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Water Resources People and Issues

Theodore M. Schad

Interviewed by
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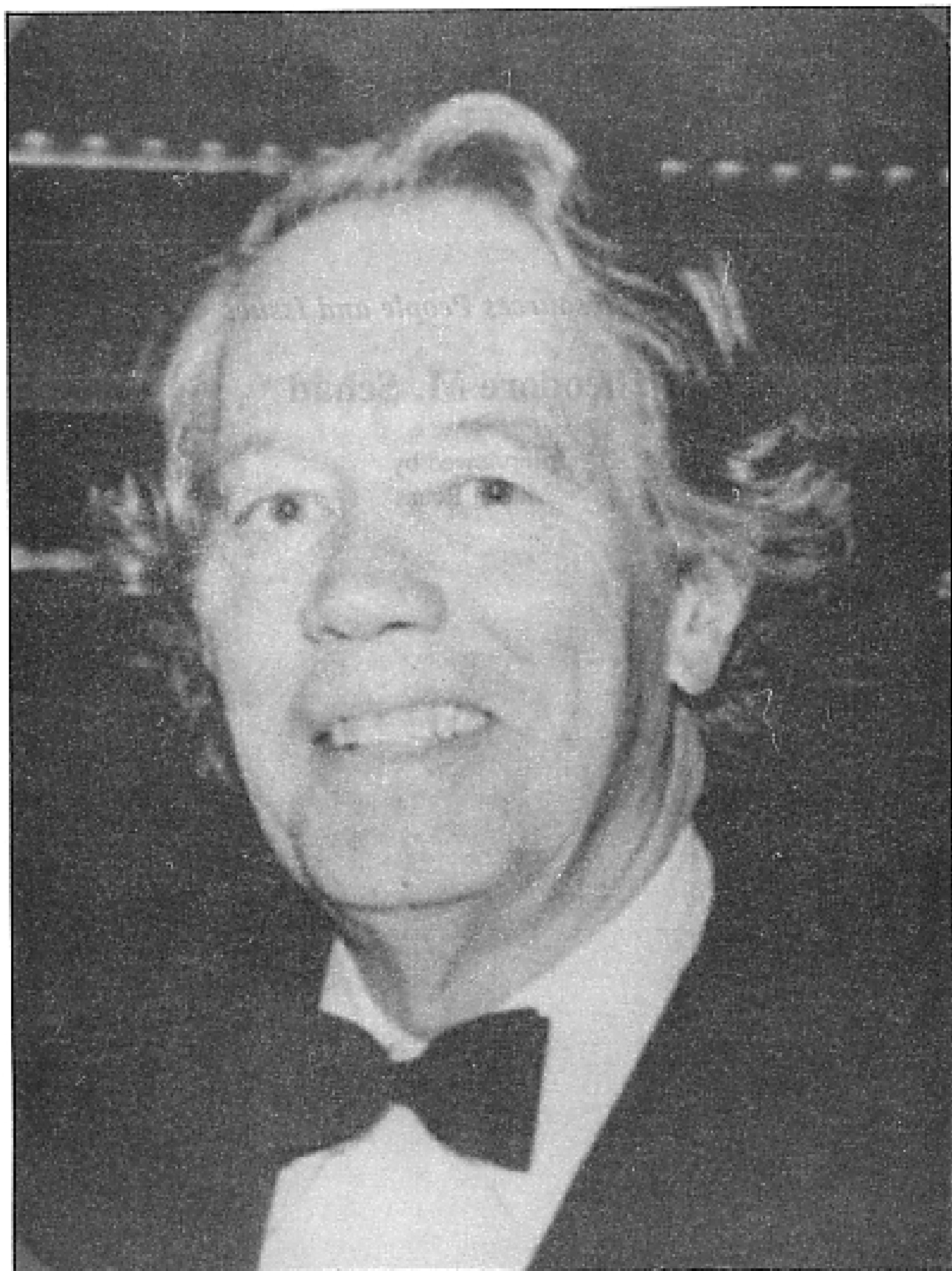

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Interview with
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Early Years

Q: Ted, let's begin by talking about your family and your upbringing, the schools you went to as a boy. Tell me about your parents, for one thing. What did your father do, where did your parents come from?

A: Well, I can do you one better than that. My grandfather was born in Hesse-Darmstadt in Germany in 1841. His grandfather had been a Hessian soldier in the service of King George III in the Revolutionary War. We don't know anything about his service, but I have been told that he came back to Germany full of stories about what a wonderful place America was, that it was a great place to live.

His grandson, my grandfather, Henry J. Schad-they pronounced it in Germany, although it is spelled S-c-h-a-d-was sent over, or was allowed to come over, to the United States when he was a teenager. His mother did not want him to be conscripted into the Hessian Army because this was before Bismarck and the Hessians were still putting out mercenaries anywhere in the world that would pay for them. So he came over as a teenager to avoid being conscripted in the Hessian Army.

That was in the 1850s, and before he got the chance to marry or do anything, he was drafted into the Union Army in what we, of course, call the Civil War and the Southerners would call the War of Northern Aggression. He lived in Baltimore. Baltimore really had Southern leanings and the first little skirmish, outside of Fort Sumter, was when the Massachusetts militia marched from one station to another in Baltimore and they were stoned by the populace.

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But he was drafted into the Union Army, and he served with great pride and has been quoted as saying he thought that to serve one's country in time of war was one of the finest things a person could do. He ended up as a master sergeant after the second re-enlistment. I've never had the time to check up and find out what battles he was in, but I have seen a little write-up about him in which he expressed his pride in his military service. Of course, a lot of what I know about him is what my father told me.

My grandfather was very proud of being an American. He married a German girl, a German woman, whose name was Emma Augusta Yeager, and she also had been born in Germany. I don't know much about her. They had a large family. They lived on Fremont Avenue in west Baltimore after the war, where he set up shop as a shoemaker.

My father was one of the latest of the family. There were seven children, two girls and five boys, and my father was number six of this lineup, born in 1876, and his name was William Henry. Interestingly enough, they didn't speak German at all. When my sister and I studied German in college, my father could not help a bit. He told us how his mother and father spoke German-that was their native tongue-but when the children would speak German his father, my grandfather, would say, "This is an American household. We speak English in this household." My grandfather was very, very patriotic-having been in the service in the war. Anyway, that was the beginning of my branch of the Schad family in America.

Some of the Schad children went to college, but my father wanted to get out on his own, and he did, at a very early age-his first job, he told me, was making wheels for wagons. I still have the spoke-shave that he used. He used to tell about how difficult it was to make these wooden wheels and then to heat up the steel rims and get them on it so they would fit tightly after they cooled without burning the wood.

And he was able to do everything with his hands. He did enlist-he was very proud of enlisting-in the Spanish-American War, and he used to tell me many times that it was the only war in which all the American troops were volunteers. No drafting. Because this was many years after the Civil War, Civil War history seemed very romantic-people talked about it, and particularly his father who was still living and thought that it was a great patriotic duty to serve one's country as a soldier. My father never got to Cuba. He got as far as

Tampa and he got the typhoid fever and it bothered his health for years afterwards.

He took a job as a motorman on an open-platform street car in Baltimore, but the cold weather almost killed him. After that he went into various businesses. Not having had the benefit of a college education, he took up what now seems to be a very unusual occupation for a man. He was a shirt ironer. This was in the day when men wore high collars, separate collars, and, of course, the shirts and collars were heavily starched and had to be ironed. He traveled up and down the East Coast. Anybody who was a good shirt ironer could get a job anywhere. He was working in laundries, and this is something that went out of style, I guess, in the first decade of the century. For a while, he operated his own laundry; he and one of his brothers operated a laundry in Washington.

He was living in Kingston, New York, when he and my mother courted. My mother was a Baltimorean-all of my family history is based in Baltimore except my father traveled around a lot. My mother was born in east Baltimore and lived there until she married. My father courted her from Kingston by postcard, and I still have somewhere in my archives upstairs the postcards that they wrote back and forth from Baltimore to Kingston, New York, where he was employed as a shirt ironer in the laundry.

They courted that way for a year or two. They had met while my mother was visiting a cousin who lived in Kingston. Eventually, he came down to Baltimore and married my mother, whose name was Emma Margaret Scheldt, also of German extraction. But the Scheldt side of the family came from north Germany.

Q: Was that S-c-h-e-l-d-t?

A: Yes, the same as the river which the Dutch call the Skelt, and you could say "S-c-h" could be pronounced in the same way, like "school." But it wasn't.

My grandmother was born in this country, but her parents were from Germany, from Schleswig-Holstein, and they actually spoke a different kind of German. The German was so different in the north and the south, but understandable.

Anyway, my mother and father were married on June 12, 1907, and lived in Kingston, New York, for a few years. My father was a pioneer in

photography. He took pictures up and down the Hudson River valley and in the Catskills around Kingston. This was in the first years when they started to have film on celluloid rather than glass, although he even had some pictures that were on glass. It was a hobby that he had in those early years and then he just stopped it, apparently, when he moved back to Baltimore because I don't have any pictures that he took after they came back to Baltimore, probably in about 1910, or possibly when my grandfather died in 1911.

And-I tend to be a little bit emotional in all this. I mean, you know, it—

Q: Sure.

A: But anyway-I'm probably telling you more than you want to hear, but you can cut it out later.

The laundry he ran was in Washington, but he was living in Baltimore-this would have been before World War I. I think World War I is what killed the high white collars. Now, Herbert Hoover, you remember, still wore them when he was President. You may not remember, but I remember the pictures of him with those high collars, and they were so tight that the necktie wouldn't even get up in them sometimes.

Shortly after the beginning of the First World War, about 1914, my father started to work for the British government in procurement of war materiel, and he worked for them all through the war and eventually got a citation from King George V. Somehow this British service seems to run in the family. I just realized that my great great grandfather served King George III as a Hessian mercenary in the revolution, three generations earlier. Somewhere we have this citation that my father got for having helped the British war effort. You remember, the United States didn't get in the war until much later.

Having served in the Spanish-American War, my father was free from World War I service. In the meantime, my brother had been born in 1908 and my sister in 1915. I was born August 25, 19 18. We were living at 601 North Calhoun Street, Baltimore, Maryland, at the time. After the war, my father went into various businesses, largely involved in buying and selling materials of all kinds.

They also took a step which had quite an influence on my life. They bought a farm out in Baltimore County about 20 miles northwest of Baltimore-actually, the farm overlapped across the northwest branch of the Patapsco Falls-that is what they call it-and over into Carroll County. So it was right on the county line there, near the little town of Reisterstown.

And they really thought they would go out there and make a living on a 169-acre farm. But the fallacy in that can be demonstrated by my mother's talking about how they had looked for farms up and down the countryside of Maryland, Anne Arundel County waterfront and everywhere, and she said, "When we drove over the top of the hill and we saw that farm spread out below us in the valley of the Patapsco Falls, we knew that was the place for us."

Well, the fact that it was such a lovely, idyllic setting, with wooded hills and rolling country made it not a very good farm. Terrible erosion-they didn't know about contour plowing in those days. Of course, my early recollections are of living on the farm, and I remember the way those fields would erode. They planted corn and wheat and had horses and cows and chickens-it was just going to be a general purpose farm.

My father built a tenant house and hired a man to run the farm. The man's name was Solly. I don't know where they got him, but he had grandiose ideas of riding around on a horse and telling the hired hands what to do. Of course, you don't do that on a 169-acre farm.

And the origin of the 1929 crash was in the agricultural depressions in the early years of the '20s. I don't know just which year they found out their dream of making a living on the farm wasn't going to work, but by 1923 my father had gone back to work in the city. He was commuting back and forth to Baltimore, driving a big Reo touring car.

Q: Photography, or—

A: No. He was working in real estate. I'm not sure when he started to work for Randall H. Hagner and Company, where he was involved largely in apartment house maintenance, but that was what his work was most of the time when I was growing up.

We didn't have a telephone on that farm and I'll never forget the time-this is one of my very early recollections-when Father didn't come home-we always called him "Father." None of this "Daddy" stuff or "Pop." It was "Father."

He didn't come home. We didn't know what had happened, and it was maybe two days before my mother got a letter from an aunt saying that he had appendicitis and was in the hospital and operated on and was all right. It was an emergency appendectomy, but we didn't have a telephone on the farm, so we didn't know what had happened. We didn't have a telephone until sometime later.

Anyway, in 1925 things got so bad that we had an auction of the farm equipment and moved into town so the commuting wouldn't be so hard. My father sold the farm to a family that wanted to move out there to give their children more space to grow up. The farm had been financed with a Federal Farm Loan Board mortgage, the nature of which was that my father was responsible for that mortgage no matter what, so when he sold it, taking back a second mortgage, he was still responsible. After selling the farm we moved into the town of Reisterstown to a house that my father rented at 360 Main Street. At that time, I was in the first grade. Later on, when I was in the second grade, we moved to a house on a one acre lot at 22 Woodley Avenue in Reisterstown. That's where we lived through the rest of my childhood, all the way through high school for me.

One of the things I haven't mentioned yet happened in 1920; I was stricken with polio which hit my right leg and damaged the muscles in the lower leg, particularly in the foot. I had to wear a brace on my lower leg until I was six years old. There are a lot of pictures of me with the brace and all, and I never looked very happy. I don't know whether I should say this or not, but my mother kept me with long curls until I was six years old. I had light blond hair and many years later she always said, "My, you wet your hair too much. It's getting dark."

And they always called me "Mac" because I had a cousin whose name was Theodore-Theodore G. Schad that they called "Teddy"-and my mother didn't want me to be called "Little Teddy" because the family already had Aunt Emma and Little Emma, and Uncle Harry and Little Harry, and my mother didn't like that. My middle name was Mac Neeve and so they called me Mac, and I went all the way through high school under the name of Mac and that's

how we got away from the pronunciation of Schad with a broad "A." You can't say "Mac Schad," with a broad "A." (Laughter)

And my father often said, "I don't care what they call me as long as they call me when it's time to eat." He was a little irreverent, I guess, on some things, but most of the time the other branches of the family pronounced the name Schad with a broad "A."

Well, anyway, at age six, the doctors decided that they could operate on my leg and do a muscle transplant which would help me to walk without a brace. A wonderful doctor, Dr. Howard Bennett, did the operation. It was done at Children's Hospital, which was on Green Spring Avenue, near Cold Spring Lane in north Baltimore.

So when I was six they cut off my curls and took me to the hospital and I had the first operation, which was a muscle transplant, just before entering school in the first grade. I didn't go to school much during the winter while we lived on the farm, but when we did go to school, I remember walking up the driveway to the road and riding to school in a Ford panel truck without any windows, with benches in the back which a gentleman named Mr. Fitz, pronounced "Fights" used to drive as a school bus. He would pick up about a dozen children who were crammed into this little Ford panel truck. After we moved into town in March 1925, I could start to go to school regularly, and I think out of the 180-day school term, I think I went to school 95 or so days and was absent the rest of the time.

But I had learned how to read-our house was full of books, and my sister read to me, and I almost progressed along with her. She was three years ahead of me, and so I could read, and I didn't have any trouble with school at any time because of that.

The people that bought the farm defaulted on the second mortgage; my father had to take the farm back, and we had that farm around our necks almost like a millstone all through the rest of the '20s and the '30s. My father was working in Baltimore, and we'd get various tenants on the farm. He sold the farm again to a gentleman who was going to raise beef cattle; the farm was perfectly suited to that. Again, he had to take a second mortgage. Nobody had money. This probably was around 1929 or 1930.

And when the second payment on the second mortgage came due-every six months there was a payment due-the man came in and said to my father, "Mr. Schad, I'm sorry, I can't make that payment now, but I've got a barrel of whiskey here. I'll give you that on account, and as soon as I sell a few head of cattle, I'll give you the rest of the money." I think the payment was $500 every six months.

Well, a little while later we heard that the still that he was operating in the barn had been blown, the explosion knocked the whole side out of the barn, and he disappeared and we never heard of him again. He apparently was running the cattle as a front for a still. This, you remember, was during Prohibition.

So we had the farm back and we'd plant beans one year and we'd plant peas the next year for the cannery. Some years they'd say, "Well, we can't take them. Just plow them up." Other years, we would pick the beans. That's about as hard work as I've ever done-stoop labor, picking beans for the cannery. We liked it when they planted peas because they were harvested mechanically, vines and all.

Anyway, the farm never really was profitable and finally, in 1940—this was after I had graduated from college and had gone out West-it was taken by the city of Baltimore as part of the Patapsco Reservoir area. The upper end of that reservoir floods into our farm and has drowned out some of my first recollections about water, which go back to playing in the stream, playing in Keyser Run before I was six years old.

Q: I wanted to ask you, as a matter of fact, if I could interrupt, whether you think your early experiences on the farm -which you obviously remember rather vividly-may have influenced your career and what you finally went into. **Do you** have any feelings about that?

A: Yes, I think it did in two ways. One was that my earliest recollections are playing in that stream and climbing up on a big rock. There was a big rock there that must have been all of six feet high, like a boulder, and it kind of sloped into the hillside, so you could walk around the back and get up on top of it. And I think this is my earliest recollection-being up on that rock, and my grandmother, who took care of me most of the time while my mother was off doing other things and running the farm, grabbed me so I wouldn't fall. I must have thought it was great fun to get up on that rock. So I did it again and

she brought me down again and smacked my hands and I think that's why I remember it.

It must have been the summer when I was either four or five years old. But that incident brought rocks and water together both of which have been a very significant part of my life from then on, although it took a little while before it all came together that way because I got off into other interests.

Q: Sure. You went to school, then, in—

A: Franklin High School in Reisterstown. I started there in the first grade and I went all the way through that school. When I started in the first grade, the whole class was all in one room. That year my brother was a senior in high school upstairs, my sister was in the fourth grade, and I was in the first grade. That was the one year the three of us were there in school together, the year of 1924-2s.

When I was in the sixth grade they built a new high school, and my seventh grade moved over into the high school building when a number of other schools were consolidated with Franklin. This, remember, was rural Maryland and we had no junior high. We had seven grades and then we went into high school and had four years of high school. So I got through school in 11 years, whereas in Baltimore and in many other places, people were generally going 12 years. And this eventually got me through college when I was only 20.

Going to the same school for 11 years gives me very vivid memories. I could probably-and I know you won't be interested, but I could probably tell you the names of all my grade school teachers and quite a few of my high school teachers. Of course, one reason is that, from time to time, I've been back there. We had our 50th high school reunion in 1985.

Q: How many people were in that class then?

A: Well, there were not a lot. There were about 80 that graduated in 1935 and there were about 70 surviving in 1985. About 45 or 48 or so and their spouses were there in 1985 for the reunion. We also had a 20-year reunion and there may have been other reunions. Those are the only one that I attended.

Q: Well, let me ask you this. When you were in high school, in particular, did you early develop an interest in science and mathematics and things of this sort, or—

A: Yes. I was always good in science and mathematics. I remember when I took geometry once arguing with the teacher and proving that she was wrong in something she had put on the board, One of my friends said, "Mac, she's going to flunk you." Instead, she gave me an A.

Q: Good for her.

A: I loved chemistry and physics, but strangely enough, the thing that obsessed me at that particular time was maps. My grandfather had bought a lot of atlases which had beautiful maps-these would be engraved maps that were so carefully printed that they were works of art-back in the 1870s, 1880s. My family was the repository for many of my grandfather's possessions. Having lived on the farm and living in a huge old house in Reisterstown, we had lots of space. So many of the relics from my grandfather came down to my father, including the shoemaker's tools. I still have some of those lasts that, I'm sure, were my grandfather's. My father kept them all; we kept everything.

But I was obsessed with maps. I became a Boy Scout. I mapped everything in sight using a compass and pacing techniques that were required for the First Class Scout test. I was really obsessed with maps, and the reason I mention this is it had quite a bearing on something that happened much later in my life.

Johns Hopkins University

Q: When you decided to go to college, did you have any difficulty making a choice?

A: Well, that's where the maps came in. I knew I wanted to be a civil engineer, largely because I wanted to make maps, but it was kind of a romantic vision of civil engineering, of a man out there squinting through a telescope with riding britches and-that's the way surveyors used to dress in those days-and so when I applied at Johns Hopkins, I listed civil engineering as my major. I'm sure that's the reason.

Now, remember, you apply when you're in high school-your senior year, I guess. Maybe in the fall of senior year. But that's what I put down. I also applied at Princeton and MIT [Massachusetts Institute of Technology] and considered colleges that didn't teach engineering, but I really wanted to take engineering. Those were the three that accepted me, but our family was not financially able to pay my tuition—there wasn't enough money for me-my sister was already in college. She was going to Western Maryland College, commuting from home-Western Maryland College is in Westminster, about 12 miles from Reisterstown. So it was a question of my getting a scholarship or not going. We were land poor, with that farm. Half the time we didn't even make expenses on it. I can't say that we were all that bad off, because my father had bought other properties and was renting them. These were properties that were in need of rehabilitation. He would buy a property that didn't have a water supply-didn't have indoor plumbing. It would have a well on the back porch and he would put in a pump and a water system, upgrade the house and rent it.

But this was during the '30s, you see. I graduated from high school in 1935 and a lot of those people didn't pay the rent, and my father was too good natured to put them out, so we never had much money. And it was a question of a scholarship or I wouldn't have been able to go to college.

Fortunately, Hopkins had a lot of scholarships through the state scholarship system in the engineering school, and I took that exam. I had also applied for and got a small scholarship at Princeton, but it would not have been enough. To live in Princeton would have been expensive, so I just reluctantly-since Princeton was my first choice-gave it up. But I had done very well on the scholarship examination for Hopkins. I never really considered MIT very seriously, although I was accepted. In those days, they didn't use the Scholastic Aptitude Test. They used the College Entrance Examination Board exams, which were held on the campus at Johns Hopkins and were largely essay-type questions.

And so I was accepted, but my recollection was that I didn't do particularly well in the science part of the CEEB exam. MIT sent me the grades. Apparently I had actually flunked the science exam, but I had done well enough in all of the others that they accepted me.

Later, there was an examination at Hopkins for Maryland state scholarships which were under the control of the state senators. Although I placed high enough on the exam to earn a full scholarship, when the time came, I didn't get the scholarship that I had earned, but I had good enough marks that I got what they called a trustees' scholarship, which paid half of my tuition and books. I had to work part time to get enough money to pay the rest of the tuition, I worked under what they called the NYA, National Youth Administration. You worked about 40 hours a month for a very nominal sum which was then applied to tuition.

When I decided to enroll at Hopkins my brother, being 10 years older and having had a rough time of it, said, "You must take electrical engineering because that's where the future is." And I said, "Yes, I guess you're right."

However, because I didn't get that scholarship right away, I didn't enroll right away. In fact, it was two weeks after school had started that I got the call from the dean who said, "The trustees have gone over your record and they've given you this scholarship and this NYA job." So I came in and I found that I had already been enrolled in civil engineering, which was based on my original preference as stated on my application. I knew full well that electrical engineering was where the jobs were, but I was enrolled in civil engineering and they had my class schedule all worked out for me. The class schedule for engineering was pretty well defined, and it was a civil engineering course which included surveying. Of course, that's what I was interested in. So that's really what directed my career-I got to be a civil engineer because of my interest in maps and surveying. One of the other things I think that had a big effect on my career was the fact that because of my weak leg I couldn't participate in sports as much as the other boys. My leg was not very strong after the first operation and my foot turned over when I ran.

When I was in the fourth grade, I had another operation in which they inserted another bone in my foot which kept it from turning over. After that, I could run and play ball and do things like that, and take long walks. Before that, I couldn't and so I was doing a lot of reading, even in those early years because that's what our family did. The whole house was full of books of all kinds and I did a lot of reading. My sister also brought her books home from school, and I used to read her books three years ahead of the rest of my class, so when I got to most of my classes, I was well prepared and didn't have to study much.

And I did reasonably well in school with good marks and all, but my family never made an obsession of it. They never said anything, except if I got a C my father would say, "Gee, what happened?" because most of my marks were As and Bs, and-but they never drove me to excellence in school or anything like that.

And then the thing that had a major effect on my education happened when I was in first year of high school. In early May, after school one day I was riding on a bicycle out to the farm, which was three miles away. The front tire blew out as I was going down a steep hill. I went head over handlebars, and the bicycle landed on top of me. I had a broken leg, the femur just above the knee. I went to the hospital in early May, and they put me in traction, trying to gain a little bit of length because my right leg had ended up shorter because of the polio.

I was in the hospital until about the 4th of July, and then I was around on crutches all summer. That was the summer that my education really took off. My brother had never been able to get through college. Determined to educate himself, he had bought the Harvard Classics, and the Harvard Classics Library of Fiction, and I literally think I went through the whole of those volumes, 50 volumes of the Harvard Classics, that summer. Now, I know a lot of that was too much over my head for me to understand, and a lot of it I skimmed-

Then there was a complete set of Dickens. And the Waverly, novels of Sir Walter Scott. I did a lot of reading. H.G. Wells, Will Durant, I wish I could remember it all. But the significance of it was it opened my eyes to the broader world while I was still a teenager.

A lot of this is already written up in my journals that I wrote from 1935 to about 1955. I've written a bit here and a bit there, and I've always thought that it ought to be documented-in a lot more detail about my family.

Q: Is it in publishable form?

A: No, no, no. It's just in drafts. In fact, it's not really very good-none of it has even been typed, but I used to write it in notebooks.

Q: I see. That's fine.

A: Because I think what I really wanted to be when I was a teenager was a writer. You know, I was very-well, poetic. I know I don't have that kind of talent, at least I don't think I do, but some people thought that I did and used to encourage me to write.

Q: Well, you were talking about these 50 books-the Harvard Classics series, and how this helped you—

A: Well, I think reading a lot of good literature is how you develop the ability to write, and that's had a big effect on me because the ability to write and communicate either in writing or verbally is very important.

Q: Yeah. It's a bit unusual, at least to me-and perhaps I'm showing some bias of my own here-for a person with an engineering bent to have also an enthusiasm for the classics, for reading and writing and so forth. So that's—that's a bit unusual. Do you think it's in some ways helped you in your career?

A: Well, I do think it helped me in the ability to communicate, and when you get down to it, communication, either writing or speaking, is essential in any profession, and that's why I mentioned it. I think it did have an effect, which I didn't really realize until many, many years later and I realized that I did have the benefit of a much better classical education than most people who went through engineering school-at least who went through engineering school at the end of the 1930s.

Now, a lot of what I read I can't really remember-I can pick up those books and look at them now and I can't imagine that I ever read them, because some of it's pretty hard going for me even now, some of those early novels and all that. But I laid on that hammock under a big maple tree and read one book after another-I was on crutches all summer.

I never did finish my school work but even though I didn't go to the last six or seven weeks of school because I was in the hospital, they passed me because I had good enough marks up to then.

About the end of August I was off of the crutches and went to school and the first day of school, I slipped on something in the hall and I was back on crutches again.

Q: Are you sure you just didn't want to read some more?

A: Well, no, because even if I did, it didn't work. One of our neighbors used to drive up to town-it was only about three-quarters of a mile-and so she would drive me to school every day, and I came home on my crutches. Now, you know, three-quarters of a mile is not too far to walk on crutches, but it caused me to wear the tips out about once a week. I remember at the end of the week after the tip was worn out, if you didn't get a new one on quick enough, well, the wood tended to open up like a cauliflower and the crutch would be a bit shorter.

But anyway, that didn't last very long. I got to the point where I was all right again, and I was a key person on the intramural basketball team because I had gained in height-I had grown about six inches while I was in the hospital because they were feeding me protein and milk and everything to make my leg grow a little bit longer. So I had suddenly become perhaps the tallest person in the class, and I was in great demand as the center on the intramural high school basketball teams. In those days, you remember, after every basket the ball came back to the center for the tip-off, and even though I wasn't very fast on the court, I had the edge on everybody else for tipping off. Aside from that, I was probably the world's worst basketball player, and I never was really good at team sports.

But we did play softball. I used to play softball. Until I was in the fourth grade, I couldn't do much of that kind of sport, but when I got to the fifth grade after the operation that strengthened my foot, even then I was one of the tallest people in the class. We used to play softball at lunchtime, and we played a game called "three-at-the-bat." Everybody called off-the first three in numbers and then the rest in team positions. The first three would be at bat and then the next one would be catcher, pitcher, first, second, third base, shortstop, and all the way out in the field. No matter how many people were there, you could always play without organizing a team or anything, and you progressed upward through each position as the batters were put out, and when you were put out you became "last-man-in-the-field."

Well, there were three fellows that were bigger or tougher than I was in the fifth grade and-so they always were the first three, you know, and if you argued with them you might find yourself looking at a fist. So, I would be four, and would start as catcher. That was the one position I could play with

reasonable skill, and then as soon as somebody went out, I'd be at bat, and I'd usually, maybe, get around the bases once before I was out. I could run, but sometimes people would volunteer to run for me because I guess I ran with a kind of a hop-leggedy run.

That was when I started in organized sports, I played softball then off and on with class teams, not with varsity. Sometimes I played soccer, and sometimes basketball. Then I started to play golf. I loved golf. I learned to hit the ball in the meadow on the farm near where we lived. I taught myself to play golf with my brother's clubs, and thenI became a caddy-this was about when I was 12, 13 years old-so I could play golf on caddy day. One Monday, which was caddy day, I got around 54 holes on our nine-hole course in Reisterstown. We didn't get much work, as caddies, because people couldn't afford to take caddies back in the early '30s.

And so the only varsity sport that I ever got involved in was the golf team in my senior year at high school. I also started swimming regularly, I guess by the time I was in high school-I taught myself how to swim by reading in a book. I went into the water in our farm one Sunday with neighbor boys who took me out there-they asked my mother if I could go and she said sure. I had read a little book called "Healthful Sports for Boys," and it had a section on swimming. It told about the breast stroke and the crawl and the backstroke and the sidestroke which they used to talk about then. I read about the various strokes, and that the first thing is to not be afraid of the water. To conquer the normal fear of water you filed the wash basin full of water and put your head in it and opened your eyes and you'll find out that you can see under water, and once you get over that, why you'll find that swimming comes easier.

So I went out to the farm with the Warner boys-1 know my mother would have had a conniption fit if she knew what I did. There was a swimming hole in the Patapsco Falls where it flowed through the farm. There was a gravelly beach where we could get down the bank to the water, so I walked down and stuck my head in the water and opened my eyes. I couldn't see a thing! The water was muddy. But that didn't stop me, and so I guess I probably dog paddled across to the other side and put my feet down and there wasn't anything down there. It was one of those places where the water was deep.

Well, I guess some people might have panicked, but I didn't. I just turned around and dog paddled and came back to the beach, and from then on I could swim.

We swam a lot during the summer when I was in high school, mostly in a neighbor's pool. These neighbors had a lovely pool, and this reminds me of one of the harsh facts of growing up around Baltimore in the 1930s. There was an awful lot of anti-Semitism. The neighbor children had gone to the public swimming pool in Glyndon and-1 don't know how people could tell someone was Jewish, but at the public swimming pool whoever was on duty said, "You can't come in, " and they asked, "Why not?" And he said, "We've got too many. " And then finally the manager came out and said, "We don't allow your kind in here."

There was a small creek running through our neighbor's farm, so they dammed it and built a swimming pool and invited the whole town to swim. They built just an ordinary little pool, and then the electric company put a new high tension power line from Safe Harbor on the Susquehanna River down to Baltimore, which came right over this pool. It wasn't safe to swim there, so the company-it's now Baltimore Gas and Electric Company-built this beautiful pool about 50 yards by 30 yards. So the whole town was invited to come out there to swim. I don't know whether it helped or hurt the business of Glyndon pool that much or not, but it must have because we all swam there, and we were welcome all summer. Some summers I would count the times I went swimming, and it would be something like 100 or 110 or something like that, and each year I'd try to beat the previous record. The pool was about three-quarters of a mile or a mile out Berryman's Lane from my house, and I walked it all the time.

Q: What was the neighbor's name, do you remember?

A: The name was Dorman, D-o-r-m-a-n. The farm has been taken over by some kind of an institution now and I don't think the pool is still there.

But that's one of the unpleasant facts of life, growing up in the 30s. We didn't think much about it, but Baltimore was very segregated, not only the black race, but also the Jewish people. Of course, the Jewish people had some of the really fine sections of the city; you couldn't call them ghettos. But in the sections around Johns Hopkins University, Guilford and Roland Park, I think

they went back three generations to find out if you had any Jewish blood. It was that kind of a snobbish society. I know they don't like me to say that, but it's a fact.

Anyway, I became a good swimmer. I used to swim a mile a day. When I first started I was swimming side stroke and any kind of a stroke, and I learned all the strokes, and eventually swam the crawl because it was the most efficient. And when I got to Hopkins I did go out for swimming, and I was on the freshman swimming team. I could do that the first year but the course schedule was so rigorous in the sophomore year that I had to give it up. I also tried to get into ROTC, not so much because I wanted to be a soldier in the tradition of my father and grandfather, but because they paid you the last two years, and that would have been very important.

I remember going to see Colonel Gregory Hoisington. I don't know whether he was a Corps of Engineers officer or not-and asking him if I could enroll, and he said, "No, no, we just can't-your leg's shorter and you walk with a limp and we just couldn't have you in the service." And I said, "Well, gee, I can do everything. I can walk miles and do this, that," and he said, "No, I'm sorry, but we can't take you."

I had to take something else to fill out my schedule, so I took French reading. Having had French in high school, after one semester I absolved the requirements for French in the Ph.D. I would have had to take an exam, but they certified that I could take it, so I had some time off, which I promptly used to play bridge over in Levering Hall.

Upon entering Johns Hopkins they gave you placement exams and I absolved taking English composition. This permitted me to go right into an advanced English literature course with the person who, I believe, is the best teacher I ever had, Captain Kilbourne, formerly of the British Army. He may have been a U.S. citizen by that time, but he lived and breathed English literature from *Beowulf* on. With my having had a kind of a literary background from all the reading that I had done, but not having been very organized, he really helped me organize it, although years later, when I looked at some of the papers I wrote, they seemed rather insipid and immature, but still it did help to really inculcate the love of English literature in me.

Captain Kilboume was steeped in the love of English literature. He could read *Beowulf* and Chaucer and he could just make it come alive in the same way that good actors can make Shakespeare live, whereas when you just read it, you don't always get the flavor of it. Unfortunately my high school courses in English-in English literature particularly-were not too good because they were so unimaginative. By the time I got to high school English literature, I had read *Ivanhoe* and *Quentin Durward* and the *Bride of Lammermoor* and almost all of the Waverly novels, which I just loved, and it was amazing to me how the teacher could make them seem so dull and uninteresting.

Well, I'm not really a classical scholar. I just enjoy literature.

Q: Let me ask you this. First of all, you'd taken French. Now, did you still have some working knowledge of German at that time?

A: No, very little. And I never took German, but I had tried to learn to speak it with my sister when she took it at Western Maryland College.

Q: What about-I'm still a little bit mystified as to why your house was so crammed full of books. I mean, your father, photography work and a shirt ironer, what led him and your mother to have that kind of an interest?

A: I think that what started it was that they inherited all the books from my grandfather when he died in 1911. I think a lot of the books came from my mother also. She had lots of books that were hers and were of a later vintage. Also they bought a lot of books up to the farm years and then their interests, I guess, became different. But no, there were all kinds of books, and it was not at all unusual for three or four of us to be sitting in the living room and reading on a Sunday afternoon.

And the other source of books was my brother-remember, 10 years older than I-but only one year at college. My father didn't have money to send him because of the losses on the farm. My brother got a scholarship for tuition, but he had to work for his room and board. He went to Randolph-Macon College-not the women's college, but the one down in Ashland-he got his scholarship through a program they called the CMTC. He went in the summer to the Citizen's Military Training Corps, which was the 1920s version of military preparedness. He was good at it, and he was awarded a scholarship. But he had to work for his room and board, and he didn't make it.

So he was determined to educate himself, and he started buying books during the boom years of the late '20s. He made a lot of money in the first few years selling radios. He was selling radios at the time when the salesman just sat there in the showroom and wrote the orders as fast as he could write them. This, you remember, was in 1927–28.

So he made a lot of money, and that's when he bought the Harvard Classics and a lot of other good books. He bought good books, like the Merezhkowski trilogy-H. G. Wells' *Outline of History* and *The Story of Philosophy* by Will Durant. All these are just a few of the books I remember, much more than my family's books, but there were several bookcases full of older books.

It always seemed that reading was the way to go, I think, in our family.

Q: Let's talk about Johns Hopkins.

A: Well, okay. I think I told you about absolving French reading and English composition and having a wonderful English literature course. But still, I was taking engineering and so the first year I took engineering drawing and surveying and mathematics, physics, and chemistry, which are the basic courses for going into engineering-the only engineering, in the first year, being surveying and engineering drawing.

And the swimming team was one interest. Then I started up a freshman golf team just so I wouldn't have to take physical education. We played mostly high school teams like Friends' School and Tome, up in Port Deposit, and other prep schools. I'm not sure any of the colleges had golf teams, at least I don't remember playing any college freshman golf team. I was not all that good at golf. If I ever got an 85, I thought I was really doing well, and I think maybe the best round I ever shot in those days was an 81 or so.

Q: Were there any particular professors at Hopkins that gave you inspiration.

A: Well, only Captain Kilbourne-in the freshman year that is. The next year my calculus teacher, Dr. Zariski really turned me on. At one time I considered changing my course, from engineering to mathematics.

Q: Okay.

A: Sophomore year, I went out for swimming, but there were two people so much better than I was that I knew I couldn't make the team and also I was very busy. In sophomore engineering at Johns Hopkins in those days, you had about a 40-hour a week schedule of labs and classes. Also I was working on the yearbook. It was the major activity that I kept up. I was on the staff of the yearbook all four years and was editor in my senior year. But you really start working in sophomore engineering and remember, I was commuting with my father, and if I stayed late, I had to hitchhike.

So I really started to hit the books more then, and I guess after the freshman year I wasn't able to sneak over to Levering Hall and play bridge. Bridge was an obsession with me as a child growing up. I just loved the game, having started off on auction bridge and then when they started playing contract, that was just like real big-time stuff and I really enjoyed it. So I've always liked to play bridge.

Anyway, so on through my sophomore year. In those first two years my NYA job was working in the chemistry library as a typist and the other thing that I did to make a little bit of spending money was type term papers for people. I took touch typing in high school and in those days, the going rate was 5 cents a page for double spaced and 7 cents a page for single spaced typing of term papers. That doesn't add up to very much money, but that was the going rate. But you could buy a hamburger, a little hamburger at the Little Tavern, for a nickel and a bottle of milk for a nickel and a piece of pie for a nickel. Remember this was 1935, '36, '37 and things were pretty low economically.

I gave up eating lunch. My mother said she had made lunch all through school for three children and it lasted for her-my brother being 10 years older than I-about 20-some years, and she, "I've made enough lunches, but you can make your own lunch if you want." And I was 17 years old by that time and didn't really like sandwiches, and I didn't want to bother making lunch so I just gave up eating lunch, even when I was swimming in the afternoon. At that time, I remember talking to the swimming coach about it, and he said, "You're really swimming on your breakfast, and if you're in the habit of not eating lunch, it won't make any difference." So I was eating really two meals a day, and once in a while maybe getting a milkshake, and that was in the days when a milkshake was two tall glasses of nothing but milk and ice cream and good stuff. And I'd do that once in a while, and that would cost 10 cents and I could afford that.

So that was what you might call poverty. Now, when I say "poverty," it was a genteel kind of poverty. We just were land poor and didn't have any money. Otherwise, it was a rich family life.

In my junior year something happened which had a major effect on me. Abel Wolman moved from the Hopkins School of Hygiene and Public Health, where he had been teaching-he was also head of the Maryland State Department of Health-to the Homewood Campus. The School of Hygiene and Public Health is associated with the medical school campus over on Broadway in east Baltimore.

Professor [John] Gregory had been professor of sanitary engineering. He left and Abel came to the Homewood campus as the professor of sanitary engineering. And I got the job as his student assistant. I can't remember whether I asked for it or whether they just figured it was a natural. They assigned me to be his student assistant under the NYA program, and my job for a whole year, working 40 hours a month, was to unpack his library, catalogue it, and put it on the shelves. Abel had an office on the second floor in Latrobe Hall, and he had an adjacent room which was his library. The ceilings must have been-they seemed like they must have been-12 or 14,15 feet high. The walls were lined with shelves all the way to the top. There were two rolling ladders on tracks, one on each side, that you could climb up to get to the top ones. So I spent that whole year in my spare time unpacking books and cataloging them and putting them on shelves. But it certainly gave me an insight on Abel, because I was always there late in the evening and whenever else I could find time to work, because engineering students had a full course schedule at Hopkins. Frequently I got the chance to talk to him and ask him about things. He really had such a tremendous volume of publications some of which seemed to me to be very esoteric.

He had all the reports of various sanitary districts, the ones in this country, such as the Miami Conservancy and the Muskingum and all of the others, plus he had a wealth of foreign publications. The ones that stick in my memory are the annual reports of the West Riding of Yorkshire and the East Riding of Yorkshire. These were the reports that told about what they were doing in the public health and sanitation field in England. And new reports were coming in all the time.

Of course, Abel is so well known, I don't have to say anything about him. I know everybody who reads this will know who he was. But he was an international consultant even back in those days, which was pre-1937. He came to the campus at Hopkins in the fall of '37.

Q: At this time, he was already involved with the Natural Resources Committee?

A: Oh, yes, and at that time a lot of these publications, the new reports and papers that were coming in were from the Water Resources Committee of the National Resources Committee and eventually the National Resources Planning Board, although really it was not named that until about 1939.

Anyway, so I was steeped in all of that. Now, I did not take hydraulics until the third year, the junior year, and I didn't take sanitary engineering until the fourth year, and I still just loved the surveying. In my sophomore year, I took railroad surveying. And in the second semester of my freshman year when I absolved the French I couldn't just goof off for that hour, which was four times a week, so they let me take advanced surveying, and that was a thrill because I was with the senior class of 1936 at Hopkins. Taking advanced surveying involved things like shooting the North Star at night and what they call the three-point problem and the two-point problem and all the techniques which require an awful lot of trigonometry. I just loved it, and at the end of the year I remember getting a 10, one of only two or three given in this course of seniors, and I was only a freshman. This was what I wanted-surveying was what I wanted to do, so I loved that course and the association with the senior civil engineering students.

And all this shows how chance really affects your life. Although in the background, I've always loved water, at that time in my life I was headed in another direction. But I think everybody loves water. It is a part of the human psyche. There is something about it that appeals to us. A lot of people have written more eloquently about that than I ever could. And I was getting an education that would help me when I got pointed in the direction of a career in water resources.

In my senior year I had my only course under Abel. He taught a course called Legal and Social Aspects of Engineering and I'd say of all the courses I took, it was the one that had the most relevance to my future career.

And Abel had the facility of making it all come alive the same way that Captain Kilboume made English literature come alive for me. For example, I had to do a paper on metropolitan area governments and I floundered around. I interviewed the chief engineer of the Baltimore County metropolitan area government and I read all kinds of things and I wrote the worst mishmash of stuff you can imagine. And showed it to Abel, which we had to do before we presented it. This was a seminar course. Each week somebody did a seminar, and this was one of my subjects. He took my draft and he read it and he asked me two or three questions, and all of a sudden, I understood what it was all about, and I went back and revised the paper and it was a reasonably good paper.

But he didn't tell me anything. He just asked me a couple of questions and it made it all come together, and he did that with me on several occasions. He was that kind of a teacher. But I really only had him in that one course. Of course, I also had him as a boss because I was his student assistant, but he never got me to really help him with any of his work. It was mostly sorting out all those publications and asking where to put them. Of course, he would talk about what was going on in Washington and tell me about his meetings as he was almost commuting daily to Washington in those days, to the meetings of the Water Resources Committee of the National Resources Committee at that time. It was before they called it the NRPB [National Resources Planning Board].

So I got to know about the alphabet agencies as they called them-and, of course, Abel also was very much involved in either the PWA [Public Works Administration] or the WPA [Works Progress Administration]. I can't remember now. He was Maryland director or something like that, because he was a very, very competent administrator. He really handled his staff the same way he handled me when I showed him a mishmash of a paper, and by asking two or three questions, he showed me how to fix it up. This is the sign of a good administrator. You get your staff to develop and do all the work by asking them questions, getting them to think.

It's hard to say whether my exposure to Abel Wolman is what got me into water resources or not, because of some other things happening.

In my senior year, I was editor of the college yearbook, the *Hullabaloo*, it was called. I gave up working for Abel because I just couldn't see my way clear to

do the 40 hours a month on the NYA job, and I borrowed the money for the last year's tuition. My scholarship, was cut off after the third year and the university loaned me the money. They said that was the way they'd do it. They wanted to make the money for the trustees' scholarships available to people that couldn't otherwise go. But I had a good enough record that the college was just willing to just take my note for tuition—which at that time was $450. In those days that was high tuition. It was the same as Princeton-I think MIT had gone up to $500 and was the highest. My sister had graduated from college in 1936—her tuition was only $150 a year at Western Maryland College.

Q: I was going to ask you, I'm interested in what kind of subjects Wolman probably covered in a course on social and legal aspects of engineering. Would he have covered things like multipurpose river development, for instance?

A: Oh, definitely, -and he covered all of the things that the National Resources Committee was doing, and that's where I first learned about the Corps of Engineers and Bureau of Reclamation, and you remember, this is at the time when the Corps was building Bonneville and the Bureau of Reclamation was building Hoover Dam, the Central Valley project, Grand Coulee, and all of those Depression Era projects. Each person was assigned a topic-one would cover irrigation and one would cover flood control, and so that's where we did start our research-but we were looking more at the underlying-the underlying reasons for all these programs.

But it was much more than just water resources because the course was also dealing with what we now call infrastructure-highways and other public works-but with a heavy emphasis on municipal water supply and sewerage, which was his field.

Of course, at the same time, I was taking sanitary engineering under Dr. John Geyer and I was taking bridge engineering under Professor [Thomas] Comber. At that time, Johns Hopkins was putting out graduates who could leave their desks, or their academic environment and go to work for a consulting engineering firm and design a bridge or design a structure. We designed plate girders. We designed concrete arches. We designed all kinds of bridge trusses, to the extent of actually drawing them and detailing the number of rivets and designing every part of the structure, and so that's why the course was so rigorous. We were probably spending 40 hours in classes and laboratories, and

then there was homework. Being editor of the *Hullaballoo* also took quite a bit of my time. I don't know how I did it all.

And I had a few other activities. I had been on the YMCA [Young Men's Christian Association] cabinet and was editor of the YMCA handbook, was a member of the student council, and various other things, which I don't remember much now.

But anyway, I was really ready to go to work on a drafting table for Greiner Engineering Company or Whitman, Requardt and Smith, or any of those companies. It was 1939 when I graduated, and I started to pound the pavements looking for a job.

Now, going back to the summers while I was at Johns Hopkins. The requirements for a degree at the time were that you have at least six months of some kind of practical engineering or subprofessional engineering work before you get your degree. If you didn't have it, you'd get a roll of white paper at the end if you otherwise had completed the course requirements, and you didn't get your diploma-it was called "Bachelor of Engineering"-you didn't get that until you had six months of experience. They didn't want to put out somebody that didn't know which end was up as far as work was concerned. My summer job after my sophomore and junior years was surveying for the REA [Rural Electrification Association] power lines in southern Maryland. I worked for a Colonel P. M. Anderson, whose office was in Washington.

Q: What were you doing?

A: He had contracts with the Rural Electrification Administration under which I worked on the survey for the Southern Maryland Tri-County Electric Co-op in the summer of 1937 and again in the summer of 1938.

I got the job from an ad in the newspaper: salary, $20 a week plus car expenses. I hitchhiked over to Washington for this job interview. Colonel Anderson's office was in the Investment Building, 15th and K Street, and I'll never forget that hitchhiking. I went down to the Washington Boulevard in Baltimore and a guy with a semitrailer stopped, picked me up, and when we got out of town he said, "Say," he said, "I'm getting awful sleepy. Could you drive this rig for me?" It was not an 18-wheeler. It was a smaller tractor-trailer-I guess you'd say a lo-wheeler or something like that. But it was a big

truck and I drove that thing, and this guy actually leaned over and was asleep and I drove all the way over to Washington. I, of course, was a competent driver because my brother had taught me how to drive when I was 12 years old but-as a matter of fact, I didn't even have a car of my own at the time. So I was really scared and drove very carefully.

We came in New York Avenue, and I got so scared of the heavy traffic that I pulled over and woke him up and I said, "Well, this is as far as I'm going. I'm going to have to get out here." This was on New York Avenue, probably over—

Q: Bladensburg or something?

A: Well, a little bit farther in than that-about 17th Street, N.E. Anyway, I got out even though I didn't realize how far it was to Colonel Anderson's office because I was in northeast and I had the address 15th and K, and here we were around, I don't know, the 1700 or 1800 block of New York Avenue, and I thought I was nearly there. But it turned out I was in northeast-I had to walk all the way over to northwest Washington.

But anyway, they hired me. I went down to start work in La Plata as a member of the crew, and we were surveying in Accokeek, right near the southern tip of Prince George's County, I got all over southern Maryland that summer. I worked the first few weeks for $20 a week and got car expenses of 3 cents a mile. My grandmother loaned me the money to buy a Model A Ford and the interesting thing was, I could make money at 3 cents a mile with a Model A Ford-not paying for the car, of course.

After three or four weeks, somebody else quit, and I became a party chief at a salary of $110 a month, which was munificent in 1937. In fact, my mother, when I told her, said, "Maybe you ought to just drop out of school for a year and hang on to that good job." And thank God, I didn't do that. But anyway, it was nice to be making a little bit of money. And that was maybe one reason why I gave up working for Abel that last year, because after working during the summer after my junior year, I was able to save some money and I just felt that the time was more important than the little bit of money I could make on the NYA job.

After finishing up in southern Maryland, I worked down on Northern Neck for the Northern Neck Electric Co-op. I worked for the Bull Run Electric Co-op and then eventually, the next year, made an inventory of the whole line in southern Maryland. One Christmas holiday, I remember going down to finish up some work-working for two weeks during the Christmas holiday down there in southern Maryland just to get a little bit of money. So I did get to use my surveying, but when I got out of college there weren't any jobs. I tried to get back on an REA job over on the Eastern Shore, where one of my buddies was working, but that didn't work out.

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I'm pretty sure we graduated on about June 4, 1939, and I pounding the pavement seeking appointments and interviews with potential employers for a week. Then I went back to Hopkins for something and someone, I don't remember who it was, told me, "I understand that the Corps of Engineers is hiring. Maybe you could go down there." And that's how I became associated with the Corps of Engineers.

But you mentioned the other professors. The other professors that I particularly remember at Hopkins were Truman Thompson who taught transportation engineering, and he also taught concrete and various things like that, and John Geyer, who was brought in to kind of understudy Abel Wolman, and did succeed him later as head of the department-he was a sanitary engineer of quite some note, coming out of Harvard. And the one that I worked a lot with was Tom Hubbard who taught surveying. Of course, I had a real affinity for him because of my interest in surveying. Later I had a real falling out with Truman Thompson because he didn't think I applied myself well. During that last year, with the work on the *Hullabaloo* and various other extra curricular activities-I was on the student council and working with the YMCA-I didn't seem to have much time for school work. My marks had been very good up through the junior year, but there was a real drop-off in the senior year, just because I was doing other things.

At times, I guess everybody in college thinks, "Well, maybe I should continue my studies and get a master's degree." But Truman Thompson, who was the department head, didn't encourage me to think about going on, and he said, "I hope you get a chance to continue with surveying. I know that's what you're

really interested in, and I hope you can find a career in that field. " At another time he said, "I can't do much to help you, but if you ever get a chance to be county surveyor somewhere, take it. That's a good job. It doesn't look like much, but," he said, "you get all those fees for doing various things. You ought to look for something like that."

This was the advice I got from the head of the Civil Engineering Department who obviously didn't think very much of my ability. Abel was just a professor of sanitary engineering, and I don't remember getting any advice from him at the time.

So anyway, I went down to the Corps of Engineers office, and I know exactly the day it was. It was June 13, 1939.

Q: Before you continue with that, can I interrupt you?

A: Sure.

Q: I want to pick up a couple of threads from your college years, still.

A: Sure.

Q: First of all, you explained in a very interesting way how you stayed in civil engineering-in other words, your brother suggested you go into double-E and you didn't, you went into civil engineering.

A: Yes.

Q: Did you ever think again about going into something other than civil engineering when you were at Hopkins, or once you got in there you decided that was the way you were going to go?

A: Oh, I knew that's where I wanted to be, because remember, I had the surveying courses for a couple of years and my summer surveying work-and then-1 liked the hydraulics, which was a course I took in my junior year. But the course in hydraulics was not a particularly good course because, for one thing, they didn't have enough money. The hydraulics lab was a little bit antiquated, as I look back on it now, although it seemed wonderful-all those big pumps and pipes and tanks and channels-but we couldn't run the big

pumps because of-1 don't know why, but we did enough things that were fun. Also, of course, a lot of it is theoretical-Reynolds number and the Manning formula and all those things that were just coming into use at the time. I think we did learn how to do practical things like flood routing and things like that. That served me in good stead when I started to work for the Corps and the Bureau of Reclamation.

So anyway, I never really considered anything other than civil engineering because I wanted to be outdoors. Remember, I had been kind of-well, almost a cripple up until I was in the fourth grade, and so I wanted to get out, in the outdoors and work in the outdoors. In civil engineering you worked in the outdoors. That's the way, I looked at it.

Q: But in particular, you wanted to be a surveyor. That's kind of what interests me, because, as you pointed out just before, here was a time during the Great Depression when all these great projects were being built: Bonneville, Grand Coulee, Boulder, Fort Peck, etcetera, etcetera. I get—

A: There was always a man out there with a transit, laying the thing out, and this was the engineer. He was there with the transit, telling the contractor what to do. Professor Comber told us we would be underpaid. He said, "If you want to make money, you should operate a steam shovel or a bulldozer." But the engineer tells them what to do. I was inculcated with the fact that the engineer is the one that is going out there first and telling them what to build.

Q: But, you know, I've interviewed, of course, a lot of engineers and, you know, one of the things that seemed to attract so many people was the design work. You were going to design the great dam. You were going to design the-you know, even just a spillway or something, something that really was tangible and was going to be put on the ground. That didn't hold, evidently, the same attraction for you?

A: That was paperwork in the office, you see, and I wanted to be out in the outdoors. Again, remember, I was only 20 years old when I graduated and I guess I was pretty immature.

Q: Yeah.

A: You don't really do an awful lot of deep thinking at age 20—well, I guess you do some deep thinking-in fact, that's when we have time to do it. But anyway, that was the way I was thinking then-it may be an anomaly for someone who has done what I've done over the years.

But anyway, I actually had a June 13th appointment for an interview at the Baltimore District Office of the Corps of Engineers. I had called up and made the appointment, and I went down there, and I was interviewed by John T. Starr, who at that time was chief of the Drafting Section, which was part of the Design Section in the Engineering Division. The head of the Design Section was Doug Chittenden-his father was an old-time Corps general and all that. But these were civilians, of course, and I can't even remember who the district engineer was.

So I went down to the Baltimore District Office in the Calvert Building and, to my recollection, the interview with Mr. Starr consisted of just three questions. The first one was almost like a statement-John Starr knew I was coming and he said, "Now, you just graduated from Johns Hopkins this year?" And I said, "Yes. Yes, sir." And he said, "You took civil engineering?" And I said, "Yes, sir." And the next question: "Can you start work this afternoon?"

And I was flabbergasted, but also I was interested in railroads. We lived up near the Western Maryland Railroad, and it just happened I had an appointment with the Engineering Department of the Western Maryland Railroad that afternoon, and so I didn't say, "Yes, sir." I said, "Well, let me think about it. I'll call you back."

And so we talked a little bit more, I'm sure. He told me a little bit about the work and all that. He said, "You'd be doing strictly drafting at first, and then eventually work into design. " I would be working on the small structures first-on the Susquehanna River flood control. That's what gave the Corps the impetus for hiring at that time. Money had just been appropriated.

This was a temporary job, salary $1,800 a year. The position was called SP-5, I believe, which would be about the same salary as about a GS-4 at the present time, I guess. I am not sure. This was before the government amalgamated the sub-professional, professional, and clerical schedules into the GS schedule.

And so, during the interview we talked about the work, and I got a picture of what it was going to be, but it was going to be drafting work in the office there. The office at that time, for the Engineering Division, was in the Calvert Building, which was at the corner of Fayette and Light Streets-at the bottom of St. Paul Place in Baltimore. The building is gone now, replaced by a new office building.

After the interview I went out to the Western Maryland Railroad office that afternoon because I still had visions of working outdoors. My younger daughter has the same feeling. She doesn't want to work indoors. She wants to work outdoors; it must be in our genes.

Anyway, at the railroad it was a typical interview. "Yeah. You've got a good resume. Don't call us, we'll call you. Right now there's nothing, but we may have something in the fall and we'll call you."

So I called up John Starr and I said, "I'll be in in the morning if you still want me." He answered in the affirmative so I started to work on June 14, 1939. Ever since I got that job, I've had a great affinity for the Corps of Engineers. I think it's one of the most efficient agencies in the United States government. Not always efficient, but-but let rne tell you an example, which also will tell you why I remember that the interview was on June 13, 1939, and that I started work there on June 14. In those days, working for the federal government, you got paid on the 15th and the last day of every month. Everybody griped about that extra day you worked on the 31st. They never said a word about February 28th, getting that half month's paycheck for only 13 days' work.

On the 15th, which was on Friday, the second day of my employment, the paymaster came around with his file of checks and I can't remember for sure what he said, but I can reconstruct it. He said, "What's your name, boy?" And I said, "Well, my name's Ted Schad, but you won't have a check for me, because I just started work yesterday." And he flipped through his file, and he pulled out a check which was for $10 for two days' pay at $150 per month. Remember, in those days you got paid actually by the day and so, you know, $150 is $5 a day. Can you imagine getting a pay check on your second day of work for the government today?

And I'll never forget that, because that was my first paycheck on a regular job. Well, I had paychecks previously from my summer work, but this was really

something-to be on a payroll, so I walked right down and cashed the check at a nearby bank-1 needed the money. Otherwise I'd have kept that check and framed it. But $10 was a lot of money in those days. It was Friday, and I needed it. So that was my start with the Corps of Engineers.

I started work at the same time as another young man who was an architecture graduate. We were put into a squad headed by an architect named Bert Lichtig-L-i-c-h-t-i-g. Bert was one of these self-made architects that had never gotten a college degree, and he said something like this-"You know, I don't have a sheepskin, but I don't really need one. Just because you've got that piece of paper that says you're an engineer"-or to the other fellow-"you're an architect, " he said, "That doesn't mean anything to me. I got to see what you can do. " Then he said, "What I want you fellows to do is to draw the borders and the title block on linen for my men to fill in the drawings. "

At that time, every job had detailed plans and specifications prepared before bids were taken. The plans were drawn up in India ink on linen. We were working on plans for the Susquehanna River flood control, so I spent my first couple of weeks drawing those borders and title blocks for the plans. The other fellow and I made a game of it, to see who could do the most. I don't think we ever did more than seven or eight a day. I think the maximum was about eight a day. We were putting down—first, at the top, you remember, it wasn't the Corps-it was U.S. Engineer Department, or U.S. Engineer Office, something like that. I have a towel that I stole as a souvenir of my first job-the statute of limitations has run out, so I can tell you-it says, "USED" embroidered in red on it. Every draftsman had a towel that he used to keep his hands and cuffs clean so that he wouldn't make a smear when he was working on those drawings.

On the other corner, at the top, it said, "War Department." And the title block had the name of the project, and the name of the drawing, and always " Prepared by.. ." "Reviewed by..." "Submitted by.. ." and "Approved by..." and the name of the district engineer and the chief of the Engineering Division-all that in 020 Leroy. Well, that's mighty fine print, and if you're not real careful, you'll smear it. Finally, down in the title block, it said, "United States Engineer Office, Baltimore, Maryland District. "

Anyway, I did borders and title blocks for a couple of weeks-we were working on drawings for the pumping plants and levees for the Wilkes-Barre