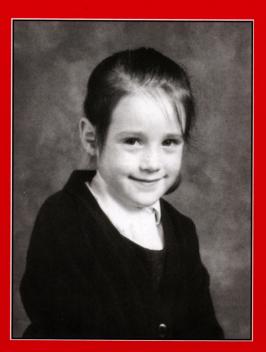
# WOLVES OF WATER

A STUDY CONSTRUCTED FROM ATOMIC RADIATION, MORALITY, EPIDEMIOLOGY, SCIENCE, BIAS, PHILOSOPHY AND DEATH



**CHRIS BUSBY** 

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> BY CHRIS BUSBY

Green Audit 🔅 2006



**Plate 33**. Top: in Aberystwyth with Ollan Herr, green activist, moral giant and hero of the Irish Sellafield case, which has now collapsed owing to the pusillanimity of the Irish State. Bottom: going down the sewer in Ray Fox's garden, Earley, Reading, for BBC Radio 4. The eerie echoing interview was repeated on 'pick of the week'.

radiation risk from discharges to the environment, Uranium Weapons (or some say, 'Depleted Uranium' weapons, as if this makes them less problematical).

These stories, and those I have told in this book, are always of situations that follow the way in which Science has been twisted to the shape desired by industry and the military.

What shall we do? What can we do? There is, happily, an answer along the lines I have indicated earlier. First we need oppositional science advice; second we need alternative and independent institutions, like the European Committee on Radiation Risk. Since industry does the pollution, it should be industry that pays for these safeguards, perhaps in the form of taxes. But failing that, the people themselves can fund the foundation of such alternative institutions; it is not that costly. But now here is a diversion...

# 17.2 Ray Fox and the Leukaemia Triangle

#### The Leukaemia Triangle

It is commonly argued that childhood leukaemia clusters occur all over the place, and therefore have some cause entirely separate from ionising radiation, the clustering behaviour suggesting that there is an infection involved. This is a theory first advanced by Leo Kinlen, and backed up by him through research showing modest increases in child leukaemia in country districts where there has been an influx of new people because of expansion of the town to accommodate increases in population (Kinlen 1988, 1993, 2001). Relative risks found in connection with his 'population mixing' scenarios were modest, about 1.1 to 2, rarely greater than that. An example is in Scotland where the North Sea oil discovery resulted in a rapid influx of workers and their families. The argument is that 'population mixing' increases the chance of infection, and that the child leukaemia is associated with this. And I have also given the example of the child leukaemia cluster in Pembroke Road, Northampton. I have also discussed Kinlen's hypothesis. The truth is that the only reason it is not laughed out of court is that it represents a convenient refuge for the nuclear mafia. At the recent Leukaemia conference in London, Kinlen was there to review and defend his position. His ears were closed to the many criticisms levelled by the scientific delegates. The most powerful of course is the observation (which he never alludes to) of the clustering of leukaemia cases in adults as well as children (Clemmesen, 1961), which suggests an environmental cause. The immune system of adults is completely formed, unlike that if children.

The nuclear project, however, has left behind some dark secrets. And without sophisticated radiation measuring equipment, the exposures are invisible. The most bizarre example is the buried Shell reactor in Reading, a large town in Berkshire. All the evidence points to the existence, several metres underneath a normal, quiet su leaching its con of childhood leu and the cancer r

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Aldermaston, to Newbury, and so Eddie Goncalves 30 year rule. On Stimson, showing Uranium depositi pattern could hav is well document caused a fire on t planes carried ato report was centre Operation 'Overtu been thought, mit through analysis o stuff.

Anyway, to the Press. The bombs had burned area. Using Natio Districts defined were significantly Districts that com Energy Research Establishment, Al leukaemia, we ca

normal, quiet suburban housing estate, of a buried nuclear reactor, corroded and leaching its contents into the groundwater. The locals say that there is a high level of childhood leukaemia in the area; but no one really knows, as the health authority and the cancer registry will not release data to examine the assertions.

First some background. The area around Reading has a statistically significant excess of childhood leukaemia, first flagged up by the local paediatric specialist at the Reading Royal Infirmary, Dr Carol Barton. The matter has been the subject of several studies in the 1980s following the Seascale child leukaemias and was examined also by COMARE, who concluded (as you would expect) that the doses from the weapons factory at Aldermaston (20 miles to the West) and the bomb factory at Burghfield (a few miles to the South West) were too low to cause the leukaemias (Roman et al 1993). Nevertheless, the locals continued to argue that there was a concern regarding the release of large amounts of Plutonium and Uranium (Tritium and Krypton gas) into the environment. The releases were both from discharges into the air and also from liquid waste into the Kennet and Avon Canal and river Thames through a long and leaky pipeline.

In the mid 1990s, the focus of interest in this affair moved to the west of Aldermaston, to the USAF Airbase at Greenham Common a few miles east of Newbury, and some twenty miles West of Reading. A reporter, and CND advisor, Eddie Goncalves, had examined official documents released from secrecy after the 30 year rule. One was a report written in 1961 by two scientists, Cripps and Stimson, showing that there was an anomalous butterfly shaped pattern of enriched Uranium deposition around the USAF airbase at Greenham Common and that this pattern could have resulted from the burning of a nuclear bomb. It seems (and this is well documented) that a USAF plane had jettisoned a fuel tank and that this had caused a fire on the runway and destroyed some planes. It was believed that these planes carried atomic bombs. The contamination found in the Cripps and Stimson report was centred on USAF Greenham Common Airfield. The report was part of Operation 'Overture', an exercise for measuring Uranium isotope ratios, which had been thought, might be a useful way of detecting Soviet nuclear installations through analysis of plant and soil residues sent back by agents: all good Cold War stuff.

Anyway, there was a terrific row following the release of this information to the Press. The Ministry of Defence and the USAF both denied that any atom bombs had burned. I undertook a study of leukaemia mortality in children in the area. Using National Statistics data I was able to show that in the seven County Districts defined by the triangle between Oxford, Reading and Newbury, there were significantly high levels of childhood leukaemia only in those County Districts that contained nuclear sites. These were South Oxfordshire (Atomic Energy Research Establishment Harwell) and Newbury (Atomic Weapons Establishment, Aldermaston). Because of the strange influences on child leukaemia, we called this area, between Newbury, Reading and Oxford, the

'Leukaemia Triangle'. I sent a letter to the British Medical Journal and they published it (Busby 1998). It was picked up by all the major newspapers and became a cause celebre.

I had used mortality- all that was available. I asked the local cancer registry for data to see if incidence of child leukaemia was raised in specific wards; the director of the Oxford Cancer Registry, which held the data was Dr Monica Roche, She refused on the basis that the data was confidential. The Director of the Oxford Health Authority at the time was Dr Peter Iredale, who was ex-Director of the Atomic Energy Research Establishment at Harwell. (No doubt it seems natural to you that running a nuclear site is a good background for running a health authority: indeed, when I questioned the matter, this is exactly the response I obtained). So I went to the local Ethical Committee to ask for the data. It was refused. The Greens on Oxford City Council arranged for a meeting with the Ethical Committee Chair. It was truly bizarre. I struggled all the way to Oxford from Wales for this meeting, taking Rosa, who was only four at the time - car sick and vomiting all the way. Richard Bramhall came along to help look after Rosa. They sat outside the meeting in Oxford Town Hall playing with dolls. At the meeting, the Chair seemed nervous and continued to refuse the data. He ended up shouting at me that I was a scaremonger and not a scientist. He rushed off from the meeting before I could respond. This was the Ethical Committee that covered the area of the nuclear site at Harwell.

Although the Oxford ethical committee had refused on the grounds of confidentiality, strangely, the Reading ethical committee (where there was no bigdeal nuclear site like Harwell) agreed to let me have their leukaemia data, so it did seem to me that there was some cover up taking place around Harwell.

But to return to the Greenham Common bomb story, because of the publicity and public concern, and because one local Newbury parent Richard Capewell whose daughter had developed leukaemia was mapping the leukaemias himself by asking questions of parents, Newbury Council commissioned a huge study of Uranium and Plutonium levels in soil in the area. This was carried out by a joint team from the University of Southampton (Dr Ian Croudace) and the Scottish University Research Reactor (Dr Ian Sanderson) (Croudace et al 1997). The former team analysed soils, and the latter engaged in an aerial survey using a complicated gamma ray camera. I have referred to this survey earlier in connection with the plutonium from the Irish Sea. The area covered was quite large, from the West of Newbury to just East of Reading and North as far as the perimeter of Harwell (the government did not allow them to measure over Harwell). The results showed much higher levels of Plutonium than were expected based on earlier grassland and soil survey carried out by Harwell scientists in the 1980s (Cawse and Horrill). Uranium isotope ratios were also measured. At this point I must say something about the Uranium isotopes, since it is part of this story and also the next one.

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vegetation were estimate was that basics, the result higher than they fold - with muc contaminated por of enriched Uran Uranium isotope material, except n with low levels of Uranium (used for

Uranium is a natural element on Earth and has been here since the beginning of the planet. The main isotope, Uranium-238, has a half-life of 4.5 billion years, so it will be around forever. Let me remind you about half-life: the concept is easy to understand. Half of any quantity of U-238 will have given off radiation and changed into another element in 4.5 billion years. In the case of U-238, the first decay (of an alpha particle) changes it into two very short lived isotopes Protoactinium-234m and Thorium-234, both beta and gamma ray emitters and these, in turn, decay into Uranium 234, another radioactive element but with a shorter, very long half life, 250,000 years. The decay products are called 'daughters' and, since each has a shorter half-life than the parent U-238, after a very long time they are in what is known as secular equilibrium. That is to say, on average, that for each decay of the parent there is a decay of a daughter: the isotopes have the same activity. A sample of U-238 left for long enough will have an activity of 'B' decays per second of U-238, 'B' decays per second of Pa-234 and 'B' decays per second of U-234. So in the natural state on earth, in minerals containing Uranium, there is a 1:1 ratio of activity of U234 and U238. However, there is another Uranium isotope, the source of all the trouble. It is the fissile isotope U-235. It is present in very small quantities in natural Uranium, 0.72 % and, because the masses are almost the same (238 and 235, only about 1%), they are very difficult to separate. In fact it was the Uranium isotope separation that was the biggest problem in developing the atomic bomb in the mid 1940s.

For atomic bombs and for nuclear reactors, there has to be a fuel that has a high concentration of the fissile isotope, U-235. The normal ratio of isotopes (in natural Uranium, mined from the ground) is 137.88 (atoms of U-238 to atoms of U-235). For a reactor, the ratio has to be less than about 50. For bombs it is usually about 25. The isotopic ratio of material in the soil pattern discovered by Cripps and Stimson was about 25. This is why they thought a bomb had burned on the runway during the fire in 1959. The codename of the fire was (appropriately) *Broken Arrow.* These military people! Aren't they something? The Israelis called their latest bombing campaign of the Lebanon 'Summer Rain'.

So the big Southampton study was carried out. Samples of soil and vegetation were taken and examined for Plutonium and Uranium isotopes. The estimate was that it cost about £200,000 of taxpayers' money. Boiled down to basics, the results showed two things. First, the levels of Plutonium-239 were far higher than they had been reported by earlier studies of the same area - about tenfold - with much higher levels near the Aldermaston perimeter fence (where a contaminated pond had overflowed). Second, that there was no longer any pattern of enriched Uranium deposition such as had been reported by Cripps and Stimson. Uranium isotope ratios were mostly quite close to the value 137.88 for the natural material, except near Aldermaston and Burghfield where there were some samples with low levels of enriched Uranium and some with small amounts of Depleted Uranium (used for anti-tank armour piercing shells). The lowest value (the most

enriched) sample had a ratio of 98. This was taken from near the Aldermaston perimeter fence. The conclusion was that there had been no bomb fire at Greenham (just as both the UK and US military people stoutly maintained). The increases in child leukaemia were a mystery, in the same way that the Sellafield ones were. Dr Bithell of the Oxford Childhood Cancer Research Group examined the census figures and showed that population mixing had not occurred. Leo Kinlen argued that it was commuters: business as usual.

### Enter Ray Fox

Ray Fox wrote to me sometime around 1997 to ask my advice. He sent me photographs of his body, which showed large areas of red rashes and blistering. 'Could it have been caused by radiation?' he asked, and told me his story. Ray is a short, tough-looking, but also unwell-looking character with a cockney accent, a tenacious attitude (as well he might have, given his experiences) and a kind of desperate angry energy. He lived, until recently, in Earley, near Reading, Berkshire at 337 Wokingham Road. In the mid 1990s he dug up a drain at the bottom of his garden to clear a blockage that was flooding his garden. The land drain crossing the corner of his property was blocked with some tarry black material, which Ray cleared away. Shortly after this he became seriously ill. His body became covered in what appeared to be burns and blisters. The symptoms (including other symptoms which he recounted) appeared to be those of radiation poisoning. He had urine analysis done in Germany where slightly increased levels of Uranium and Plutonium were detected. Following Ray's complaint about the drain, the plutonium and his illness, Shell immediately arranged for contractors to visit the property and dig up the drain, water jet the remaining sewer and close the system up, replacing all the material they removed with fresh soil.

There began several years of struggle to obtain an explanation for his illness and its origin, a struggle that has slowly revealed elements of what appear to be a most extraordinary cover-up - a secret underground atomic research site operated in Reading in the 1960s by the Shell Oil Company as part of a research effort into the development of atom bombs. As a result of the energy Ray put into investigating the cause of his illness, he managed to get all the evidence he had collected and all the results of the measurements that were made to the media. Quite a few programmes were made, including prime time documentaries on TV and a BBC Radio 4 piece called 'In The Bunker', which was a highlight of the week it was broadcast and was repeated by popular demand. In this documentary, I went down a sewer behind Ray's house (where the trouble had begun) with radiation monitoring equipment, the echoing commentary as I crawled underground, kitted up in gas mask and all the measuring gear, was reminiscent of a science fiction movie sound track (Plate 33).

The drain Ray had unblocked was an illegal connection to the public land drain to the River Loddon draining material from the Shell 'oil depot'. I first visited

the house and a measurements of on Channel 4 The levels and there from natural The particularly the insurance common LGC in Teddin chemicals and he depot, but there connect us with a Table 17.2.1.

Table 17.2.1 PlanRoad, Reading, forLaboratory of the

Isotope

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These measurements the following reasonal level of Plutonium background level in measured by Cawsen plutonium from Sella area near Aldermastan near the perimeter fen of Berkshire, the New than 2Bq/kg. Thus the times higher than exp from the fission of the spent fuel.

the house and garden and employed our gamma spectrometer to make radiation measurements of Ray's house and garden as part of the Mark Thomas investigation on Channel 4 TV. Beta and alpha scintillation counting showed very slightly raised levels and there were slightly elevated levels of radiation, mainly gamma signals from natural Thorium 234. The house itself had slightly high levels of radiation, particularly the lower block work in some rooms, but none were high enough to be considered a health risk in themselves. Samples were taken on behalf of Ray's insurance company and sent by their advisor, Dr Karta Badsha, to be analysed by LGC in Teddington. Results showed the presence of various toxic organic chemicals and heavy metals, as would be expected from groundwater near an oil depot, but there were also some very interesting radiochemical results which connect us with the Greenham fire and the leukaemia triangle. These are shown in Table 17.2.1.

**Table 17.2.1** Plutonium and Uranium Isotopes in dust and soil at 337 Wokingham Road, Reading, found in samples taken by Dr Karta Bardsha and analysed at the Laboratory of the Government Chemist (LGC) Teddington.

Isotope	First series, house dust (Bq/kg)	Second series, garden soil (Bq/kg)	
Plutonium 239+240	54.9	9.8	
Uranium 238	18	10	
Uranium 235	4.7	2.6	
Americium	a trade at problemation	6.3	

These measurements indicate the presence of material from a nuclear reactor for the following reasons. With regard to the Plutonium, prior to 1945 the background level of Plutonium would have been zero. Since global weapons testing the background level in soil and grassland should be about 0.02 to 0.7 Bq/kg, as measured by Cawse and Horrill in the 1970s. Since then, the sea to land transfer of plutonium from Sellafield has increased these values to about 1-2 Bq/kg and in the area near Aldermaston readings as high as 5-10Bq/kg were found in a few samples near the perimeter fence. However, in the largest analytical exercise run in the area of Berkshire, the Newbury survey of 1997, very few samples gave levels higher than 2Bq/kg. Thus the house dust sample of 54.9Bq/kg shows a level 100 to 500 times higher than expected on the basis of weapons fallout. Plutonium 239 comes from the fission of Uranium 235 in a reactor or a bomb, or from reprocessing of spent fuel.

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The Uranium levels are not high overall but the isotope ratio U238/U235 is an unmistakeable fingerprint for material from a nuclear reactor or reactor fuel. This is enriched Uranium. Of the 516 samples taken by the Newbury survey (Croudace *et al* 1997) and analysed, all of the samples from the control areas (12), rural Berkshire (27), Greenham Common Outer (56), Greenham Common inner (137) and Greenham Common airbase (216) gave values within 3 standard deviations from the U238/U235 natural ratio of 137.88, i.e. they were all between 137.36 and 138.40. The 68 samples from Aldermaston included 11 samples outside this range and lower than 136.94, indicating slightly enriched Uranium. There was one sample only that gave the lowest ratio of 98.03 and this was from woodland soil at the Atomic Weapons Establishment Aldermaston.

I calculated the Uranium mass ratios from the house at Wokingham road and show them in Table 17.2 2.

**Table 17.2.2** Uranium ratios in samples from Mr Fox's house and garden, 337Wokingham Road, Reading, Berkshire

Sample	U238 Bq/kg	U238 ppm	U235 Bq/kg	U235 ppm	Ratio U238/U235
House dust	18	1.45	4.7	0.059	24.5
Soil	10	0.807	2.6	0.033	24.45

The very anomalous low value of 24.5 indicates enriched Uranium, either from reactor fuel or spent reactor fuel. There is also a reference value for this in the tables of the United Nations Scientific Committee on the effect of Atomic Radiation (UNSCEAR 2000). Table 15, p124 gives values of the activity (Bequerel) ratio for the two isotopes in air, water and various foods. The reference ratio for all is about 20:1, whereas the Wokingham Road bequerel ratios are 3.82:1 and 3.86:1 respectively. Thus is it is clear that Ray's house and land had been contaminated with enriched Uranium and also Plutonium. The similarity between the ratios for the two samples, from the house dust and garden suggest strongly that the source of the contamination is the same and would be a general contaminant for the house and garden. The ultimate origin of this material must be a nuclear reactor although we cannot say where this reactor is. I speculated at first, that solvent used for cleaning a nuclear reactor or some part of a nuclear reactor might carry the material and deposit it after a fire.

However, there appears to be other evidence. In the course of investigating this strange story, we found that there was independent evidence of an experimental nuclear reactor beneath the ground at the Earley depot. It was visited by Dr David Greenwood who worked at University College London. Greenwood underground m buried in the m moderated read was apparently and later nuclea But be an accident at was recorded However, loca off. What Ray and contamina

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sent an affidavit to the European Commission describing an extraordinary underground research laboratory complete with experimental nuclear reactor, buried in the heart of Reading. According to his statement, this was a graphitemoderated reactor of about 30 feet diameter. It was buried several metres deep and was apparently used for nuclear research in connection with the Manhattan Project and later nuclear developments.

But before the site closed something happened: there appears to have been an accident at this reactor site. In 1987 there was a fire and an explosion, which was recorded locally as a minor railway accident involving a diesel spillage. However, local people reported that the earth shook and that manhole covers blew off. What Ray's discovery suggests is that the reactor is still there and is leaking and contaminating the local area.

After the closure of the depot following the fire, the land remained derelict until acquired by a developer in the late 1990s when it was 'remediated' by removing a metre of topsoil and replacing it with fresh topsoil. A new housing estate was built on the site and people now live there. I have walked around the roads measuring background levels of radiation with a scintillation counter. There is some slight radioactivity elevation around the area at the bottom of Ray's garden, but on the other side of his fence; nothing very unusual. There is a fairly radioactive piece of road behind the site. But if the reactor is there it is deep underground and shielded. A magnetometry survey would find it, but the people who live on the new estate have refused to allow such a survey on their land.

With the Green Party MEP Caroline Lucas, Ray took the case to Europe. European radiation protection laws do not allow people to bury nuclear reactors and walk away. I went to Brussels and argued the case with the radiation protection head, Steven Kaiser. Wheels were put in motion. A letter was sent to the UK asking for an explanation of the radiation measurements. The UK stalled. Kaiser was moved to another department. In fact, the whole department was moved to another department. Radiation Protection moved from Directorate 'Environment' to Directorate 'Trade and Industry'(Just imagine the power these people have). Anyway, it seems that poor Ray has come up against a dead end in Europe, although he continues to worry away at the authorities here with writs, media items and new discoveries.

Here is my own interpretation of it all. Having met many of the people who knew and read all the documents that have been unearthed, this Earley story is part of a larger one, which is about the cold war research into bombs.

#### Leukaemia clusters, cancer clusters and the Cold war

When the first research into nuclear weapons and nuclear power, and the uses of radiation generally, was being undertaken, Shell was a big player. At Earley, they were examining the possibilities associated with radiation, radioactive materials and organic solvents. This would be almost impossible for them not to have done,

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since organic solvents are at the centre of their operation. From the nuclear research side, organic solvents are an integral part of the chemistry of Uranium and Plutonium processes, and would be used for cleaning as well as integral to the preparations. Shell would have had to research the effect of ionizing radiation on solvents. So where were the nuclear sites at that time (1950-1970) and where would these sites have acquired their solvents? The main research was carried out at Aldermaston and Harwell. The closest railway connected solvent depot to Aldermaston is the Earley depot. In addition, there was a huge amount of cooperative research with the Americans, the Manhattan Project and the subsequent research on H-bombs at the US sites Oak Ridge and Hanford. Material was sent from England to the USA. We know that Plutonium for US bombs was supplied by the UK. It was admitted in Parliament. The Shell site undertook research into the reactions between organic solvents and Uranium and Plutonium, to see if they could develop liquid nuclear fuels, creating organometallic compounds, chemical adducts of U-235 and hydrocarbons or ethers, solubilising the radioactive elements so that they would be movable by pumping through tubes. The Greenham Common fire was not a bomb fire, but was a fire involving just such a contaminated organometallic solvent, waiting to be flown out to the USA as part of a research collaboration. Map contours show that leakage of this stuff to the groundwater from the runway at Greenham Common airbase would have resulted in it being transported downhill into that part of Newbury where Richard Capewell's maps showed that the high levels of leukaemia were (including his own house). It was waste containing this stuff that was being discharged illegally to the River Loddon through Ray's garden. If you look at the map, the only other way Shell could have got rid of waste was to South Lake, to the north of the Shell site, and a radiological investigation of South Lake sediment might be instructive. If the research reactor at Earley was a big deal, then there should be more contamination from Caesium-137, which there is not, although it all happened a long time ago. The signature Uranium ratio found by Cripps and Stimson was also about 25:1. It is too much of a coincidence that the Overture fire ratio is the same as the Ray Fox garden ratio.

Since the authorities will not look, and we have run out of ideas, there the matter must remain until someone grasps the nettle and looks with a magnetometer. The buried reactor story is only one of similar Cold War inheritances. For example, a Mr John Dwyer contacted me some years ago about another research reactor operated by Shell on the Wirral near Birkenhead (where Shell have a big refinery and research setup and where I worked many years ago for a short time). Dwyer has evidence that Shell made a chemical reactor using Strontium-90 to beta irradiate solvents to see if there was any mileage in using radiation for chemical production. Mr Dwyer told me that the reactor had to be broken up in the 1980s and a team from Harwell turned up to advise. No one knew what to do. The whole affair was a nightmare of radioactivity. Dwyer alleges that it was taken away by

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private operators and buried in parts of North Wales. There are leukaemia clusters in parts of North Wales. The authorities say they are chance clusters.

Here is another story. I met a man in South Wales who told me that he was out late on the Heads-of-Valleys Road, courting. He described how a convoy of trucks with a police escort drove to the area above a local beauty spot and started unloading drums. This was in the middle of the night. The police blocked off the road and the drums were apparently emptied: he didn't wait to find out what was going on, but legged it smartly. Another story came from a gorgeous hippie woman called Marilyn, jangling with beads and flashing with colours and beauty. She lived in a derelict house in the middle of nowhere near Llanidloes and said that there was an experimental station in the Hafren forest where something was going on. Could I check it out for radiation, she asked, as she was a bit worried. For many months in the late 1990s convoys of ready-mix concrete lorries thundered into the forest in the middle of the night (she said) waking her up. No one was supposed to be living up there, so no-one checked her out. This went on for two months apparently. Later, when she decided to walk into the forest to investigate, she was stopped by a Ghurkha soldier who materialised from behind a tree with a sub machine gun. He sent her away. He said he was guarding the nests of the (then) rare Red Kite. Presumably a connection between the RSPB and the Ministry of Defence. She said that for at least a year after the concrete lorry episode, there were strange flashing red lights lighting up the whole sky over the Hafren Forest accompanied by rumbling. The ground shook. All this happened in the middle of the night. OK, I see you think, another looney. What next: flying saucers? But a number of other people had also noticed and had asked their MP, Alex Carlisle to make enquiries. He said that he had been told by the authorities that there was some experimental research being done on submarine communications. Of course, how silly. The Hafren Forest, 100 miles from the sea is the obvious place for submarine communication.

But like Strathern's ethnographer, we cannot assume that these people are mad on the basis of prior theories. About a year after all this, I figured out roughly where this would have been happening from Marilyn's description and approached the area from the south, penetrating the forest from the A44 end. This was 1994. I went with Molly and my friend Bill Pritchard. We found a huge concrete slab, maybe 100 metres across, with a vast wooden dome like structure. There was an aluminium laboratory, empty, but with some danger notices on it. There were very thick metal cables running into this tank and snaking out across the concrete slab, disappearing into the ground and vanishing. I have the photographs of us standing inside this science fiction contraption (Plate 17). There was obviously quite a lot happening underground, but all the entrances had been concreted up. There was no excess radiation anywhere. What was all this about? Who knows? Did it have an effect on health? Again, who knows? But why put it in the middle of nowhere? Why surround it with Ghurkhas with machine guns. Is Marilyn all right, or did she

From the nuclear stry of Uranium and Il as integral to the onizing radiation on 50-1970) and where arch was carried out ed solvent depot to a huge amount of n Project and the d Hanford. Material for US bombs was shell site undertook ium and Plutonium, ing organometallic r ethers, solubilising nping through tubes. a fire involving just m out to the USA as ge of this stuff to the would have resulted where Richard e (including his own arged illegally to the the only other way with of the Shell site, be instructive. If the more contamination red a long time ago. s also about 25:1. It same as the Ray Fox

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