

Battelle Memorial Institute · COLUMBUS LABORATORIES

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February 9, 1966

Dr. E. P. Henderson
Division of Meteorites
U.S. National Museum
Smithsonian Institution
Washington, D.C. 20560

Dear Dr. Henderson:

We received the Tishmogo, Okla. specimen last Friday and re-prepared it immediately for a quick look. We were quite fascinated with what we saw. The martensite needles are larger than we have ever seen.

One of the interesting observations was the preferential oxidation corrosion of the martensite at the surface. The retained austenite between needles was not oxidized. Another observation of interest was confined to the martensite needles. There were parallel striations across some needles located within 1/8-inch of the surface which appeared to be Neumann bands, but we're not sure.

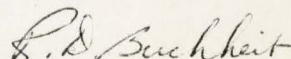
I hope we may retain this specimen for 1 or 2 weeks so that we may take some photomicrographs and electron micrographs of selected areas for our files and also for yours. We would also like to etch to determine whether any deformation evidence can be revealed in the austenite (taenite) phase. This, you will remember, we did on the Grant Meteorite by deep etching with a solution of 5 g FeCl_3 , 50 cc HCl, and 50 cc H_2O .

After we digest some of the observations we are making and obtain some photomicrographs and electron micrographs, we will probably be able to make some further comments.

Bob Maringer told me that you have received the results of the He^3 analysis which indicated that the specimen is a meteorite. This seems apparent from the microstructure also, since, to my knowledge, no man-made iron-nickel alloy ever looked like this specimen does.

We appreciate having the opportunity to examine this specimen with you. May we retain it a little longer?

Very truly yours,



R. D. Buchheit
Metallography Division

RDB:mc
Encl

P.S. Bob found a paper to be published in Acta Metallurgica in the near future which will be of interest to you. An abstract of the paper is enclosed.

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