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**Summary:** In his second interview, cereal chemist at the University of Manitoba and former director of technology at the Canadian International Grains Institute Walter Bushuk continues his discussion of his career in grain research. He begins by sharing the history of CIGI—why it was established, its purpose of grain marketing, and its programs for demonstrating the usefulness of Canadian grain—as well as the institution’s major collaborators, like the Canadian Grain Commission, Canadian Wheat Board, universities, and partner research institutions. Bushuk returns to his student research with the Grain Research Lab and discusses his next career move to set up the Food Science department at the U of M, training graduate students for careers in the Canadian and global grain industries. He explains his role in envisioning the concept for CIGI, starting and staffing the Institute, and becoming the first director of technology. He describes staff changes in CIGI over his career, CIGI and the GRL’s work to train and develop scientists, and the mentorship he received from Dr. J. Ansel Anderson. Bushuk ends the interview by sharing the story of his unique road to university as an immigrant to Canada living in rural Manitoba.

**Keywords:** University of Manitoba; Canadian International Grains Institute (CIGI); Canadian Grain Commission—Grain Research Laboratory; Grain research; Grain science; Grain marketing; Food science; Academia; Doctorate research; Research training; Management; Mentorships; Grain export destinations; Canadian Grain Commission; Canadian Wheat Board; Science publishing

Time, Speaker, Narrative
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<p>MC: I am talking with Dr. Walter Bushuk again in the Reading Room of The Food Science Department building at the University of Manitoba and this is April 30, 2009. We are really pleased that you take time again to talk to us, Dr. Bushuk, and there are several points that we didn't have time to talk about last time. I think our last discussion focused a lot on your work and the contributions it made to the industry and some of the challenges you encountered along the way. Today I thought we could begin by having you talk a bit about your involvement with the development of the Canadian Grain Institute—or CIGI as it is fondly referred</p>
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to—the development and early years, your role as director and that sort of thing. What could you tell us about how that Institute began and your involvement in it in the inception of the Institute?

WB: CIGI is a relatively recent development in the Canadian grains industry. Its function was to be part of our grain marketing and development using the soft approach to marketing. By soft, I mean the candidates who are selected for programs at CIGI would have an opportunity to learn all about the grain industry not only Canadian grain industry, but also the industries of countries that were competing with Canada in the international market. The Institute was established on the basis of using industry and government staff from other organizations, other institutions, to provide the technical and scientific knowledge in training students and participants from all over the world. It was not restricted to any particular country but was used by students from Canada but also from competing countries.

The Institute comprised a number of different departments in addition to technology and scientific information. The Institute presented programs in the area of finance, marketing, grading—all the aspects of the grain industry. The participants in these programs were selected by the institute in cooperation with other government agencies involved in the grain industry. For example, the Canadian Wheat Board was a constant source of candidates for the institute programs. In selecting candidates for these programs, several factors were taken into consideration, but the most important factor has been to select potential candidates who may be in positions sometimes in the future to make decisions about the source of grain that is purchased for domestic utilization.

A CIGI concept has become quite well known throughout the world as it is being imitated by other countries such as Australia and United States, our main competing countries in the area of wheat as an export product. So, it has been quite successful to the point where it has outgrown its physical facilities and plans are now under consideration to consider rebuilding, expanding the Institute and perhaps even combining the programs of the Institute with those of the Grain Commission, which have responsibility as the quality assurance agency for Canadian grains, and also the Canadian Wheat Board, which is mainly responsible for marketing. Problems that are considered in the Institute are often encountered in foreign countries where our grains are being utilized, and therefore the programs are structured in such a way so as to provide answers to problems encountered in our overseas market countries.

More recently we have had a very interesting development in Canada, located in Winnipeg, Manitoba—the Richardson's Centre for Nutraceuticals and Functional Foods. In this institute, more emphasis is being paid to the clinical and the medical aspects of cereal-based foods and this combines some of the activities ongoing at the St. Boniface Research Centre in the area of medical health. They are making tremendous progress in developing new products from grain products that have nutraceutical, functional food characteristics. Therefore, the new institute together with the old institutes, which devoted most of their activities to the functional

properties of the grain—how wheat is milled, how the flour is produced by the milling processes and is converted into food products, bread, pasta products and so on.

So now we have closed a circle and are looking not only at how the grain is converted into products, used to make food products, but also how the product contributes to the medical and clinical aspects of the food. It is a new development. The facility is on the campus at the University of Manitoba and every attempt is being made to coordinate the work of the new institute as much as possible with the work of the old institutes—the ongoing work at the University of Manitoba, the Cereal Research Centre of Agricultural Canada. This brings a new focus on the approach to research in cereal grains.

This leads us to the question of training to have a research activity that is continuous. It is necessary to have a continuous supply of high-quality, trained personnel. Our performance in that area has been up and down. We have had periods when we developed outstanding scientists who not only contributed in research, but also contributed to the teaching programs as well as programs of community activities.

MC: The "we" you are referring to, is that U of M, the University of Manitoba, or are you meaning the industry in a general sense when you say we are contributing the training?

WB: To the industry in general. We have been fortunate, especially with the scientists of the government laboratories and more recently the addition of the Richardson Centre. These are all highly qualified and willing to donate volunteer time to offer courses that are part of the university program. This makes possible covering a wide spectrum of subjects without having to staff each area separately.

MC: Would you agree that, as I hear you talk, it makes me think that another advantage is that your students could have a leg in the university, the academic setting, but also another leg in the industry which provides a very nice collaboration and practice the application piece?

WB: It is true that the function of the university is primarily to train qualified students, but training post-graduate students involves research, and training in research is equally important as training of students. Being at the university on a campus such as we have in Winnipeg, we can combine these two aspects of teaching and the research function. This gives us an opportunity to deal with problems in research, problems that are important to our industry. They may be very practical short term, but they need solutions so that the industry government institutes that require the information will have a source of that information.

MC: Are you saying that because of this unique collaboration, did the questions that the industry raise, those questions, do they become student research projects? Some of the questions actually came from the industry as opposed to sometimes research questions don't come from the field?

WB: Yes. Quite often the funding for research, especially if it comes from industry or sometimes some government laboratories that require a certain information, the funding can be tied to the research that is undertaken. It's very useful to have this linkage, this cooperation, because quite often it will bring in qualified scientists from industry to participate in research programs.

I might just add a few comments on the subject of funding. There is never a time when there is more funding than one would like to have. There is never enough funding, but to receive funding mostly from government sources or especially for basic research which may not have as its objective solution of specific problems but accumulation of knowledge. Quite often funding for such projects requires a commitment that certain research would be undertaken to meet the requirements. The old statement that "publish or perish" in research still applies. People who publish or are effective, productive in research, get more funding. This usually means more work and more papers. But there are individuals who enjoy that sort of environment within their own community and outside their own community. They like the competition for funding, for research, for recognition, for awards and so on.

MC: You have been very successful in combining all of those things—funding and the publishing and so on. Could you give us the secrets to how you did that, how you managed to survive? Is it teamwork? How do you do that to be successful in all those dimensions?

WB: I think that the most important element of being successful in a university-based research which requires funding from outside sources, whether industry or government sources, the most important factor is the quality of the student who undertakes the work. University research is usually integrated with teaching programs. Post-graduate programs require a certain part of the program must be based on research, terminated by publication of a thesis, which has to be adjudicated properly by committees of peers. So that the success of a research program depends on the student doing the work. Because the staff member, an academic, cannot do the amount of work that is necessary. By combining the research with teaching and using post-graduate student, a person can be much more productive than doing the research on his or her own. The research coordinator, director, is the one who provides the direction to the graduate students, but in the end, it is the coordinator, the professor, who guides the students in the right direction so that if an academic has a good number of good students he usually wants to publish more. That usually leads to more research grants, more published papers and so on.

At the centre of all this is the graduate student. But I always said that students will come. If the professor is doing a good job, his name becomes known all over the world. Apply to the professor to come and join his group. So usually, a very effective professor

will have more applicants than he or she can accommodate. And accommodate requires not only funding for the student by way of a stipend, small salary, or a scholarship, but also it has to provide facilities, laboratories, scientific equipment because, again, competition raises its head. If you are competing with students or researchers from top institutions in a particular country and that person has the most modern and most expensive equipment, you have not got a chance. The thing to do is to try and get more grants, bigger grants, so that you can get all the equipment.

Going back to my personal experience, I have been fortunate to have had some excellent students from Europe, from Australia, from United States who were able to establish not only their own reputations, but also the reputation of the professor. I must admit that all, or most, of the publications that I have published are done by students and they get credit. They go to the conferences and present papers and so and the thing gets bigger and better.

MC: Are there some of your students that you think you could name that would be particularly good examples of how this whole system works well?

WB: Yes, I would be delighted to name a few of my students and colleagues. Two of my PhD graduate students are full professors in American universities. One in North Dakota State University and one in Michigan State. The last two directors of Bread Research Institute of Australia were my graduate students.

MC: How nice! That is wonderful.

WB: One has left the Institute and is a major developer of baking industry ingredients, but when he left another graduate student of mine took over and he is doing a tremendous job. I am very proud of the achievement of these students.

I am also proud of my Japanese students. I must have had five or six Japanese students. Now they are in Japan and at the universities. One is the director of the Japan School of Baking, the top position. I am also happy to say, and I don't know whether I have had any direct influence in this area is that quite a few, most of my graduate students from Eastern Europe—Poland, Czechoslovakia, Yugoslavia—most of those students returned to their countries rather than seek employment here. They took their knowledge to their home universities, and we have maintained the linkage between their institutions and our institutions. I like that because we are not 100 percent successful because some of our Chinese students have opted out to stay for economic reasons.

MC: To stay in Canada?

WB: The situation is changing. We are getting more and more Chinese students going back to their country and their students are coming here. So there is a inter-mixing collaboration that is useful to both sides. I think if I recall I had a hand in training 83 post-graduate students.

MC: Eighty-three students is a lot!

WB: Yes, over a period of 27 years. That is graduating about three per year on average. I must say that we should not forget Canada benefiting from our program. Two of my post-graduate students are in the Food Science Department.

MC: Here at University of Manitoba?

WB: Yes, here at University of Manitoba. One with the Wheat Board and several with the Grain Research Lab and another one with CIGI. So they are spread out all over, and that in itself is a benefit because if you need some information from Russia, from Poland, from Japan and you have an email to these people, all it takes is 24 hours or so to get the information.

MC: Technology is wonderful, but the networks have to come first, right?

WB: Yes. My success as a researcher, as a professor, I attribute primarily to the students that I have been fortunate to have. Australians are extremely bright. I have had three or four very bright Australians. They come, learn everything they can, collect samples for their work and go back to Australia. We have continued to collaborate and published several books together and papers and that collaboration continues.

MC: When you were talking at the start about training, you said that we had some ups and downs in training researchers. Could you tell us what you mean by the ups and downs, and maybe over your career if you saw what was happening when it went down and when it went up? If you could talk a bit about what influenced those trends. If there were certain factors that caused it to go up or down and can we learn something from that now?

WB: We can learn, but we have to be prepared to give something up in order to achieve what it is that we are trying to do. I have an interesting personal story. I started my scientific career at the Grain Commission Grain Research Laboratory.

MC: That was after you did your chemistry degree, correct, or your bachelor's?

WB: After my PhD.

MC: After your PhD?

WB: There is a slight detour during PhD when I completed my master's degree or before I completed my master's degree. We in Canada had an outstanding program of selecting and promoting research in the area of grain. We had a national committee called the Associate Committee on Grain Research.

MC: When would that committee had started when you are talking about your training?

WB: After the war. The government provided some money. A committee identified the research area and selected a professor to coordinate, to do the research by offering the professor stipend for a graduate student.

MC: Is this out of Agriculture Canada or would this be another government department?

WC: It started as an activity of the National Research Council, the Associate Committee. Subsequently, the Associate Committee on Grain Research was moved over into agriculture. I began in 1951. I was offered a summer student fellowship at the Grain Research Laboratory. That was the year before graduation. While in that year, I was convinced by my mentor to go into graduate work.

MC: This was Dr. Anderson, correct?

WC: Dr. Anderson, and he said, "I will provide you with stipend and, better still, I will give you a job after you get your degree." I took my master's in Manitoba, but he said, "And for your PhD, you must go to another university because it is not a good idea to have all three degrees at one university." I returned to the Grain Research Lab in 1956, still not happy with my scientific training, and I decided to do a post-doctorial fellowship in France at an institute in France, with a specific aim to obtain training in large molecules. Large molecules, thinking in terms of the structure of wheat gluten, which is one of the largest molecules known. So I went for a post-doctorial year to obtain information or training in this specific area.

Dean Shavesky tried to get me to come to university at this point in time, but Dr. Anderson was much better at writing a letter to me convincing me that I should return from Strasburg to the Grain Research Laboratory, and I did. This was a period of 1958-1959. I was not the last but almost the last student to take advantage of the Associate Committee that had funds to support students. All of a sudden, the government had to cut back, and in their wisdom, which I never agreed with, they decided to cut the Associate Committee Program and then we lost the funds.

I stayed at the Grain Research Lab and in a matter of two or three years, I realized that we are going to have problems staffing because money became available for more staff after the war, but it takes half a dozen years to do a masters degree and a PhD and another year for post-doc. I went to the new director of the Grain Research Lab, Dr. Norman Irvine. Dr. Anderson, after a short stay in Ottawa with Agriculture Canada as director general of the Research Branch, he retired, and Dr. Irvine took over as director of the Grain Research Lab. I was in charge of the wheat research at this point.

It is about the early 1960s. I went into having a friendly chat with the new director, Dr. Norman Irvine, and I said to him, "I am very much concerned about the difficulties that we are having in staffing positions," and he said to me, "What do you propose to do?" I said, "What we need is a program tied into the university because that is the degree granting institutions, so we must do something to get the university to develop more qualified people." Then I said, "If you agree, I will be the professor who will volunteer my time to start an academic program in cereal chemistry at the University of Manitoba." So I got a leave of absence from the Grain Commission two years and I came to Plant Science. I don't know if you were there. I started in Plant Science. Subsequently my program switched to Food Science. Two years is not enough to start a graduate program.

MC: It is pretty ambitious.

WB: Two years went by, and I had another visit with Dr. Irvine, who still was the director, and he said, "Well you had better make up your mind. You either come back here, which I would be happy if you did, or switch the university." He could not hold the position for a longer time. I said, "Dr. Irvine, all the effort that I put in two and a half years would go down the drain if I didn't continue it." Funding came in and students came. It was an excellent program. Plant breeders were interested in the information we were producing on the work on triticale, the work on canola, the chemistry part. I said, "I would like to suggest that I resign my position at the Grain Research Lab and go to the university and develop a program there." And he said, "I agree, and if you need help in staffing part-time lectures, come to me, and I will help pick the right volunteers to do that."

MC: Did that happen? I think you mentioned that previously that some of his staff and others became involved.

WB: Oh, yes.

MC: That would be a new thing at the university.

WB: Involved and in a way that led to the formation of CIGI because they saw that there was a need not only for scientists, but for managers, technical people with background. CIGI was born actually from three or four different directions. But when I came to the



university, I brought with me the idea of a CIGI. I like to build things, so it wasn't difficult to convince the politicians and the managers, government people that there was a need for an institute.

I wrote up a proposal for the grain research institute for Canada. I showed this proposal to a person in Vic Martens. He was the first director of CIGI, and he is now retired and recently remarried having a good time as a retiree. I showed this proposal for a grains institute to Vic Martens, and he said, "It is a good idea, but the time is not right politically. Money is tight and so on." He said, "Put this on the back burner and maybe something will change."

Something did change. Within a year and a half, Otto Lang, the Minister of Agriculture—and he was a very heavy weight—he made an announcement that it was time we expanded and built up the activities and the promotions of grain products. He set up a fund, \$10 million fund, to develop the concept of promoting grain through dissemination of information. I call it the "soft sell approach." Vic Martens picks up the phone and says, "Walter, come. The time is right."

The Grain Commission hired me. The Canadian Wheat Board hired an economist from the University of Alberta. I have forgotten his name, and they set us up in an empty room at the Wheat Board building and said, "Write the proposal for the Grains Institute." We did, and within a couple of months, there was a government announcement. It was just fantastic! The new Grain Commission building, you know the mushroom building was under construction, there was space there to put the Grains Institute, and Vic Martens comes to me and says, "Okay, you are partly responsible for this, now we have to look for staff."

Some positions were filled very quickly. There were three associate director positions—technology, finance, and transportation. So Vic Martens after the institute was approved and he started to obtain staff had trouble getting anyone to his satisfaction who could be the Director of Technology. He picks up the phone and calls me at the university and says, "Okay, you partly created this, now we want to develop the program, and I need somebody to develop the program for science and technology." That was the major component of CIGI, as you know, and now it is quite large. I said to him, "There is only one person that can do the job that you want done," and I said, "That's me. I will go to the university, go to Dean Sheveski and Bob McGinnis who was head, and I will ask if they would give me a year's leave of absence to get this thing started." He said, "That is a wonderful idea, and it's not going to cost me very much." I joined the Institute on a year's appointment on leave of absence from the university.

That worked out well, but again we had to go through the process. As it turned out, we were lucky that a qualified person became available, an ex-Canadian who had gone to the US and was at that point in time the American company was downsizing and this person was without a job. So I said as I was getting ready to leave the Grains Institute, and I said to Vic Martens, "Hire this fellow and he will do a good job for you."

MC: Who was he? Do you remember his name?

WB: Ed Bass, and Ed Bass was the Director of Technology until maybe 10 years ago. They are having problems now. They have a new director Barry Senft, who was a lawyer.

MC: A lawyer? That is different.

WB: Yes. He said, "We don't need all these PhDs around here." So they hired a non-PhD to replace Ed Bass as a Director of Technology. And this is Tony Tweed. I don't know if you know him?

MC: I recognize the name.

WB: He is an outstanding baking technologist, but in the CIGI programs, there are times when you are dealing with PhDs and managers and you want to be able to have the same playing field. Barry Senft is still the director of the Institute. I think he has changed his mind about the value of the PhD, especially one that has experience in teaching and also can appreciate the outcome of research.

The Institute has grown and done a good job indicated by several other countries. Some of my students are in there. But one thing that has happened is that we are now almost at the peak as far as the staff available for training students. There is Sue Arntfeld, Harry Sapirstein, Martin Scanlon, Gary Fulcher, the department head. There are quite a number of faculty members who are developing students. I think that as these people graduate, there will be no trouble filling the vacancies at CIGI, at GRL, and there are two technical positions at the Wheat Board. Who knows? There is talk about a new facility that will be combined—the grain industry, GRL, with Agriculture Canada Cereal Research Center on the campus. These things take time.

MC: When you were talking about the ups and downs in training, are these some of the things you just mentioned were the highs and then the lows? These are what you were talking about?

WB: I think since I came to the university, we have been on the up. Slower in some instances but faster in others depending on funding. There was a point about 15 years ago where we had 14 individuals in a separate laboratory in St. Paul's College and of those 14 all were paid from a major research grant that I was able to get. But that gradually became expanded and now I think so far as cereal, grain chemistry going on from cereals to legumes—there is a special interest in legumes—there is the interconnection with the clinical people in St. Boniface the opportunities are tremendous. I hope that the young people that are hired and we have

had some significant retirements—Kruger, Dexter, Preston, and there is talk that Marchello is thinking of retiring, Williams. These are highly trained experienced people, but when they retire, and their positions will have to be filled.

MC: Do you see Canada as a leader in training in providing the industry? You have talked about how your students have gone all around the world. Is Canada a leader in training and again where Canada stands in terms of research in grains? Is it a leader or do countries like Australia develop their own unique research?

WB: I would say that taking the whole package the nutraceuticals, the functional foods, the cereals, the legumes, we are the best, the biggest, and I think the best. I am sometimes concerned that there is not enough push to get people publishing more.

MC: That is always the big problem isn't it, writing? Why is that different?

WB: The philosophy has changed in research.

MC: Do you mean in universities?

WB: Yes, in the department that I am familiar with. In my time, you walk into a place like this on the weekend, and it is buzzing with people. Not anymore.

MC: Is this that they are working on their computers at home, or no?

WB: Partly, but the final result would be the papers published or students graduated. If they are not being produced, you know that the professors are not going the extra mile. There are many factors. One that I often quote is that there is no credit given by the university for achievements outside of the academic responsibilities. No credit given to the fact that Marian Campbell has been elected president of the American Nutrition Society. So what? When I first joined the Grain Research Club, I used this occasionally. Dr. Anderson called me into his office, and he said, "I want to say a few things to you about belonging to scientific societies and how important they are for you to be a member, to serve on the executive." And he said, "As far as your job at the Grain Research Lab, in addition to be judged on your research, you will be judged on your activities and contributions, in professional and scientific societies, and you will join the American Association of Cereal Chemists, the Scientific Club of Winnipeg, and the Chemical Institute of Canada, and what others you wish, but those three and your annual assessment performance will be judged, including your contributions to these societies." You get so many points for being elected president. I am just kidding. But now some people struggle to keep the societies going, but not very many are having an input.

MC: Because there is no reward as you are saying, so the focus has become increasingly on teaching and research, and the service component is undervalued. Is this what you are saying? The recognition for that kind of work is not given by universities?

WB: No greater pride do I have than to see one of my students, Khalil Khan, who is the Professor at the University at North Dakota State who will be taking over in September as President of the American Association of Cereal Chemists. Tremendous! But we somehow have to change the philosophy.

MC: That is a hard one, isn't it?

WB: Yes. Money helps, promotions and increments and the fact that to some extent controlled by the system. I have one colleague and I said, "Why don't you submit your application for promotion to a full professor?" "Why should I? They won't give me anymore." That is the sort of attitude.

MC: Do you think the times were different back than they are now that has affected this philosophy aspect?

WB: Yes.

MC: Can you pinpoint what it was about the times then and the times now that has changed?

WB: I guess one of the key factors was competition among students, among staff to get ahead. It is not so much the personal competition but the competition within oneself. I like to think that there is a question of leadership from the president down to mere professor. For example, I used to think very highly of Ralph Campbell, and I had very little to do with him directly, but he always had a good word of encouragement whenever I met him, and he would ask "How is your research going?"

MC: Yes.

WB: That changed when Dr. Naimark took over.

MC: What was different with Dr. Naimark, and can you pinpoint that?

WB: I would say maybe lack of interest what others are doing within the institution. He was busy doing other things. I think it is a matter of prioritizing because there is only so much time, like the new American president, and I just wonder how long he will be able to take on these major projects without exploding. Did you hear his 100-day press conference?

MC: No, I was not able to.

WB: He can't help but be impressive!

MC: Yes, he is. Inspiration and that goes back to leadership, isn't it, the ability to inspire?

WB: I don't know, Marian, what you need. You need students, you need staff, and you need money. All these things together make the package. Somebody has to start and usually it is the leadership that is the important factor. The Grains Institute is an example of what can be accomplished in a relatively short time by dedication, hard work, and money. If you have money, you can't buy everything, but you can come close.

MC: Just thinking about the leadership piece. One of the names that keep coming up is Dr. Anderson. Tell me about him because he seemed to be a wonderful mentor to you, and it seems in other stories we heard a leader. Is that correct?

WB: He was able to do more than anyone I know. He worked hard himself and expected the same from his staff. He gave credit and whenever we published. He was very, very careful in naming of authors, the order. That meant something to him, and he gave credit where credit was due. He recognized staff members, colleagues publicly and gave them credit for what they did, what they achieved, and at every opportunity he tried to push people ahead by promoting, by appointments and so on.

There is an interesting background story about Dr. Bass who took over from me as the director of technology. Dr. Bass tried the old ploy of coming to your director and saying, "I have an offer for another job. I don't really want to go, but the money is good." So on several occasions, once or twice, Dr. Anderson said, "Well, I will see what I can do." So he would go to the chief commissioner and get a little increase. In those days you could do that, the director can. Then of course came a time when Dr. Bass tried it again and Dr. Anderson said, "Eddy, I think you should take that job." [Laughs] So Eddy went off to the States and spent about 10 years in several different companies but wanted to come back to Canada. I don't blame him, and when a position became available at CIGI, he came back and retired and lives in Winnipeg.

MC: Dr. Anderson certainly sounds like a wonderful man, and you have given every idea of why he was and why money can't buy those qualities.

WB: He is one of the top cereal chemists, as a total package. He could debate, he could speak, he could write, he could tell jokes. He just had everything. I often wished I could emulate him. There are not many people in the world like him. In his prime, he was

probably the top international cereal scientist. Especially when he was in charge of the barley research. He just had it. He had a way of getting people to do the right things, to say the right things, encouraged and sometimes pushed a little bit. If there was a position that he thought one of his staff members would be interested in and he would show it to him, obviously taking a chance of losing a staff member.

MC: That is the kind of guy he was. A person interested in his employees personally.

WB: He changed when he retired, and he got a two-year appointment as senior scholar in Plant Science. That is another thing, when he retired, I phoned him up, and I said, "What are you going to do when you finish?" He said, "I don't really know." And I said, "Well why you don't come to Winnipeg?" He was in Ottawa at this time. "And do what?" "Well, I can use you to teach a course and help students write theses, help staff members write grant applications." "Good idea." I said, "We will pay your moving expenses and give you a small stipend."

When he came here, he started to play bridge with us. He became one of the boys, but while he was director of the Grain Research Lab, I don't know whether this was on purpose, but he always walked on one side of the hallway when he was coming and going and he never said anything but just walked by. When he decided that he would criticize someone, he did it privately. He would call the person to his office and chew him out if need be. But he was a good writer.

The first paper I ever wrote, I wish I had kept it, I gave it to him. I thought I had done a real good job. I gave it to him, and he did about three quarters of the page with a red marker, and it was all red. He called me, and he said, "Here, I have done a little bit. I think you will get the idea of what this paper needs." I sure got the idea! [Laughs]

MC: So it was constructive?

WB: Oh yes. He was always approachable if you wanted to see him.

MC: That tells you something about leadership just talking about this individual. If you have lots of money and lots of research facilities, you still [inaudible] that person.

WB: Money is important, but it is not everything.

MC: This person can make something more than perhaps would have been there with someone with lesser skills.

WB: More value for their money.

MC: We have talked a lot about CIGI and training. Wondering if you reflect back on all of your careers, is there something that you are most proud of that you got the most satisfaction out of or the greatest joy in this rich career you have had? If you had to pick a couple of things or one thing?

WB: It is not easy. There are so many.

MC: I think you have told us a lot about them, but if there is one that you would like to comment on particularly?

WB: I think I would probably rate very highly the successful award of an honorary doctorate to one of my post-graduate students. A couple of years ago Octavio Paredes-Lopez from Mexico was honoured by the University of Manitoba with an honorary doctorate. It was a very moving experience for me. He acknowledged a contribution that I made, and others. That probably was something that I will remember.

MC: Yes. A very warm moment! I am thinking and this is maybe a personal question coming from me. Having grown up on a small farm in rural Saskatchewan a little later than you did, how did you make the journey from farm to going to university at the start, which you started university here I think the late '40s or early '50s or somewhere around there? Was that unusual for a farm kid to go off to university?

WB: Very unusual. I was one of probably the second people from the area where we were farming to go to university.

MC: How did that happen? Why you?

WB: It is an interesting tidbit, particularly at this time. We lived in a place called Garland, which is about 50 miles north of Dauphin just off Number 10 highway. The educational system in this village was that we took up to Grade 8 classroom teaching. Grade 9 and 10 were taken by correspondence through the Department of Education, which was an excellent way, I thought. I found the correspondence courses quite suitable.

Then Grade 11, we went to a high school—which only went to Grade 11—10 miles south of Garland to a place called Ethelbert, another small town, but we had to relocate during the week. I took Grade 11 in Ethelbert. I had to make a decision with what happened after Grade 11—quit or try to get a job, go to another location to take Grade 12, or go to university. At that time, you could go to university from Grade 11 in Manitoba. So quitting and going to work was out of the question. My mother who couldn't

read or write, she was illiterate. She said, "You are going on. It doesn't matter whether we can afford it or not." For Grade 12, I had to make a choice. Some of my colleagues went to high school in Yorkton, Saskatchewan. Most went to Dauphin where they had Grade 12.

So I decided I would go to Dauphin. I took the train 50 miles journey to Dauphin and went in and registered, and on my home by train, I happened to sit next to a person who had just completed that spring the first year of electrical engineer. I sat next to him, and we started to talk. He knew some people I knew from Ethelbert where I went to high school. He said to me, "You know you almost waste a year by taking Grade 12. Why not do what I do and go directly from Grade 11 to first year university?" I said, "Oh can you do that?" He said, "Of course you can do that." I came home and spoke to my parents, and they said, "Why don't you try the university route?" I quickly wrote a letter, sent my marks, and got a quick reply that I was accepted for first year science. That person who had advised me who was in engineering, his name is Nestor Burtnyk. He is an uncle to the curler.

MC: Yes.

WB: With another connection Nestor Burtnyk, who will receive at the October convocation the Distinguished Alumni Award.

MC: Isn't that amazing! What a story.

WB: For his work with NRC in Ottawa on digital imaging. He received special recognition from the movie industry during the Oscar's in Hollywood. So he will be here to receive the alumni award in October and I am happy to say I had nominated him for the award.

MC: Isn't that wonderful, and this was the young man on the train?

WB: On the train who said, "Go directly to university. The environment is different. If you are not careful, you could lose a year."

MC: And that was costly, even to go to Dauphin. So how did you make out financially even to go to university? Was the farm producing?

WB: The first summer, I had the job in Duck Mountains with a fire ranger, chasing forest fires. It was good because it paid well.

MC: So you could do it by summer work?



WB: Pretty well with a little help from my parents and some help from my brother. At the end of the university year, I was running low, I would write him a note and say, "Could you spare?" Then I joined the Officers Training Program at the University, COTC. The next three summers was this and then I finally got into the grain industry one year before I got my BSc, the summer of 1951. I was a summer research student.

MC: And that is when you met Dr. Anderson?

WB: He was the director, and he took over. After I got my master's degree, I did my research at the Grain Research Laboratory, and Dr. Anderson hired me, and he said, "I am giving you a job after MSc on one condition that in a year's time you will go to McGill University to obtain your PhD and come back here to work for the Grain Research Laboratory." I said, "Sounds like a good proposal." So he had a professor friend at McGill, Dr. Winkler, and called him and said, "I have a student for you." And Carl Winkler said, "Oh that is great, we need good students." In those days, the graduate students use to work all the time. I spent 19 months, two academic years and a summer in between doing my PhD. This was quite normal that people did their PhD in two years or even less.

MC: Do you think that was your farm-work ethic or were you saying that basically all students were like that and that were the culture?

WB: I think it was culture. Not just the farm. I think one factor that had an effect on me. I must admit the way my mother encouraged me to keep going as far in education as possible. But she didn't know what I was doing. [Laughs]

MC: Did you give her a copy of your masters in PhD thesis?

WB: I showed it to her.

MC: That's about as far as it got, but she was proud.

WB: There is an interesting story about her. We were immigrants to Canada as you probably know, and somehow just before we were to sail for Canada, somebody told my mother that she had to be able to sign her name in English. "Oy vey! What can we do?" So we, the children—I was in Grade 3, my brother was in Grade 5—we started to teach her how to sign her name. And it is not easy. We'd write her name and say, "Okay, go all right." She did that all right. Then we taught her write her name below and she did that okay, no problem. Then we would say, "Okay, write your name on a blank piece of paper." She was a blank, a complete blank.

After a few days of this, she said, "I don't care if we ever get to Canada, I am not doing this anymore," and of course she didn't have to. The old "X" was good enough. [Laughs] She just, blank piece of paper--.

MC: She couldn't do it.

WB: But it was interesting and quite a change. Of course, we came at the right time as far as the economy was concerned. War was about to start, and countries were gearing up for war, so there was employment, a demand for food crops, and so on. We arrived in Manitoba the first week of July 1939. On September 1, the guns went off.

MC: You were, I am sure, glad to be away. I am sorry what went on.

WB: I went back for the first time in 1971, back to the village, not legally. In 1971, that is 32 years after we had immigrated. I was the first person to visit the village outside of the Soviet Union. First, and we have been back several times since then. It is now quite open. We came from the area on the eastern part of Poland, Western Russia, which was a place that not too many people were allowed to go to because it was part of the buffer zone between the East and the West.

Overall, the most satisfaction that I got from a job is a university job. I spent some time in industry a bit more and government, but there is something about the university environment. I think it is related to being with younger people, the students.

MC: Invigorating.

WB: Yes. Always something new and something to do.

MC: And they have their whole life before them.

WB: Yes.

MC: What an amazing life story and professional career you have told us about in our two discussions. I am wondering if there is anything that we have forgotten that you might like to tell us that we have missed? Is there anything you can think of?

WB: I am sure there are many things that I have forgotten. [Laughs]

MC: I think we have done a pretty good job! If there isn't anything else, one other thing we would like to ask everybody we talk to is if you have any memorabilia, photographs or anything else like that we could take a picture of or a copy of that might be useful down the road in this long-term project of a perhaps a grain information centre in Thunder Bay? I know you have loaned us Dr. Anderson's book and things like that we might not know about.

WB: Another thing that I don't know if we have mentioned or not is in the course of all these activities, of course, if one is successful, one gets all sorts of awards, recognitions, and I was fortunate enough to get an Order of Canada as well as a variety of scientific awards like the fellowship in the Royal Society. But the Order of Canada is the one that gave me the greatest pleasure. I had a chance to meet the Governor General.

MC: So I take it perhaps no memorabilia you can think of at the moment?

WB: I might.

MC: If you think of something you can always give us a call because sometimes things get thrown away that are old and not of value. Some people have developed a photo album perhaps if they were going to Churchill and doing something up in Churchill, we have seen some pictures or people doing grain inspection or some of the things in the terminals in Thunder Bay and we have pictures of these things.

WB: That picture that is in Agi history.

MC: That book I got, is that the one you are meaning?

WB: Yes.

MC: That would certainly be a good one. I am going to take your picture today if you don't mind after we turn off the machine, so that we have a picture of all the people we talk to. We can talk about that after I turn off the machine. It looks like we covered everything.

WB: I am sure there are a lot of other things that could have been said.

MC: Well if you think of, for example, other people that we should interview, key people, let us know.

WB: It is too bad. We have lost the generation that came before me. Irvine. Anderson of course is a bit older than Irvine.

MC: Some of your recollections as you did so beautifully today of Dr. Anderson is a wonderful thing.

WB: He probably did more for cereal chemistry than anyone else in Canada. I supervised more graduate students, but I wouldn't compare myself with Dr. Anderson in terms of publications.

MC: It would be nice to have Dr. Anderson here to reflect on your career, and you two could debate it, but I guess we won't have that chance.

WB: I should give you another publication because it may be useful in featuring J. Ansel Anderson as Canada's greatest cereal scientist.

MC: That would be good!

WB: And have the other cereal scientists who came after him to show them as being developed or influenced by him.

MC: That would be excellent. Let's do that.

WB: Eddy Bass, John Dempster, these are people that spent quite a bit of time. Dr. Anderson basically had one career and that is director of the Grain Research Laboratory. He did some work with NRC at the beginning of his scientific career and spent a short time with Agriculture Canada in Ottawa as Director General of the Research Branch. Let me talk to other colleagues and see if we can develop a family tree.

MC: That would be excellent!

WB: The book by Harry Saperstein did something like that on meat. On our way out have a look

MC: Thank you for your time. It has been an excellent discussion. Thank you very much.

WC: I hope it is useful.

MC: It will be very useful.

**End of interview.**