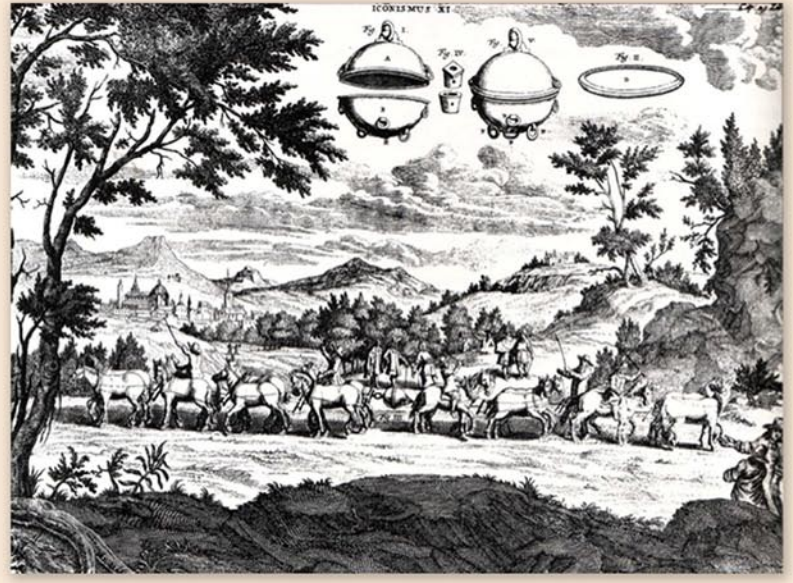
External activities

How physicists from Lund made science understandable for everyone.

Vacuum

There is a tradition at the Department of Physics in Lund of explaining physical principles to the general public. This was the case throughout the 20th century, and is still the case today. This tradition is based on the Triewald collection of instruments that Daniel Menlös brought with him to Lund in 1726.

One of the items of greatest value is the original pump used by Otto von Guericke to demonstrate the principle of vacuum to Frederick Wilhelm I of Brandenburg in 1683, with the aid of the Magdeburg hemispheres.



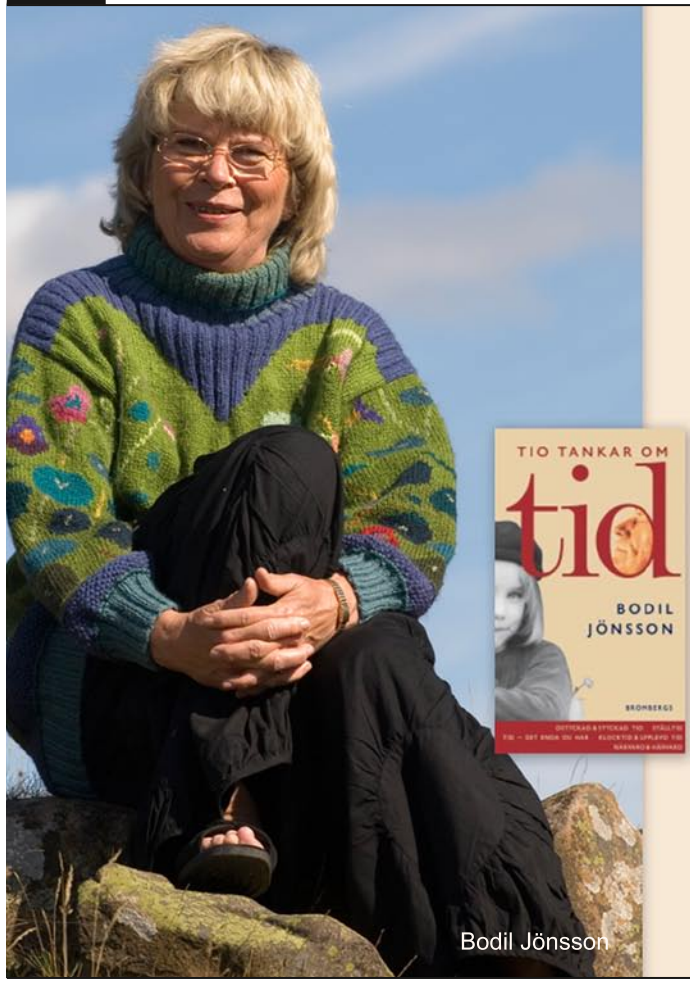
Ask Lund

Educating the public took off in the 1960s when television made its breakthrough in Sweden. In 1962 a series of TV programmes called *Ask Lund* started, in which six learned professors from Lund University answered viewers' questions. The programme proved very popular and spread knowledge on science and research throughout the country.

One of the experts was Sten von Friesen from the Department of Physics. His ingenious and sophisticated explanations made good viewing. Many Swedes still fondly remember his explanation of how the Romans managed to carry out long division with their unwieldy system of numbers.

David Ingvar and Sten von Friesen in *Ask Lund*.

Bodil Jönsson



Bodil Jönsson

When the TV series *Ask Lund* was revived in the 1990s, Bodil Jönsson was there to answer questions on physics. She had by then left the Department of Physics to be director of CERTEC, the Division for Rehabilitation Technology at LTH.

Bodil soon became very popular with the public due to her astute and objective way of explaining physics, making it both understandable and interesting to the layman.

One of her books, *Ten Thoughts on Time*, has been published in over 20 countries.

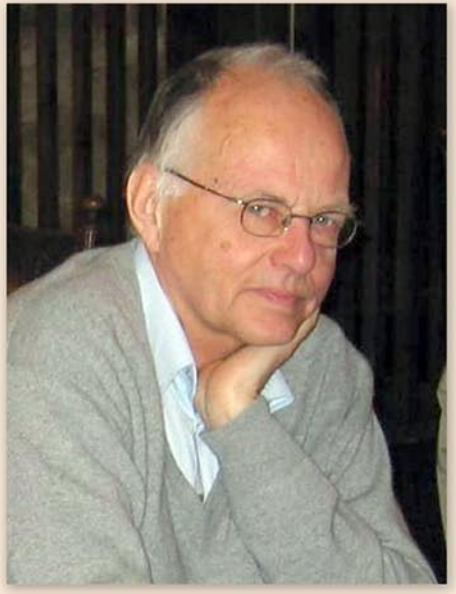
Hans Uno Bengtsson

The physicist and performer, Hans Uno Bengtsson, walking on hot coals.

Hans Uno Bengtsson was a bit more dramatic in his approach, being rather a showman. His interests were broad, from physics to food, and he was a much sought-after public speaker. He often toured the country giving lectures on various subjects.

He was able to explain quantum mechanics or the Higgs particle by working out how many times one would have to kiss a girl for her lipstick to wear off, or by using the Adventures of Baron Munchausen.

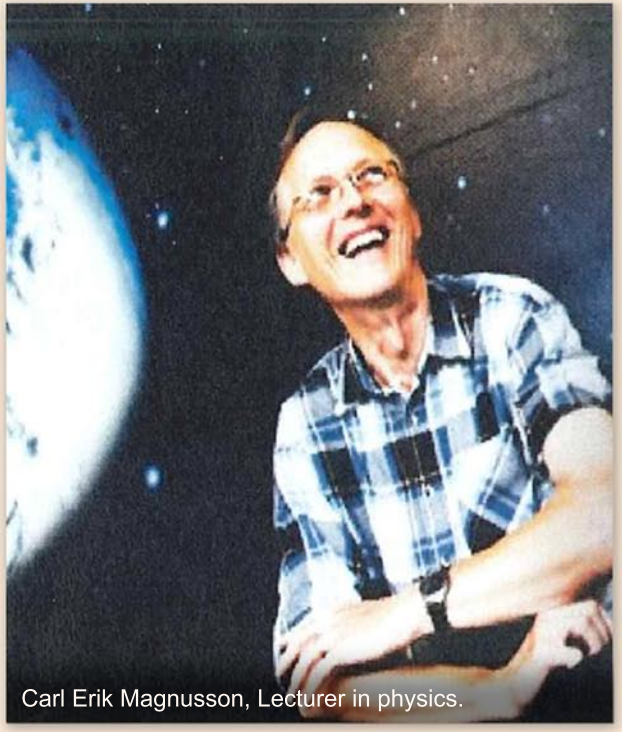
Bengt E Y Svensson



Bengt E Y Svensson,
Professor Emeritus in Theoretical Physics,
and former dean and pro-vice-chancellor.

The name Bengt E Y Svensson crops up often in connection with popular science. He is able to explain physical phenomena and critically scrutinize scientific ventures. He often takes part in *the Philosophical Circle* and *the Science and Technology Circle* at Lund University, and writes articles in the local, scientific and national press. He has also taken part in many radio and television programmes as well as reviewed a large number of books.

The importance of a good teacher


Carl Erik Magnusson, Lecturer in physics.

The importance of teaching in schools and adult education programmes cannot be overestimated. Many people bear witness to the fact that a particularly knowledgeable or enthusiastic teacher changed their lives. It may have affected their choice of career or simply the way they think. Critical thinking is decisive in public debate, especially regarding the environment and risk management. Carl Erik Magnusson is one such teacher; his outlook on life and his empathy have inspired students and stimulated public debate.

Physicists are like the members of any other group in society; they are individuals with their own opinions. In 1976, the debate on nuclear power in Sweden was in full swing. A protest march took place on 7th of August which passed along Sölvegatan, and the protesters saw the following message taped on to the windows on two floors of the Department of Physics:

PHYSICISTS ARE FOR NUCLEAR POWER

The marchers halted, shaming the scientists with a chant of: *Fy, Fy, Fysiker!*

The Grande Dame of the Department

Cecilia Jarlskog is an excellent representative of the Department of Physics, both nationally and internationally. She has been a member of the Nobel Committee for Physics and is a member of both the Swedish and Norwegian Academies of Science.

In the international arena, Cecilia served as an advisor to the Director General for CERN's member states for several years. She is a member of Academia Europa as well as an honorary professor at three Chinese universities.

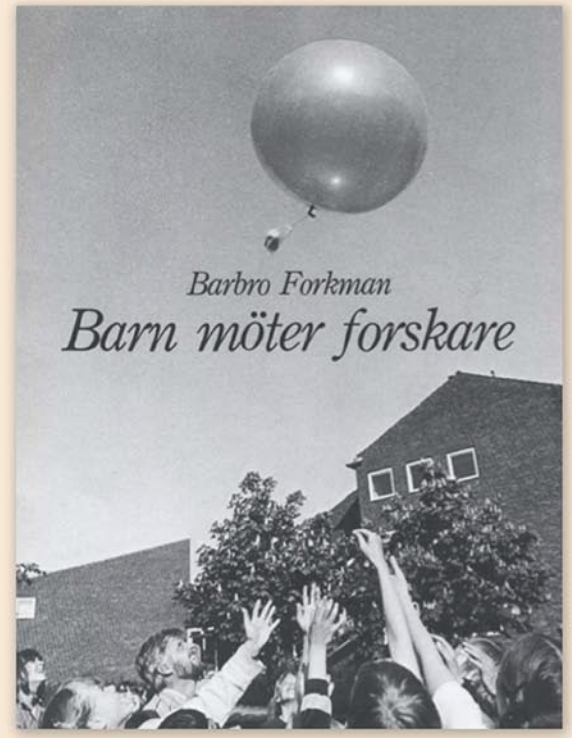
Cecilia Jarlskog is a highly respected speaker in great demand. She is also passionate about the importance of research.

> *How will we be able to find tomorrow's Einstein, the way things are today? I'm extremely worried about the situation of young scientists. They're under so much pressure – they have to write loads of applications and go to countless meetings. Give them the opportunity to get on with their research undisturbed!*

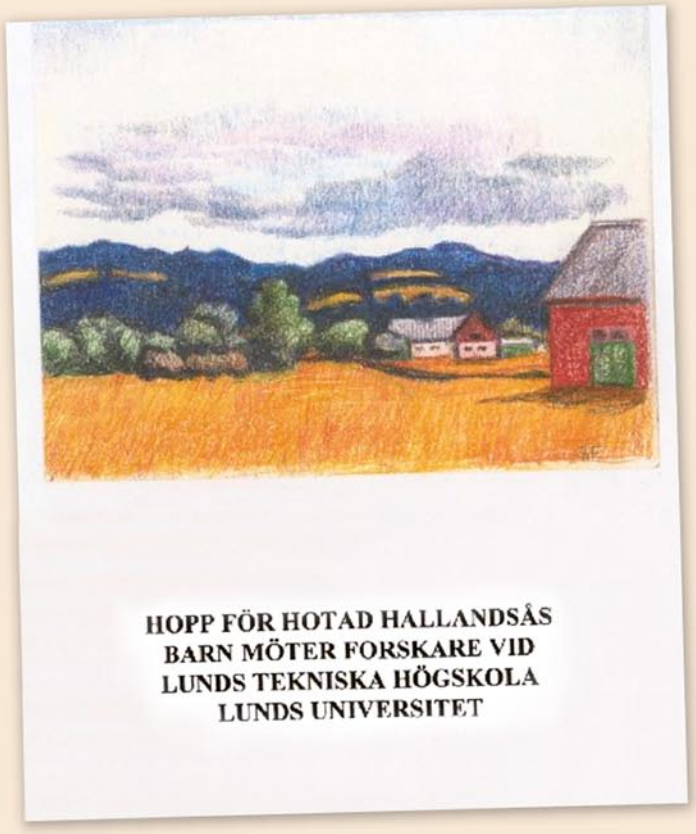
Cecilia Jarlskog, Professor Emeritus in Particle Physics.

Kids and researchers

A project that was very successful in Skåne at the beginning of the 1980s was *Children Meeting Scientists*, initiated by Barbro Forkman. The aim of the project was to provide children with the opportunity to meet and get to know scientists; to go to lectures, to ask questions, and have them answered by researchers. Finding out about experiments and investigations in progress at university departments and taking part in simple experiments was also part of the project.



The scandal in the Hallandsås tunnel



In 1992, the Swedish State Railway (SJ) started the construction of a tunnel through the Hallandsås Ridge. It was planned to open in 1995 but many problems were encountered. The most serious was the contamination of the environment by a sealing compound containing acrylamide. Fish started dying and workers became ill.

Thus a large number of school children from the area were brought to Lund by coach, and the problems were explained to them in an objective and understandable way. The children were able to ask experts, listen to a talk on the geology of the ridge, and carry out experiments.

National resource centre for physics

Physics in action on the big dipper.
Amongst many other things, Ann-Marie Pendrill developed playgrounds and amusements parks at science centres.

The ability of the teacher is a decisive factor in the classroom. The National Resource Centre for Physics provides school teachers with better tools for their occupation. This resource centre for physics teachers was started in Lund in 1995, as a result of the success of the programme *Children Meeting Scientists*.

The director of the centre was Gunnar Ohlén, who arranged a number of courses for teachers and established a web-based forum where children can ask questions related to physics. He was succeeded in 2009 by Ann-Marie Pendrill, professor in theoretical atomic physics. In 2014, she was appointed professor in scientific communication and physics teaching.

The science and technology circle

The Science and Technology Circle has existed at Lund University since 1995, and regular lectures, open to all, are arranged in a variety of topics. Since then, Popular science lectures have been arranged with varying regularity in Lund, Växjö and Halmstad. Theoretical physicists from Lund, Gösta Gustafson, Hans Uno Bengtsson, Gunnar Ohlén and Bengt E Y Svensson have been regular speakers at the Circle.

Spring programme for 2009.

The discovery club and the research club

The Discovery Club and the Research Club are intended for 6- to 7-year-olds and 9- to 10-year-olds, respectively. The aim of both is to show that physics can be both interesting and exciting. The groups meet 10 times per term and are led by students from the department. These activities were initiated in 1997 by Per Olof Zetterberg, assisted by Johan Zetterberg and Benny Asp.

The physics and laser show

In 1996, Per Olof Zetterberg, together with a number of students, gave a show for pupils aged 13-15. At the end of the show, they applauded wildly and shouted *One more time*! Since then, the show has been repeated many times, and the physics and laser show is today a well-known concept.

A fantastic show that gives an idea of what fun physics can be.

See fantastic experiments with fire, light, sound, pressure and vacuum.

Be fascinated by the wonderful laser show with incredible special effects.

Clips from the press

Father and son, Per Olof and Johan Zetterberg, were the physicists behind the popular physics and laser show.

The show has been a success!

Enthusiastic audience in a packed auditorium in Oslo.

The real breakthrough for the Lund physics and laser show came in 2000, when it was given for the first time at the International Science Festival in Gothenburg, where it was a great success. Since then, it has been a popular event attracting the biggest audience at the festival. The show is given several times a year at the Department of Physics in Lund, attracting many visitors. It has also achieved international acclaim, and has been presented in China and several European countries.

Science meets culture

The city of Lund has arranged an annual event called *Culture Night* since 1985. One of the events on this evening in September is the physics and laser show, which attracts large crowds to the department.

In order to provide other interesting activities, an Open Air Science Centre was created beside the department in 2005. During recent years, other departments have been invited to take part, and the number of visitors has exceeded 9 000 on this one night.

Professors dressed as famous scientists:
Albert Einstein (Leif Lönnblad, Theoretical Physics), and Tycho Brahe (Ingemar Lundström, Astronomy) together with Charles Darwin (Ronald Kröger) and Carl von Linné (Eric Warrant) both professors in funktionall zoologi.