

HARVARD COLLEGE OBSERVATORY
CAMBRIDGE, MASSACHUSETTS

22 December 1938

Mr. Grote Reber
212 W. Seminary Street
Wheaton, Illinois

Dear Mr. Reber:

I was very interested in your brother's account of your activities in the field of galactic static. When the regions of maximum activity that you found were plotted on a photograph of the galactic-center region, they seemed to fall more on dark clouds than on ~~the~~ bright ones. Although this tendency may be due to chance, it still is a good working hypothesis in theorizing until you can nail down all the points with great certainty. It is not unreasonable that the dark clouds should be better radiators of radio frequencies than regions clear of absorbing matter.

Your theory of free-free transitions is exactly the one I have been worrying about off and on for the last year or so. The new wave mechanics provides a considerable correction to Kramer's emission law. I got an increase of about nine times at 14.6 meters. What has held me back from publishing anything on the subject is lack of knowledge of absorption by the reverse process. The thermodynamics people maintain that one should not exceed black-body radiation at the electron temperature of the interstellar gas. This would give still a much too small value for the radio radiation (by a factor of 30 or more) if one assumes an electron temperature of $10,000^{\circ}$ K, which is a reasonable value. Unless one goes to about 300,000 K the radiation is too small and this temperature is certainly too big.

It would be very worth while if we could get together and talk this all over. Is there any chance that you might be able to be in New York on December 29 and 30 of this year? The American Astronomical Society is meeting there and I shall attend.

Mr. Reber

28 December 1938

Dr. Shapley will be there. I have discussed your results with him and he would also like to talk with you about it.

In any case, I think that you should be congratulated on your work, and that by all means you should continue until all the results are confirmed without question. Also I suggest that you pick out some of the more conspicuous dark clouds and measure the effect to see whether the correlation is real.

Sincerely yours,

Fred L. Whipple.

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