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Interviewee: Herbert R. Grosch
Interviewer: Richard R. Mertz
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MERTZ:

Dr. Grosch would you like to describe your early background and education, where and when you were born?

GROSCH:

Yep, my parents were both born in the London area in England. My father's family --the name Grosch --indicating some remote German connection, my father's family was mostly in cabinet making. And my paternal grandfather had a small furniture factory outside London in the area called Walthamsville. He emigrated to Canada in 1912, somewhat discouraged at the size of his family and the necessity for helping support it, and worked first as a carpenter then as a cabinet maker, and then for most of his life as a supervisor of cabinet makers in various parts of Canada and the United States. After a year or two, he sent for my mother and they were married in Saskatoon, Saskatchewan. And I came along as the only child about six years later; so I was born in 1918. I was, I believe, the first child to survive incubator treatment at the Saskatoon General Hospital, in a nice brand-new incubator that they just added and I probably wouldn't be here today if it weren't for that incubator. And many of my friends claim that I'm somewhat half-baked as a result of this treatment. Anyhow, 1918 --September 13 to be exact --and that was a Friday, Friday the 13th, which I've always regarded as an interesting omen of some problems that I had later.

My father moved to Midland, Ontario when I was only a year or so old. So the fact that Saskatoon had 40 to 50 and 60 degree below zero winters, was only brought home to me by my mother's and father's stories later on, I don't remember them myself. Midland, which is on Georgian Bay, is a very small community and dad was the Superintendent of the --inside Superintendent --of the woodworking work in a plant whose name is not cogent to this story. After a couple of more years he moved to Pembroke, Ontario which is nearby, and had a similar job there; and this is where my memories first begin. I don't really remember Midland but I do remember being 4 or 5 years old in Pembroke. We lived on what the British would call the first floor, and what the Americans would call second floor, of a sort of a flat with stores underneath on the main street of the town. And I remember that mother had friends who, among others, included Mrs. Hollenger who was later to be rich as the wife of the owner of part of the Hollenger Gold Mines north of that part of the country. Well, I won't do a lot of this personal stuff, because it has very

little to do with the computer interest and the scientific interest that came along later. But I was reasonably precocious --the fact that I can remember conversations and personalities back to the age of 4 is some, I think, indication of this, since I'm now almost 52. I began to get interested in reading somewhere around this time, my mother was the sort of person who would read Bible stories to you before you went to bed at night. I think that I learned to identify and to read somewhere between the fourth and fifth year.

After another couple of years my dad moved to Windsor, Ontario, which is just across the river from Detroit, and worked, I believe, from the beginning of our --no wait, I missed a city. We moved from Pembroke to Chatham and I entered kindergarten and the first grade in Chatham and had some school teacher friends whom I remember rather distinctly, but no longer remember the names. I was always the brightest child in class regardless of age or location - although nothing like Norbert Wiener. And I can remember and I still preserve in my own collections --the little things that I brought home from kindergarten --the cut-out pocket watch with the hands drawn in to practice telling time on and that sort of thing; I've still got some of that in my little private museum. After a couple of more years, my dad did move to Windsor, as I started to say a few minutes ago, and from the beginning of our residence there, which must have been about 1924 or '25 --'24 I would think --he worked at a Detroit firm and commuted across the river through customs each day. I think it's interesting to think of the problems involved in doing this because he had to take a streetcar downtown from what I remember as being a couple of miles north of the main part of Windsor, transfer at the foot of the main street to a ferryboat which took him across the Detroit River, and then get on a Detroit streetcar which took him at least 3 or 4 miles out beyond Grand Boulevard to where the factory that he worked at was located. And he did this in both directions six days a week without appearing to feel that this was anything unusual; in fact he was the sort of person who usually went back on Sundays to make sure he hadn't missed anything in the six days that he worked.

I might go on as a part of my personal history to mention, although I'm going to talk a little bit about school in Windsor and so forth, to mention that he got another job in Toledo, Ohio, commuted for a while on weekends from Windsor to Toledo on the interurban streetcars that used to run across country in those days --this would by now be about 1927 or '28 --spend only the weekend at home, the weekend being one day, and then go back again. And then was invited back, in a somewhat parallel way to the way that I was invited back to IBM and GE in later years, was invited back by this same firm in Detroit to take his old job again; by which time we were living in Toledo and had to be moved to Detroit. And then worked at that one firm in Detroit --James A. Morse Company --for the rest of his life until retirement in early seventies.

So you see a picture of an only child being moved from town to town in Ontario and in the middle west of the United States every couple of years until about the age of ten. And then the child's family settling down and not moving again for the rest of their whole lives, while I, in turn, began to move around on my own at roughly the same velocity. I

calculated the other day when I bought a new house here in Washington, that it was my 33rd permanent address, including my parents' address.

MERTZ:

When they moved, where did they more or less permanently settle?

GROSCH:

In Royal Oak, Michigan, a suburb of Detroit. And my dad died there at the age of seventy-five about 1963, and my mother died the same. They're both buried in Royal Oak. I went to high school there so I think of it as being my earliest anchor down ...no, not home ...in that since; I don't really have a home. When people say to me, where are you from? I say, I'm from everywhere, quite seriously. But that certainly is the place that was my parents' home, although they had lived in three countries and many many cities before they finally settled down there. And that, I believe, also was the only house they ever owned between Saskatoon in 19 to 19 and Royal Oak, Michigan in the later 1950s I think they never owned a house, and they finally built a house when dad was in his sixties and owned that until their deaths.

MERTZ:

I see. But the greatest single segment of your childhood in one place was--

GROSCH:

Well, Royal Oak was only four years, but that was the whole high school years, in Royal Oak. Now my parents continued to live there when I went off to college, so in a sense it remained my home for six or seven more years, but then I was in Ann Arbor or Cambridge during that time. So from my point of view I lived in Royal Oak only for four years, except for occasional summer visits and weekends. Nevertheless, that was certainly their home if it wasn't mine.

Now I'm going to go back if I can to this Windsor business, because it was there that I began to have any feeling for scientific work or showed any initiative, so to speak, other than just being a bright little kid. I remember that when my mother took me to the school involved, and I can't remember which school it was, but it was the school across the park from our address on Giles Boulevard in Windsor, so it's probably still standing and undoubtedly could be identified if anyone ever wants to put up a plaque on me some day. When I used to go to that school, I remember trudging across this park, diagonally across this rather large park in weather that, quite frequently, you know, got down to 15 below zero or 20 below F. you know frequently, I mean several days during a winter. And there was no school buses in those times --it was just what one had to do in order to go to school. Well, my mother first took me to that school in September of, I would suppose in

1925, it might have been 1924, I would have been either 6 or 7 that same September, I think probably 6.

MERTZ:

This would have been about the second grade?

GROSCH:

This would have been to decide which grade I should go in, because remember we had now moved from Chatham to Windsor and in those days you didn't have the steady flow of people moving around that you do now --and you still, of course, don't have as much of it in Canada as you do in the United States. And the result was that the business of changing to a new school was a fairly traumatic experience, both for mother and for son. And I remember mother tugging me up to the principal's office and telling the principal that I should go into, I think, the second grade because I had had two or three months of the first grade in Chatham, and the principal saying, "oh no, that's not possible, he'll have to repeat that." So they put me into first grade and I think I lasted about six months and then they moved me into the second grade. I went through the first grades in Windsor in approximately three years. They did not have a rich enough school system to provide tracks in the educational process, nor did they have enough modern educational practice to provide extra books or extra projects or anything for a bright kid. So what they simply did was that they jumped you ahead. When they got to the feeling that you understood first grade level work, why you got moved to the second grade even if it was in the middle of the year. And I remember spending, for instance, only a half a year in the fifth grade and only half a year in the sixth grade. Well now this is very flattering and it makes one's parents feel very proud, but you end up being three or four years younger than most of the kids in your class and that was a rather tough school and I used to get beaten up rather regularly by older boys on the grounds that I was the teacher's pet and that I wore spectacles and that I used to get A's where they were getting D's. I guess that was a numerical grading system; and I guess I was getting 90's where they were getting 60's. Anyhow, I used to have a fairly substantial amount of physical violence exerted on me, but again I didn't feel as out of place in my school as say Norbert Wiener did. I was a reasonably healthy kid; aside from having to wear glasses, I didn't have very much trouble. And I was simply smaller and younger than the rest of them, but I wasn't a different type in the sense that the real childhood genius types are. I liked baseball, for instance, and I was a good roller skater, and I tended to be solitary and of course one reason was being moved all the time from city to city and then beginning with Windsor, I was also being moved from class to class. So I didn't really tend to form the long childhood friendships that children do. I remember that in the middle of the two or three, I guess three years that we spent in Windsor, we moved from one house to another. The second house was on Pierre Avenue which is the French word Pierre but pronounced in Windsor, Ontario fashion ...Pierre Avenue which involved, however, the same school. And I had a French-Canadian friend in the house next door named Denvy ...I guess that would be for Denis ...Piet, however I no longer can remember how to spell Peet.

Anyway, his father worked in the Canadian Government Liquor Store which my parents regarded as something pretty sinful. And, of course, they were Catholic which my Church of England parents also thought was pretty peculiar you know. But I had a good friendship with this young boy who was a little small for his age as I was small for my grade in school and, you know, the usual reasonably pleasant boyhood business. I read a tremendous amount.

MERTZ:

Excuse me. Was this a eight/four system, of eight grades and then four years of high school?

GROSCH:

You know I'm not sure. I'm almost sure that the seventh and eighth grades were in the building also. It's a little vague in my mind. I think one reason was that I wasn't approaching the seventh and eighth grades as slowly as the average child was, I was approaching it at about double velocity. So I didn't really have much thought, I think, in those days about looking ahead to, you know, what the seventh and eighth grade was going to be like. I was having enough time scrambling about getting up to the sixth grade speed when I joined it, you know, in the middle of the year and so forth. But I always got very high grades, very quickly.

MERTZ:

Was the grade school period completed in Windsor?

GROSCH:

Was completed in Windsor, the 6th was completed in Windsor in the sense that, you know, if there had been graduation ceremonies which there weren't, I would have participated. At about May of that year ...and that would have, I presume, my ...just before my 10th birthday ...that would be about 1928 I suspect. In May or June of that year, my parents moved from Windsor to Toledo (not to Royal Oak thinking back remember). By this time, if you remember what I said a few minutes ago, my father was commuting to Toledo and working at a factory there and so we moved all the way from Windsor, Ontario to Toledo and then backtracked to a suburb of Detroit to work for the Company again he had been working for when I was living in Windsor.

MERTZ:

How long did you stay in Toledo?

GROSCH:

Toledo was two years and I did both years of my junior high school there. And that, of course, I do remember very vividly. I did begin to do organizing kinds of things there. Now let's see, I was ten years old then when I entered junior high school in Toledo, Ohio, this would be my first American school. And I immediately noticed for instance in history classes that there was a difference between Canada and the United States. For instance, there was a question of who won the War of 1812 that was very vividly obvious when you went to an American history class. The War of 1812 in that book was between the British and the Americans and aside from a few slight setbacks like having the White House burned, why, of course, the Americans won ...Commodore Perry and all that bit. On the other hand, in Canada it was regarded as a war between the United States and the Canadians and the Canadians very definitely won and I used to tell this to my fellow American students, to no particular effect I might add. I think I would call this my first example of what you might call social-iconoclasm which later became a fairly well-known part of my personality. You know this is not a minor thing; you know you look back at something like that and you say to yourself, oh, that's just silly, that's just a kid that moved across the border. But, in fact, you know in a very real sense awakened me, at least implicitly, to the fact that things looked different when you look at them from denationalize or national…

MERTZ:

South of the border?

GROSCH:

Exactly. Well I went, starting then, just about my tenth birthday, I entered the seventh grade at Alexander Hamilton School in Toledo, Ohio. Now I'm pretty clear that Alexander Hamilton was an eight-grade school, but we did not have junior high schools, separate institutions as far as I remember in Toledo, at least that was not one, if there were some, that was not one. But there was considered to be a gulf between the 6th grade and the 7th grade, a narrow gulf which would be crossed very easily and there were no graduation ceremonies with little fat-headed kids running around in white caps and gowns at the end of the 6th grade or anything like that. Nevertheless, the teachers who taught 7th and 8th grade classes, did not teach in the 6th grade classes, and the 6th grade teachers did not, in general, teach 7th and 8th grade classes. So there was a split. And I entered the 7th grade there and completed both years, and from that time on didn't do any skipping around much. The result was, however, that I graduated from high school at 15, which was about three years early; so that's the time I picked up, the velocity I acquired in Windsor which made me three years younger than the rest of my class through almost all of my high school and college years.

And in fact, in the end, although I lost a year in my doctorate because I took such a long and complex doctoral dissertation, I nevertheless got my doctor's degree at 23, which was a couple of years early compared to the typical straight-through age of 25 or 26 in the '40's. It's now stretched to the point where you're lucky to get by then, but then very few

people go through consecutively anymore either. They usually have to stop for graduate assistantships, or for their wives to have children, or as far as that goes, for the children to have grandchildren before they finally get their degrees. In those days, if you got your doctorate at all, you were lucky to get it on a straight-through basis. If course very few people did, but then there weren't very many doctorates. So I ended it up by getting my doctorate at 23. And that pattern of being very young for my surroundings, finally petered out there in my late twenties and early thirties.

Now I find myself the oldest person in most computer groups because it's all full of youngsters now. And I don't quite know what happened to the intervening period. I never seemed to have been a time when all my confreres were the same age. Very strange.

Well, we go back to Windsor, I'm just ten years old and I've been put in the 7th grade, with some doubts on the part of the Toledo school system that this poor dumb Canuck could keep up with their brilliant kids. Well, I had no problem at all being an all A student and a class leader in almost all of my activities there.

To go back to the Windsor thing, I can remember the name of Miss McColl as one of my teachers. I no longer remember which subject but, I think, almost distinctly remember that she was the 5th grade teacher that I had to leave behind when I was bumped to the 6th grade during the middle of the year. So I'd begun to form some kind of liaison with individual teachers by this time. I also remember with some fondness, a laboratory/life sciences kind of course in the 4th or 5th grade with, you know, laboratory sinks and a sort of a non, now non-standard classroom kind of things.

And I remember that they attempted to teach French in the 6th grade at the beginning of the enthusiasm for bilingualism that is so important in Canada today. Unfortunately, I didn't get much of that, and I'm poor in languages today, partly because I didn't get an opportunity to pick up something when I was young and flexible. But most of my memory of Windsor is still pretty vague. I remember the general quality; the business of being beaten up, the business of reading a lot, the business of getting along well with my teachers. But I don't remember specific things in the sense of subject matter interest, deep subject matter interest and so on. Just a general air of being intellectually oriented and excited about life.

MERTZ:

Was there any, aside from the what you might call the National bias in history textbooks, were there, did you notice any other difference substantively in the curriculum between Toledo and Windsor?

GROSCH:

I don't believe so. You have to remember that Windsor, for instance, is very much contiguous (if I may use the phrase) to the U.S. That peninsula of Ontario sticking down

there up against Michigan, in fact, it's an inverted relationship in that Windsor and that peninsula of Ontario are south of Detroit. So you've got sort of a high-degree of Americanization already in the twenties there. Also, there was a good deal of booze running back and forth across the river, so there was a heavy degree of specialized trading shall we say, between the two cities.

MERTZ:

Economic interdependence?

GROSCH:

Right. And they were digging, they had dug a railroad and vehicular tunnel and they were building a bridge. So that there were quite a feeling of…

MERTZ:

And that was, to some extent, also the case in some of the public schools?

GROSCH:

Yes, yes. I suspect that if I had gone from Windsor to Detroit, for instance especially, you know, downtown Detroit, I'd probably have hardly ever noticed the difference. By going all the way to Toledo you were getting into a smaller community and one that was a little less internationally minded than Detroit, although Detroit wasn't all that. But there really wasn't very much difference there. The school system seemed to me to be about the same. It was a little richer in Toledo. There was a little more in the way of, you know, maps on the walls and color pictures instead of black and white and that sort of thing. But we're still talking about the late twenties and things were reasonably primitive in education in both countries at that time.

For instance, the audio visual thing that is so prominent in our schools nowadays in which every time the teacher is too lazy to work up a lesson she gets a movie or something from the library and runs it; was unheard of in those days. You had an assembly in which the entire school, you know, would unite in the auditorium to watch some dumb movie that was a complete waste of time in general. But it was a big event because it was like going to the movies yourself, and that was a big thing indeed.

That reminds me to say that my parents were, in the Windsor years, fairly inveterate moviegoers in the sense that mother would take me downtown, (this was perhaps on when I was 8 years old) to meet dad. He'd come off the ferry from Detroit where he had been working, and we'd have dinner at a restaurant and then go to a movie. And these were fairly fancy movies. You know even in Windsor it would be a movie with an organ, a mighty Wurlitzer kind of thing, and maybe a sing-along program or something. And I seem to remember vaudeville even in Windsor --this was not just Detroit now --even in

Windsor I seemed to remember vaudeville. Certainly in Detroit across the river, there was very large stage shows, very professional stage shows with chorus girls and so forth a few years later when I was in high school.

So this was a time in which there was a good deal of that kind of stimulus available. My parents didn't read particularly. Neither of them were great readers. But they were very much in favor, especially my mother, very much in favor of me doing so; always encouraged me to get library cards and to bring lots of books home and so forth. That was a time in which you didn't buy books, at least not at my parents' economic level, you borrowed books from a library. And at that time I didn't even get many magazines from drug stores and so forth; that was a pretty expensive luxury too. And we just plain old didn't do it.

MERTZ:

Were there fairly good library facilities around?

GROSCH:

I seem to remember a rather good library in Windsor. I believe it was a neighborhood one, but it was apparently a large neighborhood one, and I seem to remember it as being free-standing. That is, not just in the basement of a school or something like that. But it's fairly vague in my mind.

Now when I went to Toledo there was a school library, a rather large school library in Alexander Hamilton, in which you could have a card and take books home and so forth. And I believe that that was a branch of the city library system as well as a part of a school library operation. And I did an enormous amount of reading there. I had become interested at this time (I can't remember whether I was interested in Windsor, but I clearly was interested by the time I got to Toledo) I was interested in fantasy. And that meant that I read all of the more formal books on fables and legends and so forth. And, you know, I mean the Norse sort of thing, and the Indian sort of thing, and the East Indian sort of thing, not just the Greek and Roman myths and so forth. And that was the beginning, I think, probably the first symptoms of my interest in science fiction and so on, which I began to develop then, and which carried through the rest of my life. But I don't remember doing that in Windsor. I remember reading a lot of stuff, but I don't really remember what it was.

MERTZ:

Do you associate that more with Toledo?

GROSCH:

Yes. Well, because my dad was extremely skilled with his hands, for instance, later on in Michigan during the depression, he made violins as a hobby. He had been apprenticed as a very, very expert young cabinet-maker in England before he emigrated to Canada and never lost those skills. And he was always extremely, extremely good with his hands. This meant that there were always tools around the house, and there was always a workshop somewhere, a homemade workbench, and a large chest full of woodworking tools. I certainly began to do that. I've never been clever with my hands in a sense of any expert workman, but I've always been familiar with using tools. I've always fixed up things myself, and later on as I'll mention ...I've used machine shops and done electronics work and so forth, and certainly that began back in the Windsor days. So it was a rich three or four years, but I think partly because it was so rich, and partly because I was younger than most of the kids in my classes and so on. It's relatively undifferentiated; I see it as sort of a mosaic rather than as a series of clear pictures.

MERTZ:

Do you remember spending more time with your parents than perhaps with children your own age?

GROSCH:

Oh yes, much more. But not in the sense of my parents wanting me to. Just in the sense that, you know, my mother would say, why don't you go out and play ball, you know, but in the sense that I enjoyed the books. I enjoyed the workshop kind of activities, and I did a good deal with my hands. That's something that I haven't thought about in a good many years. This interview has been the thing that's really brought it to my mind. I do definitely remember making a lot of things, first rather crude and ugly and then later not too bad. For instance, I remember for many years being uncertain about whether or not a box-kite had to have its cross-members inside of it to keep it open, or whether the wind pulled it open. Well, that's a fairly sophisticated problem to do without ever building one, see. Again, a sort of an interesting theory so to speak. It was clear that certain shapes of box-kites like those in which there's a triangular structure rather than a square one didn't need any braces; this is an interesting viewpoint from a guy 8 years old, I mean. But a square one sure, something funny about that, you know; what would keep it square? Well, of course, the answer is that there are diagonal cross-braces. I never saw a drawing of one that showed it. And I never managed to find a book on kites that gave that much detail, so I never built one because I didn't want to have a failure. But I kept the thing in the back of my mind and maybe 20 years later I finally found drawings of a box-kite that showed the diagonals. And I realized that I'd been right. Well, that would be interesting.

I remember my mother used to give me large sheets of butcher paper, you know, stuff that was wrapped up from the stores then in, what I call, middle western style. Now in Europe, they were still wrapping stuff in old newspapers. In the United States they had begun to package things, although in the late '20's this wasn't very dominant. But there was an intervening period in my Windsor, Toledo, Royal Oak days in which things were

wrapped in brown paper, and large rolls of brown paper were to be found in the stores, which of course were not yet supermarkets. And I used to get these large sheets of brown paper, and I remember my favorite drawings on these were always ocean liners. Now, of course, I'd heard lots of stories from mother about how she had come over from England, you know, in 1912 on the Empress of Britain or something. But I'd never seen an ocean liner, and all I had to go by were photographs and pictures in encyclopedias and so forth. But I remember drawing many, many ocean liners and they weren't too bad. And I used to have a rather exaggerated perspective in that the rear ends used to taper off something tremendously. Of course that was because I was trying to indicate that they were very large. Now all this time, practically no travel. My parents had enough travel moving from place to place every couple of years. So they...

MERTZ:

How about summers?

GROSCH:

Nope, spent them at home in general. Now I do remember that my parents wanted to go back and visit friends that they had made in Pembroke, I believe, while I was in junior high school in Toledo. And we arranged to go and I think that was the last vacation that my father planned to take for the next 20 or 30 years (he never seemed to take a vacation after that). And just as we were about to leave, these people, whose names were Croucher, telephoned or sent a telegram that their little son (who was about my age) had come down with something infectious, chicken pox or something. So my dad (with reasonable vigor) said, "the hell with it" you know, "we're already to go on vacation, we'll go on vacation." So we went to Niagara Falls. And I remember going to Niagara Falls on the train and I remember the excitement of seeing the Falls and being taken down to one of the powerhouses. I think I remember the powerhouse as being more impressive than the Falls.

MERTZ:

Was this from Toledo?

GROSCH:

This was on the Canadian side. Now whether this was from Toledo or from Windsor, I am a little uncertain. The visit was certainly to the Canadian side, and for that reason I'm inclined to think it was from Windsor. Because, I think if it had been from Toledo, we would have gone through Niagara Falls, New York. So it was probably from Windsor. Moreover, it would be easier to make the arrangements to go and visit in Canada from Windsor, and the Crouchers' were certainly living in Chatham or Pembroke. They were not living in the United States.

Mother corresponded through her entire life with an enormous number of old friends and I think this substituted for the normal reading of an intellectual family. Instead of reading magazines, newspapers and books, mother read letters from her friends and answered them. And she had, at the time of her death in the mid-70's, she was still corresponding with her childhood friends in England; with her Godmother who was in her 90's; with a great mass of insignificant relatives around the world, in Australia and South Africa and places like that. And, of course, with me, she was always writing me letters, too. And I think that that was her activity.

My dad was a great pencil-pusher, in the sense that one of his major activities as superintendent of the woodworking factory was to take architect's drawings, and to work the details up in to actual bills of materials and detailed sketches for the men in the shop to work from, the cabinet makers and carpenters in the shop to work from. So he pushed a pencil all day long and when he got home at most, he'd read the sports news and then later in life, look at television, listen to the radio, I guess, during the earlier years. But the books in the house were mine, great masses of them. But there was no library that by books had acquired that I browsed in, the books were bought for me or as I say, in the early days, borrowed for me.

MERTZ:

Well, then your family moved from Toledo back up to Detroit…

GROSCH:

Well, I've got lots more to tell you about Toledo though. Like for instance, I started a science club when I was in my seventh grade. And my teacher then was a Mrs. Linhart, with whom my mother corresponded on my behalf for the rest of Mrs. Linhart's life, and in fact, Mrs. Linhart died only just a year or two before my mother, about 1960 roughly, after retiring from the Toledo school system. She was the first science teacher that I remember by name. I'm sure I had science teachers or part-time science teachers in Windsor, and I've mentioned the biology sort of laboratory and all that. And, you know, pasting leafs in notebooks. But I don't remember the faces or the names of the teachers involved. But Mrs. Linhart was a major influence on me, and probably the first major influence, outside of my family. And the second order influence of books and so forth, that I had.

MERTZ:

She encouraged you in the…

GROSCH:

Very much so. I was obviously the teacher's pet of the class. And the opening subject of the 7th grade in general science, I guess you would call this, was astronomy. And I still

have my notebooks showing, you know, proofs that the earth is round, you know, with ships disappearing at equal rates over various horizons and so forth. And I think I probably still have one or two letters that we exchanged in later life. I kept her informed as I got my Bachelor's degree and my Doctorate and so forth. My mother used to send her programs where I'd been on making speeches and so forth. So Mrs. Linhart was, I think, rather proud through her whole life that she had something to do with me. Although certainly she didn't follow to the point of knowing anything about the computer field or anything like that. But we had a long session on astronomy to start the thing off. I had not had much knowledge of astronomy before this, except what I picked up from old Popular Mechanics magazines and things like that. And I think that was the beginning of my interest in going into the astronomy field, which is what I took my doctorate in, in astronomy.

Well, we started a science club and I was not only the prime student organizer, of course Mrs. Linhart was pushing and shoving behind the scenes, but it wasn't until I appeared on the scene that she was able to do it. And, of course, I was selected president, although most of the members were 8th graders ...why I was selected president; and that was my first office.

I also remember a very attractive, somewhat younger teacher, named Miss or Mrs. Morgan, I believe it was, was my English teacher in the 7th grade. And she recruited me to play the lead of Benjamin Franklin which was the school play that year in the 7th grade. In spite of the fact that I was a head shorter than any other member of the case, simply, I was the only one that could learn the lines as Benjamin Franklin. And I was on practically continuously for the entire hour long play. And I was the only one with enough application or memorization ability to learn these hundreds and hundreds of lines that poor old Ben had to recite. And I guess I discovered lightening, and was Ambassador to the Court of St. James, and to the Court of King Louis, and so forth, and had a great time. Never had the faintest trace of stage-fright. Always loved to be front and center, and make speeches and act in plays and so forth. And I would imagine, certainly, that's the first thing in my mind that reminds me of being out front and center on a stage and impressing the audience with my "fantastic abilities." The obvious solution is that I should be an astronomy professor, which was what I really intended to be when all this got started, but it wasn't that clear at the time.

MERTZ:

Did this club move on from astronomy to other subjects?

GROSCH:

To the best of my knowledge, it was going three or four years later, because the last trip I made to Toledo, I was still a high school student, and the last trip I made to see Mrs. Linhart (I was about ready to go off to college) and she told me the club was still going. I imagine that in some form or other she kept it going until she retired which was many

years later. But certainly I was president for two years, both in the 7th and the 8th grade. And the 8th grade, of course, we began to get into chemistry. And chemistry was more fun because you actually did some spectacular things. And we set up sort of a student laboratory. Instead of just having her do her demonstrations at the big lab bench at the front of the room, why we had a little table set up with shelves and so forth in the back of the room; without a sink, unfortunately, because plumbing was expensive. And the students stocked that. And we were permitted to do our own experiments on that after hours and so on, which was the beginning of my interest in the laboratory side of science. And I was the guy that made out the list of equipment and, of course, Mrs. Linhart could only get a small fraction of it for lack of school funds and so forth. But I was the one who made up the list of equipment and so forth. And I can remember the chemistry and the astronomy much more clearly than the physics.

Now clearly we had mechanics and that sort of thing and optics which I worked in later. But I don't remember much about --one of these days I'll get out that notebook and see if I've got some notes on it.

But it was the astronomy that stuck in my mind and then the elegant stinks of chemistry. I mean you could make things that made noises or that smelled bad, or that would burn you if you weren't careful. And that impressed me as being a very useful thing to do, very spectacular (I've always been impressed with the public relations aspects of my jobs) ...I think that was the side of that.

MERTZ:

The spectacular, the spectacle?

GROSCH:

Yes. I was a great favorite in the school as a sort of an intellectual leader. I was editor, for instance, of the 7th grade and 8th grade paper when I was in the 8th grade. And that was probably also Miss Morgan, although I don't remember for sure. I also had begun to get a reputation as a rather hard person to manage. I remember my mother recounting to me countless times (my mother was a great one for telling the same stories over and over and over again), countless times how Miss Morgan had said that sometimes she'd just like to SHAKE ME! because I was always disrupting class, and always disagreeing with her and so forth. But then on the other hand, I'd do something like the Benjamin Franklin thing and then she'd love me again and all was fine. Well, there was this obviously very close relationship between my mother and some of these teachers, in spite of the fact that she was a very different sort of person intellectually from the average teacher. But she was very proud indeed of my abilities, and without pushing me particularly, always managed to encourage me and reward me for the thing.

MERTZ:

What kind of rewards did you get?

GROSCH:

Well, it usually consisted of buying me a book that I wanted, I guess. I repeat, we didn't do much traveling. Now in Toledo, certain broadening influences did begin to come around. For instance, my dad bought the first car he had since Midland. That was a 1928 Essex, and I've got pictures of myself sitting on the running board looking very happy indeed to have a car. I had my first dog. (I've always been, from those years on, tremendously fond of pets --both dogs and cats.) And that was my first dog.

And, having the car, my dad then began to, you know, a little Sunday driving sort of thing, which was much more practical in Toledo than it had been in Windsor. I don't remember Windsor in those day as having anywhere that you could go to that was very pretty. You went out into farm country that had the usual one mile square grids of bad roads with nothing to see but the farm houses. And lots and lots of railroads and interurban lines crossing them, and lots of tie-ups while you waited for various trains and things to go by. But in Toledo it was different.

In Toledo you had a very handsome country-side not far away called the Irish Hills. There were also the rich suburbs of Detroit that were within driving distance of Toledo. I don't remember us ever going toward Cleveland, but I seem to remember we took some boat rides.

MERTZ:

Sandusky?

GROSCH:

In the Sandusky area and so forth. So we never got as far as Cleveland, but we obviously got as far as Sandusky and so forth. So then I began you know, to have a little broader horizon. Now, of course, I travel an enormous amount. And I usually tell my wife that the reason is that I didn't travel much as a child. But looking back on it I can see that there was a sort of a uniform progression. I certainly didn't travel very much as a small child, but after my dad got this car, we did do the Sunday driving bit, and we did begin to do the kind of, you know, family travel. That's all that kids in those days really had. But times now in which people, you know, just get on a jet and fly to California was a long way in the future for any except the very rich.

MERTZ:

Did you take any more extended car trips in the summertime?

GROSCH:

No, I don't believe so. To the best of my knowledge, we never got more than a one day trip. I can't remember ever staying overnight for instance.

MERTZ:

What did you do with yourself during the summertime?

GROSCH:

Seems to me that I divided it between more reading and baseball and things like that. I was a reasonably enthusiastic radio listener. But the Detroit Tigers, for instance, were one of the obvious ball teams to be enthusiastic about.

MERTZ:

Well, the Cleveland Indians are not far from Toledo.

GROSCH:

But I wasn't --remember I lived across the river from Detroit before I went to Toledo --so I thought of myself as being oriented up toward Detroit; even though my dad was not working there at the time, had left and was working in Toledo. So it was the Detroit Tigers. And I was a reasonably good ball player. But, of course, I was always small for the kids in my classes, so I normally had to play ball with my neighborhood kids who were several grades behind me in school. So there were some social problems from this. But I was a, I think, that it was not so much that I was a loner, in the sense of my not liking other people, except that there were some hindrances to friendships. The one that I mentioned on size and age primarily. And also, for instance, difference in interest.

If I wanted to build a gadget of some sort, a scooter for instance, out of an old roller skate or something like that, I tended to try and find a back issue of Popular Mechanics which I carefully stored away on a shelf. And find a good article on how to build a scooter, you know, which considerably delayed the production of the scooter, but usually turned out a good deal better article when you got done. And I'd usually want my parents to buy me some better nails, or a special piece of wood for a handle, or (more realistically) have my dad bring home a special piece of wood for my handle or for something else. Well that's fine. The average kid, on the other hand, would just go out and pick up something laying around in a corner and do a botched-up job. And he'd be tooting off down the street while I was still sitting there stroking my chin and wondering how to go about it.

MERTZ:

Were there any other hobbies? Did you collect anything?

GROSCH:

No, I never was a collector in that sense…

MERTZ:

Played games?

GROSCH:

Yeah, games I think. But the only real competition I had for, you know, to play checkers or something like that, tended to be my mother or father who weren't really very interested in it. I can't remember playing games with other kids. I think that one of the…

MERTZ:

Did you play chess or cards?

GROSCH:

No, I think, my parents probably didn't think very much of cards. My paternal grandfather, who had owned the small furniture factory in London, had been a drunk and in the end, sort of drank himself to death, although it took him many years to do it. And as a result, my dad never took a drink, practically in his entire life. He wasn't a teetotaler in a sense that he forbade me not to, but there simply wasn't any liquor or beer around the house. And my mother never had any inclination in that direction either. And somehow the idea that you didn't have liquor and so on, sort of extended to the fact that you didn't have many cards around either. And remember that they were rather solitary in their own way because they moved so much. You know, they didn't have the deep neighborhood friendships that you have when you live in the same town all your life.

MERTZ:

We will take a break here and continue on the other side.

[End of Side 1]

GROSCH:

I think it's an interesting thing that I didn't really have much recollection of my math teacher for those years, whether it was one person or two persons. I certainly don't have a name to assign to it. And yet I remember being very good in math and enjoying it very much.

I do remember one little incident in the seventh grade. As we started the seventh grade, they had a typical review examination to see how all the students had done in their previous couple of years of work. And I remember flunking the decimal section of the thing almost entirely. I had apparently skipped the decimal calculations, either in the last half of the 5th grade, or the first half of the 6th grade the year before. And I remember faced with this rather unfamiliar looking notation. I invented a system in which, for instance, 5.16 meant 5-1/16, and carrying the whole thing out in fractions which, of course, is a hundred times more difficult than using decimals. And, of course, gave all wrong answers. Somehow within a couple of weeks without anyone really explaining the thing to me, I picked the whole thing up, and was just as good with decimals as anybody else. I guess somehow or other, I'd gotten the hint from how the answers were corrected or something, that my invented notation was not the right one and what the others meant. But that's almost all the recollection that I have from my junior high school math days.

I don't remember any particular interest in doing large sums or long calculations or anything like that. Although that came along later in high school, but I don't rightly remember it at that time.

MERTZ:

Did you have the telescope?

GROSCH:

No. I think here you're talking about something that is of interest. I'm really a kind of perfectionist. I think I knew enough, I think, from my reading about, you know, the 100 inch telescope at Mt. Wilson and that sort of thing. But I really wasn't that much interested in something really inferior. I didn't want to get a cheap pair of opera glasses or something like that and go out and look at the moon. What I wanted to do was to read about what people using a 100 inch telescope looked at the moon, and then to put a Richy photograph up on the bulletin board showing how wonderful it all really was. That kind of perfectionism, I think, is probably a hindrance to a person who really wants to go into laboratory science. I think if I'd been intended to be a really good laboratory scientist, I'd probably have build some kind of crappy old telescope out of some used lenses or something, and gotten some kind of extra pleasure out of it.

You remember my remarks about building a better roller skate scooter than the average kid, but taking a great deal longer time to do it and having to look in a lot of books first. I don't believe that the Ingall's books from Scientific American on amateur telescope-making had been written yet. I have a feeling that they came along a few years later. We're still talking now about 1928, '29, early 1930. At any rate, I'm pretty sure that I didn't read them in those days. That would have enthralled me tremendously.

When I got to high school and read amateur telescope making, I was just engrossed. I read that first volume of what is now a three or four volume set, over and over again until

I could have almost made a telescope with my eyes closed. But I never made one. I just read about how interesting it would be.

The medium-sized operation that I would have been interested in, like grinding, maybe a twelve inch mirror, and building maybe a small grinding machine to do some of the work, rather than just doing it by walking around a tube of concrete with a six inch glass disc glued on the top, was beyond my financial capabilities or my workshop capabilities. And the very minimum sort of thing that I undoubtedly could have done and afforded, or my parents could have afforded, didn't attract me that much. So I didn't do it at all.

And when I got to be a professional astronomer and began to use really important machines, you know, I didn't have that sense of awe that one might have had if you'd started out by building something the size of a thumb yourself, and then finally graduated to, you know, a 40 inch telescope. So that was an interesting view of a rather constricted personality, I think.

I had a little extra view of the world, I think, in these years, due to the fact that, as I mentioned, my mother continued to correspond with many friends and family connections. And these had, in the course of the years, been pretty widely disbursed over the world. One of my father's sisters had married a Frenchman and had gone out to Japan; and went through the earthquake in Yokahama in 1924. And came back through Chatham, for instance, and brought me a typical child's silk kimono, you know, and all that sort of thing. Another one of father's brothers had gone down to South Africa. Another one had gone out to Australia. So letters with rather intriguing stamps on them seemed to come in to the house quite frequently, but the contents weren't really all that stimulating, you know.

MERTZ:

Did you collect stamps?

GROSCH:

I did for a little while, but again I think I was interested in doing it on a more professional basis than I could afford. My folks didn't run to complicated stamp albums and so forth. And after I'd gotten a couple of these packages of assorted stamps sort of things, and found how disappointing they were, I gave up on them. By the same token, I never really got around to collecting coins and things of this sort.

As I've traveled around the world in the last few years, I've normally kept homely souvenirs of my trips, like coins from unusual countries and a few postage stamps and stuff. But they aren't a collection in that sense of the word. They are simply souvenirs of a trip, put away in a box and forgotten until I have to sort the box for something else. But I'm not a collector in that sense. Here at the Bureau of Standards, for instance, one of my preceptors in the optical field in later life, Dr. William Meagers, was a great collector.

And he had a whole house full of collections, and all his kids and all his relatives and everyone he knew had collections. His pleasure in collecting spread out over his entire set of contacts. Well, I was not that sort of person. And I had never really had contact with that sort of person until, as a matter of fact, I met Meagers. So I never really got around to…

MERTZ:

That might have an influence because later on you started to collect…

GROSCH:

Yes, I think this is so. I think I've always been attracted to the written word. But I've always been attracted to the content of the written word as distinguished from its outside covers. I've never been, for instance, impressed by first editions. Well, I've been (I guess I should admit) impressed by fine bindings and stuff. I'd like very much to have a classic book bound in a very, very beautiful modern leather binding. A one of a kind binding or something. But I have no interest in having an ordinary, you know, trade first edition of a book, because the content is the same and the outside isn't unusually attractive.

So I just seemed to pass over that kind of taxonomic interest that leads persons into botany and entomology and things like that. People who collect a hundred-thousand almost indistinguishable beetles for instance, impressed me as being very interesting specialists. But it's not a desire I've ever had in my own lifetime.

MERTZ:

In mathematical puzzles and riddles and things?

GROSCH:

Yes, I've always been interested in mathematical puzzles and always been quite good at that. But riddles, not so much, I think. Even now when I open "Electronics News" I almost always try to solve one of the little puzzles that one of the commercial outfits has in the inside cover, for instance. And I do about half of them. I don't spend much time on it, because I've got more important things to do. But I usually run them out for a few minutes to see if I can do it.

MERTZ:

How about crossword puzzles?

GROSCH:

For a while I got to be pretty good. I would say this was probably in my 20's, college and post-college. I got to be pretty good up to and including diagram puzzles. But this was more because I liked words, and the elegance of words than I liked the puzzle aspects of it so much. However, I might mention that when I was at the Watson Lab in the late '40's, my wife and I used to spend a lot of time on contests. There was a time at which there were some fairly complex technical contests running with rather large prizes, run by a Veterans Organization, I believe. I think the same one that hands out the little miniature license plates key chains, I believe.

MERTZ:

The DAV?

GROSCH:

DAV it is. Good for you. Disabled American Veterans. I think it was then headquartered in Cincinnati or something. And they ran a series of contests in the late '40's that revolved around the permuting the letters of the names of objects whose pictures were given in the puzzle. And Dorothy and I were quite good at identifying the pictures and so forth. And then with punch card equipment, were very good indeed at permuting the letters. And we got up into the fairly high stages of this puzzle. There were, of course, supplementary puzzles and supplements to the supplements. And we got gairly far along with that, until people who were really professional puzzle solvers that really had, you know, techniques worked out for identifying rather peculiar non-descript objects and so forth, which we weren't able to conquer, passed us by. But, I guess we got down to the point where we were in about the first five hundred out of several million entries that they had. But I think there that that was a mixture of two things. It was a mixture of a desire to win some very substantial money, and to exploit a tool that I had access to and that the average person didn't have access to. It wasn't so much that I wanted to solve the puzzle for its own sake in the sense that a cryptographer or a real puzzle enthusiast does. And I've always been interested in patterns and in that kind of application of the mathematical and puzzle solving skills.

Years later when I was selecting what we now call programmers for some of the first machines, I used to ask them, I used to make a three-part test. I used to, first of all, ask them if they played any games of complete information or solved puzzles or anything. And I used to mention diagram less cross-word puzzles, chess, good games of bridge and that sort of thing, as examples. Then I used to ask them if they read science fiction. And then I used to take them into a machine room and show them a real-live multi-million dollar computer; which most of them had never seen before, and see if they didn't turn green. And if they passed those three tests, I'd hire them. And I had some very, very successful programmers.

MERTZ:

When was this?

GROSCH:

Oh, that would be '53, '52 and '53. Among the people that passed that test and got hired were, oh, John Shell, who is a fairly important executive in GE at the present time. And to a lesser extent, Dan McCrackin, who is one of the very well-known names in the trade, and one of the most prolific writers of programming books and so forth. Although Dan was working on punch card equipment out at Handford at the time and had a pretty much guaranteed ability by the time I got my hands on him.

But I did hire an awful lot of juniors that went through that route. Some of whom are now fairly senior in GE and in other parts of the establishment. And I had practically no failures. And meanwhile, the people who were designing and applying more sophisticated tests, you know, actual objective written tests and so forth, were having a fairly high level of failures. So that business about puzzles and so on, and pattern-type games, games of complete information, as I call it, is a pretty important test of programming skill.

OK, let's go back to Windsor. I'm sorry, to Toledo, we've diverged a little bit. I've mentioned all this reading and I've mentioned the certain amount of working with my hands and wood-working and drawing pictures of ocean liners and all that sort of thing. One other thing that came up in this period that's been important to me for the rest of my life was that I began to read science fiction. The first--

MERTZ:

This was in Toledo?

GROSCH:

This was in Toledo. The first American --really the first organized magazine in the field --was "Amazing Stories," which an old man named Hugo Grinsback began publishing in 1926. And I began noticing this on drug store news stands in Toledo in 1928. And I finally persuaded my father to invest 25 cents in one of these; and, you know, I didn't have an allowance or that sort of thing myself. And two bits looked like a lot of money for my dad to spend for a crazy cult magazine with a weird cover. I remember the cover was something about the moons of Jupiter. And this would have been about, roughly, September, 1928 issue. And I kept that issue for many years and all the succeeding issues. So I had, you know, shelves full of "Amazing Stories." Never missed an issue thereafter. Never was, I think, for a very, very short time, was I ever a subscriber. Somehow the idea of subscribing didn't seem to appeal to me as a young boy. Maybe because it wasn't pushed in those days as it is today. Maybe because it required a chunk of money at one time instead of two bits here and two bits next month. About two years

later "Astounding Stories" began to be published. And I bought, I think, the second or third issue of that. I guess I missed the first one or two.

Then later on I attempted to get back numbers, but that was very hard to do. When I was in college, I managed to get a few back numbers in the '26's and '27's. And they were quarterly issues, and the certain apparatus of extra copies available, had I tried to get as much of those as I could. At this point I began to evince, what you might call a completist tendency. I've always wanted to have all of the issues of a journal, for instance.

Right now, I get "Automobile Quarterly," which is a very handsome hard-cover book on antique and classic automobiles. Well I started this in the year '6, and I've been subscribing ever since. And I bought all the back issues, and now, I have a whole shelf full of them. I think that was the beginning of my interest in completism.

Now, I think, as I remember it, that at that time I had only read what you might call boys science fiction. That includes, of course, Jules Verne in the United States. Jules Verne may be regarded as a somewhat more dignified author in Europe, but in the U.S. it was "Twenty-Thousand Leagues Under the Sea" and "Mysterious Island" and so forth.

And, you know, in the kind of libraries that I had access to, you couldn't just fill out a card and get "Journey to the Center of the Earth." It was an enormous thrill to find it on the shelf, you know. You looked in the catalogue and you found that there was such a book maybe. But somehow the process of a 10-year-old not only using a catalogue, but extracting the actual book from a librarian, I hadn't really mastered that yet. There wasn't really that kind of a librarian in this basement library at the Alexander Hamilton anyhow. You sort of went to the shelf and found something interesting, and you took it up to the desk and some kind of an assistant checked it out. But they weren't much good at showing you catalogues, and they didn't have files and clippings or anything like that. After all it was a maximum eighth grade school. It wasn't a high school. There weren't research projects assigned and so forth.

I guess the major thing that I read before the Amazing Stories kind of science fiction would not be so much Jules Verne as the fantasy children's books. I was a great fan of the Oz books. And to this day at home, I have six or eight of the larger number of Oz books that I owned as a child; including the first one my parents gave me in 1926, I think it was. And I tried to read all the Dr. Doolittle books, although I used to get them from the library. And, all in all, that kind of fantasy appealed to me a great deal. So I was not only reading what you might call the classic myths of many countries, but the modern fairy stories of Oz and Doolittle and so forth. I remember for instance, that my favorite Dr. Doolittle book was not the earlier ones, but the one in which he flew to the moon. I forget the full details. So there's a tie there to science fiction which didn't develop until later.

So we've got the beginnings of a little bit of travel, in the sense that my dad had gotten a car; beginning of a life-long readership in science fiction; and the science club; and the

Benjamin Franklin play, and so forth. You begin to see a good deal of the present man in the ten or eleven year old boy that we're talking about.

Now one other influence came along there, and it's an influence that I shared with, of course, everyone else in the world, and that was the depression began. Black Friday was in October of '29, and by 1930 my dad's company in Toledo, I can't remember it's name at the moment, but my dad's woodworking company in Toledo was beginning to cut, severely cut, its employment. I guess people in Toledo just weren't building any houses or certainly weren't doing fine wood work. My dad's skills were circular staircases, paneling for judges chambers, insides of fancy churches and, of course, lots of millionaires' houses. But there began to be somewhat of a shortage of millionaires around this time, at least in the Toledo area. So I'm not quite sure whether dad was actually laid off, of whether he saw it coming. But in any event, he got in touch with a firm that he had worked for in Detroit, James A. Moynes. And I remember that Mr. Moynes himself and his older son came down to see dad. And I remember some of the conversations, and being chased out of the living room while it was going on. And, in the end, dad agreed to go back to work for them in Detroit. And again, in typical father fashion, he disappeared for weeks at a time while he worked for them in Detroit during the end of my 8th grade year.

And then after school was over we moved up to Detroit so that this would no longer be necessary. I think we were probably moved by the Moynes Company, which was fairly early example of the employee/employer relationship which is so common nowadays. It wasn't common in the woodworking business, although I'm sure IBM was already moving its salesmen around at the expense of the company. So dad was moved up to Royal Oak, and we lived in the first of two houses that we had in Royal Oak, Michigan. This one, rather remote from the center of town, on Altadina I believe, that was the name of the street, and it was about a half-a-mile walk to the high school. Now this was a useful time to move, of course, because there is inevitably in any school system, a gap between junior high school and high school. And I went to a 4-year high school, 9th, 10th, 11th and 12th grades in Royal Oak, called the senior high school. And I was able to attend all 4 years in the one building and with the same set of teachers and so forth.

MERTZ:

Was this the one senior high school in Royal Oak?

GROSCH:

That was the only senior high school in Royal Oak at that time. They did have a junior high school, which was as I remember, 7th and 8th grades only, in a somewhat smaller building. And I would have attended that if I had lived there, but of course, I was in Toledo at that time. So they were on the separate building thing, that I don't remember as being the case in Toledo. I remember that there was some kind of graduation ceremony for the 8th grade in Toledo. And I still have my graduation picture from it, but I don't

believe there was a cap and gown thing, I seem to remember that it was just good clothes. And as I say, I still have that picture, and I am indeed one of the smallest boys in the thing; sitting up front in the position of honor, and also so as not to be masked by the larger kids. I don't seem to have very much interest in girls up to that time; but remembers we're only talking about my being at the end of my 11th year when I leave -- 11 and ¾, I believe, so one would not be too surprised if I wasn't too deeply involved yet.

Now in Royal Oak I began to indulge in a different kind of recreation which ties closer to the Benjamin Franklin thing. That is, I began to be quite active in debating --high school debating. And I seem to remember not working in it the first year. I have a feeling that it was something you couldn't do as a freshman. But I was a member of the high school team for three years, my last three years of the four, and was captain my senior year. And we were reasonably successful. I thought of myself, of course, as the world's greatest debater, which I certainly was not. But I was the best in the school, and reasonably good, I think, in the competitions between the high schools around the state. We never did get very far in the State Competitions, which ultimately resulted in a State Champion being named, but we always did rather well regionally. And this, of course, is one of the ways in which I developed my ability to speak and to speak extemporaneously, which I'm still known for. I also had to learn to do the kind of library research on things that I wasn't interested in, that one has to do when one goes to college. So that I was able to do a great deal better in college than the average student, because I had the habit of library research, the use of the catalogue, the use of the periodical indices and so forth, drummed into me very thoroughly in my early years in high school.

MERTZ:

Which courses were those that you --?

GROSCH:

I took an academic, a reasonably ordinary academic course. I still have all my grade cards and stuff. I took, for instance, all three years of science that were permitted. We did not have a general science course for freshmen, but I took biology, chemistry, and physics in the last three years. I took four years of English --always with very good grades. I tried to take a year of journalism and I believed I dropped out of that. I think I was carrying too much. I always took extra courses, so that I was usually carrying five courses when only four were required.

I always tried to dodge gym. I was small and I was less athletic then than I am now, or than I had been as a younger kid, and I was contemptuous of it as well. So I was usually tended to. I didn't like the locker room atmosphere; it's a rather specialized atmosphere, I don't think much of it to this day, as a matter of fact. A bunch of guys running around naked and the usual coarse jokes and so forth. And I think I had begun to develop somewhat more of a taste for privacy. Remember as an only child, always with a

bedroom of my own, why you know, well it's a fairly unfamiliar milieu to me. So I kept dodging gym in high school until finally, in order to graduate at all, I had to take some, what would normally have been sophomore gym classes, as a senior. And I remember being assistant manager of the baseball team or something instead, and as a result, it was all working mostly in the coach's office rather than actually doing physical jerks out on the floor. But, with the exception of physical education, I got almost entirely straight A's with a few scattered B's here and there.

I had four years of math, and I remember one of my most eye-opening experiences was that when I took trigonometry in my senior year. I was very well aware of the fact that there was a whole world of advanced mathematics out beyond, and I knew that there was a thing called calculus. And I borrowed what, actually turned out later to Granvile, Smith and Longley's Calculus Text from the local library which I'll come to in a minute.

MERTZ:

Were you wearing glasses at this time?

GROSCH:

Yes. I wore glasses continuously from the age of, I'd say, seven.

MERTZ:

From Windsor then?

GROSCH:

From Windsor, yep. I don't think I wore them in Chatham, but I wore them in Windsor. The rest of my senses seemed to be alright. I never seem to have any trouble with hearing or anything like that. I was always accused of having adenoids and tonsil troubles. I guess I had my adenoids out at one time, but I kept my tonsils. In fact, IBM tried to have me remove them some years later. And now all that's pretty much died down. I think it was pretty much a mixture of emotional, psychosomatic kind of things, plus a regular maturing process; so that my bronchial and asthmatic and head colds sort of things have diminished greatly in the last few years. My general health always has been pretty good. I think it was masked by the fact that I was always small and relatively puny compared to the other kids in my classes, until you got to college where you mix up with people of all ages, of course, and athletic prowess except in the professional, semi-professional. Sports disappear --you didn't have to take physical jerks everyday, sort of thing.

MERTZ:

Did you continue in the science club in high school?

GROSCH:

There wasn't really the opportunity for it. But I did indeed parallel it with a sort of an informal assistantship to the chemistry teacher. I didn't care much for biology --it wasn't all that exciting. And there were dissection sort of things in which you take a frog apart, and before that a crayfish apart, and so forth. And I didn't seem to be very good at this and didn't particularly enjoy it. You know I wasn't sickened by it or anything, but I just didn't happen to care much for it. And I remember being shocked and very much opposed at the dissection of a rabbit or something, which the teacher did as a sort of climax to the zoology part of the course. My view was that that was a very nice rabbit and there was no need to kill it when you could have read all about it in a book, and the pictures would have been a lot clearer than the reality as well. So I didn't get too much fun out of that.

But I had a chemistry teacher named Erickson who was also the track coach. A very handsome man with considerable athletic skills. He'd been a good pole vaulter in his own college years. Not, I think, too much taken up with chemistry. But the very fact that he was a man and reasonable authoritative and ran a rather good course, somewhat masked the fact that I don't think he was all that interested in chemistry. That was his only subject. It was a large high school and he taught only chemistry. And physics teachers taught only physics.

MERTZ:

But he also had track?

GROSCH:

But he also had track. Well, the result was that he had somewhat of a shortage of time, especially in the spring after hours to keep the lab up. So I became sort of an unofficial unpaid lab assistant. I was heads and shoulders ahead of anyone else in class in terms of the theoretical work, and pretty good at the laboratory work, although not all that wonderful. And I loved the idea of, you know, being in charge of the place and going around and cleaning up at night and making sure all the chemicals were alphabetically in order on the shelves and all the stoppers were in and so forth.

And increasingly, I wanted very badly to do some, what we would now think of as qualitative and even elementary quantitative analysis. I'd read schemata on how to do this sort of thing. And, of course, there was nothing about it in the high school chemistry book. And, of course, I soon ran up against the fact that it was impossible to do this without a precision balance. We just had the cheap old balances that you used to make up mixtures with, you know, and so forth. One on the end of each lab bench. And there was no possibility during the depression of the high school buying a precision balance. But I'd read all about precision balances and finally decided that there were some things that you could do with liquids. And we did, of course, have burettes and things of this sort.

And I remember that there was a very real problem because to start out, you had to have a normal solution of something. And then you could triturate and get something else, and make sure that was normal and so on, for a long chain of liquid measurement kind of operations. And the only way I could figure on doing this, was that I finally set up a still and made constant boiling hydrochloric acid which was then supposed to be 1.32 normality or something like that, and then you could dilute that to one and so forth.

So you see, I had a reasonably scientific attitude about it for a junior in high school. You see, I would have been 14 then, which is pretty young, but I acted like a 17 year old then, so it didn't make much difference.

I was also anxious to have a home chemistry laboratory. It isn't clear to me why I couldn't have just stayed after school and done all this at school. But, I think every boy, every reasonably healthy boy, has a feeling that he wants to make gun powder and that sort of thing, and the teacher won't let him do that sort of thing. And there's also a question of having something yourself, as distinguished from sharing a common thing. So I used to steal a great deal of equipment and chemicals from the place. And I remember it's very difficult, for instance, to walk home with a burette stuck down you leg, but I managed to accomplish it. I guess this is probably my only period of crime in my whole life. I'm reasonably hipped on morality. But I must admit, I sure stole the chemistry lab blind, and ended up by having quite a little elaborate chemistry lab at home. My parents were extremely upset about this whole thing, but not so upset that they made me take it back, which I think is an interesting point. I remember my dad cooperated to the extent that he set me up with a Bunsen burner, which was not a minor item in depression Royal Oak. 'Cause it meant that we had to cut a gas pipe and put in a specially procured spigot that would take a rubber tube, you know, and so on, because I simply didn't feel that an alcohol lamp was a decent way to run a chemistry lab. And of course, I had a Bunsen burner at the high school.

So that was the equivalent of a science club for me. In fact, I remember discussing with Erickson whether we should have a science club and telling him how much fun it had been in junior high school. And him saying, "Well, you know we've got enough clubs around here as it is, and besides you're active in debating all the time and I don't see how you'd have time to run a science club too."

Physics I didn't enjoy so much. I liked the subject matter better. And I think this was because I was still interested in astronomy, still reading a great deal about it. And, of course, physics is a lot closer to astronomy than chemistry is. The fact remains, however, that the professor, the teacher, Mr. Ayer wasn't all that pleasant a person, and certainly wasn't interested in me the way Erickson had been. So what I really did my senior year was I took physics, got A's in it, coached some other people along a little bit in it, and usually led some of the experiments and so forth. But I really spent more of my time in the chemistry lab as a sort of a second year acting assistant, an unpaid assistant. Erickson and I continued to be friends right up to the time I graduated.

I mentioned that I took extra courses. I was usually taking 5, sometimes 6 courses instead of the regular 4. And one of my math teachers, for instance, encouraged me to take the first semester of junior algebra, which is essentially a review of freshman algebra; by taking the book home, by getting me an advance copy of the book. And I took it home during the summer and worked every problem in the book--in the first half of the book--I should say during the summer; handed them in, and she gave me an A grade in the course without my ever having taken it. Revealing a flexibility in the system that I think wouldn't be so common today. That's not too bad for 1932 or '33. Miss Gibson that was I believe, and she'd been my geometry teacher the year before. Well, that gave me a semester of freedom, and I took journalism or something during that semester--did not do well with it.

MERTZ:

The mathematics curriculum consisted of what - 4 years?

GROSCH:

Eight semesters, yeah, 4 years. Now I started to tell you a story about the calculus thing. I said that I found Granvile, Smith and Longley in the town library. I think it is indicative of typical high schools in those days, that there wasn't a calculus book in the high school library --and God forbid --it wasn't in the curriculum. But I did find a calculus book downtown and I took it out, brought it to my trigonometry teacher. This would be in 1934, now two years after Miss Gibson, and asked her if she could help me past the first couple of chapters. Because although I could see very easily; I could see that it was a very simple and straight forward discipline, I couldn't get past what we would now see as the fundamental concept of the approach to the limit. Now I got this in about one day when it was taught to me as a freshman in college. But I just couldn't seem to do it by reading Granvile, Smith and Longley on my own. And poor Miss Kirk had to tell me that she'd never had calculus, that she was just teaching trig out of the book. She never had had any more advanced math than that and couldn't help me a bit.

MERTZ:

Did that school have any solid geometry?

GROSCH:

Yes. 7th semester, 7th semester was solid geometry. I did that fairly well. But these were so easy for --these math courses were so easy for me --that I tended to do mathematical exercises during class rather than listen to the instructor. For instance, I remember that I had found a book, somehow or other I had bought it. I don't understand how, because I was not yet in the habit of buying lots of books the way I am now. But I had somehow or other found a book which had seven place logarithms for prime numbers, and the factors of the numbers for all the non-prime numbers. And I was sitting there, you know, during

most of the solid geometry and trigonometry class reconstructing the seven place logarithms of the non-prime numbers by adding up the logarithms of the primes in the proper business. And ended up by constructing a fairly sizable handmade seven place log table. I think that probably I was aware of the fact that I couldn't get one in the town library, and wasn't sufficiently interested (I think I know what the answer to that is) I wanted to have one of my own. So to get a seven place log table out of the public library and bring it home would have been perfectly practical, but in two weeks I had to take it back, so what good would that do. So I constructed one of my own which I never used.

MERTZ:

Did you get into Detroit fairly often?

GROSCH:

Yes. The resources that I used for libraries were as follows: First of all there was a quite decent high school library, but as I say, it was circumscribed to the course sort of thing. After you got to the end of trigonometry, there weren't any more math books. For instance, they had some popular books, you know, "Mathematics Recreations and Essays" by Ball, and that sort of thing. But they wouldn't have text books or formal materials beyond that.

Well, now, downtown there was a reasonably good Royal Oak library. Unfortunately, being depression, it was rather limited in its acquisitions. But it had had quite a few good ones before.

And I got by some shenanigans, I think, (it must have been fairly complicated) I managed to get an adult card, which meant that I could take out any book in the library instead of just being stuck in the children's, which was very dull indeed by my standards. But I was still sufficiently childish that I found, for instance, several Oz books that I hadn't read before and read them with great pleasure even though I was reading, you know, Amazing Stories and H. G. Wells and so forth from the adult collection at the same time. So I wasn't all that overgrown and, as I say, I think to this day I think I'd still get a kick out of reading an old Oz book, although I'd go through it awfully fast. Well, for instance, I remember reading a copy, or looking through a copy of Gray's Anatomy for instance, to get my first idea of what a girl would look like with her clothes off, rather than going to a burlesque show or something of that sort. It was a great deal more practical because, you know, Gray's Anatomy was a good deal more complete than the Detroit burlesque shows were in the '30's. I've always had that tendency, I think, to go to a library, or to go to a collection of information, rather than to perform the original experiments so to speak.

MERTZ:

In the biology class --that wasn't covered?

GROSCH:

No, no. There were a couple of the boys only and girls only assemblies in which horrible slides and motion pictures were shown to show you what would happen if you didn't wipe off the toilet seat, but very, very dull stuff indeed. And I was always well ahead of it so there was never any information in it for me, I think.

MERTZ:

Did you continue to go to the movies?

GROSCH:

No, my parents had quit the movie business sometime between moving from Toledo. We used to go twice a week in Toledo.

MERTZ:

It was in Toledo then?

GROSCH:

Yes, my parents and I together used to go every Tuesday and Thursday night. Essentially independent of what was going on, good, bad or indifferent.

But when we got to Detroit, somehow they didn't do that in Royal Oak. And I think that the reason was that dad was working in downtown Detroit, ten miles away. And we'd do again what we used to do in Windsor, which was that we'd go down and meet him in downtown Detroit (the other direction, he was working three miles this side of town), and we were living ten miles beyond that so to speak. And we'd meet him in downtown Detroit, and we'd go to one of the fancier theaters on a big-treat basis and see a vaudeville show, or see an important orchestra playing or something like that. And increasingly as time wore on, I'd go shopping with mother at the big department stores there --J.L. Hudson Company --one of the great department stores of the United States, as sort of a form of amusement. And dad would just not do it at all, and maybe mother and I would eat in a cheap restaurant and maybe go to a show together and then come home, sort of leaving him out of it. He'd work late or something like that. I think looking back on it, that this was partly a shortage of money. By this time the income was really dropping.

MERTZ:

Excuse me, you mentioned that your parents were --were they both Anglican?

GROSCH:

Yes, yes both Church of England.

MERTZ:

Did they attend regularly?

GROSCH:

I made them quit essentially. When I was nine years old I decided that I was an atheist. So I told them, "Well you shouldn't go to church anymore, it's silly." Well, apparently they'd been going to church primarily for my benefit. So after I refused to go, they quit going too.

MERTZ:

Did you go to Sunday School.

GROSCH:

No, I never went to Sunday School. Mother's Bible story reading and so forth was intended to substitute for it when I was very young. Remember this business of moving from town to town, so that she never had a regular church like she had had in London. And then later on when they thought that I should go and she had quit reading me Bible stories, I wouldn't go, because—

MERTZ:

Now this was when you were in Windsor?

GROSCH:

Yeah, yeah, that would be when I was in Windsor. I was nine years old.

MERTZ:

And they offered no opposition in this?

GROSCH:

Nope, I think their view was that I knew better than they did. Mother later in life developed a reasonable amount of religiosity again, and started going a few times a year, I think, in Royal Oak. But I think dad used to drive her there and leave her and pick her up again at the end of the service. And I always felt that it was essentially an intimations of mortality sort of thing. She began to realize that she was going to die, and wanted to make sure she went to Heaven sort of thing. And she had enough of the Church of

England ingrained into her that she really did believe that there was a Heaven, and that she was running a little behind on her admission ticket. But my dad didn't, I think, ever put much credence in that. He'd gone to church because he felt that the two of them ought to take me. And after I started refusing to go at the age of nine, why he gave up too, and I think, never went again.

MERTZ:

So then Sunday, as a part of the daily life--

GROSCH:

That was when we took the Sunday drive.

MERTZ:

Was not going to church in the morning, but the Sunday drive was part of it?

GROSCH:

But the Sunday drive was a substitute, yes.

MERTZ:

In Royal Oak as well as in Toledo?

GROSCH:

In Toledo. Royal Oak it was, I think, was interfered with primarily by lack of money.

MERTZ:

Did you have a car throughout the depression days?

GROSCH:

Yes, I think dad always had to have a car because there was really no convenient way of getting to downtown Detroit from Royal Oak except by driving.

MERTZ:

He had this Essex?

GROSCH:

I can't remember how long we kept the Essex. I think we kept it 'til 1935 --no, I think it was longer than that --must have kept it until 1936. And then at the beginning of 1937 model year, which would be the fall of 1936, dad bought a Plymouth, I remember which was only the second one. And during those intervening years, I used to help him make the repairs. We'd go so far as to do not only the usual lubricating and that sort of thing, but actually I remember once we changed piston rings in the Essex and so forth. And I helped him and got to be reasonably familiar with the innards of an automobile engine that way, but not in a sense of ever becoming a real hot-rodder kind of an enthusiast.

MERTZ:

But as a form of pleasure that tended to drop off, right?

GROSCH:

I think this is right. I think that dad did it the first couple of times because it was fun, and then after that because he couldn't afford to have it done in the garage as much as anything.

At the very bottom of the depression, which I would think for our family was probably in 1933, he was only taking home $15 or $20 a week. And all of the men working at benches (we used to say in his factory) were laid off. They'd occasionally call one of them back to do some particular job. But primarily, if somebody came in and wanted a screened door made, or something low-level like that; compared to the beautiful work that they had turned out in the past, you know, dad would take his tools down from the tool chest and would make it himself. And then the last accountant would write out the bill. And then the man would go away with his screened door.

MERTZ:

How did that affect your life personally?

GROSCH:

I don't think it affected it too much until I began to be a little more social in high school. I think as long as I was concerned with books and that sort of thing, I didn't --I somehow had already discounted the possibility of my folks being travelers or anything like that. I didn't travel yet myself and I simply had gotten accustomed to the fact that you stayed home, so to speak. You know the thought of flying to California for the weekend had just not dawned on very many people in those days. And so that didn't bother me so much. I think that there was always that feeling that, you know, you couldn't afford much in the way of Christmas presents. And you couldn't afford a lot of clothes, but then I was not a kid that, as I say, until I started dating and so forth, where I cared much about that sort of thing. And mother always made sure that I was well-dressed, and had nice clothes so that I never really felt poor, I think.

MERTZ:

Did you ever have any desire for or need for, or did your parents have any specific attitude toward your having an outside job or part-time…

GROSCH:

I don't think we ever really talked much about it. I think I was always too busy to do it, so to speak. I always had too many books to read; too many things to do of an intellectual sort; too many debates to attend; too many evenings to spend --many late afternoons to spend in the chemistry lab to really have any time left to work. Now, of course, the average family would look at it the other way. They'd say, "Well you have to work, you know, if you have any time left over, then you can do these other things," but my folks weren't that way.

MERTZ:

Now this is during the normal school year, how about in the summertime, in Royal Oak?

GROSCH:

Summertime is when I would ride back and forth on the distant streetcars (not long distance, I mean that they were the Detroit Public Street System, but I would pick them up at something like a 12 mile road so that was a long way out of Detroit, the city limits were 8 miles). And I'd ride down to the Detroit Public Library and I spent several hours exchanging the large pile of books that I took down, for a large pile of books that I took home. And I'd do that maybe two or three times a week. And quite frequently, I'd do it at such a time that I could go back to my dad's place on Milwaukee Avenue in midtown Detroit, and ride home with him. And this was done, at least partly, to save an extra dime carfare. And I'd walk all the way from the library to his plant with this huge pile of books. Well, it doesn't sound like much of a way to spend summer, and in fact, well, I played ball and did other things too, you understand. But the fact remains, however, that I was living primarily an intellectual life, and a rather solitary one. I read everything.

MERTZ:

Did you do much swimming or anything else?

GROSCH:

No, I never learned to swim. The high school pool where I would normally have been forced to learn, was drained during the depression for lack of money. So the obvious opportunity disappeared. We didn't go to the beach. There wasn't much of a beach to go

to in Detroit, because the Detroit river was polluted even then. And we couldn't afford to take long trips to nicer beaches and stuff, so I just never learned to swim.

MERTZ:

And you parents didn't have any particular interest in…

GROSCH:

No interest in athletics whatsoever. I don't think my dad or my mother had ever spent one minute in sport in their entire lives after the age of 15 or something. The thought of my dad playing golf or tennis or even --He used to bowl with me when I was in college. I sort of taught him bowling, and he bowled for some years in little informal groups. And he sort of gave it up when my impetus disappeared. It was something that he could do with me, rather than something he enjoyed for its own sake. And bowling is sort of a peculiar sport, in that it's not an overall healthy thing. It's a way to get together with people, buy beyond strengthening your right hand grip, it doesn't do much more.

MERTZ:

It's a little more vigorous than cricket.

GROSCH:

That's right. Dad had been an expert rifle shot as a boy. He'd belong to the Boy's Brigade, which was sort of a pre-boy scout thing back in London. And they used to be somewhat more militaristic than the Boy Scouts. And I do remember that somewhere around Toledo that he bought a little one short, single shot 22-caliber rifle, and taught me to shoot that in an amateurish fashion. But neither of us really pursued it. I think partly because, you know, in a built up community without a formal club membership or something, it's pretty hard to find a place where you can get a long enough distance to really take a good shot at something. It's not like living in Colorado or Wyoming or something.

MERTZ:

And bullets cost money.

GROSCH:

Yep, bullets cost money.

MERTZ:

[This ends the second side of the first tape.]