

Harold (a) and Harold (b): Two new meteorites from Ness County, Kansas

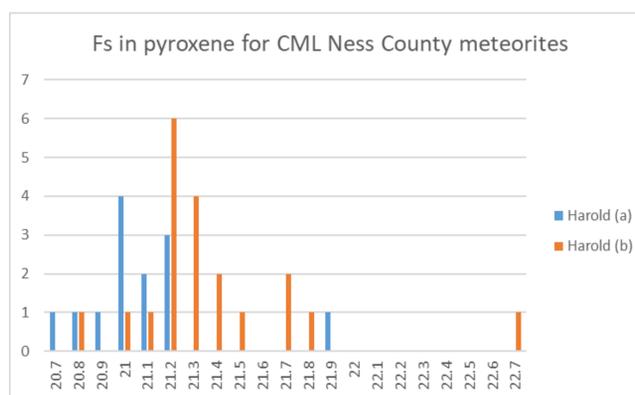
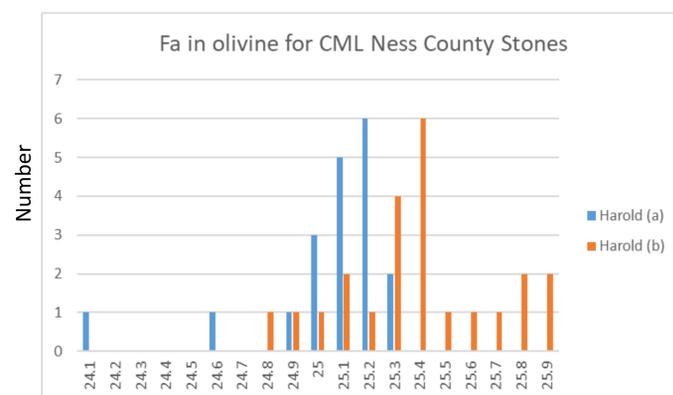
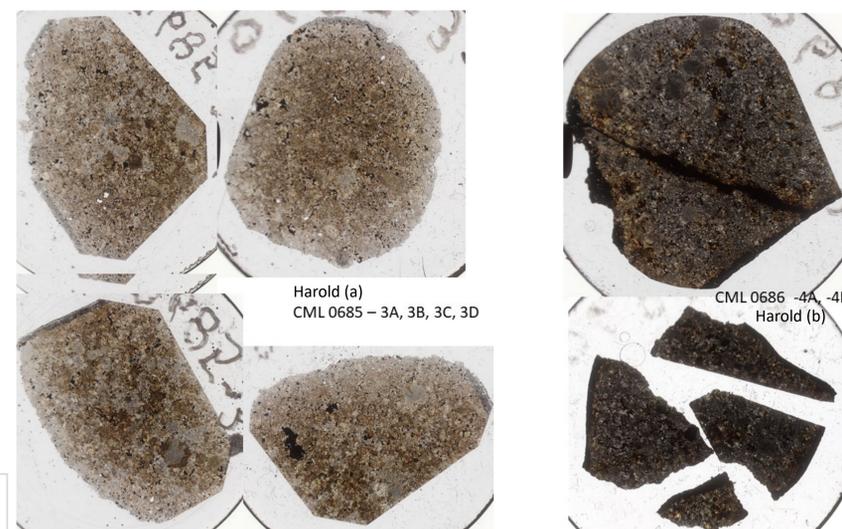
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Introduction: Cascadia Meteorite Laboratory (CML) member Dick Pugh spent decades giving meteorite lectures across the Pacific Northwest [1]. At these events, Dick looked at thousands of rocks brought in by the public. On May 12, 2012 Paquita Rupp brought three oriented chondrites to a talk being given by Dick as part of an E/PO out-reach program [1]. The stones had been given to Ms. Rupp by her grandfather, who said he'd picked them up on the family farm in Ness County, Kansas after a fireball sometime in the 1890s. Ms. Rupp said that one of the three stones had been cut before being given to her, and that she had kept the three stones on a bookshelf for 50 years (as of 2012). Ms. Rupp allowed CML to cut slices off two of the three stones. Left: Advertisement for lecture and hands-on demonstration by Dick in Baker City, Oregon; Right: Two Ness County stones analyzed by CML.



Classification: Mineral chemical data for both stones were obtained in the same analytical shift to ensure no instrument bias. Both stones are L6 chondrites, with overlapping but slightly different Fa and Fs contents for olivine and low-Ca pyroxene. [2]. In thin section, Harold (a) is lighter in color, more heavily weathered (W2) and less heavily shocked (S3) than Harold (b) (W1, S5). The difference in weathering can be used as a proxy for terrestrial ages (e.g., [3]), indicating that the two stones represent two different falls. Given the current state of the literature, it was not possible to pair either Harold (a) or Harold (b) with any of the other known Ness County stones.



Above: Thin sections of Harold (a) and Harold (b) [internal lab numbers CML 0685 and 0686]. Left: Histograms showing that Fa and Fs abundances in olivine and pyroxene are different, despite overlapping.

References:

- [1] Hutson M. L. et al. (2006) LPS XXXVII, Abstract #1095.
- [2] The Meteoritical Bulletin Database, <https://www.lpi.usra.edu/meteor/>.
- [3] Al-Kathiri A. et al. (2005) Meteoritics & Planetary Science 40:1215-1239.
- [4] Ruzicka A. (2011) Meteoritics & Planetary Science 46: 932-934.
- [5] Ruzicka A. M. et al. (2015) 78th Meteorit. Sci. Mtg., Abstract #5348.
- [6] Ruzicka A. M. et al. (2020) Meteoritics & Planetary Science 55: 1418-1438.

Dedication: In memory of Richard Norman (Dick) Pugh (1940-2020).



Left to right: CML personnel (Alex Ruzicka, Melinda Hutson, Dick Pugh) undated photo taken before 2006; Dick with Ed Scott July 2010, the year before Dick received the Meteoritical Society's Service Award [4]; Dick, Alex and Jon Friedrich in July 2015, in front of their poster on NWA 8709 [5, 6], which Dick found in a local rock shop; Dick giving a presentation at OMSI (Oregon Museum of Science and Industry) in 2012.