CENTRAL OFFICE DISCUSSIONS

May 14th:

Analysis and forecasting from a State bureau viewpoint by A. K. Hannay.

The types of analysis made in a State bureau were outlined. The limitations placed on available time by forecasting and service to the public were stressed.

Presentation of the forecast through the various agencies for public consumption was an important end point and the basic purpose of analysis was to produce the best possible forecast.

Central Analysis Section statements were reviewed from the point of view of their use in a State bureau. The importance of good communications was emphasised.

It was concluded that a sound opinion by a specialist analysis section was invaluable, particularly in the form of prognostic charts and that upper air analyses over a broad area were a useful tool for extended, as well as short period, forecasts.

May 21st:

Accuracy of upper air observations by W. J. Gibbs.

The errors to which radiosonde, rawin and pilot balloon observations were subject were discussed under the headings - (a) instrumental (b) observational and (c) sampling errors. Mr. Gibbs gave some recent results of smoke puff experiments on the time variation of winds at Woomera.

Observations were made at 20000 to 35000 ft. It was found that for time intervals between smoke puffs of up to 3 hours 50% of vector changes had a magnitude of less than 8 knots. In extreme cases changes amounted to 25 kts.

May 28th:

Some aspects of aviation forecasting and briefing by A. Garriock.

Forecasting practice at an aviation station

was outlined including analysis and supplementation of analyses by verbal information by airline pilots. The type of forecast and method of briefing for both domestic and overseas aircraft was discussed.

Mr. Garriock outlined aircraft hazards, such as hail, turbulence, icing, their effects on the performance of aircraft of various types, the use of Central Analysis Section statements for aviation forecasting and the value of climatic information to aircraft operators in route planning.

June 11th:

Energy dispersion by J.N. McRae.

Articles on energy dispersion by Yeh (1949 J. of Met. 6, No. 1) and Sekera (1949 J. of Met. 6 No.5) were reviewed. The results of an investigation by Smith and Forsdyke (1953 Q.J.R.M.S. 79 p.414) into downstream effects associated with large amplitude troughs in upper flow patterns were presented. It was mentioned that these results were in agreement with opinions expressed by staff members of University of Chicago (1947 B.A.M.S. 28 No. 6 p.255) that new waves are most likely to form when the wave length in the westerlies about 600 mb. is longer than the stationary wave length and "cutting off" when the wave length is less than the stationary wave length.

It has been observed from Southern Ocean analyses that stationary or slow moving regions of cyclogenesis appear to be most favourable for downstream development of new troughs. This is in agreement with Yeh's theoretical results.

Synoptic examples of trough development and cutting off in the Australian region downstream from a region of cyclogenesis were shown.

June 18th:

The meteorology of Heard Island. by P. Shaw:

Mr. Shaw discussed the effect of topography on weather at Heard and Kerguelen Islands and some remarkable oscillations in pressure and wind at Heard Island. In view of the interest of the information presented by Mr. Shaw to those conducting analyses over the Southern Ocean his remarks will be reproduced in full as an article in a later issue.

July 2nd:

The Jet Stream and Isotach Charts by S.H. Lloyd.

The techniques for the construction of streamline isotach charts for the upper troposphere as used in the Central Analysis section were outlined. Mr. Lloyd then reviewed the section on "Regional jet streams" by Riehl et al (1952 Am.Met.Soc.Mon.5) Results of a study of jet stream conditions over Australia during the winter of 1953 were given. Difficulties in testing northern hemisphere findings were encountered due to the sparceness of the upper air network over Western Australia and the ocean east of Australia as well as the inapplicability of the geostrophic approximation for the estimation of winds from pressure data in tropical regions.

July 16th:

The meteorological situation of July 7-13th by A.K.Hannay, S.Karelsky and A.F.Woolcock.

Between the 7th and 13th July, 1954 a number of noteworthy meteorological events occurred including a report of clear air turbulence in southeast Australia, persistent fogs in the southeast corner of the continent and a cyclone off the Queensland coast. The evolution of the synoptic situation was followed from the 6th July with reference to Southern Ocean, upper contour, thickness and streamline-isotach charts.

The main features were a large Bight anticyclone taking up a quasi-stationary southern position, development of an upper trough orientated west-east at first, a winter jet stream north of its normal position high pressure and deep easterly winds at Heard Island, a "cold pool", and "cut off low" aloft followed by cyclogenesis in the Queensland area.

It was pointed out that June distributions were exceptional so far as anticyclonicity was concerned and that the trend was continuing in July. Partly because of this persistence it was possible for the four-day prognosis, to foreshadow "cyclogenesis in the easterlies" as early as 8th July.

July 23rd:

The long range weather forecasting theories of Inigo Jones. by H.E. Whittingham.

Mr. Whittingham gave a comprehensive account of the theories used by Mr. Jones in the preparation of long range weather forecasts.

August 6th:

Constant vorticity trajectories and their application by R.H. Clarke, R. Maine and C. Pierrehumbert.

From the circulation theorem Mr.Maine developed an equation for the calculation of constant absolute vorticity trajectories.

Mr. Clarke observed the equations of motion of a stream conserving its vertical component of absolute vorticity and listed the assumptions used. An attempt was then made to solve the equations. It was shown that a simple sine wave served reasonably well as a solution when the initial motion of the stream lay between northwest and southwest, but that outside these limits the elliptical function had to be solved more accurately. It was shown that in the case of the sinusoidal solution, the curvature of the earth resulted in calculable asymmetry of the trajectory about a latitude circle.

Mr. Pierrehumbert then showed examples of constant absolute trajectories and compared the results of theoretical preduction of trough ridge developments with appropriate 500 mb. situations. The number of situations examined was too small to form an opinion as to the utility of such trajectories in forecasting.