

SHORTER CONTRIBUTION

A NOTE ON MOISTURE TRANSPORT IN THE 700 - 500 MB
LAYER

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On the 10th, 11th, 12th and 13th of June, particularly between the 11th and 12th, an unusually good opportunity arose for projecting the mean mixing ratio in the 700 - 500 layer over Western Australia into South Australia, Victoria and Tasmania, with the mean velocity of the wind in this layer. Inspection of the 500 mb. contour charts (Figs. 1, 2, 3 and 4) shows only relatively small changes occurring in these days, so as a first approximation we can take these charts as streamline charts with trajectory of the air approximately following the streamlines. Further between the 11th and the 12th there is relatively little up or down-glide over Western Australia. However, the air layers are subject to moderate upslide over southern South Australia and Victoria. So although we can expect the mean mixing ratio in the 700-500 mb. layer to be conserved northwest of Western Australia into western South Australia, relatively greater values of mean mixing ratio between the 700 and 500 mb. levels could be expected over southern South Australia and Victoria.

Interesting changes are (1) Kalgoorlie's 3.7 gms/kg. on the 10th and Hobart's increase from 0.4 gms/kg. on the 10th to 2.5 gms./kg. on the 11th; (2) Hedland's 3.0 gms/kg. on the 10th increasing to 4.3 gms./kg. on the 11th, and Adelaide's 1.1 gms/kg. on the 11th increasing to 3.8 on the 12th; also Laverton's 1.5 gms/kg. on the 11th, and 3.7 on the 12th.

In case (2) the narrowness of the 700-500 mb. moist "jet" is emphasised by values of 0.8 at Kalgoorlie on the 11th, and decreasing to 0.7 on the 12th; also 1.3 at Woomera on the 11th increasing to 1.8 gms/kg. on the 12th.

However, on the 13th June, values of mean mixing ratio at the various stations show changes not so readily tied up with changes anticipated by the hypothesis of conservative transport of mean mixing ratio. This could be explained by relatively greater changes in the 500 mb. contour pattern between the 12th and 13th June.

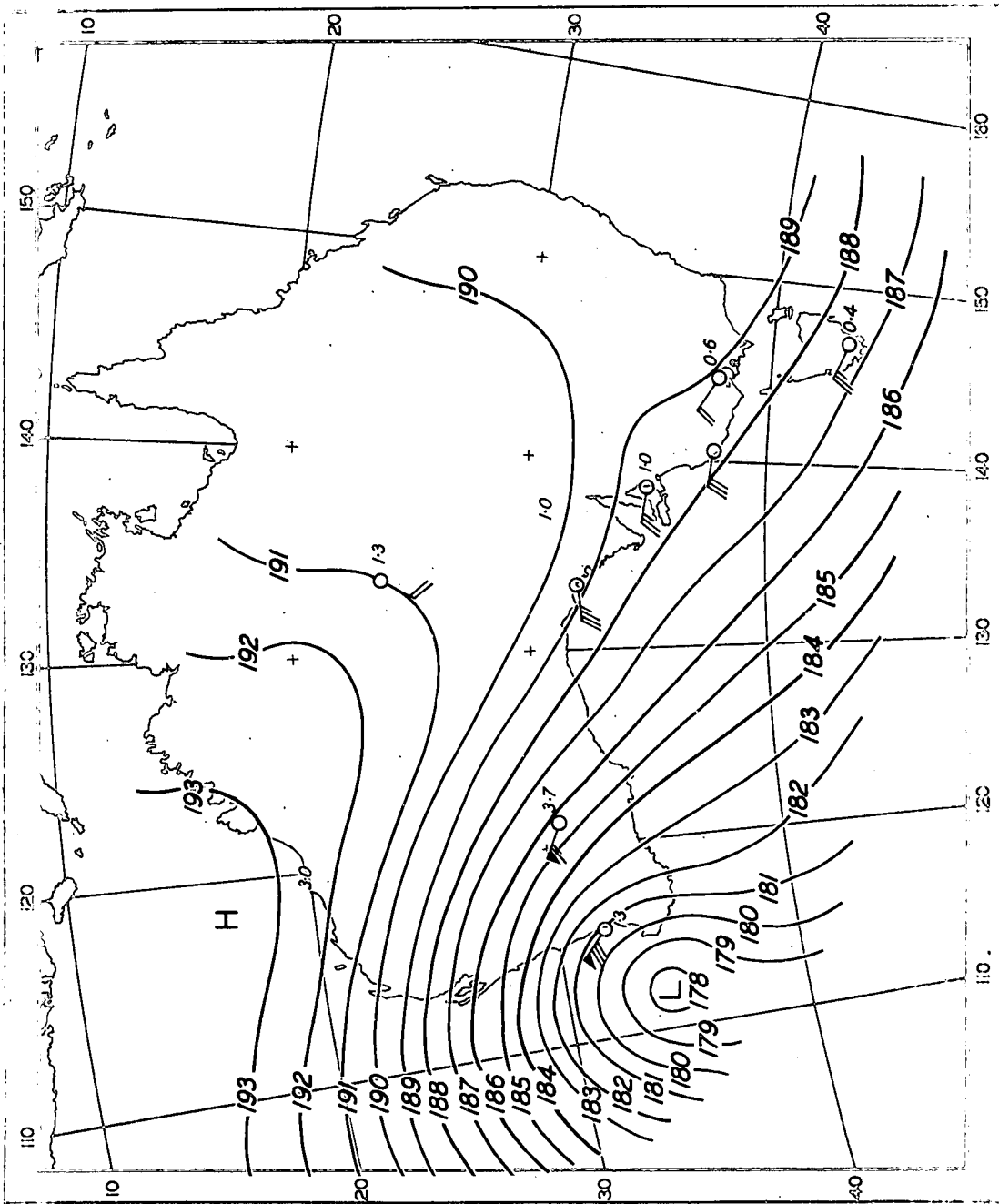


FIGURE 1. 500 MB. CONTOURS (In 100's of Feet) 0500Z 10th. JUNE 1955
 FIGURES AT RADIOSONDE STATIONS ARE THE VALUES OF MEAN MIXING RATIO FOR THE 700-500 MB. LAYER IN GRAMS PER Kg.

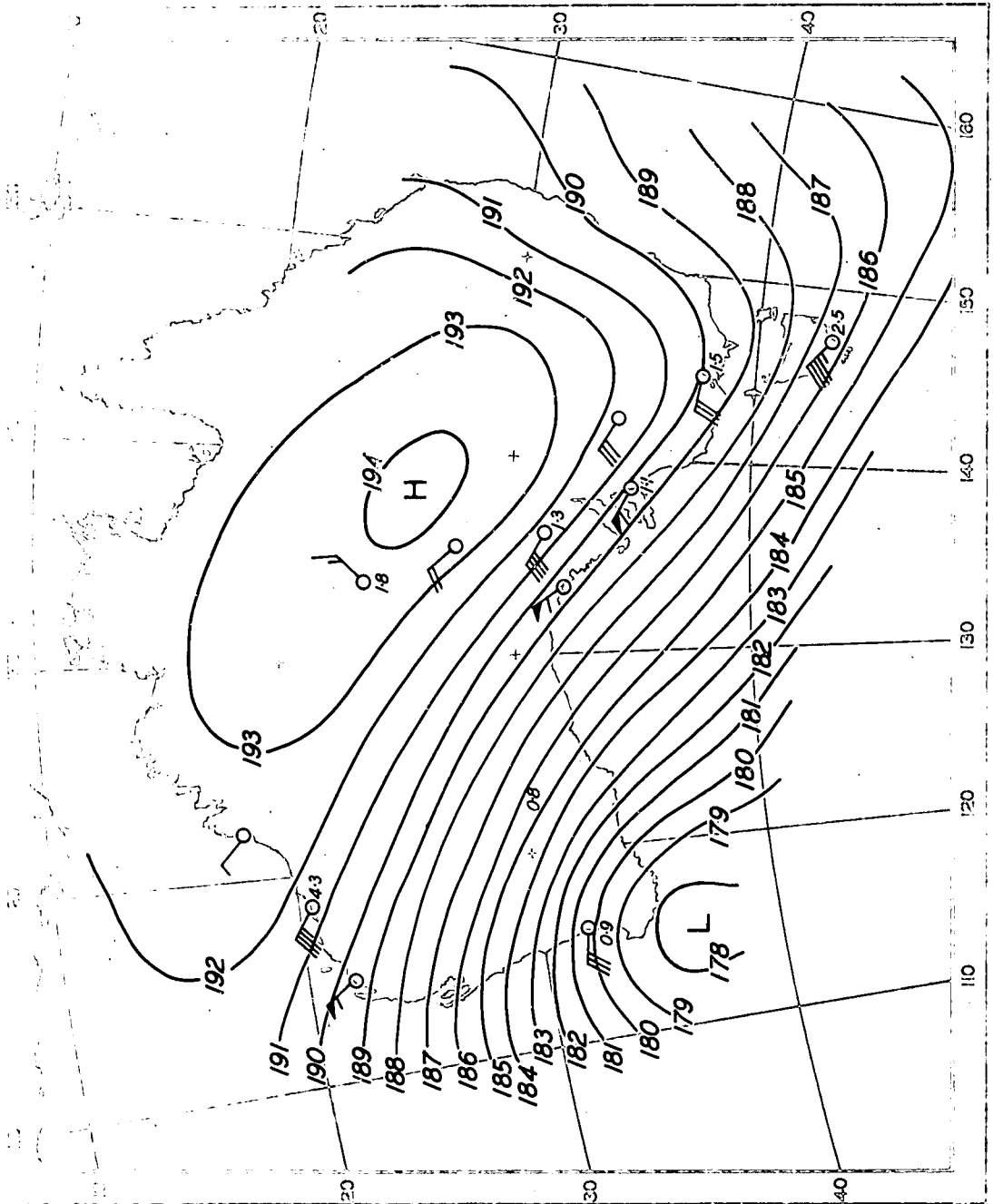


FIGURE 2. 500MB. CONTOURS 0500 Z. 11th. JUNE 1955 (FOR EXPLANATION SEE FIGURE 1.)

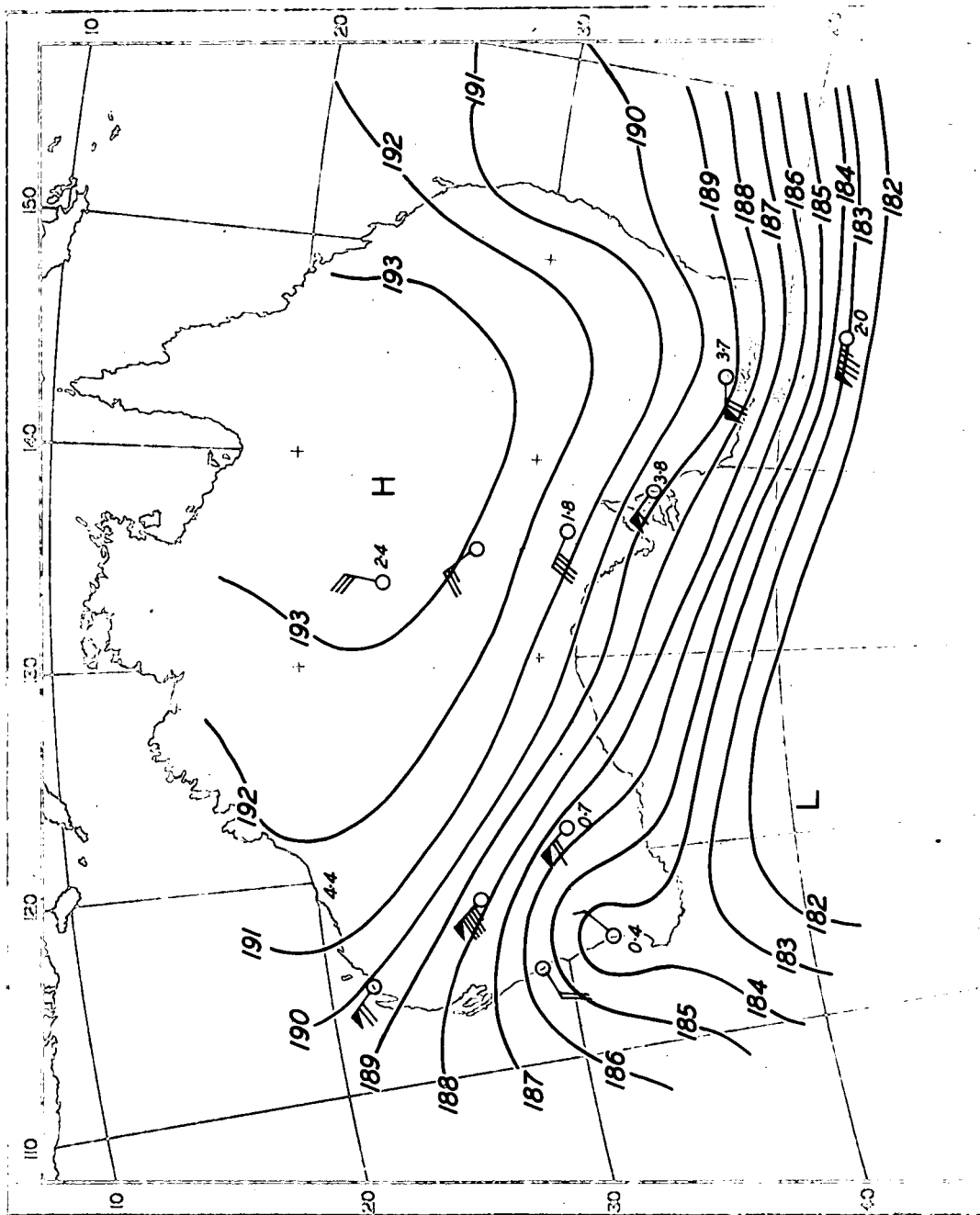


FIGURE 3. 500 MB. CONTOURS 0500 Z. 12th. JUNE 1955 (FOR EXPLANATION SEE FIGURE 1.)

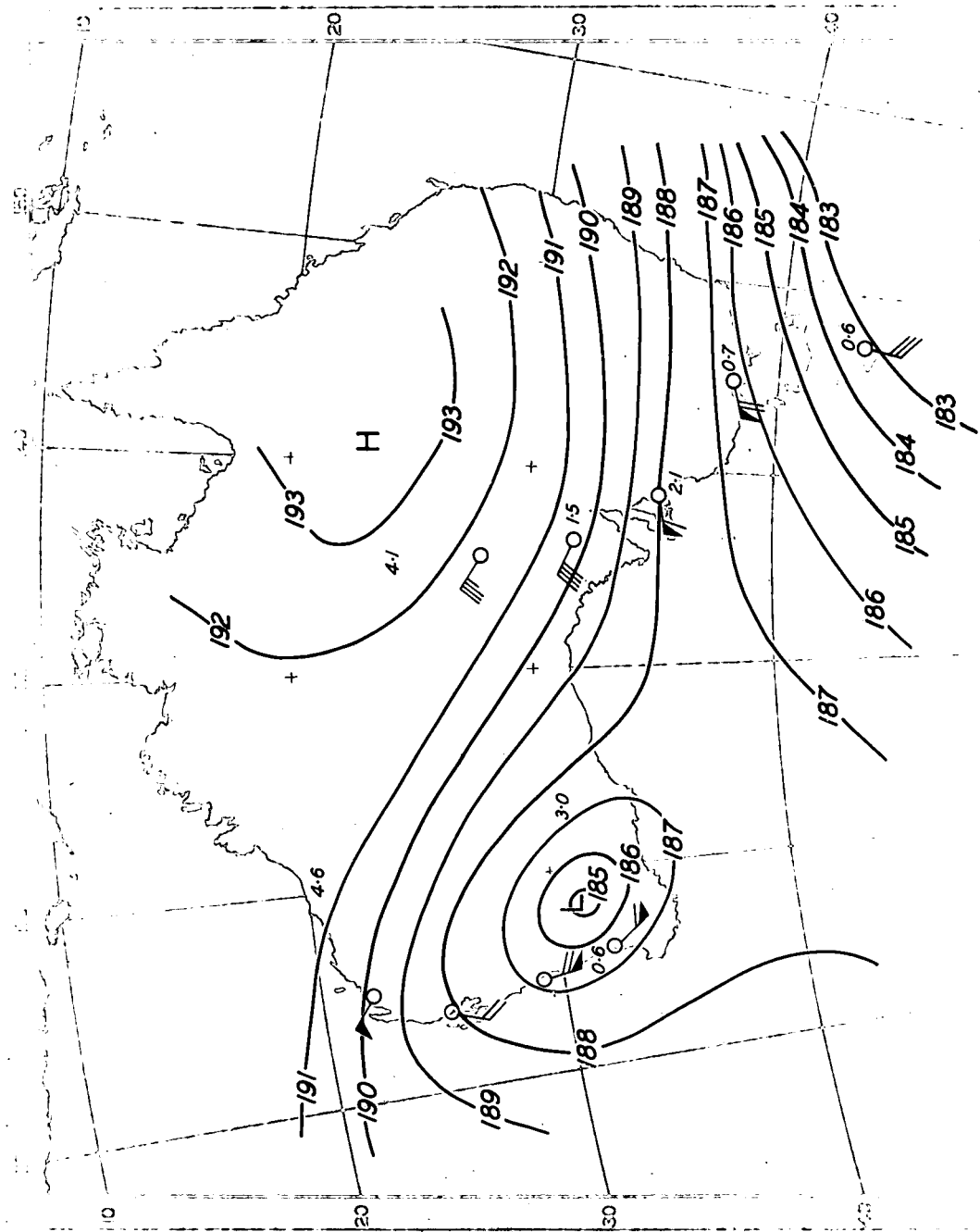


FIGURE 4. 500 MB. CONTOURS 0500Z. 13th. JUNE 1955 (FOR EXPLANATION SEE FIGURE 1.)