

30th September 1965

Dear Jennie:

The RC spring quarterly bulletin arrived on the 6th. Thanks. The RCA transistor data arrived on the 7th. It is quite similar to the Raytheon product. The Honeywell catalogs and Castanea arrived on the 28th. Castanea may be discontinued when my subscription expires. Please make out check for \$2.50 to Antique Wireless Association and send to Lincoln Cundall, 69 Parkway Boulevard, Rochester 12, N.Y. for my years dues.

Radio astronomy observations greatly improved during september and much fine data was secured. I have developed various more or less subjective means of determining when the ionospheric hole is open and I am observing the cosmos.

Raymond Haynes is an honors student in physics. His project is to build and operate an ionosonde attached to my antenna. His equipment sends out a pulse. The echo measures the height and electron density of the ionosphere. If the hole is open, the pulse goes out into space and no echo is received. The correlation between my interpretation of opening and closing of hole with his lack of or presence of echoes is nearly perfect; a most gratifying result.

The usual ionospheric installation uses an antenna with about 20% efficiency at two megacycles, compared to a half wave dipole. My installation has 200 dipoles. Thus the gain is 1000 times sending and receiving. The overall system gain makes his 5 watts as effective as 5 megawatts in a conventional arrangement. An assortment of new and interesting ionospheric phenomena have turned up. The most surprising seems to be associated with cosmic rays. Part of the reason is that instead of looking blindly all over a large area of the sky, I can steer the beam to desired directions and look at small areas of the sky.

While out with the archeologists, I collected samples of a new twining vine and transplanted them into large pots in the glass house here. They are beginning to send up new shoots as is their spring custom. In the wild it has some stalks turning clockwise and some counterclockwise on the same plant. I hope it continues to perform like this when domesticated.

Best regards,

*Grote Reber*  
Grote Reber