

Wine, Terroir and Climate Change

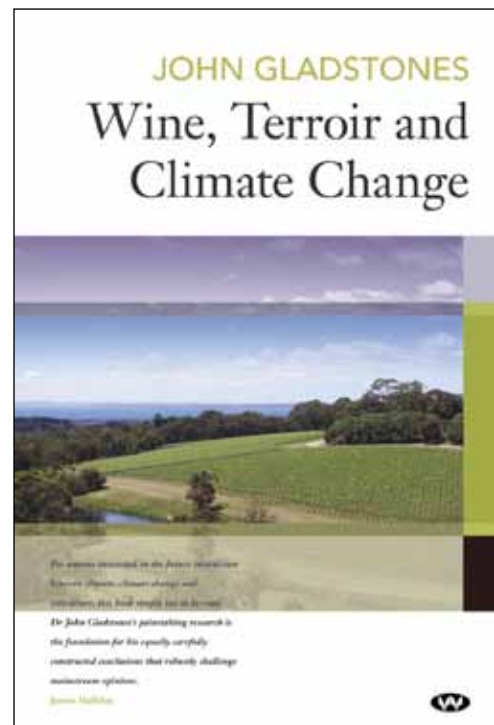
*An Appreciation by
James Halliday*

Dr John Gladstones is rightly considered to be an exceptional research scientist. He methodically collects and analyses all the available information on each aspect of his research, and patiently establishes the basis for the conclusions he then draws. On the face of it, there is nothing remarkable in this modus operandi until you realise his ability to think outside the square, and, where appropriate, to challenge what are blithely accepted as self-evident truths.

Inevitably his views on global climate change, and its implications for viticultural practices and choices in particular, will be regarded as highly controversial and lead to heated debate. But that only takes up the last part of the book. In the first two-thirds he further develops the concepts of his earlier book *Viticulture and Environment*, breaking fresh ground to build a new and more fully integrated understanding of viticultural terroir.

He returns to his proposition that a low diurnal temperature range during ripening, with relatively warm nights, gives best fruit and wine quality because it results in fastest and most complete physiological (flavour as opposed to sugar) ripening. Allowing that this occurs throughout all or most of the 24-hour cycle, more flavour and aroma compounds will accumulate relative to increase of sugar or loss of acid. This contradicts the commonly held belief that a wide range and cold nights are desirable in order to preserve acid. In fact, he says, cold nights slow physiological ripening, while hot days hasten flavour and aroma loss or destruction, and lead to excessive berry sugar accumulation.

Dr Gladstones supports the case for organic viticulture, although he cannot resist pointing to the contradiction that its officially allowed and most commonly used sprays of copper compounds and sulphur are inorganic, whereas the prohibited synthetic compounds are wholly or principally organic, i.e. carbon-containing. In the broader scheme of things, he explains why organic matter is so important in building soil health, indeed to the point where it enhances



the expression of terroir. But he sees no merit in the added rituals of biodynamics, which he deplures as an unhealthy retreat into mysticism.

As I have already suggested, Dr Gladstones's views on climate change will be vigorously disputed, although not by me. Almost 70 pages are devoted to a thorough examination of evidence on the subject, and its implications for viticulture. He carefully documents why he believes the analysis of the Intergovernmental Panel on Climate Change (IPCC) is fundamentally flawed, relying as it does on computer modelling unable to encompass the complexity of real climates, on uncertain data, dubious assumptions, and biased statistical procedures. In particular, it ignores the historical and geophysical record of past greater warmth and natural climate fluctuations, preferring instead a misinterpretation of the land-based thermometer record.

The IPCC model suggests that the last 150 years should have seen a global warming of 1 °C or more caused purely by anthropogenic (man-caused) greenhouse gases. In fact the thermometer record showed an irregular increase of only about 0.6 °C, of which half is well explained by natural fluctuations in the sun's energy output and magnetic field.

Of the rest, the evidence (including important new insights that Dr Gladstones draws from his studies of viticultural terroir) indicates that most is spuriously related to historical changes in thermometer placement and surroundings, together with real, if still unquantified, general warming due to widespread desertification from land clearing and over-grazing. From this he estimates that greenhouse gases can have produced no more than 0.2 °C of any genuine global warming over the period, which corresponds to a largely harmless 0.4–0.5 °C for any effective doubling of atmospheric concentration, as opposed to over 2 °C in the IPCC models.

Further complicating this is that plants, including vines, benefit from extra carbon dioxide but need higher night temperatures to do so fully. "I conclude," writes Dr Gladstones, "that the widely held expectation of a viticultural flight to existing cold areas is misplaced. Optimum locations for particular wine styles will probably change little over the coming half century." To further challenge climate change orthodoxy he adds: "Thus the possibility cannot be ruled out that the best terroirs will continue their historical shift to warmer locations."

However, he also warns that hot inland areas with irrigation are unlikely to benefit. Any migration of viticulture in the dry continents will continue to be coastwards to more equable and otherwise superior terroirs. Growing ability to identify and exploit these means that high-quality wines are becoming more affordable and competitive, to the common benefit of the world's wine lovers and quality wine producers.

This is a fascinating book that deserves the widest possible readership, both within the world wine community and among all with an interest in climate change.