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Company Affiliations: Dominion Malting

Interview Date: 25 May 2010

Interviewer: Nancy Perozzo (NP)

Recorder: Bea Cherniack (BC)

Other speakers: Muriel Kenyon (MK)

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Summary: Former vice president of Dominion Malting's malting operations Bob Kenyon discusses his career in Canada's barley industry. He describes his first job in the barley selection division testing barley samples for the right malting qualities. He explains in detail the process of malting barley from steeping to germination to kilning, as well as explains the process of using malt in beer brewing. He discusses his move up to assistant maltster, maltster, and eventually vice president of malting operations. He describes the increased travel within Canada and around the world, promoting the company's malt barley to brewing companies and promoting barley growing to farmers. Kenyon lists other organizations created to promote barley development, including the Brewing and Malting Barley Research Institute and the Canadian Malting Barley Technical Centre. He explains the differences between six-row and two-row barley, different kinds of malt flavours, and the best conditions and locations for barley growing. He recounts the major change of automation, as well as the major challenges of inconsistent barley crops and the increased popularity of growing other niche crops among farmers. Other topics discussed include Dominion Malting's various plants across Canada, the history of Dominion Malting company, his interactions with the Canadian Grain Commission, memories of a fire and an accident in the malt plant, and how malting work was done manually before modern technology.

Keywords: Dominion Malting; Malt barley; Grain varieties; Malting process; Beer brewing; Grain science; Grain export destinations; Grain processing; Grain transportation—rail; Microbreweries; Brewing and Malting Barley Research Institute; Canadian Malting Barley Technical Centre; Grain research; Plant breeding; Two-row barley; Six-row barley; Visual inspection; Automation; Workplace accidents; Canadian International Grains Institute; Canadian Grain Commission; United States of America; Japan

Time, Speaker, Narrative

NP: I think we're okay. This would be some special interest for people who are listening to the same set of tapes over and over again. They get a little different introduction. I'm sitting in the kitchen of Mr. Bob Kenyon. It's Nancy Perozzo speaking, and it's May 25, 2010. Bea Cherniack is also sitting in on the interview operating the equipment. I think we'll start with just asking a general question of having you introduce yourself and describing how you came to work in the grain industry.

BK: I'm Bob Kenyon from 98 Kirkwall Crescent. I came from a rural background. My father was a farmer up until I was 6 years old, but it seems that I always had an interest in farming and worked on a farm when I was going to high school. So when I was finished high school, I came to the university and took agriculture, so graduated in 1959 as a Bachelor Science and Agriculture. I had taken—at that time there was different options you could take like animal science, plant science, dairy science, entomology, that sort of thing—I took plant science, which was more in the line of plant breeding and plant physiology and plant diseases and that sort of thing.

I worked at the university in the summer. The dean of the university knew the superintendent of Dominion Malting, so they met at some meeting or other, and he said he was looking for a graduate from the School of Agriculture. He mentioned it to me, and I went and had an interview. That's where I started in 1959. I started in the barley selection part of the company, and that was the--. The grain companies would receive samples of grain from the elevator agents all over from western Manitoba, shipped into--. Well, I'd say Manitoba and Saskatchewan. Alberta was kind of on its own at that time.

They were shipped into Winnipeg, and then the people in the offices here would bring them around to our office, into Canada Malting, and there was a couple of others. K.A. Powell was selecting barley too. So they would show us the samples, and we would look at them for quality and plumpness and test them for protein and purity. Like it had to be the proper variety, and if it was acceptable, we would say, "Okay." We took a little sample of it and kept it. Then they would apply for a Wheat Board permit for one carload of barley based on that sample. Then later on during the year, we would bring the barley in as we required it in our plant. When the car arrived, it was probed, and that probe was checked against that original sample way back when. If they met, they were equal, we unloaded the car, paid for the barley.

NP: I have a couple of questions based upon what you've just said, and one is why can't all kinds of barley be used as malting barley?

BK: Well, there's certain varieties. The reason for that is that—later on we'll probably talk about the malting process—there has to be a certain level of enzymes in the barley that interact with the starch of the barley and convert it to sugar. So you need certain varieties that are going to perform that process. If you just use feed barley, you wouldn't get as high an extract level. Extract is

actually the amount of sugar you get, so you wouldn't get as high an extract level. The enzyme levels wouldn't be the right amount, so the malting varieties are bred specifically for malting.

NP: Other thing that you'd mentioned was you'd go and contract for the barley. You find a sample that seems to meet your needs, and then when it's actually delivered you, do the probe into the car and pull out a sample and hope it matches? Does it usually match? Or did it usually match?

BK: Most of the time. Not always, no.

NP: No?

BK: Oh no, there was sometimes we would refuse the car if the barley--. Like sometimes maybe the sample was taken when the field was partially harvested, and then it rained or something in the meantime. So when they got the full amount, it wasn't equal to the--. Like we always allowed for a certain variance, as long as the barley was what we call sound, that it was going to germinate properly, even if it was stained. If it was bright colour when we selected it but stained when we got it, as long as it was going to germinate, we would accept it. But there was other things too. If it was mixed, or if it was with other varieties, or if it was peeled or broken. Like sometimes during harvesting if the combine wasn't set properly, the skin of the barley would be peeled off, and that's very important in the malting process, to have the husk on the barley.

NP: Still there. What was a typical day like in your job when you first started with the company?

BK: Well, in the morning is when all the grain companies came by with their samples. This took place mainly in the fall, while harvesting was taking place. That's when most of the samples came in. So, we would look at hundreds of samples in a day, but we'd look at most of them during the morning, usually, but some in the afternoon too. Then you'd spend the afternoon doing all the bookwork connected to those samples. They were sent out to our plant and filed out there. So that was mainly the type of day it was. We also--. There were barley days held in Manitoba and Saskatchewan, but we attended to promote the production of malting barley. Those things happen more during the winter. We had to get the grades for the grain every day from the inspection department and things like that.

NP: What would you do with the grades? How does that fit into the process?

BK: The barley, the final documents, were based on the grade. Gosh, it's been so long that I forget, 2 CW and 3 CW for instance. Well, 2CW had a certain price, and 3CW had a different price. So the people in our office that were making out the out turns had to know the grades before they could process it.

NP: Process the contract with the farmer.

BK: Yeah.

NP: Why would you have to promote the growing of barley? If there was a market for it, why wasn't it just coming into you?

BK: Well, [laughs] it wasn't always--. There was a fair amount of barley growing but by the time you--. Not all of it's acceptable, and also a fair amount of malted barley is exported as barley. We were wanting to bring it into our plant and make malt out of it, ship malt to wherever, but the grain companies or some of these other exporting companies would select the barley and ship it as barley. So, if there was, say, 10 million tonnes of barley growing in western Canada, there would only be probably 2 or 3 million that would be acceptable. The rest would have been peeled and broken or weathered or whatever was wrong with it, so there had to be a large production for us to get the amount we needed.

NP: Was there a lot of competition in the malting market then?

BK: I guess originally there was two malting companies—Dominion Malting, which I worked for, and Canada Malting. Then there was a company called K.A. Powell who was an exporter of barley. There was another company, too, that was exporting barley, and sometimes the grain companies did that on their own as well. So, there was quite a lot of competition. The problem was that if there was only a certain amount of barley available of acceptable quality and the exporters got a hold of it before we did, then we would run short or would have to take lower quality, things like that. It was a fairly competitive.

NP: Was it strictly price competition or did you establish--?

BK: No, no. The price was set. The Wheat Board sets the price, depending on the grade. So that's all set. So, it just depended. The grain companies, you wanted to make sure they came to see you. So, we had to kind of promote yourself for the grain companies, so they would make sure they showed you the samples and not just took them to one place and not all the way around.

Actually, in 1961, there was a drought in Manitoba, so there was no barley available here. We, at the time, had a barley selector in Calgary, but there was a lot of barley grown in the Edmonton area and the Peace River district. So, there was really no selection to

be done in Manitoba. I went to Edmonton for six or eight weeks, and at that time, there were grain companies in Edmonton, and so I would--. It was the reverse procedure there. I was just living in a motel. Each morning, I would go and visit each company and look at all their samples and select the ones we wanted. That was kind of a nice. I was married, and we had our first daughter. But she wasn't school age, so we all went and lived in a motel and had a wonderful time. Did all my work in about half a day, and so we saw lots of Edmonton and the area around there.

NP: The one thing, in doing a fair number of interviews now, it seems that it's the same with the malting industry that relationships were a real big part of establishing yourself in the business.

BK: Yeah. This barley selection end of it was relationships were important so that the suppliers of the barley would bring in the samples.

NP: Before we move on in your career, I'd like to step back. You said that at some point we should discuss what happens with the barley and the malt. Can you tell us a little bit about--.

BK: The malting process?

NP: Yeah, the malting process.

BK: Yeah, sure. Well, when the cars arrive--

NP: For those of you people who might be listening who have no idea what even malt is.

BK: Well malt is barley that's germinated under controlled conditions. Well, you'll find out when I describe the process. The barley comes into us, and we unload it into our terminal in Transcona. It's put in bins according to variety. Then we store it. Actually, barley needs to be stored for a while after harvest in order for it to kind of complete its natural drying-out process. So, we never used it usually for maybe six weeks or so after we got it. We always had to have a carryover from a previous year. Anyway, then you take one variety and put it through a set of cleaners, so the byproducts were taken out like broken grain and wild oats and dust, and all that sort of stuff were taken out. Then it was graded into two different sizes. The reason for that is so that you'd have a batch of barley that the kernels were all the same size so that when you germinate it, you have a better chance of it germinating at the same rate, which is very important. When you have the barley cleaned and sized, then you take one size and put it into steep tanks, where it's soaked under for probably about, oh, 35 to 40 hours.

NP: Like steeping tea?

BK: Well, same idea except it's not kept under water the whole time. When you put barley in water, the first ten hours it takes up water from whatever it was. Barley is, what, 12 percent moisture? In the first 10 hours, it would go up to about 35 percent. Then you'd drain it off, let it sit for a while, then bring more water in. You'd do that about three times and increase the moisture from about 12 percent up to about 42 to 44 percent.

NP: And why is it necessary to drain it off? Why doesn't it just--.

BK: Well, it would become waterlogged.

NP: Okay.

BK: Yeah. It needs oxygen. So, at the end of the steeping time, the moisture level is approximately 42 to 44 percent, and the grain has actually started to germinate. You can see little white tips on the end of each kernel. Then you transfer it into a germination compartment, or drums. We had drums for many years and changed it later on to compartments, but they're just big, huge drums that have sections in them, like this here. And the air is brought in and these travel from one end of the drum to the other like this.

NP: Mmhmm.

BK: The air is brought in here. As it's going through the drum, it's drawn to the centre drum through the barley. That controls the temperature. In a bed, you'd just have a box, has a perforated floor, and you have barley in about this depth, and you have air coming up from the bottom, fans blowing air up, so you can control the amount of air you want or less air or whatever.

NP: Was the drum preferable to the beds or--?

BK: Not really, I don't think. It was just a different method. This was called a Galland Henning drum, and this was called a Saladin box, and that was the companies that sold them.

NP: Where were they made?

BK: Some of the drums were made in Winnipeg by Dominion Bridge, I think it was. So anyway, the barley after it's steeped, it's dumped into a box like this and germinated for four days. If this is a kernel of barley here the same thing happens as the malting

process as when you put a kernel of grain in the ground. It absorbs the moisture. The steep tank does the moisture absorption part. During that time, it grows roots, and it grows coleoptile I think it's called. Anyway, this here, it grows up underneath the husk. In the ground it keeps going and becomes a plant.

NP: Almost like an onion. I'm just looking at the diagram you've got here. It'd be like putting a little onion in the ground and you have the roots coming up, and then the whiteish part in the centre that comes out.

BK: Yeah, yeah. But in the malting process, we stop the growth when the coleoptile is three quarters of the length of the kernel and that's--.

NP: Before it emerges from the husk.

BK: Before it emerges from the husk. That's why the husk is important when you buy barley because it protects this little plant. It's also important why the kernels are the same size so that they all germinate at the same rate. While all this is all happening, there's enzymes being activated. The enzymes attack the starch and convert some of it to sugar. Some of that sugar is a source of energy for growth, but some of the starch is converted to sugar.

There's also other enzymes that attack the protein of the barley and convert it from insoluble form to soluble form. So, during that four days, you want to grow the barley at a certain rate so that it'll arrive at this stage after four days. You don't want to grow too much because then you're using up sugar that the brewery wants. That's why it's important that everything is--. The temperature is controlled, the humidity is controlled so that everything grows nicely at the same rate. It usually does if you have good barley.

If you don't have as good a quality barley, then you get uneven growth, and then it gives you--. The malt isn't as good quality. Anyway, at the end of germination, this malt, green malt they call it, is transferred to a kiln which is another big box. It's laying in here, and there's heat applied from the bottom. There's also actually a machine here, too, that has little turners on it. It travels up and down and mixes it up.

NP: Up and down the box.

BK: Up and down the box, yeah. The drum turns, and it does the same thing as what these machines do. Same thing in a kiln, these machines go up and down, maybe during a 24-hour period, they may make two trips. It loosens up the grain so that the air goes through more evenly.

NP: How big would these be? We're talking about huge?

BK: They were--. What size were they? This would probably be about 100 tonnes.

NP: The box would hold 100 tonnes?

BK: 100 tonnes, yeah. So, a 100-tonne batch.

NP: So, if we're looking at the size of this kitchen, which is about 12 by 20, bigger than that?

BK: Yeah, they'd probably be 20 feet wide and 80 or 90 feet long. Something like that. So then and what the kilning does, is it dries the malt. The moisture also in here is maintained at 44 percent, same as when it came from the steep tank. But then in the kilning process, you dry off the moisture and dry it down to 4 percent. The reason for that is so that it becomes stable because it's going to have to be stored for a while. You don't want anything with any higher moisture in a bin for any length of time.

BC: You still have the little kernel. It's still in the--. There's little liquid coming out yet.

BK: Oh yeah, it's still a kernel.

BC: Okay.

BK: With the roots on it.

BC: Okay.

BK: And the roots go on it over here.

NP: What happens to the roots in the kiln?

BK: They just, they dry up.

NP: But they stay attached?

BK: They travel with the kernel, yeah. Also what happens during kilning is that the—oh, what do they call that?—the moisture and the protein, the sugars and the protein and the moisture all go together to form what's called melanoidins. Melanoidins are coloured bodies so that the malt takes on a certain colour and that colour then follows right through to the beer. The brewery, they have their specifications. They don't want too high a colour or too low a colour or whatever. So that what happens, this process of forming colour bodies and reducing the moisture is the purpose of the kiln. That's finished malt. It's taken back to a bin for storage. That's just one size of one variety.

A variety we had for instance was Harrington. This would be Harrington 6. Then we had Harrington 5, which was a different size. It would be malted separately and put in a bin separately. Then we might have Metcalfe was another variety. It was 6 and 5, and it would be malted separately. Then when we shipped the malt, we'd take a certain percentage of Harrington 6 and Metcalfe 5 and something else 6 and blend it together and put it over a cleaner. The cleaner takes off the roots here. So then the malt is still in kernel form, but it's blended and loaded into a boxcar or a hopper car and sent to a brewery.

When the brewery get it, they put it through--. It's not really a grinder. It's kind of just a press, because the malt kernel looks like a barley kernel only it's white because it's been bleached during the drying. But it's very friable. It's kind of like a biscuit. If you bite it, it's a little bit sweet because there's still sugar in there, but it crumbles up easily. So you've got to handle malt very carefully to protect this husk again because the brewery wants the husk, too. What they do is they grind it up so that it crushes it into little pieces, all the kernel husk and everything. The husk kind of pops off, and then they put it into a mash tub at a certain temperature and raise the temperature. The enzymes that were developed in the malting process, the protein enzymes and the starch enzymes--. What happens also, just to go back here, the enzyme activity stops when you dry it.

NP: In the kiln?

BK: Yeah, and you've got to dry it at a certain temperature, so you don't kill off too many enzymes. Then when the brewery gets it, they crush it and put it in here at a certain temperature. The enzymes become active again, and the conversion from starch to sugar that we started is complete. So, they end up with a big tub of crushed up malt. The husks are in there, but the inside part has been, the starch, has been converted to sugar, and it dissolves in the water. So you have a big sugar solution mixed with husk. They take that and they transfer it into what's called a lauter tun, and the husks filter to the bottom of the tun. It's a big tub like this. The husks filter to the bottom, and the liquid filters through. So the husks are important. If they're all broken up, this becomes packed more, so the liquid won't go through as fast. It's slower run-off time, and that's no-no in breweries because time is a big, important thing to get a brew through in so many hours.

NP: What happens if the brew is slowed down because as you mentioned there's been something gone wrong with the quality of the husks? What happens to the quality of the beer with a slow passing through this system?

BK: They also have some mechanism to put it through again. They can pump it through again if the runoff is too slow. But then usually what happens is they don't get as much extract, and extract is what they--. Because the more extract, the more beer you get out of a given amount of malt. So that's a very important feature of malt, that it's going to run off properly and give you the most extract you can get. Then what you get down here is a product called wart, and it looks like beer. It's the colour of beer, but it's just a sugar solution.

NP: And that's the product that's come through the husks.

BK: That's the product, but it's all liquid now. So then what they do is--. And this is all done with pipelines and so on, so there's a pipeline coming out of here, over here there's a yeast room that has the pipes coming out. So this pipe is going here and here and this comes in here so the wart goes out and the yeast goes in, and they send it out to a fermenter, and it's the yeast and the wart ferment--. Oh, sorry, I missed the wart here they put it through. They heat it up anyway.

NP: They heat the wart?

BK: They heat the wart and boil it and that gets rid of some of the proteins, and they also--. That's where they add hops that gives bitterness to the beer, and it depends on the type of hop they have. They select certain varieties to give you certain flavours.

NP: And what are hops?

BK: Hops are like vines. They grow on big fences and they're like big cabbage leaves with little wee seeds in the middle, and the little wee seeds are what gives you the bitterness. And when I was still working, or initially when I started, they would harvest them in like bales of hay. You know the little square bales of hay about this big? That's how the brewery would get hops in bales and then they'd throw them into the boiling vat and the little seeds are the things that-- Well then later on they had hop pellets so that was much easier to handle. Now they have hop extract so it's just as they have a barrel, and it comes out in a pipe and fed in.

NP: Along with the yeast so it would be--.

BK: Yeah, it's the same idea. It's just an easier way of handling it.

NP: Are hops produced in Canada?

BK: Yeah. There's Chilliwack, they grow hops, but a lot of them come from the United States around Yakima which is in Washington. Also, there's European hops too.

NP: And what, they can't be grown on the Prairies?

BC: Sure.

BK: No.

BC: Well, I don't know, I have them in my yard.

BK: Hops? Do you?

BC: Yeah, I use them to cover my arbours. They grow so fast. It's just the fastest thing you can grow, and it comes back every year. It doesn't matter what happens to it. It's like a weed.

BK: Oh, yeah, yeah.

BC: I mean it's not a commercial crop, but it certainly grows. You can buy them at the bedding out, bedding-plant stores.

BK: I never thought that they could be grown here, but yeah. So then just to finish this off, you know the wart, after the boiling is finished then it's cooled down, and then it's sent out to the fermenter. The yeast is added in, so they have big fermenters with yeast and wart. The fermentation takes place, and the sugar is converted to alcohol. It's about a seven-day process. What happens is when the alcohol gets to a certain level, the yeast settles to the bottom. So then when the fermentation, they pump the liquid off, leave this in the bottom, take it out, put it into big tubs. Yeast is used over and over again because it reproduces itself.

NP: It's a living organism.

BK: And so, then after fermentation it goes into storage and stays in storage for seven days or so. Then after that, it's put through filters before it's bottled.

NP: So why doesn't all beer taste the same?

BK: Well, it's mainly the hops, gives it a different flavour. Different breweries decide what kind of flavour they want and get the hops that give them that. They would use more than one hop in one--.

NP: Just like the various varieties of barley, which would have some different properties? So, the hops would be the same thing, different varieties would have different properties?

BK: Different properties, yeah. European hops would give you a different flavour than a Chilliwack hop or a Yakima hop.

NP: When you go through this process, both at the malting place and then come to the brewery, there seems to be a lot of technical expertise and even just a sense that a person has to have in order to make things happen the way it's supposed to happen.

BK: A lot of brewers would be chemists or microbiologists would be their background, and maltsters would be mostly graduates of agriculture, specializing in plant breeding and plant physiology that kind of stuff because that's--.

NP: And that's something you learn on the job then, the fine tuning of it?

BK: Oh yeah, it is, yeah. This is a very complicated process.

NP: The process of sprouting.

BK: All what happens inside a kernel is very complicated and a lot of chemistry is--. You need to have some chemistry knowledge in order to understand it all.

NP: So we sort of left your career when you started.

BK: Well, I started as the barley selection in 1959 and did that until 1964. Then in '64, the plant superintendent at the plant retired, so his assistant took over his job, and I went to the plant to be involved in the production rather than the selection. So I started as an assistant maltster and then became a maltster, then became a plant manager, then became vice president of production. When I retired, that's what I was doing but all at the same plant.

NP: How would you describe the difference between what you knew the day you started being in charge of production and when you left that job?

BK: You mean when I retired?

NP: No, when you moved on into the other aspects of your career. But you said you became a maltster, so when you went from selection and what did you learn?

BK: Well, when I was doing the selection part of it, the idea was that I was going to go out to the plant eventually. So when I wasn't busy in the downtown office--. We had an office in the Grain Exchange building, and the plants in Transcona. So I would go there for an afternoon and go through the malting process. I wrote a paper on it, so by the time I was ready to go out there, I had a good idea on the malting process on paper but not exactly how it works practically. Then when I did make that change, at the time, we had a plant in Toronto and a plant in Buffalo. So I went to Toronto for six weeks two different times to work down there and get an idea of how that plant operated, and because the idea was if there ever needed to be somebody change plants for whatever reason, you need to be familiar with how their operation worked.

Then in Ontario, in Toronto, it was the malting process itself was the same. They had drums there, but their barley selection was different. They got some barley from Ontario, or then they would buy barley through the Lakehead. Grain companies would ship barley to and store it in their terminals and then ship it by boat to Toronto. They'd get boatloads of barley from western Canada. That's how they got their barley supply.

NP: Dominion Malting, where was their operation in Ontario? Was that on the harbourfront in Toronto?

BK: Yeah, it was on Lakeshore Boulevard, Parliament Street on Lakeshore Boulevard.

NP: A large elevator there?

BK: Yeah, they had an elevator and a malting plant.

NP: Okay.

BK: And Canada Malting had a plant there, too, just down the ways a bit. So then in 1964, I moved out there and to become a maltster. You need to know the malting process but, at the time, there was 70 employees working at the plant out there, so not all of

them--. There was a malting division and an elevator division, and we had a foreman in each one. So you had to be a manager as well as a maltster, [laughs] and so you kind of learn that on the job and take a few courses if you can on human relations and all the rest of it. I stayed there until 1997.

NP: When you retired.

BK: That's when I retired, yeah. 38 years.

BC: That's amazing. I know I'm not supposed to talk--.

NP: No that's fine.

BC: But here we go.

NP: We loosen up considerably now that we're moving into the project.

BC: It's interesting that many of the people that we've interviewed—and we've commented on this—that very few people now can have a 35-, 36-, 37-year career in one place and do a variety of jobs within the company. It seems like that was for you, too.

BK: Yeah, doesn't work that way, now. The thing is, at the time there was only two malting companies in Canada, so when you were a maltster, you were one of few people. Now there's four. But even at that, there isn't a lot of opportunities to go anywhere else.

BC: And was Dominion's headquarters in Winnipeg? Was it a Winnipeg company or was it a--.

BK: Yes. Well, originally it was owned by Canadian Breweries, and I don't know if you ever heard of E. P. Taylor?

BC: Sure. The horses.

BK: The horses, yeah. Well, he owned many, many breweries and he called them all Canadian Breweries. Well, in 1928, Dominion Malting—that was the first—that's when Dominion Malting started. Some people from the States came up and rented the CNR Elevator in Transcona and built a malthouse beside it. Then in 1946 when E.P. Taylor had all these breweries, he was getting kind of anxious that he wanted a reliable malting supply, so he built this plant here, the second plant here in '46, and also built the one in

Toronto in ’46. Then I guess it operated that way. In 1960, there was new bins added, another annex was added here. In 1972 there was another plant added, so that’s the third plant, and then in 1992, the third plant was expanded. It went from about 70,000 tonnes and ended up at about 90,000 tonnes production is what its capacity is now.

BC: And did E.P. Taylor own this company during the whole time?

BK: No, he owned it up until 1968, and then he sold all the malting companies that he owned. At that time, there was a fellow who was president of Carling’s, and he bought the Dominion Malting. He bought this plant here. The one in Toronto was sold to Canada Malting, and the one in Buffalo was sold to Fleischmann Malting in the States. So Dominion Malting from ‘68 on was privately owned until 1977 when, his name is George Black, when he died his sons inherited it. One of his sons is Conrad Black. You’ve heard of Conrad Black?

BC: Oh yes.

BK: So, from ’77 until about 1985, it was Conrad and his brother and two other guys that owned it, operated it. Then it was sold in ‘85 to ADM, which is a big food processing plant in the States, Archer Daniel Midland. They owned it until about 1990. I think I wrote this down. I don’t know how I’m to remember all this stuff. Yeah, in 2000 it was sold to Lesaffre Malting company. So ADM and Lesaffre, which is a French malting company, they owned it in partnership, although Lesaffre had the most shares. Then in 2007 it was sold to Malt Europe, and that’s who owns it now, a company from Europe. They own many malting companies all around Europe and Australia and China. So, it’s a big corporation.

BC: I’m surprised that breweries haven’t made sure that they have almost a vertical kind of ownership all the way up and yet, they’re not.

BK: Well, they did within Taylor’s time. He had a guaranteed supply of malt, but since that time, Labatt’s didn’t own any--. The breweries themselves didn’t own any. Molson’s didn’t own any malting plants. In Europe it’s quite common to have a malthouse and a brewery side by side, and China too.

BC: Mmhmm, I’m surprised.

NP: With all of the changes to ownership, did that have any impact? Did every change of ownership have an impact on your work, or did it pretty much stay the same?

BK: No, it didn't make too much. There was some policy changes but, you know, we just kept making malt. [Laughs]

NP: Kept doing what you did well!

BK: The best we could. Yeah, I don't think our customers even changed as a result of the ownership. When ADM had part-ownership is when we did a fair amount of expansion and automation, so we used a lot of their expertise as far as engineers and people like that.

NP: You talked about customers. At the time where it was Canada Malting and Dominion Malting, how did the customers decide who to use?

BK: Well, some of it was just due to freight rates. When you're in this location, it was much more profitable to ship east than west. So, we brought the barley in from the west, but we very seldom ever shipped the malt back. We shipped to Regina and Saskatoon but not into Alberta and BC, just because of the freight rates. The reason for that was the Crow's Nest Pass rate was based on Thunder Bay. So, a farmer, when he shipped a carload of barley, he paid the freight rate to Thunder Bay. Winnipeg is here, and this is where the farmer is, so the barley would come here. We would pay a stop-off charge to bring it into our plant, but the freight that was actually paid from Winnipeg to Thunder Bay was not used.

So, what we were able to do is when we shipped malt, we could ship a car lot of malt from Winnipeg to Thunder Bay and use that freight. Then beyond that had to be paid. It was beneficial for us to ship malt east. As a result, our customers were--. When Canadian Breweries owned it, we shipped to various places even though the freight rate--. We shipped to the States because he had breweries down in the States, too. But after that we shipped to Montreal was the big customer, Carling's in Montreal, Moosehead in New Brunswick. Who were our other big customers down there? We shipped to Montreal, Quebec City, Toronto. And those were big breweries, so it took most of our production.

But we had to work hard to maintain the quality and provide expertise to the breweries if there was any problems to explain it to them and try and correct it. So, we visited breweries regularly to make sure that the malt was performing properly and so on. So that was the--. My job changed over the years. Initially I was right in the plant every day, you know, checking the malt and making schedules and supervising men and all the rest of it. Well as time went on, I would spend more time with the public-relations end of it.

NP: Sales and promotion?

BK: Yeah, yeah. And, as a result of that, we were fortunate to--. There's a Master Brewers Association of the Americas. It's an association of all North America and the Caribbean and Mexico. So, every year there was an international convention. We went to those conventions every year. Muriel was able to come along, and quite often we'd stay and travel somewhere. I remember one time we went to Philadelphia and after the convention was over, we took a train to New York for a couple of days, saw a few plays. There were some benefits.

BC: Yeah, it's nice.

BK: And also, like I said, we didn't ship west. But I guess there was a special export rate, freight rate, out of the West Coast, so we went to Japan and got some customers over there. We shipped malt to Japan. Every year we had to go to Japan. We'd make up a little booklet of all the new varieties that are coming out, and what the crop is going to be like for the coming year, and what they can expect and all the rest of it. We'd go to their head offices and give this presentation, and then after we were done, they would tell us how our malt performed over the past year and they rated you number one, number two, number three. It was kind of interesting to--.

BC: So, you've been to Japan?

BK: Oh yeah.

BC: Oh, nice.

BK: Quite a few times, yeah.

NP: Where would Canadian Malt find itself besides the States, Japan, and in Canada?

BK: South America.

NP: South America?

BK: Mexico. I think now there's a little bit going to South Africa. But the malting plants there was only two to begin with. Now there's four, and the Dominion Malting is mostly Canadian and Mexico at the moment. Canada Malting, I think, still ships to Japan plus Canada and maybe a little bit to the States.

NP: With the European ownership now, do you keep your tentacles in or are they now shipping more to Europe?

BK: No. There'd be no malt shipped from here to Europe.

NP: Why would that be?

BK: Well, they grow their own barley and have their own malt houses and so on. Same with Australia and China, there's no malt shipped to either of those places. There's barley shipped to China, lots of malting barley from Canada, and they have their own malt houses—fairly new, modern malt houses. They used to have small malt houses and many, many of them—a brewery and a malt house all over the place. Well, those are gradually disappearing, and they have big, huge tower malting plants, but they use mostly--. They import the barley.

NP: We were talking a lot about the larger beer companies, what about the microbreweries? How do they fit into the scheme of things? They buy a little mini vat of malt or--?

BK: Oh yeah, just small amounts. You just ship them smaller amounts. One thing they do, though, is they produce kind of specialty beers, and they're different flavours. There's different kinds of malt. What we made was just normal brewer's malt is what it would be called, but there's caramel malt and chocolate malt and black barley.

NP: What about wheat beer? What would it be?

BK: Well wheat is malted as well. It's not as easy because it doesn't have a husk on it. So, this little sprout that grows up breaks off, and it kind of mats altogether, so it's difficult to malt. But it's only used as a small percentage in when wheat beer is made. It's not all wheat malt. It's barley malt and wheat malt. I was going to say about the specialty breweries, they use this different kind of malt. They use normal malt, but they add in chocolate malt or caramel malt to give different flavours. Also, the mainline breweries, the big breweries, would use a bit of caramel malt for colouring to adjust the colour of the beer. If the malt gives you a certain colour but if they want some--. Now they make what do they call it? Rickards Red for instance is a beer. Well, it's fairly dark colour, so they would add caramel malt to that to get that dark colour.

NP: Would you, in tasting various beers, be able to be so fine tuned that you'd be able to recognize the origin of the barley?

BK: No. Like brewers actually taste beer every day. They have a taste panel and some of the samples are their own production that's made that day. Some of them are competitors' beer, and they can usually tell pretty well their own beer for sure. But what they're looking for is anything that's different that shows up in their own production every day.

NP: Because they're looking for consistency.

BK: The consistency, yup.

NP: Just going to refer back to some of the questions on the sheet here so we don't miss any areas. But you've discussed a number of them just in your discussion of how the system works. Looking at connections between the malting industry and other players in the grain industry, is there anything that you wanted to add about your connection to the producers of the barley?

BK: Well, as I say, we had these barley days in order to educate the malting barley growers as to the malting process and what's important to us, so that they can do something on their end, so they don't peel the barley, or that it has to be a certain quality, and why that's so and so that was done. But there's a Brewing and Malting Barley Research Institute, and it's financed by the brewing and malting companies, and their mandate for many years was to test new varieties. Plant breeders are developing new varieties all the time. The institute coordinates the plant breeders and the Grain Commission and the malting and brewing companies, brings them together so that everybody knows what everybody else wants. We used to use six-row barley for many years, well then--.

NP: Six row barley means--?

BK: Six row barley means that it has six rows on the head.

NP: Seeds?

BK: On the head. It has three like that and three on the other side of the stem. Two-row barley has two kernels and the third one—no has only one kernel, I should say—and the two outside ones are sterile. It only has two rows, but it produces more kernels, and the yield of two-row barley is greater than six-row. It's usually a bigger kernel. These kernels are curved and--.

NP: The six-row ones?

BK: The six-row one, and these are straight, so it actually malts better. So the malting companies were saying, "We'd like to have a barley, two-row barley," but the enzyme levels of two-row barley were too low for many years. So the plant breeders worked their

way at that, and now we have, we use, two-row barley all the time. The enzyme levels are up where it's required. So the plant breeders can do a lot, if they know what's required. It takes them a while to do it—eight, nine years—but eventually they come up with a variety that's an improvement on the previous ones.

This Brewing Malting Research Institute, part of their work is to coordinate those people so that everybody knows what everybody else wants. They also had a little small brewery, so they test. The Grain Commission actually had a malt house. They would malt the little plant-breeder samples. They would malt them, and then the brewery would brew them. Hi.

MK: Hi.

BK: Meet Nancy and Bea. This is Muriel.

MK: Hi Nancy. Hi Bea.

NP: Muriel Kenyon has just joined us. We're taping here so you are now part of history.

MK: [Laughs] Well thank you. I'll just sneak on through. I was at a soccer game. I'm half frozen.

BC: Oh dear. It is windy.

BK: Yeah, so the Brewing and Malting Barley Research Institute would brew them and that would give them an idea whether there's any potential there or not. If there was, there would be the research stations would increase the volume the next year. Then the malting companies had pilot malting houses, so we would pilot malt these things and determine whether they were--. The breweries had pilot breweries, so it went through the whole step-by-step, and then eventually, if the purity was good, and the quality was good, and disease resistance was good, and all the rest of it, and the malting and brewing was satisfactory, then the variety would be accepted as an acceptable variety.

NP: And then there would be the promotion of it to the farmers to grow it.

BK: Yeah, the promotion of the farmers to grow it. Actually, yeah, that was another step. After the pilot brewing, then it was grown on--. A few farms would grow a few fields of it to get a few car lots. Then we would malt a couple of car lots. Then Canada Malting would malt a couple of car lots before the final acceptance.

NP: Who usually financed the whole research test operation?

BK: Well, this Brewing and Malting Barley Research Institute is financed by the malting and brewing companies. The Grain Research Laboratory is the federal government. It was their input into supporting new varieties.

NP: And are they like wheat, the new varieties, that they also had to be visually--. You were able to know what you were getting by looking at it visually?

BK: Yeah. Well, when I was selecting barley, you had to be able to identify the variety. If it was mixed or whatever, you had to spot that or you're in trouble if you accepted it and it was non--.

BC: It looked good, but it wasn't.

BK: Non-malting variety, yeah.

NP: Were there ever situations where barley kernels slipped in that were not up to grade? Because they looked good.

BK: But were a different variety, you mean?

NP: Yes.

BK: Yes, we would get mixtures, and if we didn't catch it, then it was our problem. But normally you were able to identify them. There were things on the kernels that you could use to identify them, like the awns for instance on the barley kernel. Certain varieties had rough awns and others had smooth. All two-row had smooth awns.

NP: What are awns?

BK: A barley head has these things coming out the top. [Drawing sounds]

NP: Right.

BK: This is all the kernels here like when you see a field of barley.

NP: The hairs.

BK: The hairs, yeah. Well, that was one identifying thing. You can tell six-row from two-row just by straight kernels or curved kernels. So there was easy markers. Then there was, on a kernel at the bottom here, they had a little rukkila here they called it. It had hairs on it. Well, some varieties had hairy rukillas and others had non-hairy.

NP: Bald ones. [Laughs].

BK: Bald ones, yeah. So, you had those kind of things to identify varieties. Just one other thing with this Brewing and Malting Institute, it's still operating now, but there's another institute called the Canadian Malting Barley Technical Centre. The institute doesn't have a brewery anymore, and this technical centre has a malting plant and a brewery. They're based in the Canadian Grain Commission building downtown. Are you familiar with that building with the mushroom top?

NP: Yes.

BK: Yeah. Well, that's where they're based. What they do is they actually promote malting barley around the world. They go to China and go here and give seminars. But they also—all the malting barley that's exported out of Canada by boatloads—they get samples of the boatloads, and they make malt out of it, and they make beer out of it. So when the barley gets to the destination and the customer is saying, "Oh, this is something wrong," then they know exactly what kind of malt it's going to make and what kind of beer it's going to make, and they can give that information to the customer. So, it's financed by grain companies and malting companies and the Wheat Board is a big player in it.

NP: So very similar to what they found successful with marketing wheat then, that they would test out the various wheats on products that were made in the various countries like pita or pasta, and then be able to do some troubleshooting if the customer was having difficulty.

BK: The other thing that's in Winnipeg is the Canadian Grains Institute and that's what they do is bring people over here and show them how to make pasta out of our varieties and flour. There's a flour mill there and pasta mill and all the rest of it. These people do that or these people who work--.

NP: Malting Barley Technical Centre.

BK: Yeah. The person who runs that, he would be involved in the Canadian Grains institute—have malting and brewing courses as well and bring groups into Canada.

BC: Do you know who runs this? Do you know the person's name?

BK: Yeah, his name is Rob McCaig. M-C-C-A- I think it's M-C-C-A-I-G, McCaig, yeah. Rob.

NP: Good.

BK: He was a brewer with Molson's for many years, and then when this institute started, he's taken over that job. So he's familiar with brewing, which they operated a small brewery and as we become familiar with malting and barley and whatever.

NP: Connection with the Canadian Grain Commission? You mentioned a little bit about contacting them for the grades and so on, were there any other connections with the inspection, weighing, or--?

BK: Oh yes, initially, doesn't happen now, but initially there was a government employee checking the weights of the barley coming in as the carloads were unloaded. We had our own employee weighing it, but a government employee had to check the weight and write out a ticket or whatever. Initially, many years ago, we had the same. We had a government employee checking the weights of the malt out, but after a few years, that didn't seem necessary. But it wasn't, and now the grain companies accept our weights, except we have to prove that we get our scales checked every year so that the weights are proper.

NP: By the weighing division of the Grain Commission?

BK: By the weighing division of the Grain Commission, yup. Yeah, so even I'm not sure how the inspection takes place now. But it's changed quite a bit like each car lot used to be inspected and graded.

NP: What about the elevator facilities themselves? Are they also inspected?

BK: For weights you mean?

NP: As you would, let's say, a Cargill elevator inspecting for inventory and things such as that or you're operating outside of that system.

BK: Yeah, that's nothing to do. But what happens now is this selection process that I described, that's the way the barley used to be selected. Now what happens is that the grain companies with these big elevators that they have, they have these cleaning facilities in the elevators and the grain is purchased differently now. A farmer can haul his grain to the elevator, and the elevator agent can buy it on the spot. What they do, their agents have been trained so that they now bin Harrington barley in this bin and Metcalfe barley in this bin, and check the protein levels. So what happens is now Dominion Malting gets a unit train of 25 cars from one elevator, so it's all predetermined. You make a contract for 25 cars, and they supply it. Then you pay them, so there's no inspection. There's no weighing. Well, there's weighing when we but--.

NP: Unload it. But you're confident that the load is what it was intended to be. They're guaranteeing that the farmer has delivered, where before you had to check the carload to be sure you were getting what you asked for.

BK: Yeah. The grain company's doing all that work now. We don't have a selection department anymore like we used to.

NP: What other changes have occurred? Major changes occurred over the time of your career. You talked about certainly the change of ownership, the people in and out of the business, any other?

BK: Well certainly all of the weighing part of it and the inspection part of it is all different, but the malting part is pretty much the same

BC: Has the automation affected the numbers of employees?

BK: Oh yes. Originally, we had 70 employees, but at that time we shipped malt in boxcars, and there was a lot more manual labour required. I think, at the moment, there's probably about 25 employees, and that's due to automation. The grain, it's all computerized, and the grain in the terminal and the elevator part of the plant is brought over automatically into the steep tanks. The water is drained and filled by a computer. The temperature that's applied to the germination is all by computer, same with kilning. So it's very different that way, the automation for sure. Yeah, quite different.

NP: But the products have essentially remained the same?

BK: The products is about the same, yeah.

NP: What would you say your major challenges were over your career?

BK: The challenge every year was barley. You don't always get good quality barley. So then you have to make adjustments to the process in order to get the maximum extract and potential out of what you've got to work with. Sometimes it's a big challenge. If barley is badly weathered and sometimes it's been even sprouted. You can't determine that when you get it to put it through the process, it doesn't always sprout again, or if it does, it's very uneven growth. So you get poorer malting results. That was always a big challenge every year, not every year. If the barley crop was good, it was a nice change.

NP: Are there some special--? What leads to a good barley crop? What kind of weather and soil conditions leads to sort of optimum?

BK: Well, it grows best in sandy, loamy soil, and it doesn't like too hot a weather. It needs rain at the right time and all the rest of it. But it's a moderate-temperature type of cereal, so that's why it grows so well in Western Canada.

NP: Are there regions of western Canada that are noted for their barley production?

BK: Yes, oh yes. Two-row barley that's grown now, I would say, north of No. 1 highway and west of Saskatoon, that corner of Saskatchewan produces lots and lots of malting barley, two-row malting barley. Southern Alberta has more malting barley than, well--. Central Alberta has some, too, but--. Manitoba there's--. I guess it's more the southern part that grows most of the better type of malting barley in Manitoba. Although, it's funny, when I first started, we used to get a lot of barley from, if you went from Brandon to Russell, you know. Sandy Lake area, there was a lot of barley growing there, but not as much nowadays, whether farmers are going into different crops, stuff like that. The barley production is going down, too, because of other crops. For years, wheat was always the number one crop, and barley was always number two. But then about late '80s I'd say--.

NP: Canola.

BK: Canola came in. I would say it's number two now, for sure, and barley would be number three. I don't think there'd be anything else. But you know there's peas and lentils and all those specialty crops coming in as well.

NP: Why would there be that shift? Is canola easier to grow, are the markets better, the price better?

BK: Probably the price is better, the market's better. Malting barley is a risky business. You seed the right variety and hopefully the weather or the growing season is acceptable, and you get a nice crop of barley. Then you swath it, and it rains for four days, you know? It's quite risky.

NP: And then it's downgraded to feed barley.

BK: Well, yeah, can be if it's bad enough, yeah.

NP: Are there any--.

BK: But just one thing about that.

NP: Yeah.

BK: Years ago, when there was tighter quotas, the malting barley was--. There was a premium paid for barley and malting barley as well, but you could ship a carload of barley over and above your quota, so it didn't affect the other quota that you were given by the government.

NP: By the Wheat Board?

BK: By the Wheat Board, yeah.

NP: So that was the farmer's quota.

BK: Yeah. So it was quite an advantage if you could get a carload of barley. It was a nice sum of money, and there was a premium paid, and it was in its own separate pool. So at the end of the year, if there was a good sale of barley, export and to the maltsters, then the final payment was pretty good.

NP: A couple of questions here, and I think you've probably answered them. What are the most vivid memories about your work life?

BK: [Laughs] We had a couple of fires.

NP: Oh.

BK: Yeah, we had the kilning process. The fuel is natural gas, but we had a standby propane unit because when it got very cold, the gas company would cut us off, and we would have to have to use propane for our kilning.

BC: They would cut you off because they needed the product for houses and--?

BK: Yes, yeah, right. One night there was, I don't know, the propane place some of the pipes--. I guess over a period of time the pipes, the propane ate holes in the tubes that were coming out of this machine. So we had one room with a heater in it, like a boiler, and another room with this converter that converted the liquid propane to gas, but there was about this much space between the rooms. So I guess these pipes were leaking a little bit, and the security guard was going out to check. He opened the door, and the draft came in and the fumes came down. The boiler and the flames of the boiler set it on fire and poof! So that was an exciting night.

NP: Lots of damage?

BK: Yeah, a fair amount of damage. Well, the other thing is you could go back on natural gas, but you paid a premium penalty. So, we weren't shut down or anything. And there was another time when a Honeywell operator was installing some equipment for us, and he was drilling holes through a wall from one area to another. A malting plant is under negative pressure all the time because the fans are up at the top, and they're sucking air in the bottom. It's getting heated up, and it goes through a kiln. So you always have to have double doors to go into a plant, because of all the suction all of the time. So he was just drilling a little hole like this and--.

NP: About an inch?

BK: Yeah, but he was soldering the line right at the hole, so it just sucked the flame right in and the wall was insulated so it started to burn in between the walls. [Laughs] So that was an interesting day. Long day before everything was kind of--. We were sure. We had to shut everything down to get rid of this suction pressure. A malting plant is a 24 operation, 7 days a week, 24 hours a day, so any delay on anything you're behind. It affects the process and affects the quality. Yeah.

NP: Was it a relatively safe place to work?

BK: Yes. I would say that we--. The malting plant is under federal jurisdiction, so a department labour came around and checked quite often. We had to put in noise control and pollution control. When you're kilning malt, and the air is going out the roof, some of these little rootlets, the little fine dust that go along with the air--. And there was two of three people who lived across from the plant had swimming pools, so they complained bitterly about the dust. Then we had to put in dust control for the workers

themselves because the elevator was a very dusty place with all the machines going on. So, you know, there was rules and regulations put in by the Department of Labour that we had to follow. So we did have one major accident, and I don't know.

BK: Oh it could've been--.

NP: Averted?

BK: Averted, but there was a group of people working on a leg. I don't know if you're familiar with a leg.

NP: Leg of an elevator? Yes.

BK: Yeah, has a belt and buckets. They were working on this anyway, and it was kind of--. We were converting to automation. Anway, we had to go through all these lockout procedures, so that the leg couldn't be started when these guys were working on it. I just forget all the details now, but anyway the leg got started and one guy his leg got pulled up. It was I think above the knee or below the knee. It had to be removed. So that was really a serious, serious incident. Of course, after that we had to really be sure of our regulations were being implemented as far as lockout procedures and so on.

NP: Over 37-year career, that's pretty decent safety record for the operation.

BK: Yeah, there was the normal back problems and stuff like that but nothing major other than that one incident.

NP: One of the reasons that we're doing this project, obviously, is to preserve the history of the industry. If there were a centre set up for the public to learn and experience the history of the malting industry, what do you think would be the most important pieces that you think should be preserved in that kind of museum, activity centre?

BK: Well, I mean you could--. You mean as far as a display or something like that?

NP: Mmhmm. Or there's a hands-on aspect of it, but then there's also the history of the industry.

BK: I'm always interested in history, and I think it would be important to have the history of the malting companies in Canada like they first started, one of them started in 1907, and Dominion Malting started in 1928.

NP: Is there a history written of the malting companies in Canada?

BK: You know, I'm not sure whether there is or not. But that would be one thing. As far as the importance of barley and the malting process, you could easily do that on just a display—a diagram on a four by eight sheet or something—and also the samples of barley and samples of malt. Actually, I should show you the difference between them. That was given to me when I was retired.

NP: It's a little stained-glass replica of a country elevator.

BK: And this is barley here and this is malt here.

NP: Oh. Okay. What a good gift.

BK: Very nice.

NP: And very attractive.

BK: And they put a little plaque here.

NP: Yes, very nice. This leads me to ask about memorabilia. We do have--. We've purchased a scanner as part of our project, and we're asking people do they have photographs or artifacts that they have collected over the years that might be useful to have a record of?

BC: That was a wonderful gift.

BK: Yeah. I don't have anything that--.

NP: Did Dominion Malting have archives of their history? Does one still exist in the facilities here in Transcona?

BK: I doubt, it but I--.

BC: Do you mind if I take a picture of this?

BK: Oh, sure yeah. There may be something out there, but I just can't think of a-- You know there's certainly pictures, old pictures of the plants when they first started of these drums that I described and stuff like that. There's booklets with all those pictures in it. I know that, but there may even be a--. I think there could be a malt fork out there, I think.

When malting first started, it wasn't pneumatic malting. It was called floor malting. It was in a building with I guess it would be a cement floor—a hard surface floor anyway—and it had lots of windows all the way around. When the grain was steeped the same way in steep tanks. It was put on this floor and leveled out and just started to grow. They used the air, opened all the windows and let the air come into the building. But they had malt forks, and they were about this wide, and yeah, it was really an art. You had to turn the malt every so many hours. Turn it but keep it level. When you were done, it had to be level, the same when you started. I've never seen it done, but I've seen pictures of it, and I've talked to a guy from Hungary, who worked for the vats, who actually did it. But that's how they made malt on what's called floor malting as opposed to pneumatic malting where the air is—perforated floor—and the air goes.

NP: If in your travels or checking with people who are still working there, if there are some things that might be worthwhile to have scanned into our collection, that would be great because, especially in a situation—the situation that happened in the last, oh, fifteen years where there's been such a rapid turnover in ownership of various companies—a lot of this stuff just tends to get tossed.

BK: Lost or tossed, yeah.

NP: Yeah. And I think I've asked most of the questions unless there are questions that you were dying to answer that you didn't ask.

BC: Or something in your notes that you haven't that we haven't even thinked to ask.

NP: [Laughs] That's right.

BK: [Inaudible] The barley coming in, difference in the selection process changed over the years, different ownership, how the plant changed over the years--.

NP: Good.

BK: Nope, I don't see anything else there that we haven't covered.

NP: Great.

BC: I appreciate how organized you were.

NP: Yes, thank you very much for--. You obviously did some thinking to put these things together. I had a question right from the very beginning when you were talking about your time at the university, so was Walter Bushuk one of your instructors?

BK: No, he wasn't, but I know who he was, yes.

NP: Because we interviewed him, and he was talking about plant breeding and yes, fascinating. Well, we'd really like to thank you for the time you gave us for this project. It's a valuable piece to the picture that we're putting together. Thank you very much.

BK: Thank you very much, appreciate it. I enjoyed doing it.

End of interview.