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Frank Moore (1933–2017)

Frank was born and educated in New Zealand to M.Sc. level, trained as a secondary school teacher and lectured in Chemistry at Auckland University. In 1959, he was awarded a 3-year research fellowship at the Atomic Energy Research Establishment, Harwell, and worked principally on beryllium used in the construction of nuclear fuel elements and on reprocessing projects working on plutonium. Then followed 4 years of work under Professor Dorothy Hodgkin collecting and analyzing neutron data for vitamin B12 for which he was awarded his D.Phil in 1966. I leave that story to his colleague at the time, Brian O'Connor, who has provided a separate tribute to Frank. (see https://neutronsources.org/about/history/literature.html under "History of Neutrons at ANSTO".)

He was then tempted back south to Australia (closer to his family) and became the first scientist employed by AINSE (Australian Institute of Nuclear Science and Engineering) and leader of its neutron scattering research group. He was instrumental in helping doctoral and post-doctoral university researchers use all the neutron scattering equipment at HIFAR, in particular the single crystal instrument 2 Tan A. He was a stickler for data accuracy and reliability and helped develop computer control of the instruments to ensure this occurred. He was extremely good at getting and developing equipment ahead of time, such as a tilting counter single crystal instrument for magnetic studies at low temperatures, upgrading from the 4K PDP8s to PCs as soon as it became cost effective, and supporting Trevor Hicks and Monash University in the continual improvements to LONGPOL.

From the early 1970's, he started preparing proposals to build a replacement reactor at Lucas Heights, making the locals aware of what was already happening overseas and indicating that HIFAR's capacity was limited. In 1976, a major proposal was prepared by Frank for AINSE and was submitted to the AAEC. By the late 1970's, it was clear that outside support would be needed and he became the first secretary and moving force behind ANBUG (Australian Neutron Beam Users Group). Its first proposal, the case for inserting a cold source into one of the horizontal beams of HIFAR, was unsuccessful. When the case to ASTEC led to upgrading rather than replacing HIFAR, he decided he could be more useful elsewhere and moved away from neutron science.

During his time at AINSE, Frank was a colleague, mentor and friend to numerous researchers and PhD students. His visits to universities as guest lecturer on crystallography opened the eyes of many students to the wonders of neutron scattering. He was very patient and carefully took students through the art of neutron data collection and structure solution. He was particularly concerned about the practice of excluding weak (so called unobserved) reflection intensities from data sets used in single crystal structure determination and refinement. His contention was that these data contained valuable and valid structural information. He proved his point at an AINSE conference where he presented a crystal structure using just the 'unobserved' data which was of comparable quality to that obtained using the full data set. Frank was always keen to use the differences in X-ray and neutron scattering factors to advantage in crystal structure determinations. Items such as hydrogen bonding, shared/partial occupancy, tautomerism, and light elements in the presence of heavy atoms were predominant in his scientific publications.

Throughout his time at Lucas Heights, Frank was my co-worker and friend. Although I worked for what was then AAEC (now ANSTO), we worked together, particularly on the computing side of data collection and processing and in the preparation of cases for a replacement reactor. We shared a love of gardening and between us produced some spectacular vegetables. His final garden in Mittagong is a testament to this. I will always remember Frank as a cheerful, patient man, a lover of life in all its forms with a strong religious belief. As he explained the apparent conflict between science and religion to his son, "there are too many gaps; there has got to be something more." A truth seeker has left us.

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