

# **the Skeptic**

Volume 12, No 3 (Spring 1992)

Registered by Australia Post - Publication No NBH 8121

*convention issue*



**ESP Tests**  
**Flood Myths**  
**Poll of Science Students**

# CONTENTS

4	News
5	Convention Report
7	Skeptics on Show
8	Media ESP Tests
9	Entering the Null Zone
10	Reviews
11	Bent Spoon Winner
14	Drowning in Superstition
19	Greenhouse – A Response
21	The Process of Explanation
26	National Poll of Science Students
31	Poll of Science Students at Newcastle
33	Coping with Creationism
36	Creation Physics?
37	Seven Types of Science
42	Circular Reasoning
43	On Crucifixion
44	Freedom of Speech
46	Chinese Medicine
48	Letters to the Editor
54	About our Authors

---

## From the President

As Skeptics, we naturally have an interest in science and as Skeptics we should be concerned about the increasing number of assaults on science from a variety of sources. We have long become accustomed to groups such as the new-earth creationists using a perversion of science to bolster their infantile theology (and their evidently minimal faith) and we have all heard the proponents of New Age mysticism attempting to use the language, though not an understanding, of science to give credibility to their fatuous speculations.

Granted, not a lot of serious media attention is given to these obvious fallacies, yet we find, especially in the environmental field, a great deal of of credibility being extended to the writings of people like Jeremy Rifkin, whose cries of ecological doom have consistently been both strident and wrong. Then we have the Club of Rome producing a report which argues that, rational solutions having failed, we should “resort to the apparently irrational, the intuitive and the emotional”. We are

frequently exhorted, by apparently serious commentators, to “get in touch with the wisdom of the ancients”. Are these people seriously suggesting that we can solve our problems by reverting to a tribal society? It just might work if we slaughtered 95 percent of the world’s population.

Even more worrying are books like *Understanding the Present* by British journalist Bryan Appleyard, which is a frontal attack on the very enterprise of science itself. And he is not alone in his antipathy, which is gaining ground among otherwise sane people .

There is little doubt that we face serious social and environmental problems, yet a more certain recipe for disaster than to abandon reason and science is difficult to imagine. As Isaac Asimov once said, “Science may not have the answers to these problems, but if science does not, then there are no answers”.

**Barry Williams**

***the Skeptic***

Vol 12, No 3

All correspondence to:  
 Australian Skeptics Inc  
 PO Box E324  
 St James NSW 2000, Australia  
 Tel: (02) 417 2071

**State Branches****New South Wales:**

PO Box E324  
 St James NSW 2000

**NSW, Hunter Region:**

c/- Prof Colin Keay  
 Dept of Physics  
 Uni of Newcastle NSW 2308

**Victoria:**

GPO Box 1555P  
 Melbourne VIC 3001  
 Tel: (03) 850 2816

**ACT:**

PO Box 555  
 Civic Square ACT 2608

**Queensland:**

GPO Box 2180  
 Brisbane QLD 4001

**South Australia:**

PO Box 91  
 Magill SA 5072

**Western Australia:**

25 Headingly Rd  
 Kalamunda WA 6076

**Tasmania:**

c/- Dr J W Marchant  
 PO Box 43  
 Richmond TAS 7025

**Happy Birthday Dinners**

By an amazing coincidence, possibly even a case of synchronicity, the NSW and Victorian Committees of Australian Skeptics independently decided to hold social functions to celebrate the 5,996th birthday of the Universe.

These momentous events will take place on Friday, October 23 (naturally) and will be the venues for the presentation of the Skeptics Journalism Awards for 1992 to Mr Graeme O'Neill (Melbourne) and Dr Peter Pockley (Sydney).

**Melbourne**

Venue: Jeremy's at Mercat  
 356 Queen St  
 cnr Pherry Rd  
 Melbourne  
 Date: Friday, October 23  
 Time: 7.30  
 \Cost: \$25 per head  
 Drinks: Cash Bar

For reservations, please call James on (03) 853 0738 or (03) 853 6443

Guest Speaker: Prof Ian Plimer

**Sydney**

Venue: Crows Nest Club  
 133 Hayberry St  
 Crows Nest  
 Date: Friday, October 23  
 Time: 7.30  
 Cost: \$25 per head  
 Drinks: Cash Bar

For reservations, please return your cheque/money order to: PO Box E324, St James 2000 by October 16, 1992

**Thanks**

The National Committee would like to express a special vote of thanks to the committee of the Hunter Region Skeptics, especially Colin Keay, Wayne Leslie, Eric Aitchison and Allan Milgate for their sterling efforts in organising the Eighth Annual National Convention.

Their outstanding work has led to this being one of the most successful and best organised national conventions ever.

**Chance**

Several members of the National Committee will be seen in a TV special, produced by Simon Townsend, on the 7 Network on Wednesday, September 16.

Entitled *Chance and Coincidence*, the show will feature some of the coincidences experienced by Harry Edwards and catalogued in previous editions of *the Skeptic*, as well as members taking part in a panel discussion.

**Editors: Barry Williams  
 Harry Edwards**

Subscription:  
 1992 - \$18.00 pa

*the Skeptic* is published four times per year by the National Committee of Australian Skeptics Inc. Views expressed in articles and letters are those of the authors and are not necessarily those of the National Committee.

Articles may be reprinted with due acknowledgement to *the Skeptic*.

## NEWS REPORT

# Successful 1992 Convention

Tim Mendham

The Australian Skeptics' first national convention to be held in a regional centre was an undoubted success. Over 120 people attended on each of the two days of talks, which covered creationism and Noah's Ark, astrology, scientific activity, the church and the law, and demonstrations of supposed telekinetic powers.

The convention was held at the Western Suburbs Leagues Club in Newcastle on June 20–21, with the first day devoted to a detailed assessment of Biblical claims for a universal flood, and Noah's Ark in particular, and belief and promotion of creationism in Australia's education system.

## Awards

Before that session, however, the assembled multitude was regaled with President Barry Williams' announcement of the recipients of the annual Skeptics awards.

The 1992 Journalism Awards went to Graeme O'Neill, science columnist for *The Age*, and Dr Peter Pockley, freelance science writer.

Mr O'Neill has been a regular commentator on matters paranormal for some time, and not without some personal cost. His output is noteworthy for combining reasoned, factually-based argument with humour and wisdom. His award, therefore, was for continued effort in analysis of paranormal claims.

Dr Pockley, a freelance science writer, has written extensively (and independently) this year on Dr Allen Roberts' much-touted claims for

Noah's Ark. He has undertaken extensive research on Dr Roberts' claims both in Australia and overseas, particularly in reference to Dr Roberts' academic qualifications. The much anticipated Bent Spoon Award is given each year to the perpetrator of the most preposterous paranormal piffle of the year.

This year the selection committee was pleased that it had a range of contenders to choose from – while this might not be good news for those fighting the good fight against sloppy thinking, it did make the committee's job a little easier.

The nominations included: Rael and Robert Morning Sky, two separate ambassadors for extraterrestrials; Colin Andrews, proponent of crop circles; the ABC-TV Couchman program for its generous treatment of the paranormal; Keith Smith, ex-radio and TV personality for his UFO publications; Brian Wilshire, Sydney radio conspiracy theorist and the previously mentioned Allen Roberts. As the story elsewhere this issue explains, Dr Roberts won the award, much to the approval of the audience.

## Creationism and Noah's Ark

The first session of the day was launched with an exposition by Prof Ian Plimer on the search for Noah's Ark.

Prof Plimer, who is head of the School of Earth Sciences at the University of Melbourne, has been a regular contributor to Skeptics convention and publications. He has been instrumental in challenging the

claims of creationists generally, and, with much recent publicity, Noah's Ark in particular.

He outlined some of the repercussions of creationist "young earth" theory, which, taking into account known geological events, would necessitate a major earthquake every six minutes, a major volcanic eruption every twelve minutes, and a giant tidal wave (i.e. tsunami) every eighteen minutes. As he said, how Biblical historians could ever write their tomes with such events going on is a mystery that creationists have never explained.

He continued on specific claims for the existence of Noah's Ark, making the point that there are many potential 'arks' with at least comparable evidence to that claimed by Dr Roberts to be found in various locations, including Australia as he showed with photographs from his own field trips.

"No matter where you look, you can find an Ark. There are at least four arks near the Milpirinka Hotel and five more near Tibooburra." Prof Plimer made the offer that he would be willing to assess other supposed arks, as long as they were sited, as with the Milpirinka example, within close proximity of a hotel.

## Flood myths

Dr Colin Groves, reader in anthropology at the Australian National University and a past president of the Canberra Skeptics, outlined the range of flood myths from around the world, with

particular reference to the Babylonian Gilgamesh tradition and its influence on the two flood versions in the Genesis. He also referred to other flood stories including that in the Koran, several Mesopotamian variants, an Ancient Greek version, as well as Zoroastrian, Hindu and some African, American and Asian versions. (See Colin Groves' article this issue.)

While creationists have used the number of flood stories as evidence for a universal flood, Dr Groves pointed out important differences between the versions and suggested that flood myths are an important statement of more fundamental attitudes towards death and creation.

### AIB Poll results

Barry Price, author of "The Creation Science Controversy" who has been described by creationists as not merely a tool of Satan but a demon in his own right, outlined the results of a survey, conducted by the Australian Institute of Biology, of first year biology students at Australian universities.

The results are given in this issue, but in summary approximately 12% of such students believe in a young earth, with a higher than average number found in the University of Technology Sydney and the University of Sydney, among others. Surprisingly, considering past creationist activities, Queensland universities showed an average or below average belief in creationist claims.

As these were first year university students questioned early in their tertiary careers, he said this indicated a major problem with teaching critical thinking in Australian secondary schools.

### Creationism in education

This theme was continued by Dr Alex Ritchie, palaeontologist at the Australian Museum, who described creationist literature and abuses he had discovered in education, including a science master at one NSW high school who had given emphasis to creationist theories to the possible detriment of non-creationist students.

### Second day

June 21 began with brief presentations on astrology by Barry Williams and Victorian Bob Stephens and a description by Colin Keay, president of the Hunter Region Skeptics and professor of physics at Newcastle University, of a survey of biology and physics students' attitudes to creationism at his own university (this latter is also published in this issue).

### Telekinesis demonstration

This was followed with a dramatic demonstration of telekinesis, duplicating a feat performed by Uri Geller on a recent Clive James *Saturday Night Clive* television program. Members of the audience (including the author of this report) were given the opportunity to show their talents in making a compass move with sheer mind power. The fact that their powers were augmented, unbeknownst to the supposed psychics, by a strong electromagnetic coil hidden in the next room was indicative that there are more than one way to reproduce such tricks as performed by Geller and his ilk.

### What is science?

This led to a talk by Peter Macinnis, one time self-confessed 'feral teacher' and now with the Australian Museum, who outlined the "seven types of science". This

paper, too, is reprinted in this issue, but in brief summary the seven types are: hard science (replicable and repeatable); soft science (human based); fraud (manufacturing the evidence, but not necessarily from low motives); fiddling (toying with the method); speculation (generating hypotheses); polemic (personal insistence); and pseudoscience (technological fraud).

Scientific activity can incorporate more than one of these aspects, but creationism cannot be called a science, despite using the fraudulent, polemical and pseudoscientific methods.

During the morning break, a live demonstration of on-line computer databases, including sceptical information, was given.

### Church, family and state

The final talk on "Church, Family and State – a Legal Perspective" was given by Prof Frank Bates of the University of Newcastle. He outlined the case for the law interfering in religious-based practices, giving a number of quite startling examples of more outrageous activities which have come up against the legal system, particularly with regard to the education system.

"The law is forced more than its practitioners would like to interfere in religious freedoms", he said. However, in extreme cases, the 'reasonableness' test is applied whereby what are considered to be generally held levels of acceptability have priority over individual religious attitudes.

The convention ended with a vote of thanks to the Hunter Region Skeptics for organising an interesting and smoothly-run meeting.

The next convention will be held in Canberra in April 1993. ■

## NEWS REPORT

# Skeptics at Science Show

Adam Joseph

Never have the 12 members of the Victorian Skeptics committee worked so hard for so long for so much. Accepting an invitation to exhibit the sceptical viewpoint at the *2nd Great Australian Science Show* at Melbourne's Congress Centre turned out to be yet another highlight in an already busy and satisfying year. President Ian Drysdale coordinated a sub-committee which spent six weeks putting together a display that Melbourne is still talking about.

In the display we had:

- Give-away pamphlets on skeptical issues;
- Laminated newspaper headlines of a sceptical bent;
- Miniature water divining tests for public participation;
- A large display of New Age minerals, accompanied by a Geiger counter;
- Skeptical books for sale; A giant flashing UFO hanging from the ceiling;
- A monstrously large bent spoon;
- Exclusive Australian Skeptics wind cheaters and T-shirts.

Patron Dick Smith once again supported the cause, providing a complete set of the Australian Encyclopaedia and subscriptions to *Australian Geographic* as prizes in our drive to enrol new Skeptics.

The *Science Show* attracted over 20,000 people in the five days of exhibits and lectures on everything from 'New drugs from frogs', through performance artist Stelarc, to our own Professor Ian Plimer speaking against creationism.

Victorian Skeptics also ran a workshop lecture, featuring Dr Stephen Basser speaking on "A before E except after C – vitamins and health". A strange lecture/hoax was devised by sceptical magician Terry McSweeney, who passed himself off as Dr James Weiss, representing the Council for Researching Alternative and Suppressed Sciences (CRASS), direct from California of course. And yes, his two appearances packed the workshop lecture and generated much debate.

All Victorian committee members, together with subscribers and friends, manned the exhibition, demonstrating water divining and handing out more than 5,000 brochures on Cold Reading, Astrology, Firewalking, UFOs and other topics, all accompanied by subscription forms.

The final highlight of the show was a live broadcast of the Skeptics *Liars Club* radio program on 3RR-FM. Adam Joseph and Ian Drysdale took a representative of the Inventors Association to task for allowing 'Magnetic Pillows' on their stand. Ian Plimer light heartedly discussed the value of 'Crystal Power' and demonstrated the ability of a \$15,000 ruby to make anyone more sexually attractive by offering it to a young lady. As expected, she swooned all over him until he asked for the ruby back. The radio show is now going into recess until October.

The venture into the *Great Australian Science Show* was extremely successful and has

attracted a number of new subscribers for the Skeptic, as well as having made thousands of people aware of our activities. We would like to thank all those who assisted us, especially the organisers of the show and National Committee who provided the funds to allow us to participate. ■

## Queensland Science Show

The organiser of the *Great Australian Science Show*, Australian Science Network Pty Ltd, will be promoting another show in Brisbane from **16–20 September** and has again generously offered free space to Australian Skeptics to mount a display. The show will be conducted at the same time as the ANZAAS Conference in Brisbane and will provide a great opportunity for the Queensland branch to increase its exposure.

Bob Bruce, President of the Queensland Branch has agreed to coordinate the event and the National Committee will provide the funds.

It will need your support and we urge all interested Queensland Skeptics who can offer ideas or time to get behind Bob and the Committee. Bob Bruce can be contacted at:

**GPO Box 2180, Brisbane 4001, or on Ph (07) 844 3601.**

## EXPERIMENTS

# Media ESP Tests

Barry Williams

Dr Ken White from the Psychology Department of the University of Queensland, and a long time member of Australian Skeptics, recently conducted two public tests of ESP via the electronic media. In the first test on the ABC *Science Show* (June 20) a student of Dr White 'broadcast' the contents of six cards which contained the answers to questions such as "Think of a number between one and ten", "I am looking at a picture of a car. What is its colour?" and "Think of a playing card". Respondents were asked to return their answers to the ABC. In the event, more than 4,500 people responded, with only five people managing to get two correct answers.

Aware that some parapsychologists regarded the test as being flawed because the person 'sending' was a sceptic, Ken arranged a further test in conjunction with a *Current Affair* (Channel 9). President of the Australian Psychics Association, Simon Turnbull agreed to act as the sender. In this instance, the cards were sealed in envelopes and Simon attempted, using precognition, to divine what the answers were and to project them to the audience. The fact that this experiment was pre-recorded six days before the show went to air was, according to Simon, of no moment and he was confident that he had correctly ascertained at least three of the answers.

The four questions in this test were "A circle contains an arrow pointing either Up, Down, Left or Right", "Think of a vegetable",

"Think of a letter of the alphabet" and "Draw a simple diagram".

The show was broadcast on July 14 and respondents were asked to fill in a form printed in *The Australian* and return them to Channel 9. More than 8,500 replies were received and only eight people were found to have correctly guessed two answers. Simon Turnbull had failed to divine any of the correct answers indicating (at least) that his precognitive powers were not in good working order. Nor did his incorrect answers achieve prominence among the results, strongly suggesting that his ability to project thoughts was also astray.

What became apparent in both tests was that there are certain answers to these questions which occur far more frequently than a simple estimate of the odds would indicate. For example, one would suppose that each letter of the alphabet would have an equal (slightly less than a 4%) chance of being selected. Yet in the *Current Affair* test, 'A' received almost 20% of the votes, followed by 'B' with almost 10%, 'L' and 'C' with around 7% each and 'E' with around 6%. Thus five letters account for half of the selections. The letter 'I' selected by Dr White received only 0.45%, the lowest percentage of all letters, and the letter 'G' predicted by Simon Turnbull 2.54%. More surprising still to the lay observer was the answer to the 'vegetable' question, with almost 58% replying 'carrot'. Only one respondent selected the correct answer 'yam', while just 2.5%

selected Simon's guess, 'onion'.

Ken White asserts that these sorts of results, known as 'mass preference factors' are what can be expected in tests of this kind, and he predicted them before the results were known. These facts are well known to those who conduct experiments of this nature, as well as to professional magicians. Of course, had Ken selected the 'mass preference' answers, it is very likely that a large number of respondents would have achieved three or four 'hits' and a false impression would have been generated that 'there must be something in ESP'.

In the event, absolutely no comfort can be taken by those who hold that ESP is a common occurrence or that 'anyone can do it'. These experiments did not prove that ESP does not exist, and indeed it is difficult to imagine any test that could so prove. What the second test did show was that a professional psychic, who was completely confident of his abilities, failed utterly to demonstrate those abilities on this occasion. Further, it showed that there are other, well-known factors which offer a more logical explanation of some events that may seem to be evidence for psychic powers.

Despite the fact that only 13 out of 13,000 people achieved two correct answers in the tests, any Skeptic could predict that these results would not prevent those who believe in psychic powers from rationalising them away. But then, no test could hope to prevent that. ■

## NEWS REPORT

# Phoney Photon Belt Goes Phut

Barry Williams

Readers will no doubt be relieved to know that the world did not enter a period of five days of total darkness on July 24. We first became aware of this potentially devastating effect when contacted by Penny Johnson of ABC Radio 3GI at Sale, regarding a two page brochure headed "You must read this", sub-headed "At some time between mid July this year, 1992 and 1993 this Planet is likely to experience an extraordinary phenomenon. Five days of continuous darkness or five days of continuous brilliant light".

The brochure goes on to state that "this event, unprecedented in recorded history (*they can say that again*), could occur because our entire solar system will enter a cosmic cloud called the Photon Belt and Null Zone". Later it claims that the effect will last for 110 hours (*which is not five days on this planet, but who's counting*), that the "Planet" (*always with a Capital*) has been doing this every 12,000 years since "the dawn of time" and that it was predicted "by both Nostradamus and the Bible's Book of Revelation". Not of course that our selfless protectors rely on these dubious sources but on "1992 scientific data, cross checked with other (*unnamed*) sources". Of course, "Many world scientists are aware of the possibilities of this event, but for their own reasons are keeping it to themselves at this time".

And what, you may well ask, will this Null Zone do, apart from giving us fiveish days of darkness (or lightness)? Well, it will cause a

severe electric shock, then "all electromagnetic (electrical) energies could be nullified". This could lead to "No electric energy could be generated, batteries probably will not work, cars and motor bikes will stop and cannot be started, elevators could stop between floors", etc, etc. We are advised to stock up on food that does not need preparation, candles, plastic bags to dispose of our bodily wastes (toilets won't work when the pumps fail). People are advised not to embark on long or overseas flights and aircrew are told that they face "a difficult decision" (*to say the least*).

The advice concludes with the statement that "There is a prediction of July 24, 1992 as the first likely date, but be on alert from mid June on. Indications are that end of July should see it occur, but it could be later, even into 1993."

The leaflet concludes "Copy, copy, copy this. Give it to all family and friends. Give to neighbours and workmates and be sure to put in letterboxes of your apartment block. Mail to friends interstate and overseas. We are sorry there is no address nor enquiry phone number but we just cannot handle the likely phone calls".

The leaflet seeks to reassure us that this effect will only last for five days (or 110 hours) and that if we do not panic we will be OK. What seems to have escaped the perpetrators of this pamphlet is that, if all electromagnetic energies were nullified, phoning home or starting the car would be the last of our

worries. For a start the sun would collapse under the pull of gravity and all atoms, including those in our bodies, would fall apart and we would all be dead. (Would a physicist care to write a "What if?" article on this theme?) And anyway, what do they imagine the light from a candle is if it is not electromagnetic?

Unable to locate the authors of this document, we were a trifle nonplused, until *a Current Affair* (Channel 9) managed to track down some devotees in the city of Wagga Wagga. In a segment devoted to these people, reporter Howard Gipps showed them gazing in the direction of the sun, claiming that it was getting dimmer, stocking up on candles and cold comestibles and generally warning the rest of us about the coming catastrophe. Then the penny dropped – one of the Wagga members mentioned that they were "Pleiadeans" and a connection with Robert Morning Sky (see story Vol 12, No 2) was mentioned.

This article is being typed on August 9 and, as yet, no darkness or blinding flash of light has been noticed, nor indeed have there been aliens on TV proclaiming their plans for the world.

Could it be that this whole episode is just another example of the specious drivel masquerading under the title of "New Age", "Human Potential" or some other such claptrap designed to demonstrate the truth of the old adage about a fool and his money?

You can bet your photons on it. ■

## REVIEWS

# Seeking Miracles

**Dick Champion**

*Powers of Darkness Powers of Light*  
John Cornwell, Viking, London 1991

If John Cornwell is known at all to *Skeptics* it is probably as the author of *A Thief in the Night; the Mysterious death of John Paul I*. After training for the priesthood to the point of disenchantment, Cornwell turned to the study of philosophy and English literature at Oxford and Cambridge universities, before taking up the profession of journalism.

A growing obsession with the supernatural (of concern to his wife, colleagues and employers) led to some revival of religion in his decision to take leave without pay ("sick leave" his boss suggested) and travel "...in search of the supernatural made visible in the world, seeking out current evidence ... that God intervenes in the affairs of humankind in literal and observable ways ..." (p 29).

His journey included Yugoslavia, Ireland, Spain, Canada, the USA, Italy and France as well as the UK, where he studied a variety of standard "supernatural" religious phenomena, such as sacred visions, apparitions, the Virgin Mary's handprint in blood, stigmatics, the Turin shroud, bleeding eyes after hypnosis, cures at Lourdes, the Madonna's tears, liquefaction of saint's blood, and so on. His descriptions are a bit more interesting than his irrelevancies: "... I took a cab out to Queens via the 59th Street Bridge" (p 171).

What did it all lead to? (you may well ask). "I had brought my travels to an end, but I could point to no specific, objective phenomenon that demonstrated supernatural intervention that contravened the laws of nature ..." (p 371). "I believe that I had begun to discern more clearly the difference between the apprehension of mystery on the one hand, and crude magic masquerading as supernatural evidence on the other. And this development in discernment had much to do with a stealthily growing conviction that I no longer had need of evidence" (p 379).

The trouble is that he doesn't share with us a definition of this clear discernment. Religion triumphs, exit sceptics. ■

# Skeptics at Play

**Barry Williams**

*Sky* by John Misto  
Ensemble Theatre, Sydney  
Starring Henri Szeps

It is not usual for *the Skeptic* to indulge in dramatic criticism, but then a new Australian play based on a well-known UFO incident is in itself fairly unusual.

*Sky* is about a father whose 17 year old son goes missing while flying a light aircraft. These details are very obviously based on the disappearance of Frederic Valentich over Bass Strait in the 1970s, which was publicised in the media with suggestions that the aircraft had been abducted by a UFO. In the play, the details are altered in that the father is an Italian migrant and the aircraft goes missing off the NSW coast near Wollongong in 1987. The UFO references, however, are clearly derived from what has been published about the Valentich case.

In fact, the UFO theme is peripheral to the play which is really about how an individual manages to cope (or not cope) with the loss of a loved one, particularly under circumstances which leave doubt (or hope) that the loved one may not really be dead. It catalogues the descent of a man through false hope and the loss of faith into madness and to a final grudging acceptance of reality.

Despite the theme, the play is by no means unremittingly bleak and contains a great deal of humour. It is a single handed tour de force for Henri Szeps, who must surely rank as one of Australia's finest actors. Such is Mr Szeps' skill that it is difficult to accept that he is alone on stage throughout the play. One can almost sense the presence of the other characters. On opening night, Mr Szeps received a well deserved standing ovation for what must have been an emotionally and physically draining performance. This is an uncommon occurrence at the small Ensemble Theatre.

Of interest to *Skeptics* is the fact that, prior to taking up acting, Henri Szeps was studying science at the University of NSW. This play is almost certain to tour and I advise *Skeptics* to keep an eye out for it and to avail themselves of a dramatic treat. ■

## CONVENTION

# Bent Spoon Award

Barry Williams

**The following is the text of the announcement of the winner of the Australian Skeptics Bent Spoon Award for 1992, made by National President, Barry Williams at the National Convention in Newcastle on Saturday, June 20, 1992.**

Those who were fortunate enough to attend the now notorious Sydney “Noah’s Ark” meeting (*the Skeptic* Vol 12, No 2) had the opportunity to acquire a twenty eight page document entitled *If this is not Noah’s Ark – then what is it?*.

Before answering the question, let me tell you a little of what the tract says. It begins by telling us that the copyright is held by one Allen S Roberts, so we can assume that he is responsible for the contents. Roberts styles himself “Doctor”, though investigations independently conducted by the Australian Vice Chancellors Committee, Dr Peter Pockley, freelance science columnist, and Australian Skeptics reveal that the institution which awarded this doctorate is not mentioned in the directories that list accredited tertiary institutions in the USA, nor indeed in the telephone directory of Orlando, Florida, where it is located. It is in fact a correspondence Bible college, located in an “80 seat church” in the Orlando suburb of Maitland and is allowed to operate under a Florida statute which gives exemptions to certain religious schools, which are not evaluated by the state Board of Independent Colleges and Universities.

In the document and publicly on a radio programme, Roberts seeks to draw parallels between this “university” and Yale and Harvard, two of the world’s most respected tertiary institutions. In the unmitigated gall stakes, this breathtaking claim must rate very highly, and all I can say in response is that is that Yale and Harvard Universities are certainly to be found in the relevant telephone directories.

Roberts is described in the document as “archaeological research consultant” for Ark Search although he has publicly admitted that he has no qualifications in archaeology, nor in any of the related sciences. He seeks to obscure this point by stating “A goat herd discovered the Dead Sea Scrolls”. That is true,

but totally irrelevant. Roberts did not “discover” the geological formation under discussion, which has been known about for at least 40 years, nor, as far as our most stringent research can determine, has the goat herd been appointed as archaeological research consultant to the Dead Sea Scrolls project.

Roberts further states that his bachelor degree from the University of New England qualifies him as an historian and goes on to say: “This following overview of Dr Robert’s academic background indicates something of the intellectual discipline his involvement is contributing to the search and to his particular role in carefully recording the investigations and findings.” We have no reason to doubt that Roberts has a degree that allows him to call himself an historian. As to what this contributes to his careful recording of any facts, well, we shall see. Let me further quote from the document in hand.

In referring to some “evidence” of fossilised animal antlers, dung and hair, he claims that they “are able to be forensically analysed to determine types of animals and their diets”. Curiously, in light of recent events, this statement may well be true, but I doubt if it is what he meant to say. If you care to look up the meaning of the word “forensic” in the Collins English Dictionary, you will find that it means “Relating to, used in, or connected with a court of law”. That’s it – nothing more. It is a common misapprehension that ‘forensic’ in some way refers to science. It does not, it refers purely to the legal process. One can just imagine the learned justices of the High Court analysing fossilised dung to determine the diet of the animal who dropped it, using only the Constitution and legal precedents. The mind boggles. It is a common mistake, but not one that you would expect from a former English teacher who applies intellectual discipline to the recording of facts.

Let us move on to another piece of intellectual rigour. On page 23 of the document we find a proposal to build a protective cover for the site, and I will quote: “Such an approach has been shown to be both exciting and viable by such projects as the Spanish Galleon, ‘Mary Rose’ in Great Britain and Sweden’s ancient Viking ship, the ‘Wasa’.”

Nothing controversial there you say? Well I am neither an historian nor an archaeologist (and if anyone offered me a job as an archaeological or historical consultant, I would invite them to step outside until they sobered up), but even I know that the *Mary Rose* was an **English** ship, built for Henry VIII, which foundered on its first voyage after a refit and which was refloated in recent years, amid much publicity and fanfare, under the patronage of the Prince of Wales. I am astonished that anyone with even a passing interest in history could have thought that the *Mary Rose* was a Spanish ship. And what about the “Viking ship *Wasa*”? Readers are probably aware that the so-called Viking Age extended from the ninth to the eleventh centuries and was all over by about 1100. The *Wasa* was a Swedish warship which sank as soon as it first raised its sails. The year was 1627 and the ship is described in the *Encyclopaedia Britannica* as “a unique example of a 17th Century sailing ship”. The best way these ‘facts’ can be reconciled with the intellectual discipline of an historian is if Roberts is an historian from an alternative time line, where Britain was a Spanish colony and the Vikings hung around for 500 years longer than they did in this one.

But better is yet to come, and this is an example of intellectual rigour that I doubt will ever be surpassed.

On page 10 of the tract, which discusses the dimensions of the alleged boat, we find that the formation exactly equates with the *Genesis* description (i.e. 300 cubits long by 50 cubits wide by 30 cubits high). Well exactly that is, except for the width and the height, and providing one uses a cubit of 20.6 inches. (The rock is allegedly 515 feet long and if you multiply 300 by 20.6 and divide by 12, you certainly get 515, though where exactly you measure from and to on a rough rock formation is not made clear.)

As I mentioned previously, not being an expert on history or archaeology, I didn’t know just how long a cubit was, so I looked it up. In fact the experts in the field are also uncertain, as the cubit is based on the length of the forearm, not on the frequency of Krypton 86 like the metre. You can see that the cubit is not necessarily a particularly accurate measuring stick and different ancient cultures apparently had different cubits (not surprisingly, as forearms differ considerably), but the consensus seems to be that the Egyptian ‘Royal’ cubit was 20.62 inches, the Babylonian about 20.9”, the Roman about 17.5” and the Hebrew about 22”. It would seem then, that Noah built his Ark using the Egyptian standard rather than the Hebrew one.

In any case it is not the length of the cubit that is important to the story - it is the footnote that Roberts

inserts at this point. Always eager to learn from an historian, I quickly turned to page 25 to find on what authority Roberts based his certainty of this rather precise measurement. I will quote it verbatim.

6 *Piazzi-Smith, Astronomer Royal in Great Britain last century.*

At this point, I must tell you that there never was any such bloke. But I do know who is meant and it is singularly appropriate that this man should appear in a footnote, because his appearances in history are largely as footnotes to the careers of three of the great 19th century men of science. Although neither an historian, nor an archaeologist, I am something of an authority on the man in question, by which I mean that I am one of the few people I know who has even heard of him.

He was actually Charles Piazzi Smyth (no hyphen) (1819 –1900), son of a British naval officer, Admiral Smyth, who named his son in honour of his friend, the well known Italian priest/astronomer Giuseppi Piazzi, discoverer of the asteroid Ceres (the first such to be discovered).

As a lad of 16, Smyth began working for Sir John Herschel, another of the outstanding astronomers of the 19th century, at his observatory in South Africa. At the age of 26, young Smyth was appointed Astronomer Royal for Scotland (not Great Britain) and professor at Edinburgh and, at age 38, he was elected a Fellow of the Royal Society. Not bad you might say, and you would be right. He was by all accounts a pretty fair astronomer, but at around this time he became involved in the study that lifted him from competent astronomer into the ranks of the all-time great eccentrics.

He discovered the Great Pyramid of Khufu. (When I say he discovered it, I don’t mean he discovered it. It didn’t need to be discovered – it was pretty hard to miss, but you know what I mean – it swam into his ken.)

At this point, I must insert a little background as to what was going on in Britain at the time. Of course, this was a time when Darwin had just published his great work and most people still believed the creation story, Noah’s flood and all those other Biblical myths. The British had for some time been a world power and, naturally enough, it became obvious to many of them that they must be God’s Chosen People. Now this was a good idea, but it was a bit inconvenient, as the Bible had it that the Jews held this honour. As it was obvious that most Britons were not named Coen or Greenberg, it therefore became imperative to find a solution and thus it was decided that the British were the descendants of the “Lost Tribes of Israel”.

Among the organisations thrown up by this belief was the Anglo-Israel movement, whose aim was the conversion of all Jews to the Anglican church. This was not just a fringe group as it had many prominent adherents and reading about the movement will repay you for the trouble. It also, though possibly unintentionally, led to the Jews being somewhat better treated in Britain than they were in other parts of Europe.

Another prominent thread which wound its way through the 19th Century British consciousness was a violent and long standing antipathy towards anything French.

This interesting combination of fundamentalism, nationalism and Francophobia caused one John Taylor, a retired publisher, to decide that the Great Pyramid could not have been built by the Egyptians, but must have been built by the Tribes of Israel (proto-British) under God's direct guidance. He was the one who began the growth industry of pyramidology (or pyramidology as I prefer to call it), which holds that the Great Pyramid's measurements contain signs and portents to all of the world's history.

At this time, someone discovered a pyramid casing stone which was 25.025 inches wide and this was taken to be evidence that God had used the British system of measurement in designing the pyramid. Although it was later found that other casing stones had different dimensions, the "sacred" cubit became 25.025 inches and, because the pyramid has five sides and five corners, one twenty fifth of the cubit became the "pyramid inch", which was only one part in a thousand larger than the British inch. What more proof could anyone need that the British system of measurement was ordained by God? And it was one in the eye to the atheistic and regicidal French, who were trying to foist their noxious metric system onto the world.

This persuasive argument had a great influence on the Astronomer Royal for Scotland and he spent the rest of his long life writing voluminous and obscure books about it. He also, along with his mentor Herschel, successfully persuaded the Standards Commission to reject attempts to introduce the metric system into Britain, a decision which is only now being rescinded.

While on a visit to Egypt, Smyth sought to find the divinely ordained 'pyramid inch'. Not unnaturally he succeeded, in the shape of a masons' boss left on the side of an otherwise undistinguished block of stone. In fact, it was not quite accurate and a disciple of Smyth was later found trying to file it down to fit but that is irrelevant here.

The final footnote to Smyth's career was that he

encouraged a young Englishman to travel to Egypt to refine the multitude of measurements of the Great Pyramid. When this man arrived, he found that most of the claims made for the pyramid were hopelessly wrong. Nonetheless he stayed on to make his own discoveries and became the recognised father of scientific archaeology. His name was Flinders Petrie.

Now you might think that I have strayed a long way from my point, which was, if you remember, the intellectual rigour that Roberts applies to his work, so let me tie it all together.

There is only one measurement of this rock formation (the length) that is confirmed by the *Genesis* story, and this is totally dependent on a cubit being 20.6 inches. For this measurement, Roberts appeals to a non-existent person Piazzzi (hyphen) Smith, who was actually Piazzzi (no hyphen) Smyth; he gives him an incorrect title (Astronomer Royal in Great Britain, when he was actually Astronomer Royal for Scotland), he ascribes the 'sacred cubit' to Smyth when it was in fact the idea of John Taylor and he makes it 20.6 inches, when it was really 25.025 inches. (515 feet reduced to 'sacred' cubits comes to 246.953047, which Genesis definitely did not say.) In fact, the cubit whose measurement Roberts almost uses to make his rock come out at the right size was the Egyptian 'Royal' cubit, which was used in constructing the Great Pyramid, and examples of which have been found. It was an entirely Egyptian invention, which had nothing to do with the Hebrews (nor indeed the British) and certainly had nothing to do with Smyth. Add this to the blunders he made about the ships and I ask you to judge for yourself the intellectual rigour displayed by Allen Roberts.

But all of this is merely a preamble and is totally unconnected with the real reason why the committee decided to make this award of the Australian Skeptics Bent Spoon for 1992. When we sat together, a vision appeared before us and a voice spake unto us, saying, "The truth about the formation in the mountains of Turkey is that both Professor Plimer and Mr Roberts are wrong. The formation is neither a syncline, nor is it the remains of Noah's Ark. It is in fact a giant, fossilised Bent Spoon."

How could we argue?

Therefore I am pleased to announce that Australian Skeptics, under divine guidance, has awarded the Bent Spoon for 1992 to Allen S Roberts, archaeological research consultant for Ark Search and a worthy successor to Charles Piazzzi (no hyphen) Smyth. ■

## MYTHOLOGY

# Drowning in Superstition

## Flood Myths and their Significance

Colin Groves

The following is the text of a paper presented by Dr Colin Groves at the Eighth Annual National Convention.

### Introduction

Why anyone would want to believe that the Bible is literally true is a mystery to me. All the stories of massacres and wholesale enslavement of innocent populations, “as the Lord commanded”, are dismal and unedifying, and the God they depict is repugnant to people of goodwill. If anything could be more chilling than the Lord ordering Joshua or someone else to commit genocide, it would be him doing it for himself. Yet this is precisely what he is said to have done in a universal deluge.

In this sense, the attempts of Allen Roberts or the late James Irwin to find Noah’s Ark, and so “prove” the Genesis flood to be true, are equivalent to knocking the moral props out from under modern Christianity.

Creationists are wont to maintain that all human cultures have flood legends, and that these are distant memories of “the” flood, whose only accurate record is preserved in *Genesis*, and that this universal occurrence is in its way as powerful an evidence for the truth of the story as is geology.

Well, it has been shown time and again that the idea of a universal flood finds no backing from geology; so now I want to look at flood myths in general, and Middle Eastern ones in particular, and see what may lie behind them.

### The Genesis story

Actually there are two flood stories in *Genesis*; so closely interwoven that very few people even realise it. Only the odd inconsistency, such as the number of each species of animal that was taken into the Ark (pairs in 6:19, 7:9 and 7:15, but the clean animals by sevens in 7:2-3), gives the game away to the attentive reader.

Julius Wellhausen in 1878 proposed that four different strands had been interwoven to form the Torah (the Pentateuch): Yahwist, Elohist, Priestly and Deuteronomist. As far as the first few chapters of

*Genesis* go, only the Yahwist and the Priestly strands concern us. Although our earliest manuscripts of the Bible are 3rd century AD, it is thought that the Yahwist sections were written about the 10th to 8th centuries BC, the Priestly ones at or after the Babylonian captivity (597 to 539 BC).

The Yahwist (J) refers to God as Yahweh (“the Lord”). The narrative tends to be flowing, human in scale, and Yahweh is constantly depicted in human form. The Priestly author (P), on the other hand, until God reveals to us his real name Yahweh (Exodus, 6:3), calls God simply El or Elohim (“God”); interestingly, he is not worshipped until that time either, and he is never humanised, only his disembodied voice is heard.

The Priestly author tells a stark, straightforward story, and is fascinated by numbers and chronology. The Six Days of Creation is a typical P story, whereas the Garden of Eden is equally typically J. The two stories conflict with each other in several details, and the modern logical reaction is “They can’t both be literally true; one must be wrong”; but for whoever placed them side by side in the same book, *Genesis*, this was a matter of indifference. It is characteristic of the mythological mode of thought that two contradictory propositions can be held at the same time.

The flood narrative in Genesis 6 and 7 is continuous, but style, the name of God, and chronological, numerological and cultic clues enable the J and P strands to be disentangled; when they are, each stands on its own as a complete story (Parrot, 1953; Bailey, 1989).

According to J, God decided to destroy the earth because of human wickedness. Noah was told to take his “household”, as well as clean animals by sevens and unclean ones by twos, into the Ark; the flood was caused by 40 days and nights of rain; Noah sent birds, including a dove, to search for land; and, on emerging from the Ark, he offered a sacrifice of one of every clean beast. Afterwards, Noah tilled the soil and planted vines.

In the P story, the flood was sent because the world was full of corruption and violence. God specified the construction and dimensions of the Ark, into which Noah

was to take only his wife, sons and daughters-in-law, and animals by twos. As well as rain, the fountains of the deep opened, and the flood was on the earth 150 days; a wind arose and caused the waters to subside. The Ark came to rest on the mountains of Ararat, on the 17th day of the 7th month, and land became visible on the first day of the 10th month, but the earth didn't dry until the 27th day of the second month of the following year. Whether the sending out of the raven belongs to P, or to J like the dove, is unclear. Noah was 600 years old when the flood came. God sent a rainbow as a promise that he wouldn't do it again.

### The Flood in the Koran

Noah is one of the five great prophets of Islam. Though the Koran was written in the 7th century AD, its version of the Noah story is worth a brief mention to show how legends may change and elaborate over the course of time. In surah 66:10 it is stated that Noah's wife, like Lot's, betrayed her husband and was condemned to eternal fire. In surah 11:44, "those who believe" were saved in the Ark along with two of every kind of animal, and Noah's household; one of Noah's sons would not enter the Ark: "I shall betake me to some mountain... And the wave came in between them, so he was among the drowned". The Ark came to land on Mt Al-Judi.

### Mesopotamian Flood Stories

Several different universal flood stories are known from Mesopotamia.

In the 7th century BC the Assyrian king Assurbanipal ordered his scribes to make copies of tablets from past eras and lodge them in his library at Nineveh. And so it is that we have a nearly complete manuscript of a marvellous epic poem written in Akkadian, *Gilgamesh*. In Tablet XI, Gilgamesh, in search of immortality, visits the man who has been made immortal by the gods, the flood-survivor Utnapishtim, who tells him the story of the great flood.

Human beings had so increased in number that the noise they made disturbed the gods, who decided to destroy them all. Sworn to tell no person, the god Ea spoke aloud to the wall of a reed hut, telling Utnapishtim son of Ubar-Tutu, a man of Shuruppak, to build a boat and put aboard it "the seed of all living things". His neighbours, though fobbed off with feeble excuses, helped him build the boat, which was to have a floor space of one acre, its walls 120 cubits high, with 6 decks; made of reeds and pitched inside and out. Utnapishtim

loaded it with gold and silver and "the seed of all living things, all of them", and all his kith and kin, cattle, wild beasts, and the craftsmen who had helped him; after being launched with rollers, the boat was guided by Puzur-Amurru the helmsman.

The tempest was so noisy and furious that the gods themselves cowered; but the storm blew itself out on the seventh day:

The sea became calm, the wind grew quiet, the flood held back.

I looked at the weather; silence reigned,  
For all mankind had returned to clay...

I wept. My tears ran down my cheeks.

Weeping seems to be something that Noah never had the grace to do.

The boat landed on Mt Nimush (formerly read "Nisir"), which is thought to be south of Ararat – perhaps Pir Omar Gudrun, in Iraqi Kurdistan. After seven days, Utnapishtim released a dove, which returned; then he sent out a swallow; finally a raven, which found a perch. So he let out everything inside the boat, and made a sacrifice of reeds, pine and myrtle to the gods, who swarmed round like flies. The goddess Ishtar, blaming herself for the flood, placed her jewelled necklace in the sky and swore by it never to cause such devastation again.

The Bible has many passages full of wonderful imagery and glorious poetry, but the flood story is not one of them. To my mind, Utnapishtim has it over Noah every time. Even the sending out of the birds, the only really poetic touch in the whole *Genesis* saga, is in *Gilgamesh* too – and told better. As for the rainbow in *Genesis*, what relevance has it to anything? To learn, from *Gilgamesh*, that it is Ishtar's jewelled necklace, at once makes sense of the episode.

Fragments of the *Gilgamesh* saga are known from elsewhere in Mesopotamia; several date from the time of the First Dynasty of Babylon, early in the second millennium BC. There is no evidence that the flood tale was part of the epic as early as that, but other flood stories are known from that era.

From Sippar come two tablets of the story of Atrahasis, who also survived a flood; given its fragmentary state in many parts, it is remarkably close to the story in *Gilgamesh*, and in fact Atrahasis ("extra-wise") is often used as an epithet of Utnapishtim. These tablets were written down by the scribe Nur-Aya in 1636 and 1635 BC. Faithful copies were made for Assurbanipal's library a thousand years later. The exploits of a third flood hero, Ziusudra (which means

much the same as Utnapishtim, “he found life”), are known from a tablet in Sumerian from Nippur, dating to about 1600 BC, and a Greek version of this was retold by a Babylonian scribe, Berosos, in 275 BC.

In another Old Babylonian tablet we read of kings of Suruppak: Ubar-Tutu, Sukurlam, and Ziusudra, “and then the flood came”... Altogether there were eight antediluvian kings of Mesopotamia (ruling from one city or another), whose total reigns spanned 241,200 years!

Given that the written documents of *Gilgamesh* are so much earlier than those of the Bible, the story of Utnapishtim is vastly more likely to have been accurate than is that of Noah... If there was such an event, and if it was in the 24th century BC as Ussher calculated!

### Mesopotamian and Biblical stories compared

Table 1 lists the essential features of the three most complete flood stories (*Gilgamesh*, and the J and P versions). The similarities between the *Gilgamesh* story and the two Biblical stories are striking – much more so than between the two Biblical stories themselves.

In an attempt to examine further this rather surprising conclusion, I compared them by a method known as Cladistic Analysis, used in biology to reconstruct phylogenies. Taking the 12 features in which particular similarities occurred, I coded the occurrence of detailed similarities as 1, and their absence as 0 (Table 2), and analysed them by MacClade, version 2.1 (Maddison & Maddison, 1987). The three alternative cladograms are shown in Fig.1, together with their lengths (=number of steps needed to construct each one) and Consistency Index (=proportion of characters supporting it) (a perfect fit would have a length of 12 steps, and a C.I. of 1.00). *Gilgamesh* and P are closest, with a 17-step tree; *Gilgamesh* and J are fairly close (18 steps), but a tree in which J and P are closest needs 21 steps.

I would explain this as follows. When the ancestral Israelites (symbolised by Abraham in *Genesis*) left Mesopotamia to become the culturally dominant group in Palestine, they brought with them a version of the flood story, perhaps the very one which was later (or already had been?) incorporated into the *Gilgamesh* epic, which gradually changed over time until it was codified as the J story in the time of the early kings of Israel and Judah, but only the bare outline was widely known. Later, during the Babylonian captivity, the Israelites came into contact with the Mesopotamian story again, and priestly scribes wrote it down anew, as P. The new version, for having gone through no purely oral stage, was closer to the original; only the hero’s name, Noah, was changed to conform with the J version. The

compilers of the Torah/Pentateuch, in the 3rd century A.D., wove the two strands together.

TABLE 1

BIBLICAL AND MESOPOTAMIAN FLOOD MYTHS		
Mesopotamian ( <i>Gilgamesh</i> etc.)	Yahwist	Biblical: Priestly
<b>Oldest version:</b> 1700 B.C.	?10th c BC	?6th c. BC
<b>Creation:</b> <i>Enuma Elish</i>	Garden of	Eden 7 days
<b>Pre-flood world:</b> Sumerian kings Sages & millenarians	Cain lineage Giants	Seth lineage Centenarians
<b>Reason for flood:</b> Overpopulation, noise	Wickedness	Violence
<b>Chief survivor:</b> Utnapishtim (etc.)	Noah	Noah
<b>Warned by:</b> Ea	Yahweh	Elohim
<b>Vessel made of:</b> Reeds	-	Cypress/reeds
<b>sealed:</b> Bitumen	-	Bitumen
<b>area:</b> 1 acre = 4047 m <sup>2</sup>	-	300x50cbs=3699m <sup>2</sup>
<b>height:</b> 120 cubits = 36.5m	-	30cbs=13.7m
<b>decks:</b> 6	-	3
<b>Passengers:</b> <b>human:</b> Kith & kin, craftsmen helmsman	Household	Wife, 3sons, 3 ds-in-law
<b>animal:</b> Seed of all living	By sevens	By pairs
<b>other:</b> Gold and silver	-	-
<b>Rain storm:</b> 7 days & nights	40 ds & ns	“Rain”
<b>Other water:</b> -	-	Founts of deep
<b>Time for flood:</b> 7 days & nights	40 d + 3 wks	150 d
<b>Why flood ended:</b> Rain ceased	Rain ceased	Wind came
<b>Ark came to rest where:</b> Mt.Nimush	Not stated!	Mts.of Ararat
<b>Birds sent out:</b> <b>when:</b> After 7 days	After 40 days	-
<b>failed:</b> dove, swallow	?Raven, dove	?Raven
<b>succeeded:</b> Raven	Dove	-
<b>Sacrifice after landing:</b> <b>to whom:</b> All gods	Yahweh	-
<b>of what:</b> Reeds, pine & myrtle	1 of each clean beast	-
<b>Covenant:</b> Rainbow	Promise	Rainbow
<b>Fate of hero:</b> Made immortal	Planted vines	Blessed

TABLE 2  
CODING FOR FLOOD MYTHS

	Gilg	J	P
Eden-like Creation Myth	1	1	0
Pre-flood Longevity	1	0	1
Survivor named Noah	0	1	1
Description of vessel	1	0	1
Household taken aboard	1	1	0
Valuables taken aboard	1	0	0
Wind put end to flood	0	0	1
Vessel landed on mountain	1	0	1
Dove sent out	1	1	0
Sacrifice after landing	1	1	0
Rainbow as covenant	1	0	1
Hero divinely rewarded	1	0	1

**Flood stories elsewhere**

In Greece, too, there was a flood story. The hero, Deukalion, was warned of a flood by his father Prometheus who, like Ea, was a divine benefactor of humanity. He and his wife Pyrrha (according to Apollodorus), or his children and his wives and pairs of all animals (according to Lucian), got into a vessel and drifted for 9 days, landing on Mt.Parnassus. On disembarkation, they were instructed by Zeus to throw “the bones of their mother” behind them, i.e. stones, and these became men and women. A few other people had escaped by climbing to the mountain tops, but Deukalion himself was the ancestor of all important people (namely, the Greeks).

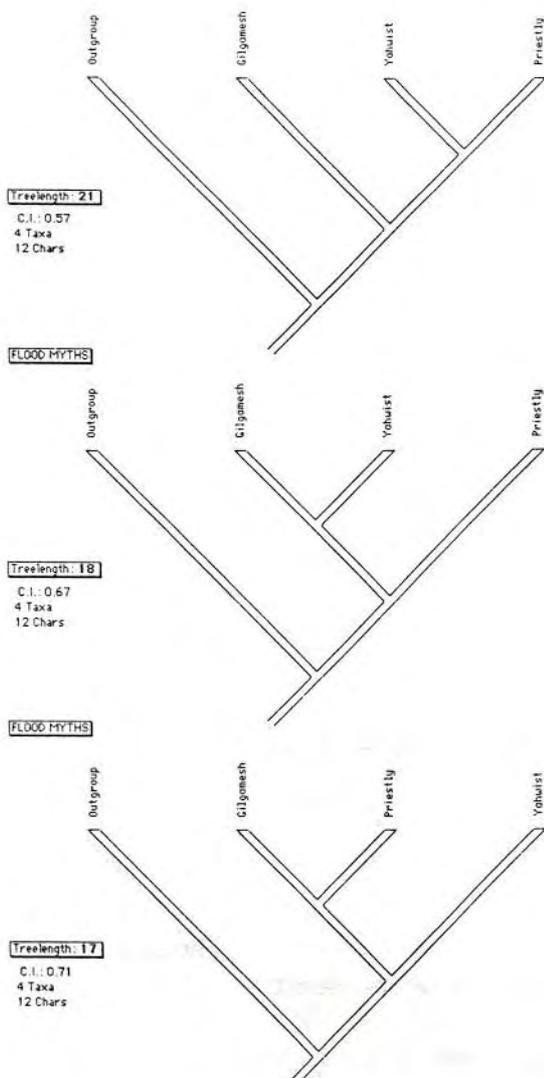
This story is clearly derivative; no version of it can be earlier than the 3rd century BC, and Lucian even says that Deukalion was Scythian and that the tale came from Syria. Interestingly, Deukalion means “new wine sailor” and Pyrrha (“fiery red”) was used as a description of red wine; their son Orestheus was the first mortal to plant vines; and a brother of Prometheus was called Iapetos (i.e. Japheth).

Creationists are fond of claiming that flood myths are universal. This is certainly not the case: they are a rarity in Africa, much of Europe, and most of Asia. Where they do occur, they could have been introduced by early, half-forgotten Christian missionaries, like the Nestorians in China (Bailey, 1989).

Indigenous flood stories tend to be so unlike the Biblical one that it is inconceivable that they could have been derived from it. In Norse mythology, the flood was the blood of the giant Ymir, slain by Odin, and those drowned were not human beings but the ice-giants. The Papago of North America have a hero warned of the coming flood by a coyote. Among the Bororo of South America, the flood was a river in spate, and one man was saved because, being a cripple, he had not reached a fragile bridge before it collapsed. In the myth of the Efe pygmies (the only flood myth I can find in the whole of Africa), the hero is saved by climbing a tree. In Zoroastrianism global destruction is not by liquid water at all, but by ice!

The only flood myth which bears the slightest resemblance to the Biblical one is the one which may have a very distant common origin with it: the Hindu story. Here a pious man, Manu, reared and released a fish which, unbeknownst to him, was an avatar of Vishnu. The fish warned him to build a ship, and into it Manu brought his family and the Seven Sages. For years the ship was carried around by the fish, on a great horn on its head, until they reached an exposed mountain-top.

FIGURE 1



### So, what does it all mean?

Water, by its formlessness, is the antithesis of being; according to Eliade (1957), it is the symbol of death, but carries within it the potentiality for life and existence. As well as myths of destruction by flood, many cosmologies (again, not all!) have stories that watery formlessness was the original state of the world. This, it has been argued (Greenspahn, 198.), is true of the P version of the Creation: "The earth was without form, and void; and darkness was upon the face of the deep. And the spirit of God moved upon the face of the waters" (*Genesis*, 1:2). What God did, in Greenspahn's interpretation, was not to create the world *ex nihilo*, but to impose form by separating the watery formlessness into its component structural opposites: light/darkness, waters above/below the firmament, and so on. Baptism is therefore a symbolic death and rebirth: the waters, by destroying the former person, make possible the birth of a new one (Eliade, 1957).

An extra twist, pointed out by Greenspahn, is that the waters in many creation myths contain monsters which are themselves symbolic of antithesis. In the *Enuma Elish*, Marduk must kill the sea-monster Tiamat before he can create, the two halves of her split body becoming the earth and the sky (each with its own waters). Indeed, echoes of this remain in the Bible: the water-dragon Rahab must be killed before watery chaos can be vanquished and God can create (*Job* 26:7-12; *Psalms* 87:4, 89:9; *Isaiah* 51:9).

In the *Genesis* story, and in all destruction myths, the old world that was destroyed was characterised by grotesque reversals of present normality: incest (sons and daughters of Adam and Eve), giants, multi-centenarians. The flood returned the world to its pre-creation state, and a new creation followed in which only normal human beings existed, incest was abnormal, people lived normal lengths of time. Those who survived the flood were normal people, made abnormal in some way - made immortal (Utnapishtim), blessed or founders of viniculture (Noah), crippled (Bororo myth).

Moreover, as Levi-Strauss (1964) has emphasised, the flood marks the origin of the social structure: in the

myths of the Bororo and neighbouring Arua tribes, the hierarchy of the social structure is set up by the flood and the actions of the survivor(s); Noah's sons are the ancestors of the three divisions of humanity that the ancient Israelites thought important; Deukalion's sons are ancestors of the Greek tribes; and so on.

### Conclusion

Creationists and "arkeologists", in insisting on the universality of flood myths, are ignorant of social anthropology. In insisting on the primacy of the Biblical flood story, are ignorant of Mesopotamian literature. In insisting on the unity of the Biblical account, they are ignorant of textual criticism and Jewish cultic history. In insisting on the internal consistency of *Genesis*, they are ignorant of the actual text.

In insisting that the flood story is literally true, they are ignorant of the nature of mythology and of the meaning of symbolism, as well as of geology. In insisting that the whole Bible, including (perhaps especially) the Old Testament, is literally true, they deprive Judaeo-Christian religions of any moral content and risk destroying that which they purport to promote.

### References cited

- Bailey, Lloyd R. 1989. *Noah: the person and the story in history and tradition*. Columbia, SC: University of South Carolina Press.
- Dalley, Stephanie (translator). 1991. *Myths from Mesopotamia*. Oxford: Oxford University Press.
- Eliade, Mircea. 1957. *The Sacred and the Profane*. NY: Harvest Books.
- Greenspahn, Frederick E, 1983 *Biblical Views of Creation, Creation/ Evolution*, 13: 30-8
- Leach, Edmund. 1983. *Anthropological Approaches to the study of the Bible during the twentieth century*. Pp7-32 in Leach, Edmund and D.Alan Aycock, *Structuralist Interpretations of Biblical Myth*. Cambridge: Cambridge University Press.
- Levi-Strauss, Claude. 1964. *Mythologiques: le cru et le cuit*. Paris: Plon.
- Maddison, Wayne and Maddison, David. 1987. *MacClade*, version 2.1. Apple Macintosh TM .
- Parrot, Andre. 1953 (first English Edition, 1955). *The Flood and Noah's Ark*. London: SCM Press.

## Original Skeptic T-Shirts

The award winning cartoonist Ron Tandberg, seen daily in *The Age* and *The Sydney Morning Herald*, has supplied Victorian Skeptics with the original cartoon featured on the front cover of this issue. The cartoon has been applied to windcheaters and T-shirts, which are available for subscribers to *the Skeptic*.

Prices are:

T-shirts (large & extra large) \$15. Windcheaters (20-22-24-26) \$25. Please add \$4.50 postage per order.

Send your cheque or money order to:

**Australian Skeptics Inc, Victorian Branch GPO Box 1555P, Melbourne VIC 3001**

## FORUM

# Greenhouse not a Myth

Phil Shannon

At times, *the Skeptic* can be more exciting than a Western serial. At the end of the last episode (Winter 1992), the cattle-rustlers (the “vocal ‘greeny’ power-bloc”) in cahoots with hired gun-slingers (“a small band of doomsday-sayers”) had trapped the Lone Ranger (Laurie Eddie, the sceptic) in an abandoned mine-shaft (the “blatant fraud” of the Greenhouse Effect) and had ignited the fuse (“bogus scientific pressure groups”) leading to a keg of dynamite (“[forcing] everyone to behave in ways which they believe are good for us”). Unfortunately (or fortunately), Laurie’s “urban myth” of the GHE has as much relation to reality as the highly idealised Saturday afternoon Western.

Laurie argues that “there is absolutely no evidence that the GHE actually exists”, apart from rickety computer models, and that only a sensationalist media, fatalistic prophets of doom and quasi-fascistic eco-activists such as the sinister Greenpeace are giving life to the myth by scaring the children (“powerful groups.... playing on people’s fears”).

All of these assertions, however, need to be highly qualified, where they are not simply wrong or mischief-making. To see the media as belonging in the den of Green myth-mongers is too simple. The media are actually giving quite a deal of prominence to the minority views on the GHE in the same way that they do with the occasional study which purports to show no link between smoking and lung cancer, and for the same reasons – the ‘heretical’ is more ‘newsworthy’, and allaying concern about the GHE is likely to appease their major advertisers such as car and oil companies, which generate Greenhouse gases.

As for the evidence of the GHE, the situation is more complex than that of Laurie’s picture of “dogmatic” believers ranged against a truth-seeking minority of dissenters. The basic science of atmosphere warming is not in dispute. Trace gases such as CO<sub>2</sub>, methane, CFCs, nitrous oxides (and water vapour) allow solar radiation in the short wavelength spectrum (e.g. UV rays) to penetrate the atmosphere but prevent some of the re-radiated heat in the long wavelength spectrum (e.g. infrared rays) from escaping, thus warming the atmosphere (the natural GHE). The three to four per

cent of such Greenhouse gases which are generated by human activity are likely to enhance the natural GHE. What is in dispute is how significant this small human-origin component of global warming is. The answer to this depends on our understanding of the variety and complexity of the interactions between Greenhouse gases and other components of the biosphere.

Laurie and a small percentage of scientists write off the phenomenon of an enhanced GHE as a pseudo-problem and attribute all global warming fluctuations to volcanic activity, sunspots, glacial/interglacial oscillations and inaccurate historical measurement of global temperature. This sounds plausible, but it dodges the issue of the complexity of the atmospheric sciences. I have yet to find a ‘pro-GHE’ scientist who fails to acknowledge the “complex, qualified and less coherent” nature of the scientific knowledge on the atmosphere, or who fails to accompany their diagnosis of the planet’s condition with “prudent reservations”, and who does not stress the “imperfect” nature of computer-modelling (these quotes are from Dr Jim Falk of the University of Wollongong and the insidious Dr Jeremy Leggett of Greenpeace). The Inter-governmental Panel on Climate Change itself (seen by Laurie as a repressive body of thought control) between its reports in 1990 and January 1992, has modified its global warming projections and stresses the uncertainty of many of the feedback effects of Greenhouse gases.

Nevertheless, despite this uncertainty, there is considerable prima facie evidence for the enhanced GHE. Since the nineteenth century Industrial Revolution, the amount of carbon in the atmosphere has increased from 580 to 750 billion tonnes and the CO<sub>2</sub> concentration has increased from an estimated 270 ppm to 354 ppm (or 420 ppm of CO<sub>2</sub> equivalent Greenhouse gases). At the same time, the estimated increase in global temperature this century alone has been between 0.3 and 0.7 degrees. GHE critics like Laurie claim that this increase, being lower than the three degrees most models predict, invalidates the GHE hypothesis. But why do the computer models say one thing and the climate data another? There are explanations other than an invalid GHE hypothesis. One of these includes the emission of

SO<sub>2</sub> from coal burning which upon oxidation, leaves a residue of sulphate particles which assist the ability of clouds to reflect solar radiation (Patrick Michaels, *New Scientist*, 23 Nov 1991). Sulphate pollution (and its attendant acid rain) may account in part for the lack of warming predicted by the models. Further, because CO<sub>2</sub> stays in the atmosphere longer than sulphate particles, a substantial potential warming may be built into the system, hidden only temporarily by SO<sub>2</sub> emissions. The thinning of the ozone layer from CFCs is also a cooling factor (Fred Pearce, *New Scientist*, 11 April 1992).

Whilst the historical correlation between human-generated CO<sub>2</sub> and global warming (allowing for confounding factors such as industrial pollution) exists, it is only circumstantial evidence. Nevertheless, it is given weight by the broad agreement on the likelihood of human-generated Greenhouse gases increasing temperature. There is a consensus on the probability of a doubling of CO<sub>2</sub> concentrations (net of negative feedbacks) causing a 2–4 degree rise in mean global temperature. Laurie's attempt to understate the impact of CO<sub>2</sub> increases as being "only... an increase from 3 ppm to 4 ppm" uses numbers to provide comfort but is not warranted by the science of global warming – trace gases like CO<sub>2</sub> only need small variations in concentration to produce major warming or cooling effects. With so little CO<sub>2</sub> up there, on Laurie's logic, the planet should be stone-cold dead.

GHE critics also underplay the caution and lack of dogmatism in the scientific community concerning the GHE. The 1985 Villach Statement from the international scientific conference in Austria, as Laurie notes, was couched in probabilistic terms, but the 'coulds', 'likelies' and 'not inconsistencies' have also been the tenor of all subsequent conferences, too. Neither are 'pro-GHE' scientists rushing naked into print with dire warnings from their computer models. They keep their backsides covered with a layer of caveats concerning the foibles of computer modelling. They do, indeed, wish that there were experimental techniques that could be run in a lab somewhat smaller than the planet. Computers are a second best surrogate lab, flawed but not fatally so. They can produce various scenarios, of which the 'she'll be apples' and 'end of the world' are the least likely extremes of a range of plausible middles.

No computer model can be perfect because the effect of countervailing negative or reinforcing positive feedback effects such as cloud formation (which, to make it really fun, can be either or both) are difficult to assess. But this is simply saying that science can never

be certain. There are degrees of uncertainty (a doubling of CO<sub>2</sub> producing a rise of 2–4 degrees is rather more likely than crystals curing cancer) and we can only assess the probabilities and take appropriate action on estimated risks. Under Laurie's model of science and social policy, which demands absolute certainty, no preventative action would be taken on a possible enhanced GHE. What should also concern us as tenants of our only home, is the possibility of the worst case scenario of a runaway GHE where positive feedbacks set in train by warming oceans, dying forests, drying soils, melting tundra and so on outstrip all negative feedback effects. No responsible scientist (or journalist for that matter) is saying this will happen but they are saying it could.

What is lost by a purist scepticism, as much as by the media's infatuation with GHE critics, is public awareness of the existence of a scientific consensus of the science on global warming and the enhanced GHE. This might lead us to gamble with the planet. But why take the risk? After all, changes which would prevent or moderate any GHE, such as preservation of rainforests, development of renewable energy sources, more public transport, etc. are all worth doing with or without the spectre of the GHE. We have nothing to lose by taking the GHE seriously and being wrong about it, but much to lose by ignoring the risks and being wrong. To ignore such odds and do nothing is to deride the GHE as nothing but a Green Scare and to rush in with the demand for scientific certainty where even angels keep well away from.

If Laurie had simply said that there is a minority view on the GHE and that their arguments should be listened to carefully, then there can be no objection. Indeed such views might help to prevent the temptation of casting caution to the wind and over-emphasising the worst case scenario in the desire to get corrective action from governments that appear comatose. If a degree of scientific scepticism helps to correct the partial imbalance between public knowledge and enthusiasm on the GHE, then this can only be to the good, not least to those wanting action taken to counter the GHE. But to portray the 'pro-GHE' scientists as careless of caveats, of putting belief before objectivity, is to seriously misrepresent their work.

To exploit the uncertainty surrounding GHE science and take refuge in an 'it won't happen' stance is logically unwarranted and socially complacent. To ascribe the GHE to a conspiracy of vocal green totalitarians is ratbaggy, not scepticism, and could make us look as nutty as the UFO fringe. ■

## PHILOSOPHY AND THE PARANORMAL (II)

# The Process of Explanation

William Gray

**This is the third in a series of articles in which Dr William Grey of the Department of Philosophy, University of New England, Armidale, examines some fundamental issues raised by psychic and paranormal claims. The final article in this series will appear in the next issue.**

### The Boundary of Science

In the first article in this series ('Science and "Psience"', *the Skeptic* Vol 12, No 1, Autumn 1992) I looked at the nature of the paranormal, and considered the sort of radical adjustment which our basic beliefs about the world would require if paranormal claims turned out to be true. I then went on ('The Search for Truth', *the Skeptic* Vol 12, No 2, Winter 1992) to point out how paranormal beliefs typically arise not from some incomprehensible perversity, but are a pathological expression of the very same capacities which have provided our most profound insights. Psychics and other credulists, I argued, are frequently engaged in a characteristically human enterprise: the attempt to capture our chaotic and fragmentary experiences in a network of meanings, and to discover a hidden connectedness which (we assume) underlies the disorderly and recalcitrant happenings in the world. Having looked at some parallels between genuine and spurious belief systems it is time to turn our attention to some important differences.

There have been many attempts to develop a criterion of demarcation to distinguish legitimate systematic inquiry (exemplified, we suppose, by science) from spurious pseudosciences. The attempt to provide a rigorous and precise criterion to distinguish science from other forms of inquiry has a long history. It is one of the central topics addressed in the philosophy of science, and it is impossible to do justice to such a complex story in a short space. It is however a topic which bears centrally on our concerns, so we cannot ignore it completely.

Francis Bacon (1561–1626) is a major figure in the development of systematic scientific method. Bacon thought that rigorous inquiry should employ the method

of induction: roughly, that we should start with observations and use these to construct theories. Science, according to Bacon, is the body of facts, theories and methods collected together in scientific texts, and scientists are people who contribute one or other of these elements to that body of knowledge. Scientific progress, on this conception, is the process by which various elements are added to the body of knowledge. This cumulative conception of the development of scientific knowledge has been disparagingly called the "bucket" theory.

The inductive method associated with Bacon has been attacked perhaps most notably in the twentieth century by Karl Popper (1959; 1963). Popper's central idea is that any theory which claims to be empirically respectable must be falsifiable; it must specify in advance observations which would justify its rejection. An inductive method, in Popper's view, fails to meet this fundamental requirement. Popper's successors, such as Imre Lakatos and Thomas Kuhn have suggested significant modifications to the Popperian account. Although Kuhn (1970) challenges a number of Popper's basic tenets about scientific inquiry, there are many points on which they agree. For a good introductory account of the issues surrounding the problem of demarcation see Chalmers (1982).

In addition to Bacon's inductivism and Popper's falsificationism, other candidate demarcation principles have been suggested, notably the verificationist criterion proposed by the logical positivists. However none of the various candidate demarcation principles—inductivism, verificationism, falsificationism, and the like—has succeeded in providing a simple way of clearly distinguishing between productive and spurious avenues of inquiry. There is no principle to which we can straightforwardly appeal which distinguishes respectable and bogus inquiries in terms of the methods employed. It appears—surprisingly to many—that pseudoscience is not (or need not be) any less rational than science in terms of its methods. But this does not mean that there is no way of calling spurious pursuits into question; only that there is no general way of distinguishing science

and pseudoscience in terms of the methods of inquiry and the structure of theories.

This claim is liable to be misinterpreted, so it needs to be spelled out with care. We can of course rule out a lot of theories as worthless, providing no useful explanations or novel insights about the world. But this is not a judgement based on the form of the inquiry, which the proponents of demarcation principles thought would be decisive. The conclusion is one which is reached rather in terms of the content of the theory. And it is moreover a judgement usually reached retrospectively. There is no set of timeless principles, or unique method, for determining what is and is not scientific; the boundary between orthodox and “heretical” or anomalous inquiries, and the grounds for drawing it are subject to change. Astrology, alchemy and phlogiston chemistry, for example, were arguably once respectable research programs, though they are certainly not any longer.

### Kuhn’s Paradigms

Kuhn has provided an account of empirical inquiry which has been highly influential in the natural sciences—for which it was originally developed—and which has also been extended to the social sciences. Kuhn is not concerned with a monolithic principle of demarcation, but rather with the explanation of episodes of development in science, for which he deploys his key concept of a paradigm. I will therefore provide a (very sketchy) account of this important notion which has produced great interest and exasperation. (This account is developed in Kuhn (1970); see especially the Postscript to the second edition. The account is developed further in Kuhn (1977), Ch. 12.)

Kuhn believes that a distorted conception of science has dominated philosophy. Philosophers of science have tended to draw their stereotypes of scientific development from textbooks, which are unreliable sources for understanding the process of scientific development. If we examine the history more closely, we find that a rather different picture of the process of scientific development begins to emerge. If one resists the temptation to oversimplify, it is difficult to make sense of scientific development as a cumulative growth-like process.

A careful investigation of the historical record shows that one cannot chronicle the development of scientific theories in the way which a cumulative model suggests. Kuhn contends that a detailed examination of the historical record exposes the inadequacy of the “bucket” model of scientific development. (Popper it should be pointed out also rejects the “bucket” stereotype.) When

examined properly, science looks nothing like a piecemeal process of accretion. It also becomes apparent that there are significant discontinuities in theoretical development.

We must give up the simplistic view that past science is just a precursor to the present. Episodes in the history of science have to be examined in a way which respects their integrity and internal coherence at a particular point in time, not from some notionally atemporal perspective. In attempting to understand the thinking of another period we have to abandon the temporal parochialism which leads us to think that the sorts of things which earlier investigators were concerned with were inevitably much the same as the questions which preoccupy us now.

The old stereotype of scientific progress presupposes a unified conception of scientific endeavour. However a closer look reveals no such unity. Often different investigators were concerned with very different (if related) issues—which Kuhn describes as a “disorderly morass”. What eventually brings unity into a particular branch of inquiry is the acceptance of a paradigm by a group of investigators. Paradigms play several key roles in Kuhn’s account. First, they have a social role: it is by accepting a paradigm that practitioners establish their allegiance to a particular branch of scientific inquiry. Secondly, paradigms have an epistemological dimension: they constitute (or embody) a constellation of shared theories about the world which are held by the practitioners of a particular branch of science. Thirdly, paradigms have a heuristic mission: they provide models or exemplars as to what constitutes a legitimate scientific problem, and what counts as a legitimate solution.

The heuristic dimension is important in the development of theories. Explanation, and the construction of explanatory theories, is not as methodical and systematic a process as it is often portrayed to be. The tidy deductive picture of how observation and theory fit together is fanciful. Constructing explanatory theories is a much more opportunistic business of appropriating useful patterns from just about anywhere, a messy, creative process of making connections, and discarding the ones which turn out to be unhelpful.

The discussion of demarcation was motivated by a desire to find some principle which would separate productive and spurious avenues of inquiry. Does Kuhn’s interpretation of scientific inquiry help us to differentiate between genuine and bogus science? The upshot of his account in terms of adherence to paradigms seems to be negative. There appears to be no way that paradigm allegiance can help us to differentiate between

knowledge claims based on appeals to clairvoyance, psychokinesis, telepathy and the like and the sorts of inquiry conducted in (say) physics departments. Why not say that astrology (or phlogiston chemistry) is just inquiry prosecuted in accordance with the astrological (or phlogiston) paradigm? Kuhn in fact rejects this line of thought. Paradigms come to be discarded and ignored when their limitations and inconsistencies demand the development or discovery of more powerful representational models. Paradigms may become useless for the prosecution of what Kuhn calls “normal science”. But the process by which theories are developed and discarded is complex. The classical notion of theory rejection in terms of the discovery of falsifying observations is a crude oversimplification of a complex process.

In Kuhn’s terms we could say that phlogiston chemistry once provided a useful paradigm, a useful way of organizing the then existing chemical knowledge. However the limitations of the model became manifest, and eventually forced its abandonment. But there was no single, simple and decisive experiment which led to its rejection. What led to the abandonment of phlogiston chemistry—and what should lead to the abandonment of deviant belief systems like astrology—is the fact that there exist more fruitful ways to interpret and to understand the subject matter which they address. Phlogiston chemistry was a useful but limited theory for helping to organize eighteenth century chemical knowledge. However it was provisional, and was in due course superseded by more powerful theories which were better able to explain the processes of chemical change.

Our best explanatory theories, which provide us with an understanding of how the world works, have been developed through a slow process of conjecture and testing. Sometimes bizarre facts and conjectures are substantiated—rocks sometimes do fall out of the sky, and the sceptics are confounded—and sometimes quite plausible hunches survive for a while, only to be drastically modified or discarded. What is classified as an anomalous “paranormal” phenomenon (i.e. what lies within or outside the accepted range of experience) may vary according to circumstance, and to that extent, what constitutes the “paranormal” is context sensitive. And in some cases paranormal claims are “normalised”—as in the case of meteors.

There are cases in which theories can be ruled out on formal grounds, such as inconsistency or complete failure to appeal to evidence. Galileo, for example, demonstrated inconsistencies in Aristotle’s dynamics. But most defective theories are guilty of less spectacular absurdities. Their defects are seldom so gross; usually

their errors are empirical rather than formal. And their refutation then demands more than an appeal to a formal principle. This may make refutation a little longer—but it is no less decisive.

What then leads to the abandonment of a theory? In general, what rules out eccentric belief systems is the amount of established belief we would have to abandon—in Isaac Asimov’s useful expression, the amount of unexplaining that they do. All powerful theories are conceived in conflict and paradox, and survive through anomaly; but they do not entail the wholesale overthrow of well-established and successful ways of explaining what happens in the world. The attempt to accommodate retroactive causation, the claim that the world is 6000 years old, or almost any one of a number of standard components of paranormal systems of belief within our world view are just epistemically too expensive.

### **The Appeal of the Paranormal**

There is no simple methodological principle to which we can appeal to delineate a boundary between eccentric and securely grounded belief systems. But the empirical defects of defective theories nevertheless provide, in general, sufficient grounds for their rejection. Many credulous belief systems however, such as the New Age enthusiasms, enjoy a robust popularity despite the existence of powerful bodies of contrary evidence. What motivates people to accept such dubious systems of belief? While addressing this question it must be kept in mind that identifying a motive, dubious or otherwise, does nothing to undermine the truth of a belief.

Paranormal claims notoriously arouse extensive popular interest; sceptical rebuttals attract a great deal less attention. Sceptics often assume the unglamorous role of the critic or “knocker”. The often observed phenomenon of a front page newspaper report of a paranormal claim, followed later by a retraction buried inconspicuously within the paper does not represent a media conspiracy; it is an accurate editorial assessment of public interest.

Science-based world views are widely treated with suspicion. Why is that so? Correspondingly, why are paranormal beliefs so popular? One factor is that the proselytisers of the science-based world view are often seen, not always unfairly, as intellectual puritans or wowers. Indeed scepticism has been characterized as the chastity of the intellect; it is, in essence, opposed to the epistemologically permissive society. Just as it is generally held that our behaviour should be circumscribed by moral constraints, sceptics hold that our belief systems need to be circumscribed by evidential

constraints. Another metaphorical characterization for scepticism might be the flywheel of the intellect: it prevents creative enthusiasms racing off ahead of the evidence.

Many however believe that there are conspicuous deficiencies in construing the world as organized in a physically orderly fashion according to causal principles which are consistent and testable. They believe that such a model is conspicuously deficient because it filters out at least three important aspects of our understanding of the world, which can be labelled epistemological, ontological and methodological.

Epistemologically (it is alleged) science dismisses important alternative ways of acquiring knowledge about the world. Direct experience (the charge continues) reveals anomalies which are more assured than any theoretical refutation. Ontologically (it is further alleged) science examines only objects and events which can be measured. But (it is suggested) it is evident from experience that reality includes objects and phenomena which elude our crude empirical investigations. Methodologically scientific investigations require controls, protocols, repeatability and such niceties which (it is suggested) are all very well for the examination of rocks and beetles, but not for the study of the ephemeral and delicate psychic phenomena of our experience.

This is related to another factor which often underlies dissatisfaction with the scientific world-view. This is the conviction that science is incapable of comprehending the phenomena of subjectivity; the vivid and rich texture of immediate experience; the phenomenological reality of our subjective lives. This conviction is perhaps well-grounded. There is something profoundly elusive about human consciousness and subjectivity, which does not appear to be captured by purely physical descriptions of the world.

A major problem is that in dealing with cognitive processes (including those, whatever they may be, which are believed by some to underlie ESP and PK phenomena) we don't have any really good deep theories. The biggest problem about cognition and brain function is the familiar fact of consciousness. Our understanding of this phenomenon is partial, fragmentary and rudimentary. Sir Andrew Huxley (1982) has outlined the problem in the following terms:

"The greatest mystery [about brain function] is that each of us is conscious of our surroundings. One can visualize how sets of nerve cells could make an animal work as an automaton; but how this could give rise to

conscious experience is something one can't yet see what kind of solution there would be. It's a degree more difficult than the sort of problem of how the nervous system works, which although unimaginably complex, one can visualize that it might be like a computer, enormously more complicated than any existing computer ... *One doesn't see any way into answering that question*" [my emphasis].

This inability to see to "see what kind of a solution there would be" nicely encapsulates the sense of deep puzzlement which is often characteristic of philosophical perplexity.

One reason for insisting on strict protocols in conducting empirical inquiry is that this is the only way of counteracting the powerful human propensity to construe the facts according to our beliefs rather than vice versa. A notorious instance of this phenomenon is what is known as the placebo effect, which is the well-established tendency for belief in the efficacy of a treatment, by itself, to bring about improvement in a condition. Ignoring this effect has lent spurious credence to a number of questionable medical treatments, both orthodox and alternative. This phenomenon has led to an acceptance of the principle that so-called 'double blind' protocols should be used, if possible, whenever there is a chance that bias, prejudice or preconception may affect the result of a test. That generally means that double blind experiments should be used wherever possible. (Double blind methods for testing the efficacy of a treatment, usually a drug, involve administering the treatment so that neither the patient nor the person conducting the test knows if the substance given contains the active ingredient or a harmless inactive placebo.)

Apart from an aversion to what many seem to regard as the narrowness of science, there is a widespread conviction about the reality of paranormal phenomena which is grounded in some vivid personal experience that (it is felt) traditional categories of causation are incapable of explaining. Perhaps much anomalous experience can be accounted for as the result of coincidence, self-delusion, trickery, the unreliable testimony of the senses, or errors of our defective faculty of memory. Notwithstanding, many people still have some hard-core recalcitrant experience such as a premonition or what they believe to be a telepathic communication, which they feel scientific causality is powerless to explain.

A certain amount of patient sceptical counselling may encourage consideration of some plausible and unmysterious explanation of such experiences. But what

Hume (1748, p. 117) called the “love of wonder” is likely to persist. Sceptics have the often thankless task of pointing out mundane alternative possibilities which the love of wonder may have led people to overlook. In assessing paranormal claims it is very important to have experts to assess the evidence. Very often this is incompetently done, for example by using scientists to evaluate skilled illusionists like Uri Geller. Magicians such as James Randi play an important part in the evaluation of psychic and paranormal claims. Scientists in fact are not very good at evaluating paranormal claims. Their expertise in science is no guarantee of expertise in deception. Indeed Kurtz (1985, p. 189) has noted that “many conjurers believe that some scientists who accept the ethical standards of science and trust the honesty of their test subjects are often, because of their naïveté, easier to fool than others”.

It is sometimes suggested that although psychics sometimes get caught cheating, they are not always caught, so they (probably) don't always cheat. The historical record is unpromising. In the spirit of Hume (see below) we should ask which is more probable: that we have been deceived, or that our best theories about the world are mistaken.

Scientists are often reluctant to address deviant theories. One reason is that they are accustomed to policing standards of inquiry only among their own peer group, and in general perceive no obligation to impose standards of rational inquiry beyond their own field of knowledge. The empirical controversies which they engage in normally take place within an accepted framework of established or well-attested fact. These disputes are internal squabbles or endoheresies (to appropriate another of Isaac Asimov's useful terms). Disputes which challenge the fundamental assumptions on which empirical disciplines are based are ones which call for special arguments and methods, which the average working scientist has often not bothered to prepare or to acquire. Thus an expert in geology or

evolution may be unable to effectively address the claims of creation science. As a general rule, the more outrageous the claim, the more ingenious are the powers of argument which are demanded to defend it effectively. People with extremely pathological belief systems (such as persons who are deeply disturbed) often argue with precision and rigour, employing great dialectical ingenuity and skilful appeal to evidence. The dialectical integrity of the argument is impeccable; only the premises are dotty.

Perhaps the decline of Christianity has also played a part in the increase in popularity of the paranormal. It may be that such declines are not accompanied by an increasingly robust and rational way of looking at the world, as some have piously hoped, but by an increase in credulist enthusiasms. Lord Chesterfield remarked that when people cease to believe in God, they don't believe in nothing; they believe in anything. In a similar vein W.H. Auden (who believed “Irreverence is a greater oaf than superstition”) suggested that one of the main virtues of Christianity was that it provides a bulwark against superstition.

Paranormal phenomena are occurrences where there

appears to be evidence for something quite astonishing; frequently a happening which seems to be at odds with well-established laws of nature. The violation of a law of nature is one definition of a miracle, and I will examine Hume's discussion of the miraculous in the next article.

#### References:

- Chalmers, Alan. 1982. *What is This Thing Called Science?* 2nd rev. edn. Milton Keynes: Open University Press.  
 Hume, David. 1748. ‘Of Miracles’. In *Enquiries Concerning Human Understanding*, §10, (ed) L.A. Selby-Bigge, Oxford: Clarendon Press, 2nd ed, 1902.  
 Huxley, A. 1982. ABC Science Show, Broadcast 17 April.  
 Kuhn, T.S. 1970. *The Structure of Scientific Revolutions*. 2nd rev. edn. Chicago University Press.  
 Kuhn, T.S. 1977. *The Essential Tension*, Chicago University Press.  
 Kurtz, Paul. 1985. (ed) *A Skeptic's Handbook of Parapsychology*. Buffalo: Prometheus Books.  
 Popper, K.R. 1959, *The Logic of Scientific Discovery*. London: Hutchinson.  
 Popper, K.R. 1963, *Conjectures and Refutations*. London: Routledge & Kegan Paul. ■



## CREATIONISM

# AIB National Poll of First Year Biology Students in Australian Universities

Barry Price

## Part 1

### Background

In March 1992, the Executive of the Australian Institute of Biology agreed to a national poll of first year biology students in Australian universities to measure the incidence of creationism. Student poll forms, return forms and a page of administration and purposes were supplied to the Institute. The essential task of sending out the 'poll package' and collecting the returns for analysis was done by Dr John Skidmore. Responses were received from 4225 students in seventeen universities, at least one in each state of Australia.

In effect these results indicate the incidence of creationism in high school students who choose to do biology as a first year subject.

The poll can be used again later in the year, also in other scientific disciplines, in high schools as well as in non scientific disciplines at secondary and tertiary level.

The statements are taken from the US Gallup Poll, *In the Beginning*, 4 November 1991 with the addition of 'Mark the statement with which you most agree'. This coalesces a large variety of opinions on the origins issue into three categories.

It was suggested to those administering the poll that it be conducted at the beginning of a class under the supervision of a lecturer or tutor and that forms not be handed out for collection at a later date.

The stated purposes of the poll were:

(a) To provide a measure of the penetration of creationism into Australian universities;

(b) To raise public awareness of the problem of creationism in schools and to stimulate the finding of positive solutions;

(c) As the first step in providing hard evidence which could be used for the establishment of a national committee analogous to the National Committee for Science and Education in the United States, which has one full time executive officer.

### Poll Measurement

Seventeen from twenty seven universities responded. There were returns from every state except the Northern Territory. The University of NSW declined because they had their own poll in place. Each university was supplied with 100 poll forms and asked to copy extras if they wished. The 4300 students polled, well in excess of the expected number, indicates the strong support of the universities concerned. The expected

percentage of informal returns ("don't know", two boxes filled in, etc.) was 4 – 5% in the original Gallup poll. The AIB poll showed informal returns as averaging 2.8%.

The poll has, in effect, measured the presence of creationism in the feeder schools to a particular university. The poll has measured only students from those schools who chose to do biology in their first year at university. There is no reason to suppose that the

A.I.B.		1992 NATIONAL POLL	
		FIRST YEAR BIOLOGY STUDENTS	
* READ THE 3 STATEMENTS BELOW			
* MARK THE BOX OPPOSITE THE STATEMENT <u>WITH WHICH YOU MOST AGREE</u>			
* MARK <u>ONE</u> BOX ONLY			
1.	God created man pretty much in his present form at one time within the last 10,000 years.		<input type="checkbox"/>
2.	Man has developed over millions of years from less advanced forms of life, but God guided this process, including man's creation.		<input type="checkbox"/>
3.	Man has developed over millions of years from less advanced forms of life. God had no part in this process.		<input type="checkbox"/>

degree of creationism in other university subjects such as the humanities will not be approximately the same as in biology. Or, put another way, there is no reason to suppose the presence of creationism in year 12 is confined to biology. Polling other subjects at first year level would be necessary to find the correlation. The AIB national executive has requested that a repeat of this poll be done at the end of the first year to assess the effect of a year at university.

**Poll Questions**

Question 1 is unequivocal. There is only one answer and that is creationism. The other two questions are not so clear cut.

Applying the label ‘theistic evolution’ is, strictly speaking, inaccurate in the sense that a theist is a person who believes in a god but not a personal one. Given the rider at the top of the poll to mark the box which states the option with which you most agree then this option will include Christians as well as others who believe in a personal god. Similarly, there are many ways to

interpret “God guided the process”.

A central tenet of creation science is that “evolution is the work of Satan”, that “you can’t believe in God and evolution”. Hence this group in particular are an affront to creationism and have been frequently targeted in their journals in recent years. One could argue that this is the group that creationist speakers aim to evangelise in their tactic of speaking at university campuses.

‘Atheistic evolution’ is the label given to those who choose box 3 as the one with which they most agree. Again it is a convenient label. It covers those who reject traditional religion and the image of god projected, as well as those who may believe in a god but one completely separated from the world. Technically it is difficult to espouse the exact definition of atheist since meaning and purpose are names for god. But most 18 year olds would not be expected to appreciate this. The established churches may perceive this group as a problem but it is difficult to see what they can do when none of them, officially at any rate, espouse evolution.

University	State	Table of Results							
		Creationist		Theistic Evolution		Atheistic Evolution		Total n	
		n	%	n	%	n	%		
1 Technology	Qld	31	13	99	43	93	40	230	
2 Queensland	Qld	41	11	174	48	142	39	364	
3 James Cook	Qld	6	7	27	32	51	61	84	
4 Sydney	NSW	191	17	517	47	359	32	1107	
5 Technology Sydney	NSW	90	20	187	42	165	37	448	
6 Macarthur (W.Sydney)	NSW	9	10	45	51	35	39	89	
7 Charles Sturt	NSW	7	15	20	45	18	40	45	
8 Newcastle	NSW	7	8	27	29	47	51	92	
9 Macquarie	NSW	37	11	130	39	165	49	336	
10 New England	NSW	20	6	139	44	150	48	315	
11 Tasmania	Tas	4	6	13	21	45	71	63	
12 Australian National	ACT	3	4	29	36	47	58	81	
13 Adelaide	SA	47	12	115	28	223	55	408	
14 Murdoch	WA	3	3	38	40	53	56	95	
15 Western Australia	WA	6	4	43	29	92	63	147	
16 Deakin	Vic	5	6	36	43	42	50	84	
17 Monash	Vic	28	11	125	47	110	41	267	
Total		535		1764		1837		4255	

**averages: creationism 12.6%, theistic evolution 41.4%, atheistic evolution 43.2%, informal 2.8% (n 119)**

\* The numbers do not total 100% because some returns were invalid.

\* National averages for Question 2 and 3 can be calculated from poll results.

\* The University of NSW has been using its own poll form over the past two years on first year biology students **at the end** of the year. The results are:

end 1990 11.5% creationist, sample size 383

end 1991 10.5% creationist, sample size 256

\* Sydney University polled students in four faculties

Faculty	% Creat	%The Ev	%Ath Ev	Total
Sci./Ag	17	45	34	688
Medicine	16	48	36	200
Dentistry	29	49	22	72
Pharmacy	14	50	27	147

\* U. of Technology Sydney (Nursing) also polled high.

	23	42	38	282
--	----	----	----	-----

\* The above are included in the overall result, not additional.

### Brief Analysis of Results

(i) No university polls zero creationist nor does any State. There is a national trend across Australia.

(ii) The national average of 12.6% from 4,255 students means that 1 in 8 students who enter first year are creationist.

(iii) The 1990/91 results from UNSW, measured at the end of first year, indicate the likely drop in the number of creationist students will be a few percent, equivalent to a drop from 1 in 8 to 1 in 9 or 10 students.

(iv) The lowest percentage creationism is in WA. Combining the results from the two universities, 14, 15, (sample 242) gives 4%. ACT and Tasmania poll 4% also but with small samples.

(v) The highest reading is 1 in 5 students (448) at the University of Technology (5). This is followed by the University of Sydney (4), with 1 in 6 students creationist (sample 1107).

(vi) Summary of Results

The poll indicates 12.6% (1 in 8) of biology first year

students at universities around Australia believe that man was created less than 10,000 years ago. The trend going around Australia from Queensland to Western Australia is consistent. The ACT and Tasmania are anomalies but have small sample sizes. Significantly lower than the average is University of New England (10) at 6% (sample 315). Unexpected is the high creationist presence at two universities in the city of Sydney. In addition it was expected that the presence of creationism would be highest in Queensland after the years of Nationalist Government under Premier Joh Bjelke Peterson and Education Minister Lyn Powell's strong encouragement for creation science materials to be used in Queensland schools. But Queensland is close to the national average.

## PART 2

### Comments and Background

Creation 'Science' is the brainchild of an American hydrological engineer, Henry Morris. It started in 1960 as an indirect way of getting a narrow Christian fundamentalism into schools under the guise of science, thus avoiding the US Constitutional guarantee of the separation of church and state. In theory, Morris could have decided that history or geography was a better vehicle for his purpose. Creation 'Science' is the entree; the main meal is a very narrow Christian fundamentalism. This point is crucial, not merely to understanding creation 'science' but in devising ways of combating it, particularly in schools and among the young. Creationism, a form of fundamentalism, is a socio-religious problem which just happens to have landed most apparently in the lap of science but which affects the whole of society. Below a certain threshold a democratic society can handle fundamentalism but it has the potential to seriously damage or even destroy a society. It is by its nature divisive.

While there is now an increasing rapprochement between science and religion the fact is that there cannot even be the beginning of discussion when one side insists that the universe was created in six days about 10,000 years ago.

Recently, in California, where the highest concentration of creationists in the US reside, Bill Honig, the state supervisor of education (an elected office) has been indicted by a grand jury. Honig is noted for his efforts over the past eight years to upgrade evolution in the state science syllabus as well as his efforts in taking away accreditation from Heritage College, run by the Institute for Creation Research (ICR) in San Diego. This

college took students for a limited time each year and granted Master of Science degrees only. Recently ICR won a court case against the State reversing the decision and was awarded \$225,000 damages. Moreover the ICR is the mother house from which Australia's own Creation Science Foundation is cloned.

The governor of the State of California, mindful of the creationist vote, has come out publicly against Honig, whom political commentators regard as not guilty of any offence. In the past, creationists in California have taken legal action against school teachers for teaching evolution, through various organizations not openly in alliance with ICR.

In Australia, Fred Nile, member of the upper house, together with his wife, in the State Parliament of NSW, has initiated the Festival of Light. One of the Festival's subsidiary groups is Parents for a Quality Education. The avowed aim of this latter group is to get creation science into NSW schools alongside evolution, which it appears they intend to achieve through legislation. Creation science was banned from NSW schools in 1986 by the then Director General of Education, Dr Winder and it is doubtful they will succeed – this time. The chairman of the Parents for a Quality Education, Mr Bruce Coleman, recently stood as a Festival of Light candidate in the NSW seat of Davidson. Coleman is one of Nile's staff members and there was never any chance that he would win. It was a matter of gaining experience, showing the flag and testing the waters, not of winning. But sooner or later they will succeed – Fred Nile did. Given the so called ten year time lag, their money, and their organization, it does not sound as confident as it used to be to say "It couldn't happen here". To some extent it already has.

The results of the U.S. Gallup Poll, which polled a cross section of society, show only 9% 'atheistic evolution' across American society. This indicates one major difference between the two cultures if more than 40% 'atheistic evolution' in the first year university biology students is any indication of the actual figure in Australian society.

### **Beyond first year biology**

The students polled have made the cut off mark to enter university. They have all done compulsory science in years 7 – 10. A majority would have done two years of biology, including evolution and basic mechanisms such as genetics, mutations, adaptation to the environment. Many would have done another science, chemistry or physics, at year 12 level. These are not

elderly people who have been comforted by the Bible all their lives – they are the future of Australia. Moreover the University of NSW results show that even at the end of 1st year the percentage creationist does not diminish greatly. This must be a concern to all Australians.

Nor do we know the percent creationist in science taught at the many tertiary institutions and colleges other than universities. Or the percent in the humanities and disciplines other than science. There is no reason to believe they will not poll the same or, if anything, higher. One cannot think of any reason, in the light of these poll results, why it cannot be said that 10% or more of all year 12 students or even of all high school students, espouse creationism. Only further measurement can verify the extent.

The guide we do have is that of all college graduates in the U.S. one quarter are creationist. In addition 47% of the entire American population is creationist. Australia may have 10% or 1 in 10 of its high school leavers who believe the universe was made 10,000 years ago. The question arising from the results of this poll is not if Australia is headed along the same path but how far along the path has it gone already? Also, how does it stop? And, can it go into reverse?

### **The Creation Science Foundation Ltd**

The Creation Science Foundation was incorporated in Queensland in 1980. It has tax exemption under section 23e of the Act, as an institute of religion and is a non profit making company. In 1990 the Tax Department granted it exemption from prior disclosure which effectively prevents public access to details of the company accounts. The Foundation can remain solvent only through donations. The quest for donations in their literature is unceasing, close to an art form. Since losses of around \$100,000 on the futures market in 1985 which virtually bankrupted them, they recorded assets of \$500,000 in 1990. In 1989, income from sales of materials was \$380,000 and in 1991 it was \$600,000.

Materials marketed by the Foundation include audio and video tapes, tracts, books, a bimonthly newsletter *Prayer News*, a glossy quarterly 'family' magazine, *Creation ex Nihilo*, a less frequent *Technical Journal*, and books to satisfy all ages from the cradle to the grave, most from their mother house in San Diego, The Institute for Creation Research Inc. (ICR). They "scientifically" prove both evolution to be false and creation 6000 years ago in six days to be true. Their books and literature are replete with misquotes, quotes out of context, distortions and falsehood. On the surface they are very convincing.

And always, underneath it, you can't believe in both God and evolution. Their literature constantly refers to Satan.

But how is it possible that students can get as far as first year biology, or any other science, or even graduate in science while still maintaining that 10,000 years ago the earth was directly created in six days, maintaining also that the earth was shaped by a flood 4000 years ago, that the one family which survived the Flood in a wooden boat gave rise in a short time to all the cultures and races which inhabit the earth today. More than 1 in 10 of first year university biology students believe this ludicrous proposition.

To explain this irrational belief requires an understanding that the materials themselves support an attitude of mind impressed upon the vulnerable, the younger the more vulnerable. This attitude comprises, among others, that evolution is the work of Satan, that evolution is the cause of all promiscuity, abortion, prophylactics, divorce, social evils *ad nauseam*. Because before evolution these did not exist (thus showing that their knowledge of history is as abysmal as their knowledge of science). At a recent Sydney meeting, sponsored by the Festival of Light, a speaker who argued for creation science in schools, stated that it was China's acceptance of evolution which resulted in the Tienanmen Square massacre. But creation science is unbiased when it comes to who will be saved. Christians who don't believe in six day creation are as damned as any atheist, or tribesman in the depths of New Guinea who has never met a white man They set up a choice between six day creation and damnation. After this point is accepted other arguments simply do not reach the mind. They may be listened to but never heard. Thus religious fundamentalism always involves fear and guilt. Nor is it a matter of intelligence, as our poll results show. They proclaim that they have the only answer to the problems of society.

### Operations of the Creation Science Foundation

The CSF comprises seven members who are also the seven directors. The staff at headquarters number no more than a dozen so we are looking at a small organization. When we consider also that only two of the directors Carl Wieland, a medical practitioner, and Andrew Snelling, PhD in Geology, are active in the field, one must wonder how two men can have such an effect.

The answer is that they are a "have genesis, will travel" organization. They service the comprehensive and efficient network of evangelical churches in Australia,

connected through the National Alliance for Christian Leadership which, among its other activities, has sponsored creationist debaters from the US. What minister besieged on every side by the television and print media continually exposing new findings in evolution and the age of the Universe would not welcome with open arms these brilliantly produced and convincing films which prove conclusively that the bible account of creation is true? Accompanied by an array of books replete with yet more 'evidence', which include imposing lists of references. And as well a quarterly glossy magazine for the family. Moreover, they can readily arrange for one of the great 'scientists' to call in and address the flock on their annual rounds. After a while there are many hundreds of 'ministers'. It grows exponentially, and always in the Christian schools.

CSF also accepts the task of speaking out in public when necessary. A more recent innovation is a fully equipped mobile home which will travel the country towns of Australia. It is equipped with every audio visual facility so the country folk are not deprived. In addition, Catholic fundamentalist groups seeking to get literal creation into schools have espoused creation 'science'.

If literal *Genesis* is to be taught as science the only materials available are from creationist sources. The CSF of Queensland claim to be the second biggest creationist organization in the world – only the mother house in the US is larger. Of the other creation science groups in Australia, John Mackay's breakaway Creation Research Institute (CRI) is the best known. A former teacher and founding member of the CSF he is now, like his erstwhile colleagues, a minister. CRI also has an extensive catalogue of materials for sale.

### Conclusion

The AIB Poll gave three stated purposes in the document which accompanied it. The first was to measure the penetration of creationism into Australian universities – it has done this successfully. The second was "to raise public awareness .... and stimulate the finding of positive solutions". One can be reasonably confident that the poll results have gone some way to achieving this by indicating to each university that the problem which it has is a common problem. The AIB could act as a central mailbox for ideas, requests and comments.

The third stated purpose of the poll was to provide hard evidence which could be used as a first step in the establishment of a national committee.

(i) The presence of creationism in 1st year biology measured across 7 states and in 17 universities was 12%.

Put another way, 1 in 8 Year 12 students who have chosen to do biology, after making the cutoff mark to attend a university, believe the Earth is less than 10,000 years old – a belief one would predict that the average man in the street would scoff at and many of today’s primary school children reject.

(ii) Creationism was present in every university and in every state. The highest, in Sydney, 20% or 1 in 5 students and the lowest in Western Australia, 4%. ACT and Tasmania polled 4% with smaller samples.

(iii) The students have all had 4 years science in years 7 – 10 and a majority have studied biology in years 11 – 12.

(iv) It is extremely unlikely that the belief that the universe is less than 10,000 years old is some kind of selective virus which only attacks those high school students who have just left school and decided to do biology at university. It is highly probable that biology students at other tertiary institutions would poll around the same as those entering university as well as those who leave school and join the workforce. One can think of no reason why they should not.

By the same argument one arrives at the probability that somewhere around ten percent of school leavers on average across Australia believe the universe is less than 10,000 years old.

It is not the ‘10,000 years’ but the implications that are of greater concern. To hold ‘10,000 years’ as a universal constant can only be done by continual blocking of the mind to much of life. To hold that

evolution is the work of Satan; that to believe evolution is to lose god; that all who do not hold 6 day creation 10,000 years ago, whether Christian or anyone else on the planet, are destined for eternal punishment is repugnant to most Australians. To observe this cluster of prejudices impressed upon the young is sickening.

The vendors of creation ‘science’, in their trade in fear and guilt, do more than threaten science. Nor, in Australia, has the hierarchy of the major Christian churches offered more than token resistance to creation ‘science’. And some have even opposed that.

In the light of the above it is clear that the formation of a National Committee is not only justified by the poll results but overdue. A most effective tactic against creationist leaders is to expose them to the light. Not only to expose their fraudulent science but to expose the darker purposes which lie underneath it. The Federal and State governments in Australia spend thousands of millions on education each year. The Committee, or whatever structure into which it evolves, must be independent, and ultimately funded by and answerable to those most affected and involved, the people of Australia. It would need one person full time plus complete files and data, and a permanent home and a communications network.

By the time this article is printed, and because of the poll, the first steps towards the formation of the Committee will have been taken. ■

## CONVENTION REPORT

# A Test of First Year Science Students at the University of Newcastle

Colin Keay

The creationism poll conducted by the Australian Institute of Biology (above) and correspondence in *Physics*, the professional journal of the American Institute of Physics, indicating a serious problem of religious belief contributing to scientific illiteracy among physics students in the USA, led us to conduct a simple quiz to check if a similar problem exists among first year students at the University of Newcastle. Because the quiz was arranged in a hurry in the last

week of the first semester, the student participation was lower than it would otherwise have been, but the numbers were sufficient for significant results to emerge. In addition, the ready cooperation of our Department of Biological Sciences allowed a comparison to be drawn between physics and biology students.

The nature of the questions in the AIB survey was not known at the time, so a reasonably simple set of four questions was devised, requiring a True/False

response for each. The four questions were:

1. The Earth was formed about 6,000 years ago by an act of creation and all evidence for a longer time-scale was created at the same time.
2. The boat-like feature found in eastern Turkey is the remains of Noah's Ark, as asserted by an archaeologist, not a syncline rock formation as claimed by geologists.
3. Paleontological (fossil studies) evidence shows that dinosaurs became extinct about 65 million years ago.
4. Physical tests (such as isotope ratios, etc.) put the age of the Earth as something like 4.6 billion years.

At the bottom of the quiz there was an instruction to "Leave both boxes blank if you really have no idea, but try to give an answer to at least three questions". Although not perfect, the questions should elicit from any student with a reasonable level of general knowledge and an appreciation of the nature of scientific inquiry, a False / False / True / True response.

Any self-consistent, non-contradictory creationists would provide the opposite response. Of course, there were quite a number of responses which were, to a greater or lesser extent, self-contradictory (about one third of the total) but these were smoothed out by averaging the responses to the four questions. To do this, "True" responses to the first two questions were lumped together with "False" responses to the last two to give the "creationist" figure, and vice-versa to yield a figure for those students who appreciate the scientific standpoint. The third response category represents those who were undecided, but in no group did their number exceed twenty percent.

The religious aspects of the quiz were clear enough to the students, one of whom wrote that the quiz was "designed to work out who the Bible-bashers are!". He failed to appreciate that the quiz was completely anonymous. A few of the other respondents made remarks indicating that they did not appreciate the plethora of quizzes of various kinds to which they had been subject: this may have led to some frivolous responses.

Responses to the quiz were obtained from 142 first-year Biology students and 198 first-year Physics students. The latter were from two streams: Physics 101 and Physics 102, of which the latter comprise more advanced students with generally better HSC scores. Biology 101 contained all of the first semester Biology

students.

The results for each question for all students are as follows:

QUESTION	1	2	3	4
True	11.5	18.8	77.3	80.0
False	87.4	68.2	17.1	12.3
Don't Know	1.1	13.0	5.6	7.7

It is clear that the greatest uncertainty was about the current Noah's Ark controversy, with 19.1 percent of the lower level Physics students being unsure what to record. This question also elicited the greatest creationist response, with again the lower level Physics students providing a 25.8 percent response, compared with 18.8 percent across all groups. The result of combining the responses to the four questions by each of the subject divisions was as follows, with standard deviations of the percentages in square brackets:

	Scientific	Creationist	Unsure
<b>BIOL 101</b>	81.2 [6.3]	13.9 [3.5]	4.9 [2.8]
<b>PHYS 101</b>	73.6 [11.4]	16.8 [5.2]	9.6 [7.4]
<b>PHYS 102</b>	78.2 [7.0]	14.7 [2.3]	7.1 [5.3]

These results are worrying. Coming as they do at the end of a semester of University science exposure, it is clear that the Biology Department is more successful at overcoming creationist influence than is the Physics Department. ■

## UFO Split

We hear that the Queensland UFO Research group is undergoing a schism. One faction wants to continue scientifically researching mysterious appearances in the sky, while the other faction wants to investigate why little grey beings are abducting (and conducting sexual experiments on) humans.

According to one of the 'scientific' members, the leader of the 'abduction' wing believes that eating onions makes the body more vulnerable to alien incursion. This promises to be a battle that makes the Anglicans' arguments about women look like a lovers' tiff. ■

## EXEGESIS

# Coping with Creationism

## Errors in the “Inerrant World”

Alan Towsey

Scientists and sceptics seem recently to have stepped up their campaign against creationism.

The first major event was the publication in early 1992 of *Creationism: Scientists Respond* by the Victorian Branch of Australian Skeptics. Then there was a report by Dr Peter Pockley in the *Sydney Morning Herald* of 18 May this year on a challenge to the “Ark find” of “Dr” Allen Roberts<sup>1</sup> (who last year gained some publicity when he was held captive for three weeks by Kurdish rebels when on a field trip to the supposed Ark site in Turkey) by a group of scientists at a meeting in Sydney’s Wesley Centre on Saturday 16 May, during which security guards ejected Dr Colin Murray-Wallace, a geology lecturer at Newcastle University, and tried to bodily carry out palaeontologist Dr Alex Ritchie of the Australian Museum.

Dr Ritchie was also reported by Dr Pockley in the *Sydney Sun-Herald* of 10 May to have attended, with other scientists, a seminar at St John’s Anglican Cathedral at Parramatta in March on “Should creationism be taught in our schools?”, organised and chaired by Bruce Coleman, parliamentary research officer for NSW MLC, Rev Fred Nile, where he had a similar experience.

Dr Pockley in the same article reported on a recent study of the attitudes of first-year biology students, commissioned by the Australian Institute of Biology, (see story this issue) and which indicates that a substantial proportion of these students believe in creationism and an age of the Earth of 10,000 years or less.

Now, while this increasing recognition of the dangers of allowing creationists to subvert the education of the young and so possibly set back the progress of science by a couple of centuries, is to be welcomed, I believe that this kind of confrontationist approach will have little effect, and is doomed to failure – indeed it may even prove counter-productive.

You see, creationism is based on an emotional belief in the literal truth of Christianity, a belief based on a literal interpretation of the Bible. People believe because

they want to believe, and as someone has said, “reason stands small against the entrenched power of habit or faith”. So creationists simply do not believe the scientists, whom they regard as agents of Satan. They believe that “the Bible” is the infallible “Word of God”, and if science and the Bible disagree, then, from their point of view, the Bible is right, and science is wrong, no matter what evidence is produced by the scientists.

This attitude is well exemplified by Dr Ritchie’s report on the seminar mentioned above:

“The scientific content of both talks was nil. The approach was unadulterated Young-Earth, Noah’s Flood Creationism. Question time was a travesty.”

“The meeting ended in uproar when the first speaker, Trevor Holt, asked to say a closing prayer, advanced from the lectern into the audience, directly confronted Barry Price (a former senior teacher of both religion and science) and me, denounced us as agents of Satan and called on Jesus to intervene, with his hands over our heads, presumably trying to exorcise evolutionary devils.”

So, before we can even hope to get creationists to even begin to listen to real scientists, we first have to break through the barrier of faith (if that is at all possible!) and get them to see that their belief in the infallibility of the Bible rests on very shaky ground, to say the least. Before being merely presented with scientific facts, they should first be confronted with undeniable biblical facts like the following:

They speak as if “the Bible” exists as a single, unique entity, handed down to mankind in its present form by God a couple of thousand years or more ago, in Hebrew and Greek, much as the Moslems believe that the Koran was written in Heaven and passed on to Mohammed by the angel Gabriel, and that the version they hold in their hand is an accurate translation of the original.

Nothing, of course, could be further from the truth! There are several distinctly different Bibles.

The Catholic Bible differs from the Protestant Bible – it contains as canonical a number of books and passages rejected by Protestants as “apocryphal”, and

differs in its reading of some passages. The Syrian Orthodox Church omits five of our twenty-seven New Testament books. The Codex Sinaiticus (the oldest extant complete manuscript copy of the whole Bible - in Greek) contains the *Epistle of Barnabas* and *The Shepherd of Hermas* - not in any modern Bible - which were obviously at that time (4th Century) considered inspired and inerrant. The Codex Alexandrinus (5th Century) contains the *Epistle of Clement*, also omitted from our New Testament, but obviously considered then to be a genuine part of "God's word". Other copies of the Bible widely circulated in that early period included a *Revelation of Peter*.

Many other gospels, epistles, "Acts" and Revelations exist. The Codex Bezae (5th Century) and other manuscripts contain a version of Acts about one tenth longer than the one normally printed in modern versions (which are based mainly on the Codex Alexandrinus); if the author of Acts wrote two versions, which is the "unerring Word"?

The earliest known translations of the Hebrew Bible (our Old Testament) - the Greek Septuagint (3rd-2nd Century BCE) and the Aramaic Targums - differ considerably from the normal accepted 'massoretic' (= traditional) versions of the Old Testament, as do many copies of individual Old Testament books found among the so-called Dead Sea Scrolls. There are literally hundreds of different manuscripts and fragments on which "the Bible" is based. Our current Bibles evolved over centuries, by a gradual process of acceptance or rejection of books and passages, in various Christian communities. That process is still going on and modern versions reflect the translators' preferences for one or another reading. Furthermore, the meaning of many passages is obscure, or even unknown, and has to be guessed at<sup>2</sup>. But, if any one version is the "unerring Word of God", the others cannot be! Which is to be preferred, and on what grounds?

True believers often quote *2 Timothy 3:16* to support their contention that the Bible is the "Word of God": "All scripture is given by inspiration of God, and is profitable for doctrine, for reproof, for correction, for instruction in righteousness."

But, quite apart from the facts that (a) any statement in any book claiming to authenticate that book remains just an unproved assertion, and (b) the translation is open to question<sup>3</sup>, most modern scholars, for very good reasons too numerous and in places too technical to go into here, believe that this book, and also its companion *1 Timothy*<sup>4</sup> are spurious, i.e. although they begin with the words "From Paul, an apostle of Christ Jesus", they

were in fact not written by him, but by someone else using his name some years after his death. (This was a common practice - though disapproved of by Paul himself: see *2 Thessalonians 2:2, 17* - in these days; many of the "non-canonical" or "apocryphal" gospels, acts, epistles etc and Old Testament books [e.g. the *Apocalypse of Enoch*] purport to have been written by prominent figures who we know could not possibly have written them.)<sup>5</sup>

It is ironic that two books often quoted by die-hard Christians to prove a point should both begin with a lie!

But even where the various Bibles agree as to the general tenor of the text - which, by and large, they do, though a number of the differences between them can, and do, affect doctrine<sup>6</sup> - they all then contain numerous errors of fact and history, and hundreds of contradictions. For example:

In *Leviticus 11:1-6*, the camel is said not to have a cloven hoof, and the hare to chew the cud; but in fact, the camel does have a cloven hoof (it belongs to a group of mammals known as the even-toed ungulates [artiodactyls], which also includes deer and cattle), and the hare does not chew the cud!

Chapter 5 of *Daniel* states that (a) Belshazzar was king of Babylon; (b) he was the son of Nebuchadnezzar; (c) Babylon was taken by Darius the Mede. But in fact the king at that time was Nabonidus, Belshazzar was Nabonidus' son, and the city was taken by Cyrus the Persian. This we know from the Persians' own records and the Greek historians; Darius the Mede is unknown to history - all kings named Darius were Persians, and followed Cyrus.

Matthew and Luke say that Jesus was born during the reign of Herod the Great. Luke also says that this occurred too at the time of a census decreed by Augustus throughout the Roman world, when Quirinius was governor of Syria. But in fact, Herod died in 4 BCE, and we know from Josephus and other sources that this census took place in 6 CE. Furthermore, at the time of this census, Galilee (where Nazareth was situated) was not under direct Roman rule. It was ruled by the tetrarch Herod Antipas (son of Herod the Great) from 4 BCE until 39 CE, and the status of client-rulers in the Roman Empire left to them the responsibility for their subjects' taxation. This census seems to have been a local one, affecting only Judea. Furthermore, under the Roman system no-one was required to travel to his place of origin for a census. There was, therefore, absolutely no need for Joseph to travel down to Bethlehem, and certainly no reason for his very pregnant wife to accompany him.

In the light of these facts, some, probably most, historians consider that both the Nativity stories - Luke's account differs markedly from Matthew's - are pure inventions, devised to support Christian dogma by claiming that the circumstances surrounding the birth of Jesus were actually a fulfilment of alleged Old Testament prophecies. By the time the gospels were written, no-one had any idea where or when Jesus was born.

In 2 *Samuel 41:1* God incites David to take a census of the people (and then punishes him for it!). In 1 *Chronicles 21:1*, Satan is responsible.

*Matthew (1:1-16)* and *Luke (3:23-38)* cannot agree on Joseph's ancestry. (Arguments that one genealogy refers to Mary's ancestors - the texts plainly refer to Joseph only - or that one refers to Joseph's "legal" line [whatever that may mean] and the other to his "natural" line [note the two mutually exclusive theories] are pure evasions, and are entirely unsupported by any external evidence.)

The four gospels cannot agree on who exactly the "Twelve" disciples were; a total of 14 individuals are identified by name altogether, and only nine are common to all four gospels.

The "synoptic" gospels do not agree with John as to the day of the crucifixion - before or after the Passover? - nor as to the details of the trial of Jesus and the events leading up to it. All four gospels give widely differing accounts of the discovery of the "resurrection" - write down the details given in each, and then compare them.

Any book purporting to be the "Word of God" should indeed be absolutely consistent and free of all errors. While by no means denying the possibility of divine inspiration, the facts that "the Bible" does not meet this criterion, containing as it does so many errors and contradictions, shows clearly that it cannot be the "unerring Word of God".

If the authors of the various books of "the Bible" cannot get right things that can easily be checked, such as a hare's digestive system, nor agree among themselves as to the details and sequences of (for them) recent events, what reliance can be placed on them when they speak of matters way beyond their ken, such as the origin of the world and the universe?

In attempting to show creationism to be the unsupported nonsense that it is, therefore, stress must first be placed on discrediting the opposition's *a priori* beliefs, and then, and then only, move on to a clear exposition of the evidence for evolution, avoiding abstruse scientific jargon, which is incomprehensible to most ordinary creationists, who lack any real scientific training.

Finally, I challenge any fundamentalist/creationist to refute, on sound, recent and universally accepted evidence, any of the biblical errors and contradictions cited above. I am quite sure our fair-minded editors would be only too happy to give space to any such attempted rebuttal.

Such an attempt would be welcome for two good reasons. In the first place, it would enable our readers to see for themselves the lame and often laughable struggles of fundamentalists to deny what are clearly plain errors and contradictions in "the Bible" (such as the two mutually exclusive theories to explain the discrepancies in the two genealogies of Joseph referred to above).

In the second place, creationists should remember that failure to explain convincingly even just one error or contradiction means that the complete infallibility of "the Bible" can no longer be maintained, and the real basis for the creationists' denial of the fact of evolution must collapse.

#### Notes:

1. According to Dr Pockley, Dr Roberts' doctorate is "from the Freedom University of Orlando, Florida. The Australian Vice Chancellors' Committee and the US Information Service Library advise this does not appear in any of the world or US lists of accredited universities and colleges." The "Ark find" appears to refer to the fossilised remains of Noah's Ark detailed at great length in David Fasold's book *The Discovery of Noah's Ark*, reviewed by me in *the Skeptic* (Summer 1991).

2. (a) *Psalms 22:16* is variously rendered as "they pierced/ have hacked off/ tear at my hands and feet", "they tie me hand and foot", etc. The Hebrew original reads "like a lion my hands and feet". (b) *Ecclesiastes 2:8* has as many different translations as there are versions. The problem arises from the fact that the meaning of the final phrase "*shiddah we-shiddoth*" is simply unknown, according to Brown, Driver and Briggs' standard Hebrew Lexicon; this is confirmed by the footnotes to the various translations. (c) Even in such a well known expression from the "Lord's Prayer" as "Give us this day or daily bread", the Greek word translated by "daily" (*espiousios*) is defined by four standard Greek lexicons as: 1. belonging to the morrow; 2. for the coming day; sufficient for the day; 3. an extremely rare word of debated meaning; among the probabilities are daily, necessary for existence, for the following day, for the future; 4. supplied with the coming day; daily; sufficient. This is its only occurrence in the New Testament.

3. The Revised Version, New English Bible, Revised

# Creation Physics

Barry Williams

Our thanks to the unnamed reader in Albany WA who sent us a creationist 'comic' which was being handed out in the town. Entitled *Big Daddy?*, the booklet was a fair average example of the sort of specious drivel the creationist sect uses to infect the minds of our children. It consisted, as usual, of various lies, half-truths and distortions about evolution, but the really startling bit came when the protagonist, a clean-cut young Christian, finally demolished the evil professor with this physics question.

"What is the binding force of the atom? ... The protons have positive charges. One law of electricity is that – like charges repel each other! Being that all of the protons in the nucleus are positively charged – they should repel each other into space. What holds them together?"

The Prof responds, in a small voice, "I don't know", to be followed by the C-CYC's denouement, consisting of various quotations from the Bible showing that Christ holds nuclei together.

Actually, it is the strong nuclear force that holds nuclei together against the effects of electromagnetic repulsion. This force was proposed in the mid-1930s and had been

given its definitive description in the theory of quantum chromodynamics by the late 1960s.

As "Big Daddy?" has a Copyright date of 1972, and is still being distributed 20 years later, one might wonder why the perpetrator of this nasty little piece of distilled ignorance was still using supernatural agencies to account for natural forces, long after those forces had been demonstrated. But then one should remember that creationists use a similar type of logic to describe everything.

While we Skeptics do not pretend to know the mind of God, we would be surprised if any self-respecting deity looked with favour on the practice of peddling lies to children.

The problem with the creator postulated by the creationists is that he comes across as being a bit dim. Rather than having him capable of inventing useful techniques like evolution, relativity or quantum physics, they would rather have us believe that he does it all by sleight of hand like some sort of cosmic Uri Geller. God, if he exists, really should be cleverer than that. ■

## ...from previous page

English Bible and the Latin Vulgate of Jerome render the sense as "Every Scripture (literally: All writing) inspired by God is also profitable for teaching, etc." The Greek can mean either.

4. *1 Timothy 2:11-13* ("Let the woman learn in silence with all subjection. But I suffer not a woman to teach, nor to usurp authority over the man, but to be in silence. For Adam was first formed, then Eve.") is another passage often quoted by those opposed to the ordination of women. Ironically, I understand that modern researchers are inclined to believe that *Homo Sapiens* sprang from the female of the species, whom they have nicknamed: "Eve"!

5. It is often claimed that "the ancient feelings and conventions about this practice were different from ours". Professional historian Robin Lane Fox, in *The Unauthorised Version: Truth and Fiction in the Bible* (Viking, 1991), pp 29-31, points out that "the truth is

exactly the opposite". As mentioned, Paul warned against it, and "when a Christian issued fake Acts of Paul and Thesla in the second century, he was promptly deposed by bishops, although he pleaded that he had been acting 'out of love of Paul'."

6. For example, the Authorised (King James) Version says in *1 John 5:7*: "For there are three that bear record in heaven, the Father, the Word, and the Holy Ghost; and these three are one." This is obviously meant to support the doctrine of the Trinity. But it appears in no modern translation. Of it, Dr Bruce Metzger, in *A Textual Commentary on the Greek New Testament* (United Bible Societies, 1975), says (p 715): "That these words are spurious and have no right to stand in the New Testament is certain in the light of the following considerations", which he then proceeds to enumerate very convincingly. How, then, can the Authorised Version as a whole be regarded as the "unerring Word of God"? ■

## CONVENTION PAPER

# Seven Types of Science

Peter Macinnis

I want to explore a theme I have been using in lectures on human evolution at the Australian Museum for about a year. I have two reasons for raising the issue here today: I want to test it out on an informed and, dare I say it, sceptical audience, the other one I will come to later.

Quite a few different and quite natural activities qualify as experimental science. For example, a hockey ball is more likely to rise off the ground when you hit it with your front foot well behind the ball. This is undercutting — it is a lot of fun when you are doing it, but rather less fun when somebody does it to you. In the interests of science, you might decide to explore this. First you vary the distance from your foot to the ball, how hard you hit it, the position of your hands on the stick, you change the angle of the stick, and suddenly the ball lifts every time. You will probably be sent off soon after, but the way of the empirical scientist was never easy.

So is that science, just pottering around, trying things out? Maybe, but then again, maybe not. “There are only two sorts of science,” said the physicist, Lord Kelvin, “physics and stamp-collecting”. Many scientists spend their entire lives describing, writing monographs, contributing just as much to our knowledge as the experimentalists. Both physics and “stamp collecting” must count as science, but so must a few other things as well. Whether they are all truly scientific, though, I leave you to judge. Let us begin with:

## Type 1

Some people (chemists and physicists mostly) regard this as the only form of science. Every observation is predictable and repeatable, all of the variables can be completely controlled. We can look at the facts and say that changing this will have that effect, every time.

Type 1 science is about straight descriptions of unbiased experimental results, the observations reported objectively and dispassionately in the literature. This simple view ignores the subjective choices scientists make when they choose what to investigate, and what phenomena, and what facts they will explore and measure. I made no mention earlier of the effect of hitting the hockey ball left-handed. Hockey players do not do that: even the left-handers play right-handed, so a whole set of investigations has been left out of consideration, because “we don’t do things that way”.

Type 1 scientists are unlikely, for example, to investigate the influences of the paranormal on a

chemical reaction. We understand their decision to discount the existence of evil spirits, invisible things which make us ill, we would probably even applaud their rational and wholly sensible choice to do so. Yet there are invisible things which make us ill, bacteria and viruses, for example, so maybe it is not such a good idea, after all, to subjectively elect to ignore the possibility of a million and one demons, all contending to influence our experimental results. But this would be crazy, unless there is a good cause.

Scientists ignore paranormal effects, at least until they find some variability which cannot be explained any other way. Then they study the effect, find its cause, and always seem to show that it is really normal, after all. Still, to the extent that we leave out demons, evil spirits, ESP and the efficacy of prayer from our investigations, Type 1 science is just a little bit subjective.

Most importantly, hard science is governed by rigid rules. We have our framework for thinking about things, and we view everything in that framework. It gives us all sorts of propositions we are then able to test, using the principle of falsifiability. On its own, hard science is not very creative. It can even be fairly restrictive, but it is very, very powerful, because we are encouraged to try to falsify everything. It works like this: We can disprove any law, just by finding a single exception, but no matter how many supporting instances we find, we can never prove the law is true: the next trial might produce just that single exception we have been looking for!

Suppose I claim I can prevent snakes from crossing our track by tapping out coded messages with my toes as I walk along. For twenty kilometres, we walk and see no snakes. Jubilantly, I claim success. You, being sensible, say this is a load of twaddle. It proves nothing: sooner or later a snake will appear, and where will my precious theory be then, eh?

That is the problem of falsifiability: we can never be sure the disproving piece of evidence is not just around the corner. And scientific theories do not usually involve silly claims about coded signals tapped out to the snakes, so common sense cannot be used half as easily.

This leads to a problem. If nothing can be proved, then you cannot do anything, and that would mean absolutely no progress at all. So for practical purposes, most scientists accept many things as “proven” or “true”, based on their practical expectations. They call their

handy assumptions “laws”, “rules”, “principles”, “theories”, “hypotheses”, “conjectures”, and so on.

Now back to falsifiability. If a scientific idea is to be of any use at all, it must give us testable assertions. It must say something like “people of Cornish descent will be more able to wiggle their ears than a random sample of humans”, or “from this, we deduce that all cultures will have a creation myth which begins in water and darkness”. Any idea which does not give rise to testable assertions and hypotheses is useless and unscientific. It can safely be labelled non-science and discarded.

Type 1 science gives us many testable assertions and hypotheses, once we have a theory to work with: it is just a pity that it is not more use when we try to develop new theories. Still, maybe that is why we have other types of science as well.

### Type 2

Type 2 science is about the interpretations placed on results by scientists. Where there are two competing theories, as there are about the origins of *Homo sapiens*, we often find competing and conflicting interpretations offered by competing schools of thought. Look at the recent “mitochondrial Eve” kerfuffle. A great deal of evolutionary biology looks back at what has occurred, and says things like “humans happened like this because . . .” We cannot run the experiment again, it takes too long, and we do not have control over most of the variables anyhow. History and many social sciences come close to Type 2 science, and that may be why the Type 1 scientists do not really like Type 2. When a historian says “The Great War happened because . . .”, this is the most reliable interpretation we can offer, based on the evidence. Like the evolution of the humans, we can see the effects, but we do not know all of the causes. If we ran the experiment again, we might not get the “right result” once more.

Type 2 science might not be repeatable. We may well be describing, after the event, a unique sequence: if we “ran the tape again”, to use Stephen Jay Gould’s expression, we might easily get an entirely different result next time. So while we describe Type 2 events in scientific language, our results are less certainly replicable.

The textbooks rarely recognise this form of science, preferring to emphasise the nicely replicable nature of physical science. Interestingly, most of the “experiments” in school science books are precisely the replicable Type 1 exercises which fit the descriptions given at the start of chapter 1. Do the educators feel that Type 2 work is too challenging for school children?

Soft science is still governed by scientific rules. We have a theoretical framework in which we explore causes and effects, and we apply Ockham’s Razor (which says we must choose the simplest available explanation). We have a certain amount of trouble in coming up with

testable, falsifiable, propositions, but we can do it. On its own, soft science would not be very creative, but it has more creative potential than hard science. It leads us to begin asking “what if” questions, to ponder about causes, rather than demonstrating them.

### Type 3

In a sense, fraud is not science at all. Fraud happens when a scientist takes a short-cut, and concocts a few results that he (I am not being sexist here: in all the known cases so far, it has been a “he”). . . he makes up a few results he thinks would have been found, if only things had gone right, if only his techniques were good enough, if only his material had been a little better than it was. Because the intention is to defraud and convince, the fraudulent scientist must produce results which are absolutely consistent with all of the other known scientific principles, rules and discoveries. Most frauds are done for “good scientific reasons”, because the fraud feels that the principle he is trying to demonstrate is more important than a mere “scientific method”. The end, in their view, justifies the means.

Because it pretends to give us real data, fraudulent science is often testable. By definition, fraud is extremely creative, and it is often right, in which case it is unlikely to ever be found out, but a few frauds are wrong, and these can be extremely destructive. The “Piltdown skull” was concocted from a piece of a human skull and an orang outang’s jaw. These had tell-tale bits broken off, the bones were chemically stained, and they were planted at Piltdown. Scientific investigation eventually exposed the fraud, but the fraud sent scientists off on the wrong line of thinking for forty years.

In mathematics, we can try asserting that “ $2 + 2 = 5$ , for sufficiently large values of 2”, but we are unlikely to get away with it. The only effective mathematical fraud involves claims to have proved that which mathematicians either have not yet proved, or have said is impossible. This second path is generally the more popular, so people square the circle and trisect angles all over the place. Professional mathematicians mostly duck and look the other way when these people come around, for the fraudulent proofs can take a long while to unravel, but unravelled they certainly will be.

Scientific fraud is easier, and there must be many cases where we will never know it ever happened. Scientific fraud involves making up the evidence to support your pet theory, but if your theory is wrong, people will eventually notice that your data are impossible, and you will be exposed. Of course, if the theory turns out to be right, nobody will ever know what you did, not unless you were careless, that is . . .

Cyril Burt manufactured IQ data and correlations. In the end, somebody noticed that Burt’s correlation coefficients never wavered from their original three-decimal-place value, even when more data were added.

Now everybody knows the calculated correlations should vary a bit, here and there. People looked more closely at his data, and the whole of Burt's work on IQ and inheritance was eventually discredited.

Burt invented co-authors for his work, he even wrote legitimate papers in the names of his "co-workers", to establish the credentials of these phantoms. One of these papers, an excellent piece of work, supposedly by a "Miss Conway", formed the theoretical basis for the scaling of HSC marks which still goes on today!

Mendel massaged his results, Dulong and Petit concocted their results, so did Ptolemy and Isaac Newton. Nobody cares much any more about them: they guessed the end result correctly, unlike the Piltdown fraud and Cyril Burt, and so these other frauds did not hold up the progress of science.

People can engage in scientific fraud with the highest of motives, as I am sure Dr McBride did, or they can mistakenly attempt to pass off a mathematical fraud, and still be entirely innocent: to that extent, they fall in the Type 3 category. Technological frauds, on the other hand, the purveyors of snake oil and perpetual motion, are a different breed. I will deal with them under pseudo-science, later.

Incidentally, "Scientific" advertising is not Type 3, because it does not seek to delude scientists in particular: rather, it is a particularly literal application of the old expression "blinding with science".

The genuine scientific content, the extent to which advertising reflects any accepted views of science, is limited.

#### Type 4

Although they may not admit it, many scientists spend most of their lives engaged in fancy sorts of fiddling. They twiddle the knobs a bit, they explore the situation in various ways, some of them systematic, and some almost at random.

Fiddling still involves sticking to the rules of science, applying the rules in slightly quirky ways, but always within the framework. Because fiddling is a bit random, it occasionally provokes an amazing discovery, but most of the time, it just brings about disappointment. Fiddling is all about testing half-formed ideas and hypotheses: if we "get a result", then we automatically have a fully-formed testable hypothesis. Most technology began as Type 4 science, trial and error variation to find the best temperature to heat the steel of a samurai sword, to find the best way of putting an edge on a stone spear-tip, trying out new fuel additives, investigating a new cake recipe.

The alchemists believed the Philosopher's Stone would transmute metals. In modern terms, if they added the right stuff to lead, they believed the lead would be turned into gold. On the surface, this seems like nonsense, but given their understanding of chemistry, the alchemists' ideas really made quite a lot of sense. The alchemists were empirical scientists, people who

explored whatever worked, and then twiddled with this. They knew the base metal, copper, could be changed by adding black or brown cassiterite (tinstone) to the mix. In our terms, they got bronze, an alloy of tin and copper, but to them, the metal had been changed.

As they described it, the black or brown stone had transmuted the metal. In the same way, a white "stone" (the mineral smithsonite) could be added to copper with charcoal in a sealed crucible, and brass was formed. Both bronze and brass look more like gold than the original copper, so is it any wonder they believed it was just a matter of finding the right "stone" in order to make gold from base metals?

Today, we realise their theory is all wrong, but this is now, that was then. It all seemed, as they say, like a good idea at the time. The trouble was you could not control the effects, you could not predict what would happen in a given case, and so there was no real science to it all. Nonetheless, fiddling is scientific.

#### Type 5

Most scientists engage in speculation from time to time, and progress would be impossible if scientists did not speculate. Scientific speculation involves saying things like "What would happen if you assumed that Euclid's Fifth was wrong?" or "Would the two weights really fall at different speeds?".

Here, scientists begin with an accepted and established "fact", and they question its validity. They ask themselves whether this fact is really all that factual. Then, still working within the rules of science, they test it, under different conditions.

Speculation is creative science, designing and planning what is to be observed, what is to be described, and then looking around for the unexpected as well. Speculation is also usually left out of courses on the scientific method. This is a shame, for we need all of Type 1, Type 2, and Type 5 activity, if our science is to be fertile.

Speculation generates hypotheses, and would be pointless if these hypotheses were not tested. It often fails to produce results, but the occasional successes more than make up for the failures, and to a good scientist, even the failures can be extremely informative. Speculation is probably at the cutting edge of science, because it is only when scientists decide to reject the "standard model", for whatever reason, that they can look for the evidence which may one day lead us all to reject the current paradigm.

Speculation always stays in a scientific framework: we reject or set aside one key assumption which looks a bit shaky, and we explore the consequences. We look for evidence which says in effect, "Yes, you probably can safely reject that assumption, at least for the moment". Always, the speculator is limited to reasonable hypotheses, varying one or maybe two assumptions here and there.

**Type 6.**

This is all about saying “I’d be happy if this were so, therefore it is so”. Just before World War I, the British were very keen to have their own fossil human, to match the French and German finds. God was an Englishman, so the first human must also be a Pom! “Piltdown” was what they wanted, and the English scientists accepted it. They kept on accepting it for nearly forty years.

Polemic involves saying “Blow the facts, I want it to be this way, and I will biff you if you don’t agree”. There are some fairly strong personalities around the scientific world, and polemic is more common than many people realise or admit. Polemic often pays little regard to the facts, and so it is only marginally scientific, but the people who engage in this sort of argument still call themselves scientists, and at least they argue about scientific facts.

The argument about cholesterol and heart disease is debated with all the fervour of a religious schism. Others claim evidence that vitamin D deficiency can cause colonic cancer, or picking your nose seems to be involved with Alzheimer’s disease. They may just turn out to be correct. Most of the time they will not, but the cases are still argued furiously.

At least the polemicists point the way to an observed (or alleged) pattern, something which can be investigated further. More importantly, there are times when the polemicists are right, so they do have a proper place in science. The Germ Theory of disease, like the theory of continental drift, rejuvenated as plate tectonics, are examples of this.

**Type 7**

This is where you put the people who believe in UFOs, “little green men” (why are there never any “little green women”? Are ETs sexist as well?) and other things that go boomp in the night.

Then there are the crystal power freaks, the homoeopaths, and the inventors of cars which run on water, or other perpetual motion devices. The claimants usually take delight in pointing out that their system “transcends” the rules of science, obeys some “higher laws”. They do not speculate on this, they assert it.

Interestingly, they accept most orthodox science, but generally add one “special”, one hitherto unknown universal force, one unrecognised law. Everything else is consistent with science, given that one supposition, so they fall just within the bounds of science.

One way to spot the pseudo-scientists is to look at their attitudes to people like Einstein or Newton: fruit-loops usually attack one or the other of these two worthies, explaining blandly that they can prove mathematically that one or the other “got it wrong”.

The only “plus” for pseudo-science is that, like any other attempt at science, a pseudo-science can be used

to make testable propositions. It is because the pseudo-sciences still allow this form of testing that they qualify (barely!) for listing among the “sciences”.

Earlier, I said technological fraud was not scientific fraud, because there is no possible way that somebody can sustain a claim that a technological fraud works, and be truly innocent. Some deviousness and some deceit is required as well.

Technological fraud should be hard, even impossible to bring off, because people want to see the “new invention” working. Luckily for the con-merchants, people are delightfully gullible, willing to believe bizarre things, to accept the strange claims that are made to them.

There was even a state Premier who praised a new car engine which used water as a fuel, and encouraged a quack who claimed a cure for cancer, offering him government support to create a clinic. But don’t you worry about that right now.

The point is that there will always be people who are willing to suspend their disbelief, and that is why technological fraud sometimes happens. Fortunately, it never lasts. Most children of average intelligence will have dreamed of a motor which turns a generator which makes the power which turns the motor, and so on. There are variations like the water wheel which operates a pump to raise the water which powers the water wheel, and weird and wonderful arrangements of magnets, rolling weights on wheels, even electric generators powered by burning hydrogen, which split water by electrolysis, releasing hydrogen to drive the generator. These are all perpetual motion devices, and even though some of the demonstrations can be most convincing, none of them can truly work. There is absolutely no way of getting energy from nowhere.

Still, you can find plenty of people who will claim they are on the verge of a breakthrough. All they need is slightly more powerful magnets, or more ductile widgets, and all will be well. The trouble is they never produce the final product. Well, hardly ever! Once in a while, you may be shown an apparently perfect perpetual motion machine. If you ever do see one, examine it carefully for hidden batteries in thick columns, or look for the compressed air jets, hidden in the curlicues. Be suspicious of any parts which seem bulkier than they ought to be, or any covers, or any vibrations in the apparatus. There has never yet been a “genuine perpetual motion machine” that really was! Pseudoscience is at best shaky science.

**Non-science**

The careful listener may have noticed that “creation science” has not come up yet. “Creation science” claims the real truth about the world’s origins is to be found only in the Bible, and that all the evidence counts for nothing alongside Scriptural Truth. Fossils are the

remnants of animals drowned in Noah's Flood. The rest of the universe only looks to be a long way away, because the speed of light changed, some time ago. Every scientific objection is dealt with in the same way, by piling on a few more special assumptions based on hope, rather than on evidence.

You cannot classify as science any belief-set which says "forget all the rules, we do not need them". The Genesis account of Creation may even be the correct one, but there is no way within science that we can prove that it is incorrect, and the creationists know it. Alone among the self-styled sciences, "creation science" fails to offer us even one testable proposition, assertion or hypothesis.

More importantly, "creation science" asserts quite happily that it can never be falsified. Accordingly, it lies beyond the bounds of my classification. It is not a science. The creation pushers fail to apply Ockham's Razor, either to their theology or to their science. The simple explanation of how Everything Began comes from the evidence. And the evidence tells us the universe evolved, the world evolved, and life evolved, all over very long periods.

Cosmology, astronomy, biology, geology, biochemistry, geochemistry, geomorphology, radiophysics, and half a hundred other sciences, all tell us how the universe began, and they all agree. The "young Earth" mob are against every known science, not just against evolution.

A literal six-day creation involves you in too many "patches", too many wild assumptions and special clauses to explain why things are as they are. It is easier to assume that a Creator used natural forces in a natural way: "God moves in a mysterious way, his wonders to perform", said William Cowper in the Olney Hymns. Why would anybody need a more complicated explanation than that?

To return from theology to science, "creation science" is not Type 3, fraudulent science. Sure, it is fraudulent, but it is not science, for it does not allow us to test its hypotheses. It is not Type 6, scientific polemic, for while it is polemical, creationism is not scientific — it denies the standard rules of science. And it cannot be labelled as a pseudo-science, for even pseudo-science pretends to use standard scientific methods, albeit a little roughly.

Scientists of all sorts will always hold everything open to doubt. People who are anti-science, like the so-called "creation scientists" use this fastidious doubt to confuse people about the truth of evolution. The scientists are in doubt, they say, so therefore the scientists do not really know anything, so the scientists are all wrong.

This is our old friend, falsifiability bobbing up again. When a scientist says "we cannot prove evolution is true", this just means that no matter how often we see evolution has happened, time and time again, we cannot

prove evolution will happen in every conceivable case. So we express our ritual doubt, and carry on working and experimenting, quite happy that evolution has been seen to happen time and time again, that it has never been seen not to happen, and if we assume evolution has happened, is happening, and will happen, we will, in all likely cases, get the right answer.

Evolution is a fact: we can see evidence for it all around us. When Darwin proposed his theory, it was not "the theory of evolution" he proposed. People already knew living things evolved. What Darwin proposed was a theory to explain how and why things evolved. Darwin's theory was about natural selection as the driving force that made evolution happen. When scientists argue about evolution, it is the actual mechanism they are doubting, not the basic fact that evolution has happened, and continues to happen.

In every case, scientists work on the basis that they will at best find evidence which does not disprove a theory. A genuine scientist will always be on the lookout for evidence which contradicts the known theories — that is how major discoveries are made (and how glory is won). And as they keep on doubting, they keep on testing, probing, looking for a weakness which may not even be there. This is what "creation science" misrepresents

And that brings me to my second reason for telling you about the seven sciences. All too often, we let the fundamentalist fringe, the people who wear off-the-rack suits with cheap ball-point pens in the breast pockets, we let the funny farm crowd set the agenda. This, they tell us, gesturing hypnotically into the distance, is Science. That, they say, sneering disdainfully at evolution, is not. All too often, we fall into the trap of letting them define the terms in the debate, to define the debate itself as a debate about evolution, and to define science only as Type 1.

I do not allow non-scientists to define science for me, any more than I allow atheists to define God for me, not my personal God, anyhow. The cobbler should stick to his last, and it is time the scientists stood up and roared "Cobblers" to the charlatans of "creation science". To do this effectively, we need to clear up just what science is about. We owe it to ourselves, we owe it to the innocent public, and we owe it even to the charlatans, to do this in an intellectually honest way.

I hope my classification system may help people to see more clearly what the range and limits of real science are, and to see how evolution fits as an essential and central component in science, while so-called "creation science" remains far beyond the scientific pale, lost in a dismal howling wasteland of primitive superstition. ■

## CEREOLOGY

# Spinning Round in Circles

Stephen Bassler

There are times, I have to admit, when I feel a touch of guilt (only a touch mind you) at being a skeptic amongst a sea of ever so earnest believers. Such an occasion was Tuesday 14 April 1992 when Colin Andrews gave a public lecture in Melbourne on crop circles. Very early in the evening, it became clear that the science content of the evening was going to be meagre at best and much of what was delivered was palpably nonsense, but the audience – most of whom dearly wanted to believe – lapped it up. At the end of the evening when representatives of the Victorian Committee tried to ask questions, they were shouted down by a crowd that had not paid \$15 each to have their faith questioned.

One of the features of pseudoscience is what I will call the ASIO phenomenon – “I am in possession of information or analytical abilities that few, if any others possess. Because I have this special, ‘secret’ information all you need to do, to accept that the paranormal event I am describing is real, is believe me”.

In this case it was Colin Andrews saying, “I have examined the crop circle, and I have found features that I believe confirm it as genuine. I have lots of photos and I even have drawings with lines drawn on them, with angles measured and I have copies of these overlaid on maps of Stonehenge. I have not included scales to allow an accurate comparison – I do not need to because I have said the fit is perfect”.

Bank notes, paintings, stamps, etc. can all be forged and it is possible for anyone to have explained to them how it is possible to tell the difference between the real and the fake. They can then make an assessment without having to have the expert present.

Colin Andrews agrees that ‘fake’ crop circles do exist - he even showed us some slides of examples (of course he did choose the worst possible ones so he could raise a laugh at Doug and Dave and the Skeptics). Before I can accept his claim that there is such a thing as a real crop circle, though, there must be objective confirmatory evidence that exists independently of the observer. That is, having been taught how to differentiate real from fake I must be able to do so when blinded.

The more astute readers will have already realised

what the audience failed to realise – that there is a paradox here. Who is going to confirm that the ones I think are real are, in fact, real? How do we decide? What is a real circle? What are its attributes? It is too easy to conclude that there are only two types of circles - those that are hoaxes that Colin Andrews thinks are hoaxes and those that are hoaxes that Colin Andrews thinks are real. Where is the proof for any other type?

One claim that Mr Andrews does make (and he very carefully makes very few!) is that there are a group of circles in which there is a characteristic microscopic structure of the wheat after it is processed in a certain way (details not given but we were shown a slide of a man in a white coat sitting at a microscope which means it must be scientifically valid). These seem to be circles Mr Andrews feels are real. Is he right? How could we tell?

There is a way and it is simple and it is what the Skeptics stand for – a controlled trial in which the observer is blinded. Take a crop circle that Mr Andrews has declared as real and extract samples of wheat from it. Take samples from unaffected wheat and from a circle Mr Andrews has declared a fake. Prepare these samples in the standard way with the person doing the preparation being blinded as to which is which and then ask Mr Andrews to identify the wheat from the ‘real’ circle.

This would be so simple (the only difficult part would be getting Colin Andrews to state unambiguously that a circle is real or fake) but to my knowledge has not been done and yet it would instantly confirm the usefulness of this technique as a way of describing crop circles. At present all we have is Andrews telling the believers, “I am telling you this is the crystal structure of a real circle”.

Mr Andrews spoke of ‘energy’ but decried calls to explain the form of the energy or how it could be measured. It was presumably there because he said it was and that should be enough evidence for anyone! Pardon me for asking.

The bulk of the evening consisted of Mr Andrews telling us his interpretation of why the crop circles were appearing - his ‘Mother Earth crying out’ hypothesis. Even if I became temporarily delirious and accepted that

there is such a thing as a real crop circle, I am far more interested in knowing what caused it than New Age theories of what they “mean”.

Mr Andrews was unable to separate science from superstition or opinion. Mr Andrews says that some form of intelligent consciousness is causing the circles and it is an attempt to warn us to care for this Earth. If this consciousness is intelligent enough to carve out a Mandelbrot set in a wheat field it surely could relieve Mr Andrews of the need to act as interpreter and just write “SAVE THE OZONE LAYER” or “STOP USING FOSSIL FUELS”. Why, if you were an intelligent consciousness, and you wanted to preserve the world, would you communicate this by making complex geometric patterns in wheat fields mainly in Southern England that can only be “interpreted” by one man?

Later in the evening I opened one of the pamphlets handed out at the lecture and I stopped feeling guilty and started to feel angry. There was an advertisement for the “crop circle signature” – only \$72 and you get a pendant that “encapsulates the energy of crop circles” and which “when worn next to the skin on the main meridian appears to help keep the body in balance”.

Mr Andrews has no answer to how I (or anyone) may measure the energy in the pendant or even confirm that it is there (it clearly is not but humour me for a second) but the belief in the idea that it could be there causes many people to part with \$72. Mix all this energy talk in with a bit of eastern influence (meridians are the lines along which acupuncture needles are supposed to be inserted - there is no evidence of their existence) and you have got a sure seller, and never mind the facts - they only tend to ruin profits.

It is fraudulent for Mr Andrews to be taking money this way and to be accompanying the sale of these pendants (and other merchandise) with a world view that is at best merely erroneous and at worst quite dangerous. Colin Andrews claims that crop circles are “Mother Earth crying out”. If the Earth is crying out it is only because she is inhabited by so many people who are not merely ignorant of the remarkable laws of nature that sustain us but who do not appear to want to be any more informed than they are. ■

**MOVING?**

**Please, please, please  
advise us of your new address!**

# Crucifixion

**Harry Edwards**

Australians were probably aghast to hear of the voluntary crucifixions performed as penance during the Easter week celebrations in the Philippines early in May, but may be relieved to know that these masochistic rituals are not quite what they seem.

Examining a photograph of Pedro Santiago, a meat dealer from Mandaluyong, who was nailed to a cross for the eighth year in succession, it became apparent to me that, like psychic surgery, what you perceive is not what you get.

The nails are made of a special aluminium, soaked in alcohol for a year and are driven into the hands and feet by attendants who make sure that they miss the bones and blood vessels. While I am unable to clearly distinguish the shape or gauge of the nails, it would be a fair bet to say that, unlike their rough forged Roman counterparts, they were designed to inflict minimum damage.

Experiments on cadavers have shown that hands nailed to a cross are incapable of supporting the weight of a human body; so do the devotees levitate or become endowed with supernatural powers to take the strain? No, the wrists and upper forearms rest in brackets and are tied to the horizontal member with wide bandages – six supports in all. Around the upper torso and secured over the horizontal and around the vertical members is another wide cloth bandage also supporting the body. The feet rest on a block.

The crucifixion is brief, lasting a matter of two to three minutes.

Given the precautions to prevent serious injury or accident, throw in a bit of hysteria and the ordeal is probably little more painful than having one’s ears pierced. While the Catholic Church discourages this and other rituals, they have become fixtures and attract throngs of tourists, much to the delight of the impoverished local community.

Mother Paring, operator of a local faith healing centre, was crucified for the fifth time after the Virgin Mary appeared to her and instructed her to perform the ritual for the next fifteen years. After the ceremony, she told the congregation “What I did was not a show, God made me do it”.

If you’ll pardon the expression, thank God I’m an atheist. ■

## CIVIL RIGHTS

# Thought Police – and Suchlike

Nick Cowdery

The year 1984 is long gone, but the memory apparently lingers on. Our astute (hirsute?) President was moved by events to to write in *the Skeptic* (Vol 12, No 2) of the need to continually question, to seek answers and to deplore the actions of those who would stifle free and open inquiry.

As he wrote:

“The right to question is one of the fundamental rights in any democratic society and it is properly the function of the sceptic to assert that right. Any attempt to stifle our right to ask questions smacks of authoritarianism and should be resisted by every legitimate means at our disposal.”

Heady stuff! He is right, of course - but why?

## Democracy

It is now accepted by all reasonable and right thinking persons (I hope this does not sound too dogmatic!) that, although not perfect, democracy (direct or representative) is the best political system we humans have yet been able to devise (as Winston Churchill asserted). Yet for all its qualities and endurance it is a fragile thing and must be constantly defended. It gives power to the individual rather than the group and individuals must be active to assert that power and to defend it. It draws further support from its adjunct, the just rule of law.

(If you would prefer to live under another political regime, then you might as well stop reading now.)

## Human Rights

In a democracy humans are best able to enjoy their rights (a proposition I am content to defend if necessary). Human rights are a set of moral principles that are general, universal and supervening. We possess them simply by reason of being human – they are indicators of our humanness.

In the present context we are concerned with the group of human rights described as civil rights (the other grouping being known as economic, social and cultural rights). Particularly we need to consider the rights

reflected in the freedoms of:

- thought, conscience and religion
- expression
- assembly
- association

In modern times our human rights are definitively stated in five instruments which are known as the “International Bill of Rights”:

- The Universal Declaration of Human Rights (UDHR)
- The International Covenant on Civil and Political Rights (ICCPR)
- The International Covenant on Economic, Social and Cultural Rights (ICESCR)
- The First Optional Protocol to the ICCPR
- The Second Optional Protocol to the ICCPR

Australia is a party to all of them.

## Freedom of Expression

Article 19 of the ICCPR reads as follows:

“1. Everyone shall have the right to hold opinions without interference.

2. Everyone shall have the right to freedom of expression; this right shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of his choice.

3. The exercise of the rights provided for in paragraph 2 of this article carries with it special duties and responsibilities. It may therefore be subject to certain restrictions, but these shall only be such as are provided by law and are necessary:

- (a) for respect of the rights or reputations of others;
- (b) for the protection of national security or of public order, or of public health or morals.”

The underlying proposition is that effective communication with others is an essential part of being human – it is a vital aspect of living. Although we practise it constantly, we should recognise it for what it is.

Read with Article 18 (which deals with the right to freedom of thought, conscience and religion) and the other freedoms referred to above, this code provides a legal basis for holding of individual opinions, for their expression, for their questioning by others and for the peaceful expression of dissident views.

### **Perversion**

There are those who argue that freedom is licence: that a freedom, or a right, may be exercised in an unfettered way. But that argument proceeds in ignorance of the true ethical characterisation of rights: they are in truth correlates of active or passive duties of others. A right to freedom of expression, for example, is a correlate of a duty not to prevent free expression by others.

Those who seek to assert their rights, as if licences, infringe upon the rights of others and should be restrained. To be more specific, those seek to express opinions or beliefs without being prepared to permit questioning, deny to the potential questioners their right to the freedom to seek and receive information and ideas and to modify, if necessary, their own opinions.

Further, it would be fatuous to argue that reasonable questioning “interferes” with the holding of opinions (cf Article 19 (1) of the ICCPR).

The action described above is legally, as well as ethically and socially objectionable.

Those who deny to others the enjoyment of their human rights are to be deplored. In reality they are part of an insidious attack on democracy itself from within, like grubs in an apple.

### **A Role for Sceptics**

Sceptics apply intuitively the relevant principles now reflected in the international instruments as described above. One meaning of a sceptic is “a seeker after truth; an inquirer who has not yet arrived at definite convictions” (Shorter Oxford).

In the search for truth one must exercise that combination of rights that might well be described as a “right to question”.

Dogmas of all kinds deserve to be questioned. Those who seek to deny that right, or any of its constituent rights, are deserving of condemnation. It is more than simply arrogant to tell another what to think. ■

---

## **Don't Believe – Think**

## HEALTH CARE

# No Ducking Chinese Quackery

Clive Coogan

We are continually being served up a load of crap about the efficacy of ancient 'natural' herbal remedies for human ailments by herbalists and naturopaths. We should joyfully find our way back to these 'natural' ways of regulating and treating the human body, they say.

Now it is quite true that there was *some* truth in the tales about *some* ancient natural herbal remedies. For example, the foxglove did contain a natural alkaloid which is now recognised and extracted to treat some heart conditions. A number of our current remedies had their start this way. That is why, in the past, medical students had to have botany as one of their skills, and perhaps (although it is less defensible) that is why Latin was once a prerequisite for a medical course, in order to work out the names of the plant species.

Nowadays, the medical student needs proficiency in organic chemistry nomenclature. Modern medicine looks at any promising hints of natural remedies to assess efficacies, if any, in ancient herbal remedies. For example, Aboriginal nostrums have been investigated in recent years, without resulting headlines.

The New Agers are particularly rapt in ancient Chinese herbal medicine. This combines the mysticism of the herbal community with the mysticism of ancient Cathay, to combine in a potency which is irresistible to New Agers. Add a prick or two of acupuncture to this and you have a whole religion which is peopled by wishful thinkers all over the 'modern' world.

Their obvious need to elevate all that is ancient, or 'natural', or derives from the mysterious East, is as pathetic as it is alarming. Virtually none of these people have been to China to observe the evolution of medicine there. China is rapidly developing Western style medicine, although admittedly there is a veneration of their old style medicine still extant, but it is all changing. The Chinese are, for example, high exponents of modern nerve surgery, being the first to stitch back a severed limb.

Acupuncture in China has been limited by law in recent times. (Wonder why we were not told about this by the New Age practitioners?) *Nature*, the leading science journal, reported that about 80% of former acupuncture procedures had been outlawed by the Chinese government as of 1987, which says a lot for the efficacy of acupuncture. Of course, acupuncture will go

on and on; they still sell oilcloth in the Mid-West of America. But both customs will ultimately die.

Dr Jim Leavesley of Adelaide spoke of his year of experience in teaching at the Medical University of Wuhan, one of China's best, on recent editions of the ABC Ockham's Razor program (January 5 and 12, 1992). He spoke of the modernisation of Chinese medicine. In Wuhan, the students do a five year course at the rate of six days per week; in all about two and a half thousand hours of lectures. Of this, 70 hours were devoted to traditional medicine and 20 hours to acupuncture. Leavesley said that more than 90% of cases in China were treated with 'Western' medicine and practically the only cases treated with Chinese traditional medicine were the chronic cases which were not resolved by Western medicine, and anything was worth a go.

But enough of this waffle – to the main thing. I recently purchased a book on fascinating China from my friendly neighbourhood bookshop. It was put out by the Chinese State, and so was official. Perhaps this was authenticated by the number of solecisms in the English of the book which otherwise was an excellent publication on the basics of China – climate, geography, industry, ethnic distribution and population were all well covered.

There were unexpected tables of the population from the year dot, and these are quite credible as China has had a Civil Service from the year dot, even inventing Civil Service entrance exams, and censuses were carried out from time to time. I plotted the population from 0 AD to 1990 AD and attach it as Exhibit 1, which is labelled Fig 1 least it be said that I didn't give a Fig.

You will note that the population of China fluctuated from 4 million to 60 million in the years up to about 1750 and then began to climb. In those early years smallpox, typhoid and sundry plagues racked China, and of course famines due to droughts and floods also wrought havoc on the population. But the interesting thing is that the population did not increase significantly until Western man arrived in numbers, bringing Western medicine and Western hygiene with him.

Of course, Western man also brought many perverse things, and imposed his injustices and cruelties, but the population still went up.

Of course, Marco Polo arrived much earlier (about 1275 AD) and his unfamed father, Nicolo, and Uncle

Maffeo, made a trip much earlier still (c. 1260) but they did not constitute any mass communication of Western ideas. Historians have spent the time since the Poloian days arguing whether the Polos introduced spaghetti to the China or whether they introduced Chinese noodles to Italy. However, it is certain that the Chinese, under Kublai Khan, were eager to accept the ideas of these peculiar, non-slant-eyed people from Outer Space, even making Marco a regular mandarin type of official.

My Fig 1 is mute testimony to the Mickey Mouse efficacy of ancient Chinese medicine and perhaps of ancient Eastern remedies as a whole.

The present generation of herbalists and naturopaths is more interested in making a natural megabuck from the hordes of ingenuous, credulous people that we have in our midst, ever eager to solve their problems with miracles, than to bother with the niceties of the truth. Hence, the herbo-naturopath cults wrap their dubious and ludicrous practices in Eastern mysticism, and push on all the pedals and buttons that will play music acceptable to the ears of the credulous in order to ring out the ultimate refrain from the cash register.

Of course Fig 1 is symptomatic of the big trouble looming for the world – over-population. Look how vertically the plot of population rises from 1948! Although China is making strenuous efforts to restrict the increase of its population – one child is good, two tolerable and more than two is a crime - little attention is paid to this in rural villages where the traditional insurance policy comes in the form of descendants willing to cater for your old age. And China has an 80% rural population. Sustainable populations are much lower

than the populations we now have all over the world. Pollution, Greenhouse effect problems and land degradations are all functions of over-population.

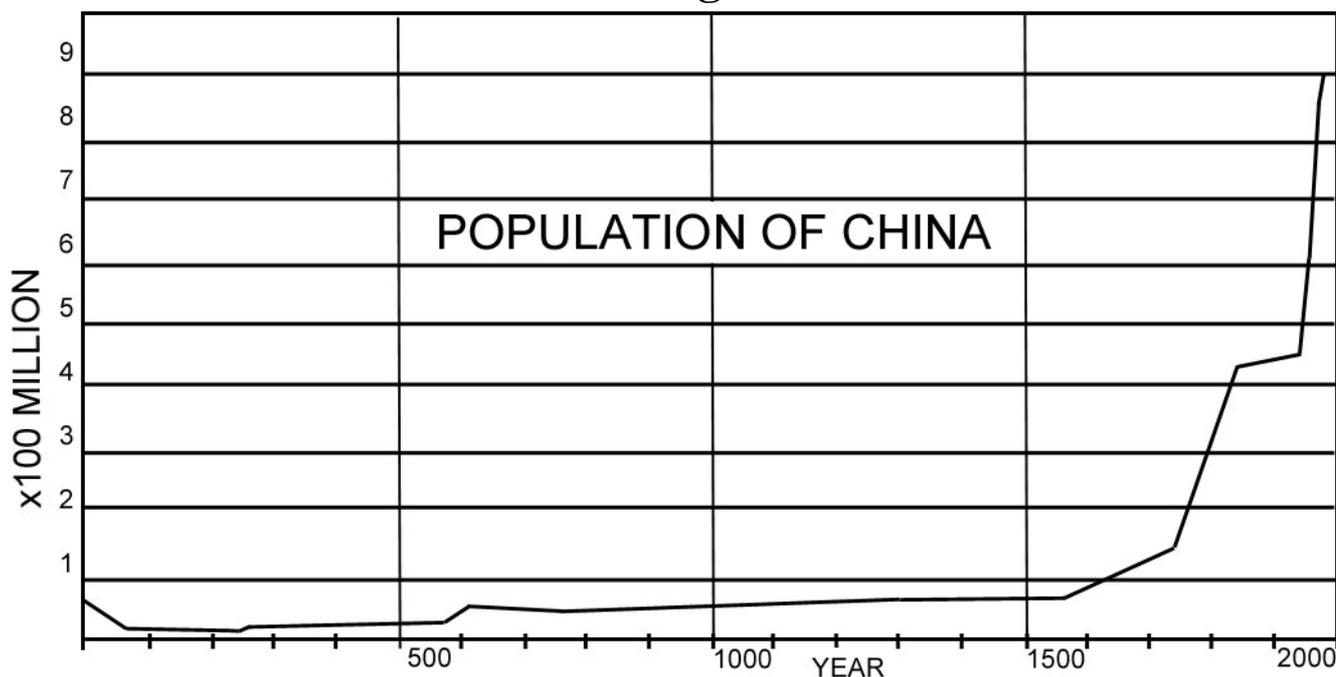
So maybe the swing to natural medicine has a good side to it - it is an ill wind that has no silver lining - and will limit our population in future years. Are the credulous hordes participating in a lemming-like rush to their destruction? Will the State intervene to make this form of medicine illegal, and so put it on a par with other forms of suicide? It intervened re blood transfusions for Jehovah's Witnesses.

Meanwhile the naturopaths and herbalists seek to raise their own status with pseudo-degrees from pseudo-colleges of naturopathy, homeopathy, etc. Have you noticed how they have sought to locate their courses in genuine tertiary institutes, which sends us a message of their own self-perception of fraud accreting to their reputations? They are trying to cover this bad image with the reputations of universities and colleges by the implication that they are associated with these institutes.

Some years ago, admittedly in the UK, in the case of Fox v. de la Warr (previously simply "Warr" before they began their fraudulent practice) the defendant's wife admitted that her degree of D.O. ("Diploma of Osteopathy" – objectionably similar to the D.O. of Diploma of Optometry) was conferred after a couple of weeks of study and an exam in her own sitting room. Although not yet exposed in the courts, we have similar diploma mills operating here.

Must finish – must rush outside to vomit after the thought of all this. ■

**Fig 1**



## Conspiracy

I write in regard to your editorial comment (Winter 92) that you would like to see a more active sceptical approach towards conspiracy theories in *the Skeptic* and generally. However, you failed (I believe) to address one problem often associated with students of conspiracy theory (a subject on which I have done quite a bit of reading as an amusing pastime). This is that there are perhaps two main schools of conspiracy theory which do not necessarily agree and this should be borne in mind by anyone researching or writing/debating about this topic.

On the one hand there are those who hold that the flying saucers regularly fly out of the hollow earth via the hole in Antarctica, zoom to Washington, Moscow and Beijing to deliver instructions to their synthetic android slaves and then use their mastery of universal energy fields and vril energy to kidnap young women for their fiendish medical experiments at secret underground bases in New Mexico and Nevada, stopping off only to mysteriously mutilate a few cattle and scare the pants off some poor motorists by buzzing them in their saucers.

On the other hand, there are those who concern themselves with the far more probable scenarios involving (man-made) plots and secret societies by world leaders, important criminals and big-time money merchants. Names which are frequently mentioned in this second school include the Bavarian Illuminati, International Communist Conspiracies, the Mafia, International (Jewish) Bankers, The French and Russian Revolutions, the CIA, the Knights Templar and Freemasons, among other organisations.

## LETTERS

---

**Letters to the editor on any topic of interest to other Sceptics are welcomed. Letters should generally be restricted to no more than two pages of typed script.**

---

I would take a wild estimate that, of the readership of *the Skeptic*, the former school would be received with slightly less credibility than claims that Noah's Ark had washed up on a Geelong beach, or that water fluoridation is part of a plot by aliens to control our minds.

The latter scenario, however, does not unfortunately require alien space-ships, astounding telekinetic powers, ability to see that which does not exist (the future) or bizarre visitations by long-dead religious figures.

My point (yes there is one!) is that sceptics must be careful not to mix in claims that (the late) Elvis Presley is actually a window-cleaner in Oklahoma, that John Kennedy was actually murdered by a hail of bullets made from ground glass which shattered when they missed, that aliens from other planets regularly contact world leaders, etc. which must be very closely and sceptically examined (debunked), with the far more reasonable (by comparison) claims that certain groups of, predominantly men, plot, and sometimes succeed in gaining power for themselves by dominating governments, churches, institutions and whole nations.

By comparison, if I were to, in one sentence, dismiss faith healers, anti-gravity, the wealth trickle-down

effect, anti-matter, reincarnation, astral travel, demonic possessions, subatomic particle theory, claims the moon is made of cheese and that the earth is circa six thousand years old, even the most sceptical would think that I was being hasty, especially given that most of the scientific community supports at least some of the theories listed above.

Don't make the mistake of appearing to dismiss claims which are physically, politically and historically possible, and in some cases provable, (the second school) by confusing them with ridiculous claims designed to make money for the person who dreamed them up and who wrote a book about it (the majority of the first school's claims).

**Ben Frayle  
Northcote VIC**

Sir Jim R Wallaby, in 'Karl Marx's Grave a Communist Plot - OFFICIAL' (Vol 11, No 1), addressed this issue in some depth. While he agreed that there were many conspiracies around, he suggested that most of the problems ascribed to major, world-wide conspiracies were better accounted for by the normal operations of bureaucracies. I have no reason to doubt that he was correct. **Ed**

## Planetary Sex

Thank you for my 1st issue of *the Skeptic*. And even before I have finished my first 'letter to the editor' comes a 2nd issue. Thanks again.

Particular thanks to Barry Williams for his 'Planetary Influences'. (Vol.12, No.1) I know nothing of the mechanics of astrology; thankfully Barry's article has not sought to enlighten me. And I do appreciate his exposition on astrology's latter-day use, or non use,

of the various celestial bodies that make up our present night sky.

But coming so soon after I'd received my copy of the latest issue of *AEON – A Symposium on Myth and Science*, with the enclosed essay 'Intimations of an Alien Sky' by Dwardu Cardona, I was immediately aware that Barry's article was a bit skimpy on information regarding the earliest references to the planets.

Barry states:

"We owe the names of the five 'classical' planets to the Romans who named them after their gods who, in their turn, owe many of their characteristics to the equivalent Greek gods. ... There is no reason to suppose that the Romans saw the planets as the actual gods whose names they bore .."

This may well be true for the later Romans. It would seem, however, that for the early Greeks it was an entirely different matter. Dwardu Cardona, in 'Intimations of an Alien Sky', pages 8 and 9, shows that, in the earliest times, the Greeks did identify the planets as the actual gods whose names they bore.

He also shows that Aristotle, among others, reminded the later Greeks of this fact.

Barry's listing of the characteristics of the five planets – jovial, mercurial, venereal, martial and saturnine - brings up a curious anomaly – the inherent 'sexism' of these five terms.

Most ancient cultures, and nearly all modern cultures, consider Venus - whether as god or planet - to be female. Why? Planet Venus is a speck of bright light in the night sky. Does it look especially feminine? Why did the ancients insist that it was?

The meanings are incorporated into the earliest astronomy, for the astronomers, of necessity, adopted the conceptual 'background' to the

names, along with the names themselves.

When the names were adopted as astronomical terms they may well have been quite 'neutral,' or as 'neutral' as the early astronomers could get. (Apart from the aforementioned ebullient, flighty, sexist, warlike lethargy, etc.)

In all cultures, all over the globe, Mars – whether as goddess or planet – is considered to be male. Why? Planet Mars is just a speck of bright light in the night sky. So also Saturn, Mercury, Jupiter. Do any of them look especially masculine? Why did the ancients insist that this, too, was so?

Even to write, as I have above, — Mars – whether as goddess or planet – feels odd. Perhaps people won't understand. Perhaps I had better change this line to - Mars...god. - And while I am about it, adjust the other one to - Venus...goddess. Venus – the planet - is, of course, an it.

If I were to speak of "the Evening Star shining her light as a guide to the mariner," the pronoun would be accepted as poetic licence. But using the English language just how much 'poetic licence' do I have for "the Evening Star shining his light" or "Mars shining her light"?

Why was/is it so important to our various cultures that planet Venus, to the virtual exclusion of the other visible planets, be considered female? Or to ask the same question the other way around: Why was it so important to our ancestors that all the planets, with the exception of Venus, be considered male?

I know of some exceptions to this general 'rule': some of the Mesoamerican cultures, for instance, consider Venus - as Morning Star - to be a particularly malign male character.

I would be extremely grateful if a Skeptic or two could provide other

exceptions; evidence for Mars – whether god or planet – as female would be particularly welcome.

The astronomers, of course, would not be influenced by any 'sexism,' ancient or modern, inherent or not. The mythologists, on the other hand, cannot avoid it. Most of mythology seems to be sexism rampant. But just where do the astrologers fit into the scheme of things? How do they rate for 'scientific neutrality'? Do they, perhaps, treat Venus as a signifier of male characteristics, or recognize Mars as a predominantly female influence?

**Allan Beggs**  
**Bondi Beach NSW**

I am no mythologist but I think I can assure you that astrologers would be extremely unlikely to attribute male characteristics to Venus or female ones to Mars. As a group, they are nothing if not conventional, and would generally run a mile before being found guilty of the sin of originality.

As to the curious licence offered by the English language, just think of that famous WWII British battleship King George V – masculine in every respect, yet invariably referred to as 'she'. **BW**

## Clairvoyance

So, you blokes reckon that there's no such thing as a fair dinkum clairvoyant, eh? Well, we have one with us here in Melbourne; James Gerrand is his name, and the proof of his amazingly accurate prediction is carried in your very own pages.

If you read *the Skeptic*, Vol 12, No 1, you will find on page 7, an article entitled 'Crows Train at Blistering Pace'. This tells of a particularly fat-headed idea within the Adelaide Crows Football Club which saw one

player treated for third degree burns after attempting a firewalk to demonstrate the power of mind over matter.

Now turn to *the Skeptic* Vol 4, No 4, and on page 16, here is the amazing Gerrand who was able to accurately predict this event, seven and a half years before it happened. In his article 'Firewalking at Geelong', one paragraph reads, "Motivating football teams to victory is a growth industry in Melbourne. Perhaps we shall see firewalking being used to gain a premiership flag. But the firewalking part is not likely to change what is known about the effect of heat on human tissue."

Only the churlish could possibly complain about the slip-up between the prediction of Melbourne, and the event in Adelaide. After all, both places are in the south of the continent, and each is on a species of river. Proof positive, my dear sir.

**Geoff Schmidt**  
North Fitzroy VIC

## Greenhouse

The Greenhouse Effect is not an urban myth, but yet another case of Grand Scientific Fraud. This is a type of fraud in which virtually the whole Scientific Establishment gets behind some falsehood of political dimensions and prevents the publication of sceptical views and has the grants of sceptics cut off. Other current examples of GSF are the myth that the HIV virus causes AIDS and the cholesterol myth.

A standard trick in such frauds is to pretend that some undisputed scientific fact is synonymous with what is no more than a wild speculation. For example, the Greenhouse Effect, which is an undisputed fact, is presented as

being interchangeable with Global Warming, which is a disputed speculation. Likewise the fact that the HIV virus can infect humans is turned into "it causes AIDS" and is called the AIDS virus. The fact that high blood cholesterol is a dangerous clinical sign is presented as being caused by cholesterol in the diet, which is absurd!

The MSG myth is yet another category comparable to the ptomaine poisoning scare which started in the 19th Century. In such cases, a casual speculation is widely promoted by the media as an alarmist fact, which sells a lot of newspapers, but the following scientific work, which proves there is nothing in it, is ignored, as this information would only discredit the media.

I think GSF is the greatest danger we face. It is a disease with staying power, as is exemplified by the lifespan of Piltdown Man. There are rather a lot of them still going strong. However, urban myths are merely harmless practical jokes, recounting tall stories about one-off, old events. They do not promote science or pseudoscience theories.

**Keith Rex**  
Paddington NSW

## Genesis

At the 1992 Skeptics Convention a paper entitled 'Do it yourself guide for finding Noah's Ark' was distributed. In it, the author quoted *Genesis* 7:2 "God told Noah 'Take with you seven pairs of each kind of ritually clean animal but only one pair of each unclean animal'" and then erroneously concludes, "It is clear that the flood took place after God had spoken to Moses" – about the dietary laws.

The King James Version translates *Genesis* 7:2 as follows, "Of every clean beast thou shalt take to thee by sevens, the male and the female: and of beasts that are not clean by two, the male and the female." Note how 'clean beasts' in the King James Version becomes 'ritually clean animal' in a more modern version (Bible, Today's English Version).

According to the 11th Century Jewish scholar, Rashi, clean beast means 'of every beast which at a later period would be considered clean by the people of Israel'.

However, the former Chief Rabbi of the British Empire, Dr J H Hertz thinks more probably the distinction between clean and unclean in this passage is based on the fitness of the animal to be used as a sacrifice to God; see *Genesis* 8:20, where it is narrated that Noah offered upon the altar 'of every clean beast, and of every clean fowl'. God required additional clean animals for sacrifice on leaving the Ark. Furthermore, from the phrasing of verse 7:2 (which differs from verse 6:19) it can be shown that the command is referring to Noah's domestic animals. Sheep were clean; asses and camels were unclean. (Pentateuch and Haftorah's Ed by Dr J H Hertz, 1987)

Richard Friedman, professor at the University of California, San Diego, and author of *Who Wrote the Bible?* concurs that "clean" means "fit for sacrifice".

The word 'ritually' is not to be found in the Hebrew text of *Genesis* 7:2. The Bible defends itself.

Perhaps the word 'ritually' was deliberately inserted into the author's Bible by gremlins to deceive him into believing that the Flood took place after God had spoken to Moses.

**Albert Braunstein**  
Carnegie VIC

## Stan Rides Again

I was interested, and somewhat troubled, to see Kate Orman's piece in *the Skeptic* (Vol 12, No 2), granting Stan status to the Creation Science Foundation.

After all, I have a certain responsibility for Stanism, and I feel that we cannot just let anyone in. I mean, there are Standards. However, Stan is nothing if not reasonable, so I decided to re-evaluate the CSF, before pronouncing on Kate the ultimate sanction of Stanism, that of Stanathema.

The CSF publications provide considerable material suitable for revue and I now realise that the CSF has long been Stanish. They have published so much wondrous material it is difficult for anything to really Stan out.

But, *Creation ex Nihilo* Sept–Nov 1989, in one of their 'wonders of creation' articles, Wolfgang Kuhn states that the 'common stinkhorn' fungus *Phallus impudicus* is called *impudicus* (shameless), merely because of its odour! This view is contraindicated by a photograph in the article of the up-stan-ding item. And *Creation* is a 'family' magazine.

Since I mentally accorded the CSF Stanic status, they appear to have accepted the duties implied by this honour. The June issue of *Prayer News* devotes its front page to the recent death of Isaac Asimov. From the tone of the article "Asimov meets his Creator! 'And whosoever was not found written in the book of life was cast into the lake of fire'", some people may infer a lack of Christian Charity in the CSF. Or even a vicious, evil, mean, malevolent, spiteful, malign, malicious, bitter,

twisted attitude, suggestive of something slightly lower on the food-chain than a dung-beetle.

I believe that the CSF has willingly accepted the odium heaped on it because it takes its duties of Standom seriously. It realised this was the only way of telling its unevolved followers about the achievement and beliefs of Isaac Asimov, who was the brother of Stan Asimov.

**Allan Lang  
Colonel Light Gardens SA**

## Rignac

Further to Alan Towsey's comments on Jean Rignac, it might be worth keeping the file open a bit longer. It seems 'Europe's most accurate astrologer' is diversifying. He, or at least one of his incarnations, has become expert in the subject of weight loss.

First, let me elaborate the results of my sampling of his astrological talents. Seeing his full page ad in the *Good Weekend*, I felt compelled to test his expertise as an interesting little adjunct to my new age research. Wishing to take advantage of his free astrological advice, I replied in the names of eight friends and colleagues as well as my own, giving vastly different dates, times and places of birth for each. For comparability purposes, we were all experiencing the same problem – money worries. The other choices were 'love problems', 'loneliness' or 'other problems'. The responses started coming in and I was delighted to find that Monsieur Rignac lived up to my expectations. All our readings were exactly the same. We all received the same letter with only our star signs changed. It seems the cause of money problems is

universally invariant. Two or three years ago we were all given bad advice by some person, which resulted in our missing a great opportunity which would have changed our lives.

OK, I thought, I'll see if there is a different causal mechanism governing other problems people are experiencing. More letters were sent off utilising Jean's other categories of problems. The replies flooded in once again. But still the cause of our problems remained the same. Each of us severely distressed by love problems, loneliness, chronic constipation or the loss of a family pet ended up in our predicament because of a person's bad advice two or three years ago. Was it the same person, I wondered, on a mission to stuff up all our lives?

Although the message remained the same in each of our readings, Jean did at least change the wording slightly on the front page of his four page offering. Each problem category had a different arrangement of the words saying the same thing. His computer allowed him to produce e.g. a 'love problems' version with appropriate star sign inserted. Each letter bore his computer coding in the top left hand corner, eg CAP/LON (Capricorn/Loneliness) or LEO/OTH (Leo/Other Problem). There was only one substantive difference. The 'money problems' version should have included a few lines beginning "Your finances are currently in a precarious state". However, astrologers don't always make good computer programmers and this insight found its way into the 'love problems' form letter.

While friends and colleagues remained patient and passed on to me, not just one letter from Jean, but also his reminder package, I now have many angry people waving

envelopes in the air screaming, “This is you. You’re responsible for this”. Jean has struck again. This time it is a weight reduction book being flogged by Jean Carpentier, who just happens to have the same address as the first Jean: 10 Stubbs St, Auburn NSW.

This truly remarkable book tells how, if one eats “negative calorie foods” which “are turned into energy, not fat”, these foods are able to “burn off more calories than they add to the body”. Negative calories “burn off the fat and drain it out of your cells”. This is clearly one of the most significant scientific discoveries of the century because, “you may eat anything you like” and the negative calorie foods “will literally ‘eat away’ at your fat”.

The book, *Foods That Make You Lose Weight* sells for \$34.45 and comes with a free gift from Jean Carpentier. As with Jean Rignac’s predictions, the money is refundable in full if not completely satisfied. I am not, however, prepared to take the risk.

Meanwhile, I and a number of ex-friends await the next round of junk mail from Carpentier/Rignac/Whoever Next Enterprises. Their motto: Diversity and Innovation – Keeping the Spirit of Capitalism Alive.

**Jan O’Leary**  
Lilyfield NSW

## Micro-myths

Talking about myths (Vol 12, No 2, p 20 and Footnote 4 p 22);

Quote: “of course the dog gets cooked from the inside out...” MYTH! I quote from P 12 of the Sharp Carousel Microwave Cooking Guide which came with my microwave oven. Under the heading “Microwave Myths”, five myths are

listed and #1 reads, “Microwaves cook from the inside out. They certainly do not. Microwaves penetrate from the outside to a depth of about 2.5 cm ...then the heat moves to the centre by conduction as it does conventionally.”

The second myth which this list explodes is equally common it seems. Again I quote, “You can’t use metal in a microwave oven. Also metal reflects microwaves ...”. The Magnetrons in most microwave ovens are designed that they cannot be damaged by the use of metal in the oven.”

So there.

**Daryl Haslam (MIE Aust)**  
Glen Iris VIC

## Free Will I

Thanks, John Fitzgerald and Andi Stevenson for your responses, but is that all that readers of *the Skeptic* can say about whether or not humans have free will? Surely this is one of the most fundamental questions that can be asked, and thus the answer we arrive at is of the utmost importance. As far as I can see, the answer is clear and unavoidable for the sceptic: free will is an illusion.

There is no scientific evidence of any non-material ‘mind’ which would allow for free will to be expressed. The ‘ghost in the machine’ is just that, a ghost – and what sceptic believes in ghosts?

Our actions, even our thoughts, can only be a product of internal chemical reactions. We are not able to choose because there is nothing beyond our chemistry with which to make choices. We may want to believe that we are able to exert our will and it may appear that we can actually do so, but wanting and appearances prove nothing. After all, many people want to believe there

is a God, and many claim that it appears that a God must exist, but no sceptic would accept that as proof, would they?

Not until there is some hard evidence of an immaterial mind (a logical impossibility), can sceptics be anything but determinists. If that is the case, then surely the game is up. What is the point of trying to change anyone’s ‘mind’ about anything? Unless of course we learn how to chemically manipulate each other. Simply talking to, or providing written material (the Skeptic) for people, with the intention of seeing a change occur is a waste of time.

Astrologers, creationists, new agers and even sceptics can’t help being what they are. Maybe this realisation should cause sceptics to be a little more humble – but then of course, what do we mean by ‘cause’?

If the foregoing ‘thinking’ is nonsense, could someone please set me straight. I guess that if it is correct, then someone won’t be able to stop themselves from responding – assuming that the appropriate chemical combination happened to occur in their brain after reading this.

To answer my own original question – in a sceptical framework, humans should not be held responsible for anything they do. Open the prison gates!

**Graham Preston**  
Annerley QLD

## Free Will II

A suggestion for Graham Preston (Letters, Vol 12, No 1). Please read *Beyond Freedom and Dignity* by B F Skinner.

**Mercedes Quintana**  
Executive Director  
Alternativa Racional a las  
Pseudociencias  
Madrid Spain

## Whither Materialism?

I write in order to ascertain the current status of a strict materialist philosophy among my fellow Skeptics. As a teenager, I referred to myself as an atheist/humanist but, after much reading of SJ Gould and others, I found the anthropocentrism inherent in this position unsustainable.

Materialism, which says that everything in the universe (including the workings of the human mind) is explicable in purely physical terms (i.e. matter in motion), struck me as the most perfect sense I had ever heard.

Obviously a person holding religious or spiritual beliefs couldn't accept this, but I have been surprised to find that even some dedicated sceptics seem to draw the line at human emotions or 'feelings', specifically 'Love'. Certainly this is a potent and much cherished emotion, but I don't think a distinction can be made between this and any other activity of the human mind (read brain), being electro-chemical impulses.

To me, accepting the total physicality of this or any other experience doesn't diminish the value of it, but merely describes it.

Is it possible to be a skeptic and still accept that something can transcend the physical? I don't believe so, but I would be very interested to hear any submissions to the contrary. Supporting evidence would of course be required for any assertion of the existence of such transcendent phenomena.

**Danny Witmer  
Redfern NSW**

## A Quibble

I am forced to take issue with you and that Williams fellow. In his article on page 6 of your Winter 92 edition the fellow has the effrontery to say, in the second paragraph, that something was a "rather unique approach".

Impertinence, sir, damned impertinence.

A thing is either unique, or it is not. There is no degree of

uniqueness, so the use of a qualifying adjective before the word "unique" is utterly wrong, sir.

Can't think what has happened to Wallaby. Fellow used to be very good at English when we were together in Poona in '48. Pity he isn't being used in an editorial function...he'd make you chaps hop, by Jove.

See that it does not happen again, sir. I may be getting on, but I can still swing a dashed effective horsewhip.

**Hurtle Gunboat-Cheese  
(Maj,Ret'd)**

---

### STOP PRESS

## Ark Un-rediscovered

Alan Towsey

Regular readers of *the Skeptic* may recall my review of David Fasold's book *The Discovery of Noah's Ark* in Vol 11, No 4. They may also recall the accounts in the last issue of a lecture by 'arkaeologist' Mr Allen Roberts.

According to an item by Dr Peter Pockley in the *SMH* (July 27), it appears that Roberts last May published a booklet entitled *If This Is Not Noah's Ark, Then What Is It?*, in which he is alleged to have reproduced material from Fasold's book without attribution or permission. Again according to Dr Pockley, Fasold contacted Roberts stating that he was "determined to sue for plagiarism and breach of copyright". When he refused to accept Roberts' explanation and apology, Roberts rang him to ask that he, as a fellow Christian, drop the charge. Fasold, however, replied that he had since "lost all faith in Christianity and abandoned fundamentalism in all its forms". "This search has been rife with hoaxes and hucksters since it began

in 1960" he said.

He now accepts that the site in question "is most probably a geological syncline, as the scientists opposing Roberts have concluded, but suggests that 'someone might have put something in it to give it credibility – a 3,000-year-old hoax'". According to the *SMH* item, "he has now established an anti-Ark group, Noahide, and publishes newsletters on the Ark claims. So much for the 'iron pins' at regular intervals holding the 'timbers' together, discovered by modern wizardry during Fasold's investigations! All the criticisms voiced in my review would now seem to be acceptable to him.

But at least all this does show that it really is possible to convince a fundamentalist of the error of his ways!

And what of Roberts? He has returned to Turkey to investigate further the geological formation which, in his blind faith, he still believes is the fossilised remains of the mythical Ark. ■

## 1993 Subscription

In the next issue (Vol 12, No 4), we will enclose a Renewal Form for all those whose subscription terminates with that issue. If you check the label on this envelope you will notice, after your name, a number in brackets. [92] means that your subscription falls due after the next issue. Any other number means that your subscription is continuing.

Now for the bad news. We have maintained a price of \$18 for the past three years, however, changes made by Australia Post in the rules and costs for Registered Publications and increasing costs of printing have forced an increase upon us.

At the National Convention it was decided that the subscription rate for *the Skeptic* will be increased from the beginning of 1993 to \$25 per year or \$65 for a three year subscription.

We regret that this increase is necessary but we believe that in value-for-money terms our magazine has substantially increased in both quality and quantity during the three years since the last price rise. During this time the average size per issue has increased from 35 pages in 1990, 44 in 1991 to 52 in 1992.

One avoidable increase is caused by the cost of sending back issues to subscribers who renew after the first magazine of the year has been printed. For this reason we offer, as an encouragement to all our loyal readers to renew their subscriptions on time, this special unrepeatable offer:

**All one-year subscriptions renewed before January 31 1993 will be \$22.**

## About our Authors

**Dr Stephen Bassler**, a hospital administrator, is a member of the Victorian Committee and is President of the Australian Council on Science and Health.

**Dick Champion** is Emeritus Professor of Psychology at Sydney University and Treasurer of the National Committee. As far as can be ascertained, there is no significance in this juxtaposition.

**Dr Clive Coogan** is a CSIRO scientist, inventor and commentator on scientific affairs.

**Nick Cowdery** is a Sydney QC who is active in the field of human rights. As the possessor of a Mephistophelean beard, he exhibits monumental gall in referring to others as 'hirsute'.

**Harry Edwards** is the National Secretary co-editor and chief investigator for Australian Skeptics. If that is not enough, he also travels a lot.

**Dr William Grey** is a philosophy lecturer at the University of New England and is a former President of the Canberra Skeptics.

**Dr Colin Groves**, also a former President of the Canberra Skeptics, is an anthropologist at ANU. He is widely believed to be the original Groves of Academe.

**Peter Johnson** is a professional cartoonist from Adelaide. He is emphatically not psychic.

**Adam Joseph** is a producer/ writer with his own AV production company, a professional broadcaster and a member of the Victorian Committee.

**Colin Keay** is a Professor of Physics at the University of Newcastle, an astronomer and President of the Hunter Region Skeptics. He is believed to travel on a New Zealand passport.

**Peter Macinnis** works at the Australian Museum and is a prominent commentator on science in the electronic media.

**Tim Mendham**, member of the National Committee, is a warm and wonderful human being, or so he would have us believe.

**Barry Price**, author of *The Creation Science Controversy*, is a former science advisor to the Catholic Education Office.

**Phil Shannon** is a public servant, for which he is forgiven, with a long standing interest in the environment.

**Alan Towsey** is a retired teacher and linguist with a deep interest in Biblical exegesis. This is not invariably fatal.

**Sir Jim R Wallaby**, of whom the less said the better.

**Barry Williams** would like to meet a psychic healer with an infallible cure for arthritic knees, but does not hold out much hope.