The Memoirs of Samuel Colville Lind

PREFACE

Samuel Colville Lind, the only native Tennessee to be elected to the National Academy of Sciences, was until his death the most prominent member of that august body to reside in Tennessee. Thus, it seems appropriate that the Tennessee Historical Society pays tribute to the Memoirs of Tennessee’s most famous scientist and one of this Acad- emy’s most eminent members.

Lind led a full, productive, happy, and healthy life. The patience and understanding of his gracious and charming wife contributed to the attainment of his high stature and recognition. On January 24, 1965, they celebrated their golden wedding at the mountainous Oak Ridge Laboratory, where the indefatigable Mrs. Lind still resides.

During his long fruitful life, Lind had many interesting experiences. He recounts some of them in his Memoirs which he completed in 1963. A few bracketed notations have been added to Lind's manuscript to bring his ideas into sharper focus and to make the literature references more explicit.

Lind died at the age of 86, on February 12, 1965, in the Clinic River below Norris Dam while indulging in his favorite hobby, trout-fishing. His love of trout-fishing is illustrated by the following anecdote. One evening, about three years before his final fishing trip, he asked me to check his automatic reel which was malfunctioning. Lind accidentally triggered the mecha- nism causing the hook which was still attached to the leader to pierce his finger. He absolutely refused to allow me to cut the hook so as to remove the barb and extract the hook. He vehemently protested, "This is my favorite fly—only yesterday I caught my limit on it." We drove to the emergency room of the hospital where the surgeons of the Clinic of Lind's was waiting. The surgeron also met with the same resistance when he started to cut the fly on Lind's finger. After a few minutes, he said, "O.K., Lindy, to hell with the fly, we'll save the hook," and it was removed intact. This was the fly Lind was using when the famous fish, with the fast waters of the Clinch.

Members of the Tennessee Academy knew Lind personally and I am sure that all with a chemical background are familiar with his publications. His doctoral publication (1906) on the synthesis of Hfr is a classical example in chemical kinetics and his rate equation for the exponential form of the equation was interpreted by Christianen (1919) and Polanyi (1920) on the basis of an atomic chain mecha- nism.

Lind's scientific career was concurrent with the development of radioactivity. He entered college the year Roentgen discovered x-rays. Before he graduated from the Buequoper discovered radioactivity, Thomson the elec- tron, and Rutherford the nucleus. It then seems fitting and proper that his major contributions to science were in the fields of radioactivity and radiation chemistry.

After post-doctoral research in radiation chemistry at Madur Curie's laboratory in Paris and at the In- stitut für Radiumforschung in Vienna, Lind recognized the importance of ions as reacting species in the radia- tion chemistry of gases and in 1911 published the first quantitative study of ion reactions. After forty-five years later, high pressure mass spectrometric studies established the importance of ion-molecule re- actions in the gas phase, which Lind's position which had fallen from favor for about twenty years. Lind and his group from the U.S. Bureau of Mines extracted 85% of radium from Colorado cantourado, the first radium produced in the United States. During the production days, an accident (not of Lind's doing) caused him to inhale some radium chloride dust, some of which permanently remained in his body. No harmful effects of the radium have been found, the thumb and index finger of his right hand, due to picking up radium contaminated objects, are even more than half normal thickness. A decrease in sensitivity in his digits was the only effect he noticed.

One of the radioactive sources was retained by the Bureau of Mines and was made available to Lind for experimental purposes. This half gram of radium followed him wherever he went and was still in use at Oak Ridge National Laboratory, where he was a senior consultant, until his death. The radolytic ac- tions most extensively studied by Lind were the syn- thesis of water from its elements, the polymerization of acetylene and the effect of additive gases on reaction rates.

He authored the "Chemical Effects of Alpha Parti- cles and Electrons" which was originally published in 1921 and revised in 1928, and his more recent monograph, "The Radiation Chemistry of Gases" (1961). He co-authored the volume "The Electrochemistry of Gases and Other Dissociated Systems" to his re- search and other duties he was editor of the Journal of Physical Chemistry for 18 years. Lind was the author of the co-author of over 140 papers, the first of which was published in 1903 and the last in 1964.

A description of the places where he has lived and worked seems a natural setting for the main theme but sometimes may stray rather far afield as the reader will find.

CHAPTER I

MY FAMILY AND MY YOUTH IN McNINNVILLE, TENNESSEE

Before beginning to describe my scientific work in the field of radiation chemistry of the elements may not be out of place to give a brief background of myself and of my family.

Born in McNinnieville, Tennessee, June 28, 1879, I have wandered far from my native heath, imitating my Swed- ish father, but not my mother Ida Colville, whose family had lived in Tennessee before its founding.

My father, Thomas C. Lind, was born in Stockholm in 1842 where he received the instruction through Swedish high school, which like German Highschool, included in the curriculum the learning of Swedish and the first two years of college. At the age of 16 he shipped as a sailor on one of his uncle's small freighters and made a round trip to New York. On returning to Sweden he completed the required military training and performed his first term of service. At nineteen, he went to America and wandered on foot to Indiana. He then returned home, enlisted in the Union Army just as the Civil War was beginning and troops were being actively recruited. With his Swedish military training, he rose rapidly to the rank of Captain and was promoted in command of a special unit, until admitted to practice by state examination. Judge Webb, with whom he began to study, was a wise choice since he was an able barrister with many years to him and he was admitted in a circuit court. He took much interest in my father's training and he was an assistant. This relation became more impor-
the Civil War ended and related that she and other girls would sit on the fence and watch the victors roll by. One of them was a Yankee soldier mounted on a charger, and for his father, however, was not a too ardent Confederate. Long before the War he had said that the action of the more conservative southerners he had not favored secession from the Union and believed a war between the states would be a mistake which as it later proved to be. His conservative leanings did not make him popular with his fellow "rebels." One of my uncle's in his boyhood was chased home from a neighbor's and told not to come back "until the War is over." Later they became good friends again.

I was the oldest of five children. One brother died at birth. Another, who was a hero of the War, is dead. I had all simultaneously severe attacks of virulent diarrhea. Amanda succumbed, while Robert and I pulled through. My attic room was a favorite place during a week. It was the coldest, and Robert was desperately ill, but fortunately not as yet dangerously ill. Robert, beloved by all for his genial spirit and liveliness, was our father's favorite. Even the truck drivers would seek him out. He was a "good fellow" in every sense of the word, and the boys could not resist coming to talk to him.

Through his love for nature, Mr. Honeywood, an Englishman, who had acquired the property and built a summer-type chalet one mile from the Beersheba hotel, which was humbly named as Dan, from the biblical association. I mention these things, not because they are of particular importance to the story, but rather because they show how much has been accomplished by the people of the area in the last few years. We are in the midst of a new era of development, which has brought about a remarkable change in the countryside. The roads are now paved, and the countryside is being restored to its former beauty. The people are once again enjoying the natural beauty of the area, and the countryside is once again a place of peace and tranquility.

Robert, attended the Virginia Military Institute, and I had left him in Washington and Lee. Never married, he has spent most of his life in the state of Virginia. He and his wife lived together for many years. Recently he retired from the Kansas City Steel Structural Company as General Counsel, to return home as Secretary. (Warner Lind died on January 3, 1968).

My own education was in the local schools beginning in the eighth year, previous to which my mother had taught me reading and arithmetic. Apparently she gave me up as a pupil not to be encouraged and have never mastered it. On completing high school in McMinnville at the age of sixteen, I took the entrance examination for West Point and Le University which I entered in the fall of 1895. My going there rather than to the college was, I believe, due to the fact that the required courses in English and history were not included in the curriculum.

The faculty had been in America for two hundred and thirty years. The people of Maryland, Pennsylvania, Virginia and Carolina were duly represented. Mrs. Robert, mother of the late Robert, was born in Warren County, who then made their home in McMinnville. My mother, who was born in 1833, was born in a small town, four boys. She was educated in public and private schools of McMinnville. She was about eighteen years old when she became a member of the family.

There were no more salons in McMinnville in those days. The people of the area were too busy with their daily work and the war, to have time for such social gatherings. Moreover, the population consisted of Negroes liberated from slavery during the Civil War. There were no Jews except for a few who had come to the area before the war.

Seven churches—Baptist, Methodist, two Presbyterian and one Christian for whites, and two for colored worshippers—But Methodism was the foundation of McMinnville's population. Four saloons operated openly and legally but were patented by the most respectable citizens—at least not openly, though, of course, there were back doors. I was never in one of them after the tender age of four and, needless to say, only once then. I was playing alone in our front yard on a mild summer evening when a strolling band of gypsy minstrels passed by. I was so enraptured with their music that I followed them all the way down Main Street and right home with them. (The author recalls his early love for music.)

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