ASHRAE Leadership Recall (formerly Leadership Recalled)

Transcription

Audio Interview of: George Hightower

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Interviewed by: Anne Boutwell

Anne Boutwell

George is going to tell us a little bit about how he stared in the industry in Atlanta and how he got into the industry. Maybe that would be a good point to start with, how you become interested in engineering to begin with?

George Hightower

Why did I get into the air-conditioning business and why did I get interested in it. I was studying Electrical Engineering at VMI and I joined AIEEE, or AIE, I think it was in those days, the American Institute of Electrical Engineers. I had to present a paper at one of the seminars we put on and I had read something about air-conditioning and I decided I would present a paper on air conditioning. And I did. I read everything I could find on it and there was very little available at that time. I did get enough together to make this presentation and I made a good grade on it because I was really interested in what I was studying and talking about. Anyway, I graduated in electrical engineering and tried to get a job in electrical. I tried everywhere for six months and could not get one. Finally, I had some money in the bank and went to Tech and took some graduate work in business courses, banking, accounting, and so forth. By Christmas, I still could't get a job in electrical engineering.

A.B.

What year was that?

G.H.

That was in 1933.

A.B.

That was in the middle of the Depression. Hardly anybody, General Electric, who usually took on students for their test course, they would take maybe a dozen or two dozen students and put them through the test course and feed them into their various activities. And I had tried to get in through that and could not get a job anywhere. I tried TVA and other places. Finally, after Christmas, I had some friends who were working with the W.D. Alexander Company in air conditioning and they had just taken it on about six months before that. They kept after me to come over here and join us. So I was in my second quarter at Tech and I quit and took a job, on a commission basis, selling air conditioning. And they had correspondence courses that I took so to get some idea of what we were doing. And we started at Georgia Tech at night school a course that was to be given to all of us who were in the business and it was to be monitored by the professor of mechanical engineering at Georgia Tech, he would just monitor it and we used the Guide as our textbook. That was the old Guide.

A.B.

Which guide was that?

G.H.

That was the ASHRAE Guide dated 1933. I think was the issue that we used. ASH&VE guide at that time. So, the way we worked it was that the professor, I can't remember his name now, just acted as monitor and we from the class took over the teaching. In other words, if you had someone with Buffalo Forge would talk on backward curved fans. American Blower, Bill McKinney - Crawley Cobant was with Buffalo Forge - would talk about forward curved fans, Aerofin coils - I believe was Bill McKinney or Crawley Cobant did that. N. W. Wise would talk about plumbing, heating problems. We had somebody from American Standard talked on boilers. People in the business would teach us what in that particular area of the business, because nobody at Tech really knew much about it except by reading the ASH&VE Guide. So it was really a fine course. I didn't finish the course because I had another job offered me in Birmingham as chief engineer of a new company that was starting over there. I didn't finish it, but I learned my basic things about air conditioning in that night school course. During that year and half when I was with Alexander I sold some residential installation of window units, which were not window units in those days. Actually, they sat on the floor and backed up to the window. The air came in and went back out. They were great big bulky things, almost as big as a piano. Then they had central-air conditioning that you had to build up. You couldn't buy an air-handling unit. You bought the fans and coils and filters and you built the housing for it. At that time you bought a compressor, you bought the expansion values that went with it and put it all together. Cooling towers were beginning to be available in that size in those days so if it was the right size you could buy it. If it wasn't, if it was too small, you made it. I sold and installed with the help of a boy named Hoke Zuber the job at Davison Paxson Tea Room, now Macy's, which was the first restaurant job in the city of Atlanta. It was such an important job that the vice president of the General Electric Company came down to help sell it. It was a 40 ton remote compressor, water cooled, air-conditioning job for the restaurant. It turned out to be a very good job and it stayed in use until about 15 years ago. It was put in 1934. We did some residential jobs and some small office jobs, but mainly they were through the wall-type window units. But we did put in some of the equipment that General electric had at that time, which was a steam boiler with a remote air-handling unit that had a coil for heating and provisions for future addition of cooling. Nobody bought the cooling at that time because residences hadn't gotten used to the idea of air conditioning - but nobody had it. But we made provisions for it in several homes that I put in. One was Norman Elsus who was head of Fulton Bag and Cotton Mills. He built a house and he made provisions for it. Dr. Dew, on Peachtree Battle, he did it and there were several others who put it in over the years, usually they were wealthy people who could afford to think about the future and prepare for it. Air conditioning was something new. In those days you had to go out first and tell them what air conditioning was and then you tried to sell them on the idea of buying it because they didn't have any idea what you were talking about. There was very little publicity about it. Those were the original days of air conditioning. In that group at Alexander at that time, there was Boynton Cole who just retired recently. There was Walter Jarod who had the accounts for Molly Towers and other things after that. There was Crawley Cobant, no he sold the stuff. Doug Cone who later went with a dealer over in Augusta, Georgia, and then started his own business and operated there until he retired several years ago. I can't think of the rest of them right now but there were about five of us and we were the nucleus. The other companies in town that

were selling air conditioning were Carrier Atlanta and they sold Carrier equipment. There was Air Temp that sold Chrysler equipment, it was Climate Control, that was the company that sold Air Temp which was Chrysler equipment. I think those were the only companies in business at that time. Then I left Atlanta and went to Birmingham with this company to start it. There was a case of a father who was wealthy and he had two sons and he wanted to put them in this new business, air conditioning. So he gave them $10,000 to start it and operate it. Well, $10,000 in those days was a lot of money. But they started and so when I got there they had already fixed up their showroom, which was really unnecessary, but they did it. They had a display of a boiler and air conditioning out front and the place was air conditioned. They spent about $6,000 getting ready to do business and had $4,000 to operate with. So, it was difficult. We went out there and we had the whole state as a distributor and we operate primarily in Birmingham, Montgomery, and Mobile and a couple of other towns as contractors also. Well, we started out and operated during the first year and we were doing fairly well but just $4,000 working capital made it very difficult because we had to turn over our money quickly and we had to go to the bank and borrow and the old man said he wasn't going to give us anymore money, that was it. Then one of the boys got to be a playboy and he wasn't doing any good to help the company progress so it was a unanimous decision of myself, the father and the other brother that he find something else to do. So he became a car salesman. Then we started operating with the one left and he also began to get interested in other things. As a result, we struggled along for a year and a half before the money ran out and the old man said "this is it - we're through" so we colose it up and I had to look for another job Incidentally, we installed equipment all over Alabama, here and there.

A.B.

Could you name some of the places like in Mobile and Birmingham.

G.H.

Yes, in Birmingham there was a theater right on 20th Street in downtown Birmingham that we air conditioned. It was the first theater in Birmingham.

A.B.

What year was that?

G.H.

That was in 1935.

A.B.

Was that comfort cooling?

G.H.

That was air conditioning. It had a washer in there originally and we replace that with a real air-conditioning system.

A.B.

What is the difference between what they call comfort cooling and air conditioning?

G.H.

Some of the comfort cooling systems that were originally there were really air washers where you take a lot of air and you have a high air change in the theater and you pull it over a water bath, swamp coolers is another name for it. You r

bring it over this water bath and what it does, it raises the humidity but reduces the temperature. So you end up with very humid conditions unless you have something inside that has a lot of heat that will

offset this and make the air rise again to absorb the heat in the room. It is sort of a humid air washer and the air going over your body picks up the heat and at the same time it drops the humidity of the air and it does a partial cooling job. So that was the old swamp cooler, air washer system. What we did, we replaced that with a DX coil or in some cases we cooled the water and just still circulated the air washer with cool water but the first ones were nearly always direct expansion where we just put a coil in the air stream, cut the water off and just let the air come over the coil with less air. That is what we did in this theater. So it was the first air cooled comfort air conditioning system for a theater in Birmingham. We also put it in one of the first restaurants, I think there was one already there when I first came out there. We did it in several restaurants, two or three.

A.B.

Do you remember any of the names?

G.H.

Yes, Joy Young's Chinese Restaurant was the first one we did and I think it was the second restaurant in Birmingham. We did it in the Tutwiler Hotel in the coffee shop. I think it was the first coffee shop in a hotel that was air conditioned in Birmingham.

A.B.

Was that in the 1930's too?

G.H.

That was all 1935 and early 1936.

A.B.

What about Mobile?

G.H.

Mobile, we did something in the Battle House Hotel. I can't remember what it was. I believe it was in the lobby and the office area. Then in Montgomery, I did a dress shop - I can't remember the name of it. We did the man who ran the Coca-Cola Bottling Plant and had the franchise for most of Alabama. We did his home with window units. He had become an invalid and he wanted it first in his own bedroom and then he got it in the living room and so forth but they were those big air conditioning units that they called window units. But they worked. They were a lot of trouble but they worked. We did a restaurant in Montgomery and another residence that I did was down at southeast Alabama, I can't think of the name. it was the town that had a monument to the boll weevil, Enterprise, Alabama. Enterprise had it right in the middle of the town square with a big monument and the boll weevil was carved out of granite. Because the boll weevil was the thing that ruined the cotton in the South. So the man who brought in soybeans put up this monument to the boll weevil because it made it possible for him to make money out of the soybeans. That whole country was prosperous at that time because of the fact that they had gotten away from cotton. Anyway, this man ran the wholesale grocery, he ran the beer distributorship and he also had the bank. An interesting thing about him was that when I came down to talk to him about this heating system for his house, with provisions for future air conditioning, but he didn't buy the air conditioning. He was telling me that it would be all right for me to do this as long as I didn’t block the streets because they were going to have a revival the next week, the week after we were going to start to put this system in. He said "I don't want you to do anything that will keep my beer trucks from getting by so that the people at this revival will be able to get beer while they are here." This was a Baptist revival, but he gave me specific instructions "Don't block the road." Those are

the kinds of people we would air conditioning to in those days. And even central heating was not common in Alabama or even Georgia at that time. In the cities, yes, but out in the country, no. They still used coal furnaces it they had furnaces at all, or coal pot bellied stoves in the house. That was the primary thing they heated with. Here we were trying to sell warm air furnaces and boilers for steam and hot water in residences. We didn't get too many of them but we got enough to make a living out of it. I think if they had a little more money to operate with that company would have made it, but they just ran out of money. So I went to Washington D.C. - I can't think of the name of the company - and they were operating out of Washington, primarily selling bigger air conditioning that a local distributor or dealer could not handle like department stores or theaters and they would come in and take over the job at the local dealer, could sell it and be the local contact, they would come in and engineer it, lay it out and get the final sale, help on the final sale and then send the supervision down to get it installed by local labor. So I worked with them and I had a job in Panama City, Florida. I had one in Montgomery, Alabama, which I had sort of lined up before I left there and we took it over. I had one in Nashville, Tennessee, a department store. The one in Panama City was a funeral home and sort of a general store, it was a combined building.

A.B.

Do you remember the name of it?

G.H.

No, I don't.

A.B.

When was this?

G.H.

This was in 1936 or 37.

A.B.

A funeral home and a combination grocery store?

G.H.

General store, you know a dry goods type store and a funeral home. The funeral home was here and the store was here and he had his office up above and we air conditioned that building. That was interesting because in a place like Panama City, Florida, where you wouldn't get anything. I mean, pipe, you had to go to Montgomery or Mobile to get It, or anything else. You had to get your material way ahead of time, line it up, and then go down and make the installation. He was an interesting person anyway and he liked to fish so we would get up early in the morning and I would go to work around 6 a.m. and work like the devil until around 2 p.m. and then he would come by and pick us up and we would go out on a boat and go fishing, get mackerel. Boy, there were a lot of mackerel out there when they would run you would catch them. Anyway, we would fish all afternoon and then get back about 5:30 or 6:00 in the evening and go to his restaurant, which he ran at the local paper mill, and have dinner with the fish and then go back and go to work maybe at 8:30 p.m. and we would work until about midnight and then go back to the motel and go to sleep and get up the next morning. We had an interesting time there putting that job in. But we did, we put the whole thing in and I was the only outside man and I got local labor to help put it in. I had to teach them what to do because they didn't know anything about air conditioning. The same thing was true in Montgomery and then this job in Nashville, Tennessee. We had a crew out of Washington that went down and did it but I was supervising

it. I had another job in Utica, New York at the same in an insurance office building that was about a six story building. It was the first air conditioning job in any office in that part of New York really, but particularly in Utica. It was the Travelers Union Insurance Company I believe. It wasn't the Traveler's Company but it was a Union of Travelers, a sort of a mutual type company. It was located on Oneida Street right on the main drag. This was in about 1937 and it was real interesting because the man was the son of the original founder of the business. He was very progressive, sort of conservative, but he was very progressive and he wanted to remodel the building and he wanted to air condition it. So we designed it and installed it. I stayed up there most of the time. I commuted from there to Panama City or to Montgomery or Nashville for these jobs. That was interesting putting that system in. I got there between Christmas and New Year's, the first time I arrived and the snow was so deep that the snow plows just kept throwing it up on each side of Oneida Street. You could just see the roofs of the houses on both sides it was so high. It was just like a tunnel going through the middle of town, and it stayed that way until the end of February or first of March. I went up there with just a light suit and a top coat. It wasn't long before I had long handle underwear and boots and a winter coat and ear muffs and everything, because every day you would wake up in the morning and it would be below zero during January. It wasn't anything to be 22 degrees below zero. We were trying to start that job at the same time. I learned two things up there about, first about the weather and living with it and the other was installing a big air conditioning job because that was the first big one I had handled.

A.B.

How did you travel back in 1937?

G.H.

Train and car. I did mostly by car, no planes.

A.B.

What kind of car did you have and how long did it take you to get there?

G.H.

I had a Ford coup. It was a good Ford Coup and it would take me back and forth. I usually drove and I would make three stops on the way as I went. If there was an emergency, I would leave my car and get on the train and then go on back to wherever I was going and then come back and pick up my car on the next trip. I mostly traveled in my car and I lived in my car. I had a place in Utica, I had a room with another boy that I had gotten from Birmingham to go up there with me to follow that job when I would leave, named Billy Massey, who lives in San Antonio right now. In fact, he called me on the phone about three months ago and we had a nice conversation. He is retired now. He went from that kind of work to plumbing and heating supply company that his father-in-law owned and then he ended up part owner of it. When he retired someone else in the family moved in, I think one of his sons did. He is out of it now but he was in it his whole life. He was like I was, in the construction end of it or the wholesale selling of the parts. Those were interesting days because very few people knew what air conditioning was. When you said you were in the air-conditioning business some people would say, "Oh, yeah I've head of that, what is it?" Other people would say, "What is it?"

A.B.

What was some of your sales pitch? Do you remember what you told people then? Give us your sales pitch.

G.H.

Really, the first thing you had to do was explain what air conditioning was. Even if somebody had sort of heard about it they didn't know really how it was accomplished and so forth. We had pamphlets that General Electric would put out to help us convey this with drawings and red and blue arrows for air and water and this kind of thing to show you what an air conditioner was, the system how it worked. Really, you almost had to go into that before you started selling. After that it had to do with, if it was a residence it all had to do with comfort and cleanliness, either full function of air conditioning as the temperature of the air circulation, the filtering and the humidity control. You tried to convey those factors to them in terms of what it would do for them in the house. Housewives make the house much cleaner so they wouldn't have to dust so much, didn't have to leave the windows open and let all this coal smoke and everything come in. In those days most of the houses in Atlanta, all over the south, were heated with soft coal. Some of the wealthier people could have hard coal which came out off the east, anthracite coal, but mostly it was soft coal and it was smoky and dirty. So, they were interested in cleanliness, filtering the air and being able to close those windows. The second was comfort, the temperature coming down and the humidity coming down, but cleanliness was the first thing you tried to sell. In a restaurant it was a matter of return on your investment. We would sell the restaurant on the basis that for a pattie of butter at each meal you can pay for your air conditioning. Just the cost of a pattie of butter - that was the way we related it, to what it would cost. And he could realize, a pattie of butter, that is not much. That way we sold a lot of air conditioning on the basis of you are going to get the money back by increasing business. Just think how many additional patties of butter you will sell to pay for that pat you are giving away to buy this air-conditioning system. We would sell water fountains on the basis that you should be drinking eight glasses of water a day and if you want to be healthy you ought to do that and so we sold water coolers on that basis. In fact, some boys were doing nothing but selling water coolers because they were very few of them out in those days except the bottle type and they put ice around the bottom and let it go through the ice and you had ice water. But this was a refrigerated water cooler. Just connect it to the water main and that was it. On department stores it was based more on floor traffic and they stay in the store longer if you get the temperature down where it will be comfortable. Offices, of course, your employees will be more efficient if they are in comfortable surroundings and you can also close those windows and keep out all that dirty, dusty air so everything will be cleaner and you will have a much more efficient operation with your employees and you will get more out of them than you do right now with heat and all this dirt and dust. So there was a lot of overlapping factors that we would use, but each market had a real sales pitch for that particular market. It was aimed at how he would benefit from air conditioning. Filtering was a great part of it in addition to the comfort or reducing the temperature of the air and the humidity. You can't realize today how dirty things were in those days. I ride on trains today and planes and it is all just beautiful. The temperature is right, the air is clean, you have fresh air and all. I compare that with riding the trains when you would open the window, you got the breeze but you got all the cinders and the dust and the dirt and the smoke with it. When you got off a train you more or less had to take a bath. It was really dirty. Later on when oil came in it was much better. But during those early days with the smoke and the cinders it was a dirty deal to ride on the train unless you just took the heat and just took the air that they would supply, just a little of it, through those trains to keep them cool.

A.B.

Are you familiar with Celestine Sibley's book on Rich's Department Store?

G.H.

No, I've never read it. I have it.

A.B.

You have it?

G.H.

I'm pretty sure I have it, because I have most of her books.

A.B.

She mentions the air-conditioning. I copied a part of it, but she mentions the air-conditioning system in there on Fourth Street at something that was just rigged up or something, but I didn't know whether it you knew any of the background.

G. H.

No, that happened after I left here. York did most all their air-conditioning equipment. A fellow named Crouch, with York, was the manager here at that time, and somehow they got in with York and they did a lot of the regional work. In fact, they did it over a period of years, and I don't remember their first system, but I know the first time I went down there they had centrifugals and they were York centrifugals, and they had that original store on Alabama and Forsyth Street. It was a showplace. I remember going to ASHRAE meetings and going down to see the Rich's air-conditioned store and how it was done. And later on, and this was after the war, in fact it was in the late 1960s or early 70s I guess, when the computerized control was put in. I guess it was in the late 70s. They had the most up-to-date computerized control system of anybody. In fact, IBM more or less came down to follow their system to start the IBM System Seven, because they had worked it out in their various stores and had all their stores on a central computer here in Atlanta, IBM system, and it was really a honey. I tell you, it was just delightful. I want to say something about it later. I looked at it just last year and it was a changed system.

A.B.

You showed me a picture once of Davidson's Department Store, and did you have the old Davidson's, which is now Macy's?

GH.

Let me see, I think I have the picture here that I gave you. Anyway Davidson's and Rich's were the two most important department stores here in Atlanta at the time, and they were strong competitors. This is the picture here. That's the way Davidson's looked at the time. Davidson Paxon was the name of the store. They were on Peachtree between Ellis and I can't think of the other street, but anyway I think it was now International Boulevard.

A.B.

Carnegie?

G. H.

No, Carnegie Way is down behind it. Peachtree's in front, Ellis is down below here. This used to be the Henry Grady Hotel in those two buildings made up the whole block. I can't think of the street right here. Anyway, it wasn't very popular, along with Rich's, store in Atlanta, and of course they were trying to get ahead of each other on any innovative idea to get people to come into the store. Anyway, I was called to the office to go up to see them about and air-conditioning system for the tea room, and I went up and surveyed it talked to the manager and he said, we're interested in air-conditioning this whole tea room.

I got help from some people from Bloomfield who, it was Schenectady at that time - they were General Electric people, to help me design it and then Hoke Zuber, who had been in the business with the refrigeration end of it with the W. L. Alexander Company before I got there, so the two of us worked out the design with the help of Schenectady, and then submit it with the drawings and the price. And incidentally, that job sold for $200 a time which is, on today's market, outrageous but we put in 40 tons for about $8000, $200 a ton . And that was a complete job, the controls, the wiring, the ductwork, the insulation, and they built up the air handling unit and the atmospheric cooling tower on the roof, the whole system for $200 a ton. And it worked. It was a very fine job. As I say, it stayed there for maybe 30 years or more. That was installed in 1934, and I know it was there in the 1950s and it could have been there in the 1960s, so it was there a long time. One interesting thing about it, as I say in those days you had to do everything. I had to design it, survey it, make the drawings, make the proposal, and then sell it, and then you helped install it. I was doing saleswork during the day on my other business, and I would work with the installation crews that night, because we had to do the installation after they close. So we go up there late afternoons and work till probably 12 o'clock or 1 o'clock at night and then I'd go home and get a little sleep and go back to the office in the morning to call my engineering sales jobs I was trying to work on and that was the way the job was put in. Hoke, Drew and myself, and then we had the sheet metal contractor put the ductwork in and then we had an insulator come in an insulate the ductwork and we had a plumber do the piping for us, and we had to sort of be with them on that because they were not familiar with refrigerant piping and we had to get the book out to show them how to do that and to keep carbon from forming inside the pipes in this kind of thing. I really put it all together, and then when we had a leak, of course he had to do that ourselves, repair the leaks. Of course, you had to do it right then. During this process of doing the ductwork, there is a big mural, a wallpaper mural, on one wall where we had to bring the duct through, and I was cautioned before we cut that wall, "don't dare ruin that mural, because we don't have any more of that paper, and you'll have to replace the mural if you do it."

Well, the first night I cautioned everybody about that thing and I came back next morning and there it was. It was ripped down because in cutting it some of the plaster came loose and stuck to the paper and as it fell it just ripped down across it. It had this strip about anywhere from 3 inches to one inch all the way down where it just pulled a little strip of it. Well, I was sunk! So I went to the engineer, the building engineer, and told him what had happened and he said, "Oh, my God!" He said, "you know, I have a record that we have some of that paper somewhere, but I can't find it." So the next night he came back and said "I found it." And it was the panel that we had cut out. All we had to do was just replace that one panel. So I'm grateful to him for finding that panel, because that would have been the whole profit of the job if we had to do that. Anyway, we replaced it and we didn't have to do anything. The job worked out real good and everybody was very pleased and we had a big dedication of the air-conditioning system when we finished it and turn the switch on, and they did a lot of advertising that the tea room was air-conditioned and most of the advertising those days was, "it's 20° cooler inside." And if they had it there they couldn't do this, but as you enter the place they had a lot of, looked like snow and ice over the door and they had a polar bear on top of that unit would say 20° cooler inside. And you have a theater, they had this around the marquee. They would have the snow and ice built up with a polar bear cut out on a big piece of cardboard up there, and it was always say, 20° cooler inside,

because that's what we designed for those days, 20° difference. That was before the energy crunch. But it was a lot of fun. I really got so into it and I enjoyed it. I liked what I was doing and it was not work for me. It was really fun I just enjoyed every bit of it, and I've been doing ever since. As far as the air conditioning field is concerned, I have just enjoyed the hell out of it.

A.B.

Let me ask you, George, and maybe we can just close it out today and then come back and continue at another time, because I know it takes a lot of energy to do this, but how would you describe the way that you worked with the job in the store and Davisons in 1934. How does it compare with what you would do today? In other words, how is it, is totally different from what you would do today? Say Macy's called you to do the same thing.

G.H.

Well, the difference is that in those days he couldn't buy the equipment complete. We did buy the cooling tower in that case, because they may cooling towers were refrigeration systems, so we were able to buy the cooling tower as a unit, and we assembled this just like you do today. Now we only had the atmospheic cooling tower. We didn't have the induced draft type. They had them for the bigger systems, but not for that size system, so there were all atmospheric towers for that range of system. As far as air handling equipment, there was none available.

(Audio missing for continuation of transcript below) at 40:00

It just wasn't made. You had to buy the coils, the expansion values, the fans, the filters, though laminators that you had to make them, you had to make the housing to put them in, you had to make the drain pan to take the condensation out. You assembled parts - that is what you did. You had to buy the copper, pipe it. You had to buy the insulation to put on the pipes, and it wasn't the kind you normally use for heating. You had to get the insulation that really had to be adapted to not only take care of the condensation that would come off the cold surfaces. So, it was sort of a mixture between the refrigeration requirements and the heating requirements. So it wasn't just a matter of looking through catalogs and getting anybody to tell you a vendor who would do this job. You really had to calculate how you had to get the coil vendor in the fan vendor in the filter vendor to work with you to design what was required to do this job, of so much airflow and that what temperatures going in and out and what refrigerant temperature you have, what size compressor you would have to use with it, how much gas you would have put in it for the length of lines, because a lot of that was just not available to you as it is today. So it was more a basic design problem in installation than it is today. As far as the basic principle some of them have changed. You know, they have become more sophisticated, and probably more accurate, but basic principle is the same, because they came from the same refrigeration experience that we had an adapted it to air-conditioning, which they continue to do and to give you more accurate information and easily increase and easily applied. Of course the equipment now is being made to fix almost anything we want. You just get it out of the catalog and put it in. But in those days you didn't do that. Is really quite interesting to go through all those maneuvers to arrive at what you need to put in a job after you decided they wanted it in you decide what to put in. Before so it was really an interesting period, And it was a learning experience for all of us, because I would say that the original group at Alexander Company, when they went to work there they knew nothing about air-

conditioning, and yet when I left there a year and a half later to go to Birmingham, I would say we knew as much about air-conditioning as anybody in Atlanta did, based on our experience of doing it in this my school course that we were available from General Electric and Carrier and other companies. So we were always studying to keep up with what we were doing, and it was an interesting time.

A.B.

Did you work with any people like Mark Young or I. C. Thomason or Gossett?

(Audio resumes)

G. H.

I don't remember any of the names of the people in those days. I don't remember the name of the company, but I do remember one after, let's see, this was just before the war, **Walter Keith** and Company. Became how of the old Keith hardware company and he went on his own and started the Walter Keith Air-Conditioning Company. They did heating and air-conditioning in Nashville, I think he had something to do with this job what I was doing this work back in 1937, but I don't think he was directly involved with it until he started his own business which was somewhere around 1939 and he continued to be in it through World War II. But I don't remember the name of the company that was our contact there at the time we did the job. I got in that job while I was on that Utica job and somebody else had handled the sale of it. I was just involved in the installation of that one so I didn't deal with the people locally. I got the people to install it which were local contractors and I was more or less supervising it, traveling back and forth and I had a man representing me there on that job. When I left the Hudson Air-Conditioning Company in Washington DC, I went with the General Electric company. I've been trying to get with them ever since I got out of school and they didn't have any openings and I just couldn't get in. Finally, they had an opening for somebody to help them write a duct design and installation manual for the engineering Databook. So they employed me because I had had this experience in the field of actually installing systems as such and also on duct design and installation. So they employed me and told me to write a section of their application manual Data book on design and air distribution. So they turned me loose and I started traveling all over the eastern part of the United States interesting distributors and sheet metal shops and looking at various installations from a standpoint of how it is being down and how it could be standardized to make it more efficient and less expensive because all the ductwork was almost hand fabricated in those days and it had to be shop laid out. The shop foreman designed and then he would cut it out and fabricate each fitting individually. It felt like there should be some easier way to do it. I spent his time trying to get pictures and talking to other people in the business and the younger guys who wanted to do a better and I came back and it took me almost a year to finish all that and write this section, which I did. It became the chapter on those two subjects in the G E manual. I spent the last three months of that period and probably three months more out talking to distributors and contractors all across the country and how to fabricate and install the most efficient duct systems, both the residential and the commercial, how to take off air behind grilles with scoops or dampers to be most effective and to have the air come out and get distributed like it should be from the register like the manufacturers had drawings showing exactly how it would come out of a grille, but that was if it was at the end of a run, perfect introduction of air behind the grille, but he put them on the side of the duct and it didn't work that way. The air would come in one end of it and go out the other, which I had found out during that period of field research and also some lab research. Anyway, I was going around telling about this problem with air distribution and what type of grille should be used in what certain applications, and using primarily the information that came from the grille manufacturers, those who had done a lot of research on it. It was a very interesting time to go out and talk to these people who really had no idea what was happening in ducts and coming out

of the grille, the pattern of the air and show them the ways that they could do it and make it more efficient and make it work better. I spent almost a year and a half what first went with General Electric doing that, just writing that. Then after that the American Society of Refrigerating Engineers asked me to write two chapters in their book. They already had to chapters but they want me to bring it up to date based on what I had written from the General Electric Data book. So I wrote those two chapters.

A.B.

What were the names of those chapters and what years?

G.H.

It was written in 1938 or early 1939. The first issue was in 1940 issue of the ASRE data book, which was similar to the guide at that time only there's primarily covered refrigeration but those people were beginning to get into air-conditioning and it was chapters 20 and 21. One was called "Air Distribution" and the other was called "Duct Design." It stayed in there, this was the last issue of that in 1953-54. So from 1940 until 1954 that chapter was in there and then it was revised. They asked me to revise it at that time but I was in the midst of starting my contracting business and I told them that they had to get somebody else to do it. I learned a lot by writing those two chapters about air distribution and duct design during that research period in the time getting the material together to put it together as a manual.

A.B.

When you were at General Electric do you remember any of the people who were like pioneers in the industry?

G. H.

Yes, one of the people who is a big name in ASHRAE is Frank Faust. His picture is on the wall somewhere over there. Frank Faust was the one who helped get me with the General Electric Company in Bloomfield and we lived together. His mother was our housemother and there was Frank Faust and Jack Lowe who later became a distributor out in Texas with Texas Distributor's, and he is a wonderful guy and so is Frank. There was a boy name Stribling who was also with the General Electric Company at that time, from New Jersey, and now he is retired in New Jersey. Who else was in that crowd we lived with? I can't think of the others. Those three were in the crowd with me at General Electric in Bloomfield. Out of that crowd all of them either turned out to either be high in engineering in the air conditioning department, research department or in management. Of course, Frank Faust went on to be president of ASHRAE. There was a man named Dick Harrington who was head of the air conditioning department for General Electric at that time and I think he was still head of it when he died which was in the late 1930's or early 40's, Dick Harrington. (Charles) Leopold was one of the very active ones in ASHRAE and ASRE, but mainly ASHRAE. I think he was a president at one time. But I remember.

A.B.

Did he start off at General Electric?

G.H.

No, but I read he was active in ASHRAE

A.B.

He seemed to be very innovative, he was into indoor air quality, I think the first was Madison Square garden in New York.

G.H.

Yes, he did it. As I remember he did it. His name was very famous in the air conditioning field. Another one that I relied on a lot in getting my air distribution and duct design manual was Konzo who was at the University of Illinois at that time. He also was very active in ASHRAE.

A.B.

Konzo? I haven't heard that name. did you actually meet Charles Leopold?

G.H.

I met him at an ASHRAE meeting. I think Walter Spiegel was employed by him. It is Seichi Konzo and he wrote a lot of articles, but this particular one here was taken out of American Artisan, January 1938, and it had to do with summary duct loses and duct fittings. He did a lot of research on this kind of thing. I gained a lot of information about duct designs and what happens in ducts from his work as well as General Electric's research lab where they were doing work on air patterns that had to do with turbines, you know, how the air gets in and out of turbine vanes and the most efficient way of handling it with the least loss. A lot of that information is in these chapters that I wrote. There were a lot of people in those days doing some basic research either through some of the bigger companies or through people like ASHRAE or just on their own at universities where maybe they were in charge of a certain mechanical department like Konzo at the University of Illinois. All that was done through the research lab at the University of Illinois. Some of that basic information is still just as authentic as it was in those days. And I quote this a lot. I pulled this book out twice last week to show a western engineer and another contractor what he was doing that was wrong. This is basic principles that haven't changed. … In 1941, I was district manager of the General Electric Company in Birmingham, Alabama, handling about five states west of Georgia and north. It was for the air conditioning department handling the sales, the application, installation and the service on General Electric equipment. I based out of Birmingham, but I would go out on trips and I would be gone for about five weeks contacting my five distributors in these five states and I would spend a week usually with each one. I lived out of my car and wherever I was I spent the weekend. So my distributors were really my friends and I got to know them quite well, both their families and their businesses and all that and I enjoyed that very much. Then the war came along and I was reserve officer. So I volunteered and was immediately called and reported to duty in January of 1942 to Wright Field and from there went overseas to China and served with Chenault with the Flying Tigers in China until the end of World War II. During that time in China I had a lot of responsibility out behind the Jap lines more or less on my own and I decided that when I got back here I was going to start my own business. If I could handle that situation out there then I could handle an air conditioning, contracting, or distributor business. So I came back and things were tight as far as getting equipment was concerned because materials weren't immediately available because during the war they had practically all been used up and manufacturers had not gotten back into production again for civilian needs. So the General Electric Company asked me to come back with them as district manager of the Southeast and be in Atlanta and cover the eight states out of Atlanta. I decided I would do it on the basis that I would work for them for one year and decide whether I would continue with them as district manager or whatever else or start my own business. And I did that. Well at the end of that year, I decided I wanted to start my own business. I resigned. Not having any business that I had to set up, I was just going to resign and start a business. After I resigned the franchise for Georgia became available just within a month after that. The company decided they wanted to give it up and I applied for it and got it. I was a distributor and a contractor for the State of Georgia. After about one year of starting from scratch, I mean from scratch. I got another boy named John Tufts to go in with me as a partner and then about two months after we started I got Al Brawner to come in as chief engineer and John Tufts was the man who was going to handle the office part of the business and the supervision of the construction and I would be engineer and salesman and head of the company. That is the way we got started, on a shoe string, all of us putting in just a little bit of money and having to watch it very closely in order to make ends meet, to make the payroll at the end of the month, and depending too on the banks to carry us on our big jobs to meet the payroll and anyway it worked and we were able to get some jobs here in Atlanta and my first job was with the Coca-Cola Company. It turned out to be a good one and then I got another job with Shannon Hosiery Mill down in Columbus, Georgia. It was a hosiery plant where they were just beginning to produce a lot of women's hose and the market was beginning to expand and he was trying to expand his business. We went down and did a lot of air conditioning in his new plant which worked out very well. Then from there we began to get restaurants like Tasty-

Town, small restaurants downtown, and we began to get some small offices and some commercial-type office warehouse-type applications and we were doing residential at the same time. We did a lot of heating and air conditioning in residences. That was when air conditioning was just beginning to be put in residences. We did primarily heating with provisions for adding the air conditioning later if they didn't want to do it then. Just a few of them wanted to add it at that time. But commercially restaurants and offices and stores were beginning to buy air conditioning very rapidly at that time, so it was a popular market. There were only a few contractors in the business and they were all doing the total job because I don't think there was but one consulting engineering in business here at that time, that was Newcomb and Boyd. Mr. Spencer Boyd was the head air conditioning man and Mr. Newcomb was a plumbing man in the business. But they were the only engineers as I remember who were in business here at that time. So, we as contractors did a lot of our own design and installation. We called it design-build. Most of it was done that way. A lot of it was done on a negotiated basis because people didn't know too much about it and they would pick somebody they had confidence in and then let you do it, just design and put it in. Actually, at the end of having run the business 35 years about 85 percent of our business over that period was done on that basis. You survey it, design it, and install it and then service it. I started my business on the basis that we would do this whole phase of the business from the design to installation and then afterward service it. We gave up on the distributorship for the state because I decided I liked the contractor business much better and so we let Tommy Thompson at that time take over the distributorship and we bought from him rather than having to stock all this stuff and worry about distributing it.

A.B.

Tommy Thompson in Nashville?

G.H.

No, the one here. He had the General Electric franchise, the Thompson Company, I think it was. He had it for probably about 10 years after that and he gave it up and gave it to somebody else, sold it to somebody else. In those days I decided I wanted to be a contractor, engineering-type contractor, rather than a distributor. We started out and we did a lot of work in Atlanta and in the surrounding towns around Atlanta and we did a little work in Macon and the Shannon Hosiery Mill in Columbus. I did some over in Athens, but then we decided we were going to stick to the metropolitan Atlanta area and we continued to do it that way until I sold my business in about 1982.

A.B.

When did you start your business?

G.H.

I started the business in 1947 and sold it in 1982. I was in business for 35 years.

A.B.

And what were some of those major jobs in greater Atlanta?

G.H.

Some of the major jobs were a lot of jobs at Coca-Cola including their headquarters building before it was replaced with their current building. It was the old building and I have a picture of it in here. That was a design-build job. We did the Southern Bell Ivy Street building. I think it was AT&T, anyway it was a telephone building on Ivy Street. The first building was facing on Ivy and then they built another addition at the back that was twice as big as the original building. That was designed by Newcomb and Boyd and we installed it. We also installed the professional building at Georgia Baptist where the doctors handle the patients right out of the hospital there. That was about 1950 something, late 50s. We later did some work in the main hospital at Georgia Baptist. We did a lot of work at Crawford Long Hospital in the old buildings and then when they built the Peachtree Tower we did all of that. It was designed by, I can't remember the engineer who designed it but we installed it. I kept people at Crawford Long for years, maybe 20 years, we just had somebody doing something there all the time,

replacing air conditioning equipment, modernizing or tearing out and reinstalling new systems. We did the same thing at Emory. We put a new air conditioning system in the original main buildings at Emory. We installed air conditioning the Woodruff Research Medical Building. We put air conditioning in part of Egleston Hospital which is part of Emory. We put air conditioning in part of the clinic building. We did it all over the campus at Emory, in the computer center and that was over a period of probably 20 years. We did St. Joseph'sa major air conditioning installation. On Ivy Street. Again, we had crews in St Joseph's over a period of probably 15 years until they built the new hospital out on North side. We did a lot of hospital work in those days. That was sort of our specialty, it got to be. We did a lot of operating rooms and recovery rooms as well as patient rooms and the whole building.

A.B.

In a hospital specialty, what specific knowledge or expertise do you need in hospital work?

G.H.

Well, an operating room is a specialty in itself. It has to have a high air change in the operating room and you have to be sure of your air flow to be able to handle that much air, getting it in and getting it out. It had to be such that it can be scrubbed down without ruining your air distribution systems, it is supposed to be scrubbed down after every operation. You have to be careful that more air is going in than is being taken out so it is under a positive pressure.

A.B.

Are there laws or codes or standards?

G.H.

Yes, there are standards that are set up by National Standards for operating hospitals. The federal government puts out these standards that are supposed to be followed by the health department. You have to be sure it is cleaned, not only the temperature but the humidity and the filtering are very, very important and the air change is important to be able to maintain the temperatures properly during the operation and you have got a case of the nurses and doctors who are operating under pressure and they are creating heat because of the intense pressure as well as the work they are doing, whereas the patient is sitting here naked practically except for where he is covered up that they don't have to get to. So you have the two problems you have to deal with. But they want the human body to be low in temperature at that time so they try to control the cover of the patient to accommodate the temperature of the human body during the operation. It is a real specialized field and has to be done accurately to get the results they want. Then you have the patient area which is just normal comfort air conditioning, but again, you have to be sure you don't have contamination from one room to another and the systems have to be such that you don't just have one central system introducing the same air to one room, taking it all out and mixing it and coming back in that same room with contaminated air. That is a specialized application where you take the air within one room, add fresh air to it and heat it, cool it, dehumidify it and filter it without it being used in any other space. Then you have the recovery room which is almost like an operating suite where you have to be sure you keep it pure and clean because you have open wounds right out of the operating suite and people who are breathing the air that had to be protected of having these germs enter their body at the point where they are at a time where they are the lest resistant to fighting germs, so the recovery room is another important thing. Then you have central supply with all these supplies in it that are going into the patient's rooms, the hospital recovery room and the operating room that have to be kept clean. Then the sterilization of all the instruments and all the other things that are used with the patients. So those areas have to be properly air conditioned with a lot of heat that has to be absorbed in that process. Of course they have the restaurants where they eat, you have the kitchens where they prepare the food, and most of those kitchens are air conditioned as well as ventilated. You got a combination of ventilating problems taking the fumes out from the cooking process as well as introducing that air and cool it and then heat it in the

winter. It is a lot of air that you handle in a kitchen or food serving area. There are a lot of problems in a hospital that air conditioning is involved in. Lots of them!

A.B.

What about energy conservation with this and trying to keep the requirements, are there federal requirements?

G.H.

Yes. Your energy requirements come originally from the Federal Department of Energy and then they are mandatory upon the state to adopt laws or see that the federal laws are followed. In the case when the energy law was first passed back in 1976-77, Georgia, adopted its own energy code. I was chairman of that committee during the writing of the Georgia Code, that is, the energy conservation for buildings. We adopted it in 1977. Now, it is the only mandatory code that the state of Georgia has that has to be followed by the cities and the counties. The cities and the counties enforce it, but they haven't been doing it like they should. We are helping right now getting ready to write an application manual that will be easier to follow not only for the code enforcement people, you know, county and city building officials, but also the contractors and the engineers where they can fill out these forms and add up numbers and come up with a figure that will either be above or below that which is acceptable. But, it came from federal regulations and the hospitals had to follow the same thing. With a hospital you have got to temper the energy requirements with the health requirements. If you have to have a certain amount of fresh air then you have got to be able to do it as efficiently as possible. When you start dealing with a lot of fresh air like, and operating room was originally all fresh air. That means you have to heat it, dehumidify it, filter it and cool it and then throw it away. They have new regulations now that will permit you to recirculate up to a certain percentage even for operating rooms as long as it stays within the same room. They also have systems now where you can take exhaust air and run it through a heat exchanger that will take the heat out of it or cooling out of it, whichever one you are trying to save and use fluid or transfer of somewhere where you are taking this heat and putting into incoming air where you are not throwing it all away. We use that primarily for taking the exhaust say from the toilet system or the kitchen system and let it take care of the air coming in then transfer that heat into the air coming in so that you don't lose it all. This is being used now as an economizer move to take the heat out of the exhaust air and put in the fresh air that is coming in. So there are various effective modifications of that which are being used today. It is essential if you are going to save all this energy that we are throwing away. Hospitals are very conscious of that and have been using it as far as then can as they remodel and bring the equipment up-to-date. In the old days it all was just fresh air, take it in, take it out. I found the hospital work very interesting because every new job was a new challenge of trying to find another way of solving an old problem. We did a lot of it. I would say we did more hospital work than probably any other kind that we did over those years. At Crawford Long and at Emory, I had people out there all the time. They just stayed there. They would go from one job to another. Georgia Baptist, for a while we were that way until they revised their set-up out there where they were operating and they did a lot of it in-house. In fact, the other hospitals did too, but we still stayed there to help them out. We liked any kind of work that required special type application or solving an application problem because we had three professional engineers and another graduate engineer on our payroll so we were set up to be a consultant as well as a contractor. That is what we liked to do because we could negotiate that kind of work better than we could just the run of the mill work that was on the street. I didn’t do anymore bid work than I had to do. Coca-Cola was our first customer and when I sold my business they were still with us. So we had a lot of our old customers through that period like these hospitals where we went in and started working with them and they were with us up until the end, most them were.

End of Interview.