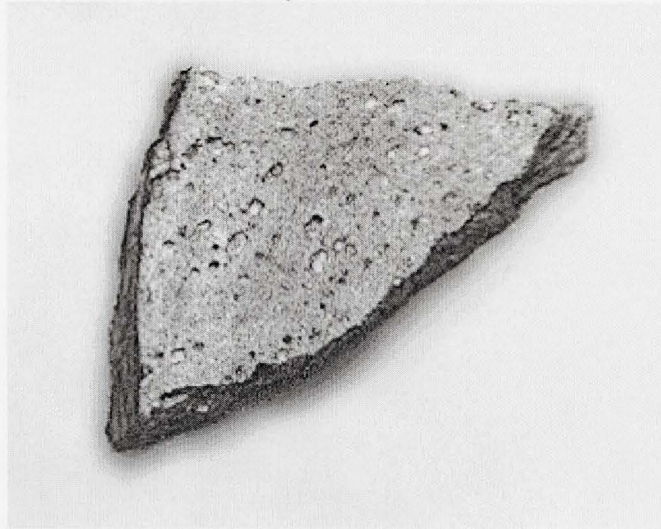


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Eucrite, Stannern trend



Fell June 30, 1957
20° S., 45° W. approx.

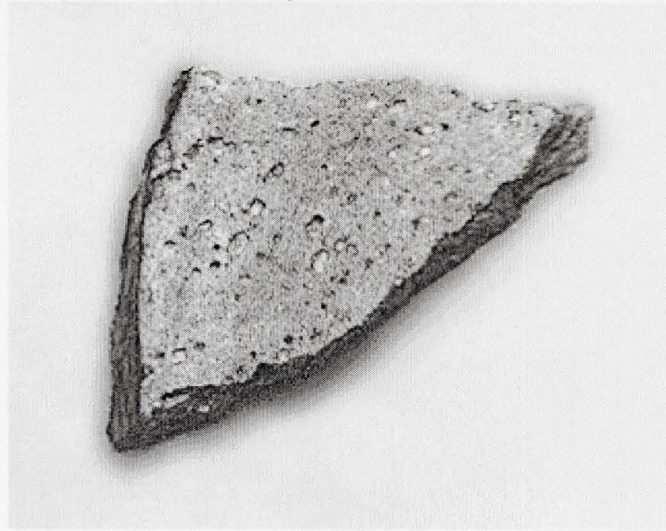
This fall occurred at 5:15 pm and one stone of 2.5 kg was recovered in the village of Ibitira, near Martinho Campos in Minas Gerais, Brazil. This is a unique unbrecciated, vesicular eucrite of the Stannern trend composition as reflected by its plot on a TiO vs FeO/MgO diagram, as well as in its major and trace element ratios.

Ibitira is derived from *in situ* crystallization from residual melts in a magma ocean, and was subsequently cooled at depth. It experienced a very prolonged thermal annealing to a grade of 5, resulting in the equilibration of pyroxene. Studies of the cooling rate and burial depth indicate that initial cooling down to 600°C proceeded at 0.01°C/yr at a depth of between ~130-800 m, corresponding to a regolith or solid rock cover, respectively. A large impact event excavated this material, forming a crater probably hundreds of kilometers in diameter. Rapid cooling along with a rapid drop in pressure allowed the formation of the large gas vesicles and established its igneous crystallization age of ~4.57 b.y., one of the oldest ages found for eucrites. A metamorphic recrystallization of plagioclase and tridymite occurred 4.48 b.y. ago. The above specimen is a 2.4 g partial slice displaying many vesicles.

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