New Zealand Skeptic

Newsletter of the NZCSICOP (inc.)

March 1990
Number 16

Contents

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N.Z.C.S.I.C.O.P. CONFERENCE

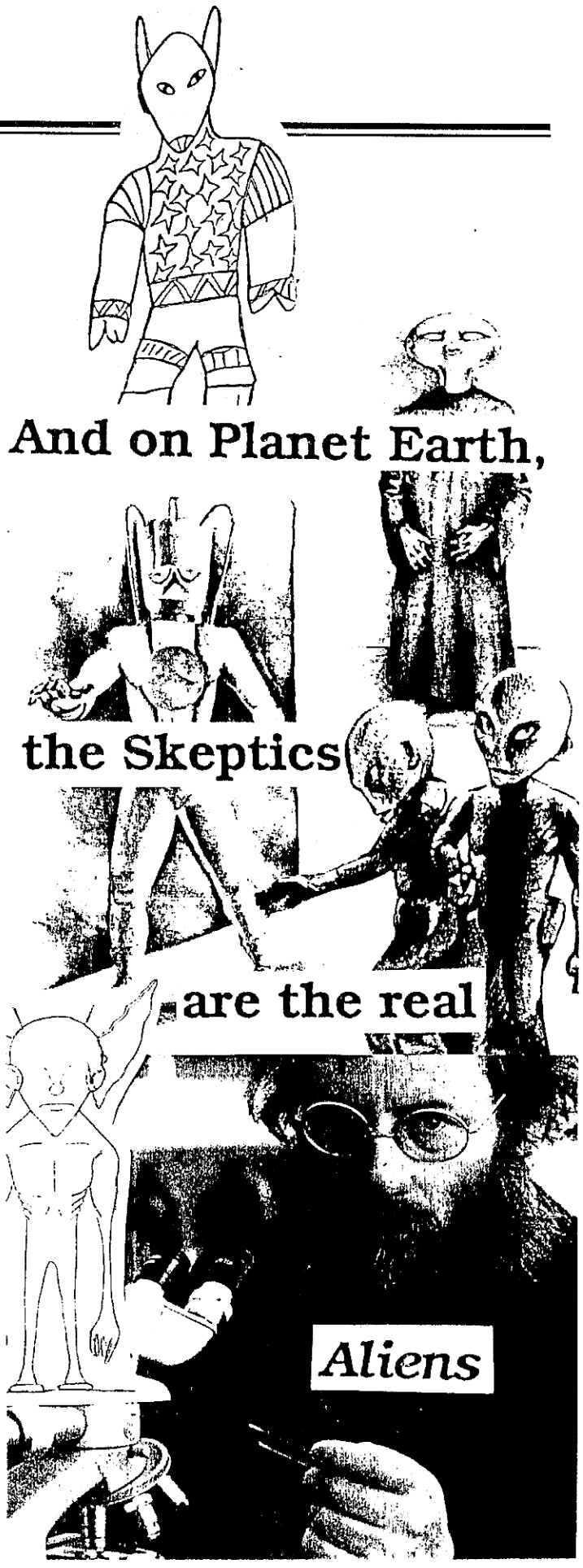
17–19 August 1990,
Massey University, Palmerston North

Paranormality for Fun and Profit

Readers are invited to submit **amazing**, never-before-revealed evidence that there are more things in heaven and earth than Skeptics are normally prepared to admit: e.g.

The Holy Shroud of Christchurch
Un-retouched photographs of the Lake Taupo Monster (Poie).

The evidence should be submitted at the conference. A small, but tangible, prize will be offered.



In memoriam...

The Skeptics have been saddened by the deaths of two of our most lively and engaged members.

Ray Carr, who was a founder of NZCSICOP, will be remembered as the most sunny and pleasant of human beings, one of the world's natural, authentic gentlemen. Long active in causes promoting rational, free thought, Ray was eager to put his weight behind the Skeptics when David Marks suggested the formation of the organisation in 1985.

Ray was a cheerful presence at every one of our national meetings and most recently had been taking pot shots at the offering of courses in astrology and other rubbish under the official imprimatur of adult education. Our heartfelt sympathies to Barbara Carr. Ray will be missed by us.

Keith Lockett, another eager member and editor until last year of the *New Zealand Skeptic*, died suddenly of heart failure in Thailand on March 30th. Keith had been working as a volunteer teacher at Montfort College, Chiang Mai, with his wife, Joan, since September. At the time of his death, Keith was cooperating with a local teacher to translate into Thai a physics textbook he had written at the behest of the College. He was also avidly learning Thai himself.

Keith, who had long taught physics in New Plymouth, was devoted to uncovering delusions of pseudoscience and New Age nonsense. A sharp wit and wide knowledge, coupled with a delightful impatience for intellectual garbage, made him a real asset to the New Zealand Skeptics.

We mourn the loss of these two friends and supporters.

—Denis Dutton

State-sponsored baloney

P.A.B.

Ray Carr was a fine example of an active Skeptic.

Last year he noticed that the prospectus for East City Community Education (Auckland) offered a course in astrology. The prospectus even claimed the course leader (Robert Phillips, contributor of the Astrotrends column for More magazine) worked with "a scientific background".

Concerned that the public education system was being used to propagate pseudo-science, Ray wrote to the Eastern Secondary Schools Board. Although a reply was drafted on the Board's behalf by the local School Community Education Advisory Committee, the board decided to ignore Ray's letter, and despite a telephone call refused to discuss the matter further. (The board was later disbanded under the new management scheme for schools.)

Ray's follow-up brought the following elucidation from the then Department of Education:

> Since 1987 it has been recommended that School Community Education Advisory Committees be established to assist the programme coordinators in setting up the programme and evaluating its progress. These programmes are then approved by the Board of Governors. There is no restriction on what classes are offered. If the demand is there to satisfy an expressed local need then the school has some responsibility to meet that need.

The official line "If the demand is there...the school has some responsibility to meet it" is questionable. What is meant by "*some* responsibility"? Would a demand for a course in witchcraft be met by a school?

Not just as Skeptics but as citizens, we have a responsibility to see the education authorities uphold high educational standards. This means ensuring that course content gives satisfactory coverage to factual critiques. Furthermore, misleading advertising should not be used.

Ray sent us the 1990 prospectus for Penrose High School Community Education which includes not only "Astrology for beginners"—and calls astrology "an exact science"—but also "Natural Health Therapies".

Readers aware of similar instances are urged to follow Ray Carr's example and take up their concern with the school board and local school community education advisory committee. Please copy us your letter. New Zealand Skeptic wishes to gauge the incidence of state-sponsored pseudo-science in New Zealand.

Note: In Skeptic No. 13 I criticised some of the courses the Wellington WEA was running. I am pleased to report I find its 1990 Winter Programme completely acceptable.

On becoming a confident, well-adjusted busboy...

Denis Dutton

While critical thinking is an essential part of the defence against pseudo-science, general knowledge also has an important role. The more knowledge you have about more things, the better equipped you are to detect the propagation of nonsense. However, the authorities may not be so concerned.

The following item is based on a broadcast on National Radio's Sunday Supplement on 13 August 1989.

There's something I admire about *Sale of the Century*, and I don't mean its tinsel consumerism. I like it for the way it rewards you for knowing lots of *little* things. Not vitally important things, just obscure tit-bits of knowledge—the capital of Bangladesh, or the composer of *Rigoletto* (starts with a "V"!).

In a way, the show addresses the fabric of our intellectual lives. As we're educated and as we live we learn facts—the meanings of words, bits of mathematics, geography, history, medicine, the inventor of the phonograph, the current president of Argentina. Our memories are a buzzing concatenation of such notions, with the Battle of Hastings indexed alongside our next dentist appointment, where people such as our standard-one teacher cohabit with Queen Nefertiti, Richard Seddon, Moby Dick, and Philip Liner.

And this isn't just trivia: being able to understand a newspaper report on Japanese politics isn't trivial, and neither is knowing a thing or two about the current Japanese government. Outside the world of television quiz games, knowing about these things probably won't make you rich, but it will make your mental life richer.

In this regard, I was very disappointed to read some recent remarks made to a gathering of school principals by the new Chief Executive Officer of the Ministry of Education, Maris O'Rourke. She told the assembled educators that "education" as she put it—and I quote—"must concentrate on the growth and development of people *rather than content, subject matter or maintenance learning of current knowledge*." When the shock wore off, I was struck by a sense of *déjà vu*. This is the same educational theory that helped to cause the disastrous recent history of education in the United States—a history which has seen a relentless decline in American academic abilities for three decades. A recent cartoon in the *New Yorker* made the point: a 1960s quizmaster asks a contestant "What's the capital of Wyoming?" By 1980, it's "What's Wyoming," while by the 90s he's lucky to find a contestant who knows what planet we're on.

Such a decline in general knowledge is something New Zealand cannot tolerate. New Zealand needs for its future a populace that is literate, numerate, and technologically *and* culturally sophisticated. We're adrift in a world that's hardly aware we exist and doesn't much care. We need people who know computers, who know foreign languages, people whose technical and business know-how is held against a larger backdrop of political, historical, and cultural knowledge. The creative and productive choices of the future—the decisions that will keep our country an attractive place in which to live, and a competitive player in the commercial markets of the world—these choices will have to be made by people who *know* a lot—and I mean, educational theories aside, a lot of *facts*—subject matter, content, and current knowledge.

It is one of the most tiresome cliches of educational theory that it is the job of our schools to teach people fulfillment and confidence. Wrong! It's the job of our schools to give young people a knowledge and know-how that they can be confident about.

It's a scary world out there, and if we don't demand internationally competitive levels of skills and knowledge from the young women and men who will take this country into the next century, we're headed toward third-world status. Oh, our kids will make happy, confident people—but they'll be, as Stuart Macmillan has written, happy, confident busboys and waitresses in Japanese-owned hotels.

Actually, as a teacher, I find that people like knowing things. Who doesn't get just a small charge in knowing the right answer to a *Sale of the Century* question? Knowledge is a good thing—why, it's even fun. But how can we convince the Ministry of Education?

A Skeptical logo

The above is a suggested logo for NZCSICOP. It was designed by a Wellington Skeptic, Hugh Young. Hugh has provided the following commentary:

A Kiwi (New Zealand) uses science (a microscope) to examine paranormal claims (represented by the Greek letter psi) and they evaporate, vanish, or—if such is your belief, and this snapshot can not indicate direction—they become more substantial.

And on Planet Earth, the Skeptics are the real *Aliens*

Matt McGlone

A talk given to the 1989 NZCSICOP Conference, Christchurch

Two years ago, at the Wellington Conference of this august society, I presented a talk detailing my harrowing experiences with the archetypal occult science—astrology. In the course of that talk I made a plea for us to better understand the needs, hopes and wishes of those who reject the saving grace of logical thought. It was my opinion then that unless we understood and addressed those deep and often unarticulated motivations we were simply, and rather self-indulgently, wasting our time.

Whenever possible, I like to take my own advice. As a result I have spent the last two years idly flicking through magazines, reading novels, watching films, watching TV, lying staring at the ceiling and thinking about Life—in other words, doing research on the problem. And I'm here today to—in the words of professional motivators, ministers of religion, and caring people of all stripes—I'm here to *share* my preliminary findings with you.

I've found in the course of my research that it is just as important to know who we are as it is to know who they are. So, I'll spend almost as much time talking about us as I'm going to spend talking about them. Even on the basis of this short discourse it is obvious that I'll need a term both for them, and for us. And this I find particularly difficult because we are used to thinking of ourselves as perhaps a little brighter, a little more educated, a little more self-motivated than the average but, in all essentials, pretty much one with all humanity. Now this would have come as a great shock to most of you if my title hadn't revealed all (due I might add to Denis Dutton's insistence on the sensational—a little weird, don't you think, in a Skeptic?), but it's not them who are strange, but us. Now this insight pretty much dictated the term I'll use for the Great Unwashed, the Gullible Consumers of Quackery, the supporters of Astrology, Colonic Irrigation, Herbalism, Pesticidiphobia, UFOs, and the vague feeling that there must be something out there, somewhere, or **it doesn't make any sense, does it**? These unfortunates are quite naturally called the *normals*.

And then there is the rest; us, in other words. What are we? Let's attempt a short description.

We are high minded, scientifically literate individuals, who look about us and see that the world is full of error and delusion. Not only is there deliberate deceit and sham—sometimes done for gain, but more often just for personal gratification—but there is mass ignorance of the very fundamentals of the world about us. There seems to be no end to the silliness which assails us on every side. And our preferred solution is education. Education—let's call it Salutary Education—by exposure of the deceitful and misguided, and Education of the Mass to a Higher Level. To us the truth is liberating: expose the people to it, and it will prevail.

It is quite obvious from this brief description what we should call this group: the *aliens*.

In this brief presentation I'll look at what *normals* are, how many there are of them, and why, in essence, there is little hope for them. I'll then try and picture us as the *normals* see us; why we are *aliens*, in other words. And finally, I will talk about what we *aliens* can do to help these poor *normal* earthlings who are so obviously struggling without us.

The *Normals*

So, let's do what we do best—examining in a caring way the gullible and ignorant public. Being scientifically literate is certainly not an absolutely necessary part of being *alien*, but most *aliens* are, nonetheless. Every so often a survey is carried out of public scientific literacy. This is no mere exploration of views out of idle curiosity; it is a rather transparent device by *aliens* to scare *normals* into providing more money for Science, their favorite charity. Naturally enough, the results are always horrific, and make headlines around the world. But what is this "scientific literacy"? Jon Miller of the Public Opinion Laboratory at Northern Illinois University believes that there are three criteria, three components to scientific literacy:

1. Understanding the scientific method;
2. Knowing its common vocabulary;
3. Appreciating its social impact.

By using these three criteria, Miller estimates that about 7% of the adult population of the United States was scientifically literate in 1979. You probably don't need to be told that most of these scientifically literate individuals were primarily males, older than 35, and university graduates. In 1985 Miller did another study and estimated that 5% of the adult population was scientifically literate, a significant decline, but probably not of any great importance. Miller's point is that scientific literacy is low, and informal, science-based education in the media—which has intensified over the last few decades—has certainly not created an increasingly literate population, and may even have led to a minor decline.

A somewhat larger percentage of the population could be defined as a 'scientifically attentive public'. These are people who are self-confessedly interested in science, would from preference turn to a scientific article in a newspaper, and probably understand enough to enjoy it. I'm guessing here, but I'm sure that this group would probably reject out of hand the more outrageous aspects of the paranormal—such as astrology, UFOs, channelling, etc. This group may make up to 15% of the population, but the definition is more subjective and therefore somewhat hazy. If we assume that all *aliens* are either scientifically literate, or scientifically attentive, we can estimate that aliens cannot be more than 20% of the population, and are probably not less than 5%. I'm not denying that both scientifically literate or attentive individuals are often *normals*, but I make the simplifying assumption that a numerically equivalent number of scientific illiterates possess logical skills which make

them *aliens* nonetheless. So, let's say that the *normals* make up something like 95-80% of the population. What do these mostly scientifically illiterate folk believe in?

You will all be familiar with the depressing lists of topics they haven't a clue about. Something like 25% apparently don't know that the earth goes around the sun once a year; they prefer once a day, once a month or would rather not have to answer trick questions. Most seem to believe that antibiotics are effective against viruses; a very large percentage are convinced that nuclear power stations cause acid rain. There are some bright spots; an impressive number seem to know that hot air rises—almost 98% in fact. But by and large it's enough to make an educator weep.

But, I can hear you cry, when all is said and done, these are just questions. Surely, in practice, *normals* do know which way is up, in an intuitive fashion of course, and one not easily tested in questionnaires.

I'd like to believe it, but it doesn't seem to be true. Some careful experiments have been performed which show that beliefs about the nature of the physical world do affect how one acts. For instance, if you believe in the medieval 'impetus' theory which states that an object continues in its motion until it runs out of impetus, and that it will continue the type of motion imparted to it, you will have problems in situations where this knowledge is important. And this truth can be experimentally demonstrated. For instance, only 50% of a group of university students in one set of experiments could correctly predict the path that a ball whirled about on a string would take when the string broke. About one third believed that the ball would continue curving away in ever widening circles; and another 20% suggested other incorrect options. When tested with an experimental set-up which was dependent on being able to correctly predict how a ball would move after release, about half the students failed. One even volunteered the information that when he had first used a sling, he had broken a window because of his incorrect assumption as to the path of ball. Likewise, when instructed to move over a target and to drop a ball so as to hit it, almost half the students dropped the ball when directly over the target, omitting to account for their own speed. One even deliberately moved past the target before dropping the ball, believing that the ball would move backwards as it fell.

Most of us have never had to take a serious interest in bomb-aiming, so we could perhaps argue that these experiments are irrelevant as far as everyday life is concerned. But in fact, when actual life and death issues arise, the problem seems to be even greater. Just to choose one example. I don't think any of us will forget the unpleasant reaction of many *normals* to AIDS victims. Even professional health personnel, who should have been able to understand the clear message that the researchers were giving, panicked. Interestingly, I believe that it wasn't until *supernormals* like Princess Di and politicians and filmstars were seen touching AIDS victims that the hysteria died down. And the message is clear enough: scientists can burble on all they like, but it's the *supernormals*—and who can be more *supernormal* than Princess Di?—that the *normals* trust and follow.

Lack of knowledge does flow over into behaviour. But, if it **really mattered**, I hear you insist, people would pick up the necessary information and use it. Not necessarily so. I can hardly think of anything which more really matters to the normals than money. Those of you who were here in the years immediately before the 1987 stock-market crash witnessed the unedifying spectacle of an entire nation being taken to the cleaners by a set of flim-flam artists who promised the earth for a one buck share in their particular sandcastle. There were we persecuting harmless UFO addicts, while people who apparently believed that the laws of thermodynamics had been suspended for New Zealand's benefit by unknown forces were nauseatingly idolised in the gutter and serious press alike. The *normals* simply didn't understand what was being proposed: they just knew that they could keep on making money for ever—or at least until they needed it to 'start a new life in Queensland'.

Money madness, or at least hope of substantial gain, clearly is enough to turn *normals* into illogical beasts. For example, most of you would have had the unpleasant experience of receiving a chain letter. I recently received one which announced that it wasn't an ordinary chain letter, largely on the grounds that it would help my child's education. There then followed a perfectly ordinary chain letter, which, instead of insisting that I send 500 dollars to the stranger at the top of the list and seven weeks later become a millionaire (or offering nothing but bad luck for many years if I failed to inflict a copy of the letter on a hapless friend), suggested that I send an unwanted story book to a stranger at the top of the address list, and promised that later I would receive a large number of unwanted story books for my child's delight and edification.

Now, the disappointing thing for me is that I have a fair number of *normals* among my friends. And these aren't your common or garden *normals*, but rather people who have been exposed to the best education the universities of this country can offer. Even so, some of these people haven't grasped the stupidity of chain letters. People who would not steal to save themselves, seem to think that this transparent device for theft is somehow all right. In other words, in spite of being capable of simple arithmetic, they can't apply it. Instead they have hit on the eminently normal concept that it's somehow wrong to do it for money, but it's OK, and will work, if you do it for something worthy, or for teatowels or any other cheap item you may just happen to need a thousand or so of in a few weeks. The very fact that chain letter-like devices, such as pyramid selling, or Aeroplane, or the Champagne Club, have had to be outlawed by legislation, rather than being laughed out of existence, is powerful testimony to the fact that very large numbers of people in this country are not only ignorant, they act as though they are ignorant.

I've worked your basic university-trained *normal* into this discussion. Let's broaden it to include the very pinnacle of normaldom: the *normal* professional.

You will be aware that the courts are increasingly calling on the help of psychologists and psychiatrists to assist with their deliberations. And psychologists and psychiatrists have put on a proper show, claiming that they know something that we don't about the state of some poor unfortunate's mind shortly before he or she came to the notice

of the courts. A recent review of the evidence (American, as usual, but still relevant) came to the following conclusion:

> "Professional psychologists and psychiatrists do not make any more accurate clinical judgements than laypersons. Lay interviewers using standardized questions produced information of equal or greater validity than psychiatrists conducting interviews in their preferred manner. Amount of clinical training and experience is not related at all to clinical accuracy. In contrast, actuarial methods, which eliminate the human judge, and base conclusions solely on empirically established frequencies, consistently equal or outperform professionals and laypersons alike."
>
> [Faust, D.; Ziskin, J. *Science* 241:31–35]

And here is the most telling conclusion:

> "The expert will most likely move the jury further from the truth, not closer to it, given the common tendency for them to overrule actuarial conclusions."

The authors discuss why this state of affairs should be so, and list the following as being depressingly common:

> "Training and experience are unrelated to accuracy. The expert, misled by subjective self-appraisal and illusory belief, and unshaken by massive negative scientific evidence, attempts to persuade jurors to share the same misplaced faith in false markers. The expert's persuasive effort may well succeed because it aligns so closely with common belief."

I wouldn't like you to think that I'm solely picking on psychology and psychiatry, which after all haven't enjoyed a brilliant press over the years. The problems which I speak of extend to all scientifically-based professions—in fact whenever trained personnel abandon sceptical attitudes towards their work and begin to allow other *normal* considerations to predominate. For instance, the NASA engineers and managers were under great pressure to demonstrate that the Space Shuttle programme could be profitable. The long term failure rate of the boosters used to launch the shuttles was 1:50. Despite this, after some internal readjustment of the figures, NASA claimed that the risks of a launch failure were 1:100,000. There are two boosters used per shuttle launch and the Challenger disaster came in right on time on launch 25.

But even simple scientific knowledge which one would think would be routine in their jobs seems to have eluded some professionals. In California a truck recently lost a 20kg bag onto a freeway, and the chemical dust within spilled and began to coat the road surface. The highway patrol had no problem identifying the substance; the bag was clearly marked 'iron oxide'. The freeway was closed, and Hazardous Incident Response team arrived. Once they had checked the dust, established that it was a toxic, and hazardous substance, they called for 'International Technology'—a toxic waste management company. They brought in two 22m long, cleanup trucks, closed the freeway for 8 hours, and completely removed the dust. Later, some doubtlessly *alien* scientists questioned the need for such precautions for, what is, when all is said and done, merely rust. The assistant director of the county's Environmental Health Department waxed eloquent:

> "The next time, the scientist who said it was not toxic can go out front on a rope and check it out without the proper equipment. If we had the same situation again we would shut down the freeway."

Now this statement is very informative about normal attitudes for three reasons:

First, none of the people involved in the cleanup can have had, or retained, anything approaching a 5th form-level grounding in chemistry;

Second, the angry and contemptuous response shows that the official obviously didn't believe that he should have had this sort of information in his head, or at least at his fingertips;

Third, his anger at the know-it-all scientists shows he is not aware of the kind of knowledge that they regard as second-nature. He sees their attitude as not coming from superior chemical knowledge but from a kind of dangerous hubris. He cannot have been aware that most scientists, having seen the label on the bag, and having looked at the metallic dust, would have been happy to have cleaned it up with their hands with no concern at all, indeed if cleaned up at all it had to be.

Why are *normals* the way they are?

I've followed the Skeptic's habitual path up until now, doing what we do best: poking a little fund at the *normals*. But what are they really like? What makes them tick? I'll make a set of assertions about them, and justify them as I go; assertions which I believe contain some clue to their thinking and behaviour.

Assertion 1: Lack of intelligence has nothing to do with it.

Let's face it, they are capable of logical thought, they intuitively can make inductive inferences. If you short-change them, many will realise it (which is more than you can say for many *aliens*). An impressive number can open a car without the aid of a key and drive it away, a feat impossible for most *aliens*. So let's get it clear: absence of logical ability or low intelligence is obviously not the reason why they are ignorant of many things and concepts which *aliens* regard as essential.

Assertion 2: They have Enormous Problems with Probability.

We *aliens* know that a lucky streak is just a run of coincidences; *normals* won't accept this. We'll accept that occasionally there'll be a cluster of birth abnormalities; not so our *normal* friends—they'll be out witch-hunting before the ink is dry on the paper. *Normals* love statements such as 'the chances against this happening are one billion to one' if, for instance, two planes carrying only penguins collided over the Sahara. Us *aliens*, while accepting the statement as a reasonable guesstimate, find it essentially uninteresting, as we know that there are an infinity of improbable things out there waiting to happen.

But we cannot simply dismiss the probability issue like that, as a misunderstanding. The matter is not one of misjudging the frequency of events, but an active process of

modifying what would be the logical probabilistic inference to draw from a given situation. Let me give an example:

> Linda is thirty-one years old, single, outspoken, and very bright. Her university major was philosophy. As a student she was deeply concerned with issues of discrimination and social justice, and also took part in anti-nuclear demonstrations.

Which is the least probable of the following statements:

1. Linda is active in the feminist movement;
2. Linda is a bank teller;
3. Linda is a bank teller and active in the feminist movement.

Now it is an unfortunate fact that most *aliens* perform as poorly in this little test as most real folk. All of you would have realised that the third statement must be the least probable, as no composite statement can be more probable than its constituent parts. But didn't at least some of you, while facing the iron logic of probability, have a nagging voice inside your head saying something like 'Hey, she can't just be a bank teller, read the description. She's got to be a feminist as well.' If we have these sorts of problems with probability, imagine the desperate situation faced by the *normals*. In fact, I tried this test out on some *normals* before giving this talk, and two of them unhesitatingly picked statement 3 as the least probable. More than a little surprised, I asked for their reasons. The answers were along the lines of 'A bank teller is highly unlikely to be a feminist'. Let's face it: both *aliens* and *normals* tend to judge according to types, rather than according to strict logic.

We now draw the most important conclusion about *normals*. Probability plays no part in their thinking; the world would be a better place if it did, but that's the way it goes. So let's move on to our third assertion.

Assertion 3: *Normals* find Meaning in the World.

A passenger plane has crashed. Many are killed. The media, after dwelling as long as is considered newsworthy on the details of the crash, switch suddenly to the totally irrelevant aspects of the disaster. And the irrelevant aspect of the disaster that I most like is all those people who weren't on the plane. All 5 billion of us, minus a couple of hundred. But to be fair, it's usually the handful who were **going to get on the plane, but at the last moment changed their minds**. Now, while I can accept that someone being on a plane can in some way be linked to it crashing, or even that someone who should be on the plane—let's say the pilot—but wasn't, can conceivably be relevant, but I cannot accept that your average passenger who wasn't anywhere near the plane can have anything to do with the matter. I suppose it's the vicarious thrill of the near miss which initially attracts the media. However, there is also the subliminal message to all prospective travellers by air: 'Sometimes if you change your mind about travelling on a particular plane, everyone on it will die horribly, **but not you**.' *Alien* luck being what it is, we are sure to change to the death plane, so the message isn't of much value to us.

It would be a mistake to see this sort of story as another case of the media trying to get a little more out of a disaster by scraping the bottom of the emotional barrel. The media—and never forget this—have much surer instincts than any *alien* ever will. Not getting on the 'death plane' is the story to many people. You see, nothing like that can ever be the result of random probability working away quietly. **They** were tapped by fate on the shoulder, but, for whatever reason, they **cheated** death. They were preserved by a force which varies according to the exact nature of their belief system, but is never called by its true name, chance.

Aliens, trusting in probability, don't seek meaning in random patterns. We bolster ourselves against fate with the comforting thought that the probability of being burnt alive on any particular flight is very low. Not so the *normals*: they get comfort from the fact that they are too young to die; that they are good people, and always say their prayers; or from their rabbit's foot; or by positive thinking; or just by constantly changing their booking so as to avoid the death plane.

But why do *normals* seek meaning in a meaningless universe? What could possibly prompt this strange behaviour? And isn't it dangerous? Actually, the *normal* approach to the world is, in its own terms, highly rational. The reason that we are intelligent creatures is not so we can indulge an insatiable curiosity about the world, but so we can better understand, communicate with, and anticipate the behaviour of, our fellow humans. And that, by the way, is why psychologists and psychiatrists perform so badly: we know it all already, so they have to look bad in comparison.

Now, it is a fact that in the closed world of human relationships and communication that there is precious little randomness. Let me demonstrate. You are talking to an acquaintance who suddenly glances at the wrist which bears her watch. Being a good *alien*, you realise that there are a multitude of reasons why people glance at their watch-bearing wrists. Here are some:

1. A sudden irritation on the wrist made them check to see if an insect had landed.

2. A movement of the head coincided with a random twist of the wrist.

3. They weren't actually looking at the wrist, but at the floor, and moved the wrist slightly to obtain a better view.

4. They have a rule—which they never break—of checking the time at regular intervals.

5. They genuinely wished to know what the time was, but for no reason.

6. They are bored stiff, wish that you would shut up and let them go, but they are too polite to tell you.

Why do we leap to 6 every time? And why are we right 9 times out of 10? Now, this is a trivial example of the meaning-packed interchanges which go on all the time. And it's vital that we get them right. If we don't, life would become unpleasant and difficult.

The truth is that we do not think in terms of probability, because we are primarily designed to relate to other

human beings, beings which we know intimately because they are us. Our reasoning is based on what we know about this person, or this type of person, not on random occurrences, not on statistical probabilities.

A side effect of this propensity is that we tend to use the same personalized, internalized logic when thinking about the external world. A bloody moon, crows flying to the east at dawn, an economic forecast, diseased entrails from a slaughtered beast, a few points movement on the stock exchange: we can see none of these as the random, meaningless events they truly are, but they say something to us, have meaning for us personally. The *normals* live in a world full of patterns, a world suffused with meaning.

Assertion 4: *Normals* believe what they see.

Seeing is very important for communication, even when it is not involved in carrying the primary message. We all have a range of emotional signals which are given by our faces, by our bodies. We lack the measure of control over these signals that we have over our verbal messages. And that's the whole point; we are not meant to control them. The whole idea is that these signals are automatic; they do for us quickly and effectively what would take much longer if it had to be thought out and expressed verbally. In the quicksilver world of human interactions, the subtle but expressive clues which chase across our faces and constantly rearrange our limbs convey by far the most important part of most human communications.

It's become a truism that television predominates in popular *normal* culture. But the reason that it has the power to make or break politicians or to transform our lives is because it deals almost exclusively with the seen not the heard part of the message. Reading is just another way of hearing a message: this is why *aliens* have never taken to television, and flaunt it as a badge of pride that they 'listen to the radio'. *Aliens* discount the visual part of the message and so habitually misinterpret television, and thus are bored by it.

It is worth knowing how the different media forms function, for *normal* and *alien* alike. The principle function of radio is to tell us that something has happened; print gives us the details, the what and why of what happened; but television give us the most important message of all—it tells us what we should feel about the event. Radio alerts us; print informs us; but television moves us.

So there you have your normals. They are not dumb, but they have a great deal of trouble with the concept and practice of probabilistic thinking. They find meaning in the world, and they believe what they see, and they feel what they believe.

Enter the *aliens*

'He neglects his family—pays no attention to his wife, never plays with his children. He has no social life, no other intellectual interests...He bores his wife, his children, and their friends...He is always running off to his laboratory. He may force his children to become scientists also.'

You may recognize yourself in this. It is the very negative impression of scientists gleaned from a survey of 35,000 American high school students, but it applies in its general thrust pretty well to most *aliens*.

You may have seen the image of the scientifically literate or adept in recent films. One of my favourites is *Dawn of the Living Dead*, made in 1980. The dead are rising from their graves, biting large hunks of flesh from the living, who then die, only to rise again and begin the cycle afresh. Like pyramid-selling, it gets out of hand pretty quick. At the beginning of the film, shortly before the collapse of civilization as the living understand it, a TV interviewer is talking to a scientific expert about the situation. The scientist, despairing and exhausted in the face of an intractable situation, still asserts the faith of experts everywhere. 'We've got to remain rational,' he says, 'logical, logical, logical...'. He sinks into hypnotic repetition of 'logical' and the interviewer's voice rises above his: 'Scientists always think in those kinda terms. It doesn't work that way. That's not how people really are.'

And as ever in the horror movie, the scientist doesn't even hear him. 'Logical' he continues, 'we have no choice. It has to be that way. It's that or the end.' And of course, as ever in horror movies, it is the end. I think that the most common image of a scientist—or the archetypal *alien* in our terms—is just that: the logician, who can sometimes come with the answers but, more often than not, is simply part of the problem. But whenever the action begins, the scientist is pushed to one side by the *normal* heroes who understand the real world, the world inaccessible to the scientist, walled off from it by his logical but narrow intellect. When a scientist is sympathetically portrayed, it is transparently a *normal* in drag. A cute marine biologist playing with dolphins, foam sparkling in his downy golden beard; or a glamorous woman, patiently stalking and empathising with the biggest male creatures she can find: lions, elephants—or most resonant of all—gorillas. In other words, just regular guys enjoying themselves with the sorts of creatures which get a good press. It's the pale, bulgy-eyed gook with the bottle-bottom glasses who studies bugs.

Why are we so *alien*?

To some extent it's a dress style: styleless clothes, off the shelf and no gold chains or bone pendants, no flash. But more importantly it's the way we interact; always arguing, disputing, never checking the body language to see if we are mortally offending someone. We are not very visual; we prefer to listen to classical music on the CD, not a rock video on the box. If we write, our publications are notorious for lacking much in the way of visual aids—we just have graphs, charts and tables as a general rule—and we seem to like it that way. We get a bit sniffy about the colour pictorial version with the neat 3-d graphs. But most damning of all, we will not take personal testimony—even if it is laced with emotion and dripping with plausibility—as anything but unsubstantiated anecdote.

My feeling of being a complete *alien* came of age when I was introduced to an accomplished acupuncturist. Being an *alien* I asked her, by way of a polite opener, if she had ever been moved to test the efficacy of her treatment by say, sticking a needle in the toe, when it was meant to go in the ear. I was surprised by the anger both my inquiry and the subsequent conversation elicited. She was devoted to

curing people, not experimenting on them. She had seen that it worked, knew that it worked, and saw no need to bolster her conviction with any further evidence. I replied that this was not enough for me; a little bit of solid testing was what I was after, not personal testimony. This was too much. Everyone in the room united against me. In the course of a relatively brief conversation I had broken every *normal* rule in the book, and established myself as an *alien*. Now, I have to admit that I am extremely sceptical about acupuncture and regard its easy partial acceptance by the medical profession as entirely due to the fact that both groups of practioners always end up sticking needles of one sort of another into people, thus establishing a bond of fellow feeling. Nevertheless, like all of you, I'm ready to be convinced otherwise, and am always disappointed by the response.

The truth is that the idea that their eyes have let them down, that their personal experience is somehow false, is enormously upsetting to normals. **Kill the messenger** is the time honoured unwritten law of the normals, and we must always remember this.

Well, where does this excursion into the murky comparative psychology of the *normal* and *alien* worlds leave us? And what can we Skeptics, as the organized wing of the *aliens*, do to help the *normals*?

1. Admit that you are an *alien*

This is a great step forward. As long as you insist in thinking of yourself as a slightly superior version of a *normal*, you are still in deep trouble. The communication problem will persist. So, every morning, say to yourself 'I'm an *alien* and I'm proud of it'.

2. Give up any hope of correcting the world view of the *normals*

Let's face it. What has at least 50 years of state-funded promotion of the scientific world view in the schools actually achieved? Most people are still pre-Galileo as far as their understanding of how the world functions. Many believe in an all-powerful deity who will suspend the normal workings of the universe to assist a self-confessedly unworthy supplicant. Perhaps 15% of the population can stagger through a popular scientific article with some understanding of the topic.

Think about it. What do we have to show for this immense effort in public education other than a dinosaur craze among the tots; a huge and growing fear of pesticides, fluoride, radiation, and anything artificial in food; and an almost religious belief that whales and dolphins are extremely intelligent, when they are probably dumber than cows? It is the *normals* that force the Department of Conservation—against it's better judgement, I'm sure—to push whales, which are obviously intent on dying, back into the water, or to truck them around the country at great expense, when the logical, (dare I say it) the *alien* thing to do would be to shoot them and get some free dog tucker.

Science does flourish, but only as a handmaiden to progress, and as an icon of the modern age. Look at that sacramental machine of the modern age, the personal computer. The classrooms of this country are filling up with useless PCs because *normals* are convinced that they somehow hold the key to their child's progress. 'Books, what good are they? What the lad needs is a computer.'

3. Cultivate young *aliens*

Every generation through whatever process—faulty genetics, poor upbringing—produces a crop of new *aliens*. Let's encourage them, tender flowers, and help them understand their true *alien* nature and strange, hopeless mission.

4. Remember what impresses the *normals*

Normals like to see things. They believe in people they can trust—people with wideset eyes, full heads of hair, sincere smiles and good teeth. They like a little humour as well—so let them know that 'Hey, we can have a little fun too!' They like a show as well, especially if they can be on the side of the lions.

5. Remember what doesn't impress the *normals*

Anything boring, or anything difficult. It's OK to say something is difficult, but never attempt to explain it if it'll take more than one minute. Meanness and unfairness doesn't impress the *normals*. Everybody is entitled to a say, no matter how stupid what they say is, as long as they don't take too long about it. And above all, they hate whiners.

The Conclusion

Some of you will by now will be wondering where all this is leading, what's the message? So, here's the message.

We can't change them. We can only hope to cut back some of the more outrageous and harmful forms of behaviour they indulge in. Denis Dutton has known this for a very long time, having been brought up in Hollywood. But I actually thought that we would be able to educate the normals. I was wrong. So, let's follow the Great Denis Dutton Principle which is, as far as I can make out, something like this: 'Get at them, but have a little fun while you do it'.

So, let's not be too serious. And let's not be too accommodating. Where some particularly egregious nonsense needs the boot, put it in. My own predilection is not to stop with the merely paranormal farrago. Think of all the other nonsense out there: Macroeconomics; the Breed a Better Baby bunch; the 'Pesticides are all that ails us' lobby; the whole 'New Age' sham; etc, etc.—all ripe for a bit of skeptical rubbishing.

We will surely hear the age-old *normal* cry of 'What harm were they doing?' I admit that in the past I've tended to cringe a bit at this, backed off, and in my most serious voice intoned 'It's only the charlatans and crooks I'm after'.

Perhaps now we can straighten up and say: 'They were doing no harm at all. It's just that they are so silly I thought I'd have a bit of fun with them'.

Postscript

In his afterdinner speech at the conference, media commentator, Brian Priestly, chided us for being middleclass, and for laughing at unfortunates who after all are doing no harm and perhaps getting a little solace from the paranormal. He also posed the question of with what we intended to replace their present misplaced faith.

I personally intend to do nothing about being middle-

class, and, as the above has made clear, will continue to ridicule silly, dangerous beliefs about the world. However, his challenge about what to replace the faith of the *normals* with is a serious one. This is my next project. I've always wanted to found a world religion.

The cover photo of Matt was taken by Green & Kahn and is reproduced with the kind permission of *Service* magazine (State Services Commision).

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Procrustes is alive and well

Bill Morris

I was first conscious that I had met Procrustes about 20 years ago, though I did not at that time know his name. At the beginning of a course of instruction on how to examine medical patients the clinical tutor had us don headphones plugged into an amplifier while his stethoscope wandered over the chest of a lady who each year donated her time to the greater glory of Medicine. She had a diseased mitral heart valve and we were invited to identify the "low pitched rumbling diastolic murmur" and "There! Listen carefully! She has an opening snap." Did anyone have problems? I decided to be uncharacteristically assertive. I could hear nothing but the normal heart sounds. I was sorry (and was secretly ready to declare that the Emperor had no clothes), but even after repeatedly listening I could not detect the murmur or the snap. In the end, as the rest of the class were getting restless, I decided to agree that the Emperor did after all have some clothes on.

Procrustes looked over my shoulder many times in the following years of training and finally I learned his name when reading an excellent little book on clinical examination by Pappworth[1] in which he warned the reader against being influenced by this figure from Greek legend. To quote Robert Graves' account, Procrustes "...who lived beside the road...had two beds in his house, one small and the other large. Offering a night's lodging to travellers, he would lay the short men on the large bed, and rack them out to fit it; the tall men he would lay on the small bed, sawing off as much of their legs as projected beyond it. Some say, however, that he used only one bed, and lengthened or shortened his lodgers according to its measure."[2] The crime of Procrustes is often committed in Medicine when a doctor makes a snap diagnosis by instinct, the seat of his pants, pattern recognition or whatever jargon metaphor is current; and then makes her observations fit the preconception. This is easier to do than one might think, since many of the signs in clinical medicine are very subtle. As Pappworth put it (p.81) "...suggestibility is a potent source of error and the experienced doctor can make the less experienced and uncritical hear anything he wishes him to hear...But apparently, with increasing years, and even sometimes with increasing deafness, some cardiologists are hearing many more things than they could 20 years ago."

Even a superficial look at the history of Science shows many examples of Procrustes at work; and when advances have been made, it is often because an investigator has refused to see what he "ought" to see. We are now quite used to the idea that observation should take precedence over dogma, but in the 16th century this was a revolutionary idea often ascribed to Copernicus's *De revolutionibus orbium coelestium* (On the revolution of heavenly bodies) of 1543. "In substituting for the authority of the ancients the principle of subordination to the facts as the source of all knowledge, Copernicus's work marks an essential turning point in the history of ideas and scientific progress."[3] Whether or not this is true (and there is some evidence that Copernicus placed the sun at the centre of the universe simply because he thought such a splendid body deserved the place of honour), it was certainly a time for the overturning of dogma.

William Harvey is usually credited with describing in 1628 how blood circulates rather than ebbs and flows. But like Newton, he stood on the shoulders of others such as Realdus Columbus who pointed out in 1559 in his *De re anatomica* that Galen erred in believing that blood passed from the right to left ventricle through pores in the intervening wall or septum; "But they err by a long way, for the blood is carried to the lung through the pulmonary artery and in the lung it is refined, and then together with the air it is brought through the pulmonary vein to the heart. This up to now no one has either observed or recorded in writing, although it was most meet to be observed by all."[4] Later he does not mince words in saying "Yet truly, there is a race of men stupid, and ignorant, who have neither the wish nor the ability to find anything new. And therefore, whatever a physician with a great name writes they immediately subscribe to it nor will they depart from their beliefs one jot."[5]

I had little difficulty in finding an anatomical example of this from recent times. Standard textbooks of microanatomy state that Brunner's glands drain directly into the crypts of Lieberkuhn and generations of anatomy demonstrators, including myself no doubt, must have pointed this out to medical students who presumably "saw" that this was so. A fellow demonstator, Tom Treasure, pointed out that "...the examination of class anatomy teaching slides contradicted this view."[6] There are in fact clearly visible ducts which drain from the glands into the duodenum.

The very eminent have not been free of Procrustes' influence, but they have had the good fortune to be "right" in their views. Gregor Mendel's classic 1866 paper on the genetics of garden peas[7] was neglected until its rediscovery in 1900, but until it was re-examined very closely by the great R.A. Fisher in 1936, none of the many thousands of people who must have read it had noticed that Mendel's re-

sults were much better than expected. It is suggested that Mendel "knew" what results he ought to get and adjusted the data accordingly, but in doing so got results that were too good to be true; or as Fisher put it: "The discrepancy is strongly significant, and so low a value could scarcely occur by chance once in 2000 trials. There can be no doubt that the data from later years of the experiment have been biased strongly in the direction of agreement with expectation."[8] He charitably suggested that Mendel was deceived by an assistant who helpfully adjusted the figures, but Wright points out how easy it is for unconscious systematic bias to creep into sorting and counting data and concludes "Taking everything into account, I am confident, however, that there was no deliberate effort at falsification."[9]

Ernest Rutherford is another example of a great scientist who "knew" what to expect and selected "good" results while neglecting results from experiments when he felt his apparatus was working less well. There was no attempt made to conceal this however and his 1886 paper "On the Passage of Electricity Through Gases Exposed to Röntgen Rays" contains a note: "[only] the observations marked with asterisks were used to calculate the constants in equation (4)".[10]

Getting the answers right seems to excuse being selective. However, Wilson's biography of Rutherford contains an account of how Rutherford and Chadwick prevented a coworker in their field from the embarrassment of publishing biased results which supported the wrong conclusions. Petersson, a Swede working in Vienna, asked Rutherford in 1924 to help arrange publication of a paper describing a new method of measuring atomic disintegrations. Rutherford and Chadwick felt that something was fishy about the results as they were working in the same field, and delayed publication until Chadwick could visit Vienna in December 1927. He found that "the observers, the counters of the scintillations, were three youngish women...of what Petersson called Slavic descent because he believed (I'm only repeating what he said to me) that...Slavs had better eyes...and that women would be more reliable than men as counters of scintillations..." Chadwick quickly found that the women knew each time what was expected to happen, but when they were "blinded" to what was expected the results were similar to those that Rutherford and Chadwick were obtaining. It was not a question of cheating but "...they were deluding themselves. They were seeing what they were expected to see."[11]

Unfortunately, there was no Rutherford or Chadwick to prevent embarrassment to Davenas *et al.* in 1988 though there is some evidence that the editor of *Nature* went out of his way to try. Their experiment purported to show that very dilute solutions of antibody (sometimes so dilute in

TRIALS AND ERROR

Consider the efforts of Dr Allgood[15] in the treatment of grottosis, an often fatal disease. It was suggested that a new drug, Vitalcillin, might cure grottosis and that in view of favourable reports from occasional prescribers of the drug it would be almost criminal to do other than prescribe it to all grottosis victims. Allgood pointed out that since some patients actually recovered you would not know whether Vitalcillin was responsible and that as it had some toxic and potentially fatal side effects, you might actually make people worse rather than better. It was decided that the only ethical thing to do was to administer Vitalcillin to only half of a group of grottosis patients so that any improvement in the treated group compared to the untreated or *control* group must be due to Vitalcillin.

After six weeks, ten out of thirty in the treatment and eighteen out of thirty in the control group had died. Allgood's assistant, Dr Spoyler, was quick to point out that there seemed to have been some bias in selecting patients for treatment as they seemed in the main to be pretty, well-nourished young women whereas those in the control group were for the most part balding, fortyish men.[16]

The trial was re-designed so that patients were allocated to treatment or control on the spin of a coin, but members of the control group soon noticed that they weren't getting Vitalcillin and that the doctors were spending little time with them, whereas the treatment group complained that the nurses were spending most of their time with the control group so that it was nearly impossible to obtain a bedpan when needed. However, knowing that they were receiving the new wonder drug made them feel much better, despite the severe diarrhoea which it seemed to cause.

A decision was then made to allocate treatment on the spin of a coin and to provide the control group with dummy medication or *placebo* so that neither group would be biased as to how they felt by the knowledge of whether of not they were receiving Vitalcillin. Allgood's house physician, Dr Kleverbugge, suggested that it would perhaps be better if no one knew until the end of the trial and eventually it was agreed that the hospital pharmacist would allocate patients to treatment or control groups and provide medication for each patient in packets which bore only the patients' names and code numbers. At the end of the trial the code could be broken to discover who had got what.

Allgood reported that the results seemed to favour Vitalcillin though the advantage was by no means as clearcut as had at first been thought: 14 out of 30 controls and 19 out of 28 of the treatment group were still alive at six weeks.[17] Kleverbugge had by this time moved on to another job and wrote to the Journal of Vital Medicine that he had just read a book on statistics and that there was little to celebrate, as he had calculated that there was a high probability that the observed differences between the two groups could have arisen by chance.[18]

fact that there could be no molecules of antibody at all) could bring about changes in a biological marker system.[12] Fierz quickly pointed out that the results seemed to lack the normal experimental spread of errors[13] (too good to be true again) and Maddox *et al.* stated that not only had no attempt been made to exclude systematic observer bias but that data from experiments that did not meet expectation were not included in the published results.[14] When bias was excluded, the results could not be reproduced.

In medicine Procrustes can of course influence not only the doctor but the patient. When a person is ill, the patient expects to be "made" better and the doctor may even naively believe that she has been instrumental in bringing this about when in fact the expectation ought to be that the patient will get better anyway nine times out of ten. When the use of a treatment system which, at least on *a priori* grounds, cannot be expected to work is followed by the patient's improvement, the improvement is seen by the uncritical as validating the system. When the instances are multiplied dozens of time, the practitioner will not feel the need to look more closely as the efficacy of the system is too obviously self-evident. "After all," he may ask, "do not 90% of my patients get better with my treatment (and did not the remainder come to me too late)?" Medicine, much more than any other branch of investigation, uses techniques designed to eliminate Procrustes' evil influence. (See box.)

In its fight against Procrustean influence, or what some more prosaic people call patient and observer bias, medicine uses controlled trials in which patients are randomly allocated on a double blind basis to treatment or control group and the person assessing the results of treatment remains blind to who is in which group until the end of the trial. Statistical analysis is then used to help decide how likely it is that the observed differences could have arisen by chance, If the likelihood is small, it is tentatively concluded that the treatment may actually have brought about the differences, which may or may not be in the direction of improvement. Surprisingly few efforts are made outside the field of medicine systematically to eliminate observer bias and well designed trials in the area of alternative medicine are rather hard to discover. Procrustes continues to lie in wait not just for Theseus, but for us all.

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Faith and expectation in the placebo effect

B.H. Howard.

The German physician, H. Rheder described the following clinical trial in 1955. In the local hospital were three patients under his care; one suffering from chronic gall bladder disease, a second from severe pancreatitis associated with weight loss, constipation and depression, and the third had an inoperable uterine cancer, with anaemia, weakness and massive accumulation of fluid in the abdomen.

Without telling the patients, Rheder approached a local faith healer, whose speciality was "healing at a distance". The healer was given all the clinical details, and was asked to project his healing forces on to the patients. This was done over a period of weeks, during which time the medical staff carefully monitored the condition of the patients. There was no change in any of the three.

After the healer had withdrawn from the case, Rheder told his patients that he had found a healer with many successes to his credit, who would project his healing powers on to them at stated times on stated days. By the time this "healing" was due to start, all three patients had become confident that the longed-for cure of their illnesses was imminent.

Within a few days noticeable improvements had occurred in all three patients. The gall bladder sufferer's pain disappeared, and he remained free of symptoms for a year. The patient with pancreatitis recovered normal bowel function and gained 13kg in weight. The cancer sufferer's appetite increased, her anaemia improved, and the abdominal fluid decreased. She was able to return home within a few days, and, until her inevitable death after three months, lived an active and comfortable life.

These three anecdotal cases illustrate the overriding importance of expectant faith, and the uselessness of the faith "healer", in the cures effected.

The source of this report is *The Healing Brain.* by Robert Ornstein & David Sobel (Simon & Schuster, 1988).

Commonsense shaken

P.A.B.

There were some strange responses to New Zealand's first big earthquake prediction.

On 10 February the public notices columns of *The Dominion* contained the following advertisement:

SAN DOMARAHE
INSTITUTE
NELSON
Will there be an earthquake on 19th February
or is Someone having another dig?
Box 270
Nelson

It passed apparently unremarked until 20 February when *The Dominion* related the notice to an earthquake which that previous night had caused widespread damage in Dannevirke. Before long the news was out that the earthquake had been predicted by Dr Thomas Baker, a then Nelson-based homeopath.

Given the acclaim Dr Baker was accorded, his actual "prediction" is worth a second look. You will see the prediction doesn't say, as one might expect of a prediction, "There will be an earthquake on...". It is instead expressed very guardedly—as a question and with what can only be called a cryptic cop-out clause. In the latter, the words "another dig" suggests similar predictions may have been made in the past and, no earthquake having occurred, then passed off as a joke. However, in fairness, I must record I am unaware of people having noticed other earthquake predictions Dr Baker might have published.

More importantly, the notice did not specify where the earthquake would happen nor comment on its severity, details one would expect of a bona fide prediction. There could be earthquakes somewhere in the world of varying degrees of severity every quarter hour. Generously, one could grant that publication of the "prediction" in *The Dominion* indicated the earthquake would affect Wellington at least.

It was later revealed Dr Baker had warned his friends a serious earthquake would strike the Nelson-Wellington area. The 19th February earthquake, rated 6 on the Richter scale, was indeed felt in Nelson and Wellington, but these were near the southern limits of the area over which it was felt. The epicentre was 160 km and 275 km distant from Wellington and Nelson, respectively. It was not a serious earthquake in those places.

Despite all these possible reservations, Dr Baker was widely regarded as having made a successful prediction.

Astonishingly, the doctor then made a bona fide prediction. *The Nelson Evening Mail* of 22 February reported that Dr Baker had predicted an earthquake rating 8 on the Richter scale would strike Lower Hutt at 1 a.m. on 10 March. It would be felt as far north as Masterton and as far south as Nelson and Blenheim. After having apparently partial success with a dubious prediction the seer was being ultra-specific.

As it turned out, nothing occured which could be represented as even a partial fulfillment of the second prediction.

The reaction

It was a good a story for the news media. As I don't watch television or listen to the radio, I can only comment on the reaction of the press. Following the example of *The Nelson Evening Mail*, papers as far away as Dunedin featured the bona fide prediction on their front page. However, in Wellington, the supposed epicentre of the quake, they seemed to have ignored it completely until almost a fortnight later when *The Evening Post* (7/3/90) reported the civil defence authorities were fielding many calls about the predicted disaster. This seemed like commendable restraint. However, the editor of *The Dominion* has advised that his paper did run a story on the prediction in its first edition of 21 February but it was subsequently displaced by other new stories.

Thereafter the Wellington papers published a number of reports relating to the supposedly impending disaster. In these, scientists were quoted throwing doubt on the validity of the prediction. Even the Minister of the DSIR, Clive Matthewson, himself a former earthquake engineer, poohpoohed it (*Post* 9/3).

Dr Warwick Smith, Director of the DSIR's Seismological Observatory was frequently the source of sane comment. He described Dr Baker's "successful" prediction as coincidence in the very first news report of it. His later comments suggest he doubted Baker understood the magnitude of an earthquake measuring 8 on the Richter scale—it would be worse than the 1931 earthquake which devastated the Napier and Hastings business areas, and would be felt over the whole country. He was also concerned about the potential social harm of such predictions. "Imagine what would happen in Wellington if people believed it. You could get people jamming the roads—there could be disaster on the highways".

In other items a different approach was taken. *The Dominion* (8/3) took the initiative of consulting The Wizard of Christchurch, who, apparently aping Dr Baker, "lent his ear to the Christchurch ether in search of ominous vibrations. 'Nothing at all', he said. 'It is quite clear there will not be an earthquake.' "

A scathing column by journalist David Cohen appeared in *The Evening Post* (9/3). It made the telling point: "How can someone with no knowledge of the workings of (the) Richter scale possibly understand the exact magnitude of a quake?"

The public reaction as it turned out was not drastic. There were even reports of people holding earthquake parties into the wee small hours of 10 March. The less lighthearted took up a lot of the time of public officials by phone calls to Dr Smith, and to the Lower Hutt, Masterton, Palmerston North and Wellington Regional Council civil defence authorities. *The Dominion* reported that items such as torches, matches and candles were in high demand

at Lower Hutt supermarkets. There were similar reports from Palmerston North.

Alan Bridle, Regional Council Civil Defence Manager said:

"[Dr Baker] has done us an immeasurable service to get the level of preparedness up. That's often difficult to achieve without putting the frighteners on people" (*Post* 8/3).

(Wellington Free Ambulance, although it told its staff there was no scientific basis for the prediction, required that all ambulances be road-worthy by 8 March.)

Bridle is also reported as having said:

"Civil Defence regularly receives calls from people saying an earthquake was going to happen at a particular time and they could not be dismissed as cranks. [Why not? — P.A.B.] Somebody sooner or later could be right. If we over-react we lose a lot of credibility in the public eye. Equally we lose credibility if we are not prepared" (*Post* 7/3). [Surely, constant preparedness would enable CD to ignore predictions, cranky or otherwise. —P.A.B.]

In contrast, the National Director of Civil Defence, Ed Latter, said no action was being taken on Dr Baker's prediction. CD only issued warnings if there was a clearly known risk. Later, he called for an end to irresponsible predictions of earthquakes. "There is no doubt that many people—particularly the young and the elderly—were extremely concerned by the forecast of such a natural disaster" (*Post* 17/3).

The New Zealand Skeptics had their say. Our Media Spokesperson and survivor of many Californian earthquake predictions, Denis Dutton, appeared on The Holmes Show. Denis offered to donate $5,000 to charity if the earthquake prediction proved correct, provided Dr Baker agreed to donate $500 if it didn't. Dr Baker was lucky—according to a report in *The Evening Post* he couldn't be located and the wager never happened.

The Method

I was sympathetic to Dr Baker. There is plenty of evidence, admittedly anecdotal, that animals can detect earthquakes. My mother's family lived on a sheep station northwest of Gisborne and always claimed the pheasants shrieked before an earthquake and that the shrieking before the 1931 Napier earthquake was especially notable.[1] Why then could not some people have a similar sensitivity? No doubt years of careful observation and recording would be necessary for predictions to be made. Although these days a human being more sensitive than the latest technology is almost unthinkable, perhaps Dr Baker's first "prediction" had been occasioned by his sensing the beginning of the strong foreshocks to the Hanmer Springs quake recorded by the DSIR at 6.29am on 10 February—the deadline for his advertisement in *The Dominion* would have been only 5pm the day before.

However, the references in the papers to Dr Baker's "method" soon dispelled my optimism.

• Dr Baker uses a combination of feeling the earth and listening for vibrations (*Post* 7/3).

• He likened his method of predicting earthquakes in some way to how dolphins communicate with echo sounds (*Nelson Evg Mail* 22/2).

• He knew the earthquake was going to happen because "I sat down and definitely felt that vibration" [The seat-of-the-pants method?] (*Mail* 21/2).

• He had had a "retune in" on Tuesday night and yesterday what he felt disturbed him so much that he decided he had to speak out (*Mail* 22/2).

• Dr Baker said he had been picking up aftershocks from the Dannevirke quake but had felt something different [Dr Smith of the D.S.I.R. said seismological equipment was registering only "very, very small" aftershocks from that earthquake] (*Mail* 22/2).

• He said predicting earthquakes "can be done, it is done and people were doing it all the time before this century" (*Mail* 21/2).

• "You can learn it, but it's not put out on television" (*Mail* 21/2).

• He said homeopathic medicine had a particular essence which was similar to the sensitivity he picked up from the earth (*Dom* 22/2).

Perhaps this is just inadequate reporting by the news media.

The Doctor

Thomas Baker was originally from Southland. He completed his medical studies at Otago University in 1981. The birth of his first child while he was a general practitioner in Thames led to an interest in homeopathy. He studied the subject in London. In 1987, when he was practising in Wellington, he was reported to be one of three medically qualified homeopaths in New Zealand.

He had a "blues musical" called "Thomas Baker and the Conductor's Shoes" produced as a late-night show at Wellington's Circa Theatre. The preview in *The Evening Post* (17/6/87) said the show was

"...a protest against the 'imposed rhythm' of medical training and family life. It explores human emotion. The performing arts like his homeopathy involve the use of sound. He says he uses sound a lot."

"Dr Baker says he is a clairvoyant and can see people's auras. Through the use of sound and music he can balance people's energies, he said."

Baker later moved to Nelson. Shortly before the earthquake predicted for that city he left for Otago. (He said the move was unrelated to the expected quake.) He intends to live in Dunedin and work on performing a type of opera aimed at reaching the spontaneous side of people and enthusing them. He does not intend to begin a medical practice (apparently, not even a homeopathic one—see page 15).

Notes.

1. A letter in New Scientist 5/5/90 refers to pheasants giving their alarm call a short time before the sonic booms of Concorde.

What the doctor ordered

To obtain information on the San Domarhe Institute Celia Lund wrote to that body. Celia has received two communications, the second of which is reproduced below. While the circular is unsigned, its envelope was addressed in the same hand as the first communication, a personal letter written, signed and addressed by Dr Baker.

10 May 1990

P.O. Box 138,
Wanaka.

Dear Folks,

Finally I get around to writing to you after much exploring and research.

The earth energy has changed, its magnetic energy has increased its frequency.

It makes living well in these times a little more difficult because it places stress on the biochemic system.

Silica tablets are a must for everybody because they protect the glands of the body responsible for regulation of bodily function. They also help eliminate toxins from the body.

2 per day would be adequate. The other mineral of importance is Zinc. Zinc helps digestion and metabolism otherwise stressed by magnetic energy.

Peoples emotions will generally tend to be more up and down.

Rational decisions will take more time and care to make.

Zinc 2 - 4 per day.
Finally it is best that everybody:-
- Do a little exercise
- Drink more water, (preferably water that has stood in a blue container for 24 hours.
- Practice an art form or aspiration daily.
- Beware to keep in company rather than isolation
- These things keep the body aligned

Homeopathy
Be aware that it is much harder to use homeopathy and herbs to cure which is one reason I ceased practising.

Be also aware that the sun has magnetic rays that combining with earth magnetism can make thoughts a little more confusing.

This magnetic change is permanent, it will affect the climate and water availability.

In 2 years we could see some dramatic changes.

I have published a book called "The Art of Being Well", which is a treatise more on spiritual health than physical health, but it would be useful for everyone, particularly on the subject of intuition.

Your greatest problem will be to stay patient.

Yours sincerely,

Thomas J. Baker

Medical roundup

Dr John Welch

A recent leading article in *The New Zealand Medical Journal* looked at Diet and Behaviour. Food intolerance was strongly associated with the mother's level of education. A little knowledge is a dangerous thing? As regards the putative link between sugar and problem behaviours the article says "...it is just as likely that restless or aggressive children seek out more sugar as that sugar causes the inappropriate behaviour." The authors conclude "...it should be recognized that modification of a particular child's diet is almost always accompanied by changes in management."
Source: *NZMJ* Vol 102 No 876 pp499–500.

NZ General Practice profiled a Chinese doctor who hopes to set up a practice incorporating both traditional Chinese medicines and conventional medicine. The "malicious natural factors" sound very much like the "humours" of the ancients and acolytes will be pleased to know that they can achieve chi by "keeping body organs in harmony and by breathing properly". Those readers who have had a heart attack may be alarmed to learn that "a regular diet of pigs hearts stuffed with a special kind of nut will go a long way towards curing your problem." Or should that read "stuffed by a special kind of nut"? With mounting alarm I noted that both asthma and schizophrenia can be treated with herbs "when his qualifications are accepted by the New Zealand Medical Council." One hopes that they read this article first.
Source: *NZ General Practice* Oct 23 1989 p6.

Since I have already mentioned herbal treatment it is worthwhile to note that these preparations can have side effects as well as modern drugs. Minerva (*British Medical Journal* Vol 299 9 Sep 1989 p692) reports in her regular column a trial of the plant "Hook" in the treatment of rheumatoid arthritis. As well as helping relieve pain and swelling, periods stopped in one third of the women patients and over half the patients developed a severe erosive skin rash. Such a side effect profile would, of course, preclude further use of this preparation.

Some of you may recall a story carried by both *The Dominion* and *The Press* newspapers on a girl with a rare disease called "William's Syndrome". This outlined her treatment by cranial osteopathy by which the osteopath was "able to normalise the blood supply to her organs ...establishing the normal movement pattern in the cranial bones." I hope that most skeptics will know that this 8-year old girl's cranial bones would have been well and truly fused. Here is the classic vague subjective language of the alternativists... "let drainage occur...allow the healing of damaged tissue." The skeptic will also know that many conditions improve with time; a far more logical explanation than any effect from this specious treatment. Are reporters more credulous these days or will newspapers print anything outrageous in order to sell more copy?
Source: Christchurch *Press* Sat 16 Sep 1989, *Dominion* Friday 15 Sep 1989.

The medical profession does not escape my scrutiny either. The *Lancet* reported a scandal where terminally ill patients were exploited by a British doctor and an Iraqui vet. An investigative journalist outlined how a friend of his posing as an AIDS victim was offered a £10,000 course of immunotherapy "after a six minute interview during which neither a history or an examination was conducted." The *Lancet* concludes "patients need some protection from the dangers of unregulated private medical practice." I echo their sentiments at a time when New Zealand doctors are adopting such useless quackery as chelation, electroacupuncture of Voll and Ayu-Veda medicine to name a few, but more on these some other time.
Source: *Lancet* Vol 1 No 8642 p856.

It seems that specialisation has come to breast feeding. Sister Wendy Rosier, president of the Australian Lactation Consultants Association, reports a new use for the humble cabbage. To improve milk flow "thoroughly washed and dried, crisp cold cabbage leaves are applied over the affected breast. Leaves are changed approximately two hourly or when they have become limp." Could this be the origin of childhood hatred of cabbage? Several case histories are outlined in an anecdotal manner but I admit it would be rather difficult to do a proper placebo-controlled trial.
Source: *NZ General Practice* July 1989.

On a lighter note those of you who worry about your health will be able to look at your tongue in the mirror and see if it "is pink, coated with a fine white fur, and has a good solid shape with smooth edges." A red tip, however, indicates nervousness or insomnia. The ancient Chinese evidently have not heard of the raspberry ice-block. However, a raspberry tongue is seen in scarlet fever. Examination of the tongue is one of the diagnostic methods used in traditional Chinese medicine. There is a sound scientific basis for looking at the tongue (e.g. the smooth shiny tongue of vitamin B12 deficiency) but to conclude that "cirrhosis of the liver can show up as a purple patch on the right side of the tongue" is nonsense. Why the right side of the tongue? Presumably, because the liver is on the right side of the body!
Source: *NZ Doctor* 7 Aug 1989.

Editor's notes

1. The cabbage leaf cure was promoted in the *New Zealand Woman's Weekly* of 26/2/90 by Isobel Moon, its Plunket nurse columnist. She vaguely explained that "A certain substance is absorbed from the leaves through the mother's skin." (Sister Rosier believes the substance is allantoin, "a substance functional in garlic".)

2. The news item about tongue diagnosis appeared on the front page of *The Dominion* on 21/7/89 (followed by a sharp response from a G.P. on page 3 the next day). More than nine months later, *The Manawatu Evening Standard* (on 26/4/90) thought the 'news' item still warranted publication.

Forum

Hawking and other forms of hunting

Owen McShane

A recent best-seller illustrates the history of the triumph of intellectual theory over ignorant pragmatism or reactionary ideology.

I was at a dinner-party recently where a guest was enthusing over the remarkable abilities of his 82-year old father. The old man had been expounding the virtues of Hawking and it had taken some time for my friend to realize that his father was not advocating some esoteric form of hunting. Instead he was talking about cosmology and how his interest had been awakened by Stephen Hawking's book *A Brief History of Time*. I have long been fascinated by cosmology but until Hawking came along it tended to be something of a conversation stopper at your average dinner party.

Hawking's literary success has been remarkable to say the least.

He spent *thirty-two weeks* at the top of the English Booksellers' best-seller list. There is wonderful irony in that *A Brief History of Time*, in which Hawking almost asks for a heretical banning, which did not eventuate, was finally toppled by Rushdie's *Satanic Verses*—which didn't and got it. We can presume that Hawking will be doubly aware of this irony as he was born three hundred years to the day after Galileo, the first famous heretic of modern science.

In his book Hawking tells us how the Pope, in an audience, had advised Hawking, and fellow participants in a Jesuit-organised conference on cosmology, that it was all right for science to study the evolution of the universe after the Big Bang but that it should not enquire into the Big Bang itself because that was the moment of Creation and therefore the work of God.

The Pope was not to know that Hawking was at that time developing his theory that while space-time is finite it has no boundary which means that it has no moment of creation.

Although beautifully and elegantly written, the book is no light-weight. We are introduced to the key concepts of modern physics including special and general relativity, the expanding universe, the uncertainly principal, and black holes, along with the complexities of broken symmetry, quark theory, strings, and Grand Unification Theories.

Valley of the Dolls it is not.

I believe that Hawking has struck a popular chord with his readers in that he has made his name as an arm-chair theoretician rather than as a technician playing with millions of dollars worth of equipment. The early "natural philosophers" such as Aristotle were also arm-chair theoreticians who simply thought about the world and developed their theories in comfort and elegance—or occasionally from inside a barrel.

Then came Galileo who overturned so many previous theories with the use of his telescopes and rolling cannon balls.

From that day science has been inescapably linked with experiment to the point where most school texts have encouraged the belief that scientific theories are built up or deduced from experimental activity. It took Karl Popper to remind us that observation and experiment can only test theories and that the great theories are acts of pure creation—more akin to music and art than to engineering or the practise of technology.

But in the meantime the world of science was seen as being entrenched in the environment of the laboratory and too busy asking what the universe is to ask the question **why**. On the other hand the philosophers have not been able to keep up with the advance of science, especially during the nineteenth and twentieth centuries, as science appeared to be too technical and mathematical for anyone to make a contribution except a few specialists working within their own esoteric fields. Hawking argues that if we can discover a truly complete theory of the universe it should, in time, be understandable by everyone. His hope is that then we shall all be able to take part in the discussion of why it is that we and the universe exist. As he puts it, "To know the answer to that is to know the mind of God".

I am sure that part of Hawking's appeal is that he holds out this hope and promise to the reader on every page. We are curious. We want to know. Hawking's grand plan makes the hard bits worth the effort.

But was it true that during the nineteenth and twentieth centuries the armchair theorist had no means of contributing to the advancement of science? Hawking drops a few hints that it was not. John Gribbin, the other great science writer of our time, makes no bones about it.

In *In Search of the Big Bang* and to a lesser extent in *In Search of Schrodinger's Cat* Gribbin argues that it was the experimenters who held up the advancement of science because of their refusal to take the theories of the "hand-wavers" seriously. To be fair, Gribbin acknowledges that the hand-wavers were so entrenched in the mechanistic view of science that all too often they too failed to accept their own theories as being serious models of the real world—especially when, as with relativity and quantum physics, these theories described a world more curious than could readily be imagined at the time.

To test this idea let's carry out a thought experiment of our own.

Imagine you are sitting outside your cottage in New Zealand around 1905 drinking tea and pondering the mysteries of the night sky. As a reasonably well-informed person of the time you would be aware of the debates of the time regarding the size of the universe. How far is up? The question to be answered was whether the universe ended at the boundaries of our own Milky Way or was there more

beyond?

As you rested from your sky-gazing to stir some milk into your tea you would notice the tea rising up the rim.

Any text of the time would explain that Newton in 1686 had recognized that this "centrifugal effect" showed that the tea in the cup somehow **knows** that it is rotating in its own "inertial frame". The puzzle was what constituted the inertial frame?

A few years later Berkeley pointed out that it is because the tea rotates relative to **the distant stars** that it rises up the sides of the cup in protest. (It is not the motion relative to the cup. Try putting your cup in the middle of a revolving turn-table. The tea will still rise.)

In 1700 Kant became aware of the work of Wright which argued that our own galaxy was not a sphere but was disc-like, as evidenced by the appearance of the Milky Way. Kant then concluded that as our own galaxy was a rotating flattened disc there might be many more like it in the universe. Had he pondered his stirred tea he might have further realized that, just like the tea, our own Milky Way can only **know it is rotating** by reference to a host of other remote galaxies.

We would then have had a few hundred years to get used to the idea that the Milky Way is only one of many galaxies in the universe.

Let us imagine then, that given the benefit of the New Zealand solitude, you have once again come to this conclusion that our galaxy is but one of many and that the universe is truly huge. This remarkable outcome might encourage you to consider the other great puzzle of the time—why is the night sky dark?

Around the turn of the century it was generally believed that the universe was filled with stars, was infinite in time and space, and was eternal and unchanging. But several philosophers had recognized that if this were so then wherever we looked into the night sky we should finally light upon a star and that the whole sky should be as bright as the surface of the sun's own disc.

The obvious and wrong response is that as the stars get further away they become less bright. It is true that their brightness diminishes as the square of their distance but the number of stars which can occupy the same "stellar sphere" increases by the same ratio—hence the two factors cancel each other out. My school texts explained the puzzle away by claiming that the light from distant stars is blocked from reaching us by inter-stellar dust and the like. Also wrong. In time the dust would absorb the energy, heat up and re-radiate it. The answer lies in one of the properties of light itself—it travels at a finite speed. The fact that light has a finite speed had been well established by 1700 so this should be no surprise to you sitting outside your Kiwi cottage around 1905. Hence you might decide that the reason the sky is not full of light is that the universe is **not** eternal and unchanging but is quite young and that there simply has not been time for the stars to fill the sky with light.

You might even have concluded that if the universe had a recent beginning it might also be expanding rapidly with the result that much of the light from the most distant stars might be red-shifted out of existence. An expanding universe would also overcome another problem which Newton himself identified. Why does gravitational attraction not cause all the stars to fall back into some central place?

Within the confines of this column I cannot explain all the arguments that could lead you to these startling conclusions but the knowledge and theories were all there at the time. If you had held your conclusions with sufficient confidence you might just have written a letter to a clerk in a patent office in Switzerland who had just published his **Special Theory of Relativity.**

Your letter might have read: "Dear Albert, I wish to advise that the universe is huge and filled with many galaxies beyond the Milky Way, that it is certainly not static and unchanging, but is quite recent in origin and might even be expanding."

Einstein might just have torn up such a message from the colonies. But had he taken it to heart you might have earned a Nobel Prize. When Einstein first developed his General Theory of Relativity in 1915 the popular scientific consensus was that we inhabited a static universe defined by the Milky Way. When Einstein ran the equations describing such a universe through the appropriate manipulations of General Relativity the equations said that the universe must be contracting or expanding but that it could not stand still. The only way to hold the system still and to mimic a universe extending no further than the Milky Way was to add an extra term to the equations which he called the "cosmological constant". He later called this the greatest blunder of his life.

Einstein's own equations had been trying to tell him the truth. Your letter might have arrived in time to encourage him to believe them—and you would have changed the course of history.

But theory had run ahead of the observations and in the spirit of the times the observers had to set the pace.

You could have made your contribution with experimental equipment consisting of no more than a tea-cup and a comfortable chair.

This is the world of science that Hawking brings back to us. Furthermore, Hawking personally encapsulates the promise of the natural philosopher because he is a victim of ALS, a motor neuron disease which has rendered him immobile and speechless. He can only communicate through computer aids and a speech synthesizer.

He believes, and others comment, that it is precisely because he is so detached from the physical world that his mind is able to make the great conceptual leaps which characterize his theories.

He has purified the concept of pure thought and at the same time demonstrated its power. Hence, he reinforces our humanity in an age which has too often seemed set on rendering us subservient to the machine.

Many who have read *A Brief History of Time* may not fully grasp the cosmology and the underlying physics, but I am sure that anyone who reads even part of it will gain a new confidence in the culture of the twentieth century. It is certainly a relief from Sartre, Camus, Brecht and the rest.

Letters

The "Mythical" Confrontation?

I have just got around to reading the article "Science vs Religion" in *Skeptic* No. 11, and am still wondering why it was written for such a journal (or was it?).

To say there is no meaningful confrontation between science and religion any longer is simply not true. The only reason for any so-called "compatibility" these days is that orthodox religion has become condescending to scientific thought, knowing that mankind has become much better educated within the last century and common sense now tells us that a lot of scientific explanations are feasible whereas "the word of God" is not. So the author was left to single out the fundamentalists as being the only culprits who are causing any trouble these days.

Let us not overlook the real differences between scientific thought and religious belief. One is real, factual according to the evidence, and does not look at the world with a preconceived idea. The other is based on primitive theories, mostly mythical in their origins, and is only good for the individual who shuns the real world and needs a substitute when common sense is lacking.

The sceptics of the nineteenth century paved the way for the abundance of scientific and universal knowledge we have today. It would be a retrograde step to allow the promoters of religion to sneak in through the back door by saying "there are really no differences between us anymore".

Bruce L. Oldfield
(Abridged)

Many scientists and people who value science do have religious beliefs. Christianity *has* largely come to terms with science. Science depends on the preconceived idea that nature is uniform.

I do not think general critiques of religious belief are a proper concern of Skepticism. However, *N.Z. Skeptic* welcomes investigation of BVM apparitions, stigmatics, miraculous relics, faith healing, reincarnated messiahs—modern low-level religious phenomena, in other words.

— Ed.

Pseudology DISCOVERed.

Discover magazine is now available in New Zealand—however, it is marred by advertisements for the Rosicrucians and Scientologists.

The November 1989 issue carries a cover illustration for a feature article about 'strange' matter (and you thought that Science Digest was weird!). Strangest of all are the nutty characters who dreamed up such an oddball theory; some of the ideas therein go right back to Plato and beyond. The strangest quality of 'strange' matter is that it's apparently undetectable by the scientists' instruments!

D. West.

Although I have not seen the article in question, the theories of modern physics are strange indeed. Skeptics should be concerned about the unjustified exploitation of this strangeness. —Ed.

THE ENIGMA OF SAMSON

By Dr. Franklin R. Ruehl*

From Ancient Skies, Vol 16, No 6. (1990)

Was Samson, the legendary muscleman of the Old Testament, an extraordinarily strong human or an extraterrestrial hybrid? While considerable attention has been focused on the possibility that Eve was created by means of an alien genetic engineering stratagem, the mystery enveloping Samson's birth has been virtually ignored by paleovisitologists. Yet, there abide a hextet of factors arguing for the involvement of ancient astronauts in the life of Samson:

- Samson's mother, the wife of Manoah, a Danite, was approached by an angel. Innumerable ufologists have speculated that angels were in reality ETs.

- Samson's mother had been barren, yet the angel assured her that she would bear a son. Most likely, an advanced alien in-vitro fertilization technique was performed upon her, analogous to the type of procedure that is being routinely carried out on infecund women today.

- The angel warned her not to consume wine or any other alcoholic beverage. This admonition is certainly suggestive of the type of warnings being issued today to mothers-to-be for the protection of their fetuses, indicating an advanced state of medical knowledge in biblical times that an alien being might possess.

- When the angel bade farewell to Manoah and his wife, he rose in a flame toward heaven (Judges 13:20). This description of his departure remarkably mirrors a report of a spacecraft ascending into the sky, again arguing for the idea that the angel was in actuality an ancient astronaut.

- Samson was possessed of superhuman, nonterrestrial strength, which strongly suggests that he was an alien hybrid, part-human, part-ET, created by advanced extraterrestrial biomedicine.

- Samson's renowned strength derived from his hair, not his muscles, as in ordinary mortals, thus persuasively arguing for the hypothesis of a hybrid entity.

*Dr. Ruehl is a Ph.D. in Nuclear Physics, a Ufologist, an Author, a Lecturer and a Columnist.

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In next issue:

"Down the Tunnel" by Sue Blackmore.

Changing Your Address?

We don't want to lose touch with members. Please tell us if you are going to move. It is depressing for our mail to you to be returned marked "Gone away, no address".