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The British & Irish SKEPTIC

A publication dedicated to the scientific examination of claims of the paranormal

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Editors: Dr Steve Donnelly and Toby Howard

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Hits and Misses

Steve Donnelly

Petrified Superstition

On a recent visit to the United States I was fortunate enough to visit the Petrified Forest National Park in Arizona. The park gets its name from the hundreds of tree trunks and logs which litter its desert landscape but which haven't had sap flowing through them for a rather long time. The forest became submerged in a swamp about 200 million years ago resulting in the petrification of the wood in such a way that all the details of the structure of the trees were preserved. Even from a distance of a few feet the logs look as though they have been recently felled, but a closer inspection reveals that they are in fact made of delicately coloured rock which is mainly quartz.

It struck me, looking at these amazing fossils, that it would be rather difficult for a creationist to understand the petrification process if he believed that the Earth has only been in existence for some 6000 years. The park was, thus, the last place I expected to encounter superstitious stuff and nonsense. But I was wrong. In the park's small museum there was a showcase containing a number of letters from people who had returned fragments of fossilized wood stolen as souvenirs because they felt that stealing the rock had brought them bad fortune. The purpose of the exercise was to persuade visitors to refrain from stealing fragments of rock by cynically appealing to their superstitious beliefs—astonishing behaviour for a National Park authority.

Tall Tale

If you have ever felt that you would like to be a few inches taller I would strongly recommend that you do *not* purchase a small 'electronic height raising device' manufactured and sold by Jing Taibao from Hebei province in China. The *Observer* on 13 February reported that hundreds of thousands of the devices were sold, mainly to adolescents who wished to gain 5–7 centimetres in height. Imagine the anger of one customer, a television actor, who after applying the device to the appropriate acupuncture points (and subsequently suffering from swollen eyes and facial pimples), discovered that he had shrunk by half an inch! The magazine *China Consumer News* investigated and exposed the scandal of the useless and sometimes dangerous device in response to the large number of complaints received by consumer protection organizations. Beijing newspapers are now publishing a list of similar substandard or bogus goods. It's a pity that newspapers in this country haven't followed suit.

The Shroud Resurrected?

The saga of the Turin Shroud threatens to go on and on and on ... The very day that the journal *Nature* (15 February) published details of the carbon dating experiments on the shroud, Dr Thomas Phillips of Harvard University, in a letter in the same issue of the journal, resurrects a theory which it is hard to believe is not a joke. According to Phillips, the body which the shroud once contained emitted a flash of radiation, presumably at the moment of resurrection, which burned the image onto the cloth. If, in addition to heat and light, the radiation also consisted of neutrons, he argues, these could be captured by other carbon nuclei in the cloth, converting them to carbon-14 nuclei. The resulting higher proportion of carbon-14 atoms in the shroud would result in the carbon dating experiments yielding a more recent date than the real date of origin of the holy relic. He goes on to propose experiments which could test this hypothesis. In a letter in the same issue, Dr Robert Hedges who led the Oxford team which dated the shroud states that the likelihood that neutrons influenced the date is 'so exceedingly remote that it beggars scientific credulity'. *New Scientist* on 25 February reports Hedges as commenting that if the flux of neutrons suggested by Phillips which (surprise, surprise) results in an age for the shroud of about 2000

years) was actually somewhat greater, then the revised age of the cloth could be a date some 100,000 years in the future!

The neutron theory, however, is not the only line of attack for the pathological believers. The March issue of *The Christian Parapsychologist*, perhaps unsurprisingly, mounts an elaborate rearguard action to preserve the mystique of the shroud. In three linked articles by separate authors it comes up with three different hypotheses to reconcile a first century origin with the carbon dating experiments (which showed that the flax from which the shroud was woven was harvested between 1260 and 1390).

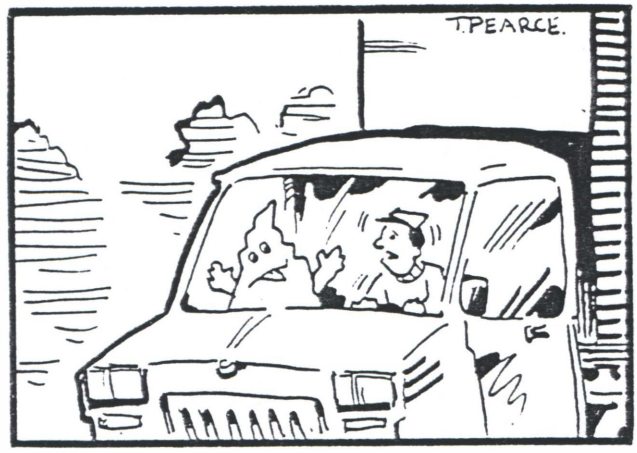
The first hypothesis is the old chestnut that the shroud was sufficiently contaminated with organic matter of more modern provenance than the shroud itself that the carbon dating measurements underestimated its real age. The second idea is that events in the history of the shroud may have perturbed the carbon-14 to carbon-12 ratio. In particular the author, Frank Tribbe, states 'we don't know what the high temperature (more than 850 degrees centigrade) of the 1532 fire and the molten silver may have done to the carbon-14 quantity in the cloth'. Anyone even slightly knowledgeable on the subject of carbon dating would be able to assure the author that neither fire nor molten silver will have the slightest effect on the carbon-14/carbon-12 ratio.

But it is in the final article by Ian Wilson (yes, him again!) that the journal presents its *coup-de-grâce*. Wilson quotes Deuteronomy 6:16, reiterated by Christ at the time of his temptation in the wilderness: 'You must not put the Lord your God to the test' and asks whether God/Jesus was referring to the carbon dating test! (In other words God has upped the carbon-14 count in the (genuine) shroud to test our faith.) He goes on to say that 'I recognize that this may sound like some form of casuistry in the wake of an adverse dating result' and I don't feel that I can add to this statement.

Watch this space for Wilson's next theory!

Haunted Truck

In what sounds like a highly original excuse for bad navigation, truck driver Karl Cann claimed that a ghost kept taking control of his lorry and driving to the wrong destination, according to the *Sport* on 1 February. Each time he climbed on board his truck he apparently experienced a burning sensation in his hands, became paralysed with fright, couldn't let go of the wheel and had to sit back helpless as the truck took him off on a journey of terror. For someone whose job involved delivering parcels in the London area, unintended trips to Dover tended to make his life rather difficult so that Keith finally resigned his job. The only problem with this story, as it appeared in the *Sport*, is to determine who was being taken for a ride, Keith Cann or the readers of the 'newspaper'!



Oh, Raelly?

Fifteen years ago a French motor-racing journalist, Claude Vorilhon, had an experience in the mountains near Clermont Ferrand which changed his life. It was nothing other than a proverbial close encounter of the third kind. The meeting resulted in Vorilhon changing his name to Rael 'The Man Who Brings Light' and journeying to the aliens' planet (at seven times the speed of light, by the way).

Rael's story is told in *i-D* magazine on 10 February but I had a personal encounter with the charismatic Frenchman at the end of last year, when I participated in a Central Television Programme *Central Live* which devoted thirty minutes to Rael and his 'Raelian' movement. Rael regards himself as a prophet whose job is to show the human race where it has gone wrong since its creation by the aliens, using genetic engineering techniques, 25,000 years ago. Rael objected to my use of the word 'cult' to describe his movement but cult it is nonetheless, albeit an atheistic one with an emphasis on sexual fulfillment. Rael's current mission is to build an embassy to welcome the aliens, and to build this embassy—you've guessed it—he needs money. Perhaps this is why one of the commandments of the movement, handed down by the aliens (but not on tablets of stone) is that each member must give 1% of his gross income to Rael. If the purported 20,000 members have an average annual income of £10,000 this gives Rael a cool £2 million per annum. This beats the hell out of motor racing journalism! *i-D* magazine reported Rael's claim that when the aliens finally descend from the sky they will take back to their planet the 144,000 best behaved saints ever to walk the earth who will live amongst their creators for all eternity.

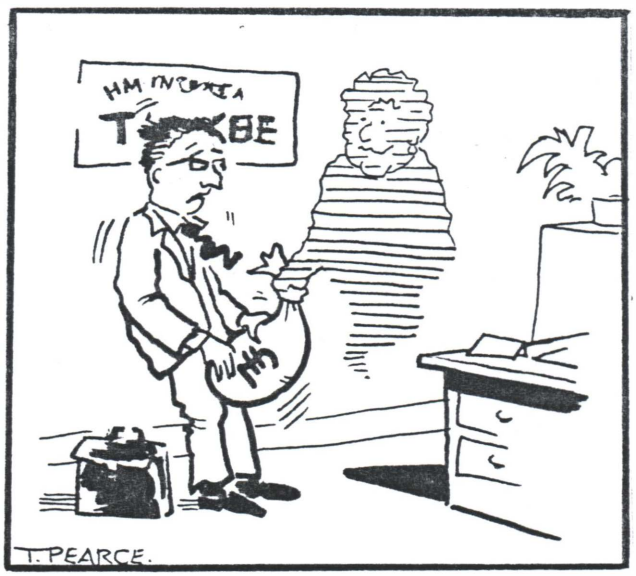
So if ever you are accosted by a bearded, Sacha Distel-voiced being, dressed all in white and offering sensual massage you had better flash him a saintly smile and hand over the moola!

You've Got To Hand It To Them

In what must count as some sort of record for accuracy, a palm reader examined a photograph of Colonel Gaddafi's hand and described him as 'tactful and diplomatic' and 'a true humanitarian with a strong sense of justice and fair play' *Sunday* magazine asked six leading palmists to examine the photograph of the Libyan leader's palm and to provide a character analysis. The results published in the magazine on 5 March were, admittedly not all so wide of the mark, and one palm reader actually identified the hand's owner although the magazine published no details of other clues which may have been present in the photograph. However, another analysis included the suggestion that 'he hasn't got the courage to put his words into action and wants to get on with everybody.'

Is There Any Money There?

Who says you can't take it with you when you go? Britain's late great psychic, Doris Stokes, is being pursued by the taxman beyond the grave and her widower, John, has been forced to pay out an undisclosed sum to H.M. Inspectors of Taxes. Doris, who died in 1987, was said to have earned up to £2000 per night yet she left only £15000 in her will, reports the *Sun* on 16 February. In an attempt to locate the missing money, widower John and his adopted son Terry held a four hour seance but Doris's communication across the astral planes was as successful as when she was alive and no information was forthcoming. Tax inspectors are waiting for Doris's accountants to provide details of her finances but matters are being held up by a fairly down-to-earth problem—a dispute over the size of the accountants' fees!



News From Germany

The latest newsletter has reached us from the Society for the Scientific Investigation of Parasciences (GWUP) in Darmstadt, West Germany. They report that in Munich the university is still solemnly studying the mysterious 'earth rays' (mentioned in this column in the last issue) that have been said to be the cause of accidents on the motorways. The GWUP have written to the Minister for Research and Technology, whose department has put up more than 400,000 DM for the study of the 'divining rod phenomenon.' The letter points out that the question of the existence of earth rays could be settled for less than 10 DM.

The GWUP are concerned that research projects in Germany are at risk of becoming a world laughingstock. They have offered to set up a properly double-blinded experiment and to supervise it. They propose inviting internationally recognized specialists to help and they make special mention of Professor Ray Hyman of the University of Oregon and investigator James Randi. The upshot is that they have received the go-ahead for an investigation but they have been told that the participation of James Randi is not acceptable.

There is a curious footnote to the affair. Last November, a week before Randi visited Munich to talk about the Benveniste homeopathy affair Benveniste himself was giving a talk in Munich. He was there at the invitation of a Professor Wagner who is the official in charge of the earth rays project. Lewis Jones, whom we thank for the translation from German, points out that the German word for divining rod (Wünschelrute) means literally 'wishing-rod.'

Vote Druid

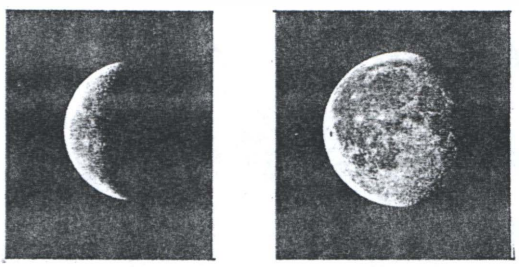
Stonehenge at midsummer is to a druid what Westminster Abbey is to Christians on Christmas Eve, reports the *Sunday Times* on 2 April, going on to report that English Heritage has decided that Stonehenge will, nonetheless, remain closed to pilgrims for this year's summer solstice. Instead the British druids will be invited to a rally at a sacred site in London to hear a proclamation. The article goes on to suggest that the druids are 'surely the original Greens without the politics' and points out that, with a membership of more than 100 000, their British following is greater than either the SDP or the SLD!

Ghost Writer

If you think that acquiring computer skills is an activity only for the young, take heart from the fact that a person nearly 500 years old has learned to word process using a BBC-B computer. Or at least

so claims *Psychic News* in a front page article on 1 April (but I don't think they intended it as an April Fool item). Apparently Thomas Harden, a fellow of Brasenose College, Oxford in 1530, has been leaving messages on a computer in the home of Cheshire high school teacher, Ken Webster. His Oxford education does not appear to have done him much good, however, as, in response to questions left on the computer, the heavenly hacker claimed that Henry VIII was 'six and fortie' in the year 1521 (Henry was actually 30 years old in this year). The story of Ken Webster's haunted house and computer is revealed in detail in a recently published book entitled *The Vertical Plane* (available from *Psychic News* bookshop) but unfortunately the mysterious communications ceased in 1986. In the hope that some other passing spirit may wish to help out with the writing of Hits and Misses, I am leaving the computer on which I'm writing this article switched on overnight. Any psychic messages will be displayed on the lines immediately following this sentence:

Moon Madness



The word *lunatic*, which is derived from the Latin word *luna* (moon) has its origins in the folk belief that certain types of madness have a recurrent nature which is dependent on the phases of the moon. Although the modern meaning of *lunatic* is 'insane' without any lunar connection, the idea that the phases of the moon greatly influence human behaviour still lives on in popular mythology. In the 1970s, Lyall Watson, in his bestselling book *Supernature*, gave a new lease of life to the lunar myth when he claimed, amongst other things, that '... the lunar cycle also appears in patterns of human birth times. The moon is so closely linked to birth that is some places it is even called "the great midwife" '. *Bella* magazine on 4 March, in a regular column entitled *Nature's Clinic*, posed the question 'Does the moon affect your mood?' and cited research which indicates that the full moon may give rise to excessive bleeding in operations. The article also claimed that increases in violence and cases of suicide occur at the time of a full moon. Because the tides are caused by the gravitational pull of the moon on the waters of Earth the confused supposition is often made that the human body, whose composition is 70% water, is also affected by the moon's gravitational pull. But, of course, the tides result from the very large mass of water which is contained in the Earth's seas. The Moon's pull on even a very corpulent human being is extremely small—probably less than the attraction due to the building in which you are now sitting—and is thus unlikely to have effects on either human physiology or psychology. In a recent book *Pseudoscience and the Paranormal*, Terence Hines examined research on the lunar effect and concluded that the mass of data which has been accumulated on this subject reveals no correlation between phases of the moon and birth, bleeding, violence, suicide or any other aspect of human behaviour. Some studies which purported to reveal correlations contained flaws in their statistical analysis.

But old myths die hard; *Bella* reveals that at the time of the full moon many people harbour feelings of hostility but that, nonetheless, the full moon is an ideal time for men to have sex with women who wish to get pregnant.

Thou Shalt Not Gazump

Messages from God come in a variety of shapes and sizes but one of the strangest divine communications in recent times must surely be the command 'Go to an estate agent' (I wonder if it was meant as a curse!). The *Sunday Express* on 26 March reported that these were the very words spoken by God to psychic healer Dr Kenneth McCall in the seventies when he and his wife were searching for a house and decided to enlist the help of a higher authority. The house which McCall eventually bought originally belonged to that famous believer in fairies, Sir Arthur Conan Doyle. In fact, Sir Arthur was sufficiently fond of the house that he was still there (in spirit) after Dr McCall took up residence. He apparently spent a night in the attic with Mc Call's 21 year old daughter (?!) but left after a local vicar carried out a service in the house. McCall, who says that he heals by divine intervention, spent many years as a missionary doctor in China where he claims he was able heal a range of diseases including diabetes for which he claims an 87% success rate. He has recently written a book on his experiences entitled *Healing the Haunted*.

Bush's Stars

George Bush will have to give up Chinese food if he is to make it to the end of his term according to Nancy Reagan's astrologer, Joan Quigley. This apparently was not a comment on Chinese cuisine but a warning to George Bush to avoid his habitual impromptu outings to Washington's Chinese restaurants. Apparently, Bush is only the second U.S. president to have his sun in Gemini, the other being John F. Kennedy. According to the *Washington Post* on 20 January

Ms Quigley warned that the President's secret service bodyguards 'must be tirelessly vigilant. He himself cannot be too careful.'

Complementary Consternation

The consumer magazine *Which? Way to Health* concluded in a special report in its latest issue that alternative therapies used in the treatment of cancer are acceptable only if patients do not place too much reliance on them. Whilst some alternative therapies may be helpful when used together with conventional treatments, the report indicated that there is no place for therapies which reject orthodox medicine. Predictably, the *Journal of Alternative and Complementary Medicine* was less than enthusiastic about these conclusions and, in its latest issue, exhorted readers to write to the editor of *Which? Way to Health* expressing their concern. In France, also, alternative médicine has been having a tougher time than usual.

The *Guardian* on 22 February reported on Mme Rika Zarai, the French 'queen' of alternative medicine, who was charged with illegally marketing pharmacutical products and then forced to delete a page and a half of her best selling book on alternative treatments. The offending pages claimed that honey was efficacious in the prevention and cure of cancer and that AIDS patients could be treated by compounds of box-tree leaves and clay. Mme Zarai, an Israeli-born former singer has become, in recent years, a highly successful promoter of *médecine douce*. Pharmacists are not particularly well regarded in France where they are seen as exploiting their monopoly on medicinal products by demanding extremely high prices. It is, thus, unlikely that Mme Zarai's image as a campaigner against the pharmacist's lobby will be significantly tarnished by her current problems.

Dr Steve Donnelly is a physicist, a lecturer in electronic and electrical engineering, secretary of the Manchester Skeptics.

CSICOP shocker:

I AM ELVIS' LOVE CHILD !

Paul Kurtz tells stunned conference

"Resemblance is uncanny" say witnesses

CSICOP chairman Kurtz shows meeting his birth certificate as proof. Dad dropped by to support the amazing revelation.

"The truth about my lifelong affair with Shirley!" by Henry *It's In My Book* Gordon. MacLaine denies she's his mystery woman: "Not in this life or any other."

Scientists confirm startling news –

Aliens removed eggs from Mark Plummer's ovaries

TOP PSYCHICS PREDICT: *Predictions for 1989 will be as accurate as predictions for 1988!*

"I KNOW Elvis is dead"–Roy Orbison

Tabloid journalism is not just the province of British daily newspapers. The Ontario Skeptics' magazine ran this exclusive.

Perpetuum mobile

Anthony Garrett

A perpetual search for perpetual motion

The promise of a machine which runs forever, a perpetual motion machine, is irresistible. Perpetual motion was a hot topic in the last century, because the age of the engineer was at its height and the demand for new energy sources great. It is no coincidence that the science involved was worked out at this time; yet even today, over a century later, people continue to propose machines which don't work.

The reason for the enduring popularity of perpetual motion is of course the dream of conjuring energy from nothing. Were this feasible, all coal-fired power stations, with their carbon dioxide and sulphurous emissions, could be closed; likewise nuclear fission power plants, with their radioactive waste; and the need to disfigure the landscape with arrays of solar cells or windmills would vanish. The enormous sums spent on energy research could be redeployed, and cheap energy made readily available to developing countries. The inventor of a free energy source would be fêted throughout the world.

Perpetual motion proposals are of two types, and the distinction is crucial. A perpetual motion machine of the first kind actually creates energy. Some of this is inevitably rendered inaccessible through friction losses in bearings, or air drag on moving parts, or the like; but the rest is available to the world as free energy. By contrast, a perpetual motion machine of the second kind neither creates nor destroys energy. It runs forever by completely eliminating friction in the bearings, air drag, and such; but any attempt to extract energy from it causes it to slow down.

These two types of machine respectively contravene the first and second laws of thermodynamics. The first law states that energy is conserved, and the second that entropy increases. More on these in a moment.

Most publicity attaches to perpetual motion proposals of the first kind. Their proponents generally agree with scientists as to the laws of force and torque operating within their machines. The law of force was first elucidated by Isaac Newton three centuries ago, and states that Force=Mass x Acceleration. Similarly, angular acceleration is proportional to the applied torque.

Once it is accepted that undisturbed motion is a body's natural state, that it alters its velocity (i.e., accelerates) only when a force is acting on it, and that slowing down is not the natural state but the result of frictional forces, the path to Newton's laws is easy and intuitive. It nevertheless took a genius of Newton's magnitude to overthrow the Aristotelian dogma of the day, and comprehend this for the first time.

But, crucially, the same people do not accept that the force and torque laws also imply conservation of energy. This makes good sense: no force, no velocity change, no energy change. But in a complicated machine the same principle is one step further removed from the forces and torques which people can feel, and so is often beyond untutored intuition. I am told, with a don't-blind-me-with-science look, 'Maybe, but what is wrong with my machine?' Perpetual motion advocates, having once got into a physicist's office, are reluctant to leave until a lengthy impasse is reached.

One catch occurs so often it is worth singling out. Perpetual motion machines, in common with many others, are almost invariably cyclic: after sufficient operation, called a cycle, the machine returns to its initial configuration. A wheel making one complete turn is the simplest example. (Cyclicity is a matter of convenience, since a non-cyclic machine would be difficult to exploit.) In evaluating cyclic machines it is essential to consider the energy balance over a complete cycle. Cyclic machines with an obvious acceleration mechanism in one part of the cycle, but a subtle deceleration process in another, are particular favourites.

Even more subtle are those machines which interchange energy between its various forms: motion, heat, latent heat of evaporation (the 'drinking bird', a popular toy), electromagnetism, and so on. Some of the subtleties are quite ingenious, but if physics is operating as it has been understood for three centuries, the catch is inevitably there somewhere.

Perpetual motion machines of the second kind, though less commercially attractive, are no less interesting. Moreover, they exist! From Newton's laws it follows that an isolated system in motion, with no forces or torques acting on it, exhibits precisely perpetual motion of the second kind. How can this be reconciled with the running down of a top due to friction at its tip? The answer is that the energy has not been destroyed, but converted into heat at the tip. Since heat is motional energy of the atoms in the tip, we could still see continuing motion if our eyesight were good enough. The motion is therefore perpetual, though on an atomic scale rather than an everyday one. We say the energy of the top has degraded into heat, and this process translates into physics through the second law of thermodynamics. It is a consequence of our inability to see things on the atomic scale, rather than a fundamental property of nature like the first law.

A further example of perpetual motion of the sec-

ond kind is electrons orbiting the atomic nucleus. Obviously there is no air resistance! Because of the peculiarities of the quantum theory of atomic processes, we can no longer picture the process simply. Nevertheless, the criterion for perpetual motion of the second kind is still satisfied: verifiable predictions are not altered unless the system is disturbed. In other words, the electron does not 'run down'. Energy conservation still holds good in quantum mechanics.

A large scale example is the earth orbiting the sun. Meteorite strikes and other external influences, which affect the motion, are separate issues. Clearly perpetual motion of the second kind is common on celestial and atomic scales, but rare on Earth. However, we now know how to set up a simple quantum state as large as we like. The secret is to cool the system sufficiently near to absolute zero. The most famous example is superconductivity, currently in vogue, in which an electric current circulates in a wire loop with zero resistance, needing no battery to drive it. Although the current itself is still invisible, its effects are observable. Another example is superfluidity, in which a liquid flows up the inside of a tube immersed in it, and back down the outside, indefinitely.

How do these systems beat the second law? This law is ultimately only probabilistic reasoning, used in the absence of detailed information about each atom. Since we normally ask questions only about large-scale quantities, the enormous number of atoms being averaged over guarantees our answers accurate with almost total certainty. (Entropy relates to the amount of information needed to specify the system at the atomic level.) In the examples just given, we are dealing not with millions of particles, but with one electron, one planet, one known quantum state. Our reasoning then is exact; the second law is a different form of reasoning used in different circumstances. Proposals which violate the second law, all ultimately equivalent to impossible heat engines, tend to be more subtle than proposals of the first kind.

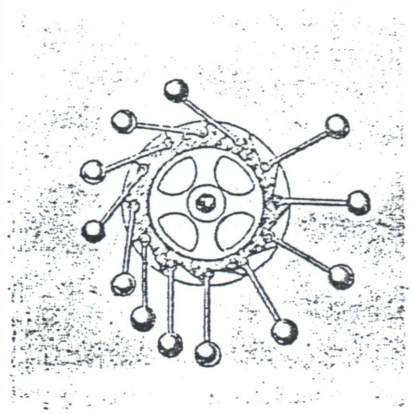
Finally for theory, conservation of energy still holds in Einstein's theory of relativity, provided that mass m is seen as a further form of energy E, related by the famous equation $E = mc^2$ where c is the speed of light. Because this is so large, mass is a very concentrated form of energy: we can do 300 million times better by converting the mass of a tank of petrol than by burning it! The complexity of nuclear reactors indicates the difficulty of transforming mass into accessible energy. But if, conversely, we invest energy in making antimatter, we have the perfect fuel, for antimatter spontaneously converts to readily accessible energy when mixed with matter. Just one tenth of a gramme of antimatter, safely confined, would propel a car for life!

We now turn to the entertaining history of perpetual motion. Arthur Ord-Hume's book, *Perpetual Motion: the History of an Obsession* (Allen & Unwin, 1977), gives a modern survey.

Today it is difficult to imagine a time when energy conservation was not firmly established, and the equivalence of different forms of energy, particularly heat, was fiercely debated. Yet that was the situation up to the middle of the last century; and earlier still, before Mayer, Joule and Helmholtz settled the first law, and Carnot and Clausius the second, perpetual motion proponents should be judged by their own times.

A Sanskrit manuscript from the first half of the fifth century refers to a wheel, free to rotate about a horizontal axis, with sealed holes drilled in radially from the circumference, part filled with mercury. Once started, the wheel was supposed to maintain its rotation. Presumably its inventor fell for the 'cyclic' fallacy, believing that the extra moment, due to the mercury on the descending side of the wheel moving under centrifugal force to the circumferential end of the tube, provides sufficient impetus to keep the whole thing going.

This is the earliest known coherent suggestion for perpetual motion. It is also the prototype of many proposed in Europe, in which weights attached to the circumference of the wheel dispose themselves further from the axis on the descending side of the wheel than the ascending.



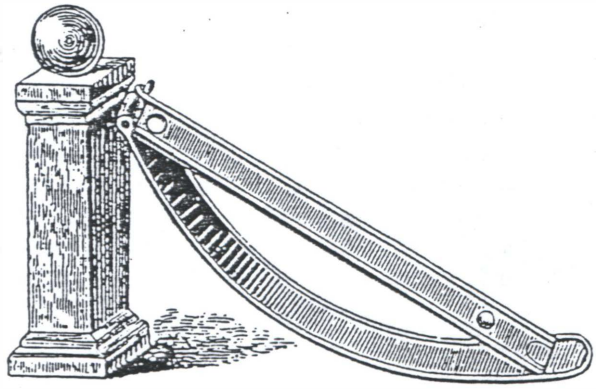
Some of these were marvellously intricate, and the Marquis of Worcester, who is believed to have constructed the first practical steam engine, claimed success for one in 1655. (Worcester's biographer, Henry Dircks, published in 1861 a comprehensive survey of the preceding three centuries of perpetual motion.)

This was pre-dated by the Italian philosopher Zimara, who in 1518 proposed a crank (inoperable, incidentally) for linking a windmill to a set of bellows aimed at it. Interconversion between forms of energy, here wind and mechanical energy, is a characteristic concept of perpetual motion. Perpetual motion was eminently respectable during the Renaissance: contemporary with Zimara, Leonardo da Vinci was involved in drafting sketches for six designs. By far the most common proposals concerned self-propelling wa-

ter wheels. The water mill was the dominant mechanical device in Europe; what could be more natural than to harness its power to raise the water once more? The aptly named Robert Fludd (1574–1637), an English physician, and Georg Bockler, of Nurnberg, were two leading visionaries of this kind. It mattered little that John Wilkins, Cromwell's brother-in-law and later Bishop of Chester, tested a similar scheme unsuccessfully during the Civil War, and pronounced his scepticism in 1648. Perpetual motion was in the air of the time. Wilkins, in fact, continued to be fascinated by perpetual motion to the end of his life.

The decline of a great many superstitions in the Age of Reason left perpetual motion untouched, for it could still be phrased as a scientific hypothesis. Indeed, proposals proliferated from the 1720's onwards. The 18th century also saw the first clock to be powered by changes in atmospheric pressure, giving an illusion of perpetual motion, by the London clockmaker James Cox. It now rests in the Victoria & Albert Museum.

In the last century, while the laws of thermodynamics were being established, the harnessing of electromagnetism led to a new series of proposals. These all essentially coupled motors back to generators. In fact, the earliest coherent magnetic proposal goes as far back as 1570, when a Jesuit priest suggested that an iron ball, rolling down a ramp under gravity, could be drawn back along a different path by a magnet. We now know that any magnet strong enough to do this would keep the ball from rolling in the first place.



The combination, last century, of the mechanical explosion and popular ignorance led to exploitation and fraud. E.P. Willis, a machinist of Connecticut, charged admission to view an asymmetrical-wheel machine, which he set up in New Haven and subsequently New York. It was maintained in a glass case, and was actually powered by compressed air passed up a strut and over one of the gears. Willis simply challenged viewers to state how the machine could run, rather than claim perpetual motion.

No such constraints attached to Charles Redheffer, who in 1812 set up a machine in Philadelphia which ran unceasingly. Needless to say, viewing was not free of charge. A team of experts sent to examine it in connection with Redheffer's application for funding detected that the wear on two connected gears was on the wrong side, and were satisfied that fraud was involved. They did not detect its nature, but instead built a similar machine with concealed clockwork, and a winder disguised as an ornamental knob. Redheffer privately offered its owner, Sellers, a large sum to reveal his secret. Instead, Sellers denounced Redheffer. Worse was to come in New York, where Redheffer, undaunted, built a further machine. The submarine pioneer, Robert Fulton, recognised its uneven speed through one cycle as characteristic of a crank (appropriately), and denounced it on the spot. He then dismantled a suspicious-looking support strut to reveal a catgut-belted drive, run by a man turning a wheel in a nearby room. The crowd, which had paid $5 a man, then a large sum (ladies free, for some reason), demolished the remainder, and Redheffer fled.

Perhaps the finest fraud was perpetrated by John Keely, again of Philadelphia. In 1875 he unveiled a complicated variant on the steam engine, into which he would blow for half a minute and then pour in five gallons of water. After a whizzbang show of manipulating various valves and taps, he would then announce that the apparatus was charged with a mysterious vapour, at a pressure of 10,000 pounds to the square inch. Keely claimed that the power source was the disintegration of water. Latterday enthusiasts prefer, like Keely, to tap 'new forms of energy', rather than deny its conservation. This is theoretically possible, but it is highly unlikely that easily exploitable new forms will be found.

The main reason for Keely's success—he raised over a million dollars to set up the Keely Motor Company—was showmanship. Keely was an imposing figure with an air of honesty, who was given to baffling the uninitiated with phrases like 'hydro pneumatic pulsating vacu engine', 'sympathetic equilibrium', and 'quadruple negative harmonics'. Such pseudoscientific terms are often used by today's charlatans; plus ça change! With men of science Keely was more guarded, and took pains to ensure none could examine his machines closely.

In the 1880's the Keely Motor Company, discouraged by his failure to produce a commercial motor, cut off his funding. He found an alternative source in a wealthy widow, and promptly unveiled a new idea: vibrating energy in the aether, which underlay the disintegration of water. The Motor Company sued him for reimbursement, but he claimed his latest idea was unrelated to earlier ones and refused to pay. After a spell in prison, he succeeded in satisfying the courts of this. Keely was forced to tread warily when his benefactress attempted to have leading scientific

figures validate his device. Tesla and Edison declined, but a visit in 1895 led the engineers involved to suspect compressed air sources. They were right. After Keely's death three years later, the son of one of his backers promptly rented the house, and found it was comprehensively 'wired' to a three-ton air tank in the basement.

The first patent on a perpetual motion proposal was granted in Britain in 1635, only twelve years after patenting was introduced. By 1775, the Parisian Academy of Sciences was refusing to accept schemes. Since this was long before the establishment of energy conservation, the gentlemen of Paris can only have been disillusioned by the repeated failure of all such devices in practice. Nearly a hundred years later, the US Patent Office decreed that a working model should be submitted within one year of the initial application; but enthusiasts still gummed up the works, and finally, in 1911, a working model was demanded from the start.

This rule has, inevitably, been challenged in the courts within the last decade, with inventor Howard Johnson finally winning US patent 4151431 on his 'magnetic motor'. Nevertheless, the world hardly waits with bated breath. The current furore over Joseph Newman's motor, which supposedly taps into hitherto unknown gyroscopic fields associated with sub-atomic particles, further demonstrates that perpetual motion will never die away entirely. (Present-day physics successfully predicts the spin properties of elementary particles to a staggering one part in a hundred million, which is as far as experiments have gone.) However Newman's device runs, it has proved subtle enough to confound several scientists. The story of perpetual motion exemplifies the entire human endeavour: an upward crawl to enlightenment, with theory and practice advancing side by side; momentous discoveries by pioneers, which become the bedrock on which the next advances are built; gradual diffusion of the new ideas into general awareness; and ever the self-deluded, and the charlatans preying on ignorance.

The story has been presented here as a case history rather than a warning, but if any lesson is to be drawn it is that the best insurance against nonsense is a scientifically educated public. It is faintly credible that the US Navy came close to backing one machine in 1881; but astounding that less than four years ago a jury acquitted a perpetual motionist of fraudulently raising $685,000, because (the attorney later found) it believed perpetual motion and energy creation possible. The sooner that cannot happen, anywhere, the better.

Dr Anthony Garrett is a physicist at Glasgow University, and a former member of the Australian Skeptics and the Manchester Skeptics.

Newman Update

Still waiting for that book...

Frank Chambers, in his article The Remarkable Mr Newman (B&IS II.6) mentioned that he had ordered, but had yet to see, Newman's much-hyped book The Energy Machine of Joseph Newman. Readers might be interested in this letter circulated by the Joseph Newman Publishing Company. —Eds

Regarding your book order of *The Energy Machine of Joseph Newman*, extremely important events have continued back to back since I last notified you which are I feel imperative to put in the book before it is sent out.

I have recently appeared at the U.S. Court of Appeals myself and expect to hear their verdict any day which I wish to put in this book. If they rule against me I will go to the Supreme Court.

In sharp contrast I have recently received the patent in Mexico on my Energy Invention and have just returned from Mexico and I am presently consummating a contract with a major company in Mexico to produce this Energy Invention within the next year, which will then be sold in the United States and worldwide and which will expose the injustice and corruption of the U.S. Government in fighting this Pioneering Technology.

This and other extremely important information that I feel is of dire importance to the Human Race is being added to this edition of the book.

I appreciate the consideration for those that have waited and are willing to wait until this valuable edition is completed with the above stated information, which will probably be another ten or twelve weeks before delivery. I do sincerely believe all who wait will find the information well worth waiting for.

Because of my appreciation of those who do wait, I will be autographing those books which I have never done before when shipping out. I can understand those who do not wish to wait and I will be glad to return their money immediately and will notify said person when the book is being sent out but at that time the book will be increased in price, possibly $15.00 to $20.00 because of the additional numerous pages, but to people who maintain their order, they will receive it for the price they sent.

Sincere thanks

Joseph W Newman

My Psychic Odyssey

Mike Rutter

Once a believer, now a skeptic...

For many years I have been interested in Science Fiction, Fantasy, and stories of the weird and wonderful—ranging from 'factual' accounts of the Loch Ness monster, Atlantis, UFOs, reincarnation, ghosts, poltergeists, clairvoyance, levitation, and ESP, moving on via straight occult fiction by Dennis Wheatley, through Lord Dunsay, to H.P. Lovecraft and his imitators—a fact that will be of some relevance later. However, for many years I treated such stories as basically entertainment and escapism, to be taken with an attitude of 'if only the world were as magical as that (but unfortunately it isn't so).' In the real world I considered myself a scientist, and eventually read mathematics at Cambridge and London.

Fifteen years ago, as a research student in London, I became friendly with some of the undergraduates, among whom was a colourful character who was interested in 'New Age' books—Atlantis, UFOs, reincarnation, psychic powers, etc. At the time I found him to be amusing but a bit weird, and wondered vaguely if he really believed all that stuff, and if so, whether he was quite right in the head. I assumed he was more or less alone in his interests. Little did I know.

Twelve years ago I moved to Manchester. Having read Colin Wilson's *The Occult* and a few other books, I now found myself, New-Age-wise, in the Promised Land, at least as far as bookshops and libraries were concerned. I devoured books by Colin Wilson, Brian Inglis, Stan Gooch, and many others.

In addition I found myself drawn to more serious accounts of Yoga, Buddhism, and the Gurdjieff tradition, and even joined a few groups to learn meditation. My attitude was suddenly transformed: like many before me, I now took it for granted that all these exciting things were objectively proved, and that the establishment, for some nefarious reason, was deliberately concealing the facts from the public. I saw nothing unscientific in my new interests—instead, I now saw the problem as being one of finding a new (non-materialistic) paradigm within which science could investigate all these wonderful new discoveries. I was still a little suspicious about UFOs and the Loch Ness monster, but any paradigm has a few anomalies that require to be ironed out by patient research. I even gave Extra-Mural courses on all these ideas.

Six years ago I was introduced to the sceptical works of C.E.M. Hansel, James Randi, and other writers from the Prometheus stable. My former complacency began to crumble. Trained as a scientist, I recognised the straightforward logic of their attacks on the various New Age strongholds, together with the shaky reasoning, and often mutually incoherent viewpoints, of their opponents on the 'psychic' side of the fence. Also, I began to realise that, unlike myself, most of the people I knew who were interested in unorthodox issues had no intention of subjecting them to any sort of rational scrutiny, and indeed often dismissed the Prometheans as 'sceptics: of course they say they don't believe in it—they won't even look at the evidence, will they?'

On the contrary, as I soon came to see, it was the New-Agers themselves who, all to often, refused to consider any evidence that went against their own cherished positions. Of course, some scientists and even self-styled sceptics displayed an incredibly closed-minded attitude to the paranormal and so on, on the lines of 'well, we know in advance that it can't be true, so we're not going to bother looking.; such people, usually regarding themselves as 'hard-headed materialists', infuriated me just as much as their New-Age colleagues who refused to consider any rational explanation for ghosts, UFOs, etc.

I still, therefore, regarded myself as a sceptic in the original sense of the term; that is, as someone who was prepared to weigh the evidence carefully and open-mindedly before coming to a definite conclusion. Through my study of philosophy, both Eastern and Western, I knew that science did not necessarily hold any of the answers to the Ultimate Questions regarding Life, the Universe and Everything (which is just as well for us trendy Extra-Mural lecturers!), and several years spent investigating the various meditative traditions had convinced me that conventional thought about the mind and consciousness, both in psychology and theology, had still a lot to learn from the Esoteric disciplines. However, I had found that (for instance) Yoga, Buddhist, Wicca and Gurdjieff groups were often just as dogmatic in their theoretical assumptions as anybody else, tending to assume that, because their techniques sometimes worked, their rationale was justified without any detailed testing of the ideas involved.

At first sight the Transcendental Meditation movement seemed to offer a scientific, rational, and testable approach to these matters. However, their refusal to admit outside, scientific, observers to their 'levitation' sessions, and similar apparent evasions of the objective approach, and me feel that nothing con-

clusive would be obtained from this quarter, Indeed, the whole of the 'alternative' scene seemed to be bedevilled by a lack of interest in rational, empirical testability, carefully controlled experiments, and a cautious approach to theorising; instead, anecdotal evidence and personal conviction seemed to be the only credentials required.

So, two years ago, I began to frequent the New Age scene, Tarot readers, Psychic Fayres, and all, in the hopes of finding some evidence for the 'occult' in the lives of those who worked professionally in the field. In the event, I was sadly disappointed in this anticipation. Let me say at once that most of the 'alternative' practitioners I met were kind, sincere, generous, sympathetic and concerned individuals, doing their best to give good counsel and practical advice to those who consulted them—although there were, of course, the few outright sharks and cranks, deluding themselves and/or their clients in a quite shameless way; I met quite a few Messiahs and Ascended Masters, returning to this planet for the Birth of the New Age, and I personally overheard a 'clairvoyant' say at one Psychic Fayre that most of the people involved were really working in 'a branch of the entertainment industry', rather than science in any shape or form!

In addition, of course, like any other group of people working together in a specialised and restricted field, these self-styled 'spiritual practitioners' had their fair (or 'fayre') share of quarrels, misunderstandings, feuds, and general mayhem, as seen by us lesser mortals both in real life and on the TV soaps—but that's unregenerate human nature for you, as we are all only too well aware. More seriously, some of the 'fringe' practitioners were self-professed Black magicians, often with a rather nasty line in rituals and ideologies.

On a lighter note, I recall an incident where several ladies, self-styled witches and Tarot readers came to inquire at the bookstall if there were any good introductory books on the Tarot that could be recommended for their use!

Caveat emptor, I also heard of a very crowded séance that took place after one Fayre—those present included (on the Astral, of course) a Chinese gentleman, a Hungarian noble, a Lancashire weaver and (inexplicably) a couple of polar bears! I have also met a wide variety of 'psychics' who could never manage their own financial affairs, and some have openly told me 'if I'd known business was going to be so bad, I wouldn't have come to the Fayre today!', and both Tarot readers and Yoga teachers who regularly suffered from major or minor ill-health, all PR to the contrary. It often seemed that the more revered the Guru, the greater the mess his (or her) private life was in. Additionally, I was appalled at the cost of readings and impedimenta such as Tarot cards, crystal balls and rock crystals at these events. Clients paid through the nose.

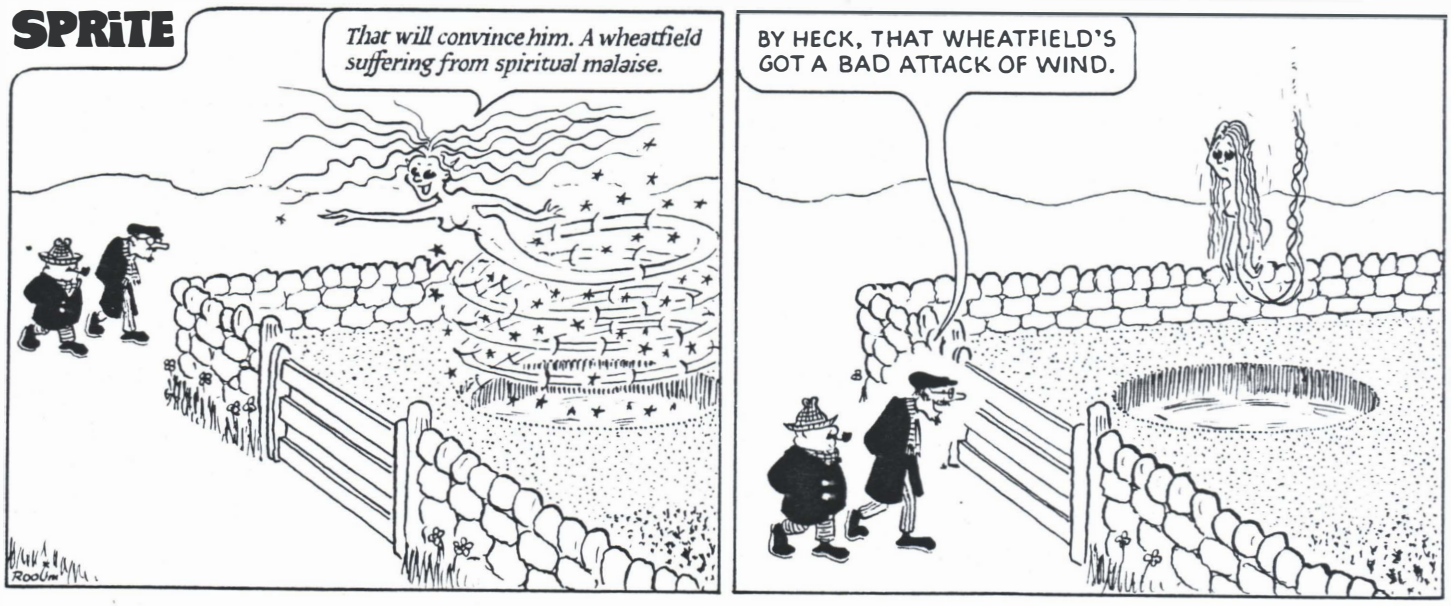
In fact, one of the most worrying aspects of all this is the way some people part with money that perhaps they can't afford, to obtain possibly worthless financial or medical advice from 'readers' whose own lives are nothing to write home about.

So, roll on the Millenium, or at least the Harmonic Convergence! But in the interim, I'm sticking to Science Fiction, and of course the *British & Irish Skeptic*. Which brings me to my final point.

I began by declaring a lifelong interest in fantastic literature of all sorts, taken simply as such. Well, I have noticed that many of the New Age enthusiasts have similar interests in books, films, dungeons-and-dragons type games, and so forth. Nothing wrong in that, of course, but I wonder if they manage to draw the necessary line between reality and sheer escapist fantasy, and, if not, what the cost will be?

May the Farce be with you! I'm off back to Vulcan, where things are organised a lot more rationally than among you crazy Earthlings. So, beam me up, Scotty!

Mike Rutter is a writer, a lecturer in Extra-Mural Studies at the University of Manchester, and a member of the Manchester Skeptics committee.



Cosmic Crystal Crankery

Stephen Moreton

An examination of 'New Age' crystalline nonsense

Having been a mineral collector for 15 years I can say that I am well and truly hooked on crystals but emphatically not in the New Age sense. For me the attraction lies in the aesthetic appeal and the scientific interest. For the New Agers crystals are 'a perfect expression of the divine mind', they 'stimulate healing within the body, based upon the principles of harmony and vibration' and they 'transform and harmonise energies at all levels'.

Crystals have attracted mankind for millenia. Peking man collected rock crystals and Australian aborigines use rock crystals and amethysts in rain-making rites, and they attribute to them malevolent powers. The idea that they can heal the sick has been around in western culture for a long time but with the recent surge in the New Age religion crystals have become big business. Miners in Brazil and Arkansas, the main sources of quartz crystals, can't dig them out of the ground fast enough—and prices have shot up.

The idea behind it all is that illness is caused by bad vibrations or disruption of energies in the body and that crystals can put these right, but more of that later. My first impression of these crystal healing, telepathic, New Age, pyramid energy people was that they were mostly a bunch of scientific illiterates with no understanding whatsoever of the subjects they profess to know so much about. In the case of crystal healers I have the distinct impression that the majority couldn't tell orthorhombic from triclinic, would think a unit cell was a place where prisoners were kept and that a space group was a rock and roll band from Mars.

No doubt this is true of the majority (and judging by some of the things I have read about crystals it is certainly true of some). It is not true of Ra Bonewitz, whose book *Cosmic Crystals* (Turnstone Press, 1983) I forced myself to read as a preparation for this article. Bonewitz is a geologist and the first half of his book is a fairly accurate and scientific description of crystals and their properties, though there are boobs like calling cinnabar 'an oxide of mercury' (it's a sulphide). The second half is about 90 to 95% mystical drivel. I was most disappointed that someone who ought to have known better obviously did not. I was reminded of an American I once read about (regrettably I can't remember his name)—who had a PhD in astronomy and yet believed that the earth lay at the centre of the universe with the sun, planets and stars orbiting it. I suppose even intelligent and well educated people are not immune to human psychological weaknesses. Bonewitz's book is fairly representative of crystal healing belief (perhaps slightly better than most) and the material below was derived from it.

For those who want to take up this crystal stuff Bonewitz gives plenty of instructions. First you must obtain a crystal. Ideally you could find your own but don't worry if you have to buy one—as Bonewitz explains—'you are simply exchanging the energy you have put into acquiring your money for the energy the crystal has accumulated in making its way to you. A crystal that has come half way around the world has acquired the energy of the miner, of the buyer, of the importer, and of the various forms of transportation required to reach the mineral seller. The exchange for money energy maintains the perfect balance of energy that characterises a crystal'.

When presented with a selection of crystals and you don't know which to chose just close your eyes for a moment and open them and grab the first crystal that you see. The first one that catches your eye does so because you have been drawn to it. Then it must be consecrated. Just will that it be used only for good. Now cleanse it of undesirable energies, i.e., wash it in water and ask the elementals of water (whatever they are) to remove those energies (don't forget to thank them afterwards). Alternatively you can leave your crystal in the sun, or breathe on it or wash it with eucalyptus oil.

Now you are ready to programme the crystal. Simply direct a thought into the crystal that its energies should be used for a particular purpose and that the crystal should retain that thought or intention within itself.

The crystal can now be used to focus your energies and aid you in your meditation so that you can reach higher levels and 'begin to discover the divinity within yourself'. It will also protect you from psychic attack and assist in telepathy.

It seems they also have horticultural applications: 'If you have problems in the garden, put a perfect image of the garden into the crystal, and place or bury the crystal in an appropriate spot in the garden'. If you have an ill plant, fill a crystal with healing energy and leave it next to the plant. To improve plant growth, plant crops in concentric circles (so that the natural energy of the plants is retained in a continuous flow rather than dissipated at the ends of rows)

and put a crystal in the centre.

Don't use them for purposes other than those they have been programmed for. Evidently one London homeopath made this mistake. He used a crystal as a repository of homeopathic information and intuition to be used in conjunction with a dowsing pendulum. He then decided to try using the crystal instead for meditation. The next day he discovered that all the homeopathic programming had been erased! I wonder if the patients noticed.

'How does it work?' you may ask. Well it's all to do with energy. Bonewitz distinguishes between 'mundane energies'—those that can be measured by scientific instruments—such as electricity, light and heat, and 'spiritual energies'—those that cannot be so measured. According to Bonewitz these are, 'Energies of thought, will, healing, and the energies that make up the higher spiritual bodies'.

Illness is 'a reflection of disruption or disharmony of energies in the subtle bodies, and ... healing takes place by restoring harmony to the subtle bodies'. This is done by placing a 'crystal in the area of energy disharmony (illness) and allowing its transformative power to work to bring the subtle energies back into harmony'. That's funny—I always thought illness was caused by germs, injuries, bad diet, bad habits etc. Bonewitz also has peculiar ideas about epilepsy: '... in an epileptic seizure the subtle bodies often become misaligned or completely separated from the physical body'.

What utter baloney. I am naturally concerned that gullible people with serious illnesses will swallow this mystical drivel and seek out crystal healing instead of real medical help. But this problem is not confined to adults who are free to make their own choices, and to affect their own lives. I have this horrible feeling that sooner or later some crystal crank whose young child complains of pain in the lower right abdomen will put a crystal there rather than have the kid's appendix seen to. As those who follow the activities of American faith-healers will know this sort of scenario has happened before—often with tragic results.

All this was bad enough but when I got to the bit about Atlantis in Bonewitz's book I nearly threw up. If you think the beliefs I have described to you so far resemble the excrement of male bovines try reading what these people believe about Atlantis. I haven't the space for details but according to New Agers the inhabitants of Atlantis used crystals extensively with the largest crystals located at major points of earth power. The priesthood, however, were corrupt and tried to use the crystal energies for their own ends. Eventually they tried to literally move whole continents. At this point 'the Hierarchy that oversees the development of the Earth' intervened. The Atlanteans were threatening the whole solar system. The unafflicted priesthood were forewarned and fled to the rest of the world to influence developing cultures in Tibet, China, Egypt and elsewhere. No sooner had they left than Atlantis was violently destroyed in cataclysmic upheavals.

Never mind evidence for all this—there is none and Bonewitz offers none. I suppose one is supposed just to take it all on faith. It all sounds about as probable as flying pigs. Some of the claims about crystals might be testable. The healing claims could be subjected to standard, double blind, clinical trials, just as with drugs. One could perhaps use cut glass as placebos. One particular claim seemed to me to be an especially easy one to examine—that the energies of crystals from Brazil are different to those from Arkansas even though they look the same. Apparently healers can feel the difference.

I doubt the believers would be moved by any negative findings. For them it is a religious belief. It is tied up with immortality, reincarnation and magical powers. Their emotional desire to believe transcends facts and reason. It is all in the mind and something Bonewitz writes merely confirms this for me. He reports that when people are given a crystal and asked to close their eyes and describe the crystal's energies they have a great variety of different experiences. Some see images, some see colours, some feel the crystal to be heavy or light, some feel pulsations, heat, cold, or pain, some hear sounds and a few detect smells. To me this collection of contradictory experiences with the same crystal shows that people are just imagining things. To Bonewitz it's all a part of the magic of crystals.

Dr Stephen Moreton lives in Edinburgh. He has recently completed a PhD in inorganic chemistry, and has a longstanding interest in minerals.

Some rational and irrational feedback

David Fisher

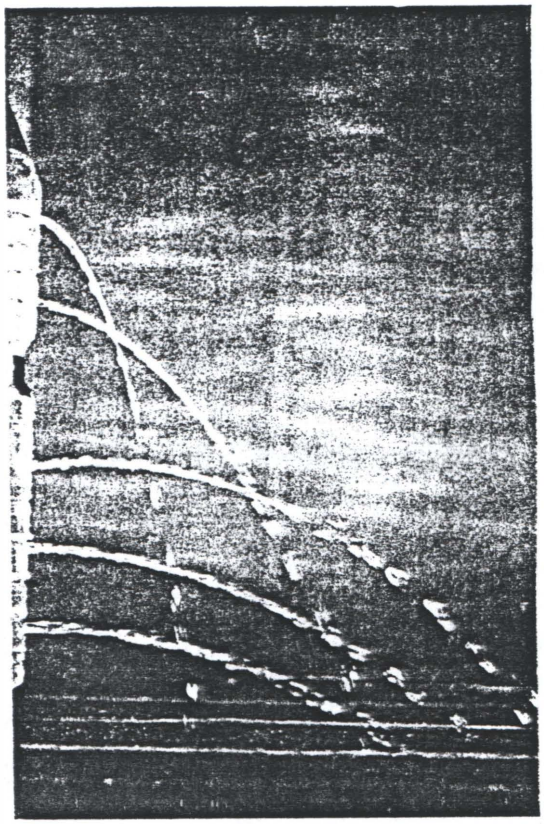
David Fisher's article 'Complacently Irrational or Irrationally Complacent' (B&IS III.1) provoked a number of letters. Reader Steuart Campbell took a particular interest in the example of a cylinder with a constant head of water and three holes. —Eds.

There was much food for thought in David Fisher's article on scientific fallacies (B&IS III.1). I was particularly intrigued by the problem of the cylinder with a constant head of water and three holes. In fact I guessed that water from the middle hole would go furthest, but it raised the question of at exactly what height the water did spout furthest. Fisher merely surmised that there must be some intermediate optimum. Consequently I calculated this optimum, which turns out to be exactly half way up the cylinder:

At what height (y) is x at maximum? Distance x is product of velocity (v) and time to fall (t). Velocity (v) is proportional to depth of water (y). Time to fall (t) is proportional to drop ($h - y$). Thus, $x = vt$, so $x = A[y(h - y)]$, where A is constant, $x = A(hy - y^2)$. Check boundary conditions: when $y = 0$, $x = 0$; when $y = h$, $x = 0$. x is a maximum when $dy/dx = 0$. $dx/dy = A(h - 2y)$, so x is a maximum when $A(h - 2y) = 0$. Then, either $A = 0$ or $(h - 2y) = 0$. It is assumed that $A \neq 0$. Then, $h - 2y = 0$ and $y = h/2$ Then x is a maximum when $y = h/2$, when the hole is half way up the water column.

I also conducted a crude experiment with a perforated plastic bottle (see photo). Fortunately experiment agrees with theory.

It is unfortunate that Fisher himself should commit several serious errors in commmenting on this problem. He claimed, contradicting Dr A, that the initial velocity of the water as it emerges from the column is zero! A projectile with zero initial velocity will go nowhere. Dr A was correct; the initial velocity *is* proportional to the head of water. Then Fisher claimed that there is horizontal acceleration and that it increases with depth. There is only *vertical* acceleration and it is constant!



Steuart Campbell

These notes were originally planned to be a short follow-up to my previous article [1] and were intended merely to put the reader's mind at rest concerning the questions which were posed at the end of that article. However, a recent letter in the *Skeptical Inquirer* [2] should have forewarned me that any attempt to quantify or test levels of skepticism would soon stir up all sorts of inventive excuse. Thus, if one asks, 'is every word in the Bible true?', some wag is sure to respond: 'Yes, it is the sentences which are false' [2].

It was also predictable that, in an article which specifically listed errors, some unintentional errors on the part of the author were sure to occur; especially as the item was prepared at great haste and finished off in the back of a taxi. The present work will thus answer some of the problems set in [1], point out some extra errors, and discuss some of the feedback which I have received from B&IS readers and others.

The most serious error on my part is the one which is pointed out by Steuart Campbell (see box). As he says, my statement is of course nonsense. But, before readers assume that I am suffering from terminal Orson Welles syndrome and question everything else that I wrote, I must explain that the statement was inadvertently taken out of context, due to a slip of the word-processor. In the book manuscript from which this example was extracted, I attack an explanation by a teacher who has an incorrect view of events occuring in the *interior* of the cylinder and who assumes that a large-scale flow pattern in the interior is necessary in order to explain the exit velocity. This in turn leads to the erroneous belief that the exit velocity is linearly dependent upon the depth below the free surface. However, I then point out (in the book)

that it is possible (by inserting various baffles within the cylinder) to reduce the fluid velocity essentially to *zero* just before the hole, and that it is the pressure and thus the *horizontal acceleration* which increases linearly with depth. Due to the omission of a critical sentence, my statement appeared to apply to the idea that the initial velocity depended linearly upon the depth.

In principle, one could use the above acceleration and Newton's second law to determine the initial (exit) velocity. In practice, this does not give the correct quantitative answer, due to the physically rather messy events which occur at the hole. The use of energy methods (Bernoulli's law) gives the correct answer (often attributed to Torricelli) which is that the initial velocity is proportional to the square root of the depth below the free surface ($V = (2gy)^{1/2}$, where g is the acceleration due to gravity).

The teacher in question then goes on to calculate the position of the hole which gives the maximum range, as does Steuart Campbell. Incidentally, I was deliberately vague ('merely surmised') about this in my article precisely in the hope of encouraging interest. But, thereby hangs a tale; these calculations form a sort of counterpoint to the anecdote [1] about the pupil whose experimental results were not believed, for both 'Dr A' and Steuart Campbell get the correct answer for the wrong reason, confirm their experimental results, write 'QED', and that's the end of it.

Unfortunately, it is already obvious from the above equation that Steuart Campbell's expression for the initial velocity is wrong. Secondly, having chided me for apparently believing that there is a horizontal acceleration outside of the cylinder, he then forgets about the vertical acceleration which he has himself just pointed out. As a result, the 'time to fall' is not proportional to $(h-y)$, but is instead equal to $[(2/g)(h-y)^{1/2}]$. The nett result is that Steuart Campbell's entire expression (just before differentiation) should be under a square root sign. Note that this does not change the position of the maximum, but it *does* change the prediction of the actual distance to which the spout will reach. I hope that all of this has not bored readers whose sceptical interests run more to mediums and such like. Now, back to those questions.

Polar bears can survive only by preying on penguins: False. I should of course have added 'in their natural habitat' because Christopher Allan of Stoke-on-Trent immediately pointed out (tongue in cheek) that they certainly do not do so in a zoo. For anyone who has not come across this famous trick question before, the point is that the natural habitats of these animals are some 12,000 miles apart.

The leg-bones of horses have been known to disappear during a race: I have been told that this is true, but have not yet managed to track down any hard data. Also the word 'disappear' is rather ambiguous. Does it mean 'disintegrated' or 'vanished'? Undecided.

There is a sequence of 1000 composite (non-prime) numbers: True, since one can easily construct a sequence of any length. If the required length is N, then start with $(N+1)!+2$ and carry on until you have your N numbers, since each successive number will be divisible (at least) by 2, 3, 4, etc. (Here, ! (shriek) is the factorial function ($N! = N(N-1)(N-2)\ldots(1)$). However, as Christopher Allan pointed out, the above process does not necessarily give the sequence of lowest numerical value.

Some crustaceans can transmute elements: In 1970, Dr C. Louis Kervran of the University of Marseilles claimed that his lobsters could manufacture phosphorus and copper within themselves [3]. His theory of 'physionuclear biology' seems to be one pseudoscience which never got off the ground. Strangely, his central claim of transmutation did not stir up as much controversy as did his secondary claim that 'life' was contrary to the second law of thermodynamics. This is a fallacy which has since been widely touted by the Creationists. False.

Statistics suggest that some species of bird are immortal: True (but one can prove anything with statistics). Fledge robins and transistors share the property that they do not appear to age, in the sense that their future life expectancy is independent of their current age [4]. Imagine this in human terms: a pensioner would have the same life expectancy as a schoolboy.

Haiti is an island situated roughly south-east of Miami, USA: False. As spotted by Christopher Allan, Haiti *shares* the island of Hispaniola with the Dominican republic. This error was made repeatedly by ITN newsreaders during a recent crisis in Haiti.

The hairs of polar bears function like optical fibres: This has been reported in journals, ranging from *Life* to *New Scientist* and the BBC *Wildlife* magazine, since 1978. It was also told to me by a man who came to service my computer. Strangely, one of those who is credited with discovering this 'fact' steadfastly disclaims it [5] as a definite fallacy. On the other hand, I am told that more recent work has further confused the situation. Therefore, I must call it 'undecided.'

All herbs in health food shops are good for one: False, and one only needs a single counter-example in order to prove it. The example is 'comfrey', the 'health-giving herb from nature's table', as my local shop puts it. The plant contains pyrrolizidine alkaloids [6]. These cause cirrhosis and cancer of the liver. Sale of the plant has been banned in Canada but not in the UK. The significance of this example is that comfrey is sold in loose form, and this permits uncontrolled dosages. Other poisons (e.g., selenium) in such shops are sold in smaller amounts.

All food crops are healthy to eat: False. In India, the nutritious pulse, *Lathyrus sativus* [7] is traditionally grown and eaten although it cause gradual

paralysis (lathyrism). In Guam [8], the inhabitants ate sago palm flour during the war. They now suffer from a range of neurodegenerative diseases, due to toxins in the plant. Even in the UK, spina bifida has been tentatively linked to potato consumption.

All fish are cold-blooded: False. At least one species of Tuna is warm-blooded.

All mammals are warm-blooded: False. 'Naked mole rats' are cold-blooded [10]. Of course, in these last two examples, the terms 'warm-blooded' and 'cold-blooded' are used in their technical sense of 'regulated' and 'unregulated' and do not refer to the actual temperature of the blood.

At this point, I should perhaps confess to a few more (minor) inaccuracies. when I said that UV light was used to treat (puerperal) jaundice, I was thinking of some of the original observations of this effect. In fact, the current treatment involves the use of light which is merely blue. This is even more surprising and, as I pointed out [1], makes 'colour therapy' sound less ridiculous.

Also, when I referred to the 'Hannay *phase*', I should have written 'Hannay *angle*'. Moreover, the effect can occur in situations which are much simpler that the one which was cited.

When stating that pressure-melting did not explain ice-skating, I did not mean to imply that it played no role at all. It has a relatively minor effect.

When rushing to meet the deadline, I missed out a reference [11] which supports my comment about undergraduates having medieval concepts of physical phenomena. Moreover, Anthony Garrett of Glasgow sent me a similar paper [12] which reveals that science students are as reluctant to change their erroneous views of physical laws as others might be to give up their belief in Uri Geller, graphology, or homeopathy.

I have received considerable 'flak' concerning 'centrifugal' force. Firstly, I should say that I was wrong only to state that 'centrifugal' force was not commonly recognised as a fallacy many years ago. In fact, Augustus de Morgan [13] mentioned it as such in 1872 but did not go into details. Some people have asked me why, if there is no such thing, do such experts as Jearl Walker of *Scientific American* and Professor Michael Berry of Bristol University often refer to it. I can only suggest that it is because 'centrifugal force', like 'quantum leap' (in the sense of large change), is a meaningless term which has entered the public consciousness and is now imposed (even upon those that know better) as a sort of *lingua franca*. The above experts may *refer* to it, but they would not use it in theoretical calculations. It must be admitted that it is a very seductive fallacy. When swinging a weight, one must exert a *centripetal* force and it is so easy to believe in an equal and opposite 'centrifugal force'. Another notorious example of a belief in a force which 'must be there' (to correct an apparent imbalance) is that provided by the gyroscope. The idea (probably inspired by the unsupported end) that it is some form of anti-gravity device has caught out the most surprising people. In 1974, Professor Eric Laithwaite (of linear induction motor fame) upset everyone by suggesting that a gyroscopic device on a balance exhibited signs of 'lift' [14]. It was particularly upsetting because he did this during the Christmas lectures to children at the Royal Institution. Faraday started these traditional lectures and was a ferocious enemy of the paranormal and pseudoscience. It is a pity that Laithwaite did not heed Faraday's advice to 'keep your imagination within bounds, taking heed lest it run away with your judgement'. Even more recently, Dr H. Aspden (a visiting reader at the University of Southampton) has suggested [15] that electronic interactions explain the anti-gravity properties of the 'force-precessed' gyroscope. In case one should doubt his theory, a letter from him in the same journal [16] points out that something called the 'Kidd machine' [17] has 'moved from the realm of being a scientific curiosity and is headed towards commercial technological application ... this is not perpetual motion but a means of swinging through space like a Tarzan who can hook the end of a rope to any chosen point in the sky.' The Kidd machine is the brainchild of Scots inventor Sandy Kidd who claims that his antigravity machine will travel to Mars in only 36 hours. According to newspaper reports last year, his device, which is based on gyroscopes, is currently undergoing tests at an unnamed Australian laboratory. Incidentally, readers who think that the golden age of heroically daft inventors is long gone should read *Electronics and Wireless World*. It is like entering another world (*sic*). During the past year, the subjects of anti-gravity, perpetual motion, and supraluminal velocities have been regularly discussed in a very positive way. Even a four-line proof of Fermat's last theorem has been tossed into the ring (January 1989) with all the ceremony of a sweet wrapper. However, readers who would regularly like to see *famous* academics out on a limb and letting their hair down at the same time should read the journal *Speculations in Science and Technology*.

The reason for the high percentage of strange theories in *Electronics and Wireless World* is worthy of examination. It seems to me is that what happens is (a) a pure scientist discovers a fundamental phenomenon, (b) applied scientists and mathematicians develop mathematical laws which describe the phenomenon *in most cases*, (c) engineers take up and use the laws, and (d) eventually, one engineer comes across an exceptional case which does not fit the law. He decides that it is a new phenomenon or that the law is wrong, not knowing that the exception was foreseen but forgotten. An example: I habitually use Fourier's equation to describe heat conduction but I know that, under certain circumstances, its use would imply instantaneous transfer of heat. This is only worrying if one uses the equation blindly. Much con-

fusion is also caused by mis-quoting laws. Thus 'nothing can travel faster than the speed of light' is an insufficient statement. Certain *non-material things* can travel faster than light (even in a vacuum); neutrons (material objects) can travel faster than light (in water). Again, 'entropy must increase' is an insufficient statement. Only the *total* entropy of the Universe has to increase. It is quite possible for it to decrease in localised regions. Creationists get a lot of mileage out of forgetting that detail.

I received some quibbles about Bernoulli's Law and aerofoils. I did not intend to query the fact that it can describe the relationship between streaming velocity and pressure; only that it could not explain lift because it merely leads to a circular argument (the pressure explains the velocity, the velocity explains the pressure, etc).

Finally, it has been suggested to me that my article was getting rather far away from the paranormal, or even from the pseudoscientific. To this, I could reply that it was commissioned by the editors—so take it up with them. I would rather reply that I think it was important to weaken the 'them and us' attitude of sceptics. Not only is there a gradation from 'believes anything' to 'believes nothing', but rationality and irrationality may exist in the same person. One leading researcher in my own field does excellent scientific work, but believes that the dead can be contacted by radio. When I went to Randi's dinner in London last year, the guest to my left scoffed at the faith-healers and psychic surgeons (described by Randi) as much as anyone else. However, this same person (Roger Coghill) believes that AIDS is not caused by a virus but by 'electromagnetic pollution' [19]. Complacent readers of the *British & Irish Skeptic* should note that others with 'unusual' views about AIDS have an effective lobby operating in parliament [20].

Another stratum of irrationality concerns that coterie of erudite philosophers and sociologists who destructively criticise the scientific method from their ivory towers. The only philosopher that sceptics seem to know of is Karl Popper; and only with regard to his falsifiability criterion. It is important to note that his criterion can be side-stepped in many ways. Interested readers might like to consult a notorious paper by David Miller [21] which proves that, since units of measurement are arbitrary, any daft theory can be caused to explain any given results better than an accepted one; simply by moving the goal posts. That is, by fiddling around with the units of measurement. This proof has never been adequately refuted. Another example: epidemiological data on the apparently unquestionable link between the cigarette smoking and lung cancer begin to look almost worthless when something called 'Simpson's paradox' is called into play [22].

One last word. We must always be careful not to throw the baby out with the bathwater. Remember that the humble and mundane Ohm's Law was once called an 'incurable delusion' of its inventor, while even Kepler's geometrical model of the solar system is surprising accurate [23]. Even the baseless theories of phrenology and telepathy have provoked scientifically valuable debates and improvements in experimental technique, respectively [24, 25].

References

1. D. Fisher, *British & Irish Skeptic*, 3(1), 1989, p. 15.
2. D. Summers, *Skeptical Inquirer*, 13(2), 1989, p. 218.
3. C.L. Kervran, *Journal of the Soil Association*, 16, 1970, p. 21.
4. R.B. Nelson, *American Mathematica Monthly*, 42, 1987, p. 981.
5. D.M. Lavigne, *Scientific American*, 259(9), 1988, p. 6.
6. J.J. Vollmer, N.C. Steiner, G.Y. Larsen, K.M. Muirhead, F.J. Molyneux, *Journal of Chemical Education*, 6412., 1987, p. 1027.
7. J. Rutter, S. Percy, *New Scientist*, 23 August, 1984, p. 22.
8. S. Fowler, *New Scientist*, 115(1573), 1987, p. 31.
9. K. Rodewald, W. Oberthur, G. Braunitz, *Biological Chemistry*, Hoppe-Seyler, 1987, 368(7), p. 795..
10. L. Gamlin, *New Scientist*, 115(1571), 1987, p. 40.
11. M. McCloskey, *Scientific American*, 248(4), 1983, p. 114.
12. I.A. Halloun, D. Hestenes, *American Journal of Physics*, 53(11), 1985, p. 1056.
13. A.De Morgan, *Budget of Paradoxes*, Volume 2, Open Court Publishing Company, London, 1915, p. 269.
14. R. Walgate, *New Scientist*, 14 November, 1974, p. 470.
15. H. Aspden, *Electronics and Wireless World*, January, 1989, p. 29.
16. H. Aspden, *Electronics and Wireless World*, January, 1989, p. 39.
17. *Sunday Express*, 23 October, 1988.
18. J. Hughes, *HiFi Answers*, June, 1988.
19. R. Coghill, *Journal of Alternative & Complementary Medicine*, 7(4), 1989, p. 27.
20. *Journal of Alternative & Complementary Medicine*, 7(4), 1989, p. 29.
21. D. Miller, *Synthese*, 30, 1975, p. 159.
22. R. Otte, *Philosophy of Science*, 52, 1985, p. 110.
23. J.V. Field, *Quarterly Review of the Astronomical Society*, 23, 1982, p. 556.
24. R.J. Cooter, *History of Science*, 14, 1976, p. 211.
25. I. Hacking, *Isis*, 79, 1988, p. 427.

Dr David Fisher carries out theoretical research in the field of phase transformations, and is currently trying to organise a Skeptics group in Wales and the West Country.

Skeptic at large...

Wendy M. Grossman

On my last trip to the States, I picked up a copy of *The New Age Catalogue* which, I am informed on the front cover, was compiled by the editors of *Body, Mind and Spirit*. It looks highly respectable, published by Doubleday, cost $14.95. 'We're here,' editor Paul Zuromski announces in the introduction, 'to help you make informed choices.' He lists his criteria for inclusion of products or services in the catalogue. 'We needed ... to experience what we had recommended... It had to *feel* good ... we had to concentrate on universal or national reach.' There is a picture of Zuromski, wearing a suit and tie, and looking terribly earnest and sincere, straight into the eye of the camera. He reminds me of a born-again Christian, or a used-car salesman—clean-cut, out to sell you his cause, and totally humourless.

Zuromski does not mention a criterion that anyone listed in the catalogue be selling something, but I suspect had he limited publication to lists of free services, it would have been a much, much thinner publication—one sheet of A4 paper would probably have been sufficient. Most of the advertisers include excerpts from their books or philosophy, just enough to incite the paranoia of the sort of person who can't pass a magazine quiz ('test your fruit-compatability quotient', perhaps) without answering all the questions and seeing how they measure up.

The Amazing Kreskin has a whole page, in which he avoids calling himself specifically psychic—but says Margaret Mead informed him he was not a mentalist, but a 'sensitive'. He is promoting a book on how to develop 'an amazing memory' (sounds like David Berglas' and Guy Lyon Playfair's recent publication). The American SPR tells you where to write to become a member. There are sections covering most of the obvious things: Egyptian magic, the *I Ching*, graphology, palmistry, chakras, healing, tarot, yoga, spiritualism, 'wholistic' health, past lives (*You Were Born Again To Be Together*), trance channeling, Nostradamus, crystals, and on and on and on.

What's fascinating is everything is in combination now. Astrology numbers, past life therapy, spirit possession by the newly dead (frightened of heaven, presumably), creative listening, Chinese hand analysis (presumably different from ordinary palmistry). Did you know that you have seven brains, all evolving? Did you know that if you have a receding jaw, you are likely to have repressed sadness or rage? Perhaps you should try polarity therapy for this condition, where the 'X-ray hands' of Dr Stone can locate where energy is blocked. Did you know about the inner smile, which will help you develop your ability to give and receive love? (This excerpt tells me that if I don't play my guitar, the strings will 'stretch out' and that I should adjust my guitar's 'bow'; I don't play the guitar with a bow, and I have never, no matter how long I've left it, come back to find the strings hanging loose ...) The Tao can awaken healing energy. Tibetan medicine can classify disease. Herbs can bolster your memory. Flower essences 'pioneer a new modality of health enhancement'. You can eat your way to health with macrobiotics and enjoy sprouted Vege-grain Patties. Trager Mentastics will teach you to exercise mentally and become ageless. You can learn acupressure points from a set of thirty flash cards. You can help your back by walking on the ceiling ... no, you lie on your back and hold your legs upright *as though* you're walking on the ceiling. Sorry. Shirley MacLaine's 'truly inspiring story in three volumes' gets two full pages. And you can integrate your right and left brains at 'Your Brain's Fitness Center ...' (registered trademark), Brain/Mind Salons (name copyright).

And this is only the tiniest part of what's available through this catalogue. (I was going to call it astounding, but you know about 'money notices,' don't you? where a critic writes one sentence which can be lifted because it sounds like praise?) I should point out that the authors are nobly handling mail orders for every item they have listed. For a fee, one presumes. Still ... wait for it to come to your local used book shop. Someday it's going to be valuable research material for scholars, trying to understand America in the 1980's.

Guardian update: Bernard Marcus wrote to tell me that since I cancelled my subscription to the *Guardian* he has written to complain about their 'intellectual treason,' and gotten no answer. He adds that they have taken to publishing New Age articles in their weekly supplement. 'All this,' he says, 'in a quality paper which supposedly upholds liberal and rationalist standards.' That's nothing. On 11 February, the *Sunday Times* ran an article on iridology. In the 'Health' department.

Wendy Grossman is the founder of the *British & Irish Skeptic*, and a writer and folksinger.

Heaven and Earth

Michael Hutchinson

Skeptical organizations in the United States seem to have greater success than they do in this country. I know of only two regional organizations in the USA which have disbanded. One of these, in Florida, has since been reorganized with new members and appears to be doing well. The second was the 'Skeptical Inquirers of New England' (SINE) which announced in the January 1989 edition of its newsletter *The SINEpost* that it was to disband. The reasons given rang a number of bells for me. Chairman David Smith wrote 'Subscribing to the *Skeptical Inquirer* is a spectator sport. You sit back and wait for your magazine to arrive and read all about the wonderful things that CSICOP is doing to combat the irrational. SINE, on the other hand, is a participant sport. It is here to allow you and me to do something on a local level. If the membership does not participate, then nothing gets done; we don't have a Paul Kurtz or a James Randi here to fight our battles. The past year has seen a steady erosion of our active membership. Of the nine people listed on the executive committee in our first newsletter, six have either dropped out or moved away. In the same period we have added one active member. You don't need a computer to figure out where this trend is leading.' Smith continued in similar vein, finally asking if a membership-service organization like SINE is really needed. He answered his own question negatively and explained that the existing organization will be replaced by an informal network and that there would be no dues, no newsletter, and no public lectures.

The situation in the UK is a similar one. I have opposed the formation of a 'club' with membership to avoid just the problems which SINE experienced. Even so the UK activity hasn't been what I would have liked it to be. There is an enormous amount of apathy. Perhaps this is partly due to the British character, and partly due to the fact that we don't yet have the paranormal extremism which the United States has. I have often thought that it is the latter which creates a backlash among rational people who see the necessity for action. But that doesn't necessarily explain why the skeptical movement in Australia is so strong, or why the New England experience was so different from other parts of the USA. Is New England isolated from paranormal (and creationist) activity? I doubt it. But there is another possible answer. Steve Donnelly pointed out to me that the character of the people in New England is similar to the one in this country. He told me that he has even mistaken New England people for British but with slight American accents.

This is not intended as criticism of the non-active readers of the *Skeptical Inquirer* and the *British & Irish Skeptic*. Your contributions to the coffers of skeptical movements in the USA and UK are essential. In addition I see these publications as providing an educational service. Those of us who have the time and inclination to investigate, complain, and write for these publications are providing the ammunition for others to promote critical thinking in their own ways, no matter how small. So all you armchair skeptics, keep up the good work by renewing your subscriptions. We need you—there is no point in writing for a circulation of one.

Some months ago Prometheus Books received an announcement about the formation of a club selling New Age publications, being set up in association with Russell Grant, the astrologer and psychic. Even though they will be promoting books on extra-sensory perception, geomancy, magic, mysticism and other psychic subjects I was not surprised at their request for information about Prometheus's trade terms. What did surprise me was why they needed to ask about the company's returns policy. Surely with such a prominent astrologer and psychic at the helm they wouldn't have any returns—would they? I supplied a catalogue and price list, but have heard nothing since. Perhaps they took seriously my suggestion that their club members would be unlikely to read critical books.

On the subject of Russell Grant, it is apparent that the Independent Broadcasting Authority have an odd policy about astrology. Although each Friday morning, Grant is allowed to promote all sorts of astrological nonsense on ITV's *After Nine* programme, the IBA barred Virgin, his publisher, from advertising *Russell Grant's 1989 Horosocopes* on television in a £100,000 campaign. The IBA code forbids advertisements which promote 'fortune tellers and the like'. This policy seems even stranger when you think of the newspapers which have been advertised on television using fortune tellers and the like of Doris Stokes!

I remember that Channel 4's marvellous, but underrated comedy programme *Who Dares Wins* occasionally showed a skeptical leaning. It once featured the following in its 'Word of the Week' spot: 'RUSSELGRANT, n. A russelgrant is the medical term for an attack of violent nausea caused by a large lump of fatty tissue which makes you throw up over your cornflakes.' I know the experience.

Michael Hutchinson is secretary of the British Committee, and UK distributor for Prometheus Books.

Reviews

Hollywood Channelling

Henry Gordon, *Channelling in the New Age.* Prometheus, 1989.

Attentive readers will recognise Henry Gordon as the magician, columnist, broadcaster, CSICOP fellow, and author of *Extrasensory Deception*, a collection of his columns from the *Toronto Star* (reviewed in B&IS I.6).

His new book is subtitled *The 'Teachings' of Shirley Maclaine and other such gurus.* Poor Shirley featured in the previous book as well, but this time she really gets the treatment. After an amusing chapter on what the New Age is all about, and a chapter on channelers—the new spirit mediums—he devotes the rest of the book to Maclaine, biographical facts about her, and an analysis of her 'teachings', philosophical, metaphysical and scientific. The analysis takes the form of a series of quotations from the guru, each followed by a pungent comment which sheds the light of reason on the sacred words.

There is a foreword by Isaac Asimov, more than usually vitriolic for him, and well worth a quotation:

> Hence we have the incredible nonsense dished up, without shame, by the likes of Shirley Maclaine; all of it 'well-documented'—simply because she says so. And here we have Henry Gordon writing a book that considers the Maclaine nonsense and debunks it. Will this harm Maclaine? I doubt it. Will it win away the helpless innocents who pant after her gibberish? I doubt it. Then why bother?

The introduction answers that question neatly:

> The only reason, it seems to me, to write a book, is to have something to say. Well, Shirley Maclaine has had lots to say—and she's still saying it.
>
> So I thought it only fair for me to say something about what she is saying and what she has said. What I have to say is certainly in a more condensed form than Shirley's sayings. But I feel I have said all I save to say about what Maclaine has been saying. To say more would be superfluous—it says here.
>
> If you think what I have just written is slightly obtuse, try reading some of Shirley's books. On second thought, don't—at least not until you have finished this book and are in a better position to decide whether to risk your hard-earned cash on a collection of nonsense that is having a profound influence on more people than you can imagine.

I suspect Henry meant 'obscure', not 'obtuse', but perhaps it was an intentional error, designed to simulate Shirley's style more perfectly.

The first chapter tries to define the term 'New Age' and to bring us up to date on the latest additions to the long list of cults, fads and illogical belief patterns which we have always had with us. I found several that I had never heard of. Henry also outlines the profit motive behind the upwelling of this garbage in recent years and identifies the people who profit: garbage writers, publishers, seminar managers, crystal cutters, cassette producers (for those who don't read very much), and the gurus themselves, to mention but a few. As the author says:

> The idea being sold is that inside every human being there is a wonderful and talented personality. And this personality will grow and flourish if the individual just looks inward and ignores any consideration for others. Just do whatever you feel like doing. This will help you expend your consciousness and make you self-aware—whatever that means.

I was delighted to see that Gordon recognises the harm being done by the adoption of New Age tenets by the business world. Practices including graphology, mystic motivational seminars, hypnosis and mandatory meditation are discussed, as are the interests of the CIA, DIA, and military in psychic techniques applied to warfare. He quotes Ronald MacRae's book *Mind Wars* where the author notes that Congressman Charles Rose thinks skeptics in the Pentagon and CIA are hindering research in 'remote viewing' and wonders openly about their motives, warning 'we may have to investigate them'. Shades of McCarthy!

Psychics in the justice system are discussed, including psychic detectives, psychic counsel to help

lawyers select juries, and psychic solicitors, not to mention judges who believe in these phenomena. But Gordon reserves his judgement for the most damaging of New Age beliefs to be 'alternative' medical practices, amongst which he emphatically includes chiropractic and homeopathy along with acupuncture, health food fads, rolfing, biofeedback, chelation therapy, iridology, crystal therapy, colour therapy, aromatherapy, auras, and the rest.

Chapter Two discusses channellers, but starts with twenty pages on the spirit mediums of the past and some of the techniques they used to confound and impress the faithful, This material will no doubt be familiar already. Speaking for myself, however, I learned a great deal from the rest of the chapter that I hadn't previously picked up from the comic strip 'Doonesbury' about modern channellers and their handy disembodied spirits. I envy the many practitioners who claim that they discovered their powers after a blow on the head. I had a fractured skull as a child, but have been unable to develop any advisers from beyond. On the other hand, who needs advice like the following transcription from a TV show from the discarnate mouth of Mafu, the mealticket of a certain Penny Torres Rubin, highly esteemed in the USA?

> Ask you that which be I, I be that which you are entity all things. I be what is called one who have come unto you on this day in your time to bring unto you the greatest thing there be, that which is come by knowing that you are loved... [all *sic*—Eds]

The rest of the book is specifically about Shirley Maclaine, singer and dancer on Broadway in her early professional years, movie actress with several Academy Award nominations and an Oscar for *Terms of Endearment*, kooky Hollywood resident, only female member of the Sinatra-Lawford-Martin-Davis 'Ratpack', civil rights activist, Vietnam protester, presidential campaign worker, traveller to distant and exotic lands, and now all-round expert on subjects occult. Her first 'mystical' book was *Out on a Limb*, a hardback bestseller. A UPI news story in December 1987 reported that she was being sued for plagiarism by Charles Silva who claimed that she had borrowed some of the plot for this book from his 1977 work *Date with the Gods*. *Out on a Limb* was made into a five-hour television movie, and she has now written a book about the making of the movie of the book. One Australian reviewer wrote 'Survivors [of the five hours] may wonder if Miss Maclaine is just Out of her Tree.' Delightful anecdotes like these fill the third chapter, which completes part one of the book.

Part Two is where we are actually exposed to the quoted words of the guru, with rational commentary by Henry Gordon. This makes for very amusing reading. For example, she likens her ideas to Newton's theory of gravity and to Galileo's saying that 'maybe all the planets revolve around the moon'. The Moon?? Elsewhere, she is quoted as saying 'The cosmic law spirals the light', to which Gordon's only comment is 'Uh-huh'. Repeatedly she uses words like 'frequency', 'vibration', 'energy' 'amplification' and 'intensity', which she does not understand the meaning of. On the other hand, neither, I suspect, do her followers. Her wisdom on the 'amplifying crystals' in radio and TV sets will astound electronic engineers who know that there are no such things. I could go on giving amusing examples all night of her nonsense and Gordon's witty rejoinders. Instead, I will recommend that you procure the book to read for entertainment and to pass it on to any acquaintance who needs a little dose of skepticism to cleanse the thinking department.

—**Frank Chambers**

Skeptics under attack?

Alan Radnor, *Paranormal or Normal*, Lennard Publishing, 1989, £12.95, 188 pp.

A book about science by a history graduate who became European editor of *Penthouse* is bound to be suspect. Even more so when the author is a member of the Society for Psychical Research and the producer of the SPR's centenery film *Quest for the Unknown* and a drama series about allegedly paranormal incidents (*Worlds Beyond*).

Radnor's purpose is to convince us that what we call the paranormal is in fact 'normal'. Ungrammatically (the writing is of poor quality) he defines 'paranormal' as 'the acquisition of knowledge without the use of normal senses', but he has no idea how else the knowledge could be acquired. Of course one can argue either that the paranormal is normal (because anything that exists must be normal) or that it is not normal (because it is abnormal or unusual). Radnor means to claim that paranormal phenomena are *real*, not imaginary or faked (although he allows that some are imaginary or faked). He also claims that *new science* (or New Age science), by which he means principally that based on quantum physics and the so-called 'uncertainty principle') supports 'the claims of psychics, mystics and seers since the dawn of time'! These are large claims which are not substantiated. Indeed they fail by reason of his inadequate understanding of science, especially the history of science.

Whatever makes non-scientists believe that they can write unerringly about science? Does an interest in the paranormal somehow dull the intellect and cause them to believe that all the mysteries of the universe are clear to them? This author believes that matter cannot be destroyed, that the planets were formed (soon) after the Big Bang, that electrons are

part of the atomic nucleus, that the discovery of cosmic strings allows us to travel 'to the edges of the Milky Way', that Newton discovered his law of gravitation by seeing an apple fall from a tree, that the universe in unstable and unpredictable, that life cannot exist without light, that the moon rises in the west, that continents and ancient civilisations have been lost under the Atlantic and Pacific Oceans, that Maes Howe in Orkney stands at the intersection of tectonic plates, etc... He confuses energy with force, the ionosphere with solar storms, gravity fields with gravity waves, and the solar wind with cosmic rays. His claim that the ancients were aware of *four* major forces in the cosmos (before modern science discovered them) is undermined by the recent discovery that two of these forces are only one force (and by the expectation that all the forces may be unified). He misunderstands the scientific method (trying to describe it in only four lines), infinity, nanoseconds, plate tectonics, Stonehenge, the precession of the equinoxes, and even the cause of the recent Shuttle disaster! He seems to be ignorant of the origin of all the heavy elements and of what exactly holds the Solar System together. He writes confusingly of the origin of the universe as 'creationism' (without the slightest reference to the religious movement of that name). His logic is at fault in claiming that he could detect with his hand 'a slight current' (in a megalith) which he also claimed was 'impossible to detect without the use of magnetometers'. His belief in dowsing is undermined by his revelation that Australian aboriginals can find water without either rods or pendulums (perhaps they know where to look).

This catalogue of errors shows that Radnor is not someone whose ideas need to be taken seriously. Even less so when he advocates acceptance of 'UFOs and their pilots', ley lines, poltergeists, reincarnation, Kirlian photography, apparitions, psychokinesis, telepathy, morphic resonance, astrology, precognition, OBEs, astral projection and travel, clairvoyance, etc.

Radnor contradicts himself in claiming that while science and technology have left many fundamental questions unanswered they are nevertheless 'moving towards mysticism and magic through its [science's] discoveries'! He is equally confused about the value of parapsychology and laboratory experiments; he asks if the laboratory is the right place for psychical research yet support claims that phenomena can only be validated in the laboratory. He admits that psychic research has failed and that it has not produced any theoretical basis for paranormal phenomena. He seems to think that normal science will eventually validate the paranormal. In this he is surely mistaken.

Radnor attacks sceptics several times, firstly as early as page viii, alleging that they would read no further. This sceptic has proved him wrong but I would advice other sceptics not to bother.

—Steuart Campbell

Physics and Psychics

Milton A. Rothman, *A Physicist's Guide to Skepticism.* 247 pp, Prometheus: 1988, paper.

This book is the latest offering from the skeptical/humanist/philosophical press, Prometheus. Written by a physicist, it presents physical science as the foundation for a skeptical viewpoint. Many so-called paranormal phenomena are contrary to physical law, and can be ruled out as such.

Of course, such arguments are convincing only to scientists. Rothman aims to educate his reader further in science, so as to widen acceptance of his position. The first part of the book expounds important physical principles. These are categorised in a central chapter and then applied to a range of topics, including ESP, UFOs and time travel.

Rothman is aware of the usual counter-argument: 'How are you so certain of the laws of nature? Newton's world view gave way to Einstein's. *It could all happen again.*' Indeed it could; but we never *do* claim to know the laws of nature, only ever closer approximations to them. An improvement took place when Newton was overthrown, and (though there are no definite discrepancies) it could certainly happen again. To deny that is to deny any possibility of progress. But Newton's theories still work very accurately in the everyday world, and relativity and quantum theory extend the domain of accuracy out to galaxies and into the atomic nucleus. Whatever its ultimate fate, today's physics more than serves as a basis for Rothman's arguments.

It accords at this point that no theory is ever proven with certainty. We may predict that the sun will rise in the east tomorrow, based on past observation and the celestial mechanics constructed about them, but probabilistically only; absolute certainty is lacking. Nor is there anything disreputable about observations at variance with theory. *Provided they are known to be accurate*, they spur the search for a better theory. The heat in paranormal debate concerns the accuracy, since the present theory works excellently everywhere else.

Neither is there any escape from physics. Those who assert that the laws of nature are suspended, or transcended, by ghosts, miracles and so on deny themselves the moment they begin to speculate on cause. One can always ask: in what region of space and time is our present description suspended? We are back in the realm of physical science.

This is, therefore, a book about philosophy of science. To examine it in detail: the early chapters presenting physics are well presented. There are occasional inaccuracies—Bell's theorem does *not* rule out a 'hidden variable' explanation of quantum randomness, it rules out one in which the hidden variables are internal to each particle, or *local.* (And John Bell

is Northern Irish, not English.) It would have been nice to read a discussion of John Cramer's marvelous new 'transactional' interpretation of Bell's result, the first to build on it, which resolves the whole gamut of quantum paradoxes [1]. But there is no question that the reader can extract, as far as is possible without the mathematics, the ideas upon which relativity and quantum mechanics are founded. There are better lay expositions, but none side-by-side with the skeptical argument.

The central chapter divides the laws of physics into two: laws of permission and laws of denial. Newton's law of force would be a law of permission; it predicts the evolution of a system. Energy conservation is a law of denial since it rules out non-conservative processes. This distinction is essentially arbitrary: to permit one thing is to deny others and, in fact, a deeper exposition unifies the two categories. A law of permission can be derived from something called a variational principle, into which a law of denial may be incorporated. Rothman is aware of this, but inexplicably goes on to assert usefulness of the distinction.

Thereafter the book takes aim at its targets. First is the vitalist denial of reductionism: the idea that the behaviour of complicated objects cannot be explained, even in principle, by sub-atomic laws. Life forms supposedly require something more. Rothman points out that this position began to be eroded when organic compounds were first synthesised in 1828, and that ever more complicated syntheses today produce ever more complicated systems *ab initio*. He insists that, as soon as a living cell is synthesised, the vitalist position will be untenable. Certainly it will be difficult to maintain; but the real point is that until the idea of 'life form' is defined in terms of elementary particles, no definite statement has been made. This brings us to the idea of emergent properties, like temperature and pressure, which are undefined in terms of the behaviour of the particles comprising the system and arise upon adopting a statistical viewpoint. 'Life' can only be a more complicated version of this idea. Rothman is not fully convincing upon this or on the related, notorious Second Law of Thermodynamics, but few physicists unaware of the viewpoint of E.T. Jaynes [2] are.

The final chapters are the best. In these, Rothman effectively provides a course in inductive logic—discerning that which it is justified to believe from the evidence available—and applies it broadly. The paranormal receives a battering at his hands. Included also is tactical advice on how to debate against paranormal proponents, by defusing such loaded questions as 'How do you know that ...'. These sections are excellent. The title of one chapter ('Living Skeptically', where 'Thinking Skeptically' would clearly do), allied with the choices of example, indicate a strident humanism which Rothman's prose style does little to belie. Readers who prefer the effectiveness of understatement may need some adjustment. But there is nothing remotely similar to this book in the literature, and it makes worthy reading at the least for its final chapters.

[1] J.G. Cramer, *Reviews of Modern Physics*, 58, pp.647–687, July 1986

[2] E.T. Jaynes, *Papers on Probability, Statistics and Statistical Physics*, ed. R.D. Rosencrantz, Synthese Series vol. 158, Reidel (Dordrecht, Netherlands) 1983

—Anthony Garrett

Two Casebooks

Joe Nickell with John F. Fischer, *Secrets of the Supernatural: Investigating the World's Occult Mysteries.* Prometheus Books, 1988, 200 pp, with comprehensive references and index, £13.95, cloth. C.A.E. Moberly and E.F. Jourdain, ed. Michael H. Coleman. *The Ghosts of the Trianon: the Complete Adventure,* Aquarian Press, 1988, 160 pp, £7.99.

Dr Coleman tackles one Victorian ghost story; Joe Nickell investigates eleven contemporary and historical cases of apparently supernatural phenomena. Coleman is a retired research scientist, and a member of the SPR. Nickell is a teacher of technical writing, a former professional stage magician and private investigator; Fischer is a forensic analyst in a Florida crime laboratory. These different backgrounds make a vast difference to the writers' approaches, and to the kind of cases they are able to tackle. (Nickell peppers his book with quotations from Sherlock Holmes.)

Nickell's focus is on solving mysteries: the ghost in Toronto's MacKenzie House, the so-called 'Skull of Death', restless coffins in a Barbados vault, spirit pictures taken at a 1985 seance, spontaneous human combustion, Mexico's Image of the Lady of Guadalupe, mysterious disappearances, a bleeding door, and the strange case of the two Will Wests in an Indiana jail. Nickell's intent is to find explanations which fit the facts, solutions which explain phenomena, rather than rejecting them. Nickell does not reject the possibility of super-natural phenomena, but points out 'extraordinary claims require extraordinary proof,' and 'one cannot explain the unknown by the unproved.'

Some of Nickell's conclusions: MacKenzie's ghost lived in the house next door, from where sounds of a cleaner's trolley, a child practicing piano, and people on the staircase were amplified by the extremely narrow walkway between the houses. The two Will Wests, both prisoners at Leavenworth in 1903, were not proof of synchronicity, they were twins. This case, widely publicised at the time, was an important one. It was the direct trigger for the dropping of the

use of the Bertillon system of measurements to identify criminals and suspects in favour of fingerprinting. Nickell analyzes the Image of Guadalupe and presents a convincing argument for its having been painted (i.e., forged), and makes recommendations for tests to resolve the issue. (It should be remembered that Nickell is the author of a book which offers a similar analysis of the Shroud of Turin, together with an explanation of how the image could have been forged; he has considerable experience as a painter.) He finds standard folk-lore motifs in the disappearance stories. He tests samples from the bleeding door—and it isn't blood after all. He examines thirty cases of 'spontaneous human combustion'—and shows a possible external source of fire in all of them. He ran controlled tests of dowsers in the Yukon Territory in 1975—and found no evidence to show that dowsing works. He was able to duplicate the spirit photographs.

One of the most fascinating aspects of the book is the comprehensive array of investigative techniques Nickell uses: chemical and photographic laboratory analysis; document research involving libraries, newspapers, census records, the police and the FBI; personal investigation; controlled testing.

Nickell's solutions are not always clear-cut, but they are always interesting. He shows that many times the supernatural explanation, though not the simplest explanation, is the easy way out. In the MacKenzie case, the caretaker next door commented that in twelve years of extensive national publicity, Nickell was the first to consult him.

Coleman's book could have been condensed to make a chapter in Nickell's book. Confining himself to document research, he discusses in depth a case involving two Victorian ladies who visited the Palace of Marie Antoinette at Versailles (known as the Trianon) in August 1901. Miss Jourdain and Miss Moberly, walking through the grounds on an erratic path and talking of other things, were both visited by 'feelings of dreariness and depression'. Three months after their visit, convinced that the Trianon might be haunted, each wrote down her version of their experiences. Miss Jourdain, by agreement between them, returned to the Trianon a number of times in 1902, in an attempt to identify the places and people they had seen. When, in 1904, Miss Moberly made a visit with her, both agreed that the grounds were much smaller and much different than either had remembered. Meantime, towards the end of 1902, they sent their documents to the SPR. The SPR declined to investigate the case, saying the evidence was not of a sufficiently high standard. At some point—and Coleman argues that it must have been after the SPR's refusal—the ladies each wrote a second, longer version of the experiences. In the meantime, they also undertook some historical research, which convinced them that they had seen various members of the court of Marie Antoinette, including the queen herself. In 1911, the longer versions of their recollections were published under the title *An Adventure* by Macmillan. As a note, the authors say of themselves in this book that one of them is the seventh daughter of a seventh son, and her Scottish mother and grandmother possessed powers of premonition and vision, and that the other has powers of second sight, 'deliberately undeveloped', adding that 'both of us have inherited a horror of all forms of occultism'.

Coleman publishes here Jourdain's and Moberly's original recollections, their second, and longer (published) versions, side by side for easy comparison. He adds the high points of their later researches and summaries of a number of critical reviews from specialist journals, including the critical discussion which appeared in the SPR Journal. The book was better received in the daily press, and went to seven printings. There were also four later editions: 1913 (Macmillan), 1924 (Chapman), and 1931 and 1955 (Faber).

All in all, Coleman does a good, scholarly job in assessing the evidence, analyzing the reactions, and presenting as much as he can of the material he draws from. He compares the Trianon case to other cases of the period, and he quotes from both critics and from those sympathetic to the ladies' story. It's obvious that the case has had widespread coverage, and Coleman's edition is clearly warranted on that score. But it would have been much more satisfying if he had been able to bring his undoubted research skills to bear on a case which was less obviously weak to begin with, like Nickell's crystal 'Skull of Death.'

—Wendy M. Grossman

Ghost Train

'Ghost Train', *Forty Minutes*, BBC2, 2 March 1989.

Anyone hoping for any kind of analysis of ghosts and hauntings must have been severely disappointed by this programme, which was little more than a 'vox pop' essay. Sources, names, and dates were not provided, nor were witnesses cross-examined. All we were offered was a series of more or less curious anecdotes. Railway enthusiasts must have felt cheated too—the ghost train of the title was not some mysterious phantom engine, but a railway carriage that was used to transport us around the country to the next location.

We began near Preston, at Chingle Hall, which is supposed to be haunted. Some nurses from a nearby mental hospital were staying there overnight, to raise money for charity. I have myself been to Chingle, on a very damp, misty day in early Autumn: ideal weather for seeing things that aren't there. Our party was shown round by a charming lady who told us about the various manifestations: these seemed pretty tame stuff. Like Borley Rectory, the house has a 'cold spot' (most houses do: they are usually called 'draughty

spots'). I, wearing a sweater, but no coat of any kind, could hardly have felt warmer. The cold spot, the lady said, was 'just where the gentleman in the sweater is standing. Do you feel cold?' she asked. 'No' I said. We moved on.

The programme travelled a few miles to Chorley, where a lady said that she had 'always seen' ghosts, and thought there nothing unusual in that. The latest was called Dominic, a hooded figure, with whom she had a friendly and indeed cosy relationship—'he's lovely; he's sweet'. Dominic had first turned up after her husband had found a large metal crucifix when digging at the back of the house. Experts (unnamed) had, we were told, disagreed about the date of the crucifix—it could be mediaeval or Victorian. I look forward to its appearance at the next *Antiques Roadshow*.

Meanwhile, back at Chingle Hall, it is midnight. We are treated to a true story about someone who was riding his motorbike to Lancaster, and who stopped to give a lift to a hitch-hiker. When he got to her destination, he turned round ... yes, of course you've heard it before. The first time I was told that little piece of urban folklore as a 'true story', it was Nottingham, rather than Lancaster!

But then the train whisked us away to Todmorden, where a man drove down the road one morning, and thought he saw dear old Ruth in her beret. But Ruth was nowhere to be seen when he took a closer look, and anyway, she had been dead for the last two years. His first thought is for Ruth's sister, Emma; is she well? He goes round to her house, and finds that she has fallen and is unable to move. End of story.

Then we have the tale of the young girl who saw her grandmother's ghost when she was left alone in the house (I hope the local social workers were watching this particular story—the girl in question seemed a trifle immature to have been left on her own). From what she says, however, the ghost has only two points of interest: it is wearing a shawl, and has two crucifixes about its neck. We are told that the girl has no idea what a shawl is, although her grandmother was buried in one two years previously, and buried with two crucifixes about her neck as well, details which the daughter, but not the grand-daughter knew. This was assumed to be positive proof of something.

At Chingle, it is four in the morning, and apart from a camera crew wandering about, all seems quiet.

Our last stop is at Radio Derby, where a 'clairsentient' is being interviewed. In public life, he is a civil engineer. Feeling sensations, and helping to free people who are 'trapped near the earth' are just his hobbies. He is taken to an RAF station at Linton-on-Ouse, where he meets two RAF personnel. One says that she has seen a figure. In a voice-over, the clairsentient says that he has been 'asked to look into' the matter. By whom? Is it official MoD policy to invite civilians onto bases for ghost-laying purposes? I think we should be told.

He concentrated, and then said that a man was killed somewhere in the vicinity (it was never seriously questioned for a moment that the figure that the woman had glimpsed was a 'ghost'). It was an ordinary accident, not a plane crash, and it involved a vehicle. The man had been run down at night, and his back broken. He was brought, on a stretcher, 'into this building, ... and he died here'. Now, thanks to the intervention of the clairsentient, 'he won't be seen again'.

It was made quite clear that we would have to accept the old 'ghost in the machine' picture of the person, because the clairsentient spoke of an 'invisible team of spirits on the other side'.

Then came the one little bit of corroborative evidence in the whole programme; in 1950, a man had been crushed in an accident at the airfield. His pelvis had been broken, and he had died.

Impressive? Not really. In 1987 alone, road traffic accidents were responsible for the deaths of 100 members of UK services personnel, to say nothing of 1,124 injured. A fair number of civilians might well have been killed or injured in those very same accidents, too. Any one of these cases would have been claimed as a palpable hit. Airfields are very dangerous places, and if there had been no accidents involving a vehicle of some kind at RAF Linton over the years, then I should be very much surprised.

At Chingle, it is time to take stock. Somebody's watch had stopped at one o'clock. One person complained of being 'frozen', while another was 'as warm as toast'. When I went to Chingle, we went from a room with a roaring fire to a room which was unheated. 'Do you feel how much colder it is in here?' asked our guide.

The one interesting piece of testimony came from a woman who had heard knocking on a door, between five o'clock and half past. It was never made clear whether this was a rough estimate of the time of an odd knock, or the actual span of time the knocking carried on for, and no one seemed inclined to worry over the matter. After all, no one else had heard it.

What can I say in conclusion? This was a remarkably silly programme. I am not going to start demanding 'equal time for skeptics' or 'the right to reply', but if the BBC wants to make serious programmes, it will have to do better than this. Not one of these cases would have got past a preliminary sifting by the Society for Psychical Research, let alone a skeptical organization. There was no attempt at explanation, analysis, or critical assessment. What we were offered was the television age's equivalent of a few yarns around the fireside of an evening. But my flesh, I'm afraid, refused to creep.

—John Lord

Letters

Crop Circles

When Uri Geller first appeared on the scene, some uninformed sceptics suggested that he was using chemicals to bend and break metals. Nowadays, any sceptic worthy of his salt would know that conjuring, not chemistry, was involved. Therefore, I hope that I am not falling into the same trap by continuing to seek scientific explanations for what might merely be a new craze of hoaxes. Here goes anyway. I recently came across a theoretical analysis of turbulent flow (J.C. McWilliams, *Journal of Fluid Mechanics*, 146, 1984, p. 21) from which the author deduces that,

> under a broad range of circumstances, the flow structure has its vorticity concentrated in a small fraction of the spatial domain ... when these vorticity concentrations occur, they tend to assume an axisymmetric shape and persist under passive advection by the large-scale flow.

When 'translated', this says that 'a random wind pattern can generate small round stable whirlwinds which do not move much'. Buried in the depths of this same paper are some predictions concerning the characteristics and distribution of stable vortices. The undersigned would therefore be pleased to receive any trustworthy data, concerning the size and detailed structure of crop circles, in order to compare them with the theory.

David Fisher
Cardiff

Crop Circle References

The crop circles recently discussed in your correspondence columns (with perhaps too much skepticism) have been definitively explained as due to atmospheric vortices by Dr T.G. Meaden, editor of the *Journal of meteorology*. Those who are interetsed should consult the following aricles in *J. Met.*: *The Mystery of spiral-circle ground patterns in crops made by a natural atmospheric-vortex phenomenon* (May/June 1988, pp. 203–212) (a paper given at the second Torro Conference on tornadoes and storms, at Oxford Polytechnic, 4 June 1988), *The mystery of the crop circles: a BBC film* (September 1988, p. 290), *The vortices of vapour seen near Avebury, Witshire, above a wheatfield on 16 June 1988* (October 1988, pp. 305–310), *A vortex of vapour seen above the Carron Forrest in Scotland on 7 May 1983* (October 1988, pp. 310–312).

Steuart Campbell
Edinburgh

Freedom

Good on yer Donald Rooum—and thanks for *Sprite*. Do please tell me why—where—how the propositions I present as truths are 'dubious'. Wouldn't 'absolute freedom' destroy society? 'I don't like that chap, let's kill him. I like his wife, though; I'll take her by force. What a nice Ferrari—I'll drive it away.' Aren't these examples 'truth'? And *don't* we willingly submit to curbs etc.? Don't you, Donald, pay for your food, drink, clothes, home, holidays—or have you found a different way to satisfy your needs and desires?

Don't *we* frame the laws? Ignoring relative states of perfection and accepting that (another dubious proposition?) all of us agree that the perfect society has not yet evolved, we *are*, each one of us, free to stand for Parliamentary election or canvass votes for whoever we choose. We *do* elect our representatives and delegate to them the making of the laws that regulate and curb ourselves and society.

Dress: sorry I found them 'a bit odd'. You have me there, Donald! I submit. I beg your forgiveness for having allowed my prejudices to take over. Maybe I should be shot down for the offence of judging a book by its cover, but I don't think I have. I agree that casual dress, however casual, ought not to be criticised and though I don't go all the way with William of Wykeham I believe that appearances in the majority of cases indicate attitudes and that the onlooker is influenced by what he sees. So I must repeat, practically all the people I saw in Bristol appeared to be hopeless and seeking help which they thought might be available through magic, and they were table-ready fodder for the unscrupulous to feast upon. That's exactly what it looked like—not that they just followed the current fashion for scruffiness.

Lastly—oh boy, this is a knockdown—yes, yes, yes. It *is* better to read books with words printed on the pages rather than to rely on coloured comic strips where views are expressed in 'balloons'. This isn't elitism, it's a *fact* and is also one of the reasons for so many social problems resulting from a rotten education which requires picture strips to satisfy the need for information.

But how wonderful to see there's someone out there who cares enough to take the trouble to say so. Come on readers, take sides. Let's have you!

Hocus Pocus
Devon

Donald Rooum replies:

The word 'freedom' signifies absence of something undesirable; the context tells us whether it means absence of debt, absence of fears, or whatever. When you used 'absolute freedom' in B&IS II.6, it is clear from the context that you meant absence of laws. The catalogue of anti-social acts which you now introduce has nothing to do with the case; the proposition that society would collapse if all behaviour was anti-social is close to a tautology. The proposition which is dubious, and remains dubious, is that society would collapse if we had absolute freedom from laws.

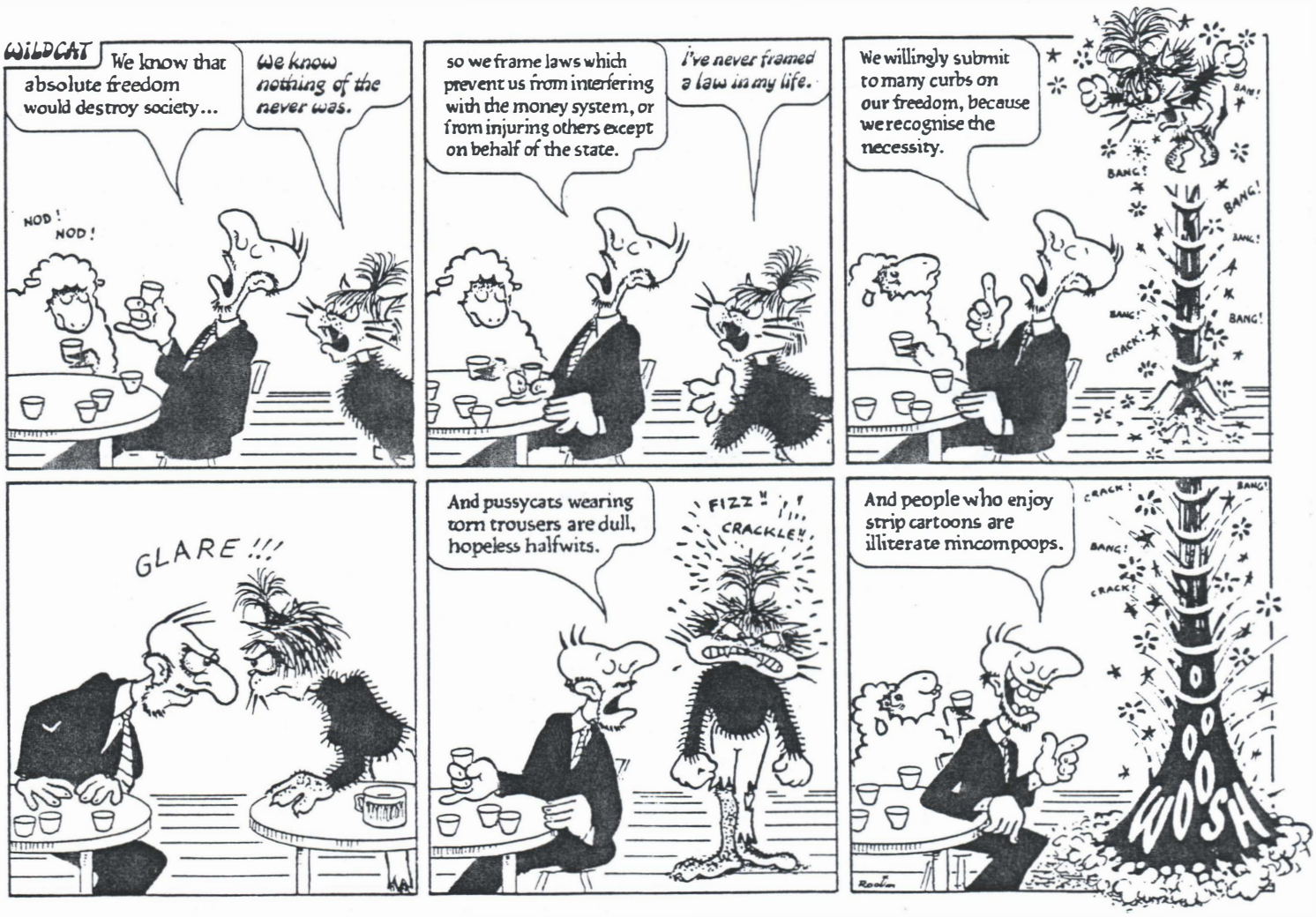
Laws are framed by rulers; we are not rulers. Even if the electoral process were the only route to power (which of course it is not), the electorate would not be lawmakers. To give every sheep the right to vote for a shepherd, is not to abolish the distinction between shepherds and sheep.

I cannot presume to forgive anyone for prejudice in judging people by the way they look, because I have the same fault myself.

It is disappointing, however, that you fail to acknowledge a similar prejudice in judging people by what they read. Comic strips are not a debased form of written fiction, any more than cinema is a debased form of live theatre. They are different art forms. The comic-book readers I know (and I do not claim they are a random sample) are all well educated and of wide interests. The badly educated people I know read neither novels nor 'graphic novels', but get their entertainment from talk, television and music.

My next book *Wildcat Strikes Again*, to be published in May (Freedom Press, £1.95) will have a strip inspired by your dubious propositions on the back cover. I will send you a copy.

The British & Irish Skeptic welcomes letters from readers, and we reserve the right to edit submissions. Letters addressed to particular authors will be forwarded. Write to Letters, The British & Irish Skeptic, 71 Bury & Bolton Road, Radcliffe, Manchester M26 0LF.



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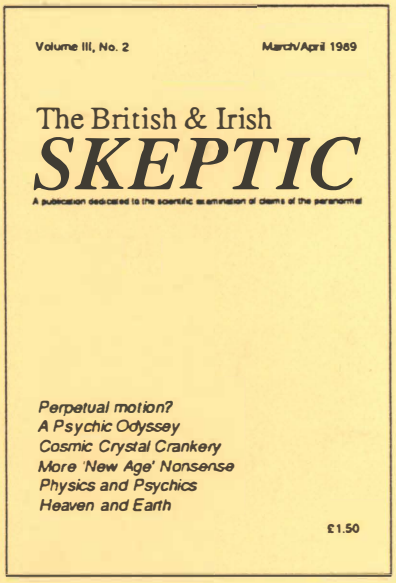

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