Exercise 1: Answer

Possums are always news in New Zealand because of the damage they cause to native species, cattle and forestry. It is an emotional issue because of the deadly effect of 1080 poison on non-target species. Also, suggestions of a science breakthrough beyond indiscriminate poisoning are big news.

You should speak to the scientist/science institute who has come up with the breakthrough. Also, approach another expert scientist for independent authoritative comment. You could also approach a 1080 protest group comment to see if the breakthrough would allay its concerns.

Exercise 2: Answer

Issues you could cover include:

- Personal accounts, from the big to the quirky. Any heroes? Any interesting animal behaviour?
- Would check for persistent problems with power, water supplies etc
- Updates on earthquake-related insurance claims? Are there any insurance issues?
- How did the various Civil Defence agencies perform? Any dissatisfaction?
- Is there any interesting science to report? Perhaps experts had been tracking a cluster of tremors.
- Stock or financial losses to farmers or other businesspeople?
- How did the local buildings cope?
- Any lessons being talked about regarding preparedness for the next big quake?

Exercise 3: Answer

One of New Zealand's unsung science heroes, **Harold Wellman** (1909-1999) tracked the extent of the South Island's Alpine fault, the massive tectonic divide extending for a sizeable part of the length of the island. Most significantly, he worked out the nature of the shifting relationship between mountains and plains – that continents behave like fluids

– leading to the finding that mountains evolve under pressures caused by shifting tectonic continental plates.

After the Soviet's 1957 launch of Sputnik, it was Wellington engineer and physicist **William Pickering** (1910-2004) who led the US response. As director of the US army's Jet Propulsion Laboratory, he responded with Explorer 1, whose orbit revealed intense bands of radiation circling the Earth. His unit subsequently won a NASA contract to pursue deep space missions, culminating in the 1962 Mariner II flight to Venus (first fly-past of another planet); Mariner IV (first grainy pictures of the Martian surface); and, in 1966, the Ranger VII spacecraft, (first clear pictures of the lunar surface).

New Plymouth astrophysicist **Beatrice Tinsley** (1941-1981) overturned traditional views of the creation and formative processes of the galaxies, and worked out models for their measurement. Researching in the US, she extended the "Big Bang" theory (that the universe was created from a cosmic explosion between 10 and 20 billion years ago) with her discovery galaxies change significantly within short time spans – in relation, that is, to the extreme age of the universe. Contrary to the belief the universe was a finite entity, it seems it is ever-expanding.

Industrial Research physicist **Jeff Tallon** (1948-) won the US patent for his high-temperature superconducting ceramic, the only material now used commercially for the production of high-temperature superconductor wire, magnets, motors and transformers. Superconductors are materials that lose almost all resistance to electricity when heated to a critical temperature (though still at an incredibly low about-minus 165ºC), enabling much larger currents with virtually no wastage, and therefore promising a revolution in energy production.

Bill Robinson (1938-2011) devised the use of lead as a damping (vibration-limiting) material to cushion buildings during earthquakes. He found that lead, though weaker than steel, "gives" but holds, while steel holds longer, but then collapses. Refining his model, he inserted plugs of lead into rubber, so the rubber provided the "give" and the lead the damping. Robinson's technology has been adopted in earthquake-prone areas all around the world, including the much-rattled Japan and California.

Palaeontologist **Joan Wiffen** (1922-2009) in 1974 discovered in a Hawke's Bay stream the bone of a large extinct marine mammal called a plesiosaur. But she won international attention after finding fossil fragments of a land-based bipedal theropod – a carnivorous creature resembling a small T Rex. She later uncovered the rib bone of a plant-eating sauropod called Diplodocus, some species of which reached 28 metres in length and weighed about 10 tonnes. Her hypothesis was proved: land dinosaurs had roamed New Zealand.