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H. Tracy Hall oral history tape, sides 11,12

Ann and Bill Heffernan had two adopted children, Scott, I believe, was the name of one of them, and he has made it through the world and done very well, educated, and all kinds of things. In fact, I think there was an article about him in the Improvement Era, or Ensign, or something one time. The little girl was not too alert mentally. I think her name was Deborah. I'm not sure. I don't know whatever happened to her.

Anyway, we were having a fireside one night at someones home. I think it was at the home of Ashworth's. Clint Asworth and her wife who used to sing so beautifully, what was her name?

Ida Rose: Rachel.

Tracy: Rachel Ashworth. I think that's where that fireside was. I had invited Frances Bundy, one of my colleagues there at General Electric. He was interested in sail plaining, gliders. To come and tell about sail plaining, hoping to get him a little interested in the church. And while he was about in the middle of his talk word came to us that Ann Heffernan had died. His wife had suddenly died. And so we rushed out there. Mother was in the Relief Society, and I think she went out with someone else who was in the Relief Society, and really quite a shocking experience. She was such a fine woman. As a note of interest, one of Ann Heffernan's best friends was Elaine Maddock, wife of Russell Maddock, who was a counselor to me along with a fellow named Christensen, I've forgotten his first name, when I became the Sunday School Superintendent on first going to Schenectady.

Russell is now still working for General Electric down in Roanoke, Virginia area, and he has been a stake president down there for a long time.

Ida Rose: I saw them when I went to the temple.

Tracy: Anyway, Elaine was the closest of any of the women to Ann, and Elaine had a vision -- a revelation one night. Ann appeared to her and asked Ann to go do her temple work immediately. You know, you usually wait for a year after someone dies. She, on account of Bill's Word of Wisdom problem .. he'd talk about going to the temple, but it would never happen. Well, she took this to president Taylor. President Taylor, I've forgotten his first name. He was the mission president of the Eastern States the latter part of the time, at least the latter part of the time we were in Schenectady. And he consulted with church authorities on the basis of this very special thing that had happened. Her temple work was done as soon as they went on vacation to Salt Lake City, they did Ann's temple work.

Bill got a housekeeper who we believe was his mistress and sort of went his way. Didn't see much more of the church after that time. Bill later on died. I don't know when he died. But he did die somewhere along there. Another sad thing ... there was a young couple in our ward, Junius Aldrodge, we called him Hap, and Velma Aldridge. Velma Aldridge had taken some dance and she was teaching Sherlene and some of our other kids to dance on occasions. Is that right?

Ida Rose: Yes, and she was also our Primary leader. That's how I remember her.

Tracy: Oh, she was the kids Primary leader. A fine young couple. All kinds of promise, and Hap was one of these young men who looked like the ideal young American man. You know, handsome, vigorous, muscular and tall. He had been in the service somehow

Ida Rose: That's where the berry's came from.

Tracy: Yeah, that's where the berry's came from, and we thought that maybe those blackberries were truly not wild berries, but just remnants had existed over the years from something the Shakers may have planted.

We always got our Christmas trees out of the forest behind us. We never had to buy a Christmas tree, or seldom did. The thing we missed was the coolness you could get by going into the mountains. We thought, "Oh, we'll get down there in this area in these high places in what they called mountains, but to us were mainly just hills. But it wasn't any cooler. You could find the highest place you could find on the map and go there and you would have that hot sticky humid situation that are just characteristic of summers in this part of the world. As a matter of fact, that's the way it is right her now at Sherlene's. No air conditioning, just hot, sticky, muggy weather. Eighty degrees here in the humidity feels as bad as one hundred degrees back in Provo where it is dry.

We saw many nearby places when we were in New York. Trips to Albany where we would sometimes have conference of just the small Albany branch. Troy had no branch at

that time. We would sometimes go out in the country. See the country fairs. I don't know how many times we may have got to New York City or places like that, but when it became apparent we were going to leave and go back west, we had to hurry up and see some things real fast. So we took our four oldest children. I guess Charlotte would have been the baby then, and left her with some friends, and took the four older children and went to New York City and to Washginton D.C. to see all the sights. We went to the top fo the Empire State Building. We went on the subway. We went over and climbed up into the arm of the Statue of Liberty, inside. And saw the other sights and sounds of New York City.

In Washington D.C. we, of course, saw the Washington Monument, the Jefferson Monument, and the words on the Jefferson Monument just give me a thrill every time I go in there and read the words that are written on the wall there that are due to Jefferson. Gets a lump in my throat to do that. We saw the White House and the Capitol buildings and went inside, and all the other things around there, we took the kids to see. A hurry-up job before we left the eastern parts of the country.

I had seen many of these things myself traveling to meetings for the General Electric Company. I had opportunity to do things like that. Sherlene, she wouldn't remember it, but she was at the top of the Empire State Building when she was probably about two years old. We passed through New York City on our way from Hollywood, Florida, to Brunswick, Maine, had a stop-over there between trains and we took Sherlene, who was dressed in a little, Oh, a suit that covered you all for the winter time. It was wintertime weather, with one of these hats that you could fold down behind your neck or down on top of your head with a point on it. And I can remember grabbing that whenever she'd try to get too far away from us in New York City crowds, I would just grab hold of that top part of her blue keep-warm outfit zippered up the front around her neck, went clear down to her feet. But I held her out over to where she could look down to the street below and about gave Mom fits to have Sherlene so that she could look at the "ants", what looked like ants, cars, and the people down on the street below

Sherlene: Oh, daddy, how could you do that!

Tracy: We purchased our first new car living in New York. It was a 1950 Ford 2-door sedan. And as I remember it, the color of it was green. It was a beautiful thing, we got a loan on it at a Schenectady bank. Interest rates were low in those days, on your savings account you got one and one half or two percent. We had a four and a quarter percent loan on our home mortgage and on the automobile I think it was only about a five percent. We bought this car for only \$1450.00 which was a real bargain. I may be mixed up on the color of the car, because we had two cars in short succession.

In 1950 we took this Ford and went home to Utah on vacation, driving this car. We had two weeks vacation accrued time per year in those days, so you had to wait 2 years and accumulate one week, which we could do, so we would have three weeks vacation and you could go to Utah every other year and take three weeks. It would take five days to drive each way, so you didn't have too much time in Utah when you got there. Coming back from Utah we were driving late at night hoping to find an inexpensive motel and not finding any, we decided to try and sleep in the car off the road somewhere in the vicinity of Atlantic, Iowa. We had driven up and down the roads and they were narrow and muddy. They had had a big rainstorm in the area and we couldn't seem to find a place that looked like it would be suitable to try and spend the night without being molested .. somewhere off the road try and catch some sleep in the car.

We didn't find anything and decided we would head back to the highway, and heading back toward the highway, I was too far to the right hand side in some deep ruts that had

and so we just staid there even after the bank was closed and they were trying to throw us out. I just insisted, well I had to. We would not have had enough money to have gone to

Lia Rose: Virginia!

Tracy: Yeah, ...
was one. And ...
third one. I was ...
the university doesn't do that anymore. I believe there have only been four. I can only think of four. Cutler, Antoine Romney, myself, and Stewart Grow. They have either abandoned the program or think that there are not it's hard to believe this, that there aren't any others that they want to bestow the title on. Cutler is retired and Romney is retired, so the only active members who hold that title right now are Stewart Grow and myself.

My first office at the university was right in with Harvey Fletcher. He was in the northeast corner on the second floor of the building. After a short while they cleared the office just south of there and I had that office. As a matter of fact, they may have cleared two offices. I don't mean south, I mean west of there. I had a part-time secretary, who worked half a day in the early days. I had so many secretaries I don't remember very many of them. Later on I had a full-time secretary.

After a year or two had gone by Harvey Fletcher didn't want the deans job, so they put on a search to find a dean and the dean they chose was Armand J. Hill. He just retired last year. But when he became the dean he didn't want me in that area and I didn't insist on staying. He took over those offices for his own operation and I moved to the engineering building, upstairs on the second floor and I guess I was there for ... Well, I don't know how many years.

Then, finally Earl Crocket felt that that was not an adequate place for a Director of Research to be. An office had been vacated, a very fine office over in the administration building on the 3rd floor where Wilkinson's and Crockett's and the rest of the offices were. An office that has a window overlooking the quadrangle to the south. The southwest offices, a big window you can see up in there. That was my office. I think Daniel Ludlow had that before I had it. So that was my office and as time went on there was more and more work to do and I asked that I have an assistant and I asked for Lane Compton. There was some change in his job situation there at the Y. My life-long friend Lane Compton had gone to work for BYU before I had, and I asked for him and he became my assistant director of research and this helped me work out of a job to have somebody in who knew the work. Then after he was well entrenched in it, then I was able to retire and he was able to take it over as acting director of research. Then a year or so later I got Leo Vernon to come and be the director of research.

It was difficult to get research going at BYU for myself and for others. It hadn't had a tradition in this area. But we struggled with it. I was not very pushy and never have been one to try and push others out to get something for myself. It's been disappointing to me as time goes on and the space that I wanted and other people, who seemed much less deserving, have pushed someone out to take over the space. But finally Billings Brown who was chairman of the Chemical Engineering Department and chemical engineering and chemistry worked together at first when I first went there, but then they were separated and I think Billings Brown may have been the first chairman after they were separated.

He had a laboratory area, not really too adequate in the old Harvey Fletcher Engineering Building. The 2 story "H" shaped structure as you look at the building from the top. And we fenced off an area with chain-link fence and started our high pressure work in there. I started to scratch for war surplus stuff and went after money here and there and that's the place we worked in for a long long time. During my last year as director of research, my patents had made a fair amount of money for the university and I had some money from the National Science Foundation that you could do what you wanted with. So, putting these monies together, I talked ... after I saw others get a research facility that I thought much less deserving than our high-pressure work, I talked to the administration into building a metal building that is now known as Building B41 exclusively for high-pressure work.

I tried to take in many BYU professors throughout the years to work in high-pressure and it never stuck with very many of them. Duane Dudley who is at the BYU, he was one of my students, but he didn't stick with high-pressure research. His interests were otherwise, and, in fact, he didn't stick with research. He was more interested in administration. Billings Brown I took in and he didn't stay in the field. The students in

chemical engineering worked with me on and off throughout the years. Kent Nielsen worked with me for awhile. He was in physics, and also in religion from time to time. He didn't stay interested. I never could interest any members of the chemistry department, particularly. The first man I interested who staid with it was J. Dean Barnett, and he still works in the field of high-pressure to this day. We have worked on occasion with Smith Broadbent, who is from chemistry. He's had students we've had working. Gerald Bradshaw, we've had students of his. and Rex Goates and Bevin Ott, Tracy, Jr., and one other student of theirs worked with us in the field of high-pressure. We've had students from physics. Occasionally even a student that's worked with us from electrical engineering and from geology.

We have had a number of visiting professors. Some of some importance: The dean of science at Rice University in Houston. Margraves, John Margraves spent a summer with us. Several Europeans have spent a summer or longer. Some have spent a year with us. I have lost track of all of them. There have been a couple from France, Scotland, no end of people have visited the laboratory. They number in the hundreds. I've lost track of them long ago. I should have kept a log. There is some log, by the way, for the record. I have usually had a calendar on my desk at BYU through the years, and I have saved most of those calendars, and there will be notes on there of appointments I have had. During the years when I had secretarial help of my own, these would be in pretty good order. Where I have been keeping the record the past seven or eight years myself, it may not be at all complete.

My correspondence used to be rather great. But when I was without a secretary ... I had a secretary, a pooled secretary over in the chemstry department, but so far away and so hard to do it by telephone, I would just go type my own letters, or don't answer my letters. As a consequence through the years, my mail has gone down to about zero, which is what I wanted it to happen anyway. But, anyway, the number of visitors who have come to our laboratory have been very great.

Others that I have helped get started in high-pressure: Howard VanFleet, physics. Daniel Decker, for quite awhile John Gardiner, who has now abandoned it. Let's see, Bill Pope of chemical engineering. Duane Horton of chemical engineering, Leo Merrill, who is full time with me. We get his salary on a grant, and John Cannon, who is full time with me and we get his salary on a grant. I've had over a million and a half dollars worth of research grants. I could have got more money if I had been aggressive and gone after it. Research grants aren't what they used to be. The reports, the proposals, have to be so elaborate, and there is so much red-tape at the government end and at the BYU end, I have become very discouraged with government grants. And my plan is to retire from the BYU at the end of the next year. I've got to write a letter and tell them that I am going to do that. I'm going to go into private research on my own.

I've written something like ... my colleagues and I, somewhere around 90 papers. I have maybe 15 or so U.S. patents, and corresponding foreign patents in many countries. If you count all the foreign patents, I probably have maybe 75 patents. I have done some consulting throughout the years. When Tony asked me how I was going to earn a living out there. He sort of presumed I wasn't going to make as much, although I wouldn't tell it to him. I says, "Oh, I'm going to make lots of extra money consulting." He laughed and said, "You're too young. You're only 35. You can't consult at that age. You need more experience!" He proved to be absolutely wrong.

People started to come after me to give talks and consult, and, as of some time ago, when I had made a count, maybe, ten years ago or more, I had already consulted for some 50 different organizations. Either a university or a company or a government agency. And I

made pretty good money at this for awhile. I don't really like to consult. I'm not gregarious enough for the job. And it's hard for me to talk to somebody for eight hours each day for a couple of days. That's really hard on me and I've essentially given up consulting. I don't do too much of it these days. However, it was the thing that enabled us to survive. BYU salary would never have been enough for us to build a home and done the other things that we have been able to do. We were frugal with out money. Saved it and have been able to advance financially throughout the years because of the start we got in being frugal in our early years.

I know I have told the story of how my consulting fees got started. I don't know that it has been recorded, maybe I ought to tell that. General Electric wanted me to consult for them, and they came after me soon after I had arrived in Provo. I went back to Detroit, and talked with the man whose name I have forgotten, who was going to head up the diamond laboratory and pilot plant and facilites there, and, of course, we talked for a long time. I gave them many suggestions on their work, all free, they weren't paying me. I think they just paid my way there, but I wasn't getting any money for the trip. But, anyway, after talking about what might be done. We had to get down to what salary was going to be paid. Well, this was completely out of character for me, but I immediately said, "How much are you paying Bridgeman. Percy Bridgeman had been hired by G.E. as a kind of a front man. He had a nobel prize in Physics which he received in 1948. He'd always tried to make diamonds for a period of almost 50 years. Had not succeeded and G.E. thought that he would like to come and see how it was done and get him as a consultant.

He had not been a consultant for General Electric. He was a consultant for DuPont. Bridgeman was so interested that he went to duPont to get released from his consulting job there so he could consult for G.E. They released him and he came and was shown the whole thing. I showed him the belt and how it worked and the diamonds and the whole bit. Bridgeman went around shaking his head. He could see that well, once you see how a thing is done, it's always easy. He sees that he, himself, could have done it if he had only been smart enough. Well, the idea was that Bridgeman would write an article for Scientific American saying that, "Yes, indeed, General Electric people had made diamonds, but he would not tell how. General Electric wanted to keep it a secret."

The scientific community didn't like this too well. Vanavar Bush and others complained to Chauncey Guy Suits about saying you made diamonds and then not telling how it could be done. Well, Bridgeman did write his articles, saying that these men had, indeed ... which added some credibility. Credibility, you see, G.E. would not have. They say they made diamonds, you're supposed to tell, to be scientifically honest, how you did it. Well, this is thre second best choice. Just have a Nobel prize winning scientist attest to the fact that G.E. had made diamonds. And this he did in a Scientific American article. Well, they chocked when I told them ... when I asked them how much Bridgeman was making, and they said, "Well, we never reveal that kind of information." But I pressed them, which is unusual for me being timid and mild mannered, particularly in those days. Well, they finally said, "Well, we're paying him \$250.00 a day." And like that (snap of fingers), I said, "I'll take \$300.00. They chocked again and said, "We couldn't possibly make that kind of a decision. We'll have to go upstairs and talk to the vice president." They went to talk to the vice president and quickly came back and says, "OK, we'll pay you \$300.00." Well, there was some more talk, and this, that, and the other, and then I went home.

They wrote up a contract. When I got the contract, it was absolutely unreasonable and wasn't what we had talked at all. They weren't going to supply any money for my research, and yet, no matter who had supplied the money, they wanted all the results of any research I did at Brigham Young University. Well, this was rediculous. I couldn't sign that kind of a contract. They weren't even going to pay anything for it, and furthermore,

they were going to limit me to something like 5 days of consulting a year, which was only \$1500.00. Well, I needed that \$1500.00 badly. I discussed the situation with Harvey Fletcher, and he says, "No, he'd never sign a contract like that, it wasn't fair!" Well, the G.E. guys were mad at me because they said that there wasn't anything in that contract that I hadn't agreed to verbally before. But they were all dead wrong on that. I can't imagine a company being so stingy to a guy who had done so much for them. They ought to have offered me a \$20,000.00 a year salary for life, or something like that. Then I would have gone with them.

Sherlene: Did you tell how much G.E. was making off of your

Tracy: Well, it's estimated that General Electric's sales today of diamond grit are \$180,000,000.00 a year. It is their most profitable business, and it takes them into more foreign countries in the world than any other business that General Electric is in. It's a more world wide universal operation than any other business that they have.

I think I got something like \$75.00 for my first consulting job ... which I had had, I guess, before I went out to General Electric. But after this I had an inkling that I did not have before that consulting was worth a fair amount of money. So that was the price I asked from then on was \$300.00 a day, and people seemed to gladly pay it.

Sherlene: What happened with G.E., did they make you a new contract?

Tracy: No, no, that was just the end.

Sherlene: You never did consult for General Electric.

Tracy: No, I never consulted for General Electric. Only in an indirect way. Yeah, I went to South Africa as expert witness for a couple of weeks for a sum of about \$14,000.00. General Electric at one point ... not too many years ago wanted me to go to Japan as a consultant, and I asked them for \$3000.00 a day, plus all expenses and they gladly agreed to pay that, but then I changed my mind. They drug on for, I think almost a year went by, and by then I decided I didn't want to go and I told them, "No!" when they finally came around to wanting me to go. But, later on I got to hearing of the fabulous consulting salaries that people get so I decided to jack mine up a little bit. General Motors came after me to be their consultant, and I asked them for \$450.00 a day, which they very gladly paid.

No. I guess ... that's not how that happened. U.S. Steel at Pittsburgh wanted me to consult for them, and so I just decided ... here's a new company, I'll ask them for more and see what happens. I asked \$450.00 and they gladly paid it. Then I called the General Motors people and said, "Look, I think I've done you all the good I can, and I have another offer at a consulting job I would just like to thank you for all you have done and hope I've done you some good. I would like to go consult for this other company. They says, "Oh, maybe there's no conflict. How much are they paying you?" And I said, "\$450.00 a day." And they says, "Well, who is it?" And I says, "U.S. Steel." And they says, "There won't be any conflict. You can consult for us and them too. We'll pay you \$450.00 a day." So, that's the way it went. But through the years I've taken anything from \$50.00 a day on up to what amounted to a couple a thousand dollars a day. That's rare that you get that kind of money.

Nowadays, attorneys I use, who I think are not as unique as I am, by any means. They get \$100.00 an hour and I ask \$100.00 an hour nowadays, and if I don't get it. I usually don't take the job. Because if any old attorney, anywhere, is making \$100.00 an hour. I figure I ought to be worth the same. It's not worth my time if they can't pay me what they

are willing to pay an attorney. So I don't do very much consulting. I do a little here and there. I'm currently consulting trying to help the high-pressure project they have going at the University of Dayton in Dayton, Ohio. That's a Catholic University. They pay me, I think, \$200.00 a day which is very low price for consultant nowadays. I don't know. They caught me when I was soft. The school needed some help, so I gave it to them at that rate.

I, perhaps, didn't finish answering question 41 of Sherlene's .. 42, What was it like in the navy? I've told some of those things. Well, navy life, or any military life ... it's something that there has to be, but it tends to be bad, because morals are loose and when people are away from home and they swear and, oh, it's just war and wartime things are just generally bad kinds of things. I was able to hold up under it, and I think many Latter-day Saint men were, but there is plenty of opportunity and temptation and hard things that you have to close your ears and eyes to and hang on to the straight and narrow. I think it is better today. The church is more world-wide and it's easier to run into church members nowadays than when it was during World War II.

The life in anything like the navy. It's generally one of wait, wait, wait! I think that's why there's so much ... There is so much idle time. See, what you do in a war is you just wait, and then maybe there is some action. Maybe there's not, but it's just a waiting thing. There's so much free time, and sometime it's difficult to occupy that free time. If you're not a scholarly type, it's a heck of a thing. You've got to be off playing cards or drinking or smoking or telling stories ... and the stories, you know, are unsavory type all the time. Now I staid away from those things very well, but it's still a hard thing. If you are an officer things are the easiest. Now I only spent a couple of months or so aboard ship and it staid in San Francisco harbor all that time. But, as an Ensign, which is the lowest kind of an officer in the navy, I had my own berth, my own little room. Now the room is designed so that two men could occupy that room, but I had my room all to myself.

A navy officer was considered a gentleman in those days. I had a black man who came and shined my shoes daily. He made my bunk, he cleaned my place up. It was hard for me to get used to that. He would make sure that my clothing was washed and pressed. So, you had a personal valet, so to speak. That didn't look quite right to me. I just never ... Lots of people looked forward to that, you know, having servants. Somebody who is serving you doing these things. And the higher you go up in the navy in those days, the more of those perquisites you would have. And I guess a captain of a ship would have to be waited on hand and toe and have when he went ashore on shore ~~leave~~ fancy cars and all kinds of things. *have*

I have had some interesting experiences in the navy that come to mind as I keep dipping back into things. I really think I may have told some of those things on an earlier tape. How I was in charge of the entire Pacific Fleet one night for eight hours. I think I've told that story somewhere. I was the junior officer of the day, but the main officer of the day, he just went to bed, it was during the night shift and during that night we had some drunken marines that I had to take care of that crashed on to the navy base and went through the guard gates to get in. We had a typhoon with 100 foot waves on the Pacific Ocean which I had to send out an alert to all ships at sea to beware of that.

You have a lot of responsibility. That's one thing I can say aobut the armed services. A young man can have the most immense amount of responsibility you can imagine, and, of course, I really felt it that night. Here I had on my shoulders and the whole sleeping United States did not know that one Tracy Hall was, for practical purposes, in command of the Pacific Fleet for that night. Now, if anything serious had broken out, I was to awaken the man who really was the officer of the day, commander ... somebody, you know, and

get him to solve the problems. But, he told me in no uncertain terms, you know, unless the moon came crashing into the earth, or some really super disaster, the war breaking out all over again, I was to leave him alone. It was my job until daybreak to handle that situation. This happened while I was at the navy base there in Oakland. The big navy base and storage depot in those days. I think the base is still there, but I'm not sure what the functions are.

Well, like I say, you can have plenty of responsibility at a very young age in the armed services, and that ... if you can survive the bad aspects of being in the armed forces, there are many good aspects that can make a man out of you and it's a good place for many young men to be. I wouldn't knock it, particularly in today's day when the church is so worldwide and you have opportunity to associate with Latter-day Saints almost any place that you might end up being with other people in the armed forces.

It looks to me Sherlene like this is just about at the end of that tape, so, by the way, I think ... you know, I've recorded some of the lessons that I used to teach my Priests, and I think I've used this event to bring home a point, and if my posterity wants to check into other oral information, I think I've got maybe twenty tapes at home, where I have given lessons to the young adult class or to the Priests class. I just took my little tiny recorder in and recorded my lessons. Primarily to help me be a better teacher. I wanted to see what I was really like as a teacher, and it did improve my teaching to hear myself give these lessons. But there are some ... I used experiences out of my everyday life all over the place in those, and I want to fish those out some day and transcribe them on to paper via typewriter.

Well, Sherlene just brought in some ice cream, and this is certainly very, very close to the end of that tape. Mother is in the next room with Charlotte and she is also telling oral history onto a tape on another little cassette recording machine.

End of tape 11,12

Now there was an ad running in those days