publication of the Ross Lake work, successive Fall field assignments distracted me from writing reports. In the Fall of 1943 Dr. J. M. ('Jim') Harrison, a future luminary in the geological realm, and I spent some two months investigating the occurrences of double-ended quartz crystals that grew in geodes within the meta-quartzite layers near Gananoque, in the Grenville Province of the Shield. Further, I spent the Fall of 1944 completing the mapping of my old Mont Orford area. The 1946 summer field season was spent wrapping up the loose ends left by previous workers in the Port Radium area of Great Bear Lake, where intensified GSC investigation of uranium mineralization in Canada had begun. I was then assigned as one of a four-man team specializing in this field. One consequence was my organizing and supervising a Fall Geiger Counter survey of the Haliburton area by a team of seasonal geologists. On another Fall project I was reunited with Jim Harrison to investigate reported uranium mineralization along the Abitibi River, during which snow chased us out of the field.

#### F. 4: Start of Arctic Islands Activities

It was in 1947 that I was introduced to work in the Arctic Islands, where earlier GSC geologists had to spend a winter in order to achieve one full season of field work. The latest of these, Maurice Haycock and Lud Weeks, reached Baffin Island by the yearly supply ship to the eastern Arctic (S. S. Nascopie) and returned home the following year on the same ship.

I became the first GSC geologist to penetrate the islands by air. The federal administrators of the Northwest Territories requested the GSC to investigate the known coal measures of the Pond Inlet area as a possible source of energy for regional consumption. Dr. George Hansen, then Chief Geologist, detailed me to travel with Operation Polco, a joint undertaking in 1947 by the then Dominion Observatory and the RCAF. The object was to land a Canso amphibious aircraft from a main operation centre at Cambridge Bay, on the northeast coast of Victoria Island, then to points on King William, Prince Albert islands and on Boothia Peninsula, where magnetic measurements were made. At the proper time, the Canso was to deliver me to Pond Inlet, whence I was eventually to be returned south by the Nascopie. When the ship sank in Hudson Strait the flight to Pond Inlet was cancelled and I remained for the balance of the summer with operation Polco doing ground geological work limited at each landing point to a few hours, otherwise observing from the air the broad geological features of the region. There were many exciting moments lived with a crew fresh from the recent war. The location of the North Magnetic Pole, thanks to the leading geophysicist, Dr. Paul Serson showed how fast the pole had migrated northward from its mapped position on King William Island, north to beyond Bathurst Island.

#### F. 5: Operation Franklin Comes About

Sometime in the late Forties I was designated GSC Arctic Islands specialist, which led me to study the history of the islands, gathering whatever earth science information was produced by early explorers. In 1949 I led a party operating in Hudson Strait and Frobisher Bay, with two Eskimo-manned Acadia boats, one on each opposing coast of the southeast peninsula of Baffin Island (Meta Incognita?). The parties kept in contact by radio; thus, a field

geologist with a young Eskimo assistant and pack dogs crossed the peninsula in about a week, investigating the geology.

The operational success of that undertaking gave me the confidence to propose the circumnavigation of Cornwallis Island by canoe, with the notion of pointing to the petroleum potential of the islands. Study of then 'restricted' aerial photographs of the region made me realize that the orogenic belt of Ellesmere and Axel Heiberg Islands extended through Cornwallis Island of what were then called the Parry Islands, which extension I called the Parry Islands Fold Belt.

From my reading of the early explorers accounts of the occurrence of micro-organic encrustation and even tarry occurrences in the islands, I gave a talk at a meeting of the Ottawa branch of the Canadian Institute of Mining and Metallurgy. I mentioned that, from the study of air photos, the passage from platform sedimentary regions to folded belts in the environs of Cornwallis Island, was akin to the juxtaposition of fold belts to plains, a geological context known world-wide for its petroleum potential. In association with Trevor Harwood, a geologist and former clerk assistant of the Hudson Bay post on southern Devon Island, and the introduction to the Arctic of Dr. Ray Thorsteinsson, who was to become the outstanding authority on Arctic Islands sedimentary geology, we circumnavigated Cornwallis Island in a large freight canoe, airlifted in the bomb-bay of a Lancaster. That operation further created interest in the petroleum possibilities in the North. Subsequently, Dr. Bill Heywood spent a season at the Isachsen meteorological station on Ellef Ringnes Island, whence he could travel through 'gummy' terrain to a circular feature (one of many exhibited on the air photos) which was identified as a salt or gypsum dome, akin to those in Texas, which are, or were, voluminous producers of petroleum.

As section head for the Arctic Islands, with GSC colleagues we used the press at large, LIFE magazine for example, to emphasize the prospects of the islands for petroleum. So, in the winter of 1953-54 the Deputy Minister of the Department of Indian Affairs and Northern Development requested a substantial effort by the GSC to establish further the petroleum potential of the islands. This gave me the opportunity to propose, prepare and lead Operation Franklin, to explore the geology of a substantial part of the Queen Elizabeth Islands, combining the use of aerial photos, the pioneer use of large helicopters to land two-man teams at pre-selected strategic sites, and the collaboration of some ten mature GSC colleagues, with a few outsiders. Complementary to Operation Franklin was a set of aeromagnetic lines to be flown across the region, as devised by Dr. Larry Morley, whereby depth to basement could be detected, and the distinction made between magnetically strong igneous and metamorphic rocks and weak sedimentary ones. Requirements for aviation fuel, heating oil, heavy camping equipment and food were shipped in the summer of 1954 for early use in the following spring and summer of 1955.

[From here 'F' numbers refer back to transcript]

F. 6: Operation Franklin in Action

See alterations and various notes to transcript pp. 9- 15

F. 7: Release to the public of information gained from field work and publication of Operation Franklin

Transcript pp. 15, 16

F. 8: My Directorship of GSC

Transcript pp. 16 - 18

F. 9: Quaternary Activities

Transcript pp. 17 - 20

F. 10: New Editions of "The Geology of Canada"

Transcript pp. 20 - 22 (plus need to publicize our achievements, p.23)

F. 11: The impact of the Ontario Science Centre Conference

Held in December 1996 at the Ontario Science Centre in Toronto, this conference had a profound impact on me, especially so after twenty years of retirement, with few geological contacts. It amazed me for the number of disciplines engaged in making astonishing progress in the Earth Sciences. I found it exciting and epochal. This explains my astonishment and disappointment that the daily press ignored completely the scope of scientific achievements of the last generation. Consequently my lasting reaction to the failure of those who claimed that their main aim is to inform the public (more on this later) [probably referring to the end of the conversation when YOF asked me to turn off the recorder because his action on this question was yet to be made public - IAB].

F. 12 - F. 20: see transcript pp. 23 - 39.

*Announcement by the Geological Association of Canada of the Yves Fortier Award for Earth Sciences Journalism*

“ Dr. Yves Fortier, Officer of the Order of Canada, Fellow of the Royal Society of Canada, Logan Medallist, Massey Medallist, honorary member of the British and French national geological societies, was honoured in the naming of the new mineral *Yofortierite*.

Geologist in many Canadian regions, and initiator of systematic geological exploration of the Arctic Islands, Dr. Fortier outlined the extent of their orogenic deformation and their geological integrity.

A constant servant of the earth sciences, Dr. Fortier was a founding member of the Geological Association of Canada, an official of many societies, and university and national advisory councils, a former Director of the Geological Survey of Canada and an active supporter of its diverse scientific activities. As former chairman of the national geological committee, he was instrumental in bringing to Canada the 24th International Geological Congress in 1972.”



**Y. O. FORTIER: Materials relating to career (including Education, geological career, Field activities, Service to the earth Sciences, Publications, Honours, etc., Announcement of YOF Award)**

**Education**

1926 -1935: Seminaire de Quebec, Universite Laval, baccalaureat

1935 - 36: Universite Laval, Colleg de Chimie

1936 - 40: Queens University, B.Sc., Mining (Geology Option)

1940 - 41: McGill University, M.Sc. Geology

1941 - 43: Stanford University, Ph. D. Geology 1946

1950 - 51: National Defence College, Ottawa, Diploma

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**Geological Career**

1936 - 39: Senior assistant, Quebec Department of Mines geological field parties

1938: Summer miner and Lab tech. At Sigma Gold Mine

1940: Seasonal employment, Geological Survey of Canada Field Party (\$2.50/d)

1941: Senior Assistant, ditto (\$3.55/d)

1942: Sub-Party Chief, Ditto (\$ 3.90/d)

1942 -43: Teaching Fellow, Mineralogy, Department of Geology Stanford University

1943: Junior wartime technologist, Field Survey Party GSC (\$2200/y)

1944 - 45: Wartime technologist, Field Survey Party GSC (\$2600)

1946: Associate geologist, GSC Field Party (\$3000/y)

1947 - 48: Geologist 3, GSC Arctic Islands Specialist

1949: Geologist 4, ditto (\$4440 - 5040/y)

1950: Geologist 5, GSC Acting Arctic Islands Section Head (\$5100 - 5700)

1950 - 51: Attends national Defence College

1952 - 54: Geologist 5, GSC Field geologist, Acting A. I. Sec. Hd.

1955 - 57: Senior geologist, A. I. Section Head (\$9060 - 10140/y)

1958 - 63: Division Chief, GSC (\$ 13300 - 14550/y) Regional Geology Division,  
Economic Geology Division

1962: 7 - month secondment to Deputy Minister (DMTS), development of  
regional office in Quebec

1963: 6-week loan as advisor to Managing Director, Special Fund, UN, to review  
in the field Tunisia's request for mineral exploration subsidy

1964 - 72: Branch Director/Senior Officer, Geological Survey of Canada (\$16792  
- 33000/y)

1973 - 74: Senior Departmental Earth Science Advisor (\$36000/y)

1975: Assistant Deputy Minister (EMR), Science and Technology Sector (\$39257)

1976: Retired (@ \$41000)

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**Field Activities (see chart)**

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**(Service, Publics., Honours, Award Announ. Filed as provided by  
YOF, not retyped)**

## Field Activities

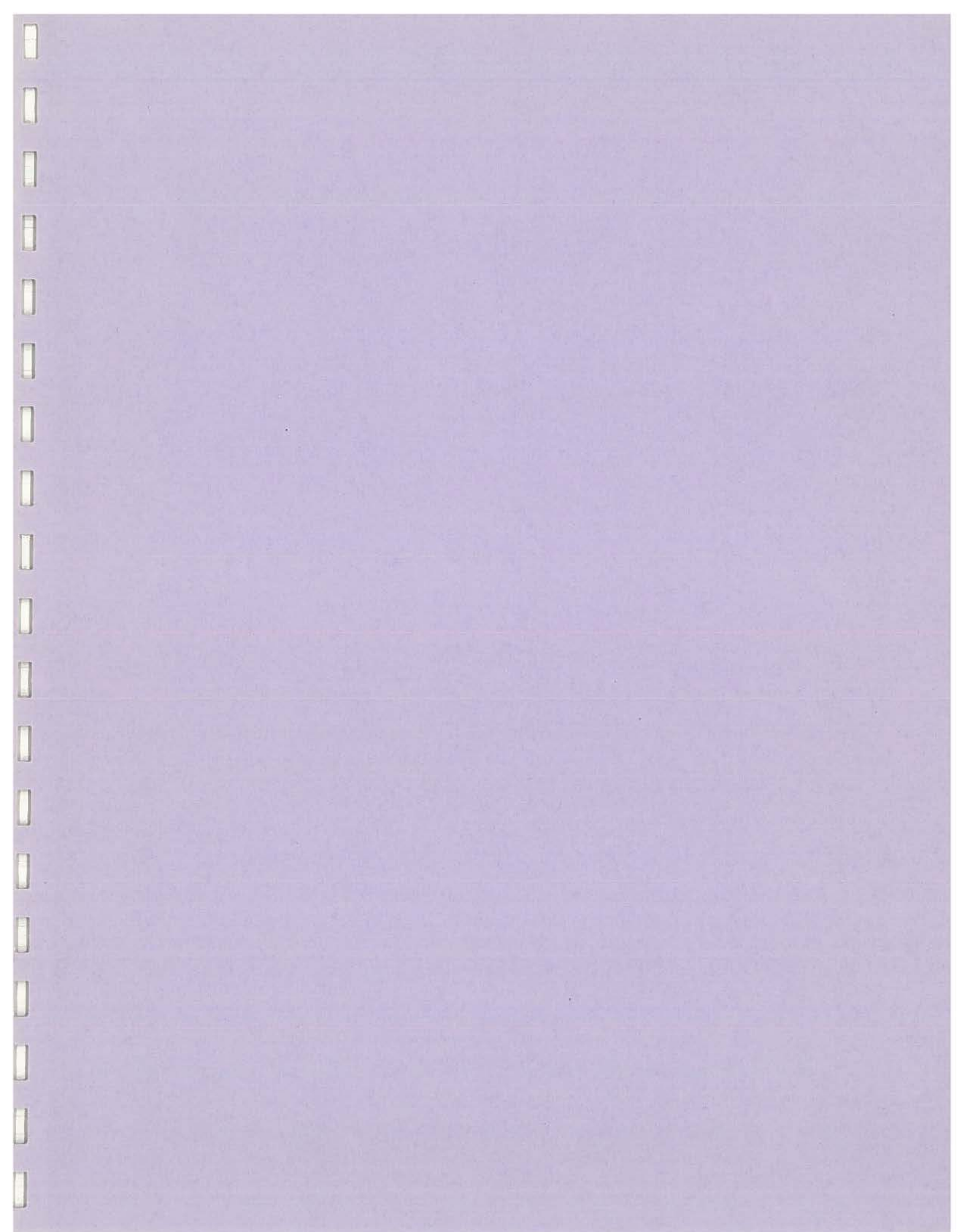
Year	Employer/ Responsibility	Activity	Target	Technique	Locality	Geological Prov
1936	QC. Dep. Min/ seas. asst.	Biostratig	-	Jacob Staff	R. Ste. Anne	St. Law. Id.
1937	" CH. S.A.	mapping	-	-	Roxboro/Mar- low Twp, QC	Appals.
1938	Sigma Mines apprentice				Abitibi, QC	Superior
1939	QDM/Ch. S. A.	mapping	Au		Barlow, Abitibi QC	"
1940	GSC/S. A.	Det. Investig.	Chromite		Eastern Twps., QC	Appals
1941	GSC/CH. SA	mapping	"		Mansonville, QC	"
1942	" Ch. subparty		"	"	Orford, QC	"
1943	"	"	Au, Ta, Cb, Li, Sn	Spec AP's	Ross L, NWT	Slave
1943 Fall	GSC/Co-CH	"	Qtz Xtals		Leeds Co., ON	Grenville
1944	GSC/IC	"			Ross L., NWT	Slave
1944(F)	"	"			Orford, QC	Appals
1945	"	"			Ross L., NWT	Slave
1946	"	"	U		Glacier L. Gt. Bear L., NWT	?Slave
1946(F)	"Co-IC	Radio- activity	U	Geiger Counter	Wilberforce, ON	Grenville
1947 (Sp)	"	mapping	U		Parry Sd., ON	"
1947 (S)	Op. POKO GSC	gen expl'n.			SW Arctic Is., Keewatin Bar- rens	various Sup
1947(F)	Co-IC	investigs	U		Otter Rpds, Abit	
1948	GSC/IC	mapping			Indin L., NWT	Slave

1949	"	expl'n		boats/dogs	S. Baffin Is.	Churchill
1950	GSC/Co-IC	mapping		freight canoe	Cornwallis Is	Innuitian
1950/51	Student	Nat. Def. Coll.			Ft. Frontenac, ON	
1952	GSC/IC	coastal expl'n			S. Baffin Is.	Churchill
1955	CH. Op. Franklin	Geodetic control mapping biostratig	Resource potential	aircraft, helicopter fly camps	Q. Eliz. Is./ Parry Is. NWT	Innuitian Arctic Pfm
1959	GSC/IC	Shield Geochron by grid sampling		float Pipercub from lakes	NW ON, Lab/Q	Sup/Chur

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GSC activities consisted largely of reconnaissance work on many different questions in many contrasting regions, which later evolved into more specialized and detailed work by others targetting other resources with newer technologies.

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4.

Y.O. Fortier in service to Earth Sciences

A-- as member of universities governing and advisory bodies:

- > Governor (1966-1975) of the University of Ottawa and member of various committees.
- > University Councillor (1966-1972) of Queen's University, former member of Advisory Council for Engineering and Advisory Committee to the Department of Geology
- > Member of Advisory Committee to the Department of Geology (1969-1970), Memorial University.

B-- as member of national granting committees:

- > Chairman (1964-1973) of National Advisory Committee on Research in Geology
- > Member of National Research Council Earth Sciences Granting Committee.

C-- as member of government missions to foreign government and national scientific institutes and industrial corporations:

- > Member of Ministerial (Hon. Jean-Luc Pepin) Mission to the USSR under the "Industrial Exchange Agreement" (Jan 27 to Feb 2, 1971). Fortier extended his visit (Feb 3 to Feb. 5 0 in relation to the specific exchange agreement between the Geological Survey of Canada and the USSR Ministry of Geology,
- > Member of Ministerial (D.S. MacDonald) Canadian Petroleum Mission to China (April 17 to May 6, 1973,
- > Member of official visit of the National Research Council to scientific institutes of France (January, 1967),
- > Leader of EMR group visit to French scientific institutes, university departments, and industrial corporations (June 11-23, 1972),
- > Canadian representative on the Ad Hoc group on Material Resources of OECD in France.

D-- as officer of various societies

- > Geological Association of Canada
  - (1947) Original fellow and member of organization committee for its first annual meeting held jointly with the annual meeting of Geological Society of America in Ottawa
  - (1968-69) President of the Association
  - (1997) Honorary President of the Association 50th annual meeting held in Ottawa,
  - (1999) The Association announces the Yves Fortier Award for Earth Science Journalism funded by an endowment provided by Fortier
- > Royal Society of Canada
  - (1962) Chairman of Geology Section new fellow committee,
  - (1969) Rapporteur of Geology Section and member of the Society Science regrouping,
  - 1970-71 Convenor of Earth Sciences Division of the Science Section, and nominator of the Society

- new president,
- > Geological Society of America:
    - (1969-71) Councillor
    - (1970) Chairman of the Committee on Honours and Awards
    - (1971) Chairman of the Nominating Committee for the Society Officers.
  - > International Geological Coongress:
    - (1968) As Director of the Geological Survey of Canada and chairman of the national geological committee , Y.O. Fortier initiated government support for the Congress meeting in Canada in 1972 and he formally extended invitation to the Congress to hold its 1972 meeting in Canada,
  - > International Union of Geological Sciences:
    - (1969-72) Ex-Officio member of the Executive Committee as representative of the Canadian Organizing Committee for the 1972 Congress meeting
  - >First president of the Canadian Geological Foundation-

E-- Science Council of Canada

- > Member (1968-69) of the Study Group on Solid Earth Sciences.

F-- 1967 World Exhibition

- >Member of sub-theme Review Group for the "Man and the Polar Regions" sub-theme, Canadian Corporation for 1967 World Exhibition



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YVES O. FORTIER'S HONOURS

Royal Society of Canada Fellow (1953)

Royal Canadian Geographical Society, Massey Medal (1964)

Geological Association of Canada, Logan Medal (1974)

The Geological Society (London), Honorary Foreign and Commonwealth Member (1969 ?)

Societe geologique de France, Membre Honoraire (1969 ?)

Order of Canada, Officer (1980)

"Yoforticrite" named by Professor Guy Perreault, discoveror (1974)

~~File with attached are citations and testimonies~~

CITATIONS and TESTIMONIES

1. Massey Medal
2. Logan Medal
3. Order of Canada
4. Candidature to Archambault Medal of ACFAS
5. Family celebrates on eightieth anniversary (Aug. 17, 1994)
6. Announcement of the Yves Fortier Journalistic Award

THE ROYAL CANADIAN GEOGRAPHICAL SOCIETY

President  
Dr. O.M. Solandt

Sec. & Ed.  
Maj.General W.J. Magill  
D.S.O., C.D., B.Sc.

CITATION FOR PRESENTATION OF  
THE MASSEY MEDAL OF THE ROYAL CANADIAN GEOGRAPHICAL SOCIETY  
BY HIS EXCELLENCY THE GOVERNOR GENERAL  
at Government House, Ottawa, 24 February 1964

YVES OSCAR FORTIER

Yves Oscar Fortier, geologist, Arctic explorer, and administrator, was born in Quebec City in 1914, attended Laval, Queen's, McGill and Stanford universities, and joined the Geological Survey of Canada in 1943. Alternating periods of exploration and study on the analysis of his findings at his desk in Ottawa, Dr. Fortier discovered that systems of mountains formerly occupied the eastern islands where mountains still exist. He named this major structural framework the Inuitian Region. Pioneer in the use of helicopters in the high Arctic for scientific work, discoverer of hitherto unknown geological and land features in the Parry Islands, first to recognize the oil-bearing potential of the Arctic islands and to launch and direct a geological program to verify his deductions; one of the few and first individuals ever to circumnavigate Cornwallis Island by canvas canoe, these are some of his accomplishments. He has published his findings in a series of papers which help to guide both the searchers for oil in the Arctic islands and the scientists investigating the Polar Continental Shelf.

Fellow of the Royal Society of Canada and of the Geological Association of Canada, Your Excellency, I present Dr. Yves Oscar Fortier for the award of the Massey Medal of the Royal Canadian Geographical Society for 1964.

THE GEOLOGICAL ASSOCIATION OF CANADA

to

DR. Y.O. FORTIER

Dr. Y.O. Fortier, 1974 recipient of the Logan Medal, is one of the most distinguished scientific leaders in Canada. His greatest contributions have been the pioneering scientific studies he himself conducted in the Arctic and the direction and application of geoscientific research in Canada. The Geological Survey of Canada was fortunate to have him serve as director at a time when the geological sciences were rapidly evolving and diversifying. His keen foresight led to the fostering of many new sub-disciplines and techniques which have greatly strengthened our science not only within the Survey but also in various regions of our country. His accomplishments and achievements, commonly modestly concealed, have had a profound effect in shaping the direction and emphasis of our geoscientific research in Canada today.

Yves Fortier's illustrious career with the Geological Survey of Canada commenced in 1943, following graduation from McGill and Stanford Universities. His initial studies in the Northwest Territories instilled a strong and devoted interest in the north which led him to launch the first geological programme of mapping in the Arctic Islands in 1947. Under Yves Fortier this programme evolved from small parties working in isolation and culminated in 1955 in the large scale, helicopter supported Operation Franklin. His Arctic studies outlined the major tectonic and geomorphic features of the Innuitian system and further firmly convinced him of the oil-bearing potential of parts of the Arctic Islands. The important concepts he presented led to the search for oil in this area followed by the issuing of petroleum permits to industry in 1956 and later to drilling by the Pan-Arctic Consortium.

In recognition of his contribution to Arctic Research he was awarded, in 1964, the Massey Medal of the Royal Canadian Geographical Society which was presented by Governor General Georges Vanier who drew particular attention to the high calibre of scientists such as Dr. Fortier in opening new frontiers in Canada.



His ability and particular talents resulted in his being appointed Chief of the Economic Geology Division in 1958 and Director of the Geological Survey in 1964. In 1973 he was appointed Special Advisor, Earth Sciences, to the Department of Energy, Mines and Resources. Since 1958 he has played a key role in appraising, selecting and innovating new techniques which would advance our science. Thus in the Geological Survey of Canada he fostered the growth of studies in mineral commodities, hydrogeology, limnogeology, geochemistry, remote sensing, engineering geology, exploration technology and environmental studies. For example he initiated and guided to completion the monumental compilation for the Geology and Economic Minerals of Canada which displays both this diversity of geoscientific endeavour and the interrelation and unification of these to one major theme. Through his foresight and planning the oldest scientific organization in Canada was well prepared to face the future and enhance its reputation for leadership in the Earth Sciences. In addition to his internal responsibilities he was sensitive to the needs of the science in general and through the National Advisory Committee on Research in the Geological Sciences (of which he was ex-officio Chairman) and other organizations, he supported and initiated new research and development. In 1972, Canada hosted the 24th International Geological Congress largely due to the efforts of Dr. Fortie in presenting Canada as the site and subsequently by the wholehearted support he gave to this major endeavour.

Dr. Fortier's leadership placed emphasis on the individual. His personal charm and quiet humour did much to encourage, enthuse and persuade a fellow scientist. In addition his modesty led him to focus his energies on setting a project off on the right track through personal discussion and advice and then allowing the project leaders reap honour for achievement.

Dr. Fortier's role continues on a higher plane but it is fitting that we pause at this time to reflect and appreciate his far-sighted wisdom, patient statesmanship and perhaps above all his human qualities.

In expressing our esteem it seems particularly appropriate that you be awarded the Logan Medal because your leadership, scientific integrity and distinguished research in the many fields of geology are in the tradition of those established by the founder and first director of the Geological Survey of Canada, Sir William Logan.



Dr. Y.O. Fortier (left) receiving Logan Medal from G. A. C. out-going President, W.W. Hutchison, at Annual Dinner in St. John's, May 21st. (Back of head belongs to the Honorable Leo Barry, Newfoundland Minister of Mines and Energy, who was guest speaker at the dinner.)

#### Y. O. FORTIER RECEIVES 1974 LOGAN MEDAL

Dr. Y.O. Fortier, one of the most distinguished scientific leaders in Canada, whose work on geological mapping in the Arctic and leadership of the Geological Survey of Canada have shaped Canadian geoscientific research, was presented the Logan Medal at the G. A. C. Annual Dinner in St. John's on May 21.

As Director of the Geological Survey of Canada from 1964 to 1973 Dr. Fortier fostered the growth of many projects in the key areas of a rapidly evolving and diversifying science. His keen foresight has endowed the Geological Survey to deal with and respond to the many problems of mineral and energy resources as well as terrain sensitivity evaluation. Specific projects for which he has offered guidance are the compilation of the monumental volume *Geology and Economic Minerals of Canada*, evaluation of mineral resource potential of Canada, participation in studies of lunar rock specimens, development of the Earth Resources and Technology Satellite program, terrain sensitivity studies along the route of the proposed Mackenzie oil pipeline corridor, and playing an important role in Canada's being host to the 24th International Geological Congress in 1972. He has fostered the growth of studies in mineral commodities, hydro-

geology, limnogeology, geochemistry remote sensing, engineering geology, exploration technology, and environmental studies. These achievements, generally modestly concealed, have had a profound effect in shaping the direction and emphasis of our geoscientific research in Canada today.

Yves Fortier graduated from <sup>Queen's,</sup> McGill and Stanford Universities commencing his career with the Geological Survey of Canada in 1943. In 1947, as a result of initial studies in the Northwest Territories which instilled in him an interest in the North, he began the first geological program of mapping in the Arctic Islands. Under him this program evolved from small parties working in isolation to the large-scale, helicopter-supported Operation Franklin in 1955. His studies outlined the major tectonic and geomorphic features of the Inuitian system and further firmly convinced him of the oil-bearing potential of parts of the Arctic Islands. The important concepts he presented led to the search for oil in this area followed by the issuing of petroleum permits to industry in 1956 and later to drilling by the Pan-Arctic Consortium. In recognition of his contribution to Arctic Research he was awarded, in 1964, the Massey Medal of the Royal Canadian Geographical Society which was presented by Governor General Georges Vanier who drew particular attention to the high calibre of scientists such as Dr. Fortier in opening new frontiers in Canada.

In 1958 Yves Fortier was appointed Chief of the Economic Geology Division of the Geological Survey and in 1964 he became Director of the Survey, a post he left in 1973 upon his appointment as Special Advisor, Earth Sciences to the Department of Energy, Mines and Resources. So, although his role continued on a higher plane it is fitting that this year's Logan Medal recognize his far-sighted wisdom, patient statesmanship, and, above all, his human qualities.

#### FIRST PAST PRESIDENTS' MEDAL GOES TO PAUL HOFFMAN

Dr. Paul F. Hoffman was awarded the first Past Presidents' Medal at the G. A. C. Annual Dinner on May 21st in St. John's. The Past Presidents' Medal was initiated this year to recognize an outstanding achievement in earth science. It thus complements the Logan Medal which recognizes a mature scientist's contributions over a period of years.

The outstanding achievement this year's award recognizes has been ably presented both in Paul Hoffman's publications and lectures and has won international recognition. In a series of papers he has described his geological mapping, detailed studies and conclusions on the Coronation Geosyncline and associated structural units affecting Proterozoic sediments in the Northwest Territories. These studies, involving well-documented field work in an area of over 20,000 square miles, have resulted in excitingly new concepts and contribute evidence on the evolution of Alpebian sedimentary basins and the comparison with the evolution of Phanerozoic basins.



ESQUISSE BIOGRAPHIQUE DE M. Y.-O.  
FORTIER

Résumé

Géoscientifique de réputation internationale et géologue de carrière au sein de la Commission Géologique du Canada, le Dr. Fortier a joué un rôle majeur dans l'exploration systématique de l'Arctique canadien où il sut reconnaître, dès les années '40, le potentiel pétrolier de cet immense territoire et où il fut le premier à entreprendre et à diriger des levés géologiques destinés à vérifier ses hypothèses avant-gardistes. Ses travaux de pionnier lui ont valu la Médaille MASSEY en février 1964.

Après de multiples missions sur le terrain et vingt-et-une années de recherche scientifique, le Dr. Fortier accéda au poste prestigieux de Directeur de la Commission Géologique du Canada, poste qu'il occupa jusqu'à 1973 lorsqu'il fut nommé Conseiller géoscientifique auprès du Ministre de l'Énergie, des Mines et des Ressources du Canada.

Membre de la Société royale du Canada depuis de nombreuses années, ses importantes contributions à la géologie canadienne lui ont valu d'être nommé Membre étranger et du Commonwealth de la plus ancienne association géologique du monde, la Société géologique de Londres, et d'être honoré de la même façon par la Société géologique de France. En 1974, l'Association géologique du Canada lui décernait la médaille LOGAN, honneur insigne rappelant l'illustre mémoire de celui qui fonda la Commission Géologique du Canada en 1842 et témoignage unanime d'estime envers ce digne successeur de Sir William Logan qui a si bien su servir son pays et le représenter aussi dignement dans plusieurs commissions et associations internationales.

Ce digne fils du Québec et cet éminent diplômé de l'Université Laval a su, grâce à son talent, son énergie et ses grandes qualités humaines, se tailler une carrière prestigieuse au sein de la fonction publique fédérale à une époque où les scientifiques francophones étaient des plus rares.

Début de carrière

Né dans la ville de Québec en 1914, monsieur Fortier fit ses études universitaires à l'Université Laval. Après des études avancées et des travaux de recherche doctorale aux universités Queen's, McGill et Stanford, il s'est joint à la Commission Géologique du Canada en 1943 où il devait faire carrière.



## Exploration de l'Arctique

Après quelques missions dans les Territoires du Nord-Ouest où ses travaux stimulèrent indéniablement son intérêt et sa curiosité scientifique pour ces vastes régions nordiques dont la géologie et les ressources minérales étaient à l'époque presque inconnues, il sut, grâce à ses talents de persuasion et à sa persévérance, rallier les autorités à la cause de l'exploration géologique de l'immense archipel de l'Arctique canadien. En 1947, on lui confiait la direction d'un programme majeur dans cette région si éloignée. Par de savantes analyses fondées sur d'innombrables observations méticuleuses recueillies sur le terrain, le Dr. Fortier délimitait alors les grands éléments tectoniques et géomorphologiques de ce territoire inconnu et reconstituait les éléments essentiels d'une nouvelle province géologique, la région Inuitienne, d'importance comparable à celle de la région des Cordillères à l'Ouest et celle de la région des Appalaches à l'Est.

Très tôt, il reconnut le potentiel pétrolier de l'Arctique et dès 1950 il s'attacha à déchiffrer les éléments favorables aux concentrations d'or noir. Suite à de savants exposés et plusieurs conférences, il put rallier le public à sa cause et c'est avec une satisfaction des plus justifiées qu'il vit, dès 1956, le premier permis d'exploration pétrolière accordé à l'industrie dans cette région reculée, menant par la suite à de coûteuses opérations de forage.

Il fut l'un des premiers hommes blancs à faire le tour de l'île Cornwallis, et ce, en canot (!) dans des eaux inconnues et souvent traîtresses. En 1955, lors de la gigantesque Opération Franklin destinée à la première reconnaissance géologique de l'ensemble de l'Archipel Arctique, il introduisit l'usage de l'hélicoptère dans cette région inhospitalière. Ses travaux sont à la base des très grandes découvertes pétrolières faites en temps récent dans l'Arctique!

## Autres réalisations

Auteur de quelque 35 publications scientifiques de grande valeur, le Dr. Fortier a fait de nombreuses études portant sur les diverses ressources minérales du Canada. Il fut le maître d'oeuvre de la gigantesque compilation devant mener à la publication de l'ouvrage majeur intitulé "Géologie et ressources minérales du Canada". De 1958 à 1964 il dirigea les travaux du gouvernement fédéral en matière de géologie économique.

Durant ses neuf années à la tête de la Commission Géologique du Canada, organisme des mieux cotés dans le monde entier, le Dr. Fortier a joué un rôle clé

dans la rapide évolution des sciences de la Terre au pays. Fortement adapté de la science au service du pays, il innova en de nombreux domaines. Il encouragea particulièrement les études scientifiques sur les produits minéraux, l'hydrogéologie, la limnogéologie, la géochimie, la télédétection, la géologie appliquée aux travaux de l'ingénieur et à l'exploration minérale.

Dans ses hautes fonctions, le Dr. Fortier insistait surtout sur les aspects humains. Son charme personnel, son humour discret et sa grande modestie lui permettaient de gagner tous et chacun à ses causes et à édifier avec ses collègues des programmes d'activité des mieux conçus. D'une honnêteté scientifique proverbiale, il savait reconnaître les mérites de chacun.

Cet homme de coeur et ce savant s'est consacré corps et âme à l'avancement des sciences de la Terre au Canada. En plus de présider aux destinées de plusieurs comités consultatifs sur la recherche et de sociétés savantes au Canada, il joua un rôle très important lors du 24ème Congrès géologique international tenu à Montréal en 1972, groupant plus de 5,000 savants de 105 pays. Il est également l'un des auteurs d'une étude majeure du Conseil des Sciences portant sur les sciences de la Terre au Canada, qui fut publiée en 1971.

Toujours disponible pour servir les meilleures causes, le Dr. Fortier a assumé plusieurs autres responsabilités majeures, dont celle de Gouverneur de l'Université d'Ottawa.

Ce savant et ce pionnier de l'exploration scientifique de l'immense territoire canadien a toujours fait honneur au Québec!

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**Dad, 80 of your great accomplishments over 80 years  
As remembered by your family**

- 1- Living eighty full and healthy years while, in your later years, neither looking nor acting your age**
- 2- Meeting and marrying Mom - and convincing her to do it all in the space of 9 weeks!**
- 3- Proceeding with marriage despite Granddad's investigations**
- 4- Managing to get Mom on a GSC field party out of Yellowknife on your honeymoon**
- 5- Being married 50 years**
- 6- Having four children - and not having any more!**
- 7- Incredible timing: conceiving a son for your birthday and a daughter for Mom's birthday**
- 8- Living to see your oldest grandchild reach the voting age**
- 9- Learning English in your twenties on entering your Bachelor's of Science program at Queen's University**
- 10- Learning German while biking to and from Stanford**
- 11- Studying at Laval, Queens, McGill and finally getting your Ph.D., in English, and at Stanford in California at that!**
- 12- Exploring Cornwallis Island by canoeing around the whole island in 1950**
- 13- Successfully completing Operation Franklin**
- 14- Continuing your field work, year after year, despite harrowing plane trips, boat trips, dog sled teams, no fresh food, and a young family back in Ottawa.**
- 15- Subduing arctic wildlife such as polar bears, wolves, whales?, sled dogs, mosquitoes, black flies,...**
- 16- Becoming Director of the Geological Survey by jumping ranks, and the first French Canadian Director to boot; participating in both of the GSC's 100th and 150th anniversary celebrations**
- 17- Braving the federal bureaucracy in Ottawa during a whole career and becoming Assistant Deputy Minister of Energy, Mines and Resources**
- 18- Working for the U.N. in Tunisia**

- 19- *While Director of the Survey, travelling the world as "Canada's geological ambassador"; managing to baffle Mimi as to your whereabouts in your frequent travels*
- 20- *Kidnapping a bunch of Soviet geologists and sending the KGB into orbit*
- 21- *Being awarded the Massey Medal*
- 22- *Being awarded the Logan Medal*
- 23- *Being made an Officer of the Order of Canada*
- 24- *Being a founder of the Geological Association of Canada and later being elected President of the Association*
- 25- *Being named Fellow of the Royal Society of Canada*
- 26- *Being selected to the Board of Governors of the University of Ottawa*
- 27- *Giving up smoking after more than twenty years - giving up chewing gum after that!*
- 28- *Building the cottage*
- 29- *Picking up the pieces and rebuilding it, including turning a boat house into a kitchen*
- 30- *Living alone in town, allowing his kids to frolic around the lake all summer in the boats you provided, including the loudest boat on Otter Lake*
- 31- *Learning to waterski in your 50's*
- 32- *Getting Mom up on waterskis*
- 33- *Reshingling the roof of the cottage at the age of 75 despite your fear (hesitation?) of heights*
- 34- *Driving across the continent with four kids - and not stuffing any of them in the trunk!*
- 35- *Building the GP14 - an indestructible sailboat - an escape from screaming kids on weekends!*
- 36- *Acquiring a "cruising" sailboat, the Tanzer 28, "OBELIX", and sailing down the St. Lawrence and the Richelieu rivers to Lake Champlain with 3 teenage girls in bikinis for deck*



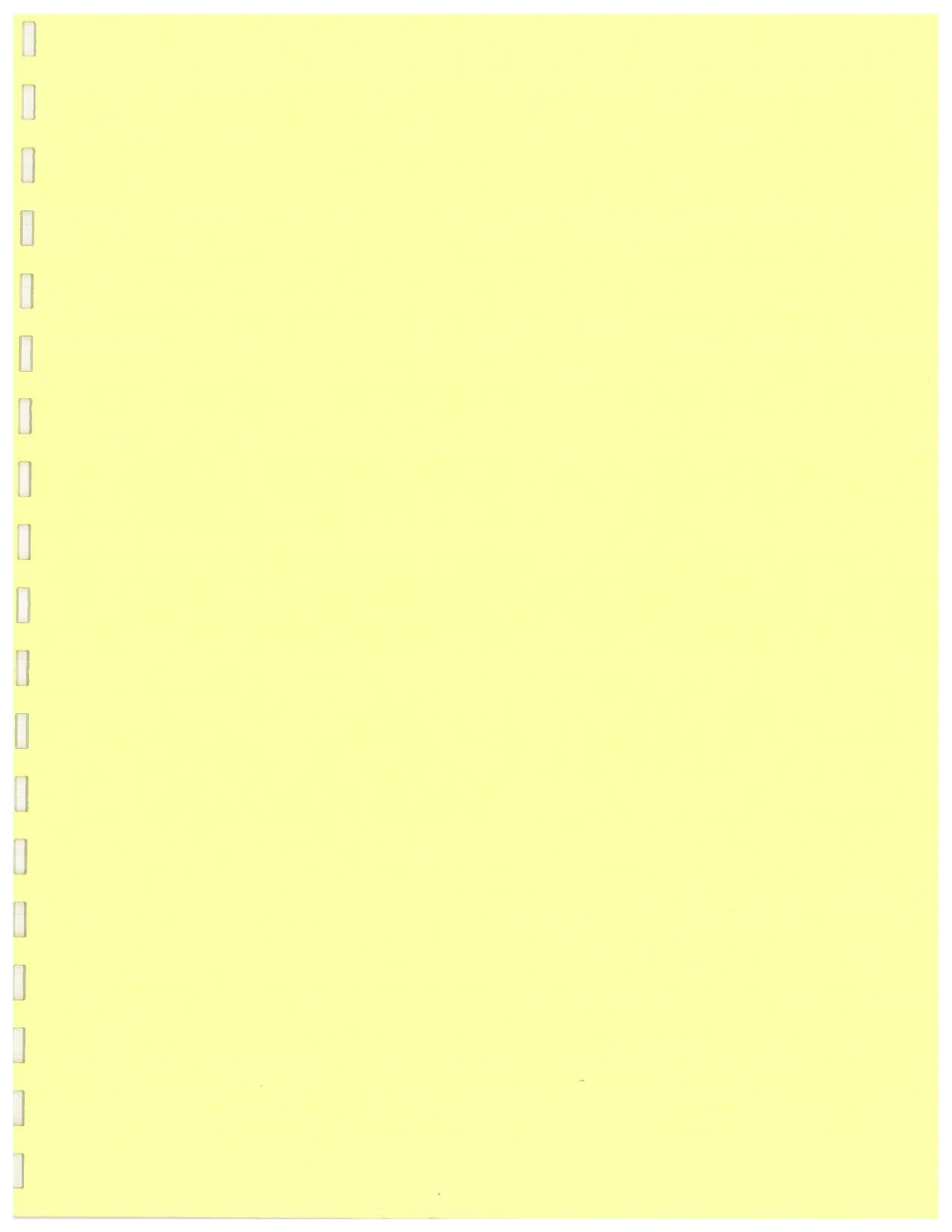
- 36- *Acquiring a "cruising" sailboat, the Tanzer 28, "OBELIX", and sailing down the St. Lawrence and the Richelieu rivers to Lake Champlain with 3 teenage girls in bikinis for deck hands*
- 37- *Living your retirement dream, graduating to a 36 foot sailboat, "SAGANOR", sailing across the open seas to the Virgin Islands - and convincing Mom to accompany you on the boat for 6 years!*
- 38- *Managing to sail into Roadtown Harbour without power*
- 39- *The great northern navigator managing to get lost in your own "back door" with Auntie Ag and Uncle Dean upon your return to Chelsea from a late ski in the Gatineau park*
- 40- *Years later, taking navigation courses for your anticipated ocean sailing adventures*
- 41- *Admiring Buffer for the character and free spirit that he was - affinity for a dog?*
- 42- *Admitting Brandy was a mistake*
- 43- *Never expressing second thoughts about Poker even after accompanying Poker to training school*
- 44- *Despite Poker's poor report card, managing to train him to respond to two names: "Poker" and "Silly Ass"*
- 45- *Always able and willing to help your children financially*
- 46- *Being able to help all your children go to university*
- 47- *Being able to help all your children spiritually and morally, even though you never benefited from a childhood with your father: instilling a sense of honesty and fairness in all your kids*
- 48- *Getting Claire and Mimi tipsy on Royale de Neuville at the Chateau Laurier, when both girls were underage (the legal*



- drinking age)*
- 49- *Preparing little Claire for a birthday party, removing burrs from her hair and polishing her little white party shoes*
  - 50- *Drinking from baby George's "golden fountain" while changing his diaper and surviving*
  - 51- *Helping your kids to move ump-teen times and sharing your home with children who had already left home once before*
  - 52- *Building a semi-igloo in Chelsea for the west-coast girl, Mom, accustomed to a longer tanning season*
  - 53- *Graciously sharing your musical nocturnal habits with Minister Pepin in your cabin aboard a research vessel on the west coast, sending the Minsiter to the decks*
  - 54- *Escaping the Warsaw Pact invasion of Prague in 1968; timing your visit to a Japanese volcano to view the crater from the rim 3 weeks before fatal eruptions; travelling to Mexico and launching a major intestinal revolution*
  - 55- *Imaginative gift presentation - e.g. when you gave a tent to Marc and a bike to George for Xmas, you threaded a string of pictures from the Xmas tree to your clothes closet; Mom's second engagement ring was in a zillion nestled boxes and finally a trunk; Playboy wrapping of Claire's Xmas gift; strung up bloomers on a line in front of the window to embellish Mom's Xmas*
  - 56- *Unbelievably, broad-minded taste combinations: Cheez Whiz and pickles, tuna fish and peanut butter, ketchup sandwiches...*
  - 57- *Recreating a biblical miracle: creating stews that multiplied like the loaves and fish in Jerusalem*
  - 58- *Owning the biggest empty (unfortunately!) wine bottle collection in Eastern Ontario*
  - 59- *Brewing and bottling exploding beer*
-



- 60- *Boisterously appreciating culinary achievements in a 17-sneeze salute*
- 61- *Life long loyalty to bananas - most recently chocolate covered*
- 62- *Creating unique expressions such as "Holy Clunk", unique delivery of "Great Balls of Fire"*
- 63- *Calling his children and pets imaginative names such as "Bozo" and "Bohunk"*
- 64- *Delivering remarkable speeches*
- 65- *Surviving, barely!, being abandoned by Mom whenever she left you to travel to California*
- 66- *Being the fastest dishwasher on Otter Lake*
- 67- *Outwitting American customs: e.g. California wine imports, avoiding a \$1000 fine from Miami customs upon return from Bimini with a true sob story*
- 68- *Single-handedly mobilizes heavy and cumbersome objects*
- 69- *After more than 30 years at the cottage, installing modern indoor plumbing - the shower - with hot water!*
- 70- *After 50 years, putting family pictures in albums*
- 71- *Rising through the Boy Scout ranks and climbing the Quebec Bridge with his scout troop*
- 72- *Flying down the boardwalk slide, la glissade du Chateau Frontenac, on skates!*
- 73- *Learning to operate a VCR in your seventies*
- 74- *Having a mineral, YOFortierite, named after you*
- 75- *Demonstrating outstanding patience when Marc supplied you with an endless supply of bricks for patio and pulled Lombardy poplar "twigs" ("weeds") freshly planted*
- 76- *Maintaining your fascination for rocks and moving rocks: sandstone patios and rock gardens for Mom*
- 77- *Putting dock, raft and boats in and out of water 70 times!*
- 78- *Planting a forest of poplars around 960 Hare and removing the poplars, stumps and all, 35 years later; currently nurturing a new forest of evergreens in town and a lawn at the cottage*
- 79- *Keeping all your hair, throughout your 80 years*
- 80- *Living to the age of 80 with your sense of humour still very much intact*





6 Sonora Terrace  
Scarborough, Ont.  
M1N 1H8  
Home Phone: (416) 265-8318

16 February 1998

Dr. Y.O. Fortier  
960 Hare Ave.  
Ottawa, Ont.  
K2A 3J5

Dear Dr. Fortier:

I am introducing myself by letter rather than telephone, so that you can take in the contents at your leisure, rather than have to make sense of a lot of information over the phone. We can talk later. Perhaps your daughter Claire has mentioned my interest in visiting you; I see her and Don regularly at our local "watering place".

I am an early-retired geomorphologist associated with York University in Toronto. Last summer I took on a project looking at the pre-Quaternary denudation history of Devon, N. Somerset, and N. Baffin islands, at the invitation of Dr. Art Dyke in Terrain Sciences at GSC. He has worked on the Quaternary of the eastern Arctic for over 20 years, and has maintained an interest in the Pre-Quaternary history, since he has continued to run into denudation surfaces and ancient drainage patterns in each new area he approaches. I meanwhile, began my career in the Pre-Quaternary, looking at old surfaces and drainage in W. Newfoundland, but gave up in favour of the Quaternary on the island, partly because there was little evidence there of process or chronology. Devon Island brings me back!

Currently, I am mapping the multiple surfaces on Devon from airphotos on to 1:50k maps, and have of course had to consult the Operation Franklin memoir and maps and the later memoir on Devon Is., as well as refresh my acquaintance with Fortier and Morley and the debate over the origin of the inter-island channels.

I would very much like to visit you to talk over your reminiscences of Operation Franklin; perhaps also you would care to go into your earlier career. I expect much of your material is deposited at GSC; perhaps you could guide me to the relevant documents.



I'd like to tape-record a casual "interview" with you, if you don't mind. It should add a colourful and personal touch to the record of your career. All too often, I feel, that the "real person" gets overlooked in our concentration on scientific achievements.

As for timing, I am thinking of early summer, say the first week of June. Could you let me know how you feel about this? Mail will reach me faster addressed to home, and I am home most evenings, if you care to phone.

With best wishes

Yours sincerely,

Ian Brookes  
Associate Professor Emeritus

IB/sv

Professor Ian Brookes,  
6 Sonora Terrace,  
Scarborough, On.,  
M1N1H8

Dear Ian

Please accept my sincerest apologies for my lateness in reviewing the transcript of the "interview" and the mess I have made of the transcript which you will find herewith together with various attachments.

Now here is my attempt to explain my delay.

We have acquire<sup>d</sup> new properties, made renovations of various dimentions on the new and old ones, while carrying maintenance on all. Some of the above were necessitated by relocation of a family member and in provision of major visits by relatives concerning special family celebrations. In order to remain alive I do much physical work which got me involved in the above property matters.

Then I was shocked in reading your transcript that my age showed in the deterioration of my inter<sup>l</sup>acution facilities, which have never been remark<sup>o</sup>able, and deterioration of my memory to an extent that causes concern.

Because of time constrain<sup>t</sup> the interview obviously had to be selective and jump across stages of my career. My attempt to put the interview in the perspective of my whole career was strained by the above cited factors and by the time consumed in the search and assembly of relevent data. Thus I attach the resulting assemblage made of the following topics

- 1-Education
- 2-Formal career
- 3-Field activities
- 4-Service to Earth Sciences
- 5-Bibliography
- 6-Honours
- 7-Selected<sup>i</sup>tations and testimonies

I have treated your transcript in two ways.


On the transcript itself I have written alterations and additions (hopefully you can read my scribblings).

Where the transcript is lacking in space for additional material (generated by reviving my memory from its growing lethargy) I wrote a separate text with sections numbered F1 to F20. The subjest matter covered by

each section is indicated by the relevant F number on the margin of the transcript and my text sections in part refer to the numbered pages of the transcript.

I hope the overall package I now transmit to you will serve your purpose.

With profound apologies and best regards

  
Yves O. Fortier  
960 Hare Avenue,  
Ottawa, On.  
K2A3J5

Attachments


Ottawa, May 18, 2000

Professor Ian Brookes,  
6 Sonora Terrace,  
Scarborough, ON  
M1N 1H8  
Dear Ian:

Straddling two languages, I am very conscious of having mastered none. I hate to read what I have written which is an imposition on those who must read it. Your patience is admirable and you must relish that the end of our commerce is practically at an end. Herewith is my review of the Additional Text that you requested. I attempted to use my computer to copy the review but after doing so for one lengthy page I gave up. To save the one page before it disappeared on me I put it in a file titled "Additional Text" which happened to be the best way to loose it. In the program Word Pad of my computer is a sub-program called "Additional Text" and my computer had no room for my text. I lost heart as my two finger-typing is a painful undertaking compounded by the hunt in search on the keyboard for the right letter. So I am reduced to return to you your own copy with my corrections, hoping that all is clear to you.

I have made some alterations to the YOF Award announcement. However I would be grateful to you for making any improvement you deem advantageous.  
I thank you for your interest and your patience.

With my best regards,

  
Yves O. Fortier

encl.

Ottawa, May 9, 1998

Professor Ian Brookes,  
6 Sonora Terrace  
Scarborough, Ont.  
M1N 1H8

Dear Professor Brookes,

A long absence from Ottawa, accumulated urgent tasks facing my return and prolonged hesitations of a 84 years old to worthy reminiscences about activities some forty-seven years past explain this long overdue reaction to your letter of February 16, 1998.

I am quite willing to meet with you in the first week of June provided you deem it worthwhile to your endeavours after reading of my misgivings as stated herewith.

I belong to an ancient class of geologists facing a relatively geologically unexplored country at a period of geoscience development when a jack of all trades could contribute something by practically jumping every year from one task or region to another.

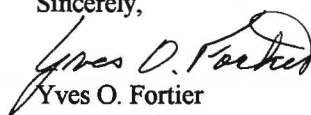
My field activities stopped in 1956 when direction of works replaced real accomplishments. That is the period when geoscience progress led to the intense development of ~~intense development~~ of a great variety of disciplines and when geological knowledge of Canada had attained a stage where specialized knowledge were directed to specific regions. Therefore what ground or topics I formerly investigated have since been gone over in better light.

Further I left the GSC and its Direction in 1973, some 35 years ago to pursue quite different activities and the GSC has become for me Terra Incognita where staff are all strangers to me. For instance I learned from you that Dr Art Dyke is a GSC staff member and that he worked for 20 years on the Quaternary of the Eastern Arctic Islands.

If my memory serves me well, material gained in the field is compiled and interpreted in published reports and maps and the only systematic in-house conservation systems are field books and the national repository of fossils.

The hesitations of an old octogenarian will appear to you as nebulous. Should you still wish to pay me a visit in June make sure you have lined up other Ottawa visits more profitable to you.

Sincerely,



Yves O. Fortier  
960 Hare Avenue  
Ottawa, On.  
K2A 3J5  
613-7227229

*P.S. Obviously I have not mastered my new computer.*

*Y.O.F.*