LKB
The roots and the pioneers
Nils Åslund

- The plant that became LKB was set in 1942
- But the history starts some years earlier

Sweden in the 30:ies
- A growing insight among Swedish chemical industries:
  The need for scientific research
  - Make use of new achievements to improve present products
  - Create new fields of activity by basic research
An image of a scientist

1. Seen by an artist*
2. A replica from the real world

*J.F. Willemsen
Willumsens museum
Fredriksund, Denmark

The(odor) Svedberg

- 1884-1971
- Professor of Physical Chemistry at Uppsala University
- Nobel prize 1926
- Inventor of the "Ultra centrifuge"
Centralbolaget för Kemiska Industrier AB

Some companies within this cluster established internal laboratories headed by qualified scientists

- **Liljeholmens Stearinfabrik AB**, Stockholm:
  - **Harald Nordensson**, Prof. Uppsala University
- **AB KEMA**, Stockholm:
  - **Ragnar Winblad**, Prof. Royal Inst of Technology
- **AB Stockholms Bryggerier**:
  - **Harry Lundin**, Prof. Royal Inst of Technology

*Pupils of Svedberg in red!

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Nils Westerdahl ("The Baker")

- Wealthy industrialist
- Member of many company boards:
  - **Liljeholmens Stearinfabriks AB**
  - **AB Kema** (including Barnängens Tekniska Fabriks AB and Fabriken Tomten AB)
  - **AB Stockholms Bryggerier**
  - .....  

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• The three companies (**L, K** and **B**) worked in different fields and did not compete.

• The Svedberg group of chemists in Uppsala performed commissioned research for all of them during 1935-1942

• There were strong personal bonds between the boards of the companies. Example: Nils Westerdahl

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″The Baker″

Nils Westerdahl was a wealthy industrialist, serving on numerous company boards:
- **Liljeholmens Stearinfabrik AB**
- **AB Kema** (including Barnängens Tekniska Fabriks AB and Fabriken Tomten AB)
- **AB Stockholms Bryggerier**
- .....
The King of Thule
Poem by Goethe, in "Faust"

- The King of Thule owned a costly goblet
- When getting old he threw it into the sea
- Nobody should use it again?

- “The Baker” owned a costly boat
- He sank it to the bottom of the sea
- As to differ from the goblet it was found and restored after many years!
1942: A vision of a company

- Born in a group of financial tycoons and eccentric scientists
- Idea: Establish a joint research laboratory in Stockholm to supplement the industry laboratories with basic research
- Advantages:
  - A joint base of knowledge in areas of common interest could be built up
  - Personnel and equipment would be better used than if stationed separately at the three companies
- Scientific advisor: The Svedberg

The LKB Research Laboratory

- Founded 1942
- Located at Alvik (Stockholm) on premises owned by KEMA AB
The LKB Research Laboratory

- Key persons (besides Svedberg):
  - Harald Nordenson (Initiator)
  - Sven Brohult (Head)
  - Robert Ljunglöf (Chairman of the board)

Remember: Pupils of Svedberg in red!

Harald Nordenson

- President Liljeholmens Stearinfabriks AB
- Chairman of the board
  - Stockholms Bryggerier AB (1950-63)
    - Stockholms Handelskammare, Stockholms Superfosfatfabriks AB, Nitroglycerin AB, Svenska Dagbladet AB
- Member of the Parliament
- Philosopher: Comments on the theory of relativity (unfortunately in opposition to Einstein!)
Sven Brohult

- Doktor thesis about The Edible Snail
- Prominent industrialist, president of the Royal Swedish Academy of Engineering Sciences
- Made the Swedish “light” beer drinkable, eventually to become a great commercial success!

The edible snail

- Was collected in great numbers by Brohult at Hammarby, once residence of Carl von Linné
- His analysis proved that it contained much larger molecules than were thought to exist
- A contribution (among other) in support of the later claims of Uppsala to be “the cradle of biochemistry”
Robert Ljunglöf

- Chairman of the board Liljeholmens Stearinfabriks AB
- Also of:
  - Stockholms Enskilda Bank, Försäkrings AB Thule, Rederi AB Transatlantic, Stora Kopparberg AB....
- Founder and president of KEMA AB
- Grandson of Jacob Fredrik Ljunglöf, famous for founding a successful snuff factory in Sweden ("Ljunglöfs Etta")
- Very wealthy
1943: Robert Ljunglöf visits The Svedberg

- A specific need was recognized: The workshop at Uppsala needed to be relieved of jobs to produce instruments for Svedberg’s colleagues
- Other needs: During the 2nd world war it was necessary to produce products which had previously been imported to Sweden:
  - Fine chemicals: High purity chemical reagents
  - Scientific instruments for the research institutes
- The solution: Foundation of another company, LKB-Produkter Fabriks AB

LKB-Produkter Fabriks AB

- Founded 1943
- Chairman of the board: Robert Ljunglöf
- President:
  1. Harry Brynelsson
  2. Sven Malmström (from 1951)
- Business idea: Profits, if any, should be used for research!
- Location: Alvik, together with “Forskningslaboratoriet LKB”
  - Workshop, separated from the workshop of “Forskningslaboratoriet LKB”
  - Chemical department, also separated

The first order

- Client: Svenska Textilforskningsinstitutet, Gothenburg
- Head: Nils Gralén
- Order
  - Ultracentrifuges
  - Equipment for elektrophoresis (Arne Tiselius*, Harry Svensson-Riibe)
  - Diffusion equipment (Ole Lamm)
  - Equipment for adsorption analysis (Arne Tiselius, Stig Claesson)

* Nobel prize 1948
Order for chemicals

- Client: Government funded program for synthetic rubber
- Head: Sven Brohult
- LKB involvement: Development and manufacture of the catalyst

A king size order: The Synchro-cyclotron

- Client: The Svedberg
- Financer: Gustav Werner, textile magnate
- Background: Neutron generator built by Helge Tyrén for producing radioactive nuclides
  - Prominent user: Prof. John Naeslund, gynecologist, Gothenburg
  - Important link: The wife of Naeslund, who knew Gustav Werner!
- Building time 1946-50, 2,5 MSEK
- Made it necessary to move to larger premises, at Mariehäll (Stockholm) 1948
Gestaf Werner, målad av Gustaf Carlzon 1944. (Foto Teddy Thörnlund)

...med prestunda som väsentligt större och dyrbareare amerikanska cyklotroner...

Cyklotronens magnetspolar inspekteras av The Svedberg, tydlig vintertid. (Foto GWI-arkiv)

Teknik

Teknik för alla
194?: Contact with the Nobel Institute for physics

- Founder: Manne Siegbahn, Nobel prize 1924
  - Designed a molecular pump which became an early LKB product
  - Offered medical student Fritjof Sjöstrand access to his electron microscope
    - This contact eventually led to the LKB ultramicrotome, introduced 1954
- New product for LKB: The Beta spectrometer
The Beta spectrometer

- Prototype: Kai Siegbahn, Nobel prize 1981
- Advanced instrument
  - Professional LKB design
  - Serial production
Crisis 1950

- 60 instruments, tailor-made, single or in small series
- 100 chemicals
- Turnover 1,2 MSEK
- No profit
- Reconstruction deemed necessary

After reconstruction

- LKB was reconstructed into a normal, commercial company, producing long series of products
- Concentration on a few branches:
  - Equipment for analysis in biochemistry and clinical chemistry
  - Ultra microtomy
  - Calorimetry
- The growth of the company is a fascinating story, but too extensive for this presentation. Consequently many names of great importance will not be mentioned
- But the portal figure of this époque can not be omitted: Sven Malmstöm
What survived after the reconstruction?

- Technical excellence manifested in prestigious distinctions

The Gold Medal of the Royal Swedish Academy of Engineering Sciences

1956  Harry Svensson
1964  Stig Sunner
1968  Börje Hellström
1968  Algy Persson
1968  Jerker Porath
1977  Ragnar Rylage
1978  Lars Wegstedt

What survived after the reconstruction?

- Contacts with the academic world, including many Nobel prize winners
What survived after the reconstruction?

• A particular spirit, the LKB spirit, which included some lack of respect for possessors of great power, both in the world of science and in the world of commerce

"Nobel prize" to Herman Haglund

• Coinciding, occasionally, with the celebration of the 50th birthday of the laureate!
• Grandiose festivity at the prize ceremony, attended by the "Royal Couple"
• Motivation for the prize:
  Invention of the "Competensometer"
  – Note: The determination of the absolute zero of the measurement scale was achieved thanks to the cooperation of the company management!
Summary

• If the LKB spirit were not a reality 300 persons had not met up to celebrate it, as they did in Stockholm 2005, many years after the company had ceased to exist.

• The LKB spirit will be preserved as long as it is kept in memory!