

# The Emission Spectrum of the Night Airglow from 2 to 4 $\mu\text{m}$

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The emission spectrum of the night airglow from 2 to 4  $\mu\text{m}$ 

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The infrared spectrum of the airglow in the region 2 to 4  $\mu\text{m}$  has been measured with a two-beam interferometer carried to high altitude by a balloon. The  $\Delta v = 1$  sequence of OH bands is in evidence as well as an emission band of  $\text{CO}_2$ .

The emission spectrum of the airglow between 2 and 4  $\mu\text{m}$  has been observed by means of a two-beam interferometer carried to an altitude of 95 000 ft. by a balloon. The  $\Delta v = 1$  sequence OH bands is the most prominent feature of the spectrum, which is shown in figure 1. This spectrum has been calculated from one interferogram of 20 min duration,

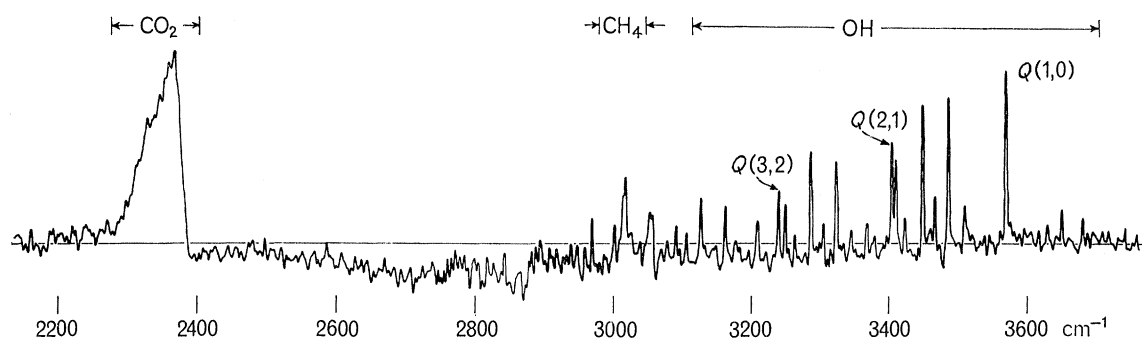


FIGURE 1. The spectrum of the night airglow recorded at an altitude of 95 000 ft.

recorded during the night of 7 September 1967. The limit of resolution,  $4 \text{ cm}^{-1}$ , is adequate to resolve the rotational structure of the bands. In addition, a strong feature at  $4.3 \mu\text{m}$  appears which is probably due to  $\text{CO}_2$  in emission; positive identification would require higher spectral resolution. This observation is capable of giving an estimate of the amount of  $\text{CO}_2$  above the altitude of observation. Another feature in the spectrum not due to OH is due probably to methane. A complete report on the experiment will appear later when all the interferograms, of which there are about fifteen, have been analysed.

The interferometer was constructed at the University of Toronto, whereas the launching and recovery of the gondola was carried out by the Canadian Armament Research and Development Establishment, Valcartier, Quebec. The author is indebted to Mr R. MacDonald and Mr H. L. Buijs for their enthusiastic assistance with the experiment.