



Professor ROBERT BURNS WOODWARD

Obituary

ROBERT BURNS WOODWARD, Donner Professor of Science at Harvard University, died July 8th of a heart attack at his home in Cambridge, Massachusetts. He was 62 years old.

Indeed he was the greatest organic chemist in this century.

He was born in Boston on April 10th, 1917, the son of pharmacists ARTHUR C. and MARGARET BURNS WOODWARD, and received his B. S. in 1936 and Ph. D. in 1937 from Massachusetts Institute of Technology. He became an instructor in Harvard's Chemistry Department in 1941, an assistant professor in 1944, an associate professor in 1946 and then a full professor in 1950. In 1953 he became Morris Loeb Professor of Chemistry and, in 1960, Donner Professor of Science.

The Nobel Prize in Chemistry was awarded to him as sole recipient in 1965 for his meritorious contributions to the "art" of organic synthesis. The art began in 1944 with the total synthesis of quinine, which had been planned at 12 years of age according to his saying. The synthesis of quinine is typical of WOODWARD's later syntheses. All of the strategy, execution, and experimental work were resourceful, elegant and perfect. And the style of paper was liberally embellished and dotted with Latin tags.

His first publication to attract attention, however, was a correlation of the UV maxima of conjugated systems with the substitutions on the system, so-called "WOODWARD's rule", which was extremely useful over 35 years.

WOODWARD had an active interest in reaction mechanisms, and the interest was important both in finishing his structural studies and in creating his synthetic ideas. His most significant synthetic accomplishments, after quinine, are the total syntheses of cholesterol (1951), strychnine (1954), reserpine (1956), chlorophyll (1960), cephalosporin C (1965), vitamin B₁₂ (1972, in collaboration with A. ESCHENMOSER of E. T. H.) and prostalrandin F_{2a} (1973).

Moreover, he elucidated the structures of many kinds of natural products. Especially, at a time when instrumental analyses were not yet fully developed, he established the β -lactam structure for penicillin and the correct constitution for the tetracycline antibiotics by his extraordinary insight based on very hard, sustained work. He also named sugar-linking macrocyclic lactone antibiotics "macrolide" antibiotics, which recently presented a formidable challenge to synthetic chemists.

Regrettably, at the time of his death, he was working on the synthesis of the macrolide antibiotic erythromycin.

Finally, his most significant addition to chemistry in general may be his contributions to fundamental theory of organic chemical reactions, made with ROALD HOFFMANN (Cornell University). The "WOODWARD-HOFFMANN rules" on the conservation of orbital symmetry have been quoted more frequently than anything else that WOODWARD has published, and considered to be certainly one of the most important advances in the entire history

of organic chemistry. For these outstanding accomplishments, they won the first ARTHUR C. COPE Award of American Chemical Society in 1973.

Besides the Nobel Prize and A. C. COPE Award, WOODWARD received a long list of awards and honorary doctorates from academies and universities all over the world, including National Medal of Science (United States of America, 1964) and the Order of the Rising Sun, Second Class (His Majesty the Emperor of Japan, 1970).

WOODWARD brought about a revolution in the fields of structural and synthetic chemistry, physical organic chemistry, and instrumental analysis as the recognized master.

WOODWARD was a philosopher who extremely loved crystals.

We shall never forget associating with a warm-hearted man wearing a blue tie.

(SUMIO UMEZAWA, KUNIAKI TATSUTA)