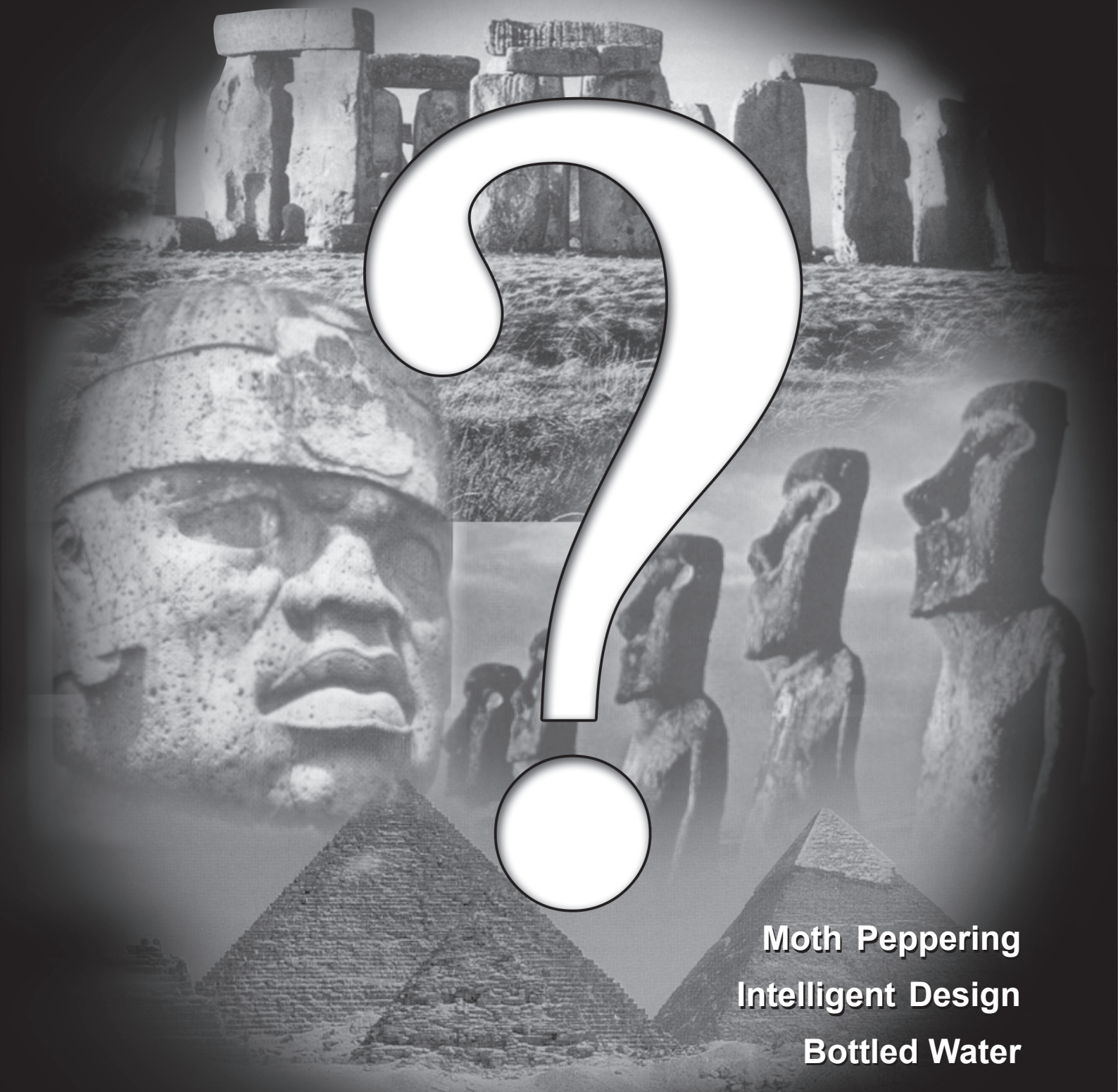
new zealand
Skeptic
number 66 - summer 2003
www.skeptics.org.nz



Moth Peppering
Intelligent Design
Bottled Water
Teaching Critical Thinking Competition

content

Pssst!

This year's password for the New Zealand Skeptics' website (**skeptics.org.nz**) is

SAGAN

Contributions

Contributions are welcome and should be sent to:

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Deadline for next issue: 10 April 2003

Letters for the Forum may be edited as space requires - up to 250 words is preferred. Please indicate the publication and date of all clippings for the Newsfront.

Material supplied by email or IBM-compatible disk is appreciated.

editorial

The Future Isn't What it Used to Be

FOR ALMOST half a century, it's seemed like human destiny to go into Space. The loss of the Columbia space shuttle hasn't extinguished that dream, but it firmly reminds us that leaving the Earth behind is a very difficult thing to do. If things were just a little bit different - if our species were as big as elephants, or aquatic, or if the Earth's gravity were much stronger, it may have been impossible. As it is, raising a human being even to low Earth orbit, is a hugely expensive proposition. And once up there, lack of gravity leads to muscle wasting and other problems. Food and air also need to be brought up from the planet below.

Perhaps in the future the problems will be overcome. Science fiction writers envisage space elevators riding smoothly and cheaply to staging posts in geostationary orbit. Raw materials could be mined from the moon or the asteroids rather than dragged out of Earth's gravity well. Rotating, wheel-shaped space stations may be able to simulate gravity. We may be able to establish artificial life-supporting ecosystems on these stations. But ultimately, it has to be asked why humans need to be in Space at all. It would be far easier to establish colonies under the sea, but this has not been done, and there are no serious plans to do so. We don't need the living space. There are no natural resources that are worth the expense of going to fetch them, nothing on which to base an economy, no realistic prospect of trade with Mother Earth.

Space is like Antarctica. Hostile, no place for humans to live on an extended basis, but oh, so fascinating. We go into Space for the same reason we go to Antarctica, to learn more about the world around us, and about ourselves. And that, ultimately, is reason enough.

Arthur C Clarke dreamed of manned communications centres high above the Earth. Though the principle of telecommunications satellites in geostationary orbit has become a reality, the giant stations of Clarke's imagination have not, and never will. Clarke, or anyone else in the 1940s, could not have realised how reliable electronic componentry would become. You don't need people on hand to replace burned-out valves.

More than anything else, this electronics revolution is the reason the manned space programme is struggling. There's no commercial reason for humans to be there, and even the scientific rationale is looking shaky. The solar system is already being explored, courtesy of Voyager, Pathfinder and company, and far more efficiently than humans could hope to do; what's more the advantages of unmanned craft will only become more pronounced. And hardly anyone grieves overmuch when a robot crashes and burns in the frozen wastes of Mars.

It's funny how things work out. Back in the 60s everyone assumed that by now we'd have been to Mars and established permanent bases on the Moon. I guess it just goes to show there's no such thing as destiny.

Peppering the Painted Apple Moth

Dr Ruth Frampton

The Painted Apple Moth spraying programme in the western suburbs of Auckland has generated considerable controversy. An alternative programme was evaluated at last year's Skeptics Conference

THE Painted Apple Moth was first recorded in the Auckland suburb of Glendene on May 5 1999. Subsequently, it was reported from the Auckland suburb of Mt Wellington. Since this moth species has the potential to seriously impact on New Zealand's forestry, conservation and horticulture, an eradication attempt was launched.

Following on from a meeting in November, on 14 December 2001, the Ministry of Agriculture and Forestry received a formal "Peppering Trial Proposal against the Painted Apple Moth".

The submission was made by the Painted Apple Moth Community Coalition (CC-PAM), supported by the Community Advisory Group, an advisory group originally convened by Maf. It was prepared by Hana Blackmore (a Green candidate in the Tamaki electorate) with the assistance of Glen Atkinson of Garuda Biodynamics, Glenys Bean, John Clearwater and Meriel Watts (a Green candidate in the Waitakere electorate).

To quote from the proposal:

"Peppering is a biodynamic method of pest control, which aims to inhibit the reproductive potential of the pest being targeted...

What the fuss is about:
The Painted Apple Moth

The theory holds that the specific preparation methods produce the negative "energy" of the pest's reproductive force, operating on a vibrational level, not a material one. Used in the field it enters the soil and surrounding vegetation producing an "unfriendly" and inhibiting environment. It is host specific and non-toxic, and does not have a lethal effect. The method has been used commercially in New Zealand for a number of years with verifiable success."

The proposal consisted of two trials:

Field Broadcast Trial

Proposal - that Garuda install a Field Broadcast pipe containing the biodynamic preparation of the Painted Apple Moth on the infested Traherne Island.

> "The trial will aim to produce a statistically significant reduction in the painted apple moth population on the island.[R]ecent innovative developments by Garuda allow the establishment or enhancement of the reproductive inhibiting 'pattern' via Field Broadcast pipes. These are simple PVC pipes with internal copper circuits that can 'radiate' the biodynamic preparation that is placed within it."

Peppering Ground Spray Trial

Proposal - that Garuda conduct a peppering ground spray of the biodynamic preparation of the Painted Apple Moth on one hectare of public land in the heavily infested zone, and that a similar control area is sprayed with water.

"The trial will aim to produce a statistically significant drop in the moth catches in the actively sprayed zone, compared to both the control site and the areas surrounding the active site."

The Technical Advisory Group (TAG), which assessed the proposal, comprised 21 members (16 scientists, three operations experts, two local council representatives) and six observers, including a representative from the Community Advisory Group. The group was devised to provide advice and make recommendations relating to the campaign against painted apple moth, including containment, control and eradication options.

One TAG member noted the following with regard to the efficacy of peppering:

> "Peppering has been used commercially, as indicated in the proposal, but the 'verifiable success' must be questioned. The testimonials from growers are data-free, and relate to insects with a naturally patchy distribution over both time and space. There is no numerical data to support the efficacy of peppering."

Concern was also expressed regarding changes to the predicted outcome of the trial. The original proposal said that the peppering would affect adult dispersal, so that they were dissuaded from entering, or encouraged to leave, the treated zone; and that it would render the F1 generation sterile. As the aim was to eradicate Painted Apple Moth, causing adults to disperse elsewhere was not considered helpful.

The usual claims about peppering relate to deterrent action, but claims of reproductive inhibition have become more common. Ultimately (and one could suggest, as a result of discussions at the meeting), the final proposal only referred to the sterilising effect of peppering - yet no measurement of this supposed effect was incorporated in the proposal.

As the aim was to eradicate Painted Apple Moth, causing adults to disperse elsewhere was not considered helpful

The claims of repellent or reproductive inhibition made by the biodynamic proponents could have led to them requiring approval under the HSNO (Hazardous Substances and New Organisms) Act or the ACVM (Agricultural Compounds and Veterinary Medicines) Act. However, such registration may have been waived due to the perception of low risk or low residue involved. Ironically, such a registration could have served to legitimise the claims made for this approach.

Further critique of the proposal concerned a number of other flaws in its approach:

> "The proposal(s) focus entirely on comparing numbers of males in traps in the peppered areas with those in non-peppered areas. There is no proposal to measure any infertility, nor to target any other insect. Thus, the proposal does not address the key issues discussed and agreed to at the November 14 meeting.

> "Furthermore, it is proposed to run the trial over the entire period of Foray (Btk) spraying, so any results will be compromised by a known effective treatment.

> "[T]he proposal as written is technically flawed, and is not capable of demonstrating any effect of peppering on painted apple moth."

At its January 15 2002 meeting, the TAG recommended that a peppering trial be undertaken on another species where there was no eradication programme in place. On the basis of this recommendation, Maf declined to supply the proponents of the peppering trial with moths.

On reflection, I have not ceased to be amazed at how officialdom has become so PC that at a critical time in an eradication campaign, much time and money can be wasted on unproven and questionable proposals.

While peppering as a pest control method now has a profile that deserves quantitative scrutiny, an eradication campaign is not the appropriate platform on which to evaluate this biodynamic approach - certainly not without compromising our biosecurity.

Dr Ruth Frampton specialises in biosecurity matters, both nationally and internationally, and until May worked for Maf leading the ministry's Painted Apple Moth eradication programme.

In Defense of Intelligent Design

Ian Wishart

In New Zealand Skeptic No 64, Warwick Don critiqued Ian Wishart's article Walking with Beasts, *published in* Investigate, *June 2002. This is Wishart's response.*

HAVING just read Warwick Don's critique of my article on Intelligent Design in your winter edition, I wonder if I might offer some observations.

Firstly, there is some fudging on the use of the word "Creationist" that needs clearing up if this issue is going to be intelligently debated by anyone. As I pointed out right at the start of my article in Investigate, the use of the word "Creationist" in that article primarily referred to people who believe there is evidence of intelligent design in the natural world. Belief that the Universe was created does not, of itself, require that one subscribes to the Biblical or any other version of creation. Cosmologist Stephen Hawking published a paper this year postulating the existence of a deistic creator, yet one would hardly call Hawking a "Creationist" in the way Warwick bandies the term around.

To discuss the scientific evidence for and against the existence of intelligent design in the universe is not, of itself, to become embroiled in a theological debate. It is more analogous to a naturalist finding indentations on a forest track and debating whether they are natural ground undulations or footprints. This is a perfectly legitimate scientific exercise.

Warwick talks of a need to avoid discussion of the bigger picture when he says, "…the undoubted problems associated with the origin of the universe or with the origin of the very first life forms on this planet are irrelevant as far as organic evolution is concerned."

With respect, I submit Warwick's approach is fundamentally flawed, and here's why: The distinctions we humans draw between the different scientific disciplines are artificial. We have made the delineation that says biology is a complete science, physics is a separate science, chemistry is a separate science and so on. In the real world, all the sciences are ingredients of the others.

To approach the study of organic evolution as though the rest of it has no bearing is akin to a group of biologists locking themselves in a biosphere forever and never opening the door to the wider world, never daring to question how the organisms in the biosphere actually got there. Without knowing the "how" of it, the organisms could, for all they know, have spontaneously generated (chemical evolution), been introduced from outside (alien seeding) or been miraculously created on the sixth day! The point is, whatever the origin, biologists locked into this mindset will never find the answer because they refuse to look for it.

With respect, that's taking good honest scepticism way beyond the rational and into the Three Wise Monkeys territory.

Warwick is concerned that opening the door to intelligent design in schools means opening the door to exam papers quoting Genesis and Job. Not so, and again this is confusion arises from a failure to drill down to the absolute core of the argument. Sure, intelligent design science can be used to support Biblical creationism, but as Warwick correctly points out there is a "distinction between acceptance of evolution [intelligent design] and non-scientific implications derived from it."

In his own critique, Warwick cites further examples that unwittingly display the current problems of evolutionary theory: after having a go at my scepticism on ancient whales, he firstly supports the ancient whale trail I was doubtful of then adds "Incidentally, based on new fossil evidence, the mantle of whale ancestor has shifted from the mesonychids (alluded to above) to

a related group, the artiodactyls, and more specifically to the hippopotami."

Which is it? Mesonychids or hippopotami? Trying to nail alleged fossil ancestors to support the theory of evolution is like trying to pin the tail on a donkey moving at very high speed. After 150 years we're all still arguing about whether *Archaeopteryx* is the transitional fossil or not.

Objective scepticism recognises that the best way for the truth to emerge is through vigorous debate and presentation of evidence. Anything less is not skepticism but dogma, similar in form to the anti-science dogma of the Catholic church in the middle ages. As the old evolutionary saying goes: "Two dogmas don't make a dog, Ma."

Warwick appeals to Eugenie Scott's "necessary methodological materialism" as sound philosophical basis for shutting out any evidence that might point to an Intelligent Designer. But who voted and made Eugenie Scott the world's leading expert on the boundary between science and philosophy? In short, no one.

If an Intelligent Designer does, in fact, exist, but our system of science as proposed by Eugenie Scott is unable to accept this even if said Designer suddenly appeared in the clouds at 3pm one Tuesday and spoke to the entire world in a thundery voice, then our system of scientific inquiry is flawed. "You can't put God in a test tube" says Scott, therefore you have to ignore it. How exactly can one justify ignoring such an event, where a supernatural entity interacts directly in our space time universe in a way that can be measured? And if one can't defend the position of ignoring that particular event, on what philosophical or scientific basis do we ignore the evidence pointing towards a Designer at more subtle levels? Surely it becomes a matter of the degree of evidence required before we start dusting off the test tubes and setting a God-trap.

Not an iota is added to the sum total of scientific knowledge by invoking a Designer

And if it is only a matter of degree, then on what basis can we then justify ignoring even the slightest evidence for the existence of a Designer, if over a period of time the accumulation of slight evidence could lead to irrevocable proof? That would be akin to paleontologists throwing away individual *T. rex* bones as useless, and only keeping a complete skeleton if you're lucky enough to find one.

The intelligent design movement is not asking scientists to become theists, it is merely asking science to follow the evidence wherever it leads, without introducing presumptive biases such as those advocated by Eugenie Scott and Warwick Don. Let scientists do the digging unfettered by religious or anti-religious bias, and let theologians argue over the implications in another arena. In other words, let the facts speak for themselves, whatever they may tell us.

Ian Wishart is editor of Investigate magazine.

Warwick Don replies:

1. I deny any fudging on the use of the word "creationist". I make a clear distinction between young-earth creationism and intelligent design (ID) creationism, at the same time indicating a link between the two. In my article in Investigate magazine (November 2002), I write: "there are several types of anti-evolutionary creationists", implying that there are also pro-evolutionary creationists. So I object to being accused of bandying the term (creationist) around.

2. Ian Wishart questions my separation of organic evolution from other phases of reality on methodological grounds. It's not a case of "a need to avoid discussion of the bigger picture" - it's simply that each major phase, the cosmic or physical, the organic or biological, and the psychosocial or human (to use a standard classification) has its own entities or objects, evolutionary mechanisms, problems and research methods. Exactly how organisms arose is irrelevant to what occurred

subsequently in the form of organic evolution. And I do recognise the bigger picture when I refer to "a postulated continuity linking all aspects [phases] of an evolutionary universe."

3. My note concerning the identity of the postulated land ancestor of whales was intended only to point out that the allusion in Wishart's article ("Walking with Beasts") to mesonychids is out of date. That the mantle of whale ancestor has shifted to another group in no way influences the nature and significance of "the ancient whale trail" as recently revealed in the fossil record, and about which Wishart continues to be sceptical.

4. As for *Archaeopteryx*, its transitional status has never been in doubt. A fossil does not have to be directly intermediate to be labelled transitional. There is discussion about where *Archaeopteryx* lies in relation to reptiles (in particular, dinosaurs) and later birds. Current consensus places it on a side branch, sharing a common ancestor with younger birds. But this phylogenetic discussion does not affect the transitional status of this remarkable animal - it is the mixture of "old" and "new" features (in this case, reptilian and bird) which is significant, providing powerful evidence of a reptilian ancestry.

5. Eugenie Scott has made it patently clear why science must ignore all supernatural entities, such as an Intelligent Designer. It is not a case of wanting to, but of having to. Not an iota is added to the sum total of scientific knowledge by invoking a Designer. The accusation of "presumptive biases" on the part of Eugenie Scott and myself is without foundation. If "said Designer suddenly appeared in the clouds at 3pm one Tuesday" (as depicted by Ian Wishart), then I feel sure Eugenie Scott would be among the first to embrace such an entity (figuratively, of course) as part of the empirical world and therefore amenable to scientific study!

6. Wishart refers to "evidence pointing towards a Designer at more subtle levels." This sounds very much like the "God of the Gaps" argument applied at the molecular level. The onus is on ID creationists to con-vince the scientific fraternity that such evidence exists. Key ID concepts, such as Behe's "irreducible complexity" and Dembski's "design filter", have so far merely provoked adverse criticism in scientific and philosophical circles. As pointed out in my Reply to Behe (Investigate magazine, November), a key aim of the ID movement is to launch a number of scientific research programmes. After a decade, apparently none has materialised.

7. Finally, regarding Wishart's plea to "let science do the digging unfettered by religious or anti-religious bias...", I fully agree. I would only add that science education too should be kept free of such non-scientific influences.

Warwick Don, before retirement, was senior lecturer in Zoology, University of Otago.

While on the topic, here's something for our Auckland members to consider...

SCIENCE, FAITH AND INTELLIGENT DESIGN

This conference is presented by New Zealand's Rhema Network and Focus on the Family NZ and aims to help unlock the mysteries of life's origins. It will be held at Greenlane Christian Centre on the evenings of 12-13 March 2003. For more information, call Focus on the Family NZ on 0800 200 362.

Alice's adventures in Wonderland, Chapter VI:
The Cheshire Cat gets Weirder.

The Price of Water

Insecurities about water quality have led to a boom in sales of bottled water. But the health benefits of the phenomenon are probably minimal.

Jim Ring

WE WERE surprised to hear recently that sales of drinking water are now the fifth largest earner of overseas currency for Fiji. A little investigation suggested that that figure may well be correct, but threw up further surprises.

Much of Fiji has high rainfall, but water is in short supply in some areas. Villagers can easily dig shallow wells, and aid agencies have dug deep wells for some villages. But deep water is often mineralised. We have stayed on islands where rain is the only supply of drinking water. As populations have grown, water extraction has allowed intrusion of salt water, and the well water is brackish. After weeks of washing in brackish water, a fresh shower is a great luxury. Tourist resorts build desalination plants but that is not an option for villagers.

According to the Australian Financial Review, aid money was used to develop a mountain spring as a source of export water. The main market is the US, where Fiji water is now the sixth highest-selling bottled water after advertising endorsements from Tiger Woods and Elle Macpherson. Good luck to the entrepreneurs, but I wonder if the contributors realised the destination of their charitable dollars.

Something is odd about a third world country exporting drinking water to the US. Fifty years ago American travellers had one main grumble about Europe; the tap water was unsafe to drink. This implied that the tap water was drinkable back home where the only people refusing US tap water were right-wing conspiracy theorists who claimed that somebody (either the government or the commies) was adding chemicals to damage the mental health of citizens.

Bottled water was then almost entirely "mineral water", either naturally carbonated water from a few famous springs or the much cheaper alternative invented by Schweppes. Scandals about contamination of some famous springs damaged the market, but some genius discovered that bottled drinking water did not need to be carbonated and any source of clean water would do.

Until that time the manufacturers of soft drinks were regarded as the epitome of value improvers; the addition of carbon dioxide and a few drops of syrup converted water at low cost to a marketable product. But the drinking water industry changed this perception. All the costs are in bottling and transport, the cost of the water in the bottle is as near zero as makes no difference.

The industry started in the US but then took Europe by storm; 15 years ago British sales of bottled water had reached £216 million and London restaurants were charging £1 per glass. It took longer to reach Australia and NZ but the sight of all those tourists clutching their bottles had an effect.

Have a look in your local supermarket, there are a variety of brands and unless you buy it in very large containers it is more expensive than petrol. Marketing has been closely targeted, using magazines and radio stations rather than TV. The sales people know their main clientele: young, affluent travellers.

By a strange bit of timing the tap water in Europe had become safe to drink just before bottled water became popular. In fact one of the priorities of government has been the provision of safe tap water (it is even safe to drink on Viti Levu, the main island of Fiji), but as it became safe, tourists stopped drinking it.

So what is the motive? At least partly it is fashion, backpackers have been seen furtively refilling their bottles at the tap so later they can be seen with the right brand. But most clearly believe it is healthier to drink "natural spring water". Some brands will tell you they are "fat free"! Ironically the quality standards for

most tap water are probably higher than those for much bottled water. But backpackers are all aware of the high incidence of "traveller's diarrhoea"; one estimate is 20 million cases per year world-wide, though it could be much higher.

Herbert DuPont is chief of internal medicine at St Luke's Episcopal Hospital Houston, Texas and an expert in diseases of the alimentary tract. His opinion is that although "Most people think it (diarrhoea) is caused by the water", it is not. "Bad food is responsible for 90% of traveller's diarrhoea."

Even in the USA, eating out is twice as dangerous as eating at home. Scientific American July 2000 contained some amazing statistics. A large percentage of outbreaks of food poisoning could not be traced to a particular source, however of those that could be so traced, the most dangerous foods were not those I would have suspected (Table 1):

Food that caused a problem	% of outbreaks
Salads	12.4
Fruit and vegetables	6.0
Beef	2.3
Chicken	2.1
Fish (including shellfish)	1.3
Milk and eggs	1.0
Pork	0.4

Table 1. Foods identified as responsible for food poisoning outbreaks

Vegetarians beware; the most dangerous items are those generally considered the most healthy! However going back to Professor DuPont, he warned that the really dangerous items were sauces and condiments, particularly if they were not properly refrigerated. I suspect (without any evidence) that this may be the case here.

It seems obvious that these percentages would be quite different in other countries, but if you cannot trust the salads in the US, those bought from street vendors in Asia must be pretty dodgy.

In the past, epidemics of the great water-born diseases, typhoid and cholera, killed millions —and they were a threat to the traveller. But in countries were most of the bottled water is being drunk, this is no longer the case. The last major outbreak of cholera from a public water supply was in a South American country where activists had opposed chlorination. Chlorine of course is a chemical, and a poison, and they should not be putting it in our drinking water! I suspect that if travellers were questioned, many would give 'chlorination' as a reason for not drinking tap water. I just wonder, how safe is bottled water?

Jim Ring is a Nelson Skeptic.

Information Flyers

We've begun producing a series of information flyers addressing topics of interest in a two-page leaflet great for handing out to friends, dropping at your local library or providing to community groups.

Current topics include astrology, biodynamic peppering, UFOs and Aliens, creation "science" and an introduction to critical thinking. More will be added, but do send us suggestions for topics you would find helpful.

The flyers can be accessed via the website's resources section:

http://skeptics.org.nz/SK:RESOURCES#flyers

They are in PDF format, so you'll need Adobe Acrobat on your computer to print them out (there's a link on the site to get the free download if you don't have it). You'll need to set your printer to print in landscape format, and print both sides.

Compiled by Annette Taylor

Death was "the Biggest Gift"

A FENG SHUI practitioner who died while on a life mastery course in Fiji was ready to leave his body, his widow believes. Stephanie Challis, pictured in the Nelson Mail (December 11) smiling happily with her three children, told how her 41-year-old husband Will had undergone a course of body cleansing which involved colonic hydrotherapy and drinking quantities of good quality water.

"He always played full out," she said. "My guess is that he had seven or eight litres of water, thinking, 'the more I drink, the cleaner I am'."

Mr Challis mentioned that he had been throwing up, but Mrs Challis, having previously done that when detoxifying, didn't think too much of it. She said his sodium levels had become unbalanced, leading to loss of consciousness. Because they were on an island facilities were not available to rectify his sodium balance, and he was not given any oxygen.

"It appears his brain suffered massive oxygen starvation in that first 24 hours. The doctors tell me they will never know."

Mrs Challis said she met her husband through training in Qi Gong, an ancient form of energy cultivation, and the basis of their relationship had always been spiritual. In the months leading up to his death, they had been "full out" on various courses. She believes he was on an unconscious level preparing to leave his body. "There are so many amazing coincidences. It all points to the fact that this was his time."

Mrs Challis said she had remained positive throughout the ordeal, and did not blame anyone for what happened and, in fact, feels privileged that her husband shared the experience with her.

"I was keeping the bigger picture in mind the whole time. When he died I felt incredibly peaceful and even joyful. I realise since that what he's done has been the biggest gift he's ever given me. I feel closer to him now than I've ever felt and deeply grateful for what he has taught me about life through his dying."

Out-of-Body Experiences at the Flick of a Switch

Doctors say that out-of-body experiences (OBEs) may be triggered by stimulation in one part of the brain (Dominion, September 23). Writing in Nature, the Swiss researchers say they were able to trigger OBEs in a female patient. They say their work may explain the phenomenon of people reporting having "left" their body and watched it from above. The doctors were studying epilepsy by using electrodes to stimulate the woman's brain. They found that stimulating the angular gyrus in the right cortex repeatedly caused OBEs. At first, the stimulations caused the woman to feel she was sinking into the bed, or falling from a height. When the strength of the current was increased, she reported feeling she had left her body. The doctors believe the angular gyrus matches up visual information and the representation of the body formed by the brain's touch and balance faculties. When the two become dissociated, an OBE may result.

Mormon Researcher gets the Wrong Answer

Anthropologist Thomas Murphy faces expulsion from the Mormon Church after showing by DNA analysis that native Americans are not descended from ancient Israelites, as the church claims (Dominion Post, December 9).

The Book of Mormon, made public by Joseph Smith in 1830, is a cornerstone of church doctrine and taken literally by the faithful. It teaches, among other things, that America was populated by Israelites who went to North America 600 years before Christ —a time within the reach of archaeology and genetics. Mr Murphy, of the anthropology department at Edmonds Community College in Lynnwood, Washington, set out to test this, and his negative findings saw him charged with apostasy. It appears this is the first time a member of the Mormon Church has faced expulsion for genetic research.

Church leaders declined to comment on specifics of the case, but critics said they feared his excommunication would have a chilling effect on Mormon scholars who wanted to stay in the church.

Clone Petition Dismissed

The Raelians, of course, know full well that native Americans are not descended from Israelites. According to the cult they, and everyone else, owe their origin to extraterrestrials, who cloned themselves to produce the human race some 25 000 years ago. They've gained themselves a lot of publicity in the last few months with their claims to have produced human clones of their own (eg Dominion Post, December 30). More recently (Reuters, January 29) a Florida judge has dismissed a petition to appoint a state guardian for "Eve", the first of three allegedly cloned babies, reportedly born on December 26. Clonaid, the company which claims to have produced the clones, says the baby is in Israel.

Expressing scepticism that a cloned child even existed, but expressing concern for its welfare if it did, Juvenile Court Judge John Frusciante said his court had no jurisdiction in the case. Clonaid president Brigitte Boisselier testified that the baby had never been anywhere near the US.

Clonaid has produced no evidence for any of the clones. Scientists widely believe the assertions are a hoax to make money or garner publicity for the Raelians.

Boisselier, a French-born chemist who is a member of the Raelians, would not say where in Israel the child was, adding she did not know as she was no longer in contact with the parents. She also told the court that she had not seen the baby, although she had seen videotapes.

Bernard Siegel, a private citizen and attorney, filed the petition earlier this month asking for the state to appoint a guardian to supervise her care. He said that if "Eve" were indeed a cloned child she could face serious medical problems.

In dismissing the case, Frusciante made plain his concerns about cloning, citing at one point President Bush's remarks during his State of the Union address in which he said no human should be started or ended as the object of an experiment and asked Congress to ban cloning.

Clonaid, which made the initial announcement of "Eve's" birth at a hotel in Hollywood, Florida, backed away from its earlier promise to provide DNA proof of the cloning after Siegel filed his petition. The company, which does not reveal where it is located or anything about its finances, now says that it has deliberately cut links with "Eve's" parents to ensure their privacy.

The lawyers representing Clonaid had urged Frusciante to dismiss the petition. "The case was a preposterous case, there was no basis for it," attorney Jonathan Schwartz said.

But Siegel said he was glad he presented the petition even though it failed, not least because it had prompted Boisselier's testimony under oath that a cloned child existed and was in Israel.

He added he hoped the Florida Department of Children and Families, which had representatives in court, would alert the relevant authorities in Israel to the possibility of a child in need of protection.

And now it's Homeopathic Vets

The first output from a new diploma course in homeopathy graduated at the end of last year (Rural News, December 2). The four women are mostly veterinarians who have taken the course at the Bay of Plenty College Auckland Campus. New Zealand Homeopathic Council president Joan Goddard says the qualification is unique, and is the first time that basic medical knowledge has been taught beside homeopathic treatment and diagnosis in an animal health course.

Students take a part-time one-year foundation course before electing to complete the two or three-year diploma.

Goddard says most of the students graduating this year are veterinarians looking to extend their treatment capabilities.

"Vets treat the diploma as an additional skill to use on herds and do not rely solely on homeopathics."

She hopes the course will set up a list of standard homeopathic treatments for various animal conditions, as many current practitioners depend on personal experiences to treat animals.

Twelve students should graduate in 2004, with similar numbers going throught the course.

Goddard hopes course numbers will gradually grow but says there are only a limited number of people to teach students. Well that's something, I suppose.

Alternative Child Healthcare

The following correspondence between nursing lecturer Sue Gasquoine and Skeptics' chairentity Vicki Hyde is reproduced with the permission of the participants -ed.

Hello Vicki

I heard you talking to Wayne Mowat on National Radio yesterday. I have a theory for you to consider as you wonder why New Zealanders view with such skepticism "religious" reasons for denying children treatment (epitomised by the death of baby Caleb Moorhead) when there seemed to be significant support for Liam Williams-Holloway's parents when they decided to "hide" him and seek "alternative" therapy.

There is a world of difference between diagnosis with and death from a vitamin deficiency and diagnosis with and death from cancer.

Vitamin deficiency is entirely avoidable even with very strict diets. Cancer in children is not. Treatment of vitamin deficiency is generally uncomplicated, entirely successful and has few side effects. Treatments for cancers such as radiotherapy and chemotherapy are by no means uncomplicated and are often associated with distressing side effects. They vary in their effectiveness depending on the type and location of the cancer and are by no means a guarantee that the child will survive.

There are few if any useful parallels that can be drawn between parents trying to act in the best interests of their child with cancer, who may in the process decline treatments offered by Western medicine and parents who do not recognise the "necessaries of life".

I think New Zealanders recognise this critical difference which has been absent in most media coverage of these tragic events. They do well to be sceptical of religious fanaticism, alternative therapy AND western medicine which also makes false claims - the "safety" of HRT and the rate of caesarian births being the most recent examples!

Sue Gasquoine
Lecturer - Nursing
School of Health Science, Unitech

Vicki responded with:

Thanks for the feedback — always appreciated.

I certainly agree there is a world of difference between diagnosis with and death from a vitamin deficiency and diagnosis with and death from cancer, and it may well have been a contributing factor though not, I would suggest, a major distinction made by people in looking at the various cases.

I say that because of the Tovia case just before Liam's one, which also involved refusal of cancer treatment for a child (albeit a 14-year-old), but this time on religious grounds.

In that case, there was, as with the Moreheads, a much more critical view taken of the parents and their role in refusing treatement. They were also taken to court, at one stage facing manslaughter charges, and were generally condemned in the media.

I have had many discussions with legal, media and medical people about the differences between this case and that of Liam Williams-Holloway, and the treatment the two families got in the press and in the court of public opinion.

I think that it would be possible to argue that Peni and Faafetai Laufau, the parents of Tovia, deserved a more sympathetic treatment in some respects because (1) they were doing it on sincere religious beliefs, not based on a book which touts conspiracy theories and coffee enemas as cancer treatments and (2) their son was of an age to arguably be a part of the informed consent process, and expressed his own wish to refuse treatment.

Much as I hate to say it, the main points of difference can be attributed to a couple of factors I suspect — the Laufaus were Pacific Islanders, of lower socio-economic status, and religious. Treena and Brendan were white, middle-class, articulate and constantly described as making a "well-informed choice".

It's a most uncomfortable set of differences in its implications...

I do think that there is culpability in both the cases you cite and in that of the Laufaus. There is a great deal regarding the Liam Williams-Holloway case which was not adequately addressed by the media, and I can understand why those involved continue to feel a certain amount of despair and anger at what happened. (I'd be happy to discuss this further if you like, or if you have any questions about it.)

And you are so right that it is vital we cast a critical eye over any

claims in all areas. What we have to do is to ensure that we have some way of helping us determine what claims there are, what the level of evidence is to support those claims, and what the risks are in accepting or rejecting that evidence.

All the best

Vicki Hyde

BSc (Astrol.) anyone?

Ever felt queasy about the courses the New Zealand Qualifications Authority gives its approval to? Remember the fuss over the Indian Government's encouragement of university courses in astrology? The infection is spreading; some well-known British universities are also up to some curious activities. A recent correspondent to the science journal Nature reports on a charity called The Sophia Project, which has money to give away for work that sets out to establish that astrology is a genuine science. Four institutions are named as having accepted funds for this. Studies include planetary influences on fertility and childbirth, and on alcoholics, and looking for correlations between birthdate and prostitution.

The correspondent is concerned that, despite the private funds provided, some taxpayers' money is inevitably going to support this "bogus research". Of perhaps greater concern is that these universities are giving undeserved respectability to this nonsense.

Bernard Howard

A Letter from the Skeptical Left

I admire your work against creationism, but I have to ask why it is that proponents of lesbian and gay rights and reproductive choice on abortion have to fight junk science from the Christian Right on our own.

I am concerned that you appear to have swallowed petrochemical industry propaganda against the Kyoto Treaty, surely akin to the tobacco industry's pro-smoking agenda in motive, intent and overall poor empirical rigour. As well as that, there is a wide-ranging debate over questions of "false" and "recovered" memories within the mental health professions, yet your organisation seems to be listening to the male backlash lobby, quite capable of its own imaginary junk science when it comes to its own control freak agenda against victims of family violence.

Craig Young
Palmerston North

...And one from the Skeptical Greens

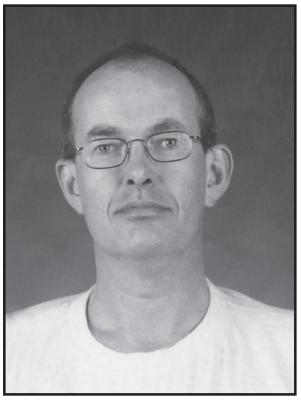
When I read Professor Dutton's vitriolic attack on the Greens in the Weekend Herald of September 28/29, I immediately thought he must have been inspired by the frantic ravings of another American whom we've heard quite a bit from lately. However, to give Professor Dutton his due, he did stop short of suggesting we should wage a war of attrition upon Green subversives.

His passionate defence of science reminded me of the attitude adopted by devout religionists over the centuries. Professor Dutton accuses environmentalists of a similarly distorted mindset, but despite the fact that all movements have extremist factions, he is well off track with his generalisations, if for no other reason than that the Greens are concerned for the well-being of things that actually exist, and have been carefully examined. Religionists on the other hand operate for the most part on pure supposition.

Science is not a religion. However it would seem that there are several people involved in that noble art who regard it as such. That is indeed sad, and a reprehensible distortion of mankind's only reliable method of inquiry into most subjects. The scientific method should be an intelligently used force that will tell us often bumbling humans how far in any direction we should attempt to go. Unfortunately, the caution factor is all but ignored these days in favour of the hedonistic delight of having found something new that works. Apart from the financial and economic benefits, the other outcomes of a new discovery are often made less transparent, until of course, somewhere down the track something highlights a hidden disaster factor that was not thought worthy of mention at the time of the discovery's introduction.

My final word to Professor Dutton is that he should place the blame for the world's starving millions exactly where it belongs. Greedy corporate giants, environmental exploiters, warmongers, and corrupt officials will do for a start. Compared with that lot, we greenies aren't even in the picture. (Abridged)

Peter E Hansen
Auckland



Providence based medicine

IF THE caring practitioner has no idea of what to do next, the decision may be best left in the hands of the Almighty. Too many clinicians, unfortunately, are unable to resist giving God a hand with the decision-making.

New Zealand Medical Journal Vol. 113 No 1122 p. 479

Acupuncture and ACC

I am pleased to report that I received a reply from Dr David Rankin acknowledging the dearth of evidence for the widespread use of acupuncture. ACC are taking a responsible attitude and are commissioning a wide range of studies looking at current treatments in order to assess which of them are truly effective in speeding recovery and the return to work.

Saint Goncalo of the Immaculate Perineum?

Haemorrhoid sufferers are flocking to a church in Portugal in the belief that exposing their afflicted behinds to the statue of a local saint will cure them. I have named this pious act "anoflection". However, the local Priest drew the line at allowing a young woman to pray naked in the hope that this would cure her severe acne. Given the revelations of widespread sexual abuse by priests, it would appear most unwise to expose oneself in this manner in a church.

Saint Goncalo, a 13th Century priest also has a history of helping women find husbands. Every June, during a festival in his honour, unmarried men and women exchange penis-shaped cakes as tokens of their affection.

There is clearly no need for our organisation to attack or ridicule religious belief when the Catholic Church is doing it for us. I believe that we should sincerely welcome these quaint rituals into our culture. I look forward to a new range of phallic pastries at my local bakery.

Dominion Post 14/1/03

Placebos and homeopathy

The business of science is generating testable hypotheses. This is the classical approach espoused by Popper who put it in a negative sense in that he proposed that for something to fall within the realms of science, it had to be capable of being falsified (proved wrong). This approach has been criticised by Skrabanek in particular because he felt that nonsensical propositions should not be tested. In this respect Skrabanek raised the idea of having some kind of demarcation of the absurd which would avoid dignifying pseudoscience by testing it. For example, the Popperian approach requires us to test homeopathy in double-blind placebo controlled trials. Skrabanek's approach would be to argue that homeopathy breaches so many scientific laws that it is already outside the tenure of science.

With respect to homeopathy, it is clear that placebo controlled trials of homeopathy are trials of one placebo against another. This explains the tendency for published trials to fluctuate around a midpoint with some showing a small positive effect and some no effect. The philosophy of David Hume teaches us to suspect either self-delusion or fraud if any published trial of homeopathy shows a dramatic effect of homeopathic solutions in any biological sense. The best example of this is the famous Benveniste study published in Nature (Davenas et al., Nature, 1988, 333: 816). This study could not be replicated by any other laboratory unless the experimental work was done under the supervision of Elizabeth Davenas.

Ginkgo flunks

Ginkgo is an herbal type product claimed to enhance and improve memory. Given what I have just written about placebo controlled trials it will come as no surprise that ginkgo provides no measurable benefit in memory or other related cognitive function. This will have absolutely no effect on the sales of this product because if people believe that it works then they will continue to buy it. Those people who sell the product will find endless reasons to defend their promotion of this useless remedy. I referred earlier to science involving the generation of a testable hypothesis. The practitioners and promoters of pseudoscience have become very skilled at generating endless secondary hypotheses to the point where further testing is impossible. Here are some examples:

The trial was too short/long

They should have used "x" and not "y" strength ginkgo

They should have used added vitamin C, selenium etc.

Ginkgo for memory enhancement: a randomised controlled trial. Solomon et al. JAMA 21 Aug 2002 Vol. 288. No.7. pp. 835-40

Chelation Fraud

A reader of the New Zealand Family Physician (Vol. 29 Number 6, December 2002 p. 366) recently took issue with a review of a paper (Knudston et al., JAMA 23 Jan 2002, Vol. 287 No. 4 pp. 481-6) which concluded "there is no evidence to support a beneficial effect of chelation therapy in patients with ischaemic heart disease, stable angina, and a positive treadmill test for ischaemia". This was a placebo-controlled trial and the conclusions are the same as for similar published trials. The reader, however, objected to the use of an active placebo and claimed that this rendered the conclusions invalid. The debate raises several important issues.

1. Chelation quackery is a worldwide growth industry worth millions of dollars. The hypothesis is that symptoms of coronary artery disease (CAD) will improve following the removal (by chelation) of calcium from atherosclerotic plaques in the coronary arteries. Despite an overly simplistic view of CAD it seems like this is a testable hypothesis but wait a minute. Chelation clinics exist all over New Zealand and as yet there are *no*, and I repeat *no*, double blind placebo controlled trials proving that chelation is more than a placebo. In fact, the Knudston trial is further evidence that chelation is ineffective. There is a worrying trend here, seen also with acupuncture, where unproven therapies are introduced into practice and opponents of such quackery are then challenged to prove that the given therapy is ineffective. I object to this argument. It is up to the proponents of new therapies to prove that their treatments are superior to placebo. In other words, put up or shut up.

2. The reader wrote in and objected that the Knudston trial used an active placebo. A placebo is by definition an inert substance. However, some drugs or treatments produce marked effects. For example, if the drug under test caused the patient's skin to turn green it would be easy for both patient and doctor to determine who was receiving the drug or the placebo. The experiment has become "unblinded" and this is fatal to any conclusions that might be drawn. This problem is well recognized and some trials even invite participants to try and predict whether they received the test drug or the placebo. This is a sensible test of the blinding. Chelation mixtures are based around EDTA, which allegedly leaches calcium out of atherosclerotic plaques. Along with EDTA the preparations contain other drugs such as lignocaine, magnesium, vitamin C. Many of these are vasoactive and cause people to feel flushed or a little euphoric. If a true placebo was used it would not cause these effects and therefore the experiment would have become unblinded. It is therefore sometimes important to use active placebos whose side effects mimic those of the drug under evaluation. For example and I quote: "forty (59%) of 68 of the antidepressant studies published between 1968 and 1972 using an inert placebo control reported the antidepressant as effective, compared to only one (14%) of seven studies using an active placebo (atropine)" (The Powerful Placebo, Shapiro, page 206). The antidepressants under test all caused a dry mouth and slightly blurred vision as does atropine. The use of an active placebo was clearly very important and shows once again how the expectations and optimism of researchers can lead to a serious overestimate of the efficacy of new drugs.

3. Chelation mixtures are non-standard and contain a wide range of drugs in addition to the chelating agent EDTA. This allows quacks to get maximum effect from the generation of endless secondary hypotheses. Suppose we test just EDTA versus placebo and produce the expected result of no effect. The quacks will start bleating that we didn't have Vitamin C, magnesium, rhubarb, senna pods (pick anything you like) so back to the laboratory. No sooner do you test one combination and they will come up with another. This is a sure sign of a pseudoscience. The hallmark of science is the generation of what Staudenmayer (Environmental Illness: Myth and Reality, Lewis 1999) calls a "hard core postulate" and he goes on to say: "When hard-core postulates cannot explain a phenomenon, auxiliary postulates (ie secondary hypotheses) are often invoked to protect them from refutation (ie being proved wrong).

John Welch is a doctor with the Royal New Zealand Air Force

Win $1,000
for One Page of Work

What would you put on one A4 page to encourage critical thinking in schoolkids?

...a class activity or worksheet, a teaching plan, an experiment, a role play, an Internet research project, a critique of a news item

Get your entry in by April 11, 2003

Post to: Critical Thinking Resource Competition,
NZ Skeptics, Box 29-492, Christchurch
Email to: skeptics@spis.co.nz

See further details: http://skeptics.org.nz

Teaching Critical Thinking Competition

Win $1000 for One Page of Work

If you've got a good way to get school students to think critically, we'd love to see it. And you could win $1000 for just one page of work...

We're looking for **one-page (A4) photocopyable teaching resources** we can use to help teachers and parents encourage critical thinking in school-aged students. It could cover any topic that lends itself to critical thinking, but we're particularly keen to have material looking at issues involving the paranormal, pseudo-science or shonky science.

Here are some ideas:

Activity	**Example Topics**
a class activity or worksheet	what are the statistics of chance or coincidence?
a teaching plan	how do you discuss Maori/Christian/science creation concepts?
an experiment	test the class for psychic powers
a role play	what would happen if aliens landed at the Beehive?
an internet research project	analyse the language on alternative medicine sales sites
a critique of a TV programme	how convincing was the Moon Hoax documentary?

It can relate to any subject - obvious ones include English, Science, Social Studies, Media Studies, Maths, Technology - and should indicate where it ties in with related curriculum strands, objectives, links or levels.

Please help spread the word and encourage others to join in. The poster opposite can be put up in staff rooms, at your college of education, anywhere it might reach anyone you think might have an idea of what we can do to encourage critical thinking in school-age students. Other ideas, details and copies of the poster are available on the NZ Skeptics website (**skeptics.org.nz**).

Competition Deadline: April 11, 2003

You can post a printed copy of your entry to:

Critical Thinking Resource Competition
NZ Skeptics
Box 29-492, Christchurch

Or email your entry to: skeptics@spis.co.nz

Electronic entries are to be in PC-usable formats (e.g. plain text, Word, Pagemaker, PDF, tiff).

Don't forget to include your name and address (postal and/or email)!

Conditions on Entry

Entry is open to anyone, and multiple entries are acceptable. Any overseas entrants should note that the prize is in NZ$ and will be supplied as a cheque drawn on a New Zealand bank account; any resulting bank charges will be the responsibility of the entrant.

Entries not in accordance with the competition requirements or received after the closing date of **April 13, 2003** will not be considered.

The winner agrees to be acknowledged in any publicity material; other entrants may also be acknowledged unless they specifically ask not to be.

By entering, the entrant guarantees that the work is free of any third-party copyright or other restriction of use; all entries become the property of NZCICOP Inc.

The judges' decision will be final and no correspondence will be entered into.

Claytons Vaccines, Claytons Protection

Vicki Hyde

BE WARY of "the health professional you see most often". In some cases be afraid, be very afraid.

Why? Well in some cases, the advice you get from your friendly pharmacist could be deadly.

I try to ignore the herbs of dubious quality, the effusive claims for magnetic bracelets, the offers to feel my feet to see what ails me – all those things which seem a core part of pharmacy stock and trade. I do wonder about the business and medical ethics. After all, what's worse—a pharmacist who apparently can't distinguish between tested, regulated medicines and the hope and hokum variety, or the pharmacist who does know and doesn't care because such stuff sells?

But the whole sorry state of that industry took a chilling turn recently with the report of an Auckland pharmacy selling a homeopathic meningococcal vaccine.

Many homeopaths would argue that the 300-year-old practice of diluting substances into infinitesimal amounts is akin to taking a vaccine. "Like cures like" as they say. What they don't say is that the massive dilutions they use would require you to drink almost 8000 gallons of homeopathic solution to get just one molecule of any medicinal substance involved.

You can pay a hefty price for this diluted water, but you can pay a much bigger price if you use it in place of stuff that actually works.

The Council of the Faculty of Homeopathy, the registered organisation for UK doctors qualified in homeopathy, recommends immunisation with conventional vaccines. As GPs, they know you ignore real vaccination at your peril. It's a pertinent warning here when we're considering a large-scale vaccination programme against meningitis.

Small wonder that the head of our Health Ministry's meningococcal vaccine strategy was concerned about the sale of homeopathic vaccines, warning in a Herald article that it could give people a false sense of security.

However, I think the real false sense of security comes from the hopeful notion that we have some legislative protection from purveyors of such patently misleading products. There's no protection under the Medicines Act it seems, for the Health Ministry's compliance team leader Peter Pratt noted in the same Herald item that such preparations are permissible so long as they were "sufficiently diluted".

Yet it's the dilution that make this approach to vaccination so dubious in the first place, and not just to the sceptical. Alternative practitioner and homeopath Dr Dominik Marsiello states unequivocally that "there is no such thing as a homeopathic vaccine". He goes on to acknowledge that "homeopathic remedies are too dilute to stimulate an immune response and confer immunity. There is no basis, historically or scientifically, for such a practice."

Yet we have bottles of water labelled "meningococcal vaccine" and "hepatitis B vaccine" in our pharmacies, sold by health professionals, as a protection against these terrible diseases. Some apologists have said that "vaccine" in this case actually means "immune booster". But "vaccine" has a specific meaning – it's something which confers immunity through the production of antibodies. This is an easily testable claim, but apparently not one our Health Ministry considers worth bothering about.

I shouldn't be too surprised. After all, last time concerns were raised about a comparable product, our Commerce Commission – the organisation charged with protecting us from fraudulent claims – passed the buck to the Health Ministry, saying it was a health issue. The Health Ministry, in turn, washed its hands of the business saying that "water is not a medicine", thus it had nothing to do with them.

Contrast this with the activities of the Australian Competition and Consumer Commission, their state Health Care Complaints Commissions, their Fair Trading Ministers, and the Australian Therapeutic Goods Administration. They are taking an increasing interest in those areas where bogus medicines, fraudulent claims and consumer rights intersect. The TGA took a very dim view of having a fake vaccine on the Australian market, banning it and warning consumers. And the New South Wales Fair Trading Minister referred to the earlier incident where people were paying a 400 000 per cent mark-up on a small bottle of water as "a New Age spin on an old-fashioned rip-off".

Strong words, but ones which need to be said, and said loudly. I know of one New Zealand baby dead of meningitis because homeopathic treatment was chosen over real medicine. I don't want to see any more. I just wish our Health Ministry felt the same.

Vicki Hyde is chair-entity of the NZ Skeptics. This article was originally presented on National Radio's Sunday Supplement

The Life and Times of a Scientific Heretic

In Darwin's Shadow: The life and science of Alfred Russel Wallace, by Michael Shermer. Oxford University Press. Reviewed by David Riddell.

ALFRED Russel Wallace was the co-discoverer of perhaps the most revolutionary idea in human history, but today his name is little more than a footnote in the biology textbooks. It was Wallace who, as a young and unknown field naturalist, wrote to Charles Darwin in 1858 setting out his ideas on evolution by natural selection, spurring his older and more famous colleague to finally go public with his own work in this area. While Wallace always recognised Darwin's prior claim, a joint presentation of the two men's writings was made to the Royal Society later that year, propelling Wallace to the forefront of the Victorian scientific community. In his time, says Shermer, he was as well known and nearly as influential as Darwin. Besides helping to set evolutionary biology on a firm scientific footing, he founded the science of biogeography, and wrote on geology and anthropology.

In later life, Wallace would champion fields which today are regarded as at best pseudo-sciences, among them spiritualism and phrenology—the determination of intellectual capacity by measuring the shape of the skull. He also opposed vaccination and advocated land reform and women's rights. Shermer argues that these activities were not in conflict with his scientific work, but can be understood as aspects of Wallace's "heretic personality", which was shaped by his background. Unlike Darwin, and indeed most of the scientific community, Wallace's family was working class, and his formal education fairly minimal. His life was far less cosy than those higher up the social scale, and he was very ready to adopt radical ideas. With some of these, such as natural selection, he struck paydirt, with others he was less fortunate.

Shermer, the author of Why People Believe Weird Things, and director of the Skeptics Society, spends many pages examining the social pressures which shaped Wallace, attempting to apply quantitative analytical techniques to the task. A lot of this is quite heavy going, and its ultimate success is debatable. Personally I would have preferred less of it and more on Wallace's expeditions to the Amazon and the Malay Archipelago, which are covered rather briefly, although they each lasted several years and laid the groundwork for his future scientific career. On the other hand, Shermer deals well with such issues as the differences between Darwin's and Wallace's views on evolution, or Wallace's involvement with spiritualism and social activism, and peppers it all with fascinating details such as an amusing but financially costly battle with a Flat-Earther. Wallace was a major character in the history of science and deserves to be better known; hopefully this book will help redress the balance.

If undelivered, return to:

NZ Skeptics
PO Box 29-492
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