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KAREL WIESNER 1919-1986

Karel Wiesner, who died in Fredericton in November 1986 after a lengthy illness, possessed an adventuresome and pioneering spirit throughout his life. As a young man in Prague, Czechoslovakia, he reacted in characteristic fashion to a seemingly prohibitive set of circumstances: Czech universities were closed during the Second World War just as he was ready to embark upon his research career. Undaunted, he found work in research laboratories at a hospital and in a pharmaceutical firm and established his own home laboratory. His innovative discovery of a polarographic method for the measurement of rates of certain very fast chemical reactions, made at home without supervision and inspired by interaction with the school of Jaroslav Heyrovský, earned him his doctorate in physical chemistry when the Charles University reopened in 1945.

A desire to widen his research interests then led him to Zürich where he studied organic chemistry with Vlado Prelog. In 1948, he was ready. Fortunately for the University of New Brunswick, he chose to come to Fredericton. Fortunately for him, the Head of the Chemistry Department at the time was Frank Toole, a combative Irishman who was determined to establish the rightful place for research at the university. They formed a formidable duo. Wiesner, building on the tradition previously established in Canada by Richard Manske and Leo Marion, embarked upon the isolation and structure elucidation of natural products, with special emphasis on alkaloids. In this study, Wiesner not only showed the courage to tackle the most difficult problems available, but he also had the uncanny ability to pick natural products whose structure elucidation revealed a new structural type. The solution of the structure of several Lycopodium alkaloids, followed by the unraveling of the puzzle of diterpene alkaloids soon established his school as one of the major ones in the world in this field. The elucidation of the complicated structure of delphinine and, in collaboration with George Büchi, MIT, the even more complex aconitine was then, in the pre-n.m.r. era, considered just about at the edge of human capabilities. In a final show of virtuosity, Wiesner solved, after a 9-year battle, the structure of the insecticide ryanodine, a polycyclic polyfunctional molecule of extreme complexity. In this solution, the n.m.r. method (in its unsophisticated late 1950s form) played an important role. It is significant that one of his scientific "grandchildren", Pierre Deslongchamps, reported a brilliant total synthesis of ryanodine some 20 years later.

With Frank Toole's help and enthusiastic support, Wiesner organized annual Summer Seminars (ten in all), held either in Fredericton or on Grand Manan Island. These were attended by many of the leading scientists in the field (Derek Barton, George Büchi, Carl Djerassi, Albert Eschenmoser, Ray Lemieux, Gilbert Stork, and R. B. Woodward, to name a few) and proved very important, not only for Wiesner and his school, but also as a small, but significant, component of the awakening of modern organic chemistry in Canada.

Soon after his arrival in Fredericton, Wiesner was joined by an impressive number of enthusiastic collaborators. He taught by example and preferred informal discussions in the laboratory to formal lectures. Most important, he was always able to infect everybody who worked with him with his enthusiasm and scientific curiosity. His supervision was frequent and often highly educational. To give just one example, a story can be recalled in which a student asked him whether it is not too daring to tackle problems which seem virtually insoluble. After a brief thought, Wiesner smiled and answered: "You know, you will never bag a tiger if you insist on chasing after rabbits!"

Hunting metaphors changed to mountain-climbing ones after Wiesner decided in the early 1960s that the time has come for him to leave structure elucidation and to embark upon total synthesis. "Remember what it takes to climb Mount Everest! All you need is the logistics to bring up the supplies, the courage to climb the last thousand meters and luck!" Concentrating almost exclusively on compounds which he had previously solved structurally, he proceeded to develop elegant strategies for the simplest possible "preplanned" introduction of functional groups, rings and configurations. An imaginative use of photo-additions, rearrangements, ring-openings and ring-closures, among other methods, enabled him to succeed convincingly. In this phase, his several syntheses of diterpene alkaloids, including the very complex ones, will always remain a memorable part of modern organic synthesis.

"Some highlights in the structural and synthetic chemistry of the Aconite alkaloids. A personal historical perspective", Tetrahedron Report Number 179 [Tetrahedron 41, 485 (1985)], is a frank, self-critical and very revealing brief summary of some 30 years of Wiesner's structural and synthetic work in the Aconite alkaloid field.

In the early 1980s, Wiesner decided to change his field and to concentrate on the study of cardioactive steroid glycosides. With characteristic boyish vigor, he proceeded to direct his research group towards the solution of the demanding triple (anomeric) β-attachment of a trisaccharide at the steroid 3-position, towards the discovery of the best strategy for introducing the necessary 14-β hydroxy group and the 17-β lactone substituent and, most significantly, towards

the synthesis of an unnatural digitalis derivative for which the ratio of beneficial heart activity to toxicity would be significantly more favourable than that of presently available drugs. He succeeded on all three counts and did, arguably, some of his best chemistry in the process. "You know, I only wish I had tackled carbohydrate chemistry earlier in my career. It is a pleasure to have so many functional groups at your disposal!" That was Wiesner's reaction to his first successful selective β-glycosylation!

An article entitled "Some recent progress in the synthetic and medicinal chemistry of cardioactive steroid glycosides" [Pure and Applied Chemistry 58, 799 (1986)] gives an instructive summary of the work accomplished by him in this field.

Verba movent, exempla trahunt. From polarographic kinetic currents to structure elucidation to total synthesis to cardioactive steroids, Wiesner taught personal discipline and excitement of new discoveries to a generation of chemists. In that sense, he shall live forever.

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