CAVEAT: METEORITE RECOGNITION

Graham Wilson, 15 November 2010

The number of queries from the public, concerning possible meteorite finds, has risen steadily over the years. Arguably the current interest in Canada can be dated to the very visible fall of the St-Robert meteorite shower near Montreal, on 14 June 1994. At any rate, I have fielded five such enquiries in the past two weeks alone. Since St-Robert, there have been about 20 more falls and reported finds in Canada, including the well-publicised falls of Tagish Lake (2000), Buzzard Coulee (2008) and Grimsby (2009).

Meteorite finds reveal some interesting traits of human psychology. There is nothing odd about finding an unusual object and wondering what it is - for some years I was a rock-aware child who thought that he had a meteorite (hematite nodule!). But let's recall that there are only about 75 meteorites identified Canada-wide (most of them listed at: http://www.turnstone.ca/canamet3.pdf - some 80% of these have been listed officially in the "Meteoritical Bulletin"). There are far more lottery millionaires in Canada! Further, a minority of finders are sure that their rock is not "any old meteorite", but a member of a rare class, representing one in 100 or one in 1,000 of some 40,000 known meteorites. No doubt popular media – the new "Meteorite Men" TV show and a host of old news articles – contribute in some way to a get-rich-quick mentality. Now, many of the "finds" are indeed visually striking, whether they are a meteorite or (much more likely) slag, scrap metal, fire brick, a little-known industrial material such as ferrosilicon, or a terrestrial rock (gabbro, basalt, limestone…). I like to give people a good idea of what their treasure really is, because the urge to know should have some kind of reward.

I won't go into meteorite recognition here. You can read some tips at the Turnstone web site, starting at http://www.turnstone.ca/mets.htm, and browse the most relevant "rocks of the month" there, including a number of meteorites and "meteorwrongs". I recently read, cover to cover, the book by Norton and Chitwood (2008) which I commend to you as the best guide to meteorites, showing you what they look like without being hopelessly arcane. I will continue to try to identify specimens free of charge, but do bear in mind that, at best, one in 500 of the proffered "meteorites" is the real thing. Don't get discouraged, keep your eyes open --- a walk outside is full of interesting phenomena: rocks, birds and trees, animal tracks, fungi and frogs, etc, etc!

Photos should be in focus, with a clear scale (see examples, overleaf). Should you, against the odds, have found a real meteorite, I will advise you of your options. If I am to assist you further, there will be just one firm commitment. To maximize the returns on your find, I will insist that at least 20 grams of the find, or 20% if it is less than 100 grams in size, be donated to an approved institution (i.e., to an accredited museum or university department) to serve as "type specimen" for the advancement of science. This is part of the procedure for the formal classification and recognition of the meteorite, which will make it more valuable, in both scientific and monetary terms.

Reference:

Norton,OR and Chitwood,LA (2008) Field Guide to Meteors and Meteorites. Springer-Verlag London Limited, 287pp. --- Currently (end of 2010) this fine paperback is readily available via Internet dealers for US$25-35 plus shipping costs, e.g., at http://www.meteoritemarket.com/mmhome.htm (one informative, Alaska-based meteorite-dealer web-site that also has useful hints on meteorite recognition).

1. **Slag** with flow texture, patina, bubbles and layering. Magnetic. Byproduct of copper-nickel ore processing at Sudbury, Ontario. Found as ballast along railway lines, usual size 2-12 cm.

2. Gabbro with discrete crystals, a common igneous rock with mineralogy and textures similar to some achondrite meteorites. Dense, often magnetic, with mm-scale crystals, a denser and darker cousin of granite.

3. Pale interior and black fusion crust of the Dresden (Ontario) **H6 chondrite**.

4. Slices of NWA 869 **L4-6 chondrite** with polished thin sections for meteorite classification and study.

5 (below)**.** A **siltstone** cobble, an “omar”.

6 (right). The Gebel Kamil **iron meteorite** (ungrouped ataxite) with sharp edges, crystallites visible on lightly-rusted surface.

Sources, 1-6: SE Ontario, Ethiopia, SW Ontario, Morocco (?), NW Ontario, Egypt ---- GCW, last revised on 17 November 2010