ASHRAE Leadership Recall (formerly Leadership Recalled)
Transcription

Interview of: Ellsworth F Cassing

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Interviewed by: Bernard Nagengast

Bernard Nagengast
August 9, 1988. Cass, why don't you just give me some background about how you got interested in the industry, you know, your early dealings with the industry you know, why did you get into it.

Ellsworth Cassing
Okay that's a good question for me. I started out to be a Lutheran minister and about the time of World War II and I did anything not to become a minister because back in those days it was proper to go to the army. So I went to the army went through World War II. And after World War II, I did elect not to go back to college and to take some trade school training which I did and I joined up with a company called General Heating and Cooling Company of Kansas City, a distributor then of General Electric equipment and more recently in the last, since 1960 they were a Carrier air conditioning company. And my life proceeded through the Carrier, normally field engineer. You'd take a course of training in Syracuse, New York back in those days. And you get assigned to a territory of course, mine was automatically built in to be the Kansas City area, which turned out to be all the state of Kansas and two thirds of Missouri. And I was a field engineer which was a good name for a refrigeration mechanic. And the more schooling you got eventually everybody dropped the name mechanic and you became an engineer. I was one of the few people in this part of the country that pioneered the heating system, basically for houses, known as perimeter heating system. And I wrote numerous papers on that subject and they were published by various trade magazines and I believe it was through one of those magazine articles that I met a fellow out of K State known as Dr. Ralph Nevins.

B.N.
Before you continue, about what time was that that you worked on the perimeter system?

E.C.
That was 1959 and with another fellow. You want names?

B.N.
Sure.

E.C.
Okay his name was Chuck Toleahr.

B.N.
How's that spelled?

E.C.

Chuck is easy. Toleahr is capital T O L E A H R. He was from Holland. He was a Dutchman. And the system in those days it was General Electric and it was known as the air wall system which was carried out to the industry in just, and then air wall name dropped and just called perimeter heating system. My job was to put one of those systems into every county in Kansas and there are a lot of counties in Kansas. Well at the end of two years we were solid in Kansas with perimeter heating and part of that success came from Ralph Nevins out of K. State who was interested also in promoting perimeter heating because he felt that putting heat on the outside wall of the structure was the place for it and the only difference is that I did it in real houses and he did it in the laboratory. And about this time the ASHRAE environmental test chamber was being relocated from Cleveland, Ohio into Manhattan, Kansas on the campus of the Kansas State University. It was about 1962-63 along in that period.

B.N.

Okay and how did you get involved with the Environmental Laboratory? What did you really have to do with it?

E.C.

Well that was another good thing. When all of the equipment arrived, the sticks and stones and nuts and bolts arrived, they had a Carrier compressor, can you believe, all system that made chilled water and the compressor was not performing well. So one day Ralph said "Cass, do you know anything about compressors"? I said a little. Well of course I was an ex-mechanic, trained by the good old General Electric Company five Lawrence Street Bloomfield, New Jersey. I knew lot about compressors. I knew a lot less about Carrier's compressor but I knew that we had them because we were the distributor in Kansas City for all of Kansas and two thirds of Missouri. So I said yes and I said give me about a week and I'll find you one. Well I came back to Kansas City and looked around and I found one on the shelf that was discarded and charged off and no funds. So I put it in my car, delivered it out to the lab, and ASHRAE got its first free Carrier compressor. And as far as I know it's still running but I met Ralph through this and then also Ralph was a ham radio operator. I am a ham radio operator and Ralph was a pilot. I am a pilot, a single engine aircraft. So I would call Ralph on the radio and say I'm coming out, how about it, he says, great I'll pick you up. And either he would come to the airport in Manhattan and pick me up or he would send somebody out. And one thing led to another and he dabbled around in photography and I dabbled around in photography. So it was kind of a labor of love for both of us. In fact Ralph had the open door policy in Manhattan. Anytime you wanted to go see the dean of the college of engineering you could go over there, open the door, walk in and you were welcome. And it was an easy place to find around. More often than not I would drop in about lunch, hoping to take Ralph to lunch and in almost in every case Ralph would have an invitation to speak somewhere. He said, I'll tell you what, you go with me. And that's what we did. We'd go with Ralph off to all the places he would make numerous noon lunches and he would always take a guest along. People in Manhattan almost got to know you. I got to be very popular and very well known out in Manhattan, Kansas for a number of reasons, mostly due to Dr. Ralph Nevins who also had a ham radio station on the university campus. And it operates under the call letters W 0QQQ and still does today and that was nice. We take Ralph to bring his thoughts to the local chapter of Kansas City at ASHRAE. And we would create a thing we call today the Kansas City's Sparkler. It was an interview with Manhattan because Manhattan is about two hours away, to Kansas City, they did not make every ASHRAE meeting which was then ASVE. The tape recordings brought a message from Manhattan from the dean of the College of Engineering, a

little prestigious for the group and that lended to a better attendance at Kansas City. So Ralph was always a part of the Kansas City meeting in person or impromptu. Sometime he would be at a meeting already in Kansas City and he would come out to our monthly meetings and do guest appearances. And he always told us what the projects were that he was doing and this was always interesting because a lot of the projects back in those days was financed and funded by ASHRAE in part. In fact my education came a lot from the interviews of Ralph Nevins and others visiting at K State. It got so that I was out at K State almost once a week and almost an afternoon. And this went on for years and years and years, until Ralph left. And of course he died. And then because we got to know a new incoming professor Dr Fred Rohles, we had the same type of report with Fred. Fred was in a different world, the world of psychology and eventually, why he became a member of ASHRAE and eventually he replaced Dr. Nevins entirely and was in charge of the environmental laboratory out there. Now this time period would be, I really don't know, 1967-68-69, along in there. No it was, it had to be about 1970. It was 1970. And I know that because we made a tape at that time. Remember we didn't have VHS television then we had slides and good old audio seven inch reels and that's what we did. The biggest project that Ralph and his group at K State did for me was to prove that the location of the return air grill was not important to a complete comfort system. We did this by film and by smoke test and I think one of his boys wrote a research paper for him which showed that any return air any place was acceptable. It turns out of course the return air was inexpensive in the central part of the room and more costly then the outside air on the outside wall of the room. So this was nice but that was the number one project. Whenever someone says your air circuit is all wrong, I'd say well according to K State's ASHRAE funded research check out it appears that returning from anywhere. You control the temperature and the comfort by putting air on the outside wall under pressure. And to this day I think that the way it stands.

B.N.

Okay, since you knew Ralph Nevins as well as you did, what can you tell us about, you know, him, you know, on a personal basis. Maybe some interesting things about him. What kind of a person was he?

E.C.

Well I'm like Ralph. I like beer. I was raised in a German community and beer was the cocktail period. Ralph did not drink beer. In fact Ralph did not drink anything. Ralph was a good Methodist teetotaler and everywhere we would go he would kid me about my drinking beer but he didn't object to my drinking beer he just wouldn't drink beer. So he was a nice guy and he would drink Seven Up at a party or meeting, at lunch of course it'd be iced tea. He didn't particularly drink coffee but Ralph was one of the nicest, friendliest engineers that you could ever hope to meet. Very knowledgeable and he could, he had a memory that would expound on any subject just on the wave of your hand. And he would never embarrass a person for not knowing something. He would however restate what he thought you were saying and ask you if that was correct. He was a great dean of the College of Engineering but what I remember Ralph most for was the open door policy. Anybody, any student, any friend, particularly a friend of the university, was always invited to visit there. And when he said visit he meant he personally would invite you in and talk to you and visit with you. And he was a very busy man visiting, which of course related to research money and funds and much of ASHRAE's funding I'm sure happened because of ASHRAE's knowing Dr. Ralph Nevins. You always called Ralph, Ralph. He actually used the word doctor when he was up professionally doing a speech or program. Otherwise it was Ralph and on the air the ham radio operators, it was Ralph. It was pilot Ralph. And the story related to that is one time we

were out there, he bumped his head, he said he should have had a hard hat. Well the great report we had with the K State people, and particularly Ralph Nevins, at one of the meetings we knew he was coming to Kansas City because he was our guest speaker. We called it hard hat night and on that particular night we gave Ralph the local 533 and the Mechanical Contractors of Kansas, the greater Kansas City gave Ralph a hard hat and had his name engraved on it and that's where he got his hard hat from. That was one of our stories.

B.N.

Anything else that you remember about him it that would be interesting to relate?

E.C.

Yeah, because I went to another church I can't tell you about his church activity but we were told and everybody kidded him about his singing. He was a good singer and he did sing a lot with church groups and around the university. He was known for his music.

B.N.

Tell me a little bit about your amateur radio group. I understand that you and a bunch of other ASHRAE members have formed a radio group.

E.C.

Yes. We call ourselves ASHRAE hams. ASHRAE hams. Started out a couple of months ago accidentally by Larry Staples who was about that time just hanging up his hat from being Regional Director at Region Nine and Larry found out that when he traveled a lot of people he talked with were hams. So he says, hey we ought to get on the air and talk to each other. Well started out with perhaps three or four people and as time went along we grew and today the count of ASHRAE hams nationwide exceeds thirty licensed ham stations located from the East Coast to the West Coast from New Orleans in the Gulf up to Canada. And we meet twice a month on the air and we talk about our jobs, we talk about ASHRAE, we talk about ham radio fellowship, and we keep the fires burning of information about ASHRAE material. Larry is the net control and we operate on two frequencies. We operate in on the high bands which is twenty meters and we operate on the lower bands on forty meters and that's in the event that one Sunday maybe the solar sunspots are not favorable to the radio transmissions and we use the other frequency. Right now we are using both on the same day and it's got to be a good spirit. We have learnt to know new people in ASHRAE and we found out that some of us had things in common such as a station in Erie, Pennsylvania that I talk with Lloyd Staebler. Lloyd had a refrigeration background and my background was refrigeration. So we talked about what we did and I was pioneering the perimeter air wall system later with air conditioning and Lloyd wrote a number of the research papers on capillary tubes that was tied into the refrigerating system that we were using. We found that in fact that one of the companies he associated with in those days was Kelvinator. And after the war, briefly, I was a Kelvinator dealer in Boonville, Missouri which was attempting to form a refrigerator society known as RSES, Refrigeration Service Engineers Society. And we worked at that. It was not totally successful but because of it now we talk about it with Lloyd and now it's able, we're able to look back in those days and see what we could have done to have made it more successful. Of course it all turned out well. Both Lloyd and myself ended up with ASHRAE. And he's more concerned with the refrigeration end and I was more concerned with the air and the air distribution end but we had a past. And then radio, ASHRAE radio has crossed several times but we did not know who it was. Our paths crossed with another ASHRAE ham, Dave Dart who used to live in Kansas City and whose mother was the secretary to

Alexander Graham Bell. Well Dave lives in Hackettstown, New Jersey and we talked on the radio today about the things that we used to do. Dave Dart and myself started out in Kansas City in ASHRAE doing a thing that we called the Kansas City Sparkler. It was a tape and slide visit to industry to visit something or somebody to see what something new was happening in the industry. Dave would check the technical side and I would try to cut the tape end of it to make it sound more interesting. And together we pioneered what we call today the Kansas City Sparkler. And we settled down after Dave moved I did it totally by myself and we moved to the, we kept the same idea but we added a little bit of humor to it. In fact in ASHRAE, the ASHRAE Sparklers were used to promote international fellowship, particularly the year when I was the international membership chairman first for Region Seven and then later for the whole, the whole society. And we used the sparklers also when I was a part of the Education Committee and Research Committee. The first sparkler in ASHRAE that was known was pioneered and put together with, I can't remember his first name, Collins out of Oklahoma. What's Collins' first name? (Ed. Note: Bill Collins) Frank Bridgers out of New Mexico and Collins and someone in Chicago. They all flew to Kansas City and on the floor of our house we put together the first research slide in tape film for ASHRAE to raise money and a report that Frank Bridgers gave me in a letter was of course the customary thank you but it set new records for ASHRAE. And after that slides and tape became commonplace effort. For that little fun thing I was given the Presidential Award of Excellence, which was given me by one of the presidents, the current president of ASHRAE, Stan Gillman and it was suggested by Frank Bridgers and presented to me by a third president. I can't remember who his name was but it was one of the society meetings and it was certificate number one of ASHRAE. And the year, I have to go to the wall and look, I should have gone to the wall and ?. December 1971. So we're quite proud of that one.

B.N.

When, you know, talking about audiovisual in ASHRAE, you had mentioned to me earlier about the fact that you think that ASHRAE's a great society but nobody knows about it and a lot needs, a lot more needs to be done. Can you talk about that for a little bit. Thoughts on that.

E.C.

Yeah after World War II, let's go back just a little bit. After World War II, I could see, I got married and we were having a baby and I could see that I had to decide in life what I was going to do. Go back to college, perhaps work on a masters or go on up to a Ph D. Or go right to work and make dollars for the pocketbook to raise the family. So I had to have a source of education. I decided on the latter, to go to work to take the immediate dollar to support the family to a way that we wanted to become a part of the community and buy a car and appliances. Remember World War II was just over. Appliances were again available. So I went to work, to work with my hands as a field engineer and that's where I picked up the story with General Electric and Carrier. But my total education of air-conditioning background came from the ASHRAE Journals, the Data Book, and the Guide. And I probably can tell you as many mistakes in the Guide at that time as good things but it was a direction to go and to this day I still use the ASHRAE Guide and Data Book for all my guidance in ASHRAE and I'm totally one hundred percent ASHRAE educated. And we've been very successful. I could have had any job assignment that I wanted. I chose to be the number two man in the company. My calling card said the Executive Vice President of General Heating and Cooling which is and was in those days the distributor of Carrier products. And that was a very fine of assignment. Within our own company I passed along the Guide and Data Book, Journals and things into a thing known as the E F Cassing training center which we trained our many

dealers and several hundred dealers were on continuous training and we used the same system and I followed the same guidelines that I had been exposed to from Ralph Nevins out of K State and the open door policy. But the training center was named after me and still is as a matter of fact. But everything we did we did it with slides, with tape and the open door and a friendly handshake and ASHRAE Guide and Data Book. It served well and of course it worked. Yes we successfully, financially successfully retired and the lab that I have here at the house has the same policy I had at work, the open door policy. Anything goes and we always have a friendly, warm welcome here. The other thing I did, I would take the material out of the ASHRAE Guide and Data Book and I would take the theory that was explained there and I would try to adapt it to a local practical problem and then I would write that up in a little paper. So any of our CRCs that we went to or our chapter regions meetings which occurred almost continually throughout the year, someplace, I would give them a practical revision of what I read from (Standard) 30. Particularly fuel related when energy became a problem I became very conscious of the energy needs and I had a feeling. I was on the first ASHRAE committee of energy related commitments and we did the same thing. We made sparklers and we put it into tutorials of extracts that started with the theory of the Data Book, the Guide and put it into a practical booklet which unfortunately I don't have samples. ASHRAE should have samples. We wrote about, we made about twenty five films a year and we wrote about the same number. But the handbooks were handed out without charge to people who attended the CRCs so we shared again that same education and we would give a little short meeting lecture on that subject and then give the workbook to the people who attended the CRCs. I'm holding in my hand at this time a typical workbook which we called, this was Region seven primarily with Don Nickles. Don was very instrumental when he was regional director and he passed his work on to Robert Kilgour. The one I have in my hand here says, workbook Region Seven Energy Conservation Committee and the title was, The A.B.C.'s of Energy Conservation. I always try to take the complicated discussion of 30 and convert it to the practical one, two, three how to, the tutorial of how it worked. And that's the book I'm holding in my hand at this moment which is typical of what we put out. Where shall we go from here?

B.N.

What do you think, you know, looking back on what you've done so far with the audiovisual material as far as ASHRAE is concerned, what do you think the future, you know, of that type of an ideal will be?

E.C.

Well presently it continues with the thought of slides and tape with tape cassettes, you could make an audiovisual on any subject. But it brings color to the meeting room which stimulates attendance. They should be short presentations, three, no more than four minutes. And they should be on a single topic. And as near good colorful humor as you can come up with but it should sell one idea or it should do nothing more than to create fellowship and to get a train of thought to the meeting attendees and it definitely will increase the attendance. I tried to put a number to it and I don't know what that number would be but we know when we showed sparklers in the Kansas City chapter that we always had about a hundred people show up. Otherwise our average attendance will be about eighty. In the year that one of our presidents was there he kept track of the attendees and we were shooting to have a hundred people at each meeting in Kansas City. Our chapter membership, I don't have recall on that but it was a couple of hundred but a lot of people in metropolitan chapters belong to a local chapter. They live far away, like people from Manhattan, Kansas which didn't have a chapter back in those days. Driving two

hours to a meeting is a long way. So we had to have a lot of action at our meetings and the sparklers brought the colorful information, thoughts. And when we showed these and we announced that we showed them, we had a bigger attendance. In the area of, when this president completed his year, he was pleased to announce we had an average attendance. And his name was Bill Dyer and I'm trying to think of the year, I can't, but we had an average attendance in Kansas City of over one hundred and ten people. And that was very good. That was the best that we've had and the following president the next year asked if I would continue to make the same sparklers for the group again and I did. I've done this for several, many years and we would hold the attendance that we gain at the first meeting and we tried to hold it up past a hundred. We did not show sparklers in the Kansas City chapter in 1987 because I had many other commitments and I was involved in many other activities and the attendance dropped to seventy. And that shows that probably we should go back to having some sparklers. Sparklers are nothing more than a colorful idea shared with people that said something to be continued next month. And it stimulates people coming to a meeting. And I think we as ASHRAE should provide some material. The Education Committee could put out sparklers. The Energy Conservation, Membership, Research, sure it raises money for research and I think the research film last year was an excellent slideshow and I'm sure it followed the guidelines of the old Kansas City sparkler. It was short, to the point and had a message. It was send money but it justified where the money came from. It told you what they were going to do with the money and that type of sparker information will raise funds and I'm sure it did.

B.N.

Do you have any additional thoughts on the problems of communications then as far as engineers go? They many times have a tendency to be dull and of course a lot of times the subjects that they cover are dull. How do you brighten-

(Tape skips)

E.C.

The attention of anybody but more often to hold the attention of an engineer, if we're giving an engineer summary, we'll talk a few facts and figures with the tutorial example and a conclusion and then ask a question and fill in with music or sound effects. And in three minutes you could sell an idea. An example would be when cooling tower were first used for heating buildings, a little town of Bellville, Kansas had an outdoor cooling tower which was adjacent to the local power plant. The cooling tower helped cool the diesel engines that generate electricity. And next to it was this factory building that made toys. Turns out it was a company that, not for profit company, that made toys for Christmas for the handicapped and others. And one idea that we did in our sparker, we showed how this factory was taking the hot water off the cooling tower which went to the local city power plant in this small little town out in the high plains of Kansas and used it to heat that factory building. Now how that was done turned out, we showed it in about a three minute episode in Kansas City and we called it free hot water. Well we showed how it was done, we should a little technical end of it in there and in about three minutes any engineer would get the idea. Use the hot water from the cooling tower to heat a factory building. And of course there are many other buildings around. The Kansas City, it came up right after that with this same concept. We called it free hot water. It was a Kansas City sparkler. That's one example.

B.N.

As you look over your long career in this industry everything what do you think was your, what would you look upon as your greatest accomplishment of your career?

E.C.

Well it had to be what the company assignment was to bring perimeter heating to the Midwest and while I make light of the idea that it came natural to me, I really didn't know whether supplying warm air to a structure should be on the inside wall or on the outside wall because I came from the refrigeration field but it made sense to me to put heat where it's needed most. And to put heat in a structure where you'd be cold if it wasn't there and then I always remember that the hot water people and the steam people put their radiators there. Why not air? Well that was, that had to be one of the good things. The toughest was to take that same perimeter heating and to make it work well on cooling and it always worked pretty good on cooling but it worked a lot better when we supplemented the winter air on the perimeter system and the summer air from the inside of the house. A mixture of the two would work quite well in a residence. In a commercial building it really didn't make a lot of difference whether you had perimeter cooling supplementing inside wall supplies of cooling or not. My remarks really are residentially directed. I think that was the number one thing that I worked on. From a company standpoint my self-satisfaction came from motivating dealers to open up a Guide and Data Book and try some of those theoretical things in there on the local home front. And calculating the correct heat loss of a house was probably the second thing that I tried to get across to dealers commercially and residential wise. Calculate the heat loss to use smaller equipment. You bring energy conservation right on the surface to the local area fast and then of course heating and cooling both, everything in Kansas City was heating and cooling, particularly in the last ten, fifteen years and calculations were a part of it. We did this with the slide rule and with the calculator and the last five years it's all been with computers. And I happened to be with the company that pioneered bringing the computer to the engineer's bench to the dealer and we put a calculation program of these things onto the computer disk. And that was given cost free to the industry into the field for the first several years that we used it. If you bought a, in this case a computer, we would give you the programs for it. I understand this program is still being used today. It's been modified and today it's being sold by industry, by ASHRAE, and others. But it's a more sophisticated program. Our programs are very simple back in the early days but it was better than using a rule of thumb or long calculations that were done on the old adding machines in the old equipment that didn't have the finesse of bringing out all the details. And because of the better calculations the heat designs were met and proven correct and of course energy conservation was the end the bottom line for all of this.

B.N.

Do you remember what year that was that you started using the computer programs?

E.C.

Yeah. That was probably, it was probably 1978-79. It was originally done with the Radio Shack TRS 1. And I think that was about the beginning of it.

B.N.

What part did you personally play in that?

E.C.

My job was to go to being in the professional selling end of the business of the engineering side. You know, it's tough to sell engineers. My job was to go to an engineer and race him with his equipment and

see if the computer disc was as fast as his calculations were and then as accurate. And then when you got your calculation you turn your building maybe forty five degrees into a different location of the sun and see how long it took him to correct his calculations. On the computer it was the punch of one dial, it was the punch of the keyboard of a matter of seconds. And you could turn the building location, you could reorient the building and in this case it would be another night or two of calculations. So that's what, the way we did it then.

B.N.

Where did the idea come from actually, you know, at your company to decide to develop something like this?

E.C.

An individual within the Carrier organization, another field engineer working for the parent company was in the Atlanta Georgia area. And his name was Staples of all things, different Staples than what we're talking about here. Not the ham Staples but he would go to the engineers and show his calculations and then the engineers were hopefully expected to include his design and mention his name in the specifications if he would give them the calculations. Well they were well engineers as a whole were quite happy to have the assist but they like the idea that you could specify all these things do it on the computer so fast and more accurately. So John Staples was promoted from a field engineer in the Atlanta area to the parent company's present location in Syracuse, New York where he built a group of people that expanded out and it went from the Radio Shack 1 into sophisticated computer equipment we have today. And when Carrier Corporation sold out to United Technology, unfortunately the computer end of the business, the calculations were dropped and it was dropped because they wanted in no way to compete with any other part of industry and at the same time they thought they had made inroads into the engineering profession where they now showed the benefits of using the computer and computers were more commonplace. So they got out of the business. Many, many years ago the Carrier Company got into the business to show engineers how to calculate to use the equipment that they built and some people may feel to this day that that was a bad thing to compete with other engineers, it was designed and built. But back in those days there wasn't any engineers that knew too much about air conditioning so you had to show them how. And as usual Carrier backed away from all of this and got out of the business of engineering and just did the business of manufacturing. Word is today everything is totally one hundred percent manufacturing and product oriented and no longer training or design oriented. Engineers are in their field and the manufacturing is in its field.

B.N.

Do you feel in general that that manufactures are going down that road of getting out of training and research and so on?

E.C.

Yes, no question about it. The engineering business is a business all its own and it is a true business today. Manufacturing is a business today. I haven't quite figured out if there's a place in the industry today for the dealer. The dealer does not like, he likes to represent a factory. He cannot represent an engineering firm. So once a dealer learns how to do all this mathematics, a dealer really with the computer doesn't have a need particularly, in small buildings, small structures small commercial, large residences, he doesn't have a need of using the services of an engineer. And let's face it, there isn't enough percentage of money in it for an engineer to engineer even a house, a large house or small

building. The engineer comes in handy for projects, for multiple projects, for larger sized buildings. And I feel that manufacturers now are going to be dedicated completely to manufacturing the product and leave the engineering to other people. Also the liability of mistakes is avoided by not performing the calculations for somebody. So I think that would ensure that the dealers sell. The time may be here where there won't be a dealer to represent a product that a mechanical contractor can sell any brand of his choice and install to maybe to somebody's specifications. But originally it was a dealership proposition. Today it's a contractor type of thing that may look around for the best price and the best buy on a product. You know I think the brand names today are less important than they were several years ago. Now I feel therefore that people doing engineering business must have a great knowledge that comes from the ASHRAE type material, the Data books and the Journals because if you buy to low dollar, you must be up to a specification and I think because of this, ASHRAE should prosper more in the future into that type of training and perhaps ASHRAE should begin to have and function as a training person, not to use somebody's equipment but to calculate what's the minimum practical energy conservation way to do something, to heat, to cool a structure. And it's also more important because the techniques now must include air purification and other things, no longer just air movement and heating and cooling and filtering a problem, but you have the injection of odor removal these days. So there's a feel all of its own has come about under new technology because we've built a better building, a tighter building and the industry has changed its concept. The manufacture should build, the engineer can engineer up to a standard, and the contractor can buy up to a price that meets this specification that the engineer has done. It takes all three. Ironically this is what Dr Ralph Nevins said many years ago in ASHRAE and it became a feature article and was the cover of one of the ASHRAE journals. Let me quote for you. What Ralph said, way back there in 1970 and 71 was we must enlist, we must enlist ecologists, the engineer, and the politician as a team and that's about where it is today. Ralph's prediction was on the cover of the ASHRAE journal back in those days. Now that's amazing to me that way back there ASHRAE had the foresight to see the many entities of engineering, the politician which is the salesman of the mechanical contractor buying down to the price up to a standard. But it did happen.

B.N.

So you think what he expounded at the time, is coming true then.

E.C.

Yes definitely. It is true and this means as we are now a world market and no longer a small entity. Remember when I was pioneering the perimeter systems of western Kansas and Missouri, I was selling to a small population and to them building a new house was a big thing. Today we've already gone through the periods of building projects of houses, we're past that. So today we have this whole new technology which has resurfaced.

B.N.

What whole new technology?

E.C.

The new technology is to buy down to the price but up to a standard in a comfort standard that is heating and cooling but designed by the engineer to the local need of the people. And as the structures are made tighter the standards will become, for safety reasons, will become tighter and the engineer's job will be taken along into the next decade.

B.N.

I think it's interesting to think about the fact that the advent of computerized material of data from manufacturers and things allowed a lot of the art and science of heating, ventilating, air conditioning, or refrigeration to be canned, so to speak and so I mentioned earlier an engineer isn't necessary to design a system for a house or a small building or something. However now because of a lot of this canning that occurred in everything and trying to apply one set standard to all different types of situations, we've got into various problems such as tight buildings and all these types of things and now we're back to the point where now we have to go back to the engineer and say we need you to figure out why we're having these problems with these buildings and these methods.

E.C.

Right. And of course I mentioned earlier a world market, what we're doing at any one location any one latitude, longitude area, one city is now being done all around the world. Once you get a computer program that works with somebody's specification in Kansas City, you certainly must adapt it, computer wise instantly in Japan. But what we manufacture in Japan could well be in America tomorrow and made possible because of the engineer specifications. It's a world market. We've got a smaller world of the bigger neighborhood. Bing Crosby said this a few years back.

B.N.

So really the advent of computerized calculations and things has solved all types of problems and opened up new opportunities but at the same time it's also created a whole bunch of new problems too.

E.C.

It has. And the problem now it seems to be one of where the politician must enter the scene and separate the engineer from the ecologist from the person who sells. We have a lot of pieces today. The engineer and the architect and the installer, the mechanical contractor, the buyer, the owner also now looks to the computer to guide him but he still has to make that decision to buy up to a standard. And I think the future of the engineer is greater than it's ever been but it's more complicated and it's more sophisticated and it is computer related. Where this takes us to I really don't know but we know that because of all this you get the legal aspect brought into it. Legionnaires' disease should be farther along than it is. Ten years ago we knew about Legionnaires' disease, not much really has happened to make, to stop people from being exposed to it. It's probably a legal function these days. Whatever it is, it's a new world for us, a new technology and it’s part of ASHRAE. I think it's an ASHRAE responsibility to gear up and train for the future and I think we are today where I was in 19, in the early very early 60's when I was knocking on the door of Ralph Nevins to find out whether the perimeter system should have a return air in the middle of the building or on the side. Where did it belong? We're there today to find out where the comfort standard belongs and it's going to take the engineer to sift out all of this because if you don't know where you're going you certainly don't know where you've been. That isn't quite there is it? (Laughter) Takes a road map and ASHRAE can provide the road map, the guidance. As Ralph Nevins said enlist the ecologist, the engineer, and the politician as a team. Now who's in charge of this team? I think ASHRAE could be.

B.N.

Okay Cass is there anything further that you wish to expound upon?

E.C.

No but I think that ASHRAE needs a sales department, a marketing department of its own. It's got to take the best kept secret in the world to everybody who enters the schools and colleges of all types and people of the unions, the people who own factories, the owners, to tell them about what ASHRAE is. Research is by far the best way to get there. That research money should be spent into market our own product which is the information we've talked about right here this afternoon and it will grow. The future of ASHRAE can be as rosy and as beautiful as the problems are. They're not problems, they're really opportunities and I think we're solving a lot of our opportunities, the team is, basically because we've added the computer to the team. We've cataloged our differences. We've catalogued the needs and we catalog the opportunities. And the engineer now has to take all of this, make a decision and then run with it. And I think all this can be documented as we have done for years in the ASHRAE Guide and Data Books and I think the future will dictate that we do that beginning almost immediately.

B.N.

Okay, well thank you Cass for your thoughts.