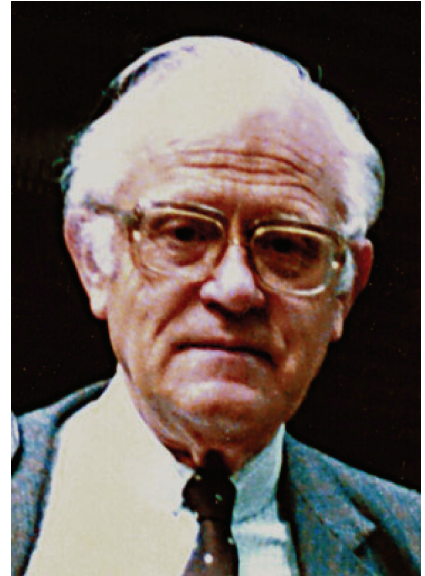


OBITUARY

Prof. Dr. HEMMING VIRGIN

19 October 1918 – 19 October 2005



Hemming Ivar Virgin (1918–2005) was a pioneer in plant photobiology. The main topics of his research covered areas such as light effects on viscosity of protoplasm, determination of turgor and elasticity of plant organs, chlorophyll formation and accumulation, plastid development during greening, and phytochrome regulation of physiological processes.

Hemming Virgin was born in Stockholm, where he graduated from high-school in 1937 and made his Master of Science in 1944 at Stockholm University. Under the guidance of Prof. Gottfrid Stålfelt he obtained his doctoral degree in 1951 with a thesis entitled "The Effect of Light on the Protoplasmic Viscosity". This light effect was the first of many for which he came to determine the action spectra. He evaluated the change in "viscosity" of the cytoplasm by noting the movement of chloroplasts during centrifugation. The results established him as a pioneer in photobiology in Sweden.

Virgin was promoted to docent at Lund University, in southern Sweden, immediately after his Ph.D. in 1951. Here he came in contact with colleagues from the Department of Plant Biology of the Carnegie Institution of Washington situated on the campus of Stanford University. He decided to spend some time in USA and went to California in 1952 for a two-year period, during which he collaborated with Prof. Stacy French, who became his very close friend.

A topic under study at the Carnegie Institution was the light-dependent conversion of protochlorophyllide to chlorophyllide. Prof. James H.C. Smith had come to the conclusion that the photoconvertible protochlorophyllide was attached to a protein in the plant and he called the complex protochlorophyll holochrome. Virgin found interest in the chlorophyll formation and chloroplast development and with short breaks he came to pursue this field for the rest of his life. For his studies, Virgin used absorption and fluorescence spectrophotometry, rapidly developing techniques at this time. As he was fond of solving technical problems he constructed some of the equipment himself. At Carnegie he also continued his studies of the blue-radiation effect on cytoplasmic properties of cells.

After returning to Lund he developed a method for the determination of turgor and elasticity of plant organs. The idea for this method came originally from Vannevar Bush, then President of Carnegie, but was perfected by Virgin with inputs from Hellmuth Hertz and Stig-Olof Falk. The method, based on the determination of a resonance frequency when the specimen was made to vibrate, is still being used. In Lund, he also continued his studies on chlorophyll formation and discovered among other things the light effect on protochlorophyllide formation. In 1972 Virgin returned for a sabbatical to the Carnegie Institution. He was impressed by the fast development in Stanford and this time he brought home the technique of computer-assisted spectrophotometry and spectral deconvolution.

In 1958 Virgin was appointed laborator (now equivalent to professor) at the Agricultural University in Ultuna, near Uppsala. Here he worked together with Diter von Wettstein and Albert Kahn on action spectra for submicroscopic changes in the etioplast when dark-grown plants are irradiated. In a classical piece of work they

showed that protochlorophyllide was the photoreceptor which triggered the morphological changes of the etioplast and started the dispersal of the prolamellar bodies into thylakoids.

Virgin introduced the phytochrome research to Sweden, investigating the role of phytochrome in plastid development during irradiation of dark-grown plants. With phytochrome activation the lag-phase in chlorophyll formation could be abolished and the formation of carotenoids was stimulated. Other phytochrome regulated processes of interest to him were seed germination and leaf unrolling.

In 1962, Hemming Virgin was appointed professor at Göteborg University where he took up the new chair of plant physiology. He was offered laboratories and offices in the old Carnegie sugar plant in the harbour of Göteborg. The location, even with a view and the facilities, was not ideal for scientific activities or teaching. However, this was a time of rapid expansion of the Swedish universities. Virgin strived to get better premises for his rapidly growing staff. In 1969 a new house was inaugurated in the Botanical Garden. In addition to plant physiology, other departments and divisions joined by time in the new building: microbiology, systematic botany and plant ecology, chemical ecology, marine botany, plant molecular biology, and marine ecology. There was also new and upgraded equipment.

After having served as full professor in Göteborg for 21 years Virgin continued to work daily as professor emeritus for an additional 20 years. His interest in chlorophyll formation and other light-dependent processes in plants influenced the plant physiology research at his department in Göteborg. Much of the research was aimed at the formation and stabilisation of the photosynthetic machinery in the chloroplast and the importance of different lipids for the formation of the thylakoid membranes. Virgin also made a contribution to the research on chlorophyll b formation, for which he determined an action spectrum. He was convinced that chlorophyll b is formed from newly synthesized chlorophyll a molecules. During his last years he worked with the development of the mesocotyl, intrigued by the fact that this organ, which in maize can be more than 10 cm long in darkness, is hardly formed at all in light. Unfortunately he never came to publish this investigation. Virgin's last publication in 1996 still deals with chlorophyll biosynthesis; this paper appeared almost half a century after his first publication in 1948. When going through his list of publications it is found that he is remarkably often the sole author of his papers. He was genuinely fond of doing experimental work in the laboratory.

Virgin was trusted with many honourable obligations connected to the management and governing of science. In 1965–71 he was a member of the Council for Natural Sciences in Sweden and 1971–77 a member of the Advisory board for Mathematics and Science for the University Chancellor and during this time made important contributions for a strong development of science in general and plant physiology in particular. In 1975–77 he was the Dean for the section of Biology and Geoscience at Göteborg University, and for many years a member of the board for the Botanical Garden and the Museum of Natural History in Göteborg.

As a young scientist Virgin experienced the establishment of the society for plant physiology, *Societas Physiologiae Plantarum Scandinavica*, in the Nordic countries. During 1964–76 he was a member of the Editorial Board for its journal *Physiologia Plantarum* based in Lund. Having this experience he could assist during the initiation of *Photosynthetica* and he was a member of the Editorial Board of *Photosynthetica* from Vol. 1 (1967) to Vol. 29 (1993) – in all 27 years! He was fond of editorial work, appreciated its educational value, and liked to suggest improvements of the manuscripts when it was necessary. He admired the initiative to start a journal devoted to photosynthesis in the eastern part of Europe and use of the English language made this journal an important link between scientists in a then divided world.

Hemming Virgin received many honours for his achievements. He was elected a member of The Royal Swedish Academy of Sciences in 1974. He was a member of The Royal Society of Arts and Sciences in Göteborg since 1967 and was its chairman during 1992. The Royal Physiographic Society in Lund elected him a member in 1969 and honoured him with the Linné medal 1986. He was also a member of the Royal Society of Sciences at Uppsala since 1971.

Hemming Virgin was a dedicated teacher, always giving comprehensive and well prepared lectures. In his early days he wrote articles about topics in plant physiology in the daily newspapers. He enjoyed listening to music, had a large record collection and played the piano. Prof. Virgin was never married but kept in close touch with his relatives. The department was a second home for him and his Ph.D. students were as his family. He always engaged himself and found time to discuss daily problems as well as new developments in science. He was respected for his great knowledge and good advice and much appreciated by both students and colleagues. He will always be remembered as an enthusiastic and a committed scientist.

C. SUNDQVIST (Göteborg), L.O. BJÖRN (Lund)