Diurnal Variation in the Occurrence of 'Dawn Chorus'

IN the audio-frequency range, a phenomenon called 'dawn chorus', which is characterized by a multitude of rising tones, is frequently observed. Other investigators^{1,2} have noted that this phenomenon exhibits a pronounced diurnal variation of intensity, with the maximum occurring during the early morning hours, and the name 'dawn chorus' has been derived on this basis. The observations of 'dawn chorus' reported here were made between January 1 and July 2, 1956, at College, Alaska, with equipment sensitive to frequencies between 1 to 10 kc./s. During this interval, the equipment was in operation on 116 days. 'Dawn chorus' was found to be present in 224 of the 2,784 one-minute hourly observing periods. The diurnal variation in the frequency of occurrence of 'dawn chorus' is illustrated in Fig. 1, which represents a histogram of the number of times 'dawn chorus' was found to be present during the one-minute recording interval for each of the twenty-four hours of the day.

Fig. 1. Diurnal variation in the occurrence of 'dawn chorus' at College, Alaska

The main feature shown by the histogram is that the time of maximum occurrence of 'dawn chorus' at College is at 1400 hr. local time, in contrast to the morning hour maximum noted by other observers. Since College is situated in a high geomagnetic latitude whereas the earlier observations were made at lower latitudes, one is led to inquire if the difference in the local time of maximum varies systematically with latitude. In order to test this hypothesis, the observations of 'dawn chorus' at College for the first half of the year 1956 have been compared with those obtained during the same period at four other stations. The local times of the daily maximum in the occurrence of 'dawn chorus' for the five stations are listed in Table 1 and plotted against geomagnetic latitude in Fig. 2. A straight line has been fitted to the points of that figure. Storey¹ gives 0600 as the time of maximum for Cambridge (geomagnetic latitude 55° N.),

Table 1

Station	Symbol	Geo-magnetic latitude	Local time of maximum	Mean local magnetic noon
College, Alaska	CO	65° N	1400	1350
Hanover, New Hampshire	HA	55° N	0700	1200
Washington, D.C.	WA	50° N	0500	1215
Wellington, New Zealand	WE	45° S	0200	1115
Dunedin, New Zealand	DU	50° S	0430	1120

Fig. 2. Local time of maximum in the diurnal variation of occurrence of 'dawn chorus' as a function of geomagnetic latitude

and the corresponding point (CA) has been included in Fig. 2 for comparison.

Although the number of points is limited, the observations nevertheless suggest that the time of the diurnal maximum in the occurrence of 'dawn chorus' is related to geomagnetic latitude.

In view of the fact that the daily maximum of 'dawn chorus' does not, in general, occur at dawn, it is suggested that it be referred to simply as 'chorus'.

The observations from the stations in New Zealand and the United States were obtained by interchange, and I wish to acknowledge the co-operation of Drs. G. M. Allcock, H. E. Dinger, L. H. Martin and M. G. Morgan. I am also indebted to Dr. L. Owren for assistance in the preparation of the manuscript. The work reported here was supported by the U.S. Air Force Cambridge Research Center, under contract No. AF 19(604)-1859.

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June 14.

¹ Storey, L. R. O., *Phil. Trans. Roy. Soc., A*, **246**, 113 (1953).

² Allcock, G. McK., and Martin, L. H., *Nature*, **178**, 937 (1956).

Band Spectrum of Gallium Hydride and Gallium Deuteride

I HAVE observed and measured some faint absorption bands in the spectra of gallium hydride and deuteride. The bands are composed of single *P*, *R* and *Q* branches belonging to a ($\Pi - \Sigma$) electron transition. The branches are degraded to the violet, and consist of sharp and wide-spaced lines.

The spectrograms were taken with a high resolving power immersion spectrograph¹. A quartz tube with an effective absorption length of 120 cm. was used as the absorption cell. The tube was heated by means of an electric furnace to a temperature of about 1,200° C., the pressure of hydrogen and deuterium being 1 atm. The following constants were calculated for (0-0) bands:

Gallium hydride		Gallium deuteride	
ν_0	$= 17,626.84 \text{ cm.}^{-1}$	ν_0	$= 17,634.36 \text{ cm.}^{-1}$
B_0''	$= 6.046 \text{ cm.}^{-1}$	B_0''	$= 3.083 \text{ cm.}^{-1}$
B_{0d}'	$= 6.518 \text{ cm.}^{-1}$	B_{0d}'	$= 3.337 \text{ cm.}^{-1}$
B_{0c}'	$= 6.526 \text{ cm.}^{-1}$	B_{0c}'	$= 3.340 \text{ cm.}^{-1}$
D_{0d}''	$= -356 \times 10^{-6} \text{ cm.}^{-1}$	D_{0d}''	$= -84 \times 10^{-6} \text{ cm.}^{-1}$
D_{0c}''	$= -449 \times 10^{-6} \text{ cm.}^{-1}$	D_{0c}''	$= -109 \times 10^{-6} \text{ cm.}^{-1}$
D_{0c}''	$= -468 \times 10^{-6} \text{ cm.}^{-1}$	D_{0c}''	$= -116 \times 10^{-6} \text{ cm.}^{-1}$