In this issue

In their paper, *Teaching, learning, and assessment of science investigation in Year 11: Teachers' response to NCEA*, Azra Moeed and Cedric Hall explore teaching practice and teacher understanding of science investigation, and the connectedness between learning, motivation to learn, and assessment.

The results from their case studies indicate that teacher practice of science investigation changed in response to the internal assessment requirements for the National Certificate of Educational Achievement (NCEA). The nature of this change raises issues of validity and reliability for the assessment of student learning of science investigation.

Paul Callaghan argues, in *Sustainable economic growth for New Zealand: An optimistic myth-busting perspective*, that vision is essential to any strategy aimed at enhancing prosperity. He believes that New Zealand is poor because we choose to be poor and are held by self-serving but dishonest myths.

His paper, orginally prepared for the March 2011 workshop *StrategyNZ: Mapping our Future,* sets about 'busting' these myths and suggests that the way forward is to encourage small to medium enterprises that have the potential to grow through investment in research and development. He argues that one hundred inspired New Zealand entrepreneurs could turn the New Zealand economy around.

Jack Sommer and Chengxiu Sun, in their paper *Bioscientists in the 2008 Survey of New Zealand Scientists and Technologists*, explore differences and similarities of New Zealand bioscientists relative to the larger science community both in terms of their attributes and opinions on some important issues.

The data for this paper were extracted from this 2008 New Zealand survey (Sommer 2010) and the authors believe they will serve as a guide to greater understanding of the issues that engage the scientific community generally and bioscientists in particular. Such understanding, they argue, is vital to the advancement of a bio-based economy such as New Zealand's.

Their analysis also demonstrates specialised capabilities of the 2008 survey not previously developed. After first commenting on the origins and purpose of the 2008 survey, they reveal some of the distinguishing attributes and opinions of bioscientists compared to all other scientists. There are important messages in this analysis for both public policy and private action. There are also some conundrums to contemplate.

In *Technology-enabled advance in the worlds of statistics, machine learning and data mining*, John Maindonald indicates that advances in digital computing continue to have large effects on all aspects of life and society, including science. These advances are possible because we have computer languages that translate directly into computational steps that can be implemented in computer hardware.

John notes that the language implemented by the R system, a software environment for statistical computing and graphics, has become the environment of choice for implementing new statistical methodology and is playing an increasingly important role in making the new abilities readily accessible at the scientific workbench.

He then goes on to give us a sense of the power that the high-level commands of the R language puts in the hands of researchers who have the skills to use them. John concludes that there is every reason why scientists whose work involves substantial statistical analysis or other computation should start using R, or something better when it comes along, early in their education. He believes the ideal place to start is at senior secondary school.

Also in this issue is an obituary for Bill Robinson, who, in the words of IRL's Jeff Tallon, '…made New Zealand's greatest technological gift to the world in his lead/rubber base-isolation dampers'.

Two letters to the editor will be of interest to members. The first, from David Penny, puts forward the notion of a 'Phased New Zealand Superannuation', and the second, from Des Darby, continues the discussion on science restructuring commenced in the previous issue.

Finally, in what can only be described as an enthusiastic review, Hamish Campbell tells us about the new book by Bruce Hayward *et al., Volcanoes of Auckland: The essential guide*. In Hamish's words 'It is a magnificent contribution [and]… highlights the relevance of earth science to modern New Zealand society, to our economy, and to environmental conservation.'

Allen Petrey
Editor

Sommer, J. 2010. 2008 Survey of New Zealand scientists and technologists. *New Zealand Science Review 67(1).* 40pp.