

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
WASHINGTON, D. C. 20560

December 9, 1969

Mr. Oscar E. Monnig
29 Chelsea Drive
Fort Worth, Texas 76115

Dear Mr. Monnig:

Our pool side conversation at Houston has prompted me to review the file on our "Bells" specimen.

Having been there at the time, you know in detail the circumstances under which our "Bells" material was collected. Ed Henderson accessioned it into our collection in December 1961, without study, having no reason to doubt the field identification. I did not get involved until April of 1966, when Ed Anders requested material for analysis. I remember clearly the uncomfortable feeling I had about this first transaction with Ed Anders, and I suggested to him that he be very careful in interpreting any data he might obtain. Two additional samples and several years later Ed wrote me that Dieter Heymann "found no cosmogenic gases".

During this period several other examinations were undertaken here. Three polished thin sections were prepared and looked at by Kurt Fredriksson and others. No serious attempt was made to identify the material. It was sufficient for our purpose to establish that nothing suggestive of meteoritic structures was observed. The sections seemed to be composed of a sulfide mineral, a highly reflecting material such as magnetite, and hydrated iron oxides. An x-ray powder pattern taken at that time showed the presence of magnetite (maghemite?) as the only identifiable phase. While all of these minerals may be found in meteorites under certain circumstances, this particular association seemed not to be meteoritic.

This work was further expanded by a brief but convincing electron microprobe study by Joe Nelen. He reported that the metallic appearing material that had been observed under the microscope has a magnetite composition (nickel free magnetite). The matrix material had iron oxide and iron sulfide compositions with intermixed aluminum oxide. No silica containing phase was observed, and the aluminum oxide possibly was introduced in our polishing operations. This work confirmed the optical examination and produced nothing that suggested meteoritic origin for this material.

After reviewing the case to this point, I discussed it with Brian Mason. He had on file an x-ray powder pattern that he had prepared from "Bells" material from the American Museum collection. His pattern was a weak magnetite pattern identical to the one we had prepared from our material. He remembered that he had not found chondrules in the American Museum material and that he had been puzzled by its strong attraction for the magnet. Mason suggests now that both our material and that in the American Museum is weathered marcasite concretions. This is consistent with everything we know about the material including its appearance under low magnification. Marcasite concretions probably occur in the area of the Bells fall.

Mr. Monnig, we would like to pursue this further. Could we borrow some authentic Bells for nondestructive examination? It seems important to us to check further into this matter. Is it possible that some of your material is the same as ours? Is it not time to put a preliminary scientific description of Bells into the literature? We stand prepared to cooperate with you in any investigation you would care to undertake.

Sincerely yours,



Roy S. Clarke, Jr.
Associate Curator
Division of Meteorites

cc: E. Anders
V. Manson
B. Mason