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°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.

The exposed thermistor type of radiosonde was then discussed. Its temperature element reflects about 95 percent of the solar radiation reaching it, but is totally absorbing as far as infrared radiation is concerned. Work in the United States was presented which showed that its errors due to solar radiation were much smaller than the ducted type sonde, amounting to only 1°C at 100 millibars but presumably more at higher altitudes. The effect of cloud and rain on the exposed thermistor sonde and the resulting errors due to the sonde acting as a wet bulb were also referred to. Their magnitude is likely to be a maximum of 1°C at 500 mbs.

Mr. Handcock concluded by summarising the temperature errors of the two types of radiosonde, indicating that the two types agree up to about 100 mbs when cloud and rain is absent. When cloud and rain is present the ducted type is superior. At pressures less than 100 mbs the exposed element type is superior under all conditions.

The role of infrared radiation and the errors produced were treated in the subsequent discussions which lead to the conclusion that the American results may not always apply to Australian conditions.

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26 May 1960

Meteorology and Creature Comfort

by F. Wickham

Mr. F. Wickham, Mechanical Engineer of the Commonwealth Department of Works, Melbourne, who has had wide experience in the air-conditioning of buildings, stated that the effects of physiological climate in terms of temperature, humidity, wind and radiation on bodily comfort were known and described in a qualitative manner, still valid today (Hippocrates: On Waters, Air and Places, ca. 400 B.C).

Comfort is a subjective reaction. Different people will register different comfort rates in identical surroundings. Comfort encompasses the sum-total of all external stimuli on the senses and therefore experimental programmes dealing with comfort must be statistically well designed to prevent masking of the variables by one another.

Simple enquiries into comfort were made in Florence in the mid seventeenth century as part of medical studies. The advent of the industrial revolution, the expansion in mining and metal-smelting and other types of factory processes, the crowding of sailors between deck,