J.RADIOANAL.NUCL.CHEM.,LETTERS 105 /3/ 129-132 /1986/

ANALYTICALLY SPEAKING

The column of our corresponding editor

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A RADIOCHEMIST "DOWN UNDER"

In April and early May, while most of my working colleagues were probably putting the finishing touches on their papers for the Modern Trends Conference in Copenhagen, I was on a tour of New Zealand and Australia. Because most of us seldom get a chance to visit "down under", and therefore know little about the nuclear activities in these two countries, I thought it might be of interest to recount my impressions of them.

New Zealand, in case anyone doesn't know it, has 3 million people and 70 million sheep. It is primarily agricultural, the scenery is unsurpassed and the streams and lakes are completely unpolluted. NZ has lots of hydroelectric power, and there are no nuclear reactors of any kind within the country. In the 1960's we were privileged to have a NZ soil scientist visit us at ORNL for a number of months. He was studying the uptake of elements

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Elsevier Sequoia S. A., Lausanne
Akadémiai Kiadó, Budapest

from soils by grazing animals, and he used the ORNL reactor and NAA to analyze his samples. It was a pleasure for me to remeet Dr. Bernie Healy in Wellington, and to have him show me around some of the laboratories of the Department of Scientific and Industrial Research.

Despite not having any reactors, NZ is still able to perform tracer studies and provide some medical isotopes through use of an accelerator. I noted experiments with C-11, for example. NZ is located in an earthquake zone, and so a great amount of the scientific effort involves mapping earth tremors and developing earthquake protection for buildings. One of their more important accomplishments has been the development of lead-rubber hysteretic bearings suitable for protecting structures during earthquakes. In 1978 I wroten an article for this column concerning geothermal energy and the so called Geysers in northern California[1]. In that article I mentioned that NZ had been using geothermal energy for a number of years. While in NZ I visited the Wairakei Geothermal Power Station in the north of the North Island. It was very reminiscent of the Geysers in that steam was rising from many sources, and there were lots of pipes running from the wells to the power station. The water and steam is not nearly as pure as in the Geysers, but the installed capacity is much greater: 157 MW. There is another power plant under construction at Ohaaki which should supply 110 MW from geothermal. It is estimated that NZ has reserves of 1000 to 2000 MW electrical energy available. So it is easy to see why they have turned thumbs down on nuclear energy. They are very fortunate to live in such a beautiful and energy abundant land. Nothing is perfect, however, and there is a waste disposal problem from the impurities in the waste water from this plant. Sodium chloride /100.000 tonnes/, Si /16.000 tonnes/, K, Ca, B, As and small amounts