AMS 73-75 Interview of George S. Benton
Interview conducted by Earl Droessler 5/25/91
This document includes eight pages of the original interview annotated and corrected by George Benton (dictated to and transcribed by Lauren Benton) in August, 1999.

Note by Lauren Benton: A typed version of the corrected interview follows. A copy of the interview with handwritten corrections, recorded by Lauren Benton at the instruction of George Benton, is attached.

Earl: George, it is very nice to be with you. Thank you very much for the invitation to come and talk with you.

George: Well, it is nice to see you again, Earl.

Earl: George, let's begin by getting to your viewpoint and your perspective on the early days of meteorology – on how you came into the field.

George: Well, I guess I go back a fairly long way in meteorology, at least it seems long now. I was on the periphery of the field when I was an undergraduate student out at the University of California at Berkeley. I was involved with the Department of Geography there, although I never did finish my Bachelors at the University of California at Berkeley. A number of the faculty there were interested in atmospheric problems. One summer around that time I did some observing for the cooperative U.S. Weather Bureau station on the Berkeley campus. But I guess my first real association with meteorology came somewhat later. I dropped out of the University of California, and in very early January of 1938, went back east to Washington, where I worked for a short time in a temporary post at the Soil Conservation Service in a division that was under the direction of Professor C.W. Thornthwaite. There were a number of people who were well associated with meteorology in that group: Dave Blumenstock [George's brother – LB] Ben Holzman, and Kathryn Clark Hafsted. Ben Holzman became later a central figure in weather forecasting during the war years. And I went out to Ohio for the Soil Conservation Service to help organize a Works Project Administration program examining the climatology and rainfall history of the Muskingum Valley. At that time, I began to carry out some studies of the statistics of drought occurrence, which were later published by the Department of Agriculture. This was really my first publication. Just a little bit later, I think it was still 1938, if I remember correctly, I took a Civil Service Examination and became an Observer in the Weather Bureau office in Akron, Ohio. This was the first time that I was really immersed in meteorology. It is remarkable how many changes in meteorological practice have occurred in the lifetime of one person. When I went into the Weather Bureau (in 1939, I think it was), upper air observations were rare. They were taken by small airplanes. Radiosondes were not used operationally in the United States. Weather information was transmitted by teletype by an awkward word code. I was told the reason for it was that Western Union did not charge as much for transmitting words as they did transmitting numbers, and we had a whole code system.

I still remember the code. The consonants were the first digits. I think B was 1, D was 2, F was 3 and so on, and the vowels were the second digit; A was 2, E was 4, I was 6, and so on. And the total value was increased by one by adding S to the word. So by transmitting a word with 2 syllables you could get 4 numbers and this was the official code which transmitted weather information all over the country. And, of course, we used to write everybody messages at New Year's time, making up words which relayed the information but were not the intended ones that were normally used. But going back to those days, it seems like a totally other world. To measure upper air winds at night, we sent aloft helium-filled balloons to which we attached a Japanese lantern with a lighted candle in it. And we followed it with a theodolyte to determine winds aloft. Obviously, when there were low clouds, the balloon disappeared into the clouds and we lost the observations. Other upper-air information was obtained by using very light airplanes that couldn't fly in bad weather. So you got very good airplane observation when the weather was fine and nothing when the weather was bad. It was a totally observationally different world than that which would become available after the war. The huge change came during World War II, when the tremendous growth in meteorology developed to support the emerging Air Force of the United States and of U.S. allies in World War II.

Earl: And you were there at the beginning, at that increase in activity of the whole science of meteorology and the development of a much larger educational framework in which to train the men needed for World War II?

George: Oh, I was there very near to the beginning certainly. I left Ohio to go back to Washington before the war began. I think it was late in 1939. I had been an observer in the Weather Service for only 6 months or so and I went back to Dr. Thomthwaite's division in the Soil Conservation Service in Washington. I was a sub-professional observer, SP3, as it was called in those days, working for the princely salary of $1,440 a year ($120 a month). This was a huge salary in those days. There was a national exam for observers. I took the exam in Akron. I think I placed third in the country. A lot of people took the exam to try to get the salary. I'd had enough undergraduate courses – very few people had. There were people during the depression years who were raising families and keeping them together on $75 a month. So as a single person at $120 a month, I was rolling in money. I had an apartment, I bought a car, I was living well, which says something about inflation. I went back to Washington as a professional, although I did not have my Baccalaureate at that time. Based on my other experience, Thornthwaite was able to get approval for me to be appointed at a professional level soil conservationist. In Washington, I continued to work on some of the statistics of drought. At that time a good bit of my time was spent over at the old Weather Bureau office on 24th Street Gust north of the circle). And I got to know some of the meteorologists in the Weather Service well. My best friend over there was Harry Wexler. Harry was a bit older than I, and a bit more senior. I got to know him quite well, and he was a very great help to me. Before I went back to Soil Conservation, Dr. Reichelderfer, Chief of the U.S. Weather Bureau, called me into his office and urged me to stay with the Weather Bureau. He said he could increase my grade from SP3 to SP5 but he was unable to offer me a position at a professional level. So I decided to leave and take the opportunity with Thomthwaite's group. I also knew Jerry Namias (Jerry Namias later became a professor

out at University of California, San Diego) and some of the other key people in the Weather Bureau. This really was just before the "explosion in meteorology." About this time, Carl Rossby left his post as Associate Director of Research in the Weather Bureau and went out to the University of Chicago to start an Institute of Meteorology, which later became the Department of Meteorology and then ultimately the Department of Geophysical Sciences. The extensive programs for training meteorologists for the army and navy were just beginning. Within the next few years, thousands of meteorologists would be trained at a handful of institutions – the University of Chicago, NYU, Penn State University, and within the army itself at a training program based at Chanute Field in Illinois. All the programs needed people qualified to teach the flood of trainees. I had been deferred from military service because of some problems I had with my left lung, which had forced me to drop out of the University of Chicago after my first year as an undergraduate there in 1934-35. One day, when I was sitting in Harry Wexler's office at the Weather Bureau, Harry suggested that perhaps I ought to go out to Chicago and go through the 9-month intensive training program in meteorology and then stay on there and teach. I thought that it was an interesting idea. I remember very well, Harry handed me the phone or rather picked up the phone and called Carl Rossby at Chicago and told him, reminded him of my existence (because I didn't know Rossby nearly as well as I knew Wexler). Harry recommended that Rossby have me come out to Chicago and first take the course and stay on and teach. And I remember very well Harry handing me the phone and Rossby saying only one thing to me, "When can you be here?" I believe this was on a Thursday, very shortly after Pearl Harbor, and it was clear that our group – Soil Conservation – was going to break up. "Our group in Soil Conservation Service is breaking up," I told Rossby. "I could probably be there a week from Monday." And he said, "That is too late. We are starting a new class and I would like you to be in on it. Can you be here next Monday?" I said I didn't think I could be, but that I would be there by the middle of the week. He said, "Fine, come ahead." I remember he didn't even talk about the details of exactly what I was going to do or how much he was going to subsidize my education. I did know from Harry Wexler that they would pay for my tuition at Chicago, and I did know that they would provide me with some kind of assistantship, which would enable me to support myself until I finished the course. I decided this was something I ought to do. So I told Rossby "fine," and within two or three days I was in Chicago. That was really the beginning of my professional association with meteorology.

Earl: Well, George, let's continue then with the early days at the University of Chicago.

George: Well, this was the real beginning of a large program. We were in what was called the third program. I was in the third program which began in March of 1942, which would be just three months after Pearl Harbor. It was called the 3rd Program but was really the first *large* program. There were at that time, which I think you well know, teaching programs at UCLA, Chicago, NYU and MIT – and at Chanute Field for the Army-Air Force as it was in those days. Chicago had two earlier programs, I think the first one of which started sometime in the previous year. And there was one that started a few months before ours. But there were only a handful of people in each of these two courses. Our course that began in March of 1942, was I think a rather special one. There

were some very impressive people taking the course, and very impressive people on the faculty at Chicago (The fourth program became very large and students began to come by the thousands). We had Carl Rossby, of course, Horace Byers was a second mainstay, Victor Starr was an Assistant Professor, and Helmut Landsberg was the group's climatologist. That was the entire staff when I first went out. Others were added later. Herbie Riehl became an Assistant Professor in later years. It is interesting to note that Horace Byers was the only member of the faculty who had an earned doctorate from an American university. As a discipline, meteorology was in its infancy. That's why the training programs were so important. Many of the outstanding people in the early programs at Chicago remained in meteorology after the war and became leaders of post-war meteorology in the United States and in the world.

I didn't have any degree at all when I went to Chicago, but I finished my baccalaureate while I was taking the intensive program in meteorology. The people who were there who were students in the first classes were an extraordinary group. They included Herbert Riehl, who later started the meteorology program at Colorado State; Dave Fultz, who stayed on at Chicago and developed some unique experiments with stratified, rotating fluid systems; Vera Suomi and Reid Bryson, who later started the Department of Meteorology at the University of Wisconsin; John Bellamy, who started meteorology at the University of Wyoming; George Haltiner, who came as a Navy Ensign and later became senior professor at the Naval post-graduate school at Monterey; Werner Baum, who started meteorology at the University of Maryland and later at the University of Wisconsin at Milwaukee; and quite a number of others who later made contributions to the field. It was quite an extraordinary group in those early days at Chicago. Most of us taking the program were civilians. We worked very closely together, studied together, worked together. It was quite an interesting time.

[This was as far as GSB got in annotating/editing the original interview. In informal conversations with me, he added some interesting points. He was fairly certain that his was the *sixth* Ph.D. in meteorology awarded in the country. There had been several, he thought, at MIT, and the early group at Chicago added to these. He and his peers were quite aware of how new the field was and even joked about who should go first; GSB said that he waited, when he was completing his dissertation, for a more senior colleague to defend his dissertation first. GSB also commented that it was when he was an instructor at Chicago that he began to be involved in university administration. Rossby (I believe) was not interested in doing the work of running the program and he effectively handed this off to GSB, who was very young still but quickly learned that if he didn't take care of the work of running the program it wouldn't get done. It was in this job, GSB said, that he first developed his technique for university administration, whereby he would divide tasks into three categories: items to take care of without telling anyone; items to take care of and simply report to his superior as points of information; and items for consultation. At Chicago, he said that most of the time that he consulted, he was told just to take care of whatever the issue/problem was. So GSB was really thrown into administration rather early, and with little prior experience other than his participation in the Ohio WPA project that he talks about in the interview.

It is worth mentioning that in conversation GSB was especially proud of the delegation he led to China to negotiate weather data sharing and other cooperation just

after the opening in diplomatic relations. GSB described rather tense negotiations. At one point, with the parties unable to reach agreement, GSB suggested to his Chinese counterpart, Zuo Jing Meng, that they go and get a beer together. The draft of the agreement was literally sketched out on a napkin over some beers, and this was the breakthrough that allowed them to shape the final agreement. GSB remained close to many of the Chinese delegates for years after this mission.

There is a little in the interview about GSB's work in university administration, but it is worth noting that his involvement with meteorology paralleled a very active career in administration at Hopkins, where he was Dean of Arts and Sciences, Vice President of the Homewood Division, and chair of three different departments. GSB downplays his scientific accomplishments in the interview, but I should note that he continued to have an active interest in theoretical fluid mechanics throughout his life and even during his most intensive administrative assignments. At home, he worked with great concentration on mathematical formulations on legal pads strewn throughout the house. I am not competent to judge his contributions to the field, of course, but I think it is worth pointing out that GSB loved to teach and was responsible for training quite a number of meteorologists himself (I do not have any figures on how many or in what years, though Hopkins would have such records; GSB in fact supervised his last doctoral student in the year before he died). He always taught while he was in residence at Hopkins, even when he was a full-time administrator. Any portrait of his life or his contributions to the field would be incomplete without mentioning his accomplishments in teaching.

As this interview shows, GSB was deeply aware that he had participated in a revolutionary change in meteorology both as a scientific field and as an arena of policy, over the span of his professional life. When he died in October, 1999, his papers were donated to the Eisenhower Library at Johns Hopkins University.

I am including two additional documents with this annotated interview. The first is the libretto of an operetta written by GSB for fun during the winter of 1943-44 and spoofing the then-current state of meteorology. The second is a short autobiographical sketch of GSB's early years based on an interview conducted by me in August 1999. It overlaps with the biographical description he offers in the original interview but also contains some additional information.

- Lauren Benton, Maplewood, NJ, January 3, 2002]