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Meteorology in Brazil

E. Linacre

Meteorology in Brazil was the subject of a diverting address by Dr E. Linacre at the September meeting of the Australian Branch of the Royal Meteorological Society. Dr Linacre had just returned from his third visit to Brazil, to which country he had been invited to deliver a series of lectures on recent advances in climatology and to suggest avenues of appropriate research.

He described the geography of the country - the fifth largest in the world and comparable in extent to Australia - and its range of climates. Overall there is no lack of water but, as is often the case, it is inadequately distributed. The semi-arid northeast, subject to intermittent droughts and floods, was compared with the hot and humid Amazon Basin, the latter it would seem a forecaster's paradise where the weather is entirely predictable: clear skies in the mornings followed by developing cumulus and then showers in the late afternoons and evenings. The climate is dominated by the Andes in the west rising to over 4000 metres, the semi-permanent south Atlantic high and the less permanent high in the South Pacific. In his travels from Porto Alegre in the south to Belém in the north he came across four main problems: (a) drought, principally in the northeast; (b) air pollution in the vicinity of the industrial centres (a slide showed a classical pollution situation with smog under a well-defined inversion); (c) water pollution leading to a lack of clean drinking water (for some reason the idea of tanks to collect rainwater from the roofs of houses was a concept the man in the street found difficult to accept); and (d) frosts that were caused by the northward movement of a cold front known locally as the 'Friagem'. Although this latter phenomenon occurred only a few times a year, the front could penetrate as far as the equator causing severe damage to coffee plantations. Not surprisingly, for a large and generally sparsely populated country, an adequate observational network has yet to be achieved, e.g. the Amazon Basin has only a few observing stations and no radiosonde ascents.

Meteorology is organised on a government basis, there being no less than three separate meteorological services: one controlled by the Ministry of Agriculture, another that meets the needs of aviation, and a third that provides for marine activities. Governments with a more authoritarian component to their mode of operation than our own are often looked on as slow moving and bureaucratic, but Dr Linacre was able to point out that there are certain advantages when it comes to getting things done quickly. Faced with a need to rapidly expand and improve its meteorological organisation, the government decreed that there would be four new Departments of Meteorology, one each at Belém, Campina Grande,

Pelotas and Sa Paulo. In such a situation results can be rapid, and finding the money, a non-problem.

Meteorological research is divorced from weather forecasting, being carried on at separate institutions. For instance, at the University Capina Grande, at the Instituto Nacional de Pesquisas Espaciois (Sao Paulo), and at the Instituto Agronomico (problems applicable to agriculture). Six universities are responsible for teaching meteorology at the undergraduate level and of these, three provide M.Sc. courses, but in all cases the bulk of the staff are young and therefore without experience - a result of a rapid expansion. A distinct disadvantage suffered by all meteorologists in Brazil is that they are not regarded as professionals.

Dr Linacre also had an eye for the unusual; for example a requirement that all instruments are locally made has led to evaporation pans fabricated out of stainless steel; and a thermometer enclosure consisting of one Stevenson screen set inside another (no reason could be found for this). An awareness of the need to up-date in some areas of its economy has also - and inevitably - led to incongruous situations, e.g. the very latest in telephone exchanges coupled with telephone lines badly in need of repair.

In conclusion, Dr Linacre described Brazil as a country becoming increasingly liberal and one where Australian meteorology is held in high regard. He left his audience with the feeling that Australian meteorologists who had some skills to impart and who were willing to tackle a second language would find a welcome in Brazil. In answer to questions, Dr Linacre agreed that tasks involving the use of one's hands, e.g. as in experimentation, were still regarded as rather lowly. He also commented that 40 to 50 per cent of the precipitation came from 'local' evaporation and that with one tenth of the forests already removed, perhaps there would be a change in climate as a result.

P.D.B.