temperatures in existing mines and subtract the variation due to predictable changes to obtain statistical data on the effect of the unpredictable change. Proper planning of ventilation and refrigeration requirements can be made only when the frequency with which undesirable conditions are likely to be exceeded at critical points in the ventilation circuit is known; and this requires prediction of the full temperature variation.

Lambrechts[6], using an empirical method, has predicted wet-bulb temperature gradients for horizontal airways. From an analysis of a large number of measurements, he deduced a linear relationship between the wet-bulb gradient and the difference between virgin rock temperature (*v.r.t.*) and the wet-bulb temperature at input (t_{1w}). Considerable scatter occurred, which Lambrechts stated was partly due to the unstable heat flux caused by atmospheric weather changes. According to Starfield[3], part of the scatter was due to the separate influence of *v.r.t.*, t_{1w} and t_{1d} not being taken into account and part due to seasonal effects. Even if the number of graphs in the empirical analysis were increased to reduce the scatter due to these factors, there would still be considerable scatter since the temperature gradients for given *v.r.t.*, t_{1w} and t_{1d} are strongly affected by the air temperatures on the preceding days. Elimination of this scatter would require an even larger number of graphs, and the amount of data required to allow valid statistical deductions to be made would be correspondingly larger.

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Symbols

r = moisture content (g of moisture per kg of dry air)
t_d = dry-bulb temperature of ventilating air (°C)
t_w = wet-bulb temperature of ventilating air (°C)
H = enthalpy of ventilating air (kJ/kg of dry air)
Ha = sensible heat component of H (kJ/kg of dry air)
Hv = latent heat component of H (kJ/kg of dry air)
V = velocity
Subscript 1 indicates measurements made at input, i.e. in the air entering the airway
Subscript 2 indicates measurements made at output, i.e. in the air leaving the airway
Prefix Δ indicates a change in a quantity between successive surveys, e.g. Δt_{1d} indicates the change in dry-bulb temperatures at input between surveys.

Student prizegiving

The first annual student prizegiving function of the South African Institute of Mining and Metallurgy was held in the Dorothy Susskind Auditorium, University of the Witwatersrand, on Thursday, 26th May, 1977. The address (see opposite page) was given by Dr M. G. Atmore, a director of Anglo American Corporation and Vice-President of the Institute.

The Institute has introduced student prizes to encourage recruitment into the departments of mining and Metallurgy at South African universities. The number of graduates in mining and metallurgy is well below the requirements of local industry, and a continued shortage of qualified mining engineers and metallurgists could lead to severe problems in the industry in the next few years.

The prizes fall into two categories: one is of great prestige value and is awarded to a student in his third or fourth year of study whose academic performance, contribution to student affairs, and interaction with the department of mining or metallurgy and the Institute is of high order. The second is a book prize, which is awarded to the best fourth-year student in a specialized field of mining or metallurgy.

The prize winners for 1976 are as follows:

Prestige prize

J. S. van Zyl, University of Pretoria, Department of Metallurgy.

Book prizes

M. R. O'Brien, University of the Witwatersrand, Department of Mining Engineering.

A. Burrow, University of the Witwatersrand, Department of Metallurgy

P. Gericke, University of Pretoria, Department of Mining Engineering.

J. D. Krige, University of Pretoria, Department of Metallurgy.