A. L. Tatum, Practical Pharmacologist

Twenty-eight years ago Arthur S. Loevenhart in a statement to the John Simon Guggenheim Memorial Foundation wrote of Arthur Tatum's researches, "They are of great practical importance to mankind, as well as of great theoretical interest." These features characterized the lifelong investigations of Arthur Lawrie Tatum. Although he was dedicated to the establishment of sound scientific principles in relation to drug action, he never lost sight of potential practical applications, and his interests always exhibited a combination of the theoretical and the practical. His teaching at all levels stressed the importance of conceptual, rather than detailed, factual information. The main theme in his philosophy of graduate training was development of a student's ability to think for himself. He consistently maintained that no amount of time spent in the laboratory could substitute for that spent sitting with one's "feet on the desk."

Tatum was born on a farm in Sac County, Iowa on 17 May 1884 and attended first a country school and then grammar and high school in West Branch, Iowa. During his boyhood he worked with his father, a nurseryman, and developed an interest in plants that persisted as a hobby throughout his life. His home at all times was filled with greenery and flowering plants.

Tatum started out to be a chemist, not a pharmacologist or a student of medicine. After his baccalaureate in science at Penn College, Oskaloosa, Iowa, in 1905, he continued for 2 years as a fellow in chemistry at the University of Iowa, earning a master of science degree. During the period 1907–10, as instructor in chemistry at the University of Colorado, he became increasingly interested in the biological aspects of chemistry. As a result he returned to graduate school at the University of Chicago where he obtained the Ph.D. degree in 1913 and a year later the M.D. degree from the closely associated Rush Medical College. Between 1915 and 1917 he served successively as instructor in physiology at the University of Pennsylvania and as professor of physiology at the University of South Dakota. He was then called back to the University of Chicago as assistant professor of pharmacology and held this rank until 1925 when he was promoted to associate professor. In 1928 he came to the University of Wisconsin as a full professor in the department of pharmacology and toxicology, and the next year, following the death of Loevenhart, he became head of the department; he served in this capacity until his retirement in 1954.

Following earlier researches on the physiology of the thyroid gland, Tatum studied the acute toxic convulsions produced by overdosage of cocaine and demonstrated the effectiveness of the barbiturates as antidotes. Extending his investigations, he established that, whereas barbiturates were the antidote for cocaine poisoning, the reverse was not true. This reminded him of one of his early papers on picrotoxin, a powerful stimulant of the nervous system. Experiments proved that his notion was correct; picrotoxin was the antidote for barbiturate overdosage. Clinical application soon followed, and the drug still enjoys widespread usage in the treatment of poisoning produced by overdoses of sleeping powders containing barbiturate.

Studies on acute intoxication with barbiturates led Tatum to investigate the changes in the central nervous system produced by the continued administration of several narcotic drugs. His observations resulted in the establishment of the physiological basis of addiction and the ultimate realization that the addict is a sick man, not a criminal.

Shortly after his arrival at the University of Wisconsin, Tatum decided to continue the active program in chemotherapy of syphilis initiated by his predecessor. At this time, the arsphenamines were the best drugs available for the treatment of early syphilis. In the course of his investigations, however, one of the arsenoxides, which had been discarded on account of its marked toxicity, caught his attention. As Tatum put it, "We were so dumb we didn't know it was no good, so we went ahead and tried it out." He soon demonstrated that the toxicity was paralleled by a greater effectiveness in the treatment of syphilis, and the drug proved to be much less hazardous than the drugs in use at that time. Although other arsenicals were developed and employed clinically subsequent to the introduction of this compound, Mapharsen (*M*eta *A*mino *P*ara *H*ydroxy Phenyl *ARSEN*oxide) remained the drug of choice in the treatment of early syphilis until the advent of the antibiotics.

In later years, Tatum became vitally interested in the chemotherapy of malaria and especially in the fundamental mechanisms involved in the immune responses to the organisms that produce the disease. After his retirement and until a week prior to his death on 11 November 1955, he could be found almost every day in his laboratory, enthusiastically continuing his studies and stimulating his colleagues when he paused, as he said, "to ask some foolish questions." The questions were always fundamental "brain ticklers."

Tatum's contribution to science, through both his own work and that of his many students, will be a lasting one.

F. E. SHIDEMAN
Department of Pharmacology and Toxicology, University of Wisconsin, Madison

I know no safe depository of the ultimate powers of society but the people themselves. And if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion by education.—THOMAS JEFFERSON