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On the Front Cover:

Stefano Cancelli and Paul Mortfield combined talents to produce this stunning image of a section of the California Nebula. The image was acquired in October last year at Sierra Remote Observatories on an RCOS 16" f/8.9 telescope using an Apogee U16M camera. Exposure, in H α , SII, and RGB wavelengths, totalled 21.5 hours. H α was mapped to red and SII to blue; green was created by using a combination of H α and SII.

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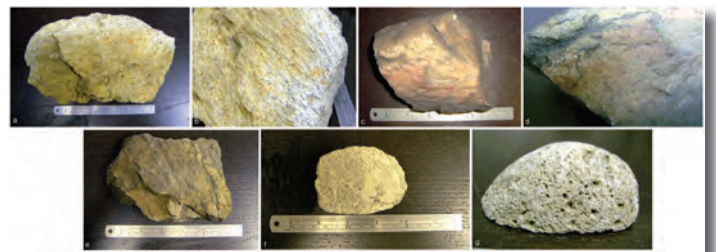
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**80 Astronomical Art & Artifact: RASC Catalogue
of Meteorites - First Supplement**

by R.A. Rosenfeld



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Astronomical Art & Artifact

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RASC Catalogue of Meteorites — First Supplement

Abstract

A recent donation has increased the size of the collection and varied its contents, particularly in the area of “impactites.” The recent accessions are presented here.

Introduction

The RASC Archives continue to benefit from the generosity of the anonymous RASC member, whose earlier gift of meteoritic materials formed the greater numerical part of the objects in the first installment of this catalogue (Rosenfeld 2009). Among the meteorites in this second installment, the fragments of Zagami (RASC M10) and of Allan Hills 76009 (RASC M11) are the most compelling (and not, incidentally, the physically least prepossessing). What is essentially a modest sprinkling of Martian dust is now housed at the National Office, as part of the RASC Archives.

The bulk of the present additions, in every sense, are the

“impactites” (RASC I3-I8). Several museum-quality specimens fittingly boost the specimen count from Canadian sources. The shattercone from the Charlevoix Impact Structure (MI5) is particularly notable in this regard (for a good introduction to shattercones, and why they are important, see Bevan 1998).

Anyone curious to explore “on the ground” the Canadian source astroblemes of the impactites catalogued here would be well advised to turn to Chuck O’Dale’s (Ottawa Centre) first-hand accounts: <http://ottawa-rasc.ca/wiki/index.php?title=Odale-Articles>.

Catalogue

The catalogue fields consist of: **1.** inventory number; **2.** type and origin; **3.** provenance; **4.** dimensions; **5.** weight; **6.** form; **7.** appearance; **8.** state of preservation; **9.** bibliography. Given the limited size of the collection, a little more detail can be supplied in the fields than is usually the case in catalogues. This is not to be taken as a sign of the relative importance of the specimens in the RASC collection; rather it attests to the opposite. It should also be noted that characterizations of the objects are referred to descriptions of the type specimens, or other properly analyzed specimens in the literature, for samples from none of the RASC specimens have been subject to extensive laboratory analysis. This catalogue has been prepared with the needs of the amateur uppermost, rather than the professional.

Meteorites

- 10. **1.** RASC M10.20091130; **2.** Zagami, Martian (shergottite), Zagami (Katsina) Nigeria (11°44’N, 7°5’E), witnessed fall 1962 October 3, *ca.* 18 kg; **3.** Anonymous gift 2009 November 30; **4.** Range of fragment sizes ϕ scale 2-3 (Wentworth size class=medium to fine sand), largest fragment 0.2×0.1×0.05cm; **5.** 0.02 gr; **6.** Irregular forms; **7.** Colour range: N 7/ Light Gley to N 4/ Dark Gray (Munsell); **9.** Not previously published; Grady (2000), p. 541; IMCAEM www.encyclopedia-of-meteorites.com/meteorite.aspx?id=30386;

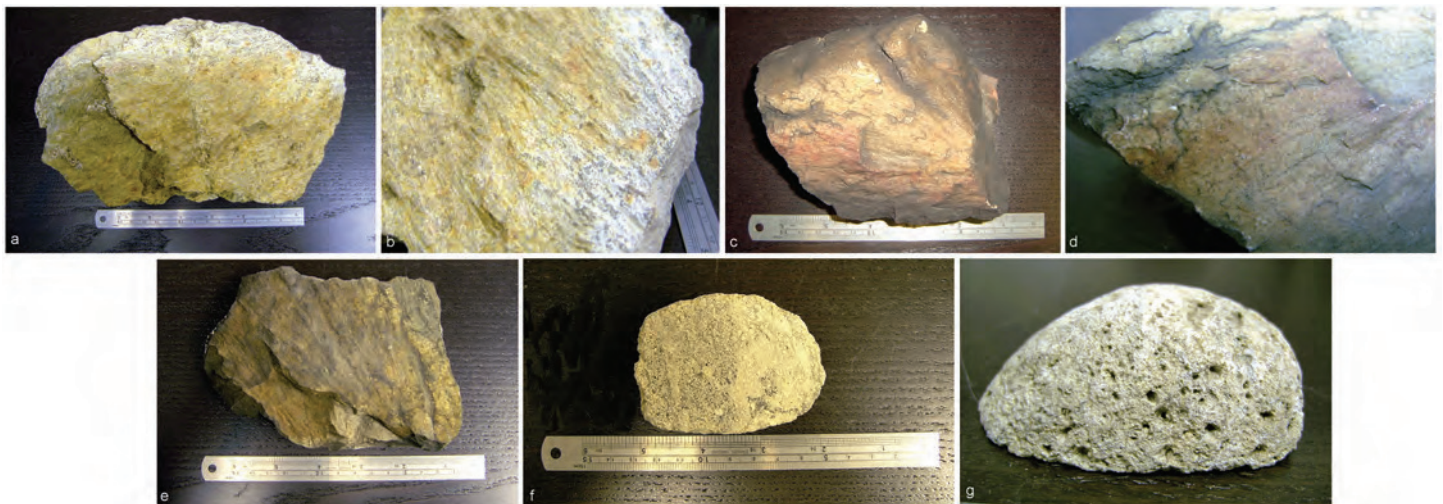


Figure 1 — The new members of the RASC meteorite collection; a: RASC 15; b: RASC 15 detail; c: RASC 16; d: RASC 16 detail; e: RASC 17; f: RASC I8 polished face; g: RASC 18.

MBDB <http://tin.er.usgs.gov/meteor/metbull.php?code=30386>

11. **1.** RASC M11.20091130; **2.** Allan Hills 76009 (ALH 76009), L6 Chondrite, West of Allan Nunatak on the edge of the Polar plateau, Victoria Land, Antarctica (76°42'26"S, 159°07'43"E), find 1977 January 20 (U.S.-Japan Joint Antarctic Expedition), 407 kg; **3.** Anonymous gift 2009 November 30; **4.** Range of fragment sizes ϕ scale 2-4 (Wentworth size class=medium to very fine sand), largest fragment 0.2x0.2x0.15 cm; **5.** 0.041 gr; **6.** Irregular forms; **7.** Colour range: 10Y 8/1 Lt. Gn. Gray to 10Y 4/1 Dk. Gn. Gray, with sparse inclusions at 5YR 6/8 Reddish Yellow (Munsell); **9.** Not previously published; Grady (2000), p. 66-67, 547; IMCAEM www.encyclopedia-of-meteorites.com/meteorite.aspx?id=1316; MB 56 (1979), 165; MB 76 (1994), 101; MBDB <http://tin.er.usgs.gov/meteor/metbull.php?code=1316>
12. **1.** RASC M12.20091130; **2.** Brahin, Pallasite, PMG, Gomel', Belarus (52°30'N, 30°20'E), find 1810, 823 kg; **3.** Anonymous gift 2009 November 30; **4.** Two fragments: a) 0.462x0.429x0.249 cm; b) 0.559x0.462x0.163 cm; **5.** a) 0.065 gr; b) 0.050 gr; **6.** a) Irregular triangular form; b) irregular lanceolate form; **7.** Typical attractive yellow crystalline olivine inclusions in an iron-nickel matrix; **8.** Good state of preservation; **9.** Not previously published; Grady (2000), pp. 113-114; IMACEM www.encyclopedia-of-meteorites.com/meteorite.aspx?id=5130; MB 44 (1968), 99-100 (Bragin, paired); MBDB <http://tin.er.usgs.gov/meteor/metbull.php?code=5130>

Impactites

13. **1.** RASC I3.20091130; **2.** Black Onaping (Suevite), Sudbury Impact Structure (46°36'N, 81°11'W), 1850±3Ma; **3.** Anonymous gift 2009 November 30; **4.** 10.10x4.37x0.99 cm; **5.** 59.9 gr; **6.** Slice, polished (matte) on broad faces; **7.** Weathering present on narrow faces, most concentrated on one of the longer faces; **8.** Good state of preservation; **9.** Published in www.encyclopedia-of-meteorites.com/meteorite.aspx?id=35310; also see PASSCEID www.unb.ca/passc/ImpactDatabase/images/sudbury.htm; Ames *et al.* (2002); Rousell & Brown (2009)
14. **1.** RASC I4.20091130; **2.** Shattercone (Malmian Limestone), Steinheim Impact Structure, Baden-Württemberg (48°41'N, 10°4'E), 15±1Ma; **3.** Anonymous gift 2009 November 30; **4.** 3.47x2.55x0.91 cm; **5.** 7.2 gr; **6.** Irregular fan-shaped; **7.** Faces with long surface exposure have a light tan patina and occasional surface speckling caused by an overlay of dark material (lichen?). Relatively recently exposed faces are chalk-white in appearance. All surfaces have a typical mild abrasive feel; **8.** Good state of preservation; **9.** Not previously published; PASSCEID www.unb.ca/passc/ImpactDatabase/images/steinheim.htm; ECIS www.impact-structures.com/germany/steinheim.htm; Skåla & Jakeš (1999)
15. **1.** RASC I5.20091130; **2.** Shattercone (charnockitic gneiss), Charlevoix Impact Structure, Charlevoix, Quebec (47°32'N,

70°18'W), 342±15Ma; **3.** Anonymous gift 2009 November 30; **4.** 23.55x15x6 cm; **5.** 2250 gr; **6.** Specimen displays discernible horsetailing (lightly to moderately well-defined *striae*), indications of a cross-sectional curve, and apical features; **7.** Obscuring yellowish light-brown weathering product over most of the faces. Fractures reveal the characteristic light and dark foliated bands of the underlying rock; **8.** Good state of preservation; **9.** Not previously published; PASSCEID www.unb.ca/passc/ImpactDatabase/images/charlevoix.htm; Robertson (1968)

16. **1.** RASC I6.20091130; **2.** Shattercone (quartz arenite), Sudbury Impact Structure (46°36'N, 81°11'W), 1850±3Ma; **3.** Anonymous gift 2009 November 30; **4.** 12.9x12x4.7 cm; **5.** 760 gr; **6.** Lightly defined *striae* (less well detailed than in RASC I5), and apical features present; **7.** Rosé and light-yellow exterior colouration, dark weathering product over ca. 65% of faces. Abrasions to weathering layer reveal brighter yellow colour of rock; **8.** Good state of preservation; **9.** Not previously published; PASSCEID www.unb.ca/passc/ImpactDatabase/images/sudbury.htm; Rousell & Brown (2009)
17. **1.** RASC I7.20091130; **2.** Shattercone (quartz arenite), Sudbury Impact Structure (46°36'N, 81°11'W), 1850±3Ma; **3.** Anonymous gift 2009 November 30; **4.** 15x10x3.8 cm; **5.** 680 gr; **6.** Lightly to moderately defined *striae* (better detailed than in RASC I6), and apical features present; **7.** Light-yellow exterior colouration, with an overlay of light-grey weathering product over most of the faces; **8.** Good state of preservation; **9.** Not previously published; PASSCEID www.unb.ca/passc/ImpactDatabase/images/sudbury.htm; Rousell & Brown (2009)
18. **1.** RASC I8.20091130; **2.** Brecciated cobble (grey suevite), Wanapitei Impact Structure (46°45'N, 80°45'W), 37.2±1.2Ma; **3.** Anonymous gift 2009 November 30; **4.** 7.2x10x3.8 cm; **5.** 90 gr; **6.** Hemisphere, porous, one polished face (matte); **7.** Off-white with grey flecks; **8.** Friable; **9.** Not previously published; PASSCEID www.unb.ca/passc/ImpactDatabase/images/wanapitei.htm; Dressler (1982), 80-87; Koeberl, C. & Montanari, A. (2009), 22-23

Addenda and corrigenda to the original catalogue (Rosenfeld 2009)

Whyte (2009), 57-91 should be added to the references for RASC M1. In the catalogue entries for RASC M4 and RASC M6, the speculation regarding the presence of traces of a fusion crust may be misplaced (Rosenfeld 2009, 210). In both cases it is more likely to be a weathering crust. The captions to figures 6 and 7 mistakenly identify the objects as meteorites; they are tektites.

Acknowledgements

The author wishes to thank the donor of the anonymous gift of meteorites for reading over this paper and catalogue, Ron St. Martin and Barry Matthews (Ottawa Centre) for assistance, the *Specula astronomica minima* for the generous loan of lab equipment, and the *Journal's* editor for his forbearance. This

research has made use of NASA's Astrophysics Data System.

Abbreviations

ECIS = Ernstson Claudin Impact Structures
 PAASCEID = Planetary and Space Science Centre, Earth Impact Database
 IMCAEM = IMCA Encyclopedia of Meteorites
 MB = Meteoritical Bulletin
 MBDB = Meteoritical Bulletin Database

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<http://tin.er.usgs.gov/meteor/metbull.php?code=5130>

Astrocryptic Answers

by Curt Nason

The solution to last issue's puzzle

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| | U | | A | | | | | | | 17 | B | | N | | | | | | | | | | | I |
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