L. Reiner, Chemist and Medical Scientist

The recent death of Laszlo Reiner brought to an end an impressive career devoted to chemical and medical research. Some idea of Dr. Reiner's scientific contributions may be gathered from his 110 publications and the diversity of his interests from the many professional societies of which he was a member. Impressive as were his scientific achievements, however, of even greater importance were his personal accomplishments. His life was a constant devotion to learning. A European education gave him a much broader cultural background than one usually acquires in this country. He spoke and read several languages, and his knowledge of literature, philosophy, and the arts in general approached that of the expert. He loved music, favoring Bach and Mozart, and was an accomplished pianist. It was always a great pleasure to his friends when he would sit down to the piano and play his favorite pieces. Nor was the physical side neglected, for Dr. Reiner was a powerful swimmer and enjoyed tennis and other outdoor activities until the last year of his life.

Dr. Reiner was extremely idealistic, almost to a fault, and set for himself and others only the highest standards of intellectual integrity. A kindly, soft-spoken man, he generated enthusiasm that was a constant source of inspiration to all with whom he came in contact. Those of us who knew Dr. Reiner are mourning the loss of an inspiring teacher, a wise counselor, and a wonderful friend.

Laszlo Reiner was born in Budapest, Hungary, in 1894, where he resided until he received his M.D. degree from the University of Budapest in 1917. He saw service with the Royal Hungarian Army, first as a sanitary officer and for the last 2 years as a lieutenant-surgeon, and was cited for bravery and twice decorated. Early in his medical studies Dr. Reiner realized that he would derive the greatest satisfaction from medical research, rather than from practice, and endeavored to obtain all the training that he could to qualify him for this field of medicine. Following the cessation of hostilities, he therefore continued his studies at Frankfort, Germany, and was granted a Ph.D. degree in physical chemistry in 1921.

For a number of years Dr. Reiner taught hygiene and public health at the Royal Elizabeth University in Hungary, attaining the rank of associate professor; it was during this period that the love for teaching, which remained with him to the end of his days, was nurtured and developed. In 1924 the Rockefeller Foundation granted him a traveling fellowship, part of which was spent in the laboratories of L. J. Henderson and of E. J. Cohn at the Harvard Medical School and the major part at the Rockefeller Institute for Medical Research with K. Landsteiner.

Dr. Reiner's major fields of interest were immunology, chemotherapy, and protein chemistry; very early in his research career he began to demonstrate the ability to combine his knowledge of chemistry and medicine in order to make significant contributions to their fundamental aspects. He did pioneering work in the field of serum proteins, particularly serum globulins, reporting the first measurement of their migration velocities in an electric field at various hydrogen-ion concentrations in 1927. Before Tiselius developed methods for the fractionation of serum proteins, Dr. Reiner showed that antibodies against infection are proteins, specifically globulins. He isolated serum globulins having different isoelectric points and demonstrated that antibodies are associated with those globulins whose isoelectric points are at nearly neutral *p*H values. These globulins were later identified by Tiselius and named gamma globulins.

From his researches in protein chemistry resulted the development of globin insulin in 1939, the first insulin of intermediate action, which achieved results not then obtainable from any mixtures of unmodified insulin with the slower-acting protamine insulin. One of the physiologically active insulin derivatives containing radioactive iodine which he prepared was used in studies of the distribution of insulin in the body and of the rate of resorption from the site of injection (1941–44). This work was among the earliest uses of tracers in medical research.

It was at the outset of this work in 1941 that I first met Dr. Reiner. He had come to America to stay permanently in 1929 because of the rapidly worsening political situation in Europe, and he became a naturalized citizen as soon as possible thereafter. He taught bacteriology at New York University and, at the same time, became associated with the research laboratories of the Burroughs Wellcome Company at Tuckahoe, New York, first as consultant, then head of the department of medicinal chemistry, and finally as scientific director. His understanding, guidance and friendship in this, my first research position, and through later years, has been the most important single influence in my own professional career.

From 1942 to 1953 Dr. Reiner was director of pharmaceutical research for the Wallace and Tiernan Company of Belleville, New Jersey. He earned the gratitude of countless servicemen in World War II by his development of Desenex, a fatty acid-containing fungicide, the most effective preparation then known for combating the spread of dreaded "jungle rot."

Some years ago there was a report of convulsions produced in dogs fed bread made from flour that had been treated with certain commonly used bleaching agents. Dr. Reiner isolated and identified the highly specific neurotoxic agent as methionine sulfoximine and synthesized it and other members of this hitherto unknown class of compounds.

In 1954 Dr. Reiner accepted a position as research associate at the Institute of Cancer Research at the College of Physicians and Surgeons of Columbia University, where his final scientific studies explored the physicochemical reasons for the selective concentration of certain drugs in cells. Only a week before his death on 27 November 1955, knowing that his days were numbered, he was still dictating letters and planning the future course of his research program, communicating to those around him not despair but rather his zest for living and enthusiasm for learning.

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I did not think; *I investigated.*—W. K. ROENTGEN.