American Meteorological Society
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TAPE RECORDED INTERVIEW PROJECT

Interview of Chester Newton

June 25, 1990

Interviewer: Earl Droessler

Droessler: I'm at the National Center for Atmospheric Research in Boulder, Colorado, on the 25th of June, 1990, Monday. It's a beautiful, bright, sunny day here in Boulder, and I'm sitting with Dr. Chester Whittier Newton, and we're readying ourselves for an interview. Good morning, Chester. It's very nice to be here with you.

Newton: Good morning, Earl.

Droessler: As a first question let me ask, how did you develop your first interest in meteorology? How did you come into the field?

Newton: It was totally accidental. I'm the only meteorologist I know of who had never heard of meteorology before getting into the field in some way. The way it happened was that I had gone to Phoenix Junior College in Phoenix, Arizona. I had a two-year standard, I don't know what they call it now, Associate's Degree or something like that. I studied some math and physics and astronomy and all that sort of thing, but meteorology was not part of what I studied. The way I got into the field was as a United States Weather Bureau observer. The way that started was a friend of my mother's happened to notice a two or three line ad in the classifieds section of the Phoenix paper saying that the Civil Service was looking for applicants for a position as a weather observer. I responded to that, they gave me a test, I passed it. So I became a weather observer back in 1939

Droessler: What was your first location, your first job? Was it in Phoenix?

Newton: My first job was at Phoenix and I was a weather observer there for close to three years, I think it was. And I was working on night shifts, primarily.

Droessler: The daily routine of the Weather Bureau at that time was largely governed by the amount of hand work that you could do. Entering data, taking observations, filling in forms, making reports to Washington and so forth.

Newton: Right, right. The jobs that I had to do were—I was a radiosonde observer. We took pilot balloon observations in those days. There was no such thing as a wind-finding apparatus; at least it wasn't available in that service. I hand plotted and hand analyzed maps. And the older hands taught me about the polar front theory, how to draw plots and analyze isobars and all that sort of thing. Of course, this was, by today's standards _____ machine. It turns out however few seconds it takes is a lengthy process, an hour to plot a map, another hour to analyze it. We also, as observers, had the duty to talk to pilots who came to the office and give them weather information and _____ not professionally trained. And, as you said, there was a lot of hand paper work. Recording observations, checking observations, and so on. That was one of the periods, incidentally, of my meteorology experience that I enjoyed the most. I saw the excitement of the weather _____ and in contact with _____.

Droessler: Well, good morning, Chester. I have much pleasure in being here with you. And to begin the interview, I'd like to ask you about how you first became interested in meteorology and how you got into this wonderful field of atmospheric sciences.

Newton: I've spoken to you a lot of -- that's a question that I ask all my friends and I find out that everybody else grew up with a love for meteorology and instruments when they were young and all that sort of thing, but I had never heard of it until I actually got into it. I had gone to Phoenix Junior College and had a –

Droessler: Good morning, Chester, it's nice to be here. Let's begin the interview by asking you to recall for us how you first became interested in meteorology and moved into this field.

Newton: I have to say it's a pleasure to be with you, Earl, and I'm grateful for this opportunity to talk about my experiences.

Droessler: Thank you.

Newton: Unlike anyone else that I have ever asked that same question, I had no knowledge of the existence of the field of meteorology before I actually got into it. I had gone to Phoenix Junior College and Phoenix Union High School, and there I studied math and physics, mainly, a little bit of astronomy. But no meteorology at all. I got out of school and I was looking for a job. A friend of my mother's pointed out a very small ad in the classified section of the Phoenix newspaper and I responded to that. The ad was asking for applicants for a job as a weather observer. I took the exam -- the Civil Service examination and managed to pass it (inaudible) –

Droessler: In those days, the daily routine of the Weather Bureau was mainly keeping

up with the hand work. Entering data by hand, taking observations, filling in reports by hand and sending them into Washington. Was that a fair description of how things went at the station?

Newton: Yes, it is. The jobs that I had were taking radiosonde observations, taking pilot balloon observations, taking the standard surface observations, the _____ visibility and all that stuff. We hand plotted our weather maps and then, having looked at all the data ourselves, we went on to analyzed it. There was a very good man named Harvey Schultz there who was my mentor in this operation. He taught me what he knew of the polar front theory and how to find fronts on weather maps. I would analyze the isobars coloring them according to the schemes that we used then, and all that. This was a job that, as I recall--I was pretty fast at plotting. It took somewhere between an hour or half an hour to an hour to plot a weather map and another better part of an hour to analyze it. So, by today's standards, it was a very slow process. But there was no great hurry about it in those days. All the hourly observations and specials -- this was, as you say, all done by hand.

This recalls, as one of my experiences as a lowly weather observer, which is a job that I had for something around three years. I received two personal letters from Francis W. Reichelderfer, who was our guide, of course, in the Weather Bureau at that time and later on. I thought it was remarkable that he would personally take an interest in me, in sending this observer in Phoenix a letter. So, first thing I opened it up and it was an admonishment from the Chief. There was a checking section at that time where everybody sat down, there must've been a whole host of people who sat down and checked the observational records. Well, as part of the radiosonde observations in those days, there was a thing whose nature I cannot recall. It was called the "Shared Stability Ratio Factor." _____ *Bulletin of the AMS* around 1940, I suppose. Anyway, I drew one of these graphs using pilot balloon and radiosonde observational data. And it strongly suggested the outline of a chicken. So, what I had done was to complete the artwork. I added legs and the comb on the head for the chicken, and things of that sort. Well, this naturally drew the attention of the checkers in Washington and it was brought to Reichelderfer's personal attention. So he wrote me a letter telling me about the serious nature of my work and that I didn't want to discredit it by such a frivolous action. That wasn't the only letter I received. I received another letter from Reichelderfer. It was about something even more silly and I refuse to say what it was about.

Droessler: But after you spend about four years as a weather observer in Phoenix, where did your career in meteorology next take you?

Newton: Well, at the onset of the war I attempted to -- I had always wanted to be a pilot. So I first attempted to enlist in the Air Corps and I was rejected because I was 25 pounds underweight. Then I attempted to join the Navy as a _____grapher, considering my experiences as a weather observer. I was

rejected by them both on the grounds of the weight and the fact that I didn't have a four-year college degree. So I don't recall how I heard about the Air Corps cadet program, but I finally enlisted in that and was sent to the University of Chicago as an Aviation Cadet. There I got in on waivers both on my weight and on my education because they required a four-year college degree also to get into this program at that time. So I had the standard nine-month training course at the University of Chicago. I probably shouldn't say standard because I don't think that Chicago is standard under the routine sense.

Droessler: Who were some of the teachers at that time?

Newton: Well, that was the wonderful thing about it. I, of course, had never heard of any of these people. Perhaps I had heard of people like Rossby. We had lectures from Rossby, we had field training, how to take pibals and radiosondes and so on. Those were-- _____ was in charge of that program, I believe, at that time. We had lectures from George Platzman, Dave Fultz, Victor Starr, people who – George Benton, I think. These were people who we came to know as great names later on _____ appreciation in the field. I'm sure that some of the people now -- an outstanding set of people who were teaching these green aviation cadets.

Droessler: So after you finish at Chicago the initial training as an aviation cadet, then you were commissioned as a weather officer in the United States Army Air Force?

Newton: Air Corps.

Doessler: Air Corps, yes. Where did you do the duty as an aviation officer?

Newton: I started out at Salinas, California, Salinas Air Force Base, where the working people consisted of myself and the master sergeant named Coutts. Coutts attempted to teach me meteorology; the big problem there was fog forecasting and stratus forecasting. I was there for the better part of one summer and then I went to the China-Burma-India Theater. I was stationed in mostly-- well, first in the northwest province at _____, where I set up -- I supervised the setting up of a radiosonde station. Then went on to two or three stations in eastern India. I spent most of my Air Force time in the _____ Valley. The big problem was fog in the winter and thunderstorms in the summer. This was forecasting for flights for over the Hump to Kunming and Yunnanyi in China.

Droessler: So, by this time you were so into meteorology, after the war you returned to the University of Chicago to take up a serious study of meteorology?

Newton: That's right. I don't know how to grade myself as a forecaster but, I really wasn't -- I would not regard myself as one of the leaders of the Indian forecasting.

The things that we did there, forecasting thunderstorms and so on, the training in Chicago had not been totally directed at this. But we had learned enough to be able to do forecasting. It was largely repetition of pilot reports and so on. Well, that's, anyway, I did learn to love the weather both as a weather observer and as a forecaster. And when the opportunity came to go back to Chicago, first as an undergraduate and then as a graduate student under the G.I. Bill, the support made the whole thing possible, I took that opportunity right away and received my bachelor's degree _____ and then the master's degree and Ph.D., eventually, at the University of Chicago from the Department of Meteorology.

Droessler: Who were some of the teachers that you had at that time and what was the particular professor that you worked on towards your Ph.D.?

Newton: Well, those that I -- of course, Byers was there. The main figures that influenced my life were Carl-Gustav Rossby, Erik Palmén, Herbert Riehl, Dave Fultz, and George Platzman, and part of the time I was there, at the end there was Starr, and Verner Suomi had been there earlier--during my earlier time in Chicago; by that time I think he had gone up to Wisconsin. My principal mentor was Erik Palmén. He influenced the rest of my life _____I learned to think along synoptic lines and physical lines, mainly from Palmén, and of course Rossby was no small figure in that. He was one to encourage you to branch out to whatever ideas you saw fit. It was required to think about the thing physically, not just draw lines on a map. But it was Palmén that mainly guided my hand directly.

When I think back a little over those days, I can well remember the fondness that we all had, all the students in the department had, for Rossby and for Palmén. They were both inspiring. We had others, of course. But mainly they stand out in our memories as people who had, not only a wish to guide you scientifically, but also strongly influence your personal life. There were small things that we remember. I recall that somebody sent him a _____ memo that there had been a wastebasket fire at 5727 University. That would be where the department was located. It fell to Rossby to tell us about this in a kindly manner so that we'd be more careful. So I can recall him standing in front of the wastebasket down on the bottom floor, and telling us to be more careful and at the same time discharging, tapping in live coals from his pipe into the wastebasket.

There are many other things, but one of my favorite things, quotations, that I have from Rossby is one that he was overheard saying to George Cressman on the stairs. He said, "I'm on my way to teach a class. I'm going to tell them about turbulence. They won't understand it and they won't like it, but it will be good for them." Well, there are many things I can recall in a personal way. Rossby was, and the other members of the department, but especially Rossby and Palmén, were anxious that we should not just learn meteorology but that we should learn something about life. That's one of the reasons that Rossby imported Erwin Biel every summer,_____ to go off on a tangent. But, Erwin Beal was (inaudible) everybody. He taught us climatology in the European fashion. A

unique climatology course. It wasn't just adding up numbers and dividing by something, but you'd go into the phenology and the health effects. The ankle was the (inaudible) in the body and with mediation you'd receive at a health spa and how the trees manage to wave in the atmosphere and all those things. But the thing that we enjoyed about the University most was cultural authorities at the epicenter. They'd take us one day, gathered all the graduate students and I guess some of the undergraduates to tour the statues in Chicago. Another day we'd tour the art museums. Beal was a collector of art himself and had a marvelous collection of Daumier political cartoons. An extremely valuable collection to buyers or art dealers in New York. They took us to a black nightclub. Things of that sort, so that we learned about the place where we lived from this Austrian who helped me learn things about the United States. Polaski, and the Palmains threw a lot of socials for themselves and they included the graduate students in these parties. Everybody felt a sense of friendship where everybody was included. In that case, they didn't just talk about say casual meteorology, but we would hear them talk about world politics, we would hear them talk about large (inaudible) or whatever they chose. (inaudible) atmosphere, it was thoroughly integrated into the working our ways into an integration into the scientific and social community.

Droessler: Now, Chester, you have talked quite a bit about your experiences at the Chicago school. I personally think you were a very, very fortunate young man at that time to be at the University of Chicago and that school of meteorology because certainly it was the most exciting and most dynamic and most innovative place for anyone to be in meteorology. I wonder what you think was the impact of the school of meteorology of Chicago.

Newton: Well, I think the impact has been remarkable as we've seen well over the 40 years since that time. It was an exciting time for the students. Active research was going on. As you know, (inaudible) a better part of it yourself and a wonderful funding agency, the Office of Naval Research, the project that was being funded by ONR at that time was a general (inaudible) project. Looking back on it, remarkably little was known about the (inaudible) at that time. When we came to work, we had a sense of excitement and impending discovery. And we had an opportunity, at least (inaudible) by people like Rossby (inaudible). Students had an opportunity for individual discovery, perhaps in collaboration with other students. They emphasized, my teachers emphasized that we shouldn't just do the routine map analysis, we should look into the physics of the weather that was going on. There was an overall framework that was exciting, the framework of the countercirculation. It centered largely around the philosophies and ideas of the nonwaves and the general mixing concepts, which was always a tough time. There was a positive stream of visitors who brought ideas with them and then also took ideas away, so the influence of the school was spread throughout the meteorological world in that way. During a period of two or three years, because there were several years that we were students there that we saw the general circulation unfold before our eyes. Our imaginations were stimulated.

An important thing I didn't mention earlier, but George Cressman was also a very important part of my own teaching. I worked with George as a map analyst, mainly analyzing surface maps while he did the upper air analysis. This went on every day and we had map discussions every day that were led by Polaski or Palmain but always with George Cressman leading off. Students were invited to participate in this process, and we did. It was a good way to tell what I knew. So it was (inaudible) part of our lives to attend these map discussions. A lot of our interpretation (inaudible) we received was the first time when observations were available to analyze maps of a whole hemisphere. There was always something new. There was always something for students, with the help of professors, to seize on as (inaudible). Generally, the (inaudible) as a kind of a new phenomenon that (inaudible) invented these (inaudible). I was, in sort of a way, was very excited by this. This departure from a sinusoidal wave and you could see it. We called it a crack in the atmosphere. We got very excited about it (inaudible). Anyway, talked to (inaudible) to see if they had the ability to develop ideas or competing views. We were in an argument, one of the great (inaudible). So it's hard to convey the excitement we felt, we had. I could go on but I won't. I could go on and on. I might mention later on when we took a trip to China which I'll mention later on. There was a fair sprinkling of Chicago people in that delegation to China. Well, we not only had the benefit of fate, there were political issues. Married in 1948 and received her Master's degree along with me when I got my Master's degree in Chicago. But again, I had good fortune of not only contact with people in Chicago but to the very good fortune of being invited to the (inaudible) International Institute of Meteorology in Stockholm, which Rossby started there. This was of enormous value in getting us a broad, international outlook of people who have been in the institution from Germany, Norway, Finland, Sweden, Belgium, France. I don't recall where else. Incidentally, in Chicago we had Chinese contacts in the pretty famous Yi-Ping Hsieh and Tu-Cheng Yeh. Anyway, we had a look into how the world worked from other people's eyes and an American's eyes. It was very valuable to us. And we looked into -- everybody knew what everybody else was doing. You may not have gotten excited about some of the more (inaudible) topics such as the polarization of the sky, but you knew somebody was doing that (inaudible). At Stockholm, we did our individual research but we also were obliged by Rossby to participate in a group activity which I might mention. This was in the days of -- it was when the Swedish computer, BESK, B-E-S-K, whatever that stands for, was being constructed and we all got a look into how the barytropic forecasts were being made by doing hand relaxations ourselves as a group. We'd have these sessions, one or two hours, everybody participating so that we had a feel for getting a foot into an exciting new venture, which turned out to be numerical weather prediction. But it was of equal value with the meteorology was the views that we heard exchanged between our European colleagues who had gone through the war and, of course, we heard their national views on their experiences, which was extremely valuable to us. So it was good for our cultural advancement, if you want to call it that. While I was at Stockholm, incidentally, there was a couple things that I worked on. One of them was shear lines, which as I mentioned,

Rossby was very interested in. But I also initiated a project with Harriet where we sat and plotted endless hourly rainfall maps with a view to looking into the behavior of squall lines. That was an interest that I had earlier stemming from a paper that I wrote in 1950. Well, Rossby was always going around looking over people's shoulders. He knew what everybody was doing very well. And one time, when we were sitting there plotting these maps, he came up and he said, "Why are you bothering with all that small scale stuff when it's the large scale features of the atmosphere that are important?" Well, this was something that led into -- this activity was something that led into later work of my own. Well, immediately after leaving Stockholm through Rossby's kind arrangements and under his -- supported by his ONR contract, actually, we went to Wood's Hole for the summer of 1953, if I remember right. Which was a very enjoyable summer. The main thing I worked on there was midtropospheric photogenesis. I think Rossby would have approved of that. It was on the same scale as shear lines. But the visit to Wood's Hole had the additional benefit for us that we got to know a number of oceanographers and that was my first exposure to the field. Later on I got interested in the subject of the comparison between oceanic fronts and atmospheric fronts, which have very many common characteristics. When it came to being invited to prepare a paper for the Rossby volume, that was the subject of the paper, which was a comparison between ocean and atmospheric fronts. After that summer at Wood's Hole, I had been invited by Peterson to join his weather forecasting research center at the University of Chicago. So that's where we went. I worked in this center for I think it was four years. Then was appointed an assistant professor and taught at Chicago for another four years. I learned a great deal from Peterson from a different viewpoint of what I had learned from Palmain and Rossby. Peterson, at the time, was working on his concepts of, which he acknowledged were based on ideas by Sudclif. That was another exciting time when I had the good fortune of being around when a major event was taking place. The major event was Peterson, in collaboration with the University of Chicago and the Weather Bureau -- the Weather Bureau office was back-to-back with the Department at Chicago at that time. A new experiment. What Peterson was working on was his concepts of vorticity advectional loft and cyclogenesis. So, there again I had the opportunity to participate, in my small way, in this major event and to watch Peterson give map discussions day after day and make forecasts, see the forecast verified the next day. It was all very exciting. As it was, later on, it was of great satisfaction to me to be Peterson's lab assistant, essentially and teaching forecast to the Weather Bureau students, some Air Force students, and so on who came to Chicago for refresher courses. So, all in all, my days at Chicago and Stockholm and back at Chicago were exciting days.

Droessler: Chester, where did you go after you left Chicago in 1961?

Newton: I had been invited by Simpson, by Bob Simpson, to join the National Severe Storms Project, which was sort of getting underway at that time. It had its headquarters in Kansas City on the floor above the Severe Storm Forecasting Unit. This was a project that carried out field experiments, airplanes, radars, and

so on based in Oklahoma City at that time, now based in Norman. At the time, I had had another offer, to be considered at least, at Wood's Hole, which was also very attractive. They were trying to build up the meteorology program there. But I was excited about severe storms and I jumped at the chance to go to the National Severe Storms Project where I was the chief scientist. C.F. Anthelenor (sp?) was the director and we tried to work hand-in-hand. That was a period when there was, again, a great deal of excitement. This was, for the first time -- I had done a lot of analyses of squall lines and so on on paper, but it was the first time when I actually went out and looked at them, saw them on radar every day and went out in the DC-6s and flew around squall lines. There was a large degree of excitement in that. Unfortunately, the instrumentation didn't work well. In a lot of cases, there were navigation problems and so on, so there was a great deal of frustration as well as satisfaction in the job and it's been remarkable to me, since coming to NCAR, to see how much matters have improved in those respects. Phil Thompson had written to us and talked to us earlier back in 1961, which is around the time I went to the Severe Storms Project in the first place. He renewed an offer to join the new -- fairly new at that time -- National Center for Atmospheric Research in Boulder, Colorado, where we had visited once. I found this prospect most interesting and immediately accepted when Phil wrote the letter and then called me about it. I've been grateful to Phil for this opportunity –

END OF TAPE 1, SIDE 1

Interview of Chester Newton

TAPE 1, SIDE 2

Droessler: Chester, we've moved over to the second side of this tape and I'd like you to comment on your association with the American Meteorological Society over the period of years that you've been associated with it and we'll focus, in due time, on your term as the president of the American Meteorological Society. Let's begin with when you first joined the AMS.

Newton: I joined the AMS first in the early 1940s. It has been a very fundamental and satisfactory association ever since. You mentioned to me yesterday that if the AMS had not existed, we would've had to invent it, so I was glad that it was invented back in 1919. It's been a guide to the profession ever since. I have been a member now for almost 40 years. I have enjoyed the associations with many, many meteorologists during that time. My membership goes back, incidentally, to the time when the publication of the AMS was the old blue-back bulletin and it was never more than a quarter of an inch thick. And you got one of these things every month. It goes up to the present time when the output of literature every month under the publication of the AMS is a staggering amount and covers many, many aspects of meteorology and related sciences. I think my greatest single satisfaction or the accomplishment that I feel the greatest satisfaction in was editing the Monthly Weather Review which I did with Harriet Newton as my associate from 1974 to 1977 and a large part of the next year's issues. The Monthly Weather Review at the time was a new acquisition of the AMS who took it on from ASA or NOAA, whichever it was at that time, which saw fit and financial necessity to abandon the publication of many rich journals. It came to us as a small journal. We had trouble filling the first issues of it, but the name of it obliged it to be monthly, *Monthly Weather Review*. So we couldn't go quarterly as would be befitting a new venture. There was sort of a minimum size for printing, which was 45 pages, I think it was. Something of that sort. We inherited three or four manuscripts from NOAA -- or half a dozen, I guess. Some of which we accepted and some didn't. So, it was tough going at the beginning, but anyway it was a satisfaction to us to see the journal gradually accepted as a respectable place to publish, which it had been, of course, for many years. It's gone passed its first century of publication. I also enjoyed the many other contacts that I've had in the AMS, serving on committees of various kinds. Severe storms committee and other ones. Education committee, whatever. I served as counselor once or twice and then eventually as the president of the society in 1979. During that time, I greatly valued the -- I found out a lot about what meteorology was about, especially on the practical side through many contacts. Fortunately had the wise guidance of Ken Spangler during this period, who was the real -- the person who has kept the society going for all those many years. He was appointed shortly after Rossby's presidency in 1944 or '45 thereabouts. Guidance from Evelyn Mazur (who has been my counsel on many occasions. Guidance from Earl Droessler, who I had the great pleasure of

watching do the real business of the society, which is its scientific and technical activities committee. That's what the AMS runs on. Its the gas that it runs on. So, all in all, it has been a wonderful experience and really a lifetime experience in terms of my scientific lifetime. My first activity in the AMS, the first meeting I went to was in 1947 or '48, where I presented a paper at the New York meeting. It was customary, in those days, to have the meeting in New York every year, a custom that, for many years, we said "Where is the New York meeting going to be held this year? Is it going to be in Los Angeles or Denver?" But at this meeting, it's interesting to compare the scales, partly, of these meetings. The meeting I went to 1948 I guess it was, was attended by about 100 people. Everybody knew everybody else at that meeting. The recent meetings, I think, have had certainly well over 1,000 people and I believe there were meetings that were attended by 1,500 people with several specialty sessions as well as the annual meeting and so on. So there's been a remarkable growth and the AMS has really had a major -- has been a major agent in stimulating that growth through its publications, its meetings, which there are many, many meetings a year now, whereas there was only one national meeting at the time that I joined. There are many meetings now in a remarkable range of specialties.

Droessler: Chester, during the years of 1978 to 1980 you served at the highest post that AMS members can offer, as the president elect, as president in 1979 and then as immediate past president serving that time on the council and the executive committee. I'd like you to comment on what were some of the important activities ongoing during your term in that office.

Newton: One of the concerns that there was a great deal of talk about in the council and the committees was the matter of basically what a meteorologist was. There was a great deal of exposure, for example, in the media. There were concerns about people being called meteorologists that had not had meteorology training. There was a large organization, whose name I will not mention, but it had a lot of pipes into the media that called people meteorologists and their function was to read somebody's weather forecast. The funny thing about meteorology is that anybody can appear to be a meteorologist by having a piece of paper handed to them and having a tube put before them. But, I won't go into that. Anyway, there was a great deal of concern about protecting the professional status of the field. There was concern about ethical practices, which led the society into difficulties later on, fortunately not during my term as president. But Bob White got stuck with it as my successor. This was a matter that was driven by some things that were going on during my time. There were people who were dissatisfied with the AMS, and this also happened to other organizations over matters of professional certification and things that were stated in the codes of ethics. At any rate, there was a great deal of discussion in the calendar year 1979 when I was AMS president, and there had been, I'm sure, before. There was almost a feeling at that time that we were going to be sued because respectable organizations, including the Bar Association and so on had been sued over these matters before. Finally, the outcome, which took place mostly in 1980, was the suit by the Attorney

General of Maryland. The result of this suit was to force out of the bylaws of the society what we had previously thought was an important part of the section of the code of ethics. This stated that a member of the AMS may not engage in unfair competition. That seems fairly innocuous, but it was objected to. That a member should not interpose between another professional and his client, which also seems decent to me. That he would secure work on his qualifications and performance, that was reinterpreted to mean that he wouldn't compete on the basis of price of his services. That he would not discredit, unfairly, another meteorologist but he would present information on unethical, illegal, or unfair practices. And finally, that he would not take credit for work by others. All these things seem fairly reasonable to have in a code of ethics and they were all forced out of the AMS bylaws by this suit by the Attorney General. And, as I mentioned, this had happened in other societies before. The suit was centered around constraint of trade. I won't mention what we knew and don't acknowledge brought it on, but it was brought on by particular cases that the AMS was trying to deal with during the time I was president. Another concern to us at that time was our relationships with the National Weather Association, which I looked back in the minutes and I found a statement there that we had cordial relationships. (laughs) It was not 100% cordial. The National Weather Association is a professional organization to the greater -- the AMS is a scientific organization. We had matters in common. We had common meetings and so on, but the formation of the National Weather Association was partly caused by dissatisfaction with the past treatment of forecasters by the AMS and what they perceived as something that I was particularly involved was the perception that the AMS would not publish work by forecasters. Well, there were a number of responses to that. Our friendly cooperations with their organization and meeting, they had giant forecasting meetings, focus in forecasting was started in the bulletin as a response to their dissatisfaction in things being turned down. This was all very curious to me because the point that I tried to make -- but sometimes it amounted to a shouting match at the evening get-togethers -- was that the primary place for people to start if they wanted to get something published was to submit it. So I perceived a shortage of papers being submitted and I admittedly didn't go out and beat the bushes as I was urged to do. The editor really had enough on his hands without doing that, dealing with a couple hundred manuscripts a year. They complained about reviewing. If I do send you a paper, you'll send it to a bunch of university professors and they'll turn it down. I tried that one out on three or four occasions by sending papers both to weather service forecasters and university professors. The hostile party, invariably, was the Weather Bureau forecaster. So anyway (laughs), I'm sure they had a complaint, but it was somewhat curious. Anyway, that sort of thing generated a lot of discussion. The ethics questions, the questions of certification of certified consulting meteorologists. I forced, incidentally, to become a certified consulting meteorologist because Ken Spangler and various other people didn't think it was fitting for an AMS president not to have that qualification. So I did quite a lot of work writing what I was required to write by Loren Crow, who was the chairman. He gave me a very good task to do and I carried it out and am now certified. It

was a beneficial experience for me, because in the process I learned, a little bit at least, not through personal experience but from reading about what the practical side of the field was. As for personal experiences, it was very instructive also to go to the -- what's it called?

Droessler: WMO.

Newton: The WMO Congress, which takes place every four years. The AMS has, for many years, been invited to send a delegate who is always the president, I believe, of the society. I went and sat there for a month and listened to the debates without really contributing anything except on the private side. On the private side, I did tell our delegation who the coming -- I described the scientific qualifications of the coming secretary general of the WMO who was running at that time, Wiin-Nielsen. The WMO is an intergovernmental organization and I found that it was somewhat a different world and an interesting world. Different world from the one that I had been affiliated with on the academic side and the research side. At the WMO meeting in Geneva in 1979, the most heartwarming event was to have a reunion with our fellow -- Harriet's and my fellow student Tu-Cheng Yeh, who was with the Chinese delegation to the WMO. Not as its head, because the head was a member of the party, but as its real spokesman who did the business at the WMO. So it was great to be reunited with him and to meet some of the Chinese people there. Then, later on, we had another reunion in June of 1979 in China itself, where the AMS sent its second delegation consisting of several of the current president and several ex-presidents and the executive director of the AMS and the (inaudible) commissioner, Earl Droessler. Was there anybody else? That was it, I think. A funny thing about this was -- well, we did have this wonderful reunion with both of our Chinese friends from the University of Chicago days in the late 1940s. It's sort of an example of the extension of the influence of the Chicago school to realize that of our two friends, Tu-Cheng Yeh had been, for many years, the director of the Institute of Atmospheric Physics of *Academia Sinica*, which was their working national academy, and was supervising a large number of activities as well as doing research himself. Our other close friend form Chicago, Yi-Ping Hsieh, was the head of the Department of Geophysics and Astronomy at Peking University, thereby occupying the position of highest academic distinction in China. So there were these two people we had known as young men who had returned to their country to see to its progress and who were, on the one hand was Hsieh who had taught hundreds or perhaps thousands of students, and Yeh was the greatest influence on meteorology as a science in China and serving on important committees, among others, being a member of the People's Congress, where he had a voice in the highest councils. At any rate, this was an occasion of what the Chinese kept repeating as one friendship, a stock phrase that we heard wherever we went, but we took it the way it was intended, as a sincere thing. That was an exciting time because the cultural revolution had recently ended and the lid was off. People were, at least appeared joyous in the streets and wherever we saw them. The Chinese were extremely cordial to us. They paid us also a return visit in October of that year. It was a

thrill to see, to visit a country where the lid of oppression had come off and where science and everything else were coming back to life. Hospitality was marvelous. We had good companions. All around, it was a great visit. Since then, we've had other contacts with our Chinese friends, with our personal friends and also with many other Chinese and we have the highest respect for them.

DROESSLER: For the record, Chester, would you mention how long the visit lasted in 1979 in China. And as we toured both the scientific and the weather service operational side, what were your impressions about how the Chinese science and Chinese weather service compared with activities in the USA?

Newton: Well, first of all, the trip lasted for two weeks, which was just a long enough period to make us all experts on China. During that two weeks, we visited a number of places starting out and ending up in Beijing, where we visited the Central Meteorological Bureau at the Peking University and other places, as well as a great deal of sightseeing. Great Wall, Summer Palace and so on. We also went to Kweilin, which is the place with the mountains that are higher than they are wide. Floated the Li river there. Watching Ken Spengler -- we were there during the (inaudible) rain season, and it was generally overcast over the country, but during our trip down the Li river on a boat, we watched bareheaded Ken Spengler gradually turn red as a beet by the end of our trip. We visited Canton, Shanghai, and other places. And all of these places we were (inaudible) greeted by delegations from the local branches of the society and people from the Chinese Weather Bureau. We were taken around to see anything from the local small weather station to a large forecast center. Well, quite naturally, they were not at all comparable to the analogous thing in this country in all respects. In some ways, they were perhaps superior. Things like numerical prediction were underway, even at that time, using, I believe, Japanese computers that they had. Things were getting off to a vigorous start and they've continued that way since. One of the things that I recall seeing was, we visited the regional meteorological office in Shanghai, which was across the street from the Zi Ka Wei Observatory, which was part of a Catholic mission earlier. This had been used as (inaudible) rifle during the days of turmoil and was used as a warehouse at the time. Well, Zi Ka Wei had been one of those places we had read about and studying tropical meteorology is a source of long period of observation, so it was sad to see it in that state. The Chinese have and had at that time the greatest extensive network of upper air observations, of radio (inaudible) observations and Piebull (sp?) observations that exist anywhere in the world. So it was interesting to see that aspect. They also have a remarkable number of surface weather stations. The ones we visited were tied in closely with their local communities. There's a weather station in practically every county in China. One of the things that they do -- well, you'd find the weather station occupying a carefully prepared plot, measuring the ordinary things, temperature, humidity and so on and so forth. But they'd also be measuring radiation and making soil moisture measurements, so they have a great body of material like that that is, I think, superior to any other country that I know of in the world.

DROESSLER: I thought they were remarkably good in synoptic meteorology and forecasting as hurricanes -- as they call them in the Pacific, the typhoons.

Newton: Yes, hurricanes, of course, are an enormous both benefit and hazard in China. China has 13% of the land in China is arable. That was the figure that was given to us at that time, it may have increased by now, I don't know. And this is a lot of it in the Szechwan basin, which is a very rich crop growing region. But mostly along the east coast of China. Being along the east coast, all this farming land is subject to being either helped or wiped out by hurricanes. Of course, hurricanes are more of a benefit than a hazard, because they furnish the major part of the precipitation for the Chinese farmer. Well, likewise in Szechwan, their problem is severe thunderstorms and heavy rains that wipe people out with floods. But at the same time, they furnish the necessary rainfall. So, anyway, there was evidence that the Chinese meteorologist are very skilled at forecasting things like hurricanes, severe storms. It was a revelation to us to find that the science of meteorology was in remarkably good health so soon after a major cultural disaster, the Cultural Revolution. I was struck by the awareness of the Chinese meteorologists of the literature from the outside world. One of my great satisfactions was to be presented with copies of the Chinese journals that were edited by Hsieh and Yeh that were being published for the first time. It was a sin to publish because that was private property during the Cultural Revolution, so it was a heartwarming experience to se the publishing enterprise come back to life and to be given some of the first copies that had rolled off the press in 1979 when we were there.

Droessler: Chester, to conclude this interview with you, I'd like to ask you a simple question. Who is Chester Newton?

Newton: By that, I take it you mean where did I come from. I was born in Los Angeles, a fact that I try to forget because I'm not too fond of Los Angeles. I started growing up in southeastern Alabama in a town called Dothan (sp?), in the very southeastern part. Hot, humid place before the days of air conditioning and I can't remember that we noticed it. Both of my parents came from that area. My father was a member of a family that had come down originally during the days when Tories became unpopular in the Northeast. Most Tories went up to Canada, I believe, but a certain percentage of them went south and they were among those Tories that went south. My grandfather was a penmanship teacher. Beautiful scroll writer. And he also started a grocery business in which my father became a partner later on with his three brothers. My mother grew up in a small town not far from Dothan. Hartford was the name of it. Her father was a farmer who had cleared the land himself by his own strength and willpower and was a beloved figure in the town. My parents were loving people who I never heard a cross word between them. Both of our families were religious, although I'm not. I grew away from it, unfortunately, I think. My parents -- well, I should say I grew up in different places. Sort of up until I reached adulthood I spent about equal

time in Alabama and California and Arizona. My father could never tolerate being in one place longer than three years or so, so we were continually moving. In California, we lived first in Los Angeles where I was born, and Bakersfield, Fresno, Visalia, Berkeley. He would stay out west -- he came out west as a young man before he was married and I believed he played at being a cowboy for a while. He worked on a shrimp boat in the Gulf of Mexico at one time. A little bit of an adventurous spirit. He had a dream of making his fortune as a gold miner, so we also lived in Belarot (sp?) in the Pinamit (sp?) Range in Death Valley. I can still remember the size of the rattlesnakes there, although I was a little kid at the time. I can remember another mining venture was in the eastern part of the state of Washington. I can remember the eyes of the wolves when we opened the door at night glinting in the firelight that went out the door. We finally wound up in Phoenix and my father was killed in an automobile accident when I was 17 years old, which I took very hard. My parents both -- well, he went to Georgia Military Academy was his academic side. My mother never finished school. I don't know just what she got to, to seventh or eighth grade, something like that. But she educated herself after that. She's an extremely intelligent person. She could have got a Ph.D. anywhere if she set her mind to it and had those circumstances. She is still living. She lives in Phoenix. She's 93 years old. Still as sharp as a tack.

DROESSLER: Do you have any brothers or sisters?

A: I had one brother, who died about 20 years ago. My parents put a lot of stock in education, so their influence in that respect was very strong on me. They praised good schoolwork and they didn't praise bad schoolwork (laughs). Anyway, there was a constant reinforcement and reward there. My mother was a loving mother who was very attentive to her children. My father, if he had -- I didn't think he had any faults -- but if had a fault, it was simply that he couldn't stay in one place. He had a secure partnership in a wholesale grocery company down in Dothan, Alabama. But he just could not stay at that for very long. He was a salesman in various enterprises. At one time I believe what they call a roustabout in an oil field. He was a very powerful man. Heavyset. He could grab hold of a light pole -- he weighed 240 or 250 pounds but he could extend his body out perpendicular to the thing with the power in his arms.

DROESSLER: You might explain what a Tory is. Some people listening to this tape might not know what a Tory is.

A: Well a Tory was the party that supported the King back in the early days of the country. They grew somewhat unpopular during the days of the revolution.

DROESSLER: (inaudible) met your bride?

A: I met my bride at the University of Chicago where we were students together and where she got her Master's degree. My bride, unfortunately, had to give up meteorology when we started having children. She worked in Stockholm, as I mentioned earlier, partly with me and partly on other activities of the Institute, of Rossby's institute. Harriet initiated the meteorology laboratory at Argon National Laboratory, where they were concerned about matters such as the travel of radioactive materials.

DROESSLER: Her father was a distinguished chemist.

A: Her father was a distinguished physical chemist. He grew up on a farm out in northwest Kansas back in the days of the sod huts and went on to educate himself and became a schoolteacher and eventually went to get his Ph.D. in physical chemistry.

DROESSLER: What was his name?

A: His name was Worth Huff Wurterbush (sp?).

DROESSLER: I remember he came to the University of Chicago at the invitation of Horace Myers and worked together with your group there on some problems in cloud physics (inaudible).

A: That's right. I think it was during World War Two. One thing I know he was engaged in was the business of creating smoke. Smoke screens was an important part of naval operations during the war.

END OF INTERVIEW