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Centenary of Joel H. Hildebrand

November 16, 1981, marks the 100th birthday of Joel H. Hildebrand. This venerable scientist has led a rich life with many achievements. One could speak in praise of his writing skill; in admiration of his athletic accomplishments, his appreciation of classical music, his respect for the outdoors; in gratitude for his public service in two World Wars and as president of the American Chemical Society, president of the Sierra Club, manager of the U.S. Olympic ski team of 1936, and chairman of the Academic Senate of the University of California at Berkeley. But we would like to focus on the model he gives us to emulate as a scientist and teacher.

Hildebrand's investigations of the solubility of various nonelectrolytes helped shape our thinking about the liquid state. He began with insightful demonstrations of the importance of molecular interactions in solutions, and these led to his early recognition that entropy provided the primary conceptual framework within which to understand solubility behavior. His reformulation of Trouton's rule by comparing entropies of vaporization at fixed molar volume placed this important rule on a more sound theoretical footing. He provided us with a useful definition of regular solutions and defined the solubility parameter with which to codify solubility behavior. He was one of the earliest to make use of radial distribution functions determined by x-ray diffraction as indicators of molecular packing in liquids. He first recognized the intense optical absorption that occurs when certain liquids are mixed and thereby discovered what we now call charge-transfer complexes. Recently, he proposed a simple but effective theory of the viscosity of liquids. His latest research paper, published in 1981, concerns the state of hydrogen in liquid metals.

While contributing to the advancement of science with these fundamental ideas, he also established a reputation as a science teacher par excellence. In the course of his career, he has challenged and charmed some 40,000 first-year students, many of whom may have forgotten the oxidation states of manganese but remember with pleasure the excitement and inspiration conveyed by Professor Hildebrand in his freshman lectures.

These are days of waning support for science education in our nation's capital. This attitude can only tend to diminish the enthusiasm and energy which our younger academic colleagues bring to their teaching responsibilities. In such times we can all benefit by reading again some of Hildebrand's remarks about science and teaching in his Remsen Lecture to the Maryland section of the American Chemical Society on May 27, 1949:

"A university should be primarily not a place of compulsions but one of opportunities.

"Freshmen . . . are more dependent upon good teaching than at any later period. It is, therefore, more of a challenge to teach at this stage and more of an art to do it well.

"I and my colleagues have experimented for many years upon the problem of presenting chemistry to students in such a way as to activate their minds, to stimulate them to develop some degree of skill to think and act scientifically.

"If we are trying to help graduate students to become scientists, should we not begin by treating them as scientists? Should we not encourage in them the qualities of the scientist, such as imagination, originality, judgment, and curiosity?

"The discovery of truth and its transmission to others belong together, and their joint exercise can afford satisfactions greater than either one practiced by itself."

These are ideas which should be remembered. Putting them into practice is a fitting way to wish Joel Hildebrand a happy 100th birthday.—GEORGE C. PIMENTEL and KENNETH S. PITZER, *Department of Chemistry, University of California, Berkeley 94720*