

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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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,

all placing more people in hot and often humid atmospheres, made it necessary to study the effects of heat-humidity stress and comfort on the performance of people at work.

At present the index most generally used for people doing light office work or relaxing at home is "Effective Temperature" (American Society of Heating and Air-conditioning Engineers. Guide 1959 : pp.66). Various derived or similar indices have been proposed, for a description of probable comfort-reaction as influenced by indoor temperature, humidity and air velocity; Effective Temperature is still considered the most useful index and the easiest to use.

For persons under severe heat - humidity - workload stress, comfort votes are a poor index, but measurements of body-functions give a good index of stress. The 4 hour sweat rate is such an index and probably the most useful one at present (McArdle et. al., see F.E. Smith M.R.C. Memo. No. 29, 1955).

So far, the statistically significant work has been done in countries other than Australia. A Climate Chamber is being built for the School of Public Health and Tropical Hygiene in the University of Sydney and will be a valuable tool for research into the climate-comfort relations applying to Australian conditions.