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Biographical sketch of Professor Robert Bruce King*

R. Bruce King was born in Rochester, New Hampshire on February 27, 1938 and by high school had begun to display a keen interest in chemical synthesis which he pursued in a laboratory in the basement of his parent's home. It appears likely that the aromas from these youthful experiments contributed to his exceptionally early matriculation in Oberlin College where his received his B.A. in Chemistry in 1957. Bruce moved on to Harvard where he joined the group of the young Assistant Professor Gordon Stone, completing his Ph.D. in 1961. While at Harvard, Bruce developed his legendary reputation for productivity by frequently maintaining three simultaneous syntheses and still managed to find time to court his lovely wife, Jane. Bruce worked for a year with the Explosives Department of the E.l. duPont de Nemours and Co., before joining the Mellon Institute in Pittsburgh as a Research Fellow. In the Fall of 1966, Bruce joined the faculty of the University of Georgia. He was appointed to the prestigious position of Regent's Professor of Chemistry in 1973. Over his distinguished career, Bruce has been recognized with a number of awards and fellowships. He was an Alfred P. Sloan Research Fellow from 1967 to 1971, a NATO Senior Fellow in 1978, and a Japan Society for the Promotion of Science Fellow in 1981. In 1971 he was presented the American Chemical Society Award in Pure Chemistry and was the 1991 recipient of the American Chemical Society Award in Inorganic Chemistry. Bruce serves on the Editorial Boards of Synthesis in Inorganic and Metalorganic Chemistry, the Journal of Mathematical Chemistry, and Inorganica Chemica Acta. He has been the North American Regional Editor of the Journal of Organometallic Chemistry since 1981. Bruce has authored over 600 research and review articles in professional journals and has authored or edited 16 books. Attesting to Bruce's extraordinary range of interests, in the last few years his books have included Applications of Graph Theory and Topology in Inorganic Cluster and Coordination Chemistry, Inorganic Chemistry of Main Group Elements, and Beyond the Quartic Equation. Finding highlights of Bruce's work to acknowledge in this 65th birthday volume is an easy task, but reducing these to a list that will permit room in the volume for papers from his friends and colleagues is quite another thing. I sincerely thank Bruce's colleague at the University of Georgia and long time friend, Professor Charles Kutal, for the following summary of Bruce's major research contributions:

The synthesis in 1964 of the first transition metal complexes containing the arylazo ligand, namely compounds of the type $RN_2Mo(CO)_2(C_5H_5)$. This discovery opened up a whole new area of coordination chemistry which has provided useful models for the reactions involved in certain aspects of nitrogen fixation. The development of metal carbonyl anions as reagents for the synthesis of novel transition metal organometallic compounds. Important achievements in this area include the synthesis of new types of polycyanovinyl, dicyanomethylene, dicyanovinylidene, cyclic acyl, 2-azabutadiene, and keteneimmonium transition metal complexes. This area of chemistry has provided insight into novel applications of metal carbonyls for organic synthesis. The elucidation of novel aspects of the reactivity of metal carbonyls towards unusual acetylenes including especially macrocyclic alkadiynes and acetylenes containing one of two dialkylamino substituents. A totally unanticipated result from this research has been the discovery that the carbon-carbon triple bond in $(C_2H_5)_2NC{=}CN(C_2H_5)_2$ can undergo complete rupture upon treatment with iron carbonyls under relatively mild conditions. The development of new approaches for the synthesis of polyphosphines containing PCH_2CH_2P structural units. Such polyphosphines are useful as ligands in transition metal coordination chemistry including systems important in homogeneous catalysis. The development of the coordination chemistry of bidentate fluorophosphines of the type $RN(PF_2)_2$. Such fluorophosphines are useful for stabilizing novel binuclear transition metal structures which exhibit novel chemical reactivity of possible relevance to catalysis. The discovery of the first stable and readily

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available metal carbonyl derivative containing a phosphorus-bridging carbonyl group formed by an unprecedented migration of carbon monoxide from iron to phosphorus and the first demonstration of ketone-like reactivity of such phosphorus-bridging carbonyl groups. The elucidation of mechanistic aspects of metal-carbonyl catalyzed reactions of carbon monoxide and formate ions. In collaboration with Dr A.D. King, Jr., Prof. King was the first to provide experimental data showing major mechanistic differences in the water gas shift reaction depending upon whether carbonyls of the Group Vl metals (chromium, molybdenum, or tungsten) or iron are used as the catalyst precursor. This research area has recently become important in connection with the use of formic acid in the processing of nuclear wastes. The application of advanced mathematical techniques from graph theory, topology, and group theory to problems of interest to inorganic chemists. Prof. King has developed the first graph-theoretical approach to the structure and bonding in polyhedral metal clusters and boranes and more recently has extended this theoretical approach to superconductors including the high temperature copper oxide superconductors.

Throughout his career Bruce has been generous in his assistance to colleagues, and is extraordinarily modest about his accomplishments. His contributions to organometallic chemistry, catalysis, main group chemistry, and theory make him one of the pillars upon which modern inorganic chemistry has been built. It is to Bruce, the friend and colleague, that we dedicate this special issue of the Journal he has served for so many years.

Tom Bitterwolf
Professor of Chemistry
University of Idaho
Guest editor.