

13 Dec.

Dear Alex:

I finally got around to reading your paper on the reversal of the Jovian magnetic field. It is an interesting speculation and the only unfortunate aspect is the time of the order of centuries, making it a difficult conjecture to test in one human life time.

I am not at all up on present theories of the internal structure of Jupiter. The last I recall (1979) was a liquid metallic hydrogen-helium alloy layer surrounding a solid core of the same. Inside as the liquid layer, where the convection and nonuniform rotation ~~might~~ ^{must} occur, is thin it is not unreasonable to assume a solar type dynamo, generating a periodic field. A thick convecting layer suggests a steady field, although sufficiently large dynamo number would produce an oscillatory field ^{and then}. Did you not suggest a similar behavior for the planet

Pluto some years back? With subsequent reappearance in the next century?

The way things are turning out I am still only a little bit retired. I finished Charida's memoir for the National Academy of sciences only to find that I have been elected to give the annual Ryerson Lecture. Each year the University puts the finger on some member of the faculty to give a talk of general interest to the faculty as a whole. It is an honor, but think about it a bit and you begin to wish you were away somewhere in China. After going around and around

I have decided to go ahead with the title "Probing Empty Space from Your Porch" in which I will try to get it across that careful observations of magnetic field and cosmic rays at the surface of Earth — anyone's back porch will do — plus careful scrutiny of comet tails, and the solar corona as seen during an eclipse, leads to the general nature of things in space, including the solar wind and the heliosphere.

The space age came along then and quantified the picture, and went on to discover details that no one could anticipate from meditations and measurements on their porch. But as a matter of historical interest, the general nature of things in space was worked out before the multi-billion/year space program got underway. It shows what hard work and careful thought can do. The presentation will be superficial but I will try to impress the reality of force fields — magnetic and electric — in our everyday environment. The variations of the force fields on the porch are a direct consequence of the activity in space. So space weather is piped into our homes via the geomagnetic field. Ask anyone who lives in Quebec about power disruptions!

On top of that the NRC solar physics panel is supposed to begin deliberating in February. Another review yet. The one bright spot is that the Astronomy Division of the NSF has a real success story, Hugh Vanblomm, as Director and he is personally interested in the problems of solar physics. We shall see.

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