Mineralogical Society of New South Wales

The Mineralogical Society of NSW is for people interested in Geology and Mineralogy. The Society holds monthly meetings at the University of Western Sydney, North Parramatta Campus. For more information go to their website: http://www.minsocnsw.org.au/.

Each meeting has a different presenter and Dr Munro-Smith (Science Teacher at MHS) was invited to present a lecture on ‘Cobalt Mines of the Cloncurry District’ at the February meeting. Emeritus Professor Peter Williams introduced Dr Munro-Smith, providing some background information on her Masters and PhD theses. She carried out several field trips to the Cloncurry-Mt Isa Block, Queensland over a number of years.

Dr Munro-Smith began the lecture by giving background information on Cloncurry, which is located in north-west Queensland. The temperatures can get very high there and in fact Cloncurry holds a record for the highest recorded temperature in Australia (it reached 53.1 °C in 1889!). During her time there temperatures of up to 51 °C were encountered.

There have been only three cobalt-producing mines in Queensland: Mt Cobalt, Queen Sally and the Success. No extensive study of cobalt mineralisation in the area had been previously published. The purpose of her study was to identify cobalt-bearing mineralisation and possible modes of formation.

The study covered numerous deposits in the area including those run by Selwyn Mines (Plume, Straight Eight, Mob’s Lease and Straight Eight deposits) and Mammoth Mines (Esperanza deposit). Sample material was brought back to the laboratory and analysed using an electron microprobe and x-ray analyses were performed using an X-ray Diffractometer (both at UWS).

Dr Munro-Smith’s study included the identification of a rare mineral called wupatkiite, CoAl₂(SO₄)₄·22H₂O, at the Lorena gold mine. Her team of researchers were beaten to the naming of the new mineral by six months by an American group. Nevertheless, their finding of the occurrence of wupatkiite at the Lorena mine was certainly the first and only for Australia.

Her findings were that many of the deposits are hydrothermal in nature, contained high-temperature mineralisation (such as molybdenite and uraninite), suggesting an association with nearby granites. Cobalt was found to be commonly associated with pyrite at many of the deposits studied, while cobaltite was also present in many of the locations. The Esperanza and the Selwyn group of deposits were found to show the greatest potential for economic cobalt recovery (based on amount of ore and cobalt-content).

The Mineralogical Society of NSW would like to invite anyone interested in rocks and minerals to their meetings. The society also runs field trips through-out the year to various locations.
Wupatkiite, CoAl₂(SO₄)₂·22H₂O; image: Dr Munro-Smith.

Esperanza open-cut pit, looking south; Mammoth Mines; photo: Dr Munro-Smith.
Underground at Mt Elliot cooper mine, Selwyn Mines, NW Queensland; photo: Dr Munro-Smith.

Ernest Henry copper-gold mine, NW Queensland; photo: Dr Munro-Smith.