

*The worst speculative Sceptic ever I knew,
was a much better Man than the best
superstitious Devotee & Bigot.
David Hume*

Phony bomb detectors
The decline of violence
Caffeine and insomnia
A night with a medium
Bio-identical hormones
Climate sensitivity
BioMag and the ASA
Herbal weight loss

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Something in the water?

IT TOOK Hamilton City Councillors about one hour to banish fluoride from the city's water supply on 5 June, a move Waikato Medical Officer of Health Dr Felicity Dumble said discounted the mainstream opinion of the vast majority of dentists and doctors in Hamilton and in New Zealand.

A 2006 referendum showed 70 percent of participating Hamilton voters supported continued fluoridation. The result was supposed to be binding. The most recent quarterly residents' survey found 50.2 percent support, with 31 percent opposition, while a citizen's panel on-line survey showed 56.1 percent wanting continuation, and 43.9 percent opposed. The sample sizes were small and margins of error large, but the community's support for fluoridation was clear.

There are many who live outside the city boundaries who access the Hamilton water supply: I am one of them. But the effects of this decision are going to be felt even more widely. According to the *NZ Herald* (7 June), Fluoride Action Network New Zealand spokeswoman Mary Byrne said other cities were discussing the removal of fluoride and her organisation would "definitely" be a part of their conversations. "Whakatane and Hastings are holding referenda already, Palmerston North have put aside \$10,000 to look at fluoridation and the Kapiti Coast District Council said they were going to review fluoridation but they haven't decided how."

FAN has already applied to the High Court at New Plymouth for a judicial review against the decision by the South Taranaki District Council to fluoridate Patea and Waverley's water supply, on the basis that the council had no express or implied power under the Local Government Act 2002 or any other act to fluoridate. The Hamilton City Council identified this review as one of the risks it needed to consider when making its decision.

Other reasons for the decision include simple finances. The annual cost of fluoridation in Hamilton was \$48,000 per annum – not inconsiderable in a city where there have been several disastrous financial decisions in recent years, notably the annual hosting of a round of the V8 Supercar series.

But what about the science? It seems it wasn't even considered. The report prepared by the council prior to the hearing noted that much scientifically verifiable information was provided, but that council staff do not have the expertise to review that information. And as stated, fluoridation had wide public support. So how was the decision reached? Dr Dumble had a clear opinion: "They have listened to a highly vocal minority (many of whom are not Hamilton residents) and as a result the oral health of Hamilton residents will suffer."

David

For sale: Electronic Sniffer Dogs, noses not included

Stu Cottam

The widespread use of what are basically dowsing rods to detect bombs in Iraq and other trouble spots is a striking example of how a lack of critical thinking can lead to all manner of death and mayhem.

I HAVE never tried to smuggle a bomb through airport security, or through an army checkpoint, or into a police station. I suspect not many of you ever have either. Despite the mayhem and carnage caused by the very few people who *do* do that sort of thing, not many people ever have. So however many people get searched or scanned passing through a checkpoint, very few bombs will be found, and therein lies an opportunity which was exploited for massive profit, at the cost of an unknown number of lives and mutilations.

“Fake bomb detector conman jailed for 10 years,” the headline in the *Guardian* declared (2 May 2013). I first saw the story when browsing the BBC website for news, and since then it has spread around the world, although it hasn’t received anything like the scrutiny I feel it deserves.

In late April this year, British businessman James McCormick was convicted of fraud at the Old Bailey in London and sentenced to ten years’ imprisonment. His crime was the marketing and selling of bomb detectors, known as Advanced Detection Equipment [ADE] 651, that it

Iraq. It was proven the units were knowingly manufactured without any effective working components and were based on a novelty golf ball finder, called The Gopher or Golfinder, which is sold for around US\$20. It had been claimed that the ADE 651 could effectively and accurately detect the presence and location of various types of explosives and other substances, including \$100 bills.

It is estimated McCormick’s company made over US\$20 million in profits from sales of the device. When challenged by an employee who later went on to

tell the BBC of his concerns, McCormick reportedly told him, “The device does exactly what it’s supposed to do ... it makes money.” The sentencing judge gave McCormick the maximum



The ADE 651: in use in Baghdad, March 2013. Photo: West Cumbria Skeptic.

was proven he knew were useless. ADE 651 units were sold by McCormick and other agents from his UK-based business, ATSC, to more than 20 countries, including Afghanistan and

term possible for this kind of crime, describing it as “a callous confidence trick” that “promoted a false sense of security and in all probability materially contributed to ... death and injury to innocent individuals”. He said the case was the most serious of its kind he has known. Since then what remains of the assets of ATSC have been seized by the crown, and the Iraqi government (and maybe other unwitting customers) are now seeking millions in compensation. McCormick continues to vehemently deny the charges from behind bars.

According to promotional material, the ADE 651 is supposed to work by the principle of “electrostatic magnetic ion attraction”. The ADE 651 consists of only a swiveling antenna mounted by hinge to a plastic handgrip, a plastic-coated cardboard ‘detection’ card and a collection of junk electronics. It has no power source, and is claimed to be powered by the user’s static electricity. The electrical components are not connected to anything.

A multi-purpose device

The glossy promotional material issued by ATSC claimed that the ADE 651 could detect items including guns, ammunition, drugs, truffles, human bodies, contraband ivory and bank notes at distances of up to one kilometre underground, through walls, underwater or even from aeroplanes at an altitude of up to five kilometres. According

to ATSC the ADE651 could by-pass all known attempts to conceal the target substance. Resellers had also claimed the device worked on the principles of nuclear quadrupole resonance (NQR) or nuclear magnetic resonance (NMR). McCormick went on to tell the BBC, in 2010, that dowsing rods and the ADE 651 worked in a very similar manner.



Two of a kind: The ADE 651 bomb detector (left) and the Gopher golfball finder (right). Photo: motherboard.tv

The substance-specific “programmed detection cards” were claimed by ATSC to “tune into the frequency” of a particular explosive or other substance, as named on the card. The cards were supposedly “activated” by being placed in a jar for a week along with a sample of the target substance to absorb the substance’s “vapours”. Initially, McCormick said he had used his own blood to programme the cards for detecting human tissue, but eventually gave up even this pretence.

After inserting the detection card (in a plastic slot) the device was supposed to swivel in the user’s hand to point its antenna in the direction of the target substance. One Iraqi police officer claimed, “If we are tense, the

device doesn’t work correctly. I start slow, and relax my body, and I try to clear my mind.”

I hear the *Twilight Zone* theme playing in the background. Seriously, it makes me want to grab something from the \$2 shop and turn it into a revolutionary faith-based bomb detector ... all yours for only \$200! That would be cheap: ATSC sold thousands of the ADE 651 units to countries

including Bahrain, the Lebanon, Mexico, Niger, Pakistan, and Syria as well as Afghanistan and Iraq for up to US \$40,000 per unit. The Iraqi government alone was said to have spent more than US\$50 million on the devices. They are still being used by the Iraqi police and army,

and reportedly also in the Middle East and possibly elsewhere. Similar gadgets, under different names, are used in Thailand.

Real detectors

There are real bomb detectors, but they work rather differently. The most common ‘bomb detector’ is of course the dog; dogs can be trained to identify the scents of several common explosive materials and notify their handler when they detect one. However, whilst generally very effective, dogs can lose efficiency if they become tired or bored.

Several types of machines have therefore been developed to detect trace signatures for various explosive materials. The most common technology is ion mobility spectrometry (IMS) in

which molecules are ionised and then moved in an electric field in a vacuum or gas. The time that it takes for an ion to move a specified distance in an electric field is indicative of that ion's size to charge ratio, which can be matched to the signature of the ions in various explosives.

Thirdly, x-ray machines can detect explosives by looking at the density of the items being examined. They may use dedicated software, containing an explosives threat library, to identify substances using tomography or, more commonly, related components such as detonators. However, x-rays can be foiled if devices/substances are hidden, for example, inside electronic equipment.

Lastly, a detection taggant has been added to many explosive substances to make detection easier. An example is Semtex, which now is made with 2,3-dimethyl-2,3-dinitrobutane (DMDNB) added as a detection taggant which dogs are sensitive to.

As yet there is no credible hand-held device for detecting explosives, and most detection methods can only work when relatively close to the explosive they are trying to detect.

The path to prison

McCormick's con had been slowly unravelling for some time prior to his trial. As long ago as 2008 skeptic James Randi had offered one million dollars to anyone who could prove the ADE 651 worked, describing it as "a useless quack device

which cannot perform any other function than separating naive persons from their money... a blatant fraud." *Der Spiegel* reported in 2010 that the ADE-651 had been tested by the Israelis in 2008 but was "kicked out of the country". An explosives expert at an arms and security fair in Beirut in April 2009 described it as "one big fraud".

The question then seems obvious: why the heck would a sane person believe the ADE 651 actually worked?

A *New York Times* investigation in 2009 reported that the US military believed the device was no more use than a magic wand for detecting explosives, whilst a former national security aide in the Clinton and Bush administrations condemned the device as "laughable". As a result the US military notified all military and civilian personnel in Iraq that the bomb detection device was ineffective and should not be relied upon as a means of ensuring the safety of any personnel. Whether the Iraqi police and military willfully chose to ignore this advice is not entirely clear.

In 2010 BBC's *Newsnight* programme investigated the ADE 651 and scientifically assessed the "programmed substance detection cards". They found that the cards contained only a standard radio frequency security tag of the type used in stores to prevent shoplifting and that it was impossible for the cards to detect anything. The card could not be programmed, had no memory, no microprocessor and no form of

information could be stored on it. Despite the high cost of the devices, the cards were worth only about two to three pence (four to six cents) each. Furthermore, the card reader was found to be no more than an empty plastic box. Following this investigation export of the device was banned by the British government and McCormick was arrested on suspicion of fraud. ATSC was dissolved in March of this year and millions of dollars worth of McCormick's and ATSC's assets were seized.

James McCormick himself is an interesting fellow. A former Merseyside police officer, he makes no claim to having any scientific or technical knowledge. McCormick owns, or used to own, a plush country home in Somerset, a mansion in Bath (formerly owned by one Nicholas Cage) as well as houses in Florida and Cyprus, and a luxury yacht. He is the founder, managing director and sole shareholder of ATSC and its sister company ATSC Exports. ATSC was claimed to be a broadcasting and telecommunications company on its inception, although its primary product became the ADE 651.

The question then seems obvious: why the heck would a sane person believe the ADE 651 actually worked? To no small degree the British government must bear some responsibility as it, perhaps unwittingly, gave McCormick a shield of respectability by marketing the ADE 651 at government-backed trade fairs. McCormick also made his devices look the part by selling them in Pelican rigid cases as

used to carry genuine military products, using the logo of the International Association of Bomb Technicians (without authorisation) on each unit, and putting official-looking stickers that warned users not to open the detectors. Still, why would you just believe that they worked, except by being too lazy to check?

This brings me back to my original point: bombings are relatively rare events. In almost any environment, even downtown Baghdad, the vast majority of people, vehicles and items going through a security checkpoint will be innocent and harmless. This isn't really any different to us passing through the scanner at Auckland International; if a device detects a possible threat, then a search is made and, assuming nothing is found, the person searched happily goes on his or her way. Such events occur routinely every day at security checkpoints, with all devices, and if nothing is found

the assumption is not that the device doesn't work, but instead that it gave off a false alarm. Thus the ADE 651's false alarms were/are routinely ignored and thereby a non-working bomb detector was considered to be working correctly. It behaved in the same way most working detection devices do in that it often indicated false positives: think of your smoke alarm.

Then why did the ADE 651 sometimes correctly find bombs? We know that the antenna on the ADE 651 isn't connected, electronically, to anything and is just loosely hinged to a plastic handle. The most likely explanation is that the swinging of the antenna, sometimes in the direction of a real threat, is merely due to its loose assembly and unconscious wrist movements of the user. Or, perhaps, the operator already strongly suspected a particular threat. Anyway, to quote a cliché, even a broken clock is right twice a day.

Who's responsible?

There is then the broader question of whose responsibility it was to check that the units worked, and if they didn't then why not? Most likely those purchasing the ADE 651 *en masse* were either ignorant, or benefited by some percentage of the sales, or most likely a mixture of both. It would surely not be too hard or time-consuming to test the device's effectiveness but seemingly very few ever bothered. It has been shown that millions changed hands in kickbacks to those responsible for rubber stamping purchases in countries including Afghanistan, Iraq, Mexico, Syria, Lebanon, Niger, and Pakistan. Presumably those purchasing the device didn't bother to convey the lack of evidence for its effectiveness to those using the ADE 651 daily. It's as if a defence ministry purchaser had bought a load of sub-machine guns only to discover in the midst of a fire-fight that they had no firing mechanism or ammunition, despite the manufacturer claiming they would always score a direct hit from up to 10km away.

The Iraqi Interior minister responsible for combating explosives, Major-General Jihad al-Jabiri was a major purchaser of the ADE 651 and continues to vocally support the product. In a rather unscientific test undertaken by reporters investigating the fake bomb detector story, deliberately hidden explosives in al-Jabiri's office were detected by Iraqi police and security officers wielding the device but not by the reporters using the same device.

NEARING ZERO

by Nick Kim



"Bravo Professor, you stumbled upon the one fact that makes sense of it all. Unfortunately humanity is not permitted to know that the Universe was designed by a committee of ducks."

Al-Jabiri's explanation: the reporters "needed more training in its use".

Despite the recent conviction of McCormick and the mountain of evidence against him the Iraqi Prime Minister Nouri al-Maliki continues to claim that the device is, at least partially, effective. Maybe when you have over US\$50 million dollars worth of egg on your face you'd rather convince yourself it's not there. Of course, it can be argued that if everyone, including those trying to conceal explosives, believed it worked effectively then it was a working deterrent of sorts.

One defence used by McCormick was that the people who have purchased and used his product have rarely complained. However, as another skeptic noted to me, a suitable test for McCormick's confidence in his product would have been to make him distinguish three fake and three real letter-bombs with his device. He then has to open the three he decides are fakes...

Without doubt the consequences to the unwitting users of the ADE 651, and the people the devices are claimed to protect, must be dire. We know well that thousands of people have been killed and injured in devastating bomb attacks in Iraq and Afghanistan without the bombers being detected by ADE 651 devices at checkpoints. Who is to blame, beyond McCormick, is likely to be the subject of ongoing and numerous conspiracy theories.

Double standard

As abhorrent as the actions of McCormick and his cohorts are I can't help but see a huge

double standard in the way he was treated compared with other pedlars of pseudo-scientific junk and snake oil. If, in the UK, 10 years' jail is to be the legal sanction that is taken against a manufacturer/ seller of worthless, potentially dangerous, pseudo-scientific junk then why isn't such a strong stance taken against the manufacturers and purveyors of, for example, 'alternative vaccines', 'healing by prayer', or psychics? All of these products or services are guilty of creating a false sense of security that potentially puts people's lives at risk.

Stu Cottam is an early childhood teacher from Nelson.

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violence

Good news from the Professor

Martin Bridgstock considers a major work, which gives us all some astonishingly good news.

MOST of us are used to being deluged with bad news. The economy is on the slide again. Violence has burst out somewhere in the world. The environmental outlook is grim. And as for the behaviour of young people ... say no more!

Now Steven Pinker, Professor of Psychology at Harvard University, has produced an astonishing counter to the pervasive gloom. *The Better Angels of Our Nature: Why Violence Has Declined* is a blockbuster of a book – more than 1,000 pages in all, with over 100 graphs, tables and diagrams – in which he argues that violence is in decline for the human race. On the first page of the book, he puts it like this:

"Believe it or not – and I know that most people do not – violence has declined over long stretches of time, and today we may be living in the most peaceable era in our species' existence."

The average skeptic is likely to greet this with a snort of derision. Wasn't the most savage war in history the Second World War, which is still within living memory? And wasn't there a whole mass of other wars, massacres and atrocities in the same century? And didn't the twenty-first century open with a hideous act of terrorism, followed by many more? "How can anyone call our era peaceful?" the skeptic may demand.

Pinker is aware of all the objections. And steadily, over hundreds of pages, he produces the evidence and the arguments to meet them. He stresses that his evidence is well known to specialists in various areas of research. However, the overall news has not yet seeped out to the general population. At the end I concluded that yes, it looks very much as if violence is generally declining for the human race. And that has to be regarded as some of the best news we could possibly have.

Let's be clear that the statistics which Pinker produces are not completely consistent. Most of his charts show declines in violence, but there are sudden upturns and unexpected spikes in the data. In the Islamic world there is no sign of a decline, though it isn't getting any worse. On the other hand, Pinker doesn't just chart the statistics, he also explains the processes which underlie the trends, and which seem likely to continue to reduce the levels of violence. I will put all these in a table: they are well worth a look, and mostly self-explanatory.

What sort of processes are involved? The earliest appears in the table: the Pacification Process. This took place in pre-historic times. It involved the

change in lifestyle of humans from hunting bands to settled communities. Pinker estimates that this reduced the incidence of violence by a factor of about five. There is a good deal of evidence showing that hunter-gatherer societies are appallingly violent, and so this early change in our circumstances reduced all kinds

US was one of the first, followed by women's rights, children's rights, the rights of minorities and animal rights. Pinker makes the point that these movements imitate each other. In addition, although these movements can often be thoroughly irritating, they have greatly influenced the way we all think. Conservatives



Despite occasional conspicuous blips, the level of violence in human societies continues to decline.

of assaults greatly. Another process, the Civilising Process, took place in Europe less than a thousand years ago. This happened when 'Leviathan,' the central authority, imposed his rule upon the fractious – and violent – local rulers. In Britain this was known as the King's Peace, and it made people's lives safer again, by a factor of perhaps 10 to 50.

More recently there have been cultural developments which have led to further reductions in violence. What Pinker calls the 'Rights Revolution' has swept through the developed world. The civil rights movement in the

nowadays are as anti-racist as anyone else, and for good conservative reasons. The American Republican Party has started to realise that if it alienates important groups like minorities and women, it is going to lose more elections.

So gradually, and with many failures, we are becoming less and less violent. What is more, because we tend to forget what the past was like, we are mostly unaware of this enormous, wonderful trend. Pinker shows that we tend to assume that the past was less violent than the present, when in fact it was much more

dangerous. And some modern events have been startlingly peaceful. The cold war looked as if it would end in a monstrous conflict which might exterminate humanity. Instead, it ended relatively peacefully. In some countries, indeed, there was no violence at all.

“Yes,” I hear the skeptic complaining, “but what about World War Two? It was a modern bloodbath, and the most costly war in history.” Pinker makes two points. There is a ‘spike’ in violence for World War Two, but it is superimposed on a long-term decline in war deaths. Second, if you allow for world population, the Second World War does not look so destructive. Pinker cites

work which standardises the destructiveness of wars against the total world population at the time. The Second World War then falls to ninth place in the overall tally of murderous events. What comes top? The Chinese An Lushan Rebellion

**... more and more people
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improve.**

of the eighth century. Apparently an ambitious general tried to overthrow the T’ang dynasty. After a hideous civil war he was defeated, but Chinese records show that about 36 million people were killed. Scale that up to

the world population in the 20th century, and you are looking at over 400 million deaths. Second, incidentally, come the conquests of Genghis Khan, with a scaled up total of 278 million deaths. Seen in this way, the past looks much darker, and the present is much less murderous than we usually suppose.

For me, Pinker’s book is most impressive because of the way that he collates huge quantities of statistics and then uses current research to explain what is going on. Our understanding of our own behaviour is not perfect, but it does enable Pinker to make sense of what is happening. He argues that there are specific psychological mechanisms which make us violent, and these have

Processes	Explanation
The Pacification Process	Prehistoric. A five-fold reduction in violence caused by the move from hunter-gatherer societies to settled communities.
The Civilising Process	In Europe, this took place between mediaeval times and the 20th century. The development of a centralised state led to a 10- to 50-fold reduction in violence.
The Humanitarian Revolution	In Europe, around the time of the Enlightenment. Organised movements to stop cruel punishments, slavery, despotism, cruelty to animals etc.
The Long Peace	Since World War Two. The two-thirds of a century in which the great powers appear to have stopped making war on each other.
The New Peace (Pinker’s own term)	From the (peaceful) end of the Cold War in 1989 to the present. General decline in all forms of violence.
The Rights Revolutions	A ‘cascade’ of movements from the late 1950s to the present day, opposing violence against a whole range of groups and populations.
Five Inner Demons (ie processes tending to make us violent)	Aggression comes from several psychological systems which differ in what triggers them. Five of these systems are: Predatory or instrumental violence, Dominance, Revenge, Sadism and Ideology.
Four Better Angels (ie processes leading us away from violence)	Humans have some motives which orient them away from violence and toward altruism and cooperation. Empathy, self-control, moral sense, reason.
Historical forces favouring peaceable motives and pushing for a decline in violence	Leviathan (ie functioning governments), commerce, feminisation (ie more concern for the welfare and opinions of women), cosmopolitanism, escalator of reason.

Table: the main processes operating to increase or reduce human violence. Note: a good summary of all this appears in pages xxii to xxv of Pinker’s book.

to be triggered by our environment. Over time, those triggers are becoming less frequent, and our better nature is more able to emerge.

Assuming that Pinker is right, what might we expect from the future? There are no guarantees, but if the processes continue to operate, then we can predict that world violence will continue to decline. Without changing much as individuals, we will become more aware of, and sympathetic to, the suffering of others. Wars, terrorist outrages and violent crimes will not disappear, but they will slowly become less common, and less accepted. And we mostly won't notice!

In my view, Pinker has understressed the importance of two factors. One is the development of mass electronic media which enable information to be passed around quickly and easily. The other is increased personal mobility as people move from country to country in search of work or refuge. As a result, more and more people in poor, despotic, badly-run countries know that matters can improve. In particular, they know that there are prosperous nations where the population chooses the leaders, and the people are free and not terrorised by the state. In my view, this is part of the explanation for the current Arab struggles for democracy and the campaigns in India against violent sexual assaults. These people know what we have, and want it for themselves.

What has this to do with skepticism? Several things. First, in my sceptical view, Pinker's argument must be checked. With something as important as

this, we need to know that he is right. Second, Pinker makes the point that skeptical thought flourishes in the kind of environment which is spreading across the world. In less advanced countries, argument and criticism is not acceptable, and can lead to violence. In fact, open debate is the cornerstone of freedom, and the world is slowly realising this. As it does so, the scope for skepticism as a worldwide movement will increase. More and more

people will be open to skeptical arguments.

Just possibly Pinker's book is the first truly great work of the 21st century. It can change our whole vision of history, and suggests a future world which will be better for everyone.

Martin Bridgstock is a senior lecturer in the School of Biomolecular and Physical Sciences at Griffith University, Brisbane.

caffeine

Something to keep you awake at night

Stuart Landsborough conducts a small experiment which may land him in big trouble.

I TRIED an experiment with my wife, but until now she knows nothing about it. I wonder what her reaction will be when I show her this article! Hopefully she will accept the result of the experiment I have done; however, like all believers in a solution they have come to accept, I wonder if she will somehow find a reason to discredit my 'discovery'.

Before I tell you of my experiment, I will tell you that I am a skeptic to such a degree that I find it difficult to accept any medical or alternative claim about some amazing cure without seeing a lot of back-up studies; that tends to eradicate all alternative claims!

My wife is a fellow sceptic, but like many or all of us, some-

times accepts certain claims with little evidence.

Since 1994 I have offered a large sum of money (now \$100,000) for any person that can find a promissory note hidden within a hundred metres radius of a cabinet that is located at my business in Wanaka: Stuart Landsborough's Puzzling World. As yet, although I have had seven serious challengers, none have won the challenge.

So, although I am not a scientist, I do have a history of some inquisitive inquiry. As I was the one that was testing my wife (without her knowledge) the testing cannot be claimed as 'double-blind' but I hope the way I have done it is still valid as my wife had absolutely no knowledge of the testing on her.

So, now I come to the time when I explain the experiment. Have you noticed in the last few years how many people have decided that they should not have a cup of coffee after three in the afternoon as it keeps them awake when they go to bed? Well, a few years ago my wife became one of them. She decided that she was having sleepless nights but when she experimented with only having decaf after 3pm her nights' sleep much improved. Being a 'convert', she tries to encourage me to give up coffee in the evening even though she can see that I find it almost impossible to stay awake even after just having a coffee!

Luckily for this experiment, I am the one to make the evening hot drink for my wife and myself. Until two months ago, at 7.30 in the evening I made myself a cup of instant coffee and my wife a cup of decaf. My wife then usually stays up until about midnight

when she goes to bed. Within three minutes she is fast asleep. Two months ago, without my wife's knowledge, I replaced her decaf with a standard strength instant coffee.

The first time I did it I was very worried that I would give her a disturbed night's sleep. But, luckily for me, and quite remarkably, my wife was asleep within the usual three minutes!

This has been going on now for the last eight weeks and my wife shows no signs of any altered sleep patterns.

I usually go to bed hours before my wife, but am such a light sleeper that I often wake up as she comes to bed and am aware that she continues to fall asleep almost instantly. Other nights when I do not wake up, in the morning I have had to find out how she slept without arousing her suspicions with questions such as: I slept well last night,

how about you? And guessing that she slept well I would say: you slept well last night, and there would be no denial.

So, what do I make of what has happened? Obviously, for my wife, as I have just proved, having an evening coffee doesn't keep her awake after all. Therefore, when she started taking her last coffee at 3pm some years ago and immediately felt she had better sleeps because of it, does it mean that there was no real medical reason for her previous sleeplessness apart from it 'being-in-her-mind'? Isn't it amazing how just believing that not having late coffees can positively affect her sleep pattern instantly?

Perhaps coffee is much maligned.

Stuart Landsborough is the founder of Stuart Landsborough's Puzzling World, in Wanaka.



Mother 'died of a broken heart' after false psychic message

THE dramatic rescue of three women kept prisoner for 10 years in a house in Cleveland, Ohio, came too late for the mother of one of them (*NZ Herald*, 9 May).

Louwana Miller, mother of Amanda Berry, died of heart failure in 2006, aged 44, three years after the disappearance of her daughter, and two years after being told by a psychic that her daughter was dead.

The *Plain Dealer* reported at the time (18 November 2004) that the psychic was Sylvia Browne. "She's not alive, honey," Browne told Miller. "Your daughter's not the kind who wouldn't call."

With those blunt words, the *Plain Dealer* wrote, Browne persuaded Miller to accept a grim probability that had become more likely with each passing day. Miller said she believed "98 percent" in Browne.

"Please don't misunderstand me. I still don't want to believe it. I want to have hope but, after a year and a half, what else is there? It seems like the God-honest truth."

Yet nothing in Sylvia Browne's track record should have inspired any sort of confidence. This is not the first time she has wrongly claimed a missing person to be dead (*The Guardian*, 8 May). She told the parents of missing child Shawn Hornbeck that their son was buried between two boulders. He was found alive in 2007 after being missing for

four years. A three-year study of Browne's predictions about missing persons and murder cases by Ryan Shaffer and Agatha Jadwiszczok for the *Skeptical Inquirer* found that despite her repeated claims to be more than 85 percent correct, "Browne has not even been mostly correct in a single case."

Tiny 'Alien' mummy human after all

A 15-cm humanoid skeleton with a high-pointed skull found in Chile's Atacama Desert has been confirmed as human by genetic testing (*Stuff*, 8 May).

Dubbed Ata, the diminutive specimen was reportedly found in a ghost town, and has been latched on to by the producers of the film *Sirius* and others as evidence of alien life. Now immunologist Garry Nolan of Stanford University has examined its DNA. He initially presumed the specimen may have been ancient, and consulted experts who had extracted DNA from bones of the Denisovans, an Asian relative of European Stone Age Neandertals. It turned out that their protocols weren't necessary: Ata's DNA was modern, abundant, and high quality. Its mitochondrial DNA revealed that its mother was from Chile.

Mysteries remain, however. Ata has only 10 pairs of ribs instead of the usual 12, and the growth plates on the long bones show development equivalent

to that of a six to eight-year-old child. So either Ata had a severe form of dwarfism or, more likely, suffered from a severe form of progeria, a disease causing rapid aging. Nolan hopes to resolve this by extracting haemoglobin from the specimen's bone marrow and comparing the relative amounts of foetal versus adult haemoglobin proteins.

"This looks to me like a badly desiccated and mummified human foetus or premature still-birth," said William Jungers, a palaeoanthropologist and anatomist at Stony Brook University Medical Center in New York. He noted the "barely ossified and immature elements" of the hands and feet, and the wide open metopic suture, where the two frontal bones of the skull come together down the middle of the forehead.

One thing is clear: Ata is not a hoax. X-rays clearly showed it had real bones, complete with arterial shadows, Nolan said. "You just couldn't fake it. Unless you were an alien."

Burger still prime after 14 years?

The *NZ Herald* (26 April) has run a credulous piece on Utah man David Whipple's McDonald's hamburger, which still looks "good as new" 14 years after it was made. Whipple said he'd originally planned to keep it for two months to show friends how its preservatives would maintain its appearance.

In the *Herald's* defence, the story was published widely around the world, but it's just the latest incarnation of an urban legend that's been doing the rounds for many years.

In reality, preservatives have nothing to do with it: *any* small burger will keep its appearance if it's allowed to dry out – it's probably very easy to achieve this in Utah. Kenji López-Alt of aht.serious-eats.com put this to the test in 2010. He found that home-made, preservative-free (and even salt-free) burgers wouldn't rot either, if they were left in the open to dry out. Furthermore, the larger McDonald's Quarter Pounder did rot, and by about the same amount as a home-made version. To complete the study, he put both McDonald's and home-made burgers in zip-lock bags. Both rotted. Now that's science at its best.

Exorcist doesn't believe in "that sort of thing"

The Anglican vicar who was once Wellington's exorcist has told the *Dominion Post* (23 May) he doesn't believe in all that sort of thing – "it's a load of rubbish."

Father Michael Blain learned exorcism in the 1980s in rural Zimbabwe, where distress was often blamed on curses, demons, or magic. Some families would call for a witchdoctor, but others came to the church.

"... [T]he church staff said it was my job ... they see the world in such a way they believe you can help them, and it was my job to help."

It was not about what he believed, he said, it was about what people needed. He would turn up on a motorcycle and perform exorcisms alongside village elders. But he never believed he was casting out Satan.

When he returned to New Zealand he was asked to do the job for Wellington. "My parishioners in Kelburn laughed at me ... said they were embarrassed to tell anyone they had a priest who did exorcisms."

He was proud to say he never actually performed the ceremony. If he was asked to do one, he would talk and pray with the person, and would often refer them to a psychiatrist or a doctor.

He said he was concerned about the growth of churches that believe in demons and possession.

While every Catholic diocese is still obliged by canon law to have someone available to do exorcisms, Wellington has no appointed exorcist, and Catholic Archbishop of Wellington John Dew said that, as far as he knew, it had never needed one.

Catholic Education Office chief executive Pat Lynch said these things were not in the realm of fantasy. He remembered a house in Auckland in the 1970s, where "people were getting in touch with the Underworld".

The story was that a one-metre hole would open up in the side of a wall, leaving scorch marks around it. While parts of the story may have been embellished, an exorcist was brought in, and the ritual he performed apparently worked, Lynch said. "I have no reason to disbelieve it."

Psychometric tests cost jobs

Longstanding public servants are being asked whether their friends know how to party, if they hate opera and whether they like riddles – and their answers could cost them their jobs (*Dominion Post*, 5 July).

Psychometric testing is being used in restructuring measures at government departments such as the Ministry of Business, Innovation and Employment and the Department of Conservation, a move employment lawyer Barbara Buckett says is a new and sinister trend.

"It's a cute move they use to get rid of what they classify as 'dead wood'. They can design it to make sure certain people don't pass."

One of her clients, a former public servant, took redundancy rather than complete a test, after deciding that failure could obstruct future employment.

Public Service Association national secretary Brenda Pilott said the association objected strongly to the tests. "We think this kind of dabbling in people's psychological makeup is horribly intrusive, and it's ridiculous – how does liking opera singing make me a good health and safety inspector? I suppose you're meant to say you don't like it, because if you say 'yes' you are some kind of elitist snob, but I don't know."

Statements which participants in the tests had to tick True or False included: "The secrets of the universe are objective and knowable", "I can make up stories quickly", and "I would enjoy skydiving".

One night out fishing

*In the first of a new series of columns, **Matthew Willey** catches up with what celebrity medium Kelvin Cruickshank is up to these days.*



THE dead talk to no-one. Kelvin Cruickshank is either deliberately misleading his audience when he says that they talk to him, or he is deluded. The niceties of putting thought into print mean that I should not assert here which option I think is the case. It's not even a very interesting question.

What is more interesting is sitting in the audience of a charismatic self-promoter, and to watch him ply his trade. Fascinating to sit amongst true believers, to feel their rapt attention, to hear their chuckles and gasps as they are skilfully played like the fish he says he catches. Interesting to watch someone you know is presenting illusion as reality, someone who has honed this delivery to a fine point.

He aimed his speech perfectly at his familiar listeners. For

example, he knows about local variation. The show was tuned to a provincial audience and included much about the shallowness of Aucklanders, who didn't want him, but wanted something from him, who didn't know the value of friendship. (Knowing laughter and nods from those seated around me.)

He knows about suspicion of mainstream medicine, and related a heartbreaking story about how doctors tried to medicate his gift away from him, nearly killing him in the process. But just as the show turns mawkish, and before the atmosphere turns leaden, he wheels out the kiwi bloke persona. In this guise he spins stories of everyday life as a famous person. It's not easy.

This kiwi bloke theme was oft repeated, and earned him audible gasps of appreciation from the crowd. He isn't in it for the money, of course he isn't. He has the gift to hear from the dead, to connect them with the living because, you know, they miss us as much as we miss them.. But after his breakdown, and after he had been dismissed by his teachers (what do they know, eh?) as never going to amount to much, he decided that his calling would lead him to help others. Because that's what you do, eh? It's the kiwi way.

He also plays a Maori cultural card, and clearly knows that a chunk of his fan base comes from that demographic. And he plays it with the same level of skill and cynicism, talking about his wairua, about sharing kai, about knowing where his kai comes from and how he completes the circle of life. He knows of the higher spiritual being, to whom he also offers blessings, and then just at the point where it becomes unbearably grandiose, he tells us a story about being recognised in the supermarket with his potatoes and carrots, because fame is the price he pays for what he offers people. And we are back with the kiwi bloke just trying to help.

His empire, shoddy though it is, is branching out. There are initiatives such as retreats with Kelvin, and an option to sign up for membership of his spiritual family. You get bracelets and things, oh it's hardly important, the point is the connectedness, the love, the aroha. And he moves on, having planted a lucrative seed of interest in his audience's mind.

And then, again, we switch mood and are treated to a comical story of a gay fortune teller giving Kelvin a tarot reading. Kelvin camps it up, playing the homophobia card not for the first

or last time during the evening. Big, appreciative laughs. It's a kiwi bloke thing.

All of this is in some way forgivable. The audience wanted this, they paid for it, and I felt at times that he was as much a product of them as a manipulator of them. But I felt nothing but contempt for the man when he singled out two couples, and publicly flaunted their tragedies for his own aggrandisement. The couples clearly knew him and they were privileged to be, in some way, in his inner circle. People rose in their seats and strained to see these blessed twosomes, and even smiled at them encouragingly as their stories were told, basking in the reflected drama.. But their losses and their suffering these pairs had brought, in error and naivety, to Kelvin Cruickshank of all people. And now their horrors have become food for his mesmerising narrative played out on stage. And as Kelvin builds up the rescuing hero, at the last moment he diffidently pushes it away from him with disarming compliments to his hapless stooges. But their healing came from them, eh? It was their love that pulled them through. Kelvin only did what anyone would. The kiwi bloke with the great gift, who only ever wanted to help.

By the time we come to receive questions from the audience, the crowd (some three hundred strong by my reckoning, I wish we could pull a fraction of that for the Skeptics in the Pub) are rapt and it is beginning to take on the feel of a revivalist meeting. Hands shoot up for the microphone, and it is handed to the first questioner.

Q: "I'm interested that you say that the spirits of the dead whisper in different ears depending if they are male or female. Men use mainly the left side of their brain and women use mainly the right side. I wonder if that's got anything to do with it?"

A: "Wow! You must be a scientist. Hey, I don't know, I'm just picking up what they are saying. Did you read a book about it? You must have read a book about that right? The first book I ever read was my own, *Walking in Light* (laughter). That was the hardest book I had to

write because I had so much to unload."

This was the point where I reckoned I had had my money's worth, and I quietly exited, squeezing past the tragic couple, whose moment of fame had passed, and whose dead daughter had whispered into Kelvin's right ear.

Matthew Willey works in schools as an adviser for children with disabilities. He lives in Palmerston North with his family, who tolerate his enthusiasm for skepticism with a kindly forbearance. He is English, but losing the accent.

hormone supplements

'Natural' hormones no better

Gail Thomas

Hormone supplements derived from plants are widely promoted as more 'natural' than hormones from horses, but they carry the same risks – and some more of their own.

THE New Zealand Menopause Institute claims to be able to end the symptoms and long-term consequences of menopause through advice on diet, exercise and taking 'natural' hormones. The New Zealand Men's Clinic makes similar claims.

This natural Hormone Replacement Therapy (HRT) uses what are known as bio-identical hormones, which the institute claims on its website are different to synthetic hormones given as conventional HRT. They explain that synthetic HRT is

dangerous because it is extracted from the urine of pregnant horses whereas bio-identical hormones are much safer because they are not altered but match the hormones found in the human body. They go on to quote Dr Jonathan Wright (an American advocate of natural hormones) who says "natural oestrogen and natural progesterone provide all the benefits of the synthetic forms, while there is little risk of endometrial or breast cancer." He also explains that "the word natural is used to refer to the structure of

the hormone molecule, not its source.” The source for natural hormones is wild yam or soya bean; the extract is converted to match the hormones found in the human body, ensuring a much safer match than horse hormones. Bio-identical hormones are extracted from wild yam or soya beans.

Spot the contradiction in their claim: These bio-identical hormones are firstly said to be unaltered then we are told they are converted to match body hormones!

Over the phone a nurse at the institute informed me that the hormone supplementation was natural because the amount prescribed was tailored (compounded) to the needs of the patient and may even be in extremely tiny amounts (warning bells!).

Aside from the issue of extremely small amounts used as a treatment modality I wanted to find out whether there was any evidence that bio-identical hormones worked and were safer than conventional HRT.

Looking on-line, there seems to be a lot of scientific evidence that bio-identical HRT has the same risks and benefits as other forms of HRT. The nurse I spoke to said she only knew of anecdotal evidence from thousands of patients. And Oprah Winfrey.

This is from the Harvard Medical School website (www.health.harvard.edu/newsweek/What-are-bioidentical-hormones.htm):

“Bio-identical oestrogens are 17 beta-estradiol, oestrone, and estrinol. (Estradiol is the form of oestrogen that decreases at

menopause.) Bio-identical progesterone is simply progesterone. It’s micronized (finely ground) in the laboratory for better absorption in the body.

“Bio-identical hormone therapy is often called “natural hormone therapy” because bio-identical hormones act in the body just like the hormones we produce. But here again, that tricky word natural muddies the waters. Pregnant mares’ urine is natural, but Premarin is not bio-identical, at least not to human oestrogen. The same goes for Cenestin, which is made from plants but is not bio-identical. Technically, the body can’t distinguish bio-identical hormones from the ones your ovaries produce.”

An informative Wikipedia article on bioidentical hormone replacement therapy cites a large number of studies showing that bio-identical hormones not only have the same risks as conventional HRT but can present extra risks due to compounding.

The International Menopause Society, American Congress of Obstetricians and Gynecologists, Society of Obstetricians and Gynecologists of Canada, The Endocrine Society, The North American Menopause Society (NAMS), United States Food and Drug Administration, American Association of Clinical Endocrinologists, American Medical Association, American Cancer Society and the Mayo Clinic have all released statements that there is a lack of evidence that the benefits and risks of bio-identical hormones are different from well-studied non-bioidentical counterparts; until such evidence is produced the risks should be treated as if

they were similar; and that compounded hormone products may have additional risks related to compounding. A major safety concern in bio-identical hormone replacement therapy is that there is no requirement to include package inserts, despite the potential for serious and possibly life-threatening adverse effects associated with HRT. Regulatory bodies require pharmacies to include important safety information with conventional hormone replacement therapy (CHRT) via package inserts.

The US Food and Drug Administration website (www.fda.gov/ForConsumers/ConsumerUpdates/ucm049311.htm) says:

“Many claims have been made by marketers of compounded “bio-identical” hormones, also known as “bio-identical hormone replacement therapy” (BHRT). But these claims are unproven. FDA is concerned that claims like these mislead women and health care professionals, giving them a false sense of assurance about using potentially dangerous hormone products.”

My concern is that the many ads on the radio for treatment at the New Zealand Menopause Institute (as well as its counterpart New Zealand Men’s Clinic) will – as do so many ads for natural health products – mislead people into parting with a large amount of money for something that could do them a lot of harm.

Gail Thomas is a biology and science teacher working in Auckland. She has a degree in biochemistry from the University of Sussex, England.

A climate of hope

*If climate scientists were credit-rating agencies, climate sensitivity would be on negative watch, says a recent article in the Economist. **Barry Brill** looks at recent climate sensitivity estimates and considers the possibility of a downgrade.*

THE world has been discussing anthropogenic global warming (AGW) for over 20 years, but knows very little about its extent. Is it trivial or dangerous? This crucially depends on the relationship between atmospheric carbon dioxide and global temperatures – known as the ‘equilibrium climate sensitivity (ECS)’.

Gareth Morgan’s book, *Poles Apart*¹, canvasses the views of both sides but eventually comes down on the side of orthodoxy in saying (p248):

“We regard the IPCC range of values for sensitivity to carbon dioxide – between 1.8°C and 4.4°C as plausible, or more plausible, at any rate, than the Sceptic’s unreasonably low 1.5°C”.

In a lengthy report headlined *A Sensitive Matter*, a recent issue²

of *The Economist* captured the policy dilemma:

“If, as conventional wisdom has it, global temperatures could rise by 3°C or more in response to a doubling of emissions, then the correct response would be the one to which most of the world pays lip service: rein in the warming and the greenhouse gases causing it....

If, however, temperatures are likely to rise by only 2°C in response to a doubling of carbon emissions (and if the likelihood of a 6°C increase is trivial), the calculation might change. Perhaps the world should seek to adjust to (rather than stop) the greenhouse-gas splurge. There is no point buying earthquake insurance if you do not live in an earthquake zone. In this case more adaptation rather than more mitigation might be the right policy at the margin.”

The phenomenon triggering the article is set out in its first two lines:

“Over the past 15 years air temperatures at the Earth’s surface have been flat while greenhouse-gas emissions have continued to soar.”

There has been no significant warming since 1996 (or longer according to three of the six recognised archives³). The 20-year warming episode of 1978-98 has been followed by a plateau of almost the same duration. The trend has been slightly downwards since the beginning of this century, but that figure is not yet statistically significant.

The major challenge to the orthodox view has been the failure of the IPCC predictions of previous years. A 2012 IPCC graph showing actuals versus



The future may be looking brighter if global temperature turns out to be less dependant on CO₂ than first thought.

predictions was described in one UK newspaper⁴ as showing “a spectacular miscalculation”.

The correct figure or range for the ECS depends upon the chaotic action of clouds and has long been debated. Its shaky history appears from the Wikipedia entry for “climate sensitivity” (the original source, from *Science*, is behind a paywall):

“A committee on anthropogenic global warming convened in 1979 by the National Academy of Sciences and chaired by Jule Charney estimated climate sensitivity to be 3°C, plus or minus 1.5°C. Only two sets of models were available; one, due to Syukuro Manabe, exhibited a climate sensitivity of 2°C, the other, due to James E. Hansen, exhibited a climate sensitivity of 4°C.

“According to Manabe, Charney chose 0.5°C as a not-unreasonable margin of error, subtracted it from Manabe’s number, and added it to Hansen’s. Thus was born the 1.5°C-to-4.5°C range of likely climate sensitivity that has appeared in every greenhouse assessment since...”

A rash of recent journal papers are now (after 30 years and billions of dollars) proposing to adjust Charney’s 3°C best estimate down to 1.5 - 2.5°C or perhaps less. This is hugely significant because warming up to 2.2°C is expected to have net beneficial effects⁵.

It’s pretty clear that the accumulated effect over the whole period until the 2.5°C level is reached (if ever) will be a positive experience. Further, many believe that the present temperature plateau is likely to last for another 15-20 years, removing

any serious threat of dangerous AGW during the 21st century.

Predictions of future temperatures will always be rife with dissension and uncertainty, but recent science should provide considerable comfort to the worriers.

References

1 Gareth Morgan & John McCrystal 2008: Poles Apart: Beyond the Shouting Who’s Right About Climate Change. ISBN 978 1 86979 045 5

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3 skepticalscience.com/trend.php

4 www.dailymail.co.uk/news/article-2301757/Governments-climate-watch-dog-launches-astonishing-attack-Mail-Sunday-revealing-global-warming-science-wrong.html

5 wattsupwiththat.com/2013/02/04/new-paper-by-richard-tol-targets-for-global-climate-policy-an-overview

Barry Brill is Chairman of the New Zealand Climate Science Coalition. He was Minister of Energy and Minister of Science and Technology from 1978 to 1981.

forum

Global warming evidence questionable

I AGREE with Vincent Gray (*NZ Skeptic 107*), it is not possible to determine an average temperature for the Earth. However it is important to note that even the alarmists agree that the Earth is not warming and has not done so for about 17 years. The British Met Office even predicts it is not going to do so in the near future.

Michael Edmonds “believes there is more than enough evidence to accept that human actions are playing a significant role in climate change.”

This is faith not science.

He follows with a set of assertions.

Edmonds claims verifiable changes in the environment are occurring. He lists: temperature rises (not true: see above), shrinking ice caps ... Not true: it is claimed that the Greenland cap is melting – but the claimed loss is less than one percent per century. Ice cores show

the Greenland cap did not melt when the temperature was much warmer than today. See various climate blogs; presumably Edmonds ignores these because they are sceptical. Antarctica is gaining ice.

Edmonds worries that pH changes due to CO₂ “will affect sea life”. Inshore pH varies through the day as photosynthesis proceeds but there is no trend. He claims there is a limit to how much CO₂ the oceans can absorb. Evidence? The oceans are so strongly buffered that CO₂ has negligible effect. The ocean basins are made of mildly basic rock.

CO₂ absorbs and re-emits infrared photons, this should slow down their transmission through air. A greenhouse has little effect on radiation. It conserves heat by preventing convection. The idea of a ‘greenhouse gas’ is pseudoscience.

Jim Ring
Nelson

New Zealand Skeptics Conference 2013

Our annual conference is going to be held this September in Wellington, with three days of talks, workshops and New Zealand's first Skepticamp!

While there will be a wide range of talks and presentations this year, all of them will be based – however loosely – around the theme of science communication. We'll be holding the conference in Rutherford house in Wellington, and there's going to be the usual dinner on Saturday night (venue to be decided). This year we're also auctioning off tickets to a VIP dinner where the winners will be treated to a three-course meal with some of the weekend's speakers (drinks included).

All the details (including some nearby accommodation options) can be found at our website – **conference.skeptics.org.nz**. We're still finalising the speakers, so keep checking back for updates. If you want to buy tickets, either head over to the website, or send us this registration form along with payment.

When: 6 – 8 September

**Where: Rutherford House, 23 Lambton Quay, Wellington
Skepticamp**

As part of this year's conference we're holding New Zealand's first ever Skepticamp. It's on the Friday before the conference, and conference registration is NOT required to attend this event.

What's a Skepticamp? It's a user-driven conference that tries to distance itself from the images typically associated with professional conferences: expensive, sponsor-driven and with a fixed format. For this reason, the term "un-conference" has often been used to describe them.

Organised on the day (or close to it), anyone can give a talk or run a workshop provided that they a) stick to the timeframe and b) are prepared to answer questions and engage with the crowd after their talk. Being skeptical, we expect speakers to be able to back their talks/claims/bold faced assertions with facts and references (citation needed).

When: Friday,
6 September

Where: Black Dog Brewery
17 - 19 Blair Street
Wellington

NZ Skeptics Conference Registration 2013 Fri 6 September - Sun 8 September, Rutherford House, Wellington

Name: (first, last) _____

Name: (first, last) _____

Address: _____

Special dietary requirements: _____

Wheelchair Access: ☐

Other considerations: _____

Registration:	No.	Total:
Full Conference:	\$160 x _____ =	_____
Concession:	\$120 x _____ =	_____
Saturday only:	\$90 x _____ =	_____
Dinner (Saturday Night):	\$60 x _____ =	_____
VIP Dinner Auction:	_____	_____
TOTAL: _____		

Please note that no-one is considered registered until payment has been received or an alternative arrangement has been made. We take payment by either direct debit or cheque:

Cheques: Please send (along with your registration) to:

NZ Skeptics
PO Box 30-501
Lower Hutt 5040
New Zealand

Direct Debit:

ANZ Bank Tokoroa
A/c Name: NZCSICOP INC
11-7810-0185045-11
Please use full name as reference

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you can cut out the form and send it in
RIGHT AWAY!

BioMag gets rude awakening

Michael Edmonds reports on his successful complaint to the Advertising Standards Authority over the dubious science used to promote BioMag underlays. For more on BioMag see NZ Skeptic 91.

The BioMag website makes the following claim for their magnetic underlays:

“BioMag’s scientifically engineered magnet system stimulates nerve endings which increases your body’s blood flow and helps produce a chemical called melatonin.

“Melatonin plays a key role in providing you with a deeper, more restorative sleep and alleviating insomnia related problems.”

I could find no scientific support for this, so I laid a complaint with the Advertising Standards Authority (ASA). My complaint was upheld and the full report was released on the ASA website on 27 June.

BioMag first claimed the page I was complaining against was “non-searchable” and “unlinked” within the site. This surprised me, as I had found it by a google search, and had taken a screenshot of it. Nevertheless, by the time my complaint was being dealt with, the page no longer existed. So I was asked if I wanted to continue with my complaint.

Pleased that the claim about melatonin might have been removed, I checked the revised website. I found the following statement on a new page:

“Your BioMag will not only ease your pain, but an increased production of melatonin will help you get a deeper, restorative sleep.”

So I decided to pursue the complaint based on the fact they were still claiming their magnets increased melatonin production.

BioMag then provided a series of links to journals that they believed supported their claims. The Complaints Board disagreed, and upheld my complaint.

Of the references they provided, a few looked at whether electrically generated (not static) magnetic fields *lowered* melatonin levels in animals and humans. The results show no discernible effect of the various electromagnetic fields on humans. I could find no mention of *increased* levels of melatonin, as suggested in the BioMag claims.

They also included a few papers which discussed the benefit of melatonin in treating sleep related disorders, but which contained no evidence related to magnetic fields. Unfortunately, they don’t seem to have understood the literature as, according to the ASA report BioMag still believe that “it is widely noted that Magnetic Fields effect the production of melatonin.”

They then go on to say:

“While I can concede that the phrase ‘helps produce’ doesn’t specify whether Magnetic Therapy increases or decreases melatonin production, it is true to say that it can have a positive effect on regulation”

This I find a little strange. Surely if you claim to “help produce” something it means you are increasing it?

Another reference provided by BioMag specifically describes how magnetic fields in these experiments were generated using high-voltage, high-current discharge systems to produce *pulsing* magnetic fields. Such fields are very different from the static magnetic fields used by BioMag.

Of course BioMag could look at this paucity of good research as an opportunity. Being a highly profitable company they could easily fund research to test the effectiveness of their products. Surely, there are scientists in New Zealand who would happily test BioMag products using double-bind, randomised, placebo-controlled experiment? Imagine the commercial benefits, *if* they could back their claims with solid, New Zealand-based research.

After all, BioMag have already shown they are a responsive company – they have quickly removed all claims about melatonin from their website.

Michael Edmonds has spent the last decade as a chemistry lecturer, researcher, and more recently as manager of programmes at Christchurch Polytechnic Institute of Technology (CPIT). This article was originally published on his blog, Molecular Matters, 27 June 2013.

'New Zealand's #1 way to lose weight' – oh really?

Alison Campbell thinks there are better ways to lose weight than one recently touted option.



AS I'VE said previously, I find Facebook good for keeping up with friends and family, and profoundly irritating in its practice of 'targeting' ads to the user. Mind you, that offers endless opportunities for blogging (when one can find the time). And today I shall make use of that opportunity, for today Facebook offers me a link to "New Zealand's #1 way to lose weight" – and no, it's not a combination of exercise and eating sensibly!

First up, although the purported writer claims to be a New Zealander looking at use of a particular "miracle" combination in New Zealand and documenting her own results, I couldn't help but notice that a) "New Zealand" is mentioned but a single time in the blurb; b) she looks nothing like any of the women in her supposed "before and after" photos (nor does she share a name with any of them – such sloppy editing); and c) none of the women are from New Zealand.

Anyway, what's she raving about? There seems to be a new miracle weight loss/elixir of health offered every week (there've been ads pushing resveratrol in the papers recently, for example). This particular wonder is the fruit of *Garcinia cambogia* (aka Gambooge), native to Indonesia but grown through South-east Asia and parts of India and Africa, where it's widely used in cooking. However, it's also been claimed to have significant health benefits. The page Facebook promotes says:

"It is known to contain the highest antioxidant concentration of any known food, and is reported by many to have unprecedented weight loss and health benefits. By combining Garcinia Cambogia [sic] supplements with a natural colon cleanse..., many people claim that their bodies have literally become "fat burning machines".

Ah, the wonders of pseudoscience – oxidation is required to 'burn' fat, so promoting an antioxidant to help lose fat sounds somewhat contradictory. And colon 'cleansers' – money down the loo.

As for that claimed weight loss (the promotional web page claims 13 kgs!), well, the value of *G. cambogia* in achieving this has been put under the microscope. This approach is

rather more reliable than relying on testimonials, even celebrity endorsements: like green coffee beans, gambooge has been promoted on Dr Oz's TV show as a "revolutionary" new fat buster.

Yet it isn't even new – its use has been studied for over 15 years. A study examining its potential as an anti-obesity agent, published back in 1998, concluded that

"Garcinia cambogia failed to produce significant weight loss and fat mass loss beyond that observed with placebo."

And a meta-analysis of randomised clinical trials – published in 2011 – found that Garcinia extract (hydroxycitric acid) might cause short-term weight loss. However, they noted that in one trial those using the extract were more likely to suffer gastrointestinal upsets than people on a placebo, and went on to conclude that

"The magnitude of the effect is small, and the clinical relevance is uncertain. Future trials should be more rigorous and better reported."

I'll stick to the exercise/sensible eating combo – it'll probably save me money too :)

References

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Postscript: A reader has queried the size of “about 30 mm” quoted for a 12-week foetus in last issue’s Bioblog. This is the size given at www.sciencephoto.com/media/313650/view, although other sites give a range of sizes, averaging 55-60 mm. The ‘foetus’ illustrated (actually a resin model) appears to be about 80 mm, and lacks the prominent umbilical cord, translucent skin and red colouration of a real foetus. Though 30 mm is at the low end of reported sizes, the point that it is a falsehood to say the foetal model shows what we all looked like at 12 weeks in the womb still stands.

Skepticism and Miracles

William Grey

WHAT is a miracle? In the vernacular we speak of “miraculous” escapes and the like, to characterise events which are extremely unlikely – at odds with the normal course of experience. A miracle in this weak sense just means a very improbable event.

David Hume, in his famous essay “On Miracles”, had a stronger sense of “miracle” in mind, namely something which violates a law of nature. It is in this sense that miracles have commonly featured in religious systems of belief, as the means by which God has been thought to have demonstrated His presence or His power to His chosen people.

The question which Hume addresses is: are we justified in believing that miracles have in fact occurred? He argues for the very strong conclusion that we are never justified in believing that a miracle has ever occurred.

Hume is not claiming to show that miracles have never occurred. Proving negative existence claims is notoriously problematic. Hume’s claim is the importantly different one that we are never rationally justified in believing that miracles have occurred. That is, Hume is addressing the epistemological issue of what it is rational to believe, rather than the metaphysical question of what is and is not possible in our sort of world.

... In evaluating testimony for miracles, Hume advances the following principle which, echoing the famous methodological principle commonly attributed to William of Ockham (c. 1285-1349), has been called Hume’s Razor. The principle is:

No testimony is sufficient to establish a miracle unless that testimony be of such a kind that its falsehood would be more miraculous than the fact which it endeavours to establish.

– From *NZ Skeptic* 28, June 1993.

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