

1969, June 17

Mr. R. D. Buchheit,
 Battelle Memorial Institute,
 505 King Ave.,
 Columbus, Ohio.

Dear Sir:

I thank you for the reprint on "Some Metallographic Observations on the Tishomingo, Oklahoma, Meteorite".

Could I ask you as a favor to send me an additional one for the finder of the meteorite? He is Glen Orr of Route 2, Tishomingo, Oklahoma, 73460 should you prefer to mail it directly. Incidentally, the correct spelling of the county in which this was found is Johnston.

It may interest you to know that I just last week closed the financial side of this acquisition by finishing payments for the masses. I am writing Dr. Henderson about this, as I know he is most anxious to cut the big piece in two, but I have some reservations about doing this. The finder wants to retain ownership of half of each of the two smaller pieces. He (the finder) is now a grown young man and just finished getting a pilot's license!

I have read your paper with care and absorbed it as best a novice and dilettante in my class can do. From all the astronomical evidence, I have long assumed that the break up of the parent body from which the meteorite came (an asteroid, presumably) would be quite adequate to furnish the mechanical shock you infer. I doubt seriously whether earth impact would be adequate. At the bottom of the hole in which these were dug from we were down to a sort of granitic gravel or hardpan; granite outcrops on the surface in the immediate vicinity in a number of places and the "soil" in many places is quite thin. The amount of oxide flakes surrounding the pieces was surprisingly small, but I presume this is natural considering that we have here practically a piece of stainless steel and good drainage conditions.

How far out in the solar system do you have to go to attain the -185° C. temperature you mention? I would think this would be the black body temperature of an object in the asteroid belt

think you or some one at the Washington meeting mentioned the possibility of an indication here that the object had to be out beyond Jupiter to get that cold. This does not seem too unlikely to me, but then the object would warm up somewhat every time it passed perihelion, and I am wondering what effect this recurring set of changes would have on the structure. Might this account for some of the "reverse transformation" of martensite back to taenite? As I gather it, this is about what you say in the first paragraph on the back of the reprint.

The point that still eludes me is what is the composition of the Tishomingo iron? I understand (perhaps wrongly) that martensite is a structural term, not compositional; yet you say only 21% is taenite. Then what, compositionally, is the 79% martensite? At one point you quote Massalski and hint the meteorite may be a Type II plessite in his classification. I had at one time come to the idea that one could call this a mass of plessite, since that term seems to be rather vaguely defined as a mixture of kamacite and taenite. But later I swung around to thinking of it as nothing more or less than a mass of taenite, along the lines of your mention of a "single prior taenite grain".

So, will you kindly elucidate this for me in a few well chosen words if that is possible???

Yours sincerely,