CHEMICAL HERITAGE FOUNDATION

# FRANK R. NISSEL

Transcript of an Interview
Conducted by

James G. Traynham

at Welex, Blue Bell, PA

on

March 20, 2002

(With Subsequent Corrections and Additions)

CHEMICAL HERITAGE FOUNDATION
Oral History Program
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FRANK R. NISSEL

| | |
|---|---|
| 1926 | Born in Berlin, Germany on 2 July |

## Education

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|---|---|
| 1945 | B.S., American University, Cairo, Egypt |
| 1946 | M.S., chemical engineering, Virginia Polytechnic Institute |

## Professional Experience

| | |
|---|---|
| 1946-1956 | Union Carbide Corporation |
| 1956-1966 | Co-Founder, Vice President, Prodex Corporation |
| 1967-present | Co-Founder, President, CEO, Welex Corporation |

## Honors

| | |
|---|---|
| 1992 | SPE Extrusion Division Distinguished Service Award |
| 1993 | Fellow of the Society of Plastics Engineers |
| 1995 | SPE International Award in Business Management |
| 2000 | Plastics Hall of Fame Inductee |

## ABSTRACT

Frank R. Nissel begins the interview by describing his early childhood and schooling in Berlin, Germany, and subsequent move to Egypt due to the emergence of Adolf Hitler's policies. Arriving in Egypt at the age of seven, Nissel continued his multi-lingual education. After a six-month escape to Jerusalem until the end of World War II, Nissel returned to Egypt to attend the American University at Cairo. He continued his education in the United States, studying chemical engineering at the Virginia Polytechnic Institute. He began a successful decade of work with Union Carbide Corporation after earning his M.S. in 1946, finally leaving to become co-founder of Prodex Corporation with Albert Kaufman. At Union Carbide, Nissel focused on vinyl calendaring, but returned to his more mechanical instincts by building extruders in his new business venture. The machinery built at Prodex revolutionized plastics machinery by being more efficient, yet less expensive, than its competitors, making waves with companies like Dow Chemical Company. Nissel continued to improve his products, while ensuring customers a good value. In 1955, Prodex was sold to Koehring Company, and after a brief time of consulting, Nissel joined forces with Welding Engineers Company to form Welex Corporation. At seventy-six years old, Nissel is not ready to retire, but has confidence that when that time comes, the company he founded will be well taken care of. For his innovation and contributions to the plastics industry Nissel has earned many honors and awards, including membership in the Plastics Hall of Fame. Nissel concludes the interview by sharing a bit about his family today, as well as interests outside of the work sphere, especially the jazz music scene.


## INTERVIEWER

James G. Traynham is a Professor of Chemistry at Louisiana State University, Baton Rouge. He holds a Ph.D. in organic chemistry from Northwestern University. He joined Louisiana State University in 1963 and served as chemistry department chairperson from 1968 to 1973. He was chairman of the American Chemical Society's Division of the History of Chemistry in 1988 and is currently councilor of the Baton Rouge section of the American Chemical Society. He was a member of the American Chemical Society's Joint-Board Council on Chemistry and Public Affairs, as well as a member of the Society's Committees on Science, Chemical Education, and Organic Chemistry Nomenclature. He has written over ninety publications, including a book on organic nomenclature and a book on the history of organic chemistry.

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INTERVIEWER: James G. Traynham

LOCATION: Welex Corporation
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TRAYNHAM: Mr. Nissel, you've had a rather extraordinary career with a variety of activities. Whenever you have to fill out some form or biographical report that asks you to identify yourself in terms of a category, what do you say?

NISSEL: I say I'm a chemical engineer.

TRAYNHAM: All right. I would like to explore what you've done as a chemical engineer. But before doing that, I would actually like to back up to the beginning, so to speak, and for the record have you tell me when and where you were born and the names of your parents.

NISSEL: I was born in Berlin, Germany, on July 2, 1926. My father's name was Hans Nissel and my mother's name was Gertrude Nissel.

TRAYNHAM: Tell me something about your early childhood in Berlin.

NISSEL: Well, my father was a vice president of the Berlin Power Company, and he was a very successful man over there. In fact, he came over to America on a trip in 1928, and I have a picture of him with Thomas [A.] Edison.

I went to school in Germany, to grade school, and I still have lots of memories of that. Then [Adolf] Hitler came along. My family, being Jewish, decided at that point to get out right away, before it went too far, and we left Germany in 1933. My father gave up a hellishly good job, and we ended up in Egypt where he had some relations with a power company there. He had already written several books on power distribution, and he was internationally known. So he got a job in Egypt for the Egyptian government, in fact, working on power networks and some of the early designs of the Aswan Dam, which later was built.

And, as I say, I left Germany when I was seven years old. I then grew up in Egypt, which was a very cosmopolitan place at that time because it was basically a British run protectorate. We lived in a suburb of Cairo, which was a hundred percent European, with its own sporting club and all that good stuff. We lived like kings over there, when it really comes down to it. First, I went to a French school, and then I went to an English school. Then I went to another French school, and I finally graduated from English high school. So I learned all these languages quite well. I speak French, German, and English equally well, and which has helped me a great deal in my later career.

TRAYNHAM: I'm certain it has. Were your parents also multi-lingual?

NISSEL: Yes, but they learned the languages much later than I did. When you learn a language once you're grown up its quite different.

TRAYNHAM: Yes.

NISSEL: In fact, I had a tough time, for instance, learning Spanish, which I picked up later. I'm fairly fluent in Spanish, but nearly as well as I am in French. And, of course, English is my second language. I also speak Arabic as a result of living over there. And as I said, I graduated from the English high school. I was just over there recently to look at that. I haven't been back in 55 years. It was quite interesting to see.

TRAYNHAM: Do you recall what your favorite studies were in high school?

NISSEL: Chemistry. I was the lab assistant of a chemistry teacher. That was my avocation. In fact, I worked many hours overtime in the chemical lab. I even remember doing stupid things such as ingesting mercury, which today, I think, is a terrible thing to do. I thought mercury tasted pretty good. [laughter] I'm serious! I did some pretty silly things.

So I graduated there in 1942, and after that I went to the American University in Cairo and finished my studies there. But they only had a general science and mathematics curriculum. They were not very specialized at that time. They had literature and arts and I took the science curriculum.

TRAYNHAM: By that time the war had come to Egypt, hadn't it?

NISSEL: Oh, yes. In 1942, during the summer, the Germans were at the gates of Cairo. That was when [Erwin] Rommel got to El Alemain. And by that time my father ended up as the agent of the British General Electric Company in Egypt and sold their equipment in Egypt. And when Rommel came to the gates of Cairo the British were nice enough to call up one day and say, "If you want to get out, come to the station tonight with one suitcase a person we'll take you out of the country." And so we packed up in a hurry and went to the train station. I was sixteen years old. I remember that distinctly. You can imagine what a thing it is to have to pack up everything, get out, and not know whether you'll ever see whatever you had again.

TRAYNHAM: The whole family went together then.

NISSEL: I had a brother. And we went to the station and they said, "Here are two trains and you have a choice. This one goes to Suez, and there will be a ship there to take you to Ethiopia, and this other train will take you to Ismailia [Egypt], and then you go across the Suez Canal and we'll take you to Jerusalem. And we'll see what happens from there." And my father said, "Well, if they get to Jerusalem they'll also get to Ethiopia sooner or later." And we had some relatives in Palestine at that time so he said, "Better go to Palestine." So we did that and I spent six months in Jerusalem, which was no interesting time of the war. And then after they defeated the Germans then they retreated and we went back. Thank God everything was okay.

TRAYNHAM: You went back to Egypt?

NISSEL: We went back to Egypt and I went to the American University. This is what happened between my high school and my university.

TRAYNHAM: So you attended the American University in Cairo after World War II?

NISSEL: No, this was 1942, during the height of the War.

TRAYNHAM: All right. After they were defeated in Egypt you went back.

NISSEL: We went back. In fact, at that time there were a lot of Europeans living in Egypt and they couldn't go to school in Europe. The American University was attended mostly by Europeans. I was registered to go to the ETH in Zurich [Eidenössische Technische Hochschule, Zürich]. I was supposed to attend the Swiss MIT [Massachusetts Institute of Technology], but I couldn't get there. My father had arranged for all that, and I had very good grades in school so I

had no big problem getting the qualifications. But since I couldn't get there I went to the American University as did a great many other people who would never have studied in Egypt. So a lot of people I went to school with became fairly famous afterwards, for one thing or another, who went to school with me there.

TRAYNHAM: Did you graduate with a degree in chemistry from American University?

NISSEL: Just in science. They had a science and mathematics course. Then I came over here. In fact, I came over here when the war was over in 1946.

TRAYNHAM: Did you come with your whole family, or did you come alone?

NISSEL: I came over first. In fact, the American military, of course, came to Egypt. One of their big bases is in Cairo. They used the American University as the headquarters for their educational distribution system because they ran a lot of courses and things. So I got involved with them, and I ended up running the whole movie distribution system for the Middle East for the Americans. I ran that movie theater at headquarters in my spare time, and I got to know all the top people. If the General had a special party at his house I would be invited over to bring some movies. We actually premiered a lot of movies over there, and I met a lot of the movie stars who came. Jack Benny came over. I've traveled with him, and it was quite an interesting time.

TRAYNHAM: It sounds so!

NISSEL: I had a very good time the last year of my school, and I still managed to do my schoolwork. As a result of that, when the War was over and I wanted to come over here, the Commanding General arranged for me to come over on the troop ship. There's no other way to get here. And so I came home with some of the last troops that came over. I came over on the NYU Victory from Alexandria to New York and then I was here.

TRAYNHAM: What year did you arrive?

NISSEL: I arrived in New York in early March of 1946.

TRAYNHAM: So you arrived in New York and what then?

NISSEL: Then I looked up some friends in New York, and some relatives again, and I stayed in New York for a couple of weeks. Then, the Commander of this educational system they had was a Colonel. And he was a big VPI [Virginia Polytechnic Institute] person. And he arranged for me to get into VPI. So I did one year at VPI and finished my studies there. That's how I got into chemical engineering. And I was only there for just about a year. In fact, I was class of 1947 at VPI.

TRAYNHAM: That was a pretty quick move through the master's program.

NISSEL: Well, it was very quick, yes. Everybody went through very quickly in those days. I was one of the few non-veteran students there, you know. Most of them were veterans who were then on the veteran's program, and everybody was in a great hurry to get through. So I got through that. In fact, I'm going there to my fifty-fifth reunion shortly.

TRAYNHAM: Oh, very good. So you graduated from VPI with a master's degree in chemical engineering. And you were ready to seek employment.

NISSEL: Yes.

TRAYNHAM: Is there any particular experience during your Master's program that you want to comment about?

NISSEL: Well, it was really very uneventful. I got kicked out of there just before I graduated but they still let me go through. I was a very bad guy.

TRAYNHAM: What had you been doing?

NISSEL: Well, I had been a very bad guy, you know. VPI is a military school, and I did not go through the military. So I lived off campus. Then I was very much into jazz, which I still am. I'm into all kinds of music and I have quite a large record collection, which I amassed. Radio reception was pretty bad in Blacksburg, Virginia for some reason. They have a lot of iron ore in the ground. So you couldn't even pick up radio stations 100 miles away. So I started a clandestine radio station off campus with a little 1-kilowatt transmitter I built. I put an antenna up on a building that was just off campus. In the afternoon after school and the evenings I'd sit

there and play records for everybody. It became a very popular station. I called it WTEK—which is still there, by the way. The official station at VPI is still WTEK, which were my letters. And everything went very well. Everybody was very happy. Nobody bothered me. The FCC [Federal Communications Commission] didn't know I was there, you know, so they didn't pick that up. You could only pick it up within a mile or two.

They had a lot of problems at that school. There was a little bit of corruption here and there; they had several outbreaks of ptomaine poisoning. I started to dig into that, and I started to accuse some of the people of malfeasance on the radio. They started not to like me anymore, you know. I was a muckraker. Then the last straw of the whole thing was, a couple of weeks before I was supposed to graduate, which was just back in I think about May or so, there was then a famous hit tune by the Vaughn Monroe Orchestra called "And So To Bed." I played that one night as a request from several boys in barracks number five to the police chief's daughter, who was a somewhat promiscuous young lady. The next day I went to town and the police chief beat me up, literally beat me. He was one of these out-of-the-movies, fat, old southern police chiefs, you know. He beat me up and told me to get out of town, and launched a suit against me and all kinds of stuff. And I got out of town. I thought the better of it. So that was my career at VPI.

TRAYNHAM: But they still allowed you to graduate.

NISSEL: Yes. I probably still have a warrant for my arrest out. [laughter] I haven't been back too often. I'm going back in a few weeks.

TRAYNHAM: Well, maybe the still existing radio station will play a reprise of your incident.

NISSEL: Well, I'm going to have to tell them. They probably don't even know what their origin is anymore. I still have a copy of a *Techgram*, which was our weekly newspaper which tells the whole history of the situation.

TRAYNHAM: Well, you did graduate and you looked for employment.

NISSEL: Yes. I was already looking for employment, obviously, before graduation. And I had two offers. I had one from Union Carbide [Corporation] in Bound Brook, New Jersey and I had one from Esso [ExxonMobile Corporation] in Baton Rouge. And I went up to Bound Brook, New Jersey, first, just to look that over. And I liked that because it was only about a half hour from New York. And I said thanks but no thanks to Esso [ExxonMobile Chemical], and I moved to New Jersey and found something there. I was with Union Carbide then for ten years.

TRAYNHAM: And you had a successful career at Union Carbide I understand.

NISSEL: I had a very successful career, a very enjoyable career with Union Carbide except I was very young. You know, I started when I was just about twenty-one years old. I wasn't even twenty-one yet. I did a lot of innovating. I worked primarily there on compounding at first and then on calendering. And they got me involved in vinyl stabilization. I got quite a few patents there in my early days on the various things I was working on. I was fairly inventive in those days. But they held me down because they told me, "Hey, you're a very young guy, and, you know, bide your time." And I was there short of ten years, and after I was there about five or six years I got a call from the president of the company whose headquarters was then on 30 East Forty-second Street. That was Union Carbide's headquarters. And he said his name was Miller. I remember that. I knew him because I was working in the Development Department, and we were regularly giving progress reports.

We had brass meetings about every three months with all the vice presidents. The president would come and we'd give ten-minute presentations on what we were spending their money on. I'd become a fairly fair-haired boy there. I could tell that they liked me. He called me up one day and said, "Don't tell anybody, but I want you to come and see me personally." I went in to see him. He said, "You know, Frank, we can't advance you as fast as we want to because we have all these people who have been there a long time. We can't jump you. But you're going to get extra compensation from headquarters here which nobody knows about—your boss, nobody knows about that."

TRAYNHAM: That was an unusual arrangement.

NISSEL: They must have done that to other people, too, I'm sure. But before I got through I was getting as much money on that special compensation out of headquarters as my boss knew I was getting, which was a pretty ridiculous situation. And a very political company, Union Carbide, in those days I guess. After I was there about ten years, I did a lot of customer service because of a lot of things we developed. I went out then and helped customers how to apply them. People didn't have tech service departments in those days. You just sent out one of your process engineers. And as I went along I had several job offers from some of these customers.

And I had also met a gentleman who was one of the early pioneers in extrusion. In fact, he was the garden hose king of this country. He owned a company called Supplex, who was one of the major producers of garden hoses in the country. I met him through the Ski Club in Plainfield [Pennsylvania]. I was a skier then because of my wife. He had just sold his company, Supplex. He was a big capital gainer and was going to start a company that built extruders with his knowledge, because he'd done a lot of pioneering on extruders. Those were

the days, in the 1940s and early 1950s, when extruders were used for rubber. And then plastics came along, and he'd try to use rubber extruders for plastics. They weren't very suitable. Plastics took a much more sophisticated machine than rubber. He'd done a lot of work on that.

He suggested that we get together and start this new company—which I jumped for, although my experience was not in plastic extrusion at all. Although when I first went to Carbide for about three months I shared an office with Bruce Maddock, who's considered one of the pioneers of all extrusion. You know, he's the Moses of extrusion. And a little bit of that I guess rubbed off on me. Bruce was a very brilliant guy too. He died a few years ago. I really didn't know a lot about extrusion, but I picked up pretty quickly.

TRAYNHAM: What had been your major focus at Union Carbide?

NISSEL: I focused mainly on vinyl calendering. I ended up being technical manager. They were one of the big vinyl producers in those days. There were two big vinyl producers: one was Goodrich [B. F. Goodrich Company] and the other one was Carbide. And we had a big calendering plant in Bound Brook [New Jersey] and a big calendering plant in Ottawa, Illinois. And I got involved in a lot of the development on improving the performance of calenders, the quality of calenders. And as a result of that, I backed into a lot of the formulation work because I found out that formulation was very important in what made stuff calender well. This is what made vinyl film and sheet flexible and rigid.

So I ended up being the chief vinyl formulator too. And I invented several stabilizer systems in those days, which are still being used today. And I was the first to come up with them. Matter of fact, I developed all kinds of acceleration tests of formulations for heat stability. That's a test I developed which is still being used. And the other thing I developed at that time at Carbide was the density column, which I should have put my name on. And it would have been called a Nissel column. You see, today you go into any plastics operation of density determination down to the third point is very important. I needed a test at that time for vinyl formulations because a typical vinyl formulation going in the calendering product had as many as fifteen, maybe twenty ingredients.

In those days everything was weighed manually. We just had to scale up. We had all these bags and boxes and things and people would weigh them in. These were five thousand pound batches. They were making ribbon blenders, and if somebody left out one ingredient it could do some hellish damage if they left out some stabilizer or lubricant. If that got on the calender it just stuck up and everything shook. It would cause thousands of dollars worth of damage and shut the line down for days. So I wanted some quick quality control test. And I figured if I could measure density accurately that would be a good way to quality control the formula. I checked, and normal density measurements, which you might do with a picnometer, are very laborious. It's not a good factory floor test.

TRAYNHAM: Particularly with molten plastic.

NISSEL: Yes. It's a very technical test, which you can't do quickly on the floor. These five thousand pound batches ran maybe oh, two hours, three hours. So these tests had to be run very quickly.

I was reading up on the literature, and I found that at the Philadelphia Textile Institute [Philadelphia University] somebody had come up with a test to measure the density of individual fibers. He did that with a column of two liquids which were of two small differences in density, mixed slightly, and then had a gradient through there because they were slightly mixed. If you dropped the fiber in it would sink to a certain level. Actually, they didn't even wait for it to sink to a level because fiber sank so slowly. They just determined the final velocity and from that they extrapolated where it might sink to. Otherwise, we'd wait two days, you see, for the fiber to sink to the level.

I took that and I got to work. All we had to do is make one pellet and put it in a wetting agent so when we dropped it in and use two solutions. We usually used some of the heavy salts to make the solutions to get up. We needed densities for the vinyls. They were in the 1.5 to 1.3 range. So we used one of the bromides. It had a very heavy salt. We made two different solutions with a density of 0.05 difference, which was very easy to do. You put one in and put the other one in. You mixed it very slightly so that you got not just a straight line, but you actually got a gradient through there. And then we made calibration pellets, which, of course, went through very careful measurement, and we floated those in there. We had six or eight or ten calibration pellets in the thing. And then you could just take a pellet and drop it in there. Within ten seconds you'd have the density down to four points. This became a hellishly good test. But the other test became very good for ultimately was polyethylene density, which was another very critical thing.

Carbide felt that that was such an important tool that they would not let me publish it. They would never say that they locked this up at a special temperature control test room, which was a secret. Nobody was allowed in there except a few technicians and me. They kept it all to themselves. They wouldn't allow anybody to publish. They gave it to Western Electric [Westrex Corporation] because that was our big customer on polyethylene. Then after a while they gave it away to some company. I think it was a company called Tech in Princeton who builds them now. But they don't even know who I was! [laughter] Yes, it's actually called a Nissel column. I would be famous now like many other test methods with people's names. So that was one of the many things I developed in those days.

TRAYNHAM: Well, you had a successful career at Union Carbide going.

NISSEL: Yes.

TRAYNHAM: And in effect received a double salary.

NISSEL: Yes.

TRAYNHAM: There must have been some hesitation on your part about the prospect of leaving that and taking up in extrusion technology, an industry that you didn't feel that you had had experience in?

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NISSEL: There were two things that happened that somewhat pushed me in that direction. One was that I really felt that, having been paid half of what my bosses know by my boss and the other half in town, there's something wrong with that company, in the long run. And the other thing is that, when I pushed a little bit, they offered me a job in New York at headquarters but in a totally different area of activity. They wanted me to be the head of their Extrusion Materials Division. I said, "Listen, I'm now the world expert on calendering. How can you put me into something I know nothing about? Besides, I really don't care to move to New York. That's a killer. It's an hour's commute each way, and that's how you get old in a hurry."

Just about that time I got this offer from my friend to join him in this new company, and I just told them, "Thank you very much. I'm going to step down and go out and do my own thing and try my luck at building extruders." And they were so upset at my refusal of this promotion to being a manager of something that I was told five minutes later, "Please pack up and get out of here. We'll give you a farewell party in two weeks, but don't come in here anymore." And that's the way Carbide handled people. Carbide was a very stupid company about ex-employees. Even if they went with customers they resented them which was very silly, because if they went with a customer it could do Carbide a lot of good.

They just felt anybody who left Carbide was a traitor, regardless. I wasn't going with a competitor either, you see. And the funny thing is, for instance, Dow Chemical Company, who now owns Carbide, plays the game totally differently. I know at the Annual Technical Conference of the Society of Plastic Engineers, Dow Chemical for many years used to have an alumni dinner to cultivate these people because they're a good place to sell Dow materials, you see.

But Carbide, they just hated anybody who left the company. They just thought that was a treacherous thing to do, and in essence you almost got fired for leaving. So I left and I started

this new company. We were quite successful because I picked up rather early on extrusion. And interestingly, these were the early days of sheet extrusion. Sheet extrusion was then something that had been developed by Dow Chemical Company in polystyrene. And Dow had developed a whole concept that one would extrude polystyrene sheet, which they were making. By the way, Carbide also made polystyrene. You'd extrude the sheet, then you'd reheat it and thermoform it and make things like cups. And Dow developed that whole technology of extrusion and thermoforming.

Well, it was just happening just about the time when we started Prodex [Corporation], which was the company I started with Al [Albert] Kaufman who was the principal. I was the junior, although I ended up owning a good piece of the company. But he was the garden hose person. In fact, he was in garden hoses with vinyls. In fact, that's one of the reasons that I was very conversant with him because I had a lot of experience in vinyl formulation. We'd talk about vinyl formulation, all that kind of stuff, late into the night. But he was extruding vinyls. And he thought he would start this company, having sold his garden hose company, and go see all these other people all over the world who were making garden hoses and sell them the vinyls to make garden hose, or for that matter pipe. He was also making some polyethylene in those days. We sold a few of those.

But then I heard about the sheet extrusion and I got very excited about that. I talked to some of the people up in Michigan who were making some of the downstream equipment to make sheet. We had the extruder. There were other people making the sheet dies and then also the cooling of the roll stacks and all this equipment. There was a little company up in Michigan who was doing that with the know-how provided by Dow. And so I got us off in the direction of sheet extrusion, and pretty soon we were the number one sheet extrusion anywhere and we sold machines all over the world. And after one year we never sold another machine for pipe or garden hose. That was the end of that.

TRAYNHAM: So you were producing not just plastic products, you were producing and selling the machines?

NISSEL: That’s all we did. The whole objective of this company was a machinery company. It was never intended that this company would be a company to produce anything. In fact, Al Kaufman's idea was that he would sell these machines with a license agreement with his technology that he had on garden hose and pipe, which was then very advanced over what anybody else had and that we would in essence sell these machines as part of a license package. But, as I say, that didn't last very long, and we turned around and built sheet lines together with this company in Michigan who was building the dies and the takeoffs. And they, subsequently, went under, because the poor guy who owned the company crashed in Lake Michigan one night when his plane iced up flying from Chicago to Elkhart [Illinois]. And so then we ultimately built the whole thing ourselves. In fact, we hired some of the people who worked for him and we just did it that way.

TRAYNHAM: As a chemical engineer you had been involved in the production of chemical products.

NISSEL: Yes.

TRAYNHAM: Did you find the transition to a machine inventor and manufacturer difficult?

NISSEL: To me it was natural. I don't know why I ever got into chemical engineering; I always liked machines. I'm a mechanical person. And my chemical engineering background helped me a nice great deal in making calculations and things like that. And other than the vinyl formulation end where I did use some of my chemical know-how knowledge, I really never used my chemical knowledge greatly. You always use it to some extent. But really as such all of that didn't do much for me. I'm a mechanical tinkerer.

TRAYNHAM: So from that time forward you were essentially doing what a mechanical engineer would do rather than what a chemical engineer normally did.

NISSEL: That's correct. I always had the ability to convince customers. I mean I was always traveling and finding opportunities. I never let anything stand in my way such as a person saying it can't be done that way. In fact, that was one of my famous things, if people tell me it can't be done that way, I'll find a way.

And so, we built that business up very much over a period of years and were very successful. We also built some big compounding machines. I had some very good relations with some of the people in the major chemical companies. And, in fact, we had Hercules [Chemical Company, Inc.] right across the river from us that had high-density polypropylene operations, and we built their compounding machines. And Esso was up there and Shell [Chemical Company] was up there, so they're all up in that area. In those days Esso was in Linden [New Jersey]. The refinery is still there except it's owned by somebody else now. That was their technical headquarters.

So we got involved with those people, and we built a lot of compounding machines for the new polymer plants. So we had two areas we were big in: we sold very large machines, and the other one was sheet extrusion. We did a lot of sheet extrusion. We also did some pipe. We did some rigid PVC pipe. In the early days of rigid pipe, through my know-how in vinyl formulations we'd done a lot of development work on the extrusion of rigid PVC pipe. And we'd actually done a good big of development work.

We ran into a high intensity mixer in Germany, which is basically a large Waring blender. But the capacity is in the five hundred to two thousand liter range—a big motor and a big impeller. We brought it over here and it really gave us a big jump in the rigid PVC end because we were able to make a dry blend that we could extrude directly, which you could never get with a ribbon blender. You'd have to compound, pelletize first, and so on. And we took this whole mixer thing and we sold about two thousand of those mixers in about five years over here.

The whole vinyl industry switched to that kind of mixing system for everything. All the vinyl people jumped from their rhythm blenders and used high intensity mixers. We then used the dry blend also to extrude directly into pipe on a single screw extruder, which nobody had done before. And, in fact, we'd done it in quite a battle with Goodrich, who was the major producer of PVC compounds. We were able to extrude directly from dry blend, which saved the compounding step. Instead of paying 35 cents a pound then for the compound that's made by Goodrich, the raw material cost in the whole thing was about 15 cents. So for 15 cents they were able to do the same thing that Goodrich would charge 35 for.

We had a battle for years with Goodrich, who were trying to even go to ASTM [American Society for Testing and Materials] and have it specify not that pipe have certain physical characteristics, but you could not extrude from anything but pellets. And they went around and did all kinds of tests and things to try and prove that the pipe made from dry blend was no good and would fail after a period of time, and so on. But we sold hundreds of machines. This question has been moot for thirty years now. Goodrich fought that battle for a long time with us.

TRAYNHAM: Well, it sounds as though while your aim was to produce the machinery for sale, you actually built and used the machinery to turn out product to prove the efficacy of the machines. Did you market those products you were turning out?

NISSEL: No, we would run some pipe in the lab. You had to demonstrate it. We also had a very large lab at Prodex. We had up to eight-inch diameter machines there and we could run two, three thousand pounds an hour. That way when people wanted to run compounding tests, those people would come in, they'd have some new polymer, and they'd want to see what you could get out of a machine. And we had rail siding, and people would come and we'd run a full-production-size compounding machine. Nobody else in the whole world had that size machine set up. So there was never any question of scale-up performance guarantee. “Gentlemen, here it is. You ought to take this machine with you if you don't think we can build another one.” We actually had people who did that. They would want that machine. So we said “Fine, we'll build another one. You take that one.”

Well, it's interesting how over a lifetime you can get into battles, political battles with raw material companies. I'm in one of them right now again and I've never lost one. The first

one we had, incidentally, was when I was still with Prodex in the early days. We had developed the vented extruder to devolitilize material in the course of extrusion. They were around before we got there, but it was never a practical machine for product extrusion. They never had a uniform output. They were okay for compounding, but when you want to make a product you have to have a precise output rate. We took the vented machine from its infancy and really brought it up to a machine that works perfectly and it still does. But still people out there don't know how to build a good vented machine. We do.

In the early days, polystyrene was then the major material for sheet extrusion because that had the characteristics you needed to make plates and cups and things of that kind, which were the interesting products in thermoform materials. Polystyrene in those days always contained a certain amount of moisture. People had to pre-dry it very carefully, because otherwise you'd end up with bubbles if you made something of a foam sheet, but small cells with holes. We decided to apply our vented extrusion know-how to this.

We offended the Dow Chemical Company by saying, "Our machine does not require a dryer." They were the major supplier of polystyrene for this application. We just went out and said, "We don't need a dryer anymore. We can run this stuff on our vented machine. And not only can we run it vented, but we can run about 30 or 40 percent more output on our machine than Dow claims for their screw design." They had a very proprietary screw design they thought was necessary to run polystyrene, that one of their people had developed, a fellow by the name of Fred [Frederick] Dulmadge with the famous Dulmadge screw.

They had this holy number on a four and a half inch extruder, you could only run 395 pounds an hour. We took a four and a half vented, and we ran 600 pounds an hour. And Dow Chemical Company went all over and said, "You know, you're going to ruin our polymer if you do that. You can't use that Prodex machine. Don't do that. If you run that output you're ruining the material. If you run vented you're ruining the material. You're going to have problems." Well, we fought that battle for a while and we won. But it took a while. They were going around to everybody saying, "Don't buy that machine." And, you know, how funny they are. It was in their best interest! We were saving money. We were making it less expensive to process their material, and yet they still fought us.

TRAYNHAM: Was there a court case or a lawsuit?

NISSEL: There was no lawsuit. There was nothing legal about it, it was a macho thing. We offended them because they thought they had written the book on how to process their polymer, and we said, "Yes, this is one way but we have a better and more economical way of doing it." Well, interestingly enough, I met the head of their lab in Connecticut. And I brought him in and showed him what we were doing. He bought one of our machines, and he became one of our best salesmen. And yet Dow, Midland was saying, "Don't do it," and this guy said, "Do it." And as a result of that fortunately we started with people like Sweetheart.

Sweetheart was then an ice cream cone manufacturer up in Boston—up in Cambridge. And they were one of the early sheet extruder thermoformers. They developed a little boat shaped thing for banana splits they called a banana boat. This goes back to about 1956 maybe 1957. They made a little green banana boat. Well, the first machine they bought was from us. And that's how Sweetheart was now a big powerhouse and, you know, all its cups and disposables got them in business, with our vented machine.

TRAYNHAM: I'm prompted to ask—because you keep mentioning the success with which you changed the way the machines were operating in this developing industry: Do you have a feeling for identifying just what it was that enabled you and your colleagues in your company to repeatedly produce machines that were advantageous to use over the others? What was it about your approach that enabled you to beat out the competition on designing new machines?

NISSEL: You have to have a broader view than the others. You have to try not to do it exactly the way everybody else has done it all these years. I've gone to a lot of technical conferences all over the world where I find that I'm the only machine builder. There will be a lot of machine users there and raw materials people but no machine builders. That's where you learn what's coming up next, what is the new material that might come up and what are some of the possibilities. And in the end you have to put one and one together and come up with two and a half. I've just had the ability to be a little bit more farsighted than the others, and I've never copied any of my competitors. In fact, we still make products that nobody else does. They're still following us all along the way in most cases.

You just have to see what's coming up and what people want to do. You have to talk to people and say, "What would you like to see done better? How can we save you money?" I don't want to make a cheaper machine, I want to make a better machine. You know, anybody can always build something cheaper than somebody else can. But we try always to build it better and to give people a better value. And that's what I've done all my life. And there have been many cases I've had fights with raw material suppliers. I have one right now with Eastman [Kodak] Company on polyester. Because they say you cannot run polyester on a vented machine. I've got two hundred machines in the world doing it, but they still say you can't do it or it ruins their material. They're going out telling people the same old story that Dow did forty years ago. And it's so funny. They feel offended because they want to do it the other way. My way, the cost savings are incredible, and the disadvantages are so minor that it just makes no sense. But we're still fighting about it.

TRAYNHAM: Well, was Eastman or Dow earlier manufacturing the machines that they were promoting?

NISSEL: No, they're not promoting machines, they're promoting a way that the machine should be built to process their material. My answer to that to customers is, do you go to the gas station and tell the guy the engine should be built? This is about the approach they take. I mean Exxon [ExxonMobile Corporation] doesn't tell General Motors [Corporation] how to build the engine. But some of these raw material people tend to have very proprietary attitudes on how their polymers should be processed. And actually, none of these raw material people have very modern machines in their labs, you know. When they buy an extruder, good Lord, they never wear out! I know Eastman, in their lab, still has extruders I sold in Prodex days, forty years ago. They're still using those as lab machines, you know. So they're dealing with old archaic machines, and they're still promoting that way of doing things because that's what they feel comfortable with.

TRAYNHAM: Well, you were very successful at Prodex. But what did that lead to, or what was next?

NISSEL: Well, Prodex was very successful. And Al Kaufman, who's a senior partner, is a capital gainer. His whole history is every so many years, and we would build a company up, you know. We paid ourselves very minor salaries and had no company cars. Because, as I said, every penny you leave in the company you'll get back ten times when you sell the company—which is true.

TRAYNHAM: So your and his intent was to build a company for sale.

NISSEL: Well, his was. I had never done this before. He said, "Listen to me, Frank, capital gains is where it's at." And so we had quite a few offers to sell the company, and we finally sold the company to the Koehring Company in 1955. Their big business was excavators. And they were trying to broaden their market into what they thought would be a less cyclical business. And they had already bought the HBM Company, which was then the largest injection machine company in the country. And so they figured, "We buy Prodex and we're probably the second biggest extruder builder in the company."

They bought us then. And they were the first company who tried to put together a plastics machinery conglomerate and, you know, who had injection and extrusion. And subsequently they also bought Brown Machine [Company], which is a thermoforming machine builder. This is, of course, what you need after the extrusion to make thermoform packaging of products. They ended up buying quite a few other companies and put together a plastic machinery conglomerate. And I didn't stay very long because, you know, once you're your own boss and you get another company in there telling you how to run it, and you tell them all the reasons not to make a mistake and they make the mistake, after that happened a few times I got out.

TRAYNHAM: It’s no fun anymore.

NISSEL: It’s no fun anymore. And, in fact, I was on the Board of Koehring Company and all that good stuff, and they were a typical stodgy Midwestern company. But I think other people have been through the same experience. When you own a company or maybe manage and then somebody else takes over and tries to tell you how to run it—you can't do that. It doesn't work. So I got out. In fact, Al Kaufman and I both got out because they promised us big bonuses. They said, "We have this wonderful bonus plan. If you make your objectives, you get up to a 30 percent or 40 percent bonus at the end of the year." And I said, "That's wonderful."

I'd never done any forecasting, you know. I still don't do any forecasting because there's no way in the machinery business that you can forecast. It depends on the economy. You tell me when the economy is going to pick up again, I'll tell you when my machinery sales will pick up again. But they asked me when. I said, "Well, okay. If you want me to forecast, next year we'll have a 10 percent increase in sales and 10 percent increase in profits." Oh, they said, "That's wonderful, Frank, very good." But instead that happened to be a very good time. We went up about 25 percent or something like that.

So at the next Board meeting in Milwaukee after the first of the year I said, "Where's our bonus check?" And they said, "You don't get one." I said, "Why?" They said, "Well, you didn't meet your objectives. You said ten and ten." I said, "I did better than that." They said, "If every division did that we'd have a cash flow problem." So we walked out. We literally got the company secretary and dictated our resignations, and walked out. That was the end of that.

TRAYNHAM: What did you walk to?

NISSEL: Nothing, I walked home. My wife was thrilled to see me twenty-four hours a day, you know, because we really worked pretty hard in this company. I'd come home at eight o'clock at night much of the time. I didn't see the kids much. I went all over the world traveling. She was delighted to see me home. We had a glass of champagne and we celebrated that I was out of a job. And then I bummed around for about a year or so and became a consultant. Lots of people called me up and said, "Hey, Frank, we need some help," and this and that and the other thing. I'd charge people a thousand dollars a day—which was a hell of a lot of money in those days. They were delighted to pay me a thousand bucks a day plus expenses.

But I found that consulting was not a very interesting business. Because when you're a consultant you cannot compel people to take your advice, you can only hand it to them. And you can tell people, “You know, the well is open. You’re going to fall right into it,” and they

fall into it. You see them doing it and you try and prevent them from doing that. What happens in the end, if they take your advice and it's successful, they praise themselves for having hired such a good consultant because they hired a good consultant. And if it doesn't work, they make a mistake they say, "Well, we had the best consultant and we failed anyway."

So I found that to be a very unsatisfactory trade. And I did that for under a year. Anyway, I had plenty of money from the sale of the other company that I never had to work again anyway.

[END OF TAPE, SIDE 2]

NISSEL: At one point, I got a call from a friendly competitor to some extent, Jack Hendrickson, who was the vice president of the Welding Engineers Company in Norristown, Pennsylvania. We had done some work together with them in compounding work. Welding Engineers was then the foremost builder of twin-screw extruders in this country, and his father, [J. B. Hendrickson] was the founder and owner of the company. And we were somewhat competing with each other.

In the early days of high-density polyethylene, which was a flaky material, the only way people could compound the pellets was to use twin-screw machines, just because it didn't feed very well. It's very fluffy and flaky and the single screw extruder didn't feed very well. We had done some work on this with Hercules who were right across the road from us in New Jersey, and we had actually managed to do the same thing on a single-screw machine which cost a fraction of what a twin-screw machine costs. So pretty soon we were taking away business from Welding Engineers. They were a tough competitor, although this was like taking candy away from kids because we were just a fraction of the cost. I wasn't even trying to be cheap. A single screw machine is just one hell of a lot less expensive to build than a twin screw, and has less problems.

There came a point after practically nobody bought the twin screw machines anymore where Welding Engineers had one thing we didn't have which was a die face pelletizer. Normally we were running strands out of a die, and then through a water bath and chopping them up to make pellets. They had a system to cut the stuff hot right on the die. We didn't have that. And we had one customer, an Italian customer in those days Montecatihi who were building a plant over here and who had Welding Engineers machines with hot cutting in Italy, and who insisted that they're going to buy a Prodex extruder which they really wanted to. We had to prove to them we could do hot die face cutting.

So, I went to Welding Engineers and I said, "Do you want at least part of the business? You know, these guys will buy your die face cutter from you, but they also insist that we demonstrate that at our lab." So they brought in their cutter, we put it on our machine. And Jack Hendrickson, who was then the son of the owner and he was the technical guy, he came

over and we spent several weeks getting this whole thing working on our machine. So we got to know each other. And, as I say, you know, a few months after we sold Prodex Jack Hendrickson called me up and said, "You know, we ought to get together." Because in the meantime they had picked up another high intensity mixer in Germany made by another company and were struggling to make a go of it—whereas we had probably 90 percent plus of the market. I mean they were a competitor of ours on mixers. I didn't even worry about them because they didn't know how to market it properly. And Jack said, "Why don't you come to give us a hand with marketing this mixer? Because you know our mixer isn't a bad machine, we just don't know how to do it." And I said, "Okay."

So I started to come on a consulting basis in the beginning charging a thousand dollars a day. I came up to Norristown for a few days. And as we went along I said, "You know, Jack, your whole company is not organized to handle this product." They were a very clumsily organized company. And every work order took twelve copies. Would you believe they had a form of twelve carbon copies to distribute it to all these people. It was a badly run company. And I said, "Jack, the only way this is going to work is if you and I get together and we start a new company outside of the organization that you have. And we'll do it that way, and I'll be your partner in that. Besides, I'd also like to build extruders again because I have some new ideas." He said, "Okay, let's do that."

That's how we founded Welex—Welding Engineers and extruders, that's how the name came to be. So we founded Welex as a separate company and it grew very rapidly. At first, we had a small rented building right near where Welding Engineers was in Norristown. I was commuting back and forth for quite a while till we moved here. Then we built this place. We've expanded this several times, and in the meantime all the engineers died off. They sold off the remainder of it to another company in Ohio about two years ago. You know, they slowly went down the hill and we went up the hill. And so in the meantime, unfortunately, Jack Hendrickson died about three years ago, and so I've got the whole thing now. But his widow's still, you know, very much involved here but not actively.

TRAYNHAM: How long ago was this facility built?

NISSEL: This was built in 1969. We've added on here a little bit. On one side is Unisys [Corporation] headquarters which was then called Univac. It's now Unisys.

TRAYNHAM: Yes.

NISSEL: And we bought an open field here. There was an old farmhouse. We bought it because it's 15 acres or something like that. And so here we are.

TRAYNHAM: Well, it looks newer than 1969 vintage. It's well cared for.

NISSEL: It's been well cared for. In fact, I hung this map you see on the wall here. I hung that when we moved in and it still hasn't deteriorated. But we take good care of it, you know, and we put new carpeting in every so often. We change the lighting too—new fixtures, and so on.

TRAYNHAM: I would like to ask, what do you see as the future for Welex and for yourself now at this stage?

NISSEL: Well, right now, quite honestly, we're going through the biggest depression in the machinery business that I've experienced. I've been in this business now since 1955, so a good many years. Business is very slow for everybody. Several of the companies have actually gone broke. My old company, HBM, went under. Somebody bought them for nothing, but they broke last year—Chapter 11 and liquidated. Then somebody bought up the pieces. There are several others that are just hanging in there. Even the very largest companies like Milacron [Inc.] are running at half speed or less. You know, there's no growth at the moment in the demands for the products that are made and people are hesitating.

So I can't change that. I mean we have business, but we're running at about half speed here like everybody else is. And, of course, under these conditions everybody on top of everything. They know things are tough so they're trying to beat you over the head and every order is fought over by many people. So it's not a happy time, but we'll survive. You know, this is basically a family-run business. My son is our sales manager; my daughter is our marketing manager. My daughter's husband is our general manager. So we have a very nice operation here. And we've had many offers. I mean I get daily offers, literally daily offers to sell the company. But really what would I do that for? I mean I have very good succession plans here. The younger generation can run this place very well. We've remained a modest company. In a good year we do about 50 or 75 million dollars, which is a very viable amount, and we're profitable.

This year we're going to lose money for sure. But we can manage. We have no back loans outstanding. I've run this place in a very conservative fiscal way. I haven't had a bank loan ever since the company started. We support ourselves. So, I can hang in there quite a while. I think the future is bright because the plastic industry is going up and up. It's just a hiatus for the time being, as are many other industries. Look at the paper industry. When I see their statistics with machinery sales, they're in worse shape than we are.

TRAYNHAM: Who in the company is groomed to exercise the responsibility of the inventiveness that you have provided when you decide that you're ready to have a successor?

NISSEL: My son Jim [James Nissel] is doing very well. He's got several inventions to his name already. And I have a bunch of young engineers here that are pretty good. But I have no fear that this company is not going to do well. If they want to sell it, that's up to them. I'm not going to retire. I'm going on to seventy-six this year.

TRAYNHAM: And you're still having fun.

NISSEL: I'm still having fun, although less fun right now than I've had other times. It's nice, however, to have some time to relax and be able to read some magazines and things instead of just putting out fires all the time. This is giving us a good time to do some new designs that I've wanted to do for a long time, and we just haven't had the time to do it. It's just been putting out fires getting orders out the door. So, at this point we've got some real new designs coming out, some good ideas all of us have put together.

TRAYNHAM: I suppose since you build your machines to last longer than a lifetime, the new designs will have to be bought by new companies or just new start-ups or something.

NISSEL: No. The old companies—they're more efficient designs. They're better performance for the money and more efficient. You know, this is a growing industry. It's just at the moment the market is down for the last year or so. It has nothing to do with 9/11 [September 11, 2001]. Already long before that, it was on the way down, because we had a whole bunch of crazy years and we had people who over-bought. They really bought too many machines and right now they have machines sitting idle.

Well, you know, the plastic market is a growing market. It's out growing the GDP by about 100 percent. Polymers are going up and up and up, and there are always new things coming out. There are constantly new things coming out, the new polymers around give us more things we can do. We're right on top of all those imitations. You know, this is one of my inventions here, the two-color cup, things you use every day.

TRAYNHAM: Yes.

NISSEL: And simple as it may seem, that's a four-layer structure. So there are all kinds of things going on that needed new things done. We'll be there to do it.

TRAYNHAM: Your inventiveness, or creativeness, and achievements have been recognized by your colleagues in the plastic industry, and I believe you received some significant awards as a result of your career. Tell me something about the awards and your reaction to them.

NISSEL: Well, I've had about all the awards they had to offer I think, you know. I've been a member of the Society of Plastic Engineers for fifty years. And, you know, I'm a Fellow there. I've had that now for ten years or twelve years I guess. And I've had all kinds of other awards given to me by various groups, not just in the plastic industry. Two years ago I was greatly honored and surprised, I was put in the Plastics Hall of Fame. I'm very happy to be in that, of course. But that's about as far as you can go. And, you know, when they hear about it, everybody all of a sudden wants to be your friend, you know. Interestingly enough, I don't mean that in any nasty way. But I'd totally lost touch with some Union Carbide people. And all of a sudden after I got my Hall of Fame award—ah, one of our boys made it!

So I got this call from their old-timers group. Said, "Hey, Frank, you know, we have this old-timers group. We meet for lunch every month. And so you must come down here and join us." So it's great. So I go down to Bound Brook for lunch once in a while on the last Thursday of every month and meet with all the old guys. I'm the youngest of the group now. Some of them are up in their nineties and doing very well. So, the Hall of Fame thing really more than anything re-established my contact with a lot of people who I'd lost contact with. That's the best thing it did for me. These people came and said, "Congratulations, Frank." And I said, "Oh, thank you very much." And, my God, I'd totally lost contact with them and lost touch with them.

So it's wonderful. That's the best thing that did for me. The honor is wonderful, and what it did for me in terms of social contact and friendships with people is way beyond anything I thought.

And I'm also into many other things. I'm very much, as I told you, into music. And I've been on the Board of the Philadelphia Bach Festival, and I'm on the Board of the New Jersey Jazz Society, and I've been on the Board of several other jazz societies. And I just got back from Florida where I was one of the “do-ers” in a big jazz weekend down there. I've got all kinds of awards in the jazz industry. I've been given the top awards of several jazz organizations and have medals hung on me from them.

TRAYNHAM: Do you play any instruments yourself?

NISSEL: It's called a tape recorder. Like you do. [laughter]

TRAYNHAM: You're an appreciative listener.

NISSEL: I'm an appreciative listener. It's a funny thing, because both my parents were very proficient musicians, classical. And my father, in fact, was a semi-professional cello player. He had his own string quartet that played at the house every Sunday morning. God help you if you called up during Sunday morning. And he in fact played in the Chicago Symphony Orchestra part time. He ended up as vice president of Chicago Edison Company, but he was such a good player that he actually played in the orchestra whenever he wanted to.

When I was a kid in Egypt they tried to get me piano lessons. He knew a couple of these very famous concert pianists. But they didn't have much patience with me and I didn't have much patience with them. I had two concert pianists who were supposed to give me piano lessons, and neither of them had enough patience with me nor did I have enough patience with them. That was the end of that, you see. So, I never learned how to play an instrument—much to my chagrin. But I greatly enjoy the music, and I know a great many of the famous jazz musicians around. In fact, I circulate with them. I go to a lot of recording sessions in New York. I go to their concerts and things, and I have a whole other life in the jazz area.

TRAYNHAM: You mentioned your involvement in musical groups in New Jersey and New York. Are you involved in any in Pennsylvania?

NISSEL: Yes. Oh, yes, Pennsylvania. I'm also much involved with the Pennsylvania Jazz Society. Thank you very much. And they've given me their highest award they give. And I'm involved with the Tri-State Jazz Society, which is another one down there that's in Wilmington [Delaware]. And so I keep very, very busy.

TRAYNHAM: You must have to travel quite a bit to keep up with all your musical groups.

NISSEL: Maybe by car. I do go to jazz things out of town quite a bit. But mostly they're between New York and here so, you know, New York's only about two hours away from here.

TRAYNHAM: What other interests do you have besides machinery for plastics and music?

NISSEL: I like to ski in winter and I like to sail in summer. I tried to play golf for thirty years and finally gave up.

I ski with our golf pro. He has a ski place. I have a little ski place up here in the Poconos [Pocono Mountains, Pennsylvania] right by the slopes and he has one up there too. So I've decided the best thing to do with the golf pro is go ski with him and his wife.

TRAYNHAM: Do you have your own sailboat?

NISSEL: Yes. I have a Hobie Cat.

TRAYNHAM: And where do you anchor it?

NISSEL: I don't. It's on a trailer. I go to lakes. I go to the ocean. I mostly sail on a big lake up here. I go up there to sail. I bought a Hobie Cat the second year it came out and I'm still like a kid sailing a Hobie Cat. You know, that's a very fast, very exciting boat to sail. I don't like big sailboats. They're too slow for me. My daughter and son-in-law just bought themselves this great big sailboat on the Chesapeake [Bay]. I've been on it once and it's not very interesting. It's too slow, too much work. You know, you have a big sailboat, you sail for one hour, and then you spend two days cleaning it up. [laughter] I really have no use. My wife and I went all over the Caribbean and various other places. We used to go charter sailboats. That's a great thing to do. You pay your money for a week, and then you walk away from it and it's their problem.

TRAYNHAM: Yes.

NISSEL: Whereas if you own the boat oh, my God if you want to maintain it right the maintenance is endless. I can see what my kids are going through here. It's awful. But they still love it, you know. They just want to get a bigger boat. I've never had the urge to get a bigger boat. I'm very happy with a Hobie Cat, thank you.

TRAYNHAM: You've made references to your family members throughout. Tell me something about your wife's interests and your children.

NISSEL: Well, my wife and I were married fifty-one years now. I met her in New Jersey in Plainfield when I was working for Union Carbide through a fellow I met who was my haberdasher in Plainfield. And he was running a men's shop in town, and I would go by there and buy my shirts and underwear from him. And he told me one day that he had a very nice girl for me, it was his childhood sweetheart. But he in the meantime met another lady. He was

married, and so he sent her to me. But he became one of the famous jazz writers up there and is very much into jazz. We still get together.

Unfortunately, about a year ago my wife [Bette Nissel] had a very bad stroke. And she's at home paralyzed, so she's bedridden basically. But I have live-in help taking care of her, and I do all the cooking. I have two people in the daytime, and one person who stays overnight too. When I come home at six o'clock or so I start cooking. All these ladies are Jamaicans, so I have to have the hot sauce, bottle of Tabasco. So whenever we eat they always have to have Tabasco sauce on it. But I'm famous for my cooking. I was always a pretty good cook, but recently I've become a better cook. I enjoy cooking too. But unfortunately Betty's not with it. Even her speech is badly affected.

TRAYNHAM: That's sad.

NISSEL: It's very sad, but she's comfortable. And fortunately the family is around. So Nancy [Lewis] (my daughter) went over there today to lunch to see her and brought her a sandwich and yakked it up with her. And so, everything's all right, but let's face it, she's going to be this way for what little time she has left and I'll make her as comfortable as I can. But I still get out, fortunately. I don't let this hold me back. In fact, I go to more concerts and things now than I used to because she used to say, "I'm tired today," and all this kind of stuff. Now if I want to go I say, "Okay. See you later."

TRAYNHAM: And you have how many children?

NISSEL: I have three. The oldest is Jim, my son who's the sales manager here. The second one is Nancy, who's our daughter who is very talented in marketing and, in fact, graduated Summa Cum Laude from Ursinus [College], top of her class, and who's doing a hell of a good job here and also, for that matter, kind of runs the family. She's the one that makes sure, if anybody has a pain she immediately has the right doctor, you know. You have a doctor's appointment this afternoon at three o'clock, Dad—all this kind of stuff. She's a very persistent, hard working person. She makes sure everything's done right.

And then I have a younger daughter, Laura [Shemanski], who's also a chemist. She is one of the top environmental people at the pharmaceutical company in New Brunswick [New Jersey]. She worked for BASF [Corporation] for a few years, and then she found that BASF had a glass ceiling. Women were not allowed to advance. So she quit.

But she's very successful up there. She's married. And they don't want to have any kids. She's married to an engineer, and they have a lovely house over in Flemington [New Jersey]. We see them a lot, so I have the great fortune of having my whole family close by.

TRAYNHAM: That is fortunate.

NISSEL: It's really nice.

TRAYNHAM: Do you have any grandchildren?

NISSEL: Yes. Jim has two. Nancy and Wayne don't want any kids, you know, so that's that. So I have two grandchildren by my son Jim.

TRAYNHAM: Can you think of anything else that you want to add to the story?

NISSEL: I don't know. I don't talk about myself a lot.

TRAYNHAM: When you do it's very interesting.

NISSEL: I've done a lot of things and I could talk a lot about different things. But somebody has to bring them out. I've traveled all over the world. I've been in not every but almost all countries and all continents.

TRAYNHAM: Do you have a favorite other than Pennsylvania?

NISSEL: Switzerland's very nice. I mean, if you're going to give me a country, give me Switzerland. But there are lots of lovely places. You know, if you really come down to America—whatever you'd get anywhere else you can find in America too. You don't have to go outside the U.S. to find beautiful scenery and all that kind of stuff. Really, some people just need to run away all the time. You know, they need these mysterious places to talk about. They need to go to Tibet or some funny place so they can tell their friends they've been to someplace they haven't been. That doesn't impress me. I've been to all those places, you know. Been there, done that. I don't have the necessity to distinguish myself among people by having done something different, you know. I've done enough different things to begin with.

One thing I will say is that my whole philosophy of running anything, including my own life, has been by the Golden Rule. And I don't mean in any religious sense, but do unto others

as you would have them do unto you—and also the negative of that, don't do unto others as you would not.

That's how I run my whole business. I don't need anybody to teach me morality or anything like that, because I treat people well and I treat them the way I expect to be treated. If anything I'll lean over backwards. That's how I run this company. I treat people well, and I have people who have been with me for a long, long time here. Very few people leave this company. In fact, I've got several who have left and come back. Everybody gets another chance. They go away even with competitors and come back. I'll give them one chance.

TRAYNHAM: They're glad that they saw the light.

NISSEL: Yes. So that's what we do here and that's how we run the thing, you know. I've had a very pleasant life, I have to say, and it's very interesting. Of all the places I've lived and all I've been through, I've had a very interesting life.

[END OF TAPE, SIDE 3]

TRAYNHAM: Well, thank you very much for being so generous with your time. And I know that both the Plastic Pioneers Association and the Chemical Heritage Foundation will be pleased to have your story as part of the archives. And it's been fascinating for me to be part of this recording, and I'm glad to have been here.

[END OF TAPE, SIDE 4]

[END OF INTERVIEW]

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