

## SHORT COMMUNICATIONS

### SODIUM LAYER HEIGHTS OVER ANTARCTICA\*

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Measurements of the twilight sky luminosity variations in Na D at Saskatoon, Canada, were found by Hunten and Shepherd (1954) to be consistent with a distribution of sodium atoms centred at a height of 85 km with a scale height of 7.5 km above and below the peak, the luminosity being due to resonance scattering of sunlight. By fitting Hunten's (1954) luminosity curve to experimental data obtained in Australia and Antarctica, O'Brien (1960) found a sodium layer height of  $90 \pm 5$  km.

TABLE 1  
SODIUM LAYER HEIGHTS OVER MAWSON, ANTARCTICA, DURING 1960

Aug. 10, p.m.: 91 km	Sept. 24, a.m.: 90 km	Oct. 17, a.m.: 87 km
Sept. 13, p.m.: 89	Sept. 24, p.m.: 85.5	Oct. 21, a.m.: 93
Sept. 15, p.m.: 87	Sept. 25, a.m.: 88	Oct. 22, a.m.: 91
Sept. 16, p.m.: 97	Sept. 27, p.m.: 87	Oct. 24, p.m.: 88
Sept. 17, p.m.: 89	Sept. 28, a.m.: 90	Oct. 25, a.m.: 85
Sept. 20, p.m.: 84.5	Sept. 29, p.m.: 90	Oct. 25, p.m.: 91
Sept. 21, a.m.: 87	Sept. 30, a.m.: 87	Oct. 26, a.m.: 88
Sept. 21, p.m.: 91	Oct. 10, a.m.: 85	Oct. 26, p.m.: 91
Sept. 22, a.m.: 87.5	Oct. 11, a.m.: 97	Oct. 27, a.m.: 86
Sept. 23, p.m.: 88	Oct. 13, p.m.: 85	
		Mean height: 89 km

At the Australian National Antarctic Research Expedition's station Mawson, Antarctica, 29 observations were made during August, September, and October 1960, using a photoelectric filter photometer similar in principle to O'Brien's (1960). A scale height of 7.5 km was assumed and the fit of the data to Hunten's (1954) luminosity curve was good with a sodium layer height uncertainty of order 1 km. The average height of the layer (Table 1) was 89 km. No evidence for a seasonal variation of height is found in this period.

On 10 nights an evening observation was followed by a morning observation, indicating sometimes a rise, sometimes a fall in the sodium layer during the dark hours. The last three observing nights were the last possible before the sodium

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layer was illuminated uninterruptedly for the summer period. On each of these nights the sodium layer dropped 3–5 km during the short period of 1–2 hr while it was in the Earth's shadow.

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