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Dear Mr. Reber:

I want to thank you for your very kind letter of November 20 sending me a reprint of your latest paper. It stated more specifically some of the things you had told me earlier.

I get a great deal of satisfaction from your line of attack. I note that after extending Paul Jansky's measurements to much higher frequencies and after others have gotten close on your heels you have turned around and <sup>gone</sup> the other way to extend the frontier by no less than four octaves! It now looks as though cosmic radiation might be present at almost any frequency provided local noise is sufficiently low for its observation.

There are many questions I should like to ask about noise conditions in the far south but most of them are too involved to be handled by correspondence. To those of us who live in the New York area it seems almost incredible that anyone should be able to detect at 520kc extra-terrestrial radiation as low as  $10^{-19}$  watt per square meter per cycle of band width. Here we have far too many broadcast stations, far too much industrial noise and far too much static.

The reprints you requested were forwarded by parcel post several days ago. I hope that you are not in a hurry. I could hardly bring myself to spending

the necessary money to send them by air mail.

In using my antenna-array paper, bear in mind that my calculations ignore all earth-proximity effects. Perhaps these are not important for the particular conditions under which you were working.

What seems to be the limitation preventing you from making similar observations at 250 kc or 125 kc or even lower? Is there anything I can do that will help? I am no longer in B.T.L. but ~~it~~ might help you to something they may have.

~~I am not sure that I understand your proposed mechanism to explain the penetration of 500 kc through the ionosphere but I assume that it calls for the mechanical motion of charged particles in the presence of the earth's magnetic field. No doubt the energy of motion comes from the incident wave and after penetration the energy of motion is converted back to wave energy. If this involves a kind of resonance, is it possible for such waves to be set up merely by cosmic particles being shot into the ionosphere from without? Is it possible that all cosmic noise is of this kind? Would such waves vary with sidereal time and therefore have the appearance of having come from outside our solar system? You probably know many reasons why this could not be.~~

I hope to be in Florida soon and may stop on the way down at Gainesville to see what is going on at the University of Florida. They one-time offered me a job. I believe they have a project based on the location of storm centers by radar methods. The popular they should also have one relating to radio astronomy. I must close for this time. Best regards and best of luck in the job's ahead. You have already made priceless contributions and with your long experience you should be able to make many more.

Sincerely, George D.