

It appeared that "Irish Cedar" passed the northern portion of the front labelled (12) at about 1500Z on 12th, and by this time this front had weakened considerably in conformity with the rapid south-south-eastward movement of the wave cyclone (Figure 3).

It was found necessary to discount pressures from the vessels "Asphalion" (Figure 1) and "City of Capetown" (Figure 2) to fit this analysis.

References:

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| C. A. W. D. Section,
Bureau of Meteorology | 1954 | Analysed charts for March
(unpublished) |
| | 1955 | Aust. Met. Mag. 8,
Central Bureau of
Meteorology, Melbourne |

R E P L Y

by K. P. Lynch

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28th July 1955

With regard to the first period of pressure fluctuations which began on 9th March, Mr. Hannay's explanation appears similar to mine. Mr. Hannay says that the "Irish Cedar" remained near front labelled (11) for some hours since the ship's course and the orientation of the front were nearly in the same direction, i.e. north-west - south-east.

My explanation of the pressure fluctuations quote "The course of the ship followed closely that of the quasi-stationary front and this could account for the long period of fluctuations."

Thus both explanations are that the cause of the fluctuations were caused by the ship moving along a course parallel to a front for several hours.

The question whether the front was quasi-stationary or a rapid moving front is difficult to answer owing to lack of sufficient data in the area.

Mr. Hannay's explanation for the second period of fluctuations - "the vessel was exposed to winds of 30 to 40

knots with higher gusts for some 10 to 12 hours" - is possibly correct. My analysis was made without the report from the ship "Korrawatha."

SOUTHERN OCEAN ANALYSIS 1 - 3 JANUARY 1954

by R.H. Clarke

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24th November 1955

While recognising and approving the careful logic behind Mr. Garrick's frontal analysis (Aust. Met. Mag. No. 10, p. 71) in the Heard-Kerguelen Is. area, I believe it is desirable, even necessary, in existing circumstances, to speculate further on the relationship between his short frontal segments and frontal passages observed elsewhere. One is accustomed in the Australasian area to frontal systems of length measured in thousands of miles. The relative positions of the three islands of the South Indian Ocean network are approximately as follows: Kerguelen Is. is about 260 n. miles northwest of Heard Is., and Amsterdam Is. about 750 n. miles north north east of Kerguelen.

On the days in question (1 to 3 January 1954) a clear cold frontal passage occurred at Amsterdam Is. about 1200 hrs. G.M.T. on 2/1/54 (wind change from northwest to west) and a much less definite one about 2100 hr. on 3/1/54. No other observations bearing on the matter are available.

Of the several interpretations which could fit the observed frontal passages, the one which appears most plausible, in my view, is that the warm frontal passage at Kerguelen Is. at about 0300 hr. on 2/1/54 is continuous as a wind shear line with the cold frontal passage at Amsterdam Is. This amounts, I believe, to declaring that the "warm front" of Mr. Garrick is, rather, at least historically, a "warm occlusion", of the type not uncommonly found over the southern extremity of New Zealand, Campbell Island, Macquarie Island and even Tasmania. The weak second cold front at Amsterdam Is. is considered to be continuous with Mr. Garrick's cold front at Kerguelen Is., and to be in some manner "secondary" to the leading front.

The use of the time section technique in this area on earlier occasions suggested that Kerguelen's apparent warm frontal passages may have been warm occlusions, but no opportunity to my knowledge has yet presented itself of testing this hypothesis with a more adequate network of observations.