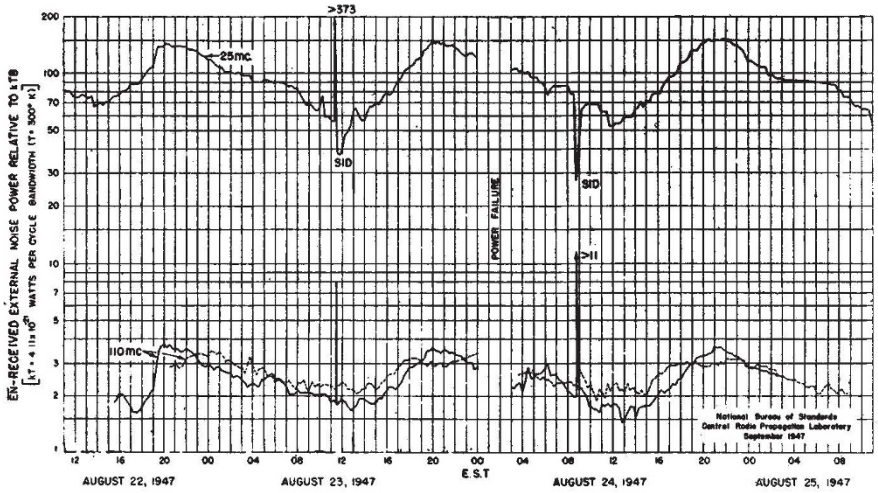

EXTERNAL NOISE RECEIVED ON HORIZONTAL HALF-WAVE DIPOLES A QUARTER WAVE-LENGTH ABOVE GROUND, AT STERLING, VA., LAT. 38° 59′ N., LONG. 77° 28′ W.

Approximate characteristics, $\sigma = 2 \times 10^{-14}$, $\varepsilon = 4$. Full line, dipole in east–west plane; broken line, dipole in north–south plane. *SID*, sudden ionospheric disturbances

before the radio noise burst, similar to the phenomena described by Hey, Parsons and Phillips[4].

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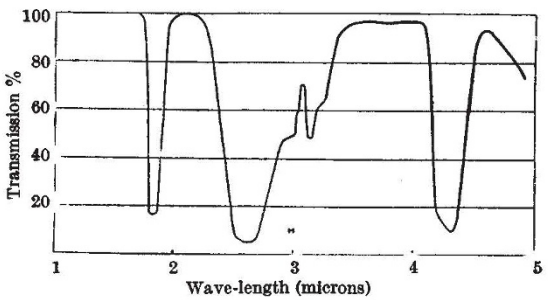
Transmission of the Atmosphere in the 1–5 Micron Region

THE most comprehensive published data available for the transmission of the atmosphere in the infra-red region is that of Fowle[1], whose results were obtained over comparatively short paths (maximum 127 yards) in the laboratory. In spite of the short path, no region clear of considerable absorption was reported between 2·1 and 8·5 microns. It may be of interest to record preliminary field results obtained during work at this Laboratory in the 1–5 micron region using the greatly improved apparatus now available.



TRANSMISSION OF THE ATMOSPHERE OVER 600-YD. RANGE (TEMP. 42° F.; REL. HUMIDITY, 77%; PRECIPITABLE WATER, 0·305 CM.)

The measurements were made using a source and spectrometer separated by a 600-yard range. The source consisted of a Nernst filament at the focus of a 2-ft. focal-length parabolic mirror of 2-ft. diameter. A mirror system of 10-ft. focal-length served as collector unit for the spectrometer. The latter was a Littrow arrangement with a 30° rocksalt prism. A Hilger–Schwarz thermopile was used as detector in conjunction with a General Motors D.C. amplifier[2]. Amplifier output was displayed on an Evershed and Vignoles 5-mA. double-pen recorder, one pen of which was used for wave-length calibration marks. To obtain the transmission curve, comparison was made between emission curves of the Nernst filament obtained over a short range (5 ft.) and over the 600-yd. range. In calculating percentage transmission, it was assumed that the value at 2·2 microns was 100 per cent[1].

A typical curve is reproduced herewith. It will be seen that, in particular, a region of high transmission exists between 3 and 4 microns. Fowle's figure for 3·5 microns is about 65 per cent transmission (127 yards). Our results were obtained in what was intended to be only a preliminary investigation; but they are considered quite adequate to show that transmission in the 3·5-micron region is comparable with that at 2·2 microns.

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Spin-Dependence of Magnetic Dipole Gamma Radiation and the Nuclear Level Scheme of Pb^{208}

Hulme, Mott, Oppenheimer and Taylor[1] remarked that a γ-ray due to a transition between levels of the same parity may be a mixture of magnetic dipole and electric quadripole radiations. This is possible when the change ΔI in the quantum number I for the total nuclear spin is ± 1 or 0. The relative proportions in the mixture will depend on the structure of the nucleus. For $\Delta I = \pm 2$, no parity change, magnetic dipole radiation is forbidden and nearly pure electric quadripole radiation will be emitted. An exception occurs if the spin change is $1 \leftrightarrow 0$, when the radiation must be pure magnetic dipole.

The presence of a high proportion of magnetic dipole radiation will give an abnormally large coefficient α_K of internal conversion in the K-shell.