5-3-46

Nature, Vol 157, March 9th # 3984, pp 296 & 297
Hey, Phillips & Parsons find a maximum amount of Cosmic Static coming from Sagittarius. The peak value they give as $13.2 \cdot 10^{-21} \Delta\nu \Delta\omega$ watts/sq meter at 64 mc. where $\Delta\nu$ is bandwidth in cycles per second
$\Delta\omega$ is the element of solid angle subtended in steradians.

Now a steradian is the solid angle covering a surface r^2 on a sphere. Also the total surface of a sphere is $4\pi r^2$. Thus there are 4π steradians on the surface of a sphere.

Also one circular degree subtends an area of $\frac{\pi}{4}\left(\frac{1}{57.3}\right)^2 r^2$ on the surface of a sphere. Hence there are 52500 circular degrees on the surface of a sphere, $\left(4\pi r^2 / \left(\frac{\pi}{4}\right)\left(\frac{1}{57.3}\right)^2 r^2\right)$. Thus each steradian has $52500/4\pi = 4180$ circular degrees.

Reducing their value to my system gives.

$$13.2 \cdot 10^{-21} \cdot 10^6 \frac{1}{4.18 \cdot 10^3} \cdot \frac{1}{10^4}$$

$= 3.16 \cdot 10^{-22}$ watts/sq.cm, cir.deg., mc bd.

which is 28% of my figure. They get 56% as much as 2 do from Cygnus.

Antenna was a Yagi array having 3DB down points ±6° in elevation and ±15° in bearing. Work done July 22-31st 1945

Antenna was for $\lambda/2$ dipoles in front of a plane reflector

Nature, Vol 157, Feb 9th 1946 #3980, pp 158 & 159.
Pawsey, Payne-Scott & McCready found solar noise at 1.5 meters equivalent to a solar temperature of $1.2 \cdot 10^7$ degrees peak. The correllation between intensity of solar noise and area of sunspots was good over period Oct 2 to Oct 23, 1945. Peak was on Oct 4th at which time tests were also made at 50cm and 25cm. At 50cm nothing could be found so the effective temperature of sun is less than 50,000°K. ~~at 50cm~~ which was limit of sensitivity of apparatus. At 25cm a faint amount of energy was detected equivalent to a solar temperature of 6000°K. Apparently sunspots do not radiate strongly below one meter wavelength.

If cosmic noise is due to sunspots on the stars then it may be found that cosmic static dies out rapidly as the frequency is increased. This explanation of course does not explain why sunspots radiate best at low frequency or the mechanism involved in such spot radiation.

11-8-47

Hey, Phillips & Parsons Data

The graph on page 297 of Nature, 9th March 1946 was reduced to tabular form as on following sheets

To get their curve lines into watts/sq. cm., cir. deg., mc. bd. multiply by 3,16/12.0 = 0,264 The absolute level is then comparable with my data on 160 + 480 mc

1310 max

Original Data Sheet

I		12	9	6	4	2	
Dec	RA	1815	1845	1911	2009	1153	0613
−30°		1805	1753	1714	1446	1124	0219
Dec			1901	1941	2025	1140	0534
−20°			1753	1714	1437	1057	0304
Dec			1913	1951	0742 2035	1152	0453
−10°			1808	1713	0714 1600	0922	0347
Dec			1921	1956	0734 2039	1147	
0°			1836	1709	0658 1556	0904	
Dec				1953	0710 2043	1147	
+10°				1830	0634 1459	0909	
Dec					0649 2103	1153	
+20°					0609 1516	0916	
Dec				2042	0632 2127	1212	
+30°				2006	0509 1826	0924	
Dec			I=8.2				
+35°			2034				
Dec				2106	0627 2149	1247	
+40°				2008	0429 1914	0940	
+50°					0630 2312	1342	
					0120 2008	1030	
+60					0534		
					2226		