

DR. HORACE S. ISBELL

This issue of *Carbohydrate Research* is dedicated in honor of Dr. Horace S. Isbell on the occasion of his 75th birthday.

Horace Smith Isbell was born in Denver, Colorado, on November 13th, 1898. His interest in chemistry was sparked in 1915, when he was still a high-school student. His sister, who was studying chemistry at the University of Denver, found herself without an escort for an evening lecture on radioactivity to be given by Dr. S. C. Lind, and Horace volunteered to accompany her. The lecture was so stimulating that young Isbell then and there decided on his future career. He enrolled as a chemistry (major) student at the University of Denver, where he won the Phi Lambda Upsilon medal for proficiency in analytical chemistry in two successive years; throughout his years as an undergraduate, he supported himself by working as a conductor on street cars. He received his B.S. in chemistry in 1920, and his M.S. in organic chemistry in 1923. From 1920 to 1921, he was an analytical chemist, analyzing ores and metallurgical products, at the American Smelting and Refining Company at Pueblo, Colorado; and, from 1921 to 1923, he worked briefly at the Pure Oil Co. at Glenwood Springs, Colorado, and then at the Paul S. Nice Laboratory in Denver. In 1923, he obtained a post as assistant chemist with the Bureau of Animal Industry of the U.S. Department of Agriculture in Beltsville, Maryland; and then, in 1925, he was awarded a graduate fellowship by the U.S. Public Health Service to conduct research on organic compounds of gold at the University of Maryland, nearby. The results achieved led to his receiving a Ph.D. degree in organic chemistry in 1926. In the following year, he joined the staff of the National Bureau of Standards in Washington, D.C., where he remained until his retirement therefrom in December, 1968. He then joined the staff of the American University in the same city.

During his 41 years at N.B.S., and since, Dr. Isbell has made notable contributions to carbohydrate chemistry. In collaboration with Dr. Harriet L. Frush, his associate for many years, he perfected an electrolytic method for the oxidation of reducing sugars in the presence of bromides; this process has achieved considerable commercial importance. During the period of 1927-1940, in collaboration with Harriet Frush and Dr. W. Ward Pigman, he recognized (for the first time) the important role of neighboring-group effects in replacement reactions, and the effect of conformation on the rates of chemical reactions. These concepts have since been assimilated into the body of general organic chemistry. During the Second World War, part of his work was directed towards the synthesis of vitamin C, and the use of algin, pectin, and other carbohydrates as components of dry cells.

In the 1950's, Dr. Isbell and his group developed the first practicable methods for the synthesis of radioactive sugars and their derivatives, compounds position-labeled with carbon-14 or tritium. They published numerous reports on the methods,

and supplied the compounds to nearly every major chemical, biological, and medical research laboratory in the United States, as well as some abroad. These labeled carbohydrates proved an invaluable research-tool in tracing the course of an atom or molecule through a series of complex processes. Dr. Isbell also investigated the blood-plasma substitute dextran, and devised, for reliable determination of its molecular weight, techniques involving the reaction of dextran with sodium cyanide labeled with carbon-14. He developed a simple analytical procedure based on the copper-reducing value of dextran, useful new methods for process control, and criteria for precise specifications for dextran of clinical grade. In 1957, Dr. Isbell became Chief of the Organic Chemistry Section at N.B.S., and combined administrative duties with his research until his retirement in 1968. At present, he is studying the reactions of sugars with hydrogen peroxide, under a grant from the National Science Foundation, thus opening up a new field concerned with the formation, rearrangement, and cleavage of hydroperoxides of carbohydrates.

Dr. Isbell was Chairman of the Division of Carbohydrate Chemistry of the American Chemical Society in 1937-1938, Secretary of the Division's Committee on Carbohydrate Nomenclature (1938-1944) and a member thereof to the present, and President of the Washington Section of the A.C.S. in 1945. He was awarded the Hillebrand Prize by the Washington Section in 1952, the U.S. Department of Commerce Silver Medal for Meritorious Service in 1950, and a Distinguished Alumni Award from the University of Denver in 1953. In 1954, he was presented with the eighth Honor Award of the Division of Carbohydrate Chemistry in recognition of his contributions to carbohydrate chemistry and in appreciation of his services to that Division. In April, 1973, at Oxford University in England, he was awarded the second Sir Norman Haworth Memorial Medal of The Chemical Society (London) for his contributions to carbohydrate chemistry; Sir Derek Barton presided at the meeting, and the subject of Dr. Isbell's Haworth Memorial Lecture was "The Haworth-Hudson Controversy, and the Development of Haworth's Concepts of Ring Conformation and of Neighboring-group Effects".

Dr. Isbell has been a most diligent member of the Editorial Advisory Board of *Carbohydrate Research* since its inception, and the Editors, Board members, and all his friends and associates join in wishing him continued success in his many endeavors.

R. STUART TIPSON