

The Bulletin interviews

Lennart Bengtsson

To sum up Lennart Bengtsson's long and distinguished career is no mean feat. He obtained his B.Sc. and M.Sc. from the University of Uppsala (1957 and 1959, respectively) and his fil.lic (Ph.D.) from the University of Stockholm (1964). He started his career in Sweden as a research meteorologist and later division leader at the Swedish Meteorological and Meteorological Institute. He participated in the planning for the European Centre for Medium-Range Weather Forecasts (ECMWF), becoming subsequently Head of Research there from 1975 to 1981 and Director from 1982 to 1990. From 1991 to 2000, he was Director of the Max Planck Institute for Meteorology (MPI) in Hamburg, Germany. He is currently Professor at the Earth System Science Centre (ESSC) at the University of Reading, United Kingdom, and Director Emeritus at the Max Planck Institute for Meteorology.

His scientific contributions cover a wide range of research including climate modelling and prediction, numerical weather prediction (NWP), data assimilation and climate data studies. Currently, he is involved in climate detection investigations with special focus on the water cycle and the modelling and studies of extreme events. He cooperates closely with scientists at the COLA institute in Calverton, Md. on the problem of climate predictability and regional climate change and with scientists at the Nansen Centre and Bjerknes Centre in Bergen, Norway, on Arctic climate change and prediction.

Prof. Bengtsson has always been active on the international level. He has been chairman of various international working groups such as the Working Group on Numerical Experimentation (1978-1985), the Working Group on Coupled Modelling (1995-2000), the European Space Administration Earth System Advisory Committee (1999-2004) and the science

steering group for the Baltic Sea Experiment (1994-2000). He also chaired the committee which proposed the International Research Programme on Climate Variability and Predictability (CLIVAR) (1991-1993). Moreover, during the preparation of this interview, Prof. Bengtsson was overall chairman of the First International CLIVAR Science Conference in Baltimore (21-25 June 2004).

Swedish by birth, Lennart Bengtsson is very much a European in the sense that he feels equally at home in England and Germany as well as in Sweden. This is very much in keeping with his view of meteorology as being a unifying force and the need for countries to work together.

The list of honours won by Lennart Bengtsson is too long to give in full. Suffice it to say that he is a member of the Swedish Academy of Sciences and *Academia Europaea*, fel-

low of the American Meteorological Society and a corresponding member of the Finnish Academy of Science and the *Nordrhein-Westfälische Akademie der Wissenschaften*. He has received several rewards, including the Julius von Hann Award of the Austrian Meteorological Society (1986), the Körber Stiftung Award (1990), the Milankovich medal from the European Geophysical Society (1996) and the German Environmental Award (1998). He is the author and co-author of some 200 articles and books and has been scientific adviser to a number of meteorological institutes. For more details, readers are invited to consult Prof. Bengtsson's homepage: (<http://www.mpimet.mpg.de/~bengtsson.lennart>).

As the theme for this July 2004 issue is the 25th anniversary of FGGE, it may be mentioned that Prof. Bengtsson delivered one of the lectures presented at the 34th session of the WMO Executive Committee in 1982 entitled "Results of the Global Weather Experiment" (the other, entitled "The impact of the Global



Lennart Bengtsson (Photo courtesy ECMWF)

Weather Experiment in the Southern Hemisphere”, was delivered by Dr J.W. Zillman¹).

Prof. Bengtsson was the student and associate of many famous scientists—Tor Bergeron², Bert Bolin³, Bo Döös⁴, Aksel Wiin-Nielsen⁵ and Alf Nyberg⁶, to name but a few—who quickly recognized his capabilities and potential and encouraged him to find his place on the ladder of international meteorology, as readers will discover for themselves during this interview. Despite his success, however, Lennart Bengtsson remains modest. He feels he has had his fair share of luck and the reaction to seize the opportunities at hand. It has to be said, however, that he has an amazing capacity for hard work—in fact, he equates work with enjoyment—and his favourite adjective is “exciting”! In short, he is an excellent role model for young people, wherever their academic interests may lie!

This interview took place in June 2004.

Bulletin — Could you start off by telling us something about your earliest days and your family?

- 2 L.B. — I was born on 5 July 1935 in Trollhättan, a small industrial city north of Gothenburg in Sweden. Ours was a working-class family. My father and grandfather and all my uncles were toolmakers in local industry and my mother looked after her home and family. I have one sister, who still lives in our hometown. She was a personal assistant in the local employers’ association. Several of my relatives emigrated to the USA, some spent some time at sea and one aunt went to live in Tehran.

The family was close-knit but at the same time open-minded and outward looking, with a keen interest in technical matters and geography and ready to encourage those who wished to study. In fact, it was my grandmother who stimulated my interest in mathematics. When I was four or five, she taught me to play with numbers and make quick mental calculations.

Bulletin — Where did you go to school?

L.B. — I went to school locally and was lucky in that, just in time, it became possible to take the Abitur in Trollhättan. Until then, students had had to travel 25 km to a nearby city. Unfortunately, my father died in

an accident when I was eight and our family had its share of financial difficulties. However, we were able to keep our house, which my father had bought before the war, which we shared with my father’s sister and her husband. In spite of help from relatives, my sister and I had to help out as much as we could and I worked every summer from the age of 13 to make a financial contribution. A lot of those jobs were quite boring but they were enriching experiences as I learned to work with all kinds of people from all walks of life.

Bulletin — Can you identify a moment when your interest in meteorology quickened?

L.B. — I always had a leaning for science and physics and chemistry in particular. At one time, indeed, my experiments in the basement almost led to my blowing up our house! My mother had an almanac published by the Swedish Academy of Sciences and I remember, around the age of 10, being tremendously excited when I realized that it was possible to predict a partial eclipse of the Sun, of which I have a very clear memory. Then, the following year, there was a sudden and unexpected early autumn snowfall which we youngsters found great fun, of course, but it also aroused my curiosity about the predictability of weather events. I was particularly intrigued that the weather predictions were so poor but the astronomical predictions so accurate. That is when I really became interested in meteorology and started reading books on the subject.

Bulletin — Where did you go to university and what did you study?

L.B. — At the age of 20, I went to the University of Uppsala, where I could study meteorology. University education was free and as a fairly bright student, I was given a scholarship to cover expenses. Moreover, it was possible for students to borrow money interest-free, which was wonderful, as inflation in Sweden at the time was fairly high, and I was soon able to pay back the loan entirely.

As well as meteorology, I studied maths and physics but I was not impressed by the meteorology lectures, which were mostly descriptive. I was more interested in doing calculations like in astronomy. So I decided that I would continue with maths and philosophy and become a teacher and lead a comfortable life. I also knew that, after my time at university, I would have to do my compulsory military service, which had already been postponed (normally, military service was done before university).

Bulletin — Tell us something about your military service.

1 President of WMO, 1995-2003

2 Winner of the 11th IMO Prize (1966)

3 Winner of the 26th IMO Prize (1981); interviewed in *WMO Bulletin* 37 (4) (1988)

4 Interviewed in *WMO Bulletin* 46 (3) (1997)

5 Secretary-General of WMO, 1979-1982

6 President of WMO, 1963-1971; interviewed in *WMO Bulletin* 33 (3) (1984)

L.B. — I was not looking forward to military service—I had been selected for an artillery unit—so when I heard about a new arrangement, set up by Prof. Carl-Gustav Rossby⁷ in Stockholm, which combined meteorology studies with training to become a forecaster for the Swedish Air force, I was delighted. The idea was that two months of basic military service would be followed by academic studies leading to a full degree in meteorology. Ten of us were selected, who already had done two-thirds or half their degree course. I was really excited.

An important aspect was that I had to do only some two months of traditional military service instead of the normal 18 months. Then came the interesting bit. Among my teachers were Bert Bolin, Bo Döös and Aksel Wiin-Nielsen. They were not only excellent scientists but also inspiring teachers. They were also actively involved in numerical weather prediction at Rossby's institute. As part of our curriculum, we even carried out numerical weather prediction manually using a graphical method which Wiin-Nielsen had learned from R. Fjortoft⁸. Unfortunately, I was not able to meet Prof. Rossby as he died in the first week of the course.

Bulletin — What did you do then?

L.B. — With my B.Sc. and military service behind me, I went back to university to take my M.Sc. and to complete my exam with experimental physics and some more mathematics. I was then offered a job at Uppsala University as assistant to Tor Bergeron. Bergeron was one of the leading Scandinavian meteorologists. He had been assistant to Vilhelm Bjerknes⁹ and a member of the famous Bergen School of Meteorology. His field of interest was in atmospheric physics and synoptic meteorology. In spite of an age

difference of some 45 years, we became close friends and my wife and I met regularly with Tor and his wife. The reason for the close relationship was a common interest in meteorology, a dislike for bureaucracy and a habit to work long hours. This meant that we spent quite a lot of time together at the institute. As Tor Bergeron had an exceptional good memory, I received the most detailed accounts of meteorology in the past, especially in the 1920s and 1930s. As my interest was in dynamical meteorology and weather prediction, we did not write any joint papers but he encouraged me to take a doctorate in meteorology with Bert Bolin who had taken over from Rossby in Stockholm. I started this work but remained at the institute in Uppsala.

In the spring of 1961, I was contacted by Bo Döös, who asked me to go and join him in setting up a numerical weather prediction unit at the Swedish Meteorological and Hydrological Institute (SMHI) in Stockholm. The offer was also very timely as I had just got married and I accepted.

Bulletin — Tell us about your work with Bo Döös.

L.B. — The task was to set up a comprehensive system for numerical weather prediction at the SMHI, including automation of the many routine activities of the Weather Service. This was a very exciting and challenging task as it was brand-new work, essentially

starting from scratch. We were a small team of some six people under Döös. We used a Swedish-built computer with virtually no software, so we had to develop our own programming language, MAC, meteorological autocode, and our own compiler. All programs were written in machine language using an octal code. I can still do basic calculations with eight as a base instead of ten if needed. There was no tutorial and no blueprints. We managed in a short period of time to

develop a comprehensive NWP system which was considered as one of the best of its time. Unfortunately, Döös left after a few years and I was requested by the Director General, Alf Nyberg, to take over as division head. Over the years, the size of the division had grown and included also a traditional operational forecasting unit. There were a number of managerial and administrative tasks which were new to me. Fortu-



Les Houches, France, 1997 — With Dr Eugene Rasmussen during a NATO training school on modelling the Earth's climate and variability, at which Drs Bengtsson and Rasmussen were the main lecturers.

7 Winner of the 2nd IMO Prize (1957)

8 Winner of the 36th IMO Prize (1991); interviewed in WMO Bulletin 37 (1) (1988)

9 Winner of the 4th IMO Prize (1959)



Four Directors of the ECMWF (from left to right): David Burridge (United Kingdom, 1991-2004); Lennart Bengtsson (Sweden, 1982-1990); Jean Labrousse (France, 1989-1981) and Aksel Wir-Nielsen (Denmark, 1974-1979) (Photo: courtesy Detlev Frömring)

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nately, I was able to complete my *Fil.Lic.* (Ph.D.) exam before my promotion.

I commuted from Uppsala to Stockholm every day, worked around the clock and kept up my research work as much as I could. As salaries were low, I needed additional income which I got from giving university classes in Uppsala and Stockholm. On the other hand, the need for money was modest as there was no time to spend it! Fortunately, my wife had left her teaching job and looked after the family which now included three small children. In her spare time she worked as a translator. It was in many ways a wonderful time and I really enjoyed it—apart from the lack of sleep!

Bulletin — What, in your opinion, is the reason why meteorology has always been so strong in Sweden?

L.B. — Scandinavia had produced many excellent geophysicists since the 19th century and they set a good example for later generations. People in Scandinavia are highly dependent on weather and climate in their day-to-day lives and thus have a natural interest in those fields. After World War II, Sweden was in a fortunate situation. The economy was good and development rapid. There was a strong feeling of optimism about the future and the environment was conducive: schooling was free and the libraries and other facilities were excellent. Some of the leaders in meteorology were outstanding. I can mention Bjerknes, Rossby, Palmén¹⁰ and Bolin from among many others. Those who were

interested in weather and climate had all the opportunities and no excuse not to seize them.

Bulletin — When did you have your first contacts with meteorologists on the international scene?

L.B. — My first international contacts were at workshops and meetings with the other Nordic countries concerning our work in NWP about three or four times a year. This soon led to meetings with scientists from all over the world. One of my first contacts with WMO was as a Swedish delegate in the Commis-

sion of Aerology in 1965.

In 1969, the European Community consisted of six countries and was about to expand. There were ideas to explore the possibilities of scientific cooperation. Within the framework of European Cooperation in the field of Scientific and Technical Research (COST), a series of strategic projects had been worked out. One of these, called the European Meteorological Computing Centre (EMCC), had the objective of undertaking operational extended-range forecasting with the use of supercomputers. Nyberg asked me to join him at a meeting in Brussels to discuss this potentially interesting project. The first meeting was followed by others but progress was slow and we were both frustrated.

However, things improved following a proposal from our delegation to commence work with an expert committee under the chair of Heinz Reiser from the German Weather Service. I became one of the members of this group. A concrete proposal was worked out and subsequently approved. It also acquired the name European Centre for Medium-Range Weather Forecasts (ECMWF), to specifically outline the objective. A blueprint for ECMWF emerged and plans were completed in 1971. It is amazing in retrospective to note how similar the organization and activities of ECMWF are today, a third of a century later, to this early plan.

¹⁰ Winner of the 14th IMO Prize (1969); interviewed in WMO Bulletin 30 (2) (1981)

Bulletin — What happen then to the plan for the ECMWF?

L.B. — At this stage, my work and thoughts took me away from the ECMWF. Most of the work connected with the Centre dealt with policy and organizational matters and I rather lost touch, having more to do with various working groups in WMO and the Global Atmospheric Research Programme (GARP). I found the plans for the First GARP Global Experiment (FGGE) exciting and I started to think what it would mean for the future of meteorology. I visited the USA several times and made two longer visits to the National Center for Atmospheric Research in 1971. In 1973, I made a trip around the world on behalf of GARP to explore the need for global data assimilation for the forthcoming Global Weather Experiment and how to centralize and analyse the data. I also got heavily involved in several international activities. In 1973, I was elected chairman of the Commission for Atmospheric Science's Working Group on Numerical Weather Prediction and also became a member of the Working Group on Numerical Experimentation (WGNE) of the Joint Organizing committee. It was a dynamic period and I met many people from all over the world. At the same time, I was looking after my division at SMHI and a staff of some 50-60.

Bulletin — But now ECMWF comes back on the scene?

L.B. — For some reason, the ECMWF proposal had received political support and been approved by the Member States albeit without any long-term guarantee. For this, the ECMWF Convention would have to be approved by the Governments of its 17 Member States. It had also been decided to set up ECMWF in the United

Kingdom. The key question was to find a Director. There were several candidates but Aksel Wiin-Nielsen, Professor of Meteorology in Ann Arbor, Michigan, USA, would have to be convinced to stand. As I happened to be in the USA at that critical time, I used the opportunity to see him and did my best to convince him to stand for the position of Director of the ECMWF—a post for which he was particularly well qualified as he

was competent and a born leader. In 1974, he took over as Director of the Centre and shortly thereafter he invited me to join him. I was given leave from the SMHI and, on 1 July 1974, took up my position as member of the interim planning staff. It was a great pleasure to work together with Aksel again.

Bulletin — Tell us something about this new ECMWF venture.

L.B. — This was the beginning of a particularly satisfying and dynamic time for me, scientifically, professionally and also politically and socially. The Member States ratified the Convention for the Centre and, in 1976, I became Deputy Director and Head of Research. I thus increased my international contacts, especially with WMO and the European Space Agency. The major part of my work was scientific and I continued to work with WGNE, GARP and later the World Climate Research Programme. At the ECMWF we were fortunate in that we had the best up-to-date facilities, the biggest computer, advanced telecommunications and could attract the most capable people with good salaries. We were able to quickly build up our capabilities in global forecasting. From the beginning of operation there was a quantum leap in the

quality of weather predictions. Of course, it was always the science that excited me, not management or politics. For the family it was a good time, too. My wife and our three children came out from Sweden and settled in England.

Bulletin — But you did not lose touch with Sweden?

L.B. — In 1979, I was offered an Associate professorship (Docent) in Meteorology at the University of Stockholm, which I hold to this day.

Over the years I have maintained very close contact with Sweden, where I have served on several committees and helped to work out new research initiatives for SMHI and Linköping University. I also served for many years as member of the board of the Swedish



Lennart Bengtsson in thoughtful pose during a NATO workshop on climate prediction in Trieste, Italy, 1991

11 Winner of the Nobel Prize for Chemistry (1995); interviewed in WMO Bulletin 47 (2) (1998)

Foundation for Strategic Environmental Research (MISTRA).

Bulletin — What happened when you became Director of the ECMWF?

L.B. — I became Director in 1982. At that time we had only been operational for about two years and the quality of the forecasts, although better than elsewhere, were rather poor, particularly in the tropics. The main objective was to improve the forecasts and build up close and efficient cooperation with Member States. Telecommunications were a bit primitive (this was before the Internet) and some countries were still served by telefax. However, the main problem was to get the Centre onto the scientific map and accepted as a key actor in international meteorology whilst not disturbing the delicate balance with the national meteorological services. This little incident may exemplify this.

In 1985, I prepared, with contributions from a number of leading international scientists, a strategic plan for the future of ECMWF, with the central objective to incorporate seasonal forecasts. The published report was glossy and colourful and intended to convince the Council. I had not secured prior permission for the study, however, and the Council received it with reservations. They insisted on having a less ambitious, black-and-white version, properly channelled through the scientific advisory committee. This made me begin to realize the inertia of established institutions such as the National Meteorological Services and the fragility of international organizations. My personal dream of a common European Meteorological Service retreated even further into the distant future.

Bulletin — It sounds as though the time was ripe for a change of career direction?

L.B. — Not immediately as there was so much to do at the Centre and I was quite happy to work there, but perhaps the first seeds were sown. A few years later, the Max Planck Society invited me as Director for the Max

Planck Institute for Meteorology in Hamburg to undertake climate modelling research. It was an offer I could not refuse as I wanted to spend the main part of my time on research, and I went to Hamburg in 1991. It was a wonderful offer. I was able to hire the staff I wanted and the conditions were very flexible. Of course, my wife was not too happy to be uprooted again. My children were now grown up and remained in England where they had settled by then. The Hamburg period was another happy and active period of productive science, especially in the area of climate-change studies. I enjoyed particularly the cooperation with the many gifted colleagues in the Max Planck Society such as Paul Crutzen¹¹ and Klaus Hasselmann. Another source of satisfaction were all the other social and intellectual contacts in Germany in general. I retired formally in 2000 but still maintain an active research programme both in Hamburg and in recent years also in the United Kingdom. I maintain residence in both countries.



Lennart and Karin Bengtsson at Yellow Mountain during a tour of China in 1994.

Bulletin — The theme of this issue of the Bulletin is the 25th anniversary of the First GARP Global Experiment (FGGE). What are your recollections of this momentous event?

L.B. — The time for FGGE coincided perfectly with ECMWF as the Centre started operational global prediction about the same time. I was involved in the planning from 1973 and so was Wiin-Nielsen. The ECMWF undertook the analysis of the FGGE dataset and produced one year of global analyses four times a day. It was the first time that data for the global atmosphere were analysed systematically on a regular basis. The analysis started in December 1978 and lasted until the end of 1979, using the unique FGGE data from the new observing systems, including satellites, and new techniques to control and assimilate the data.

As this time I had taken over WGNE and chaired the meetings, as I mentioned previously, and we carried out experiments to test the impact of our findings and the assimilation of the data. We analysed the tropical

atmosphere and the southern hemisphere. FGGE was a great scientific adventure and extremely important for NWP in particular and for the development of meteorology in general. It enabled us to discover completely new things such as the complexity of the tropical circulation and the exchange of information between the hemispheres. The new models did a good job. When assimilating data, the model sets the scene for the new data coming in. The concept of global data assimilation was born out of FGGE and set the scene for reanalyses which have now been undertaken covering almost the whole post-World-War-II period.

Bulletin — Do you think that another such Experiment could be carried out?

L.B. — I had long discussions with the late Professor Verner Suomi¹² about holding the Second GARP Global Experiment (SGGE). We both favoured this. The scientific community at large, however, felt that it could not be justified. They would have preferred something different, focusing on the physics of the atmosphere and climate, while FGGE had addressed atmospheric dynamics and weather prediction. In the end, the World Climate Research Programme was established and took over these activities with programmes such as the Global Energy and Water Cycle Experiment (GEWEX) and CLIVAR.

Bulletin — You have received many awards and honours. Which are the most important to you?

L.B. — This is not easy to answer. I have enjoyed receiving all my rewards and recognitions. Perhaps the German Environmental Award which I received together with my colleagues Klaus Hasselmann and Hartmut Grassl¹³ at the Max Planck Institute in Hamburg was very special. This Award has a very high profile in Germany.

Bulletin — Looking back, what do you consider to have been the highlights of your career? It is hard to imagine, but is there anything you regret not doing?

L.B. — My most satisfying achievements were the building up of the ECMWF and my department at the MPI in Hamburg, as well as my work in data assimilation, NWP and climate prediction. I now very much enjoy my present work at the ESSC at the University of Reading and the interaction with many gifted and inspiring colleagues in the United Kingdom.

12 Winner of the 38th IMO Prize (1993); interviewed in WMO Bulletin 36 (4) (1987)

13 Former Director of the Joint Planning Staff for the World Climate Research Programme, WMO

Do I regret anything? Maybe I should have gone to the USA when I had an offer in the early 1970s. I regretted it at the time but I am happy with what I have done. I had good luck and used the chances that presented themselves to develop them further. I usually become quickly interested in new things and I am equally happy to delegate to others when I know it works. I am not a caretaker. But I have done what I wanted to do. I am a happy person. For me, work was never a burden. I sometimes think I would have done what I did for no pay!

Bulletin — You retired formally in 2000. What are you doing today?

L.B. — I would have to say that I am doing the same things that I have always done! I am still at the MPI in the Physical Climate System Department and my interests are still climate modelling and data assimilation. In 2001, I accepted a part-time professorship at the University of Reading in England and tend to spend two weeks in Hamburg and two in Reading. We also have a small summer house in Sweden so my life is fairly peripatetic. I find this extremely stimulating, although my wife finds it less so! I would find it boring now to live in just one country!

I have quite a number of interests outside meteorology. Science in general, political literature are in the forefront. Mathematical puzzles and problems are another thing. For some time, the former WMO Secretary General, Sir Arthur Davies¹⁴ and I exchanged mathematical problems. I maintain an old interest from my childhood in collecting stamps, although this has not been a very active occupation in recent years. I also enjoy walking and cross-country skiing whenever the possibility exists.

Bulletin — How do you see the future for meteorology in general and for WMO in particular?

L.B. — Meteorology and numerical weather prediction in particular have benefited enormously from the developments in computing and in space technology. This is likely to continue. The problems I see are related to political and economical influences which could have a negative effect in the long term. The success in meteorology, climate and environmental research very much depends on a peaceful world where human beings work together and help each other. Meteorology is setting a very good example here. The free exchange of meteorological information to everybody is essential.

14 Secretary-General of WMO, 1955-1978; winner of the 30th IMO Prize (1985); interviewed in WMO Bulletin 40 (1) (1991)

Unfortunately, this is not the case everywhere. It is ironic that the best forecasts which are freely available to the public in Europe are produced by the USA and by a mathematical institution in Warsaw, Poland. Meteorology could play a leading role in uniting the expanding European community. The ECMWF could, for example, take over weather forecasting for Europe in the way that the National Oceanic and Atmospheric Administration does for the USA.

The major problem in the Third World of insufficient density and quality of observing systems is the result of many other overriding problems such as civil war, disease and religious fanaticism. They have neither the time nor the resources to devote themselves to meteorology—even though it is as important to them as it is to developed countries. Meteorology should be approached holistically as the problem of the world as a whole. Extreme political ideas should give way to liberal values such as the more even distribution of wealth and the availability of welfare for all.

In this, WMO has an exceptionally important role to play. In the free exchange of data in real-time, for example, it has made some wonderful achievements, even at times of conflict. It should also take overall responsibility for data and observing systems in oceanography and look for an over-arching role in the environmental field. Everything should be done to help countries with difficulties. On the global scale, the Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) could make an important contribution. African countries also should work together.

I believe that globalization is a good thing and is indeed the only long-term stable solution. Some years ago, for example, there were enormous differences in the socio-economic development of countries in the European Union. Now there is hardly any difference. In 25 years' time, there will be more countries all enjoying

more or less the same standard of living and that is an exciting concept. Tremendous growth has also been seen in China and India. This growth will of course create some social and environmental problems but they can be dealt with.

Bulletin — What advice would you give to a young person interested in a career in meteorology?

L.B. — Young people should be happy growing up. They should follow their feelings and convictions and not be afraid of taking steps into the unknown. Do not be afraid of making mistakes. Human beings should be given chances but they have to be prepared to seize them with both hands—this is true for both boys and girls. They may make unpopular choices but that does not matter. Nature is a wonderful master and will always let you know if you're doing something foolish.

Above all—listen to wise people. One can learn a lot from other peoples' successes and failures.

Bulletin — Would you like to say something about your family?

L.B. — My wife Karin and I have been married for 44 years. We met at a university dance. She was a linguist and a teacher but when our first daughter was born, she decided to stay at home and study and do translating work. I am deeply grateful to her. We have three children, born within six years, and now six grandchildren, who all live in England. Our children are academics but are interested in business and humanities rather than science. Karin was always wonderfully supportive, right from the start, and would have been disappointed if I hadn't done all I wanted to.

Bulletin — Thank you so much for according us this interview. I am sure our readers will agree that your enthusiasm is infectious and your optimism inspiring.



With old schoolfriend Lennart Hedene at a 45-year Abitur celebration in Trollhättan, May 2000