

My four dates with LKB 9000 GCMS and how I learned to do business in Japan

Solna, Sweden, May 2020.

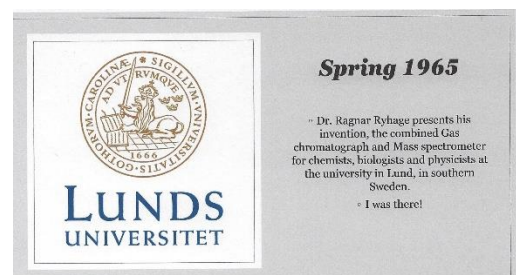
1965 before leaving the University of Lund in southern Sweden I was hired by a company in Bromma, Stockholm, LKB Produkter AB. Its business was expanding rapidly, and LKB was recruiting many young engineers with university degrees in chemistry and physics.

LKB had been in business for some 20+ years. It was started as a joint effort by three major companies in Stockholm during the wartimes and its main business became to help university professors commercialize their inventions and turn them into products that could be marketed worldwide. In the early sixties LKB had two, world leading, product lines. One was methods and apparatus to separate and purify biomolecules and the other was ultramicrotomy, i.e. how to slice samples thin enough to be examined by electron microscopy. The products were sold worldwide, only 2% of the turnover was generated from sales in Sweden. Sales subsidiaries, all named "LKB Instruments" were already in place in many markets. LKB had pioneered several major research projects, for instance by helping professor and Nobel prize winner The Svedberg at Uppsala university to industrialize his Ultracentrifuge for separation of bio molecules. LKB was too small at the time and the international marketing rights and future development was turned over to USA. It became the Spinco division of Beckman Instruments Inc. in California. The Ultramicrotomy products originated from the Karolinska Institute (KI) in Solna, Sweden.

In the early 1960thies LKB was acquired by a company owned and controlled by the major industry and banking family, at the time, in Sweden, the Wallenberg family. The head of the family, Marcus Wallenberg, became the chairman of the board at LKB Produkter AB. The president was a very dynamic and talented young engineer, Sven Malmström. With the aid of the financial strength of the new owners, LKB started to invest in several research projects at Swedish universities. I was hired to become product manager for such a joint venture between a chemistry laboratory at the University of Lund and LKB. The LKB 9000 GCMS was a similar project started in collaboration between LKB and KI.

Ragnar Ryhage, then head of the mass spectrometry laboratory at KI, had an idea of how to separate the sample under investigation by GC, from the carrier gas and thereby be able to use a mass spectrometer as a detector for a gas chromatograph. He filed patents and published, 1964, "The Ryhage separator" and started to build instruments for the use at KI in their biomedical research. The dean of the Institute professor Sune Bergström saw the commercial potential for such an instrument. Marcus Wallenberg and Sune Bergström knew one another and both served at the board of directors at LKB. The deal was obvious and with money from the Wallenberg bank the LKB 9000 GCMS was baptized. Sune Bergström received after some 20 years the Nobel Prize in Physiology or Medicine, 1982, together with Bengt I. Samuelsson and John R. Vane "for their discoveries concerning prostaglandins and related biologically active substances." "Mr. Ryhage" became "professor Ryhage" at KI and finally LKB became the leading company in GCMS in the world for as long as the patents for the separator were valid.

It sounds like a win/win deal and initially that was also the case because the demand was such that the LKB 9000 GCMS was essentially selling itself to major universities around the Globe. I first learned about the instrument and Ragnar Ryhage in spring 1965, when he gave a presentation of the GCMS instrument at the Chemistry department at the university of Lund. One of the combined gas chromatographs mass spectrometers from LKB was already on its way to be installed at the University. At LKB, however, there was no expertise in either field. LKB knew everything about "paper chromatography" but had no knowledge of gas chromatography. Mass spectrometry was equally unknown as well as how to install and service instruments

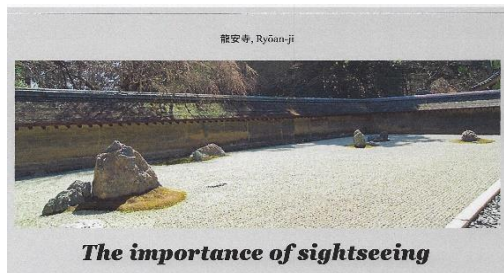
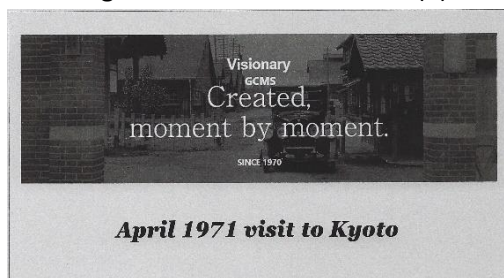


as complicated as the LKB 9000 GCMS at faraway Universities around the world. Everything had to be built up from scratch in just a few years, from R&D and manufacturing to marketing sales and service. Money came in from sales, but more money was needed to build up technical skills, production, marketing, and an application laboratory.

This was the situation when in the late 1960thies, a contact was established between Shimadzu and LKB. Shimadzu had the expertise in GC and LKB had the experience from turning over the ultracentrifuge project to Beckman Instruments. An agreement was signed to let Shimadzu manufacture an OEM version of the LKB 9000 GCMS for (initially) sales in Japan. In the agreement there was a clause that someone from LKB should be present to observe the final testing of the first instrument manufactured by Shimadzu. I happened to be that person, not due to any competence in the field of GCMS but because I was on a trip around the globe and for about a year 1970-71 I was a “stand in” marketing manager for the LKB 9000 GCMS. The colleague who had that position was in a “executive development” program in Switzerland, and I oversaw in the meantime sales and marketing worldwide.

We had to travel a lot at LKB in those days. Three to five months a year, the sales, service, and application staffs, were “on the road”. Business in Europe was minimum one week of travel, leaving home Sunday afternoon arriving back late Friday night or usually Saturday morning. The normal trip was two weeks and outside Europe three to four weeks. During my fourteen years with LKB I had several different positions and for a number of years I had the responsibility for all LKB sales in Japan and Australia, which meant a minimum three weeks trip one week in each country and one week for travelling.

1971 I was on a four week stretch with several stops across Canada and USA, Kyoto and Tokyo, New Deli, London and back home. This was my first visit to Japan, and I learned two things. Got to know Shimadzu (1) and how to make business in Japan (2). First and foremost, I learned that Shimadzu had all (and more) competence in GCMS than what could be found in whole Sweden, second the importance of sightseeing! The first learning led to truly short business meetings and therefore more time for sightseeing! I learnt, the hard way, that all should be agreed on before any physical meeting. A visit to Japan should focus on sights, culture, bars, and Japanese cooking. With that knowledge I quickly agreed to any “lose issues” that still might exist in the relation between our two companies. The importance to agree before any physical meeting has been my guiding rule doing business in Japan for over thirty years. It was taken to an extreme when I flew from Stockholm over Anchorage to Osaka (20+ hours) spending the day in Osaka sightseeing returning in the evening, same day, and same route, back to Sweden. We were in total agreement before I left Sweden, we agreed to a 15+ million USD deal and spent two hours together to talk about the magnificent cherry blossom in the spring of 1985! Was the trip wasted time? No, it was absolutely essential! And the pink flowers were nice. In Japan you never meet face to face if you disagree! You might “lose your face”, bad, but worse, you might lose the opportunity of a consensus agreement with your Japanese friends.



1970 LKB had a large installed base of LKB 9000 GCMS. We knew our customer base and we had a good idea of the specifications needed for the second-generation instrument, to increase the market and our turnover. To motivate the management and the board of directors at LKB to invest even more money in the GCMS project we made a thorough market survey in USA, Europe and finally in Sweden at KI! After having made more than twenty in depth interviews, we had honed the specifications and were ready to talk to the president of LKB. “We” were not just a few marketing persons; it was the entire GCMS team, worldwide, from marketing and users to engineers in our application and R&D groups. We knew exactly what the market wanted, but we had not talked to Bengt Samuelsson and Sune Bergström! So, we did and we learned that Ragnar Ryhage already had decided on the specs for the next generation GCMS, LKB 2091. Not the instrument our customers wanted, not the instrument our team wanted, not the least costly project, but the instrument Sune Bergström wanted, to

make Ragnar Ryhage professor at KI. We had wasted time and money on serious market research after checking, only with the president of LKB (Ulf Ståhlklint, who had replaced Sven Malmström) and not with the real GCMS powerhouse, in the company, the dean of KI.

The spirit in our team and the interest from our future customers disappeared. Engineers started to leave; the application laboratory closed. The manufacturing of LKB 9000 GCMS was terminated and the instrument was replaced by a Shimadzu product named 9000S. In August 1973 was the new instrument LKB 2091 GCMS introduced and later also offered as an O.E.M. product to Shimadzu. The offer was turned down, Shimadzu had made its own development using the quadrupole technology. Instruments using the same technology had also been introduced by the American company Finnegan. The man behind the company was an engineer, who worked at LKB in Sweden during the time we did our market research. LKB lost the advantage of being the first manufacturer of an instrument using an MS as a detector for a GC. Somewhere in the (now lost?) company archive at LKB was our Market survey from 1970/71 hidden and forgotten.

Finally, the history of LKB 9000 GCMS was rewritten by the company Shimadzu and the years 1964-69 were forgotten or simply disregarded. For god reasons of course! Shimadzu continued to create GCMS “Moment by moment” and became a world leader in that field.

LKB became successful in other markets and was 1987 acquired by Pharmacia AB, in Uppsala, Sweden.

This would have been the end of the story, but for two reasons the history turned again. LKB Produkter AB disappeared as a brand name, but “The Spirit of LKB” was still alive and kicking! Around the world there were thousands of former LKB employees, most of them belonging to one and the same generation. They had all enjoyed working for their company, where young engineers in their twenties were trusted to travel thousands of miles around the globe and sell high quality instruments to research departments, at universities. “Science Tools” was the name of house journal and we all had worked “In the service of Science”! Nearly all the managers in the head office and the subsidiaries formed an international society, 1987, and met annually for almost 20 years. In 2005, 300+ managers and employees met for seminars and social activities in Sweden. Our flag was, for a day, June 7, once again flying high over Bromma, although the only physical artifact from our factory was and is this old sign from the early 1940ties:



But we are still alive and kicking. You can find us at <http://www.lkbprod.com/> like many (old!) users of LKB instruments, who call us to ask for spare parts to instruments they bought in 1960ties!

Kristin Akilleson, Application Support Specialist at Shimadzu in Kista, Sweden found the internet-address above. She invited us to the, May 15, 2020 celebration of 50ty years with GCMS, in Kista. I promised to make a short presentation of the birth of LKB 9000 GCMS at the opening of the new application laboratory.





These three encounters with GCMS; Lecture by Ragnar Ryhage, 1965, in Lund. The visit, spring 1971, to Kyoto and the market research for the specifications of the next generation, are my total experience of LKB 9000 GCMS. After this extremely limited experience in GCMS I continued to other assignment at LKB, Pharmacia, and several other biotechnology companies in Sweden and USA. Trained as engineer in chemistry, with a university major in chemistry and physics, I have spent maybe a day or two in a chemistry lab, since I left the University of Lund 1966, but I do have some 40+ years in the biomedical industry.

Life had, however, yet one more GCMS twist, in store, for me. One of our daughters became a university-trained analytical chemist and married a chemist who is making his living from running a GCMS lab. I know they have no Shimadzu instrument in the lab, and that he was scheduled to go to Tokyo to work in a lab with plenty of Shimadzu equipment during the Olympic Games 2020. So as a small gift to Shimadzu I thought to offer this sales lead to a major lab, which is now being upgraded for the 2024 Olympic games in Paris. The suggestion was to try the trick of sightseeing on him, while he is in Japan.

**The end but,
not the very end
life goes on.....**

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**Try
sightseeing**

二条橋, Nijo-jo

Then came CORONA, and since I already done some research I decided “in the service of Science” and quarantined, to put the story on paper and reveal to Shimadzu and the world the main features of the LKB 9001 GCMS, the instrument that was never borne!

Combine a GC and a Quadrupole MS with the Ryhage separator, invest in computer supported evaluation program and improve the software overtime, to make LKB the worldwide leader in GCMS!

Ingvar Pettersson

The story is mine, based on 49-year-old undocumented memories. But it has been red by two persons with knowledge; Lena Palmér, who worked 1970/71 in the application lab for GCMS at LKB in Bromma and Leif Bergstedt, who joined LKB 1973 as a product specialist for GCMS. Leif later became manager at the LKB company in Japan and paid visits to Shimadzu.

The old company sign “LKB PRODUKTER” was delivered to Shimadzu in Kista, May 15, 2020, as a decoration of their new application laboratory for GCMS. We kept the “Corona-distance and neither delivered nor contracted any virus.