

Abstract

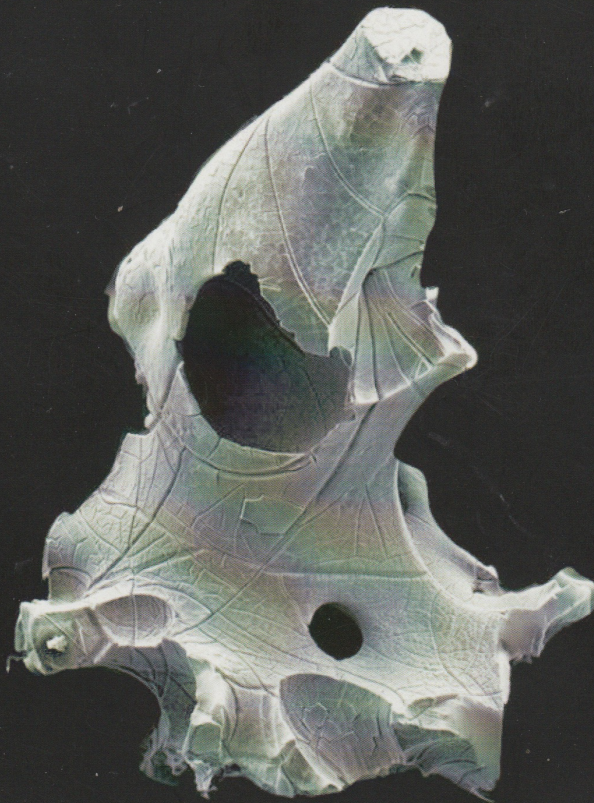
H. Ahokas 2017: Previously unidentified meteorite impacts in South Finland. – *Interdisciplinary Biology, Agriculture, Linguistics and Antiquities* 7: 205 pp. ISBN 978-951-98445-8-9. ©Kave, Helsinki.

Six craters (Ø from 11 to 40 m) were in the 1900s peat bogs lying less than 210 m apart on Vatajanmäki hill, Kouvola, SE Finland. A series of ^{14}C dating suggests an impact age of 6400 yr cal BP. The impact was also dated with moraine boulders smoothed by the Weichselian Ice, secondly supposedly broken by the impact; there the ratio of leached depths on these two types of surfaces was used to estimate the age of the breakage in the respect to the ice recession age. This gave an age of 6386 (mean) and 6572 (median) for the impact. Micrometeorites usually having C, O, Fe, Ti were EDS-studied. The largest (280 mg) evidently survived through the air due to its low-friction form of a delta-wing with winglets. A meteoritic mineral with C, O, Ti, Fe and Mn is previously unknown, tentatively called vatajanmäkite. Some had minor elements like Ce, Co, Cu, Mo, Ni, Sb, V, Zr, P, S, F, Cl, and I. Glassy and graphite-like carbon (chiemite) was formed in the impact. Some meteoritic grains had joined with charred plant tissue. Kink-bands on mica, shattering cones and marks of a local earthquake were shown. The local clay beneath the moraine is older than Weichselian. The azimuth of the impact was evidently NE (45°) based on four different observations further supported by the distribution of ejected boulders from the impacted moraine and staying on flat tops of erratic stone blocks. The NE direction was related with the theme of a 'fire', *kokko* (also 'eagle' in folklore) flying from NE ("*lenti kokko koillisesta*") or from eastern Kola Peninsula ("*tuli kokko Turjanmaalta*") in about 300 files of the Finnish folklore. Evidences for a past dry climate about 9200 yr, and dry and windy about 6300 yr, and more moisture since about 4000 yr cal BP, were presented. The putative use of meteoritic metal-containing pieces to stain a local prehistoric rock carving is shown. The meteoritic metal was perhaps used by local ancient blacksmiths. Remnants of a smithy were detected. – A separate crater (Ø 205 m) from the impact in the sea in the Holocene is now apparent on Medvastö isle, Kirkkonummi, S coast, due to the land upheaval. Boulders with recrystallized shocked parts were ejected and found on about 15 m asl, a past shore level round the crater. A putative new purple, C-containing mineral appeared in a shocked boulder. Small grains trapped with a magnet usually having C, O, Fe, Ti, rarely Cr, Pb, Cu, Zn, P, S and Br, had accumulated in the ancient 15 m asl shore gravel where also glassy carbon (chiemite) was found and ^{14}C -dated and is assumed to have resulted from the impact about 2600 cal BP. The past 15-m asl shore was also the level on which most of the Neolithic dwelling sites occurred in the area. ^{14}C -dating of sediments and mollusc shells gives too old ages making published results of the coastal past confusing. A relict species of sea shore vegetation, *Allium schoenoprasum* has survived inland on some 15-m asl rocks. A dated lime boulder was formed in the Ancylus Lake $\leq 10\,000$ cal BP. A prehistoric rock carving depicting a boat with sailors and a tree as the sail was found. A found grinding stone perhaps originates from the local slash-and-burn culture in 14th century. The earliest form of the island name, Maavessuo probably referred to the freshwater (*maavesi*) of the crater, earlier a swampy bay, now a pond.

**AIEMMIN TUNNISTAMATTOMIA METEORIITTITÖRMÄYKSIÄ
ETELÄ-SUOMEEN**

- 1. Meteoriiittiparven törmäys Vatajanmäkeen noin 6400 vuotta
sitten (cal BP): jäännöksiä ja merkkejä maastossa ja muistoja
suomalaisessa kansanrunoudessa**
- 2. Törmäyksestä meren pohjaan syntynyt Kotilahti, nykyinen lampi**

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in South Finland



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