xxxzx 76134

1969, May 20

2305 W Johnson

Mr.Sam Bishop,
Midland, Texas.

Dear Sam:

You asked long ago about magnesium sulphate in the carbonaceous chondrites (at least in the so-called Class I and Class II. There is a Class III about which classification there is some argument.)

I quote from an article by Dr. Brian Mason, "Minerals of Meteorites", in a book called "Researches on Meteorites". This is a set of papers delivered at a special meeting in 1961 when the Nininger Collection was dedicated by the Universities who bought it.

"Epsomite. Berzelius in 1834 observed that the Alaia meteorite, a carbonaceous chondrite, contained some 10% of water-soluble salts, principally magnesium sulphate. Water-soluble salts have been noted in other carbonaceous chondrites. Some authorities have claimed that these salts are not original constituents, but have been formed after the meteorites reached the earth by the action of atmospheric moisture on sulphur compounds. However, Daubree (1864) showed that the water-soluble material in Orgueil was an original constituent of this meteorite. Every specimen of Orgueil shows a white salt thruout the friable mass of the meteorite; in this musuem (Mason was then in charge of minerals in the American Museum of Natural History in New York) the salt is hydrated magnesium sulphate, $MgSO_4 \cdot 7 H_2O$, according to Du Fresne and Anders (1961). HOWEVER, THE STATE OF HYDRATION WILL VARY WITH THE HUMIDITY (I capitalized that by mistake--excuse poor typing), and the state of hydration when the meteorite was in outer space is unknown."

There are many similar comments in recent literature and Anders has run a picture of a fragment of Orgueil showing a white vein of magnesium sulphate running thru it, with the comment "This vein must have been deposited from water solution, thus offering evidence of the one-time presence of liquid water in the meteorite parent body".

Can you satisfy your non-believers now?