

BELL TELEPHONE LABORATORIES

INCORPORATED

MURRAY HILL LABORATORY

MURRAY HILL, NEW JERSEY

SUMMIT 6-6000

May 7, 1946

IN REPLY REFER TO

1170-CHT-CMH

REPLYING TO

MR. GROTE REBER

212 W. Seminary Avenue

Wheaton, Illinois

Dear Mr. Reber:

I have been recently working on a possible explanation of the source of radio waves from the Milky Way which may also explain part of the radio radiation from the sun. Am enclosing an abstract of a recent Physical Society paper which is my only published material on this subject and which may have escaped your notice.

Your interesting results have been very helpful in my work on this subject, but I am not sure of my interpretation of two important points concerning your measurements. First, your efficiency is given as 0.85 on page 284 of Astrophysical Journal vol. 100 (1944). Is this the average of two directions of polarization or do you receive only one plane of polarization with such efficiency? Secondly, I notice that although you state your beam width as 6° to 8° , the distance between half-power points in your curve of response from the sun shown on page 286 of the same Journal is approximately 15° . This seems to indicate an apparent diameter of the sun at this frequency of about 7° , or is there some other interpretation of this 15° width.

Mr. G. C. Southworth has shown me your letter to him of September 20, 1945 noting that no radiation from the Milky Way is detected at 480 m.c. My formula seems consistent with this result since it says that the apparent Milky Way temperature or the energy per frequency interval received in the frequency range in which you are working is approximately inversely proportional to frequency squared.

Mr. Grote Reber - 2

Have you any more quantitative results at this frequency,
such as the minimum power you would have expected to detect?
Would you allow me to quote your results at this frequency?

Sincerely yours,

Chas. H. Townes

C. H. TOWNES.

Enclosed:
Abstract.