

## JOINT COLLOQUIA

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## The Warburton Wave

by U. Radok

Dr. U. Radok, of the Meteorology Department, University of Melbourne, described the Warburton Wave project, a joint investigation with the R.A.A.F, the Bureau of Meteorology, the Division of Meteorological Physics, C.S.I.R.O, the Department of Civil Aviation, and two gliding clubs. After preliminary trials in December 1957 persistent unsuitable weather forced the postponement of the main trials until June, when cloud conditions seriously restricted both ground visibility and pilot balloon observations upwind of the mountains. The analysis of the eight pairs of traverses across Mount Donna Buang flown at height between 22,000 ft and 6,000 ft by a Mustang (pilot Flt. Lt. Coty) and a Wirraway (Flt. Lt. Blake) was hampered by the partial breakdown of the cameras which the aircraft carried for recording their exact positions. Nevertheless a consistent streamline picture emerged, with a marked lee wave approximately in phase at all but the highest levels and downdraft velocities exceeding 20 ft/sec in stationary cumulus clouds at 6,000 ft. The latter clearly form a serious hazard for aviation in mountainous regions. A comparison of observed lee wave features was made with those predicted by the Scorer and Long theories; similar calculations are to be made for the Palm model. It is hoped that the results may aid with the prediction of lee wave conditions.

In the discussion Mr. E.K. Webb stressed the need for the study of secondary waves further downstream which are an essential feature in the perturbation theory model. Mr. F.K. Ball commented on the possibility of allowing for compressibility effects in the Long model; while the speaker thought that this was rendered unnecessary by the use of potential density.

28 April 1960

1. The Effects of Dissolved Salts in the Water used for  
Wet and Dry Bulb Psychrometers

by S. Bloomberg

Mr. Bloomberg, of the Bureau of Meteorology, discussed the errors introduced into humidity measurements by the use of wet bulb

thermometers wetted with water containing dissolved salts. These were discussed with particular reference to Australian conditions and practices.

The errors, he said, were caused by the alteration of the vapour pressure and also the deposition of sparingly soluble salts on the muslin and wick.

He discussed the theory of the alteration of the vapour pressure and the duration of the continued concentration of salt in the solution required to give specified errors in relative humidity measurement.

The results of laboratory experiments undertaken to check the values given by the theoretical approach were given.

The theoretical and practical results were then applied to give the time for which a wet bulb thermometer could be operated under various conditions before specified errors would occur.

He concluded by discussing some other items noted during his work, including the variation in wet bulb error with the period of exposure of the muslin and wick.

The subsequent discussion included suggestions for the means of obtaining pure water in outback Australian stations and also the experience of other workers in this field.

## 2. The Effect of Solar Radiation on Radiosonde Temperature Measurements

by D. Handcock

Mr. Handcock of the Bureau of Meteorology discussed the effects of radiation from the sun, the atmosphere and the earth's surface on radiosonde temperature measurements made with the Australian radiosonde (with temperature element exposed in a duct) and a radiosonde with a white painted thermistor exposed outside the radiosonde. The latter type is in use in the United States of America and is being considered for Australian use.

The effect of solar radiation on the curved duct sonde and the corrections which are applied to Australian radiosondes for this effect were quoted. The corrections can amount to as much as  $10^{\circ}\text{C}$  at 10 mb and take some time to apply to each flight. They do not take into account the heating or cooling of the temperature element by long wave radiation exchange with the earth and its atmosphere.