MEMORIAL RESOLUTION OF THE FACULTY OF THE UNIVERSITY OF WISCONSIN-MADISON

ON THE DEATH OF PROFESSOR EMERITUS WILLIAM ELLIS STONE

William Ellis Stone was born on January 22, 1911 in Colton, California and died on September 21, 1991, at the age of 80 years. His career in research was very largely devoted to measuring and understanding the role of metabolites and energy metabolism in brain pathology. He was a true pioneer in this field, being there at the beginning and publishing large numbers of ground-breaking papers in the leading journals of that time. His work continued as an emeritus, and during ten years of retirement he maintained an active research laboratory and published several important papers.

Bill Stone received his undergraduate degree at the California Institute of Technology, did his Ph.D. at the University of Minnesota and then went to Yale, where he was the Alexander Brown Coxe Memorial Fellow from 1939-40. He then moved to Wayne University (now Wayne State) in Detroit where he became an assistant professor, before coming to the Physiology Department at UW-Madison as an assistant professor in 1947. He was a professor between 1964 and 1976 at which time he became emeritus until his death. During the latter period he was awarded the Emeritus Faculty Award for the work he was carrying out on different forms of epilepsy.

He obtained his Ph.D. from the University of Minnesota and his first paper, published in the Biochemical Journal in 1938 set the tone for his career. In it he measured the effects of epileptic seizures in mouse brains on the levels of lactic acid, a reflection of glycolytic metabolism. The true significance of this work was that it helped initiate the idea that brain metabolism and metabolites could be profoundly affected by brain activity, and vice-versa. Epilepsy was used both as a tool to produce widespread activity, that would have an effect on metabolites measured in whole brain, and also because it was an ever more frequently studied brain pathology.

The measured changes in lactate provided a way in which abnormalities of activity might lead to later brain defects. Dr. Stone reported consistent effects of anesthetics (decrease in lactate production) and epilepsy to more than double lactate levels. It was one of the earliest demonstrations of the coupling between energy metabolism and electrical activity and it is very interesting that in recent years the controversy about this coupling has, rather than being resolved, become more intense. Thus, the field he helped set in motion with his doctoral work continues to grow in significance. To read the discussion in this paper, from the perspective of 60 years beyond its publication, is to be immensely impressed by Bill Stone’s insights and intelligence. As an example of the level of our knowledge, at the time he began his work, is the title of a paper of his in Journal of Biological Chemistry in 1943: “Acid-soluble phosphorus compounds of cerebral tissue”. This was truly the beginning of neurochemistry!

One classic paper of his, published in the American Journal of Physiology in 1949 was the first to highlight the rapidity of electrical changes vs the slower high energy metabolite changes during anoxia. This unexpected finding led to the ultimate discovery that ATP changes in synaptic brain regions were much more rapid and could account for the loss of electrical activity.

He continued this line of study for the ensuing 20 years, examining changes in metabolites, changes in metabolic pathways for radiolabelled carbon, and comparing these with changes in activity caused by three pathologies; hypoglycemia, anoxia and epilepsy. His aim always was to see the extent to which pathologies and altered function could be explained in terms of brain energy and lipid metabolism. He was unquestionably one of the 4-5 international leaders in this very young field that gradually became defined as neurochemistry.

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During this time he changed areas somewhat, becoming very interested in how different agents were able to cause and to prevent epileptic seizures. He combined this with his metabolic measurements to help develop a classification of different epilepsy etiologies. Much of this work he did as emeritus and many memories of Dr. Stone are of him, well into his 70s, transporting mice to his emeritus laboratory in the old hospital on University Avenue where he would carry out studies of epilepsy. He was always energized and excited about this work and this was inspirational to younger members of the department. In addition to a fulfilling and extremely valuable research career in neurochemistry and epilepsy research Bill Stone did a prodigious amount of teaching, being a key member of a small team that annually taught graduate student physiology in the Department of Physiology. He taught respiratory physiology and acid-base balance with vigor and care and was much admired as a teacher. He was also extremely well thought of by Ph.D. students and young faculty whom he helped greatly with their research projects. He greatly enhanced the reputation of the Physiology Department in the years he was here.

He was a man of much dignity and discipline, who greatly loved research and who made a very important contribution to the development of neurochemistry as a respected discipline. He was a true pioneer, embarking boldly on a metabolic study of the brain at a time when it was not at all clear that brain biochemistry would be relevant to brain function. As with all new fields, working in this field required boldness of vision, perseverance, and self-confidence. Dr. Bill Stone had these, and a strong devotion to science.

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