

ASHRAE Leadership Recall (formerly Leadership Recalled)

Transcription

Interview of: Otto Nussbaum

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Interviewed by: Mike Kearney

Mike Kearney

Good afternoon. My name is Mike Kearney and I'm a member of the Historical Committee for ASHRAE and we're here in lovely St. Louis and it's the 13th of June. And it's my privilege to interview Mr. Otto Nussbaum who is a long standing ASHRAE member and a fellow in the Society and a leader in several of the technologies that the Society is interested in. Otto, welcome to St. Louis. I hope you enjoyed your stay here and we wished the Cardinals had won a game or two for us but-

Otto Nussbaum

Well I'm a Pittsburgh fan.

M.K.

Oh you are. Well that's probably why we haven't had much success here of late.

O.N.

I lived in Pittsburgh for quite some time. It was very difficult not to be a Pittsburgh, a fan.

M.K.

Well we would have hoped to cured you. I think if Vince Coleman had got a hit late make a game Tuesday, well Monday I guess it was, we might have cured you of being a Pittsburgh fan.

O.N.

No, no.

M.K.

No. Well Otto the purpose of this interview is as I mentioned is to get down on tape some of your impressions of ASHRAE and the industry. But first I think it's important to get impression of Otto Nussbaum. You came to this country when and how'd you get started in the air conditioning business.

O.N.

Well before that I think I ought to tell you that ASHRAE has done a great deal for me. I think that chances are that whatever I have achieved in those 50 years that I've been a member was because of the help I got from people that I've met through ASHRAE because of the things I've learned while I was an ASHRAE member. And I think that whatever contributions that I have made to ASHRAE, they are very slight by comparison with of what I have gained from being and ASHRAE member.

M.K.

That's interesting, that's interesting. Well do tell us though when it was you came to the United States.

O.N.

Well I landed here what was then Armistice Day of 1937. And the reason I came here is because I lived at that time in Vienna. And the Republic of Austria at that time was very anxious to end being a republic and becoming a part of Greater Germany. And to me as a Jew there was nothing to look forward to.

M.K.

Well I don't know if Von Schuschnigg thought the same at that time either, do you?

O.N.

Schuschnigg of course was the one who promoted it but he did not anticipate is that ? because after Austria became part of Germany, oh less than six months after I left, he was not a very important part of what became Austria. As of now I think he wound up here not too long.

M.K.

Yes, sir he did. He wound up here in St Louis and he taught at Washington University.

O.N.

That's good. He was a talent who was pretty clear in his own mind about what he really wanted because he was, what we called in Vienna, a clerical. And the Nazis I think were not particularly religious people. I think they might have tolerated Catholics but I don't think they were particularly anxious of pleasing the clergy. You know of some other German clergyman who you know were critical of the Nazis and as the result either didn't survive or found it very difficult to survive. Anyhow that was why I left and I was young at that time. I was about less than 24 years old. I had just got my mechanical engineer's degree six months earlier in Leningrad.

M.K.

In Leningrad?

O.N.

In Leningrad. I lived in the Soviet Union for about five years and that was during the time when I was of the age that you normally go to college. And I went to college in Russia, in Moscow as a matter of fact, but I got my degree in Leningrad. And that was somewhere in the spring of 1937 when I got my degree and that was at the time when Stalin was still running the Soviet Union. But for non Russians it was a very pleasant kind of existence. I made lots of friends while I lived there and the only incentive I had to leave was the fact that after I graduated from school, that was tuition free and everything. There was no such thing as tuition for college education in those days in the Soviet, maybe there is now, I don't know that. But in any event, my incentive to leave at that time was that I was told about the people who were watching me and that I had a choice. I could either become a citizen of the Soviet Union or leave the country. And they didn't give me much time to make a decision. And it was a real easy decision to make because it was pretty clear that for the people who lived in the Soviet Union, you know then it was a great big prison. And the walls over there are not like the Berlin Wall. Much more difficult to cross. And so I said that while I had a good time here, I appreciated the opportunity to study, I was also acting at the same time while I studied, that I would prefer to go back to where I came from which was Vienna because that's where I belonged. And that's where I felt more comfortable. They said that is perfectly alright but in that case you better pay us tuition for the five years that you studied here. And I did.

M.K.

You did?

O.N.

Yes, I did. I thought that it was not unreasonable. I learned enough to become a mechanical engineer, in matter of fact I specialized in refrigeration while I studied there. And I also worked at the same time at night as a shift manager in a cold storage plant. So when I graduated I already had some practical experience at the same time.

M.K.

When you arrived here in 1937 that must have been a great change for you personally and culturally.

O.N.

I spoke the language. Probably not fluently but I had no difficulty. I learned English and French when I went to high school and I remembered enough to be able to communicate and all that. But on the other hand that was the end of the Depression in this country and there were no opportunities for me to function as an engineer in 1937. And I had several strikes against me. One of them of course was that my English was faulty. Secondly, that I had an education that probably was not on the surface of it sufficient from the viewpoint of a perspective employer. And certainly I also had the handicap in being a Jew and in those days large industrial companies would hire Jews but they had to be exceptionally good.

M.K.

I see. But that was an unspoken-

O.N.

It was an unspoken kind of a, I don't think they would have officially have told anybody that they don't hire Jews but there were very few Jews working in industry in 1937. Most Jews were merchants and businessman, very successful ones.

M.K.

Professionals.

O.N.

Lawyers. Physicians. But not in situations where they would have to be hired. For instance I applied for a job at Carrier Corporation. They had a training course before they hired somebody in the technical capacity and it took them a very short time to make up their minds. They did not want me. They didn't say why but they said I had several handicaps so my first two years in this country were not, I did not function as an engineer. I got odd jobs which I don't think are too interesting. I survived for about two years.

M.K.

Well what was your first job back in the industry? You obviously knew you wanted to be in the refrigeration industry.

O.N.

Yes, oh yes. I was convinced that eventually I wanted to function as an engineer. And about a year later my first job was as a refrigeration service man. I carried a tool box in Manhattan.

M.K.

In Manhattan?

O.N.

In Manhattan and I was servicing refrigerators in Horn and Hardart Company.

M.K.

With what company?

O.N.

Horn and Hardart, which you know was self storage food stores. You ever hear of that?

M.K.

No. How do you spell the last name? H-A-R-D-E-R?

O.N.

H-A-R-D-A-R-T, I believe. There were lots of those stores. They were all over New York City and all the other boroughs. The only time you could service their refrigerators was after midnight, between midnight and six AM because the rest of the time they were busy and they didn't want people in overalls climbing around the nice clean food stores and disturb the customers. So what I did for about perhaps a year or so. And I think that was very useful because it introduced me to the American way of making refrigeration work. What I did in Russia before I came here was strictly ammonia refrigeration. And in this country for the food stores was probably for the most part at that time sulfur dioxide, methyl chloride and eventually they started using Freon. So I worked with my own hands servicing refrigeration and I did that until about the end of 1939. And then I got a job as a laboratory engineer with Kramer Trenton Company which has sold out as a matter of fact. You might have read about that.

M.K.

Now where were they located, Kramer Trenton?

O.N.

In Trenton, New Jersey. And most of the time, at that time I used to live in Jersey City on the other side of the Hudson River from New York and commuted into New York. I moved to Trenton and I got enrollment in the YMCA in Trenton, which was about one block from the railroad station so it didn't take me very long to find a place to live. And it cost me \$3 a week for a very nice comfortable room. Cheapish. And that's how I got started as an engineer in the United States. And as a matter of fact I worked for this company in Trenton for almost 25 years.

M.K.

Kramer Trenton?

O.N.

Yes. And then I left as chief engineer.

M.K.

What kind of work did you do with Kramer Trenton?

O.N.

Well I started as a laboratory engineer. I was performing tests, writing test reports, and eventually learned how to draw conclusions from test results. And I was testing not only refrigeration but also they were in the heating business and we were testing heating convectors. Something you are familiar with aren't you, because it's something that isn't being used very much today. But it was interesting and I learned more about heat transfer. I also learned more about testing methods. How to establish a steady state so you could take readings. And so it was quite interesting and quite useful. The next year in 1940, Mr. Kramer introduced me to ASHRAE in Philadelphia.

M.K.

In Philadelphia? So in 1940 was the-

O.N.

Yes, I joined ASHRAE in 1940. And in 1966 I became the president of the ASHRAE Philadelphia chapter. So it took me a long time before I finally made it to president of the chapter but I did.

M.K.

Who are some of the people who were kind of inspirational to you during that period of time? Were there folks that you really looked to and learned a lot from during that time?

O.N.

I learned an awful lot from Mr. Kramer who was my employer. He was quite an interesting individual. I don't think he was a graduate engineer but he was a man who taught himself and in addition to being a good engineer, in my opinion, he also was a very forceful person. A dynamic kind of personality too. He was tall, heavy, impressive speaking voice. Could project his voice from here to any place beyond so, you know, one of those people who attract the weight of attention by just whispering. And that's something that not everybody knows how to do. But I respect him a lot. He just passed away about a year ago so he was in his 90s when he passed about. But I think he was probably the first individual that I met in my career that, if you ask me, that I looked up to and that I respect and helped me advance myself.

M.K.

What is his first name?

O.N.

Israel.

M.K.

Israel. There you go. See right there.

O.N.

Did you ever meet him?

M.K.

No, sir I didn't. It was not my privilege to meet him.

O.N.

He was pretty well known in ASHRAE. Not recently. He was active when he introduced me to ASHRAE, he was active on a national level. He published quite a few things.

M.K.

Well Philadelphia had quite a few manufactures involved in the air conditioning field and really from Philadelphia came quite a few people who were leaders of respective technologies.

O.N.

Yes, that's right. Like Albert Nesbitt.

M.K.

Did you know Albert Nesbitt personally? I never knew him.

O.N.

No, I did not know him because when I came to work for Nesbitt, it was about I guess 1964, about 25 years after I started with Kramer. He had already sold out to ITT.

M.K.

Yes, and Nesbitt, the nature of that company changed but even within Nesbitt we always remarked on the number of people who really were very, very strong players with Nesbitt. And Albert Nesbitt did some things, particularly from a marketing standpoint that were really quite remarkable.

O.N.

Yes. Well he also had some patents to his name I believe. Also the man who was his chief engineer, Sam Miller, do you remember him?

M.K.

Sam Miller I knew. And John McElgin before him.

O.N.

JohnMcElgin. I met both John McElgin and Sam Miller. I did not have too much contact with either one of them because of when I joined Nesbitt they were several layers above me and I was, they recognized me and I recognized them but it was about the extent to it. I know that John McElgin did quite a bit of heat transfer research and got some patents to his name and published quite a bit of information that I read and profited by. I don't think he was ever active in ASHRAE. He was active in ASHVE I believe in Philadelphia but I did not get much into that at all.

M.K.

Well now you're in Philadelphia and you've been involved with Kramer Trenton. Is that where you got involved, I was told at one time that you're really considered quite an expert in coil theory and manufacturing.

O.N.

Yes, yes. And that is why Nesbitt hired me and I thought of leaving the Kramer Trenton Company simply because not many people in my position and my age, I noticed they're progressing much better by not staying in one, the same place for a large time. And when I saw this opportunity to go to work for Nesbitt, they advertised actually for refrigeration engineers in the Wall Street Journal. That's how I noticed there was an opening for me and it so happens that I knew somebody who was with ITT in Philadelphia who was in another position. I think it was General Controls. I don't really remember that or not. But he visited Nesbitt. He introduced me to Sam Miller and Sam Miller was really the one to hire me. And that's how I started moving around.

M.K.

Moving around a little bit.

O.N.

Yes. It turned out that it was a good idea, not only from the viewpoint of making a change but from the viewpoint of getting a broader horizon. And I think a lot of people are still doing that. I think that being with one same company works out very well for very few people. I know some people who staying with the same company and I know some people who stayed with Kramer Trenton Company for 50 years. But I don't think they did them any good. I think that eventually they reached a point where they just became a routine situation. Of course they grow, they got more money and all that. But I think from the view point of being creative that's the wrong thing to do, to stay in one, unless you're looking for career up the ladder in a place like Carrier or something like that. But Kramer Trenton was not that kind of situation. There was no career up, higher ranks because it was a family owned company and this was a career with any higher up position as I had as chief engineer were for family members. And that's how it turned out.

M.K.

Okay, so you went in '54 to Nesbitt and then you ended up down south didn't you?

O.N.

Yes. The minute I started working for Nesbitt I got telephone calls from people, from other people I knew who asked me why I went to work for Nesbitt, and very frankly I said, I tried to be loyal to the Kramer Trenton Company and not to go work for their competitors. That's why I went to Nesbitt. They

did not, Nesbitt did not consider Kramer a competing brand. Kramer of course did not consider Nesbitt a competitor. They were an entirely different business. But very soon after I went to work for Kramer, there were a number of people, number of companies who came as competitors who apparently had read or observed what I was doing and the one who was most persistent was Larkin Coils. So about a year and a half after I went to work for Nesbitt, and after corresponding with Larkin for about a year, I decided to move away. That was a very difficult decision to make, not for me but for my wife because my wife was a native of Trenton. She is a native of Trenton, and she had never lived outside of Trenton and I don't think she ever traveled much further than the other side of the school yard.

M.K.

Well I hope, did you move to Atlanta from there?

O.N.

We moved to Atlanta from there.

M.K.

Well I hoped that she has learned to accept the south and that city a little better.

O.N.

Oh yes. Yes, as a matter of fact she's here. If you would talk to her today she would say that she was probably when she was young, deterrent in my career because the chances are that I had other opportunities much earlier and the reason we did not pursue them was because she was still attached to Trenton. Her parents of course lived there. She had a big family in the Philadelphia area so we did not consider any opportunities very seriously until-

M.K.

Well I think your career speaks very for itself, Otto. I know that you've been very successful in your career.

O.N.

Thank you. Well I feel I have succeeded in a lot of things. By this time I think I'm working on patent number 27.

M.K.

Is that right?

O.N.

Yes, yes. Most of the patents that are in my name were assigned to the Kramers but there's some patents Nesbitt owned in my name which is now still ITT, I guess. And Larkin owns some patents in my name.

M.K.

Let's focus on the patents for a minute. Anybody who has 27 patents has done one, a lot of research and two, a lot of independent thinking and three, you learned how to deal with our government successfully.

O.N.

Well I let the lawyers deal with the government. By the way, I don't know whether that belongs here or not but I attended a seminar today and the last speaker was a man who apparently has a great deal of experience as serving as a technical expert in the courts. And he told a story where a ship was about to sink and the captain ordered everybody in the life boats and there were not enough life boats. So there was a lawyer and his entourage on the ship and they offered to swim ashore and so the captain said, I appreciate your courage, are you a good swimmer? And the lawyer said, yes I am and so all off my

colleagues here jumped into the water which was shark infested and got to shore and the life boats got there after him and the captain came in the lifeboats and he asked, how did you make it through all of these shark infested waters with all of your people and everybody survived? And the lawyer said, well that was just a bit of professional courtesy.

M.K.

Between sharks. Well alright.

O.N.

You can cut that part out. But it is some acumen I got from an ASHRAE seminar.

M.K.

There we go. It shows some good political acumen. Do look back on your patents and the things you have received credit for and created. Of these which were things that you are particularly proud of and think really were an advancement?

O.N.

Well there's one particular product which is called Kramer Thermobank. The original patent was in Mr. Kramer's name. In those days it was impossible to get a patent in your name without having all of your collaborators name on it. But I subsequently contributed enough so that there was some other patents on the same system, and mine, that is still being used. The Kramer Trenton Company just sold out to a company called Ardco, I think a West Coast company and they continue to produce the Kramer Thermobank and I saw a news article that they just assembled the first one somewhere in a plant in Yuma, Arizona. This is probably one of the things that I had a hand in, I contributed to.

M.K.

Tell me, I don't know what that product does. Or is it a method of controlling refrigeration?

O.N.

It's a refrigeration system. And it's a refrigeration system in which is primarily designed for subfreezing cold storage and it defrosts automatically and it uses storage, energy storage, stored energy for defrosting rather than outside sources of energy. So it's an energy efficient system and, it's recognized now and respected. Probably still unique and without much competition. I also think one of the other things that I'm very happy with is the fact that when I first started in the refrigeration industry, air cooled condensing was only used for household refrigerators, very small refrigeration systems. I had the idea of using air cooled condensers for large capacities. And today that is very common place. You can see a 100, 200 ton air cooled condensers. In those days that was unheard of for large refrigeration plants. You would use either cooling tower or perhaps evaporative condensers but not air cooled. And today air cooled is a very accepted method of condensing. In fact there was an ASHRAE tour here Monday afternoon to a very large supermarket in St. Louis, is it Dierbergs?

M.K.

Yes, sir.

O.N.

Yes, and they had large air cooled condensers on the roof. So that's something that made me feel good.

M.K.

That's good.

O.N.

I published a paper on air cooled condensers for large tonnages and it was an ASHRAE meeting paper in St. Louis. And the meeting was in St. Louis at the Chase Hotel, does that still exist?

M.K.

The Chase Hotel, it still exists but I believe it's been sold or it ceased being a hotel for some reason.

O.N.

Well that's where that ASHRAE, it was a summer meeting as a matter of fact, and my paper was on the economics of air cooled condensing and I actually demonstrated that in spite of the fact that air cooled condensers are less energy efficient in summer that if you operate them year round and you let the condensing pressure go down in winter that it on a yearly basis they can be made to operate just as economically as water cooled. That was before the energy crisis.

M.K.

But of course I think we are beginning to appreciate and incorporate the cost of maintaining anything that's involved with water and air passing over water. That has a high maintenance component to it and it's tough to deal with.

O.N.

The main thing is that as water cooled condensers it's something that has become automatic. It's being controlled now with microprocessors. If you look at the Dierberg supermarket you could have just as well done it with water cooled condensers and air cooled with all the microprocessor controls and programmed maintenance and all that that they have there. But I think the decision to use air cooled equipment was not so much maintenance in my opinion as it was that the people who installed it and possibly the people who designed it were probably more comfortable with air cooled condensing. Just as you are probably more comfortable with driving Buick rather than a Chrysler, something along those lines, you know. It's something that you're used to, that you feel comfortable with, where the bulk of your experience is and I'm the same way.

M.K.

I think we all are really, our habits and our traditions. Any other of your patents that you're particularly pleased with and have seen them bear fruit like that?

O.N.

Yes, one of the other things that became apparent after I introduced air cooled condensers for industrial refrigeration was the fact that it turned out that during the cold season the condensing pressure of the air cooled condensers were so low that it wasn't high enough to force the refrigerant to an expansion valve and there is a certain amount of pressure difference as you well know for that to happen. So the problem then to find a way to artificially raise the air pressure in winter to get that pressure, to force the refrigerant to the expansion valve. And so I came up with some ideas on how to do that. There were some ways to do it in those days but not practical or logical for condensers. And this idea was also patented by the Kramer's and it was marketed under the trade name of Winter Stat. and they built it into most of their refrigeration systems for a long time. It's not been used, at least to my knowledge it's not very popular today because it is not energy efficient. It does raise the head pressure artificially and you don't want to do that if you want to operate in an energy efficient fashion.

M.K.

That's true, that's true. Now are you getting in ASHRAE in Philadelphia and were you involved in the, working in the committees at a national level?

O.N.

Yes, I, well initially of course was active in the Philadelphia ASHRAE chapter. I was a speaker there several times. And during my Philadelphia career one year I got a best paper award from the Philadelphia chapter. That was a very nice desk pen. I guess it was a sheathed pen with a marbled base and I still have that on my desk. It goes way back but I'm so happy with that and eventually I got interested on a national level and technical committees. I started getting involved in what is now TC 8.4. It's primarily concerned with air to refrigerant heat transfer equipment and eventually I became the chairman of that TC. And that was the first achievement that I had on a national level in ASHRAE. Eventually I got into other technical committees and I got into the Research and Technical Committee, I got into the Standards Committee. I was the chairman of the Metric Committee when conversion to the SI metric was the important issue.

M.K.

Whatever happened to that? What are we going to do with that? Are we ever going to get over this, foot and inch and pounds?

O.N.

Well we now have that, two versions of every ASHRAE Handbook. We have an SI version and then inch, pound version, so we're getting there very slowly. We also have an ASHRAE metric guide that I think is going to be updated pretty soon. And I was involved in that very deeply, regarding the first ASHRAE metric guide. I have a little bit of background for that from my European education.

M.K.

I wish you'd do a better job with getting us down to the metric system.

O.N.

Clint Philips, was the first chairman of the Metric Committee before me and he was very anxious to promote the idea of SI conversion but, and that lasted until he became president but I think after that there was some influential people who did not think that this was an important cause for ASHRAE. The energy crisis and the Standard 90, you know, and those were the things that eventually pushed the SI movement to the background. I think it's getting back there again.

M.K.

Oh, yes I think it will.

O.N.

I tell you what, seems to me to be one of the incentives and that's the United States of Europe which are going to start in 1992 or something like that. It seems that the United States, this country is very anxious to participate in the coming prosperity in Europe and I think it will be, they are completely converted to SI metrics in Europe so we will have to be manufacturing and marketing and being conversing with the SI system. But Canada is already completely converted to the best of my knowledge.

M.K.

So it's time we got on that.

O.N.

Yes, Canada still has some problems and over, this is a very short story. If somebody goes to a Canadian wholesaler and he wants a piece of 25mm pipe and the guy behind the counter says, how do you want it, in a 10 foot length or a 20 foot length.

M.K.

You mentioned that ASHRAE has been very important in your life and in your progress here. And you've explained a little bit about how important you are to the things that ASHRAE is involved in. Can you describe a little bit about your association with ASHRAE as an organization and how it's helped you in your work?

O.N.

Well it helped me primarily because I met people that were knowledgeable, that I could exchange experiences with and eventually it also helped me find employment in places that I was interested in. It helped me with getting published when I wanted to but the most important thing of course is that I established a lot of friendships, a lot of business contacts that were very useful to me, and right now from a business viewpoint, because I'm not too much of a business man but it helped me get information from people, exchange experiences with people and learned a great deal from the association with them.

M.K.

You developed a lot of close friends in AHRAE, I know that.

O.N.

Yes. Well there are quite a few older people in the society who know me by my first name. Such as you.

M.K.

Yes, sir. I am very proud to know Otto Nussbaum. What do you see ahead for our industry? You've been involved in the advancement of it and mentioned too the encouraging the use of air cooled condensing. You've been gratified to see that expand via a common trade. Where do you see us going now with the technologies you've been involved in? What kind of things do you anticipate seeing developed?

O.N.

One of the things that the world has struggled with is the fact that a great deal of our energy now is going into developing new refrigerants. They've been forced into that by legislation or by pending legislation, by necessity let's put it that way. But I think a great deal of creative energy and expenditure is going into the development of new refrigerants which may or may not be as good as the Freon or the halocarbon refrigerant that we know about. We got 60 years or more experience with halocarbons and the Freons that makes them reliable. We know all about them. There's a great deal of research that the Society did with the existing Freons and I think it's unfortunate that we have to spend so much time and money and energy into developing other refrigerants about which we don't know enough, at the best we will have some laboratory experience with them when we start using them because of the exorbitant and it will take a long time before we reach the level of confidence that we have into the refrigerant that we are now using.

M.K.

Do you see us ever increasing our use of ammonia as a refrigerant?

O.N.

I'm very, well, not enthusiastic, but I am very anxious to help the, widen the utilization of ammonia because that too is a refrigerant in which we know everything. At least we know enough. It's older than the halo-carbons. It's reliable. It's an energy efficient refrigerant and it's a very, very cheap refrigerant. And we're going to start using substitute hydro fluorocarbons they will probably cost at least ten times

and probably more, the cost of ammonia. And this is one of the incentives that this industry has is to pay a little bit more attention to ammonia because ammonia is a harmless refrigerant. Breaks down long before it ever gets into the ozone layer and it's been used in all kinds of other industries and we know about, we know what the hazards are with ammonia and we know how to deal with them.

M.K.

Do you see any impediments to the use of ammonia in comfort cooling applications?

O.N.

Well the main impediment is that Underwriters Laboratories classifies it, I don't know what the class is but two or three grades below the halocarbons and that of course has held up the development of ammonia as a refrigerant for comfort air conditioning or even for industrial air conditioning but it's feasible.

M.K.

I think it is.

O.N.

It's feasible. As a matter of fact Will Stoecker whom you probably know, has just published an article or two in Heating, Piping and Air conditioning which outlines the advantages of ammonia and I agree with him fully. Ammonia was the first refrigerant that I learned about and I think the important thing about it is that it's much better known. Well let's put it the other way, there are very few things that we don't know about ammonia. There's almost everything that we don't know about those new refrigerants. And well what I'm driving at of course is that all of this energy that goes now into trying to develop new refrigerants could be put to much better use. If we could do research into other fields and to fields where we could refine our knowledge of refrigeration and maybe make some breakthrough.

M.K.

What kind of interests do you have? Where's Otto Nussbaum going now? What's your next challenge? What's your next patent going to be on, if you can talk about that.

O.N.

Well I'm interested in air conditioning now and I'm interested in indoor air quality and the latest path that I have related to indoor air quality, they're related, to individual comfort in a large office building. The ideas that are working are now have to do with people being able to select their own level of comfort. You know that in large offices now the thermostat is always under lock and key because every individual wants a different temperature and a different amount of air movement and so the only way to keep an air conditioning system running is to set it and then lock the thermostat so that nobody can do anything about it. But only about 20-30% of those inhabitants of that office are happy with the air conditioning. Where I worked my last job in north Alabama was a fairly large general office and Alabama has very hot summers. At the height of summer you would see some of the women have an electric resistance heater underneath their desk because they were feeling uncomfortable with the air conditioning while the men of course were working in short sleeves. And this something I have in mind now and that I have some patents on. Every individual, every work station will have their own thermostat and their own air flow adjustment so that they can select their own comfort conditions.

M.K.

And have that vary. I think that's the ultimate zone of control, isn't it? That each workstation be allowed to make that selection and what have you. I think we can do that and that's a worthy...

O.N.

And eventually of course all of that can be done with microprocessors so that you deliver a certain amount of air to each work station. But then the ultimate adjustment will be made by the person who occupies that workstation and that's particularly important because you, practically in every desk today you see a computer or at least a monitor you know, and that creates its own heat load and to some people it's a disturbance. And by being able to adjust their own temperature and their own air movement and their own air flow direction they can deal with that and be a bit more comfortable. They'll spend less time at the water cooler or less time chatting with somebody in the hallway or the ladies room and smoking less. And there are some indications that you can achieve a very substantial in workplace productivity, at least in office buildings.

M.K.

Well I think if a person's uncomfortable certainly it's going to affect their productivity. Let's get back to ASHRAE for a minute Otto if we could. Your tenure and your involvement in ASHRAE has been thorough and intensive since joining in 1940. Within ASHRAE, folks that you've been particular impressed with in your association, I know that ASHRAE's full of people that are impressed with people but if you'd like to name a couple.

O.N.

Yes, if you want me to. There was one man in Philadelphia very early in my career, Charles Leopold. I don't know if you remember the name. He was a president of ASHVE years ago. And he was the one who designed and supervised the installation of the air conditioning system in the Pentagon when it was built. He was a very, very creative consulting engineer, probably of that time the best known in the Philadelphia area. And one of the people who worked for him, as a young fellow at that time is Walter Spiegel who eventually became a consulting engineer in his own right. He's a friend of mine now. He was a president of ASHRAE not too long ago. But he started his history working for Charles Leopold and probably went with ...

M.K.

It's interesting, it's still very much a, oh help me out with the word, where the craftsman and the guild people taught the apprentice. Apprentice is really the word I was looking for. For much of our business is an apprenticeship and you go through education and you go through experiences in the work place and you apprentice.

O.N.

Yes, there are many scientists in the Society but there are just as many craftsman like myself in the Society too. I know a bit about heat transfer theory and all that. I also had learned how to program computers and all that.

M.K.

You're kidding. Tell me you've gotten into the computer age.

O.N.

I have a computer at home and as a matter of fact I publish computer programs and I've gotten quite a bit of good feedback on computer programs. They're not sophisticated. They're not the kind with all the bells and whistles and multiple colors and all that but they get you from here to there quickly and as I said I published some and I'm getting some very satisfactory vibes from what I have accomplished in computer programming.

M.K.

Oh, that's great.

O.N.

The reason I know how to program computers is that when I worked in Pittsburg for Halstead and Mitchell that was in the 19- late 60s early 70s, and that's when computer s first became common place and I was in charge of engineering there but I had a man working for me who was a computer programmer but did not know enough about heat transfer, whatever went into the programs that I needed to create. I had a very difficult time communicating with him but I decided I better find out what he's doing. And I took several courses at the University of Pittsburg at that time. I learned programming and have no difficulty designing programs and debugging programs if I have to.

M.K.

That's great, that's great.

O.N.

I think it's important. I think that you're very badly behind the times if you don't understand computer languages or at least a minimum of how computers function. It's very important also in control systems since all of our sophisticated control systems are now computer based.

M.K.

Well we're going to bring this interview to a close but I want to give you an opportunity to make any points that you'd like to make that we haven't covered before about your relationship with ASHRAE or with technologies that ASHRAE's involved in. Have we missed a point that you'd like to make?

O.N.

No, I'm still active in ASHRAE. I hope to continue to be active. I'm now a member of the Research and Technical Committee and I enjoy work on the Research and Technical Committee. I also work on some of the technical committees in my field of, in the field I specialize in and I hope to keep it up.

M.K.

I'm sure you will and Otto, ASHRAE has benefited a great deal from your interest and participation and I anticipate it's going to continue to be a two way street, where Otto benefits and ASHRAE and the people in ASHRAE benefits. Thank you very much for joining us this afternoon and I didn't know I'd enjoy visiting with a Pittsburg fan as much as I have. I've quite enjoyed visiting with you, thank you Otto.

O.N.

Thank you.