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## Maverick man of science

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interview**

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IRON MAN**

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*Brian J Ford has always challenged scientific orthodoxy and his latest theory on spontaneous human combustion is no exception. Interview by Robin Healey*

# Spontaneous science

**J**ust who the Hell is Brian J Ford? This was the question asked by an irate blogger not long ago. It's certainly not one that any Mensan worth the name would ask. Ford, as science writer and controversialist, lecturer, and veteran of many a Mensa at Cambridge convention has been, along with Victor Serebriakoff, Clive Sinclair and Jack Cohen, one of the most recognisable figures in British Mensa since the Sixties.

Even to non Mensans Ford is well-known enough to be instantly recognised – perhaps not yet as familiar as David Bellamy, James Burke and the late Magnus Pyke – but very nearly so. It's not just the brisk, confident manner or even the bow tie, or the voice, well known to everyone who tuned into Science Now on Radio 4, but the polymathy. Just as Bellamy, a professional botanist, and Pyke, a nutritionist, roamed widely outside their specialist disciplines, Ford, a micro-biologist by training (although he left university without a degree) is credible on a wide variety of subjects, and not only science ones. And even if the ignoramus blogger who had never heard of Ford was an American, he ought to know better, since Ford has also been a frequent presence in the States, as lecturer and TV guest, for decades. The sceptic, it turns out, was a palaeontologist and Ford had irked him because as a biologist with no doctorate in dinosaur studies he had dared to invade the blogger's territory with a theory that dinosaurs had been aquatic, not terrestrial beings. This 'limey' had to be put in his place. So he was dismissed as a "well-known crank" (something of a contradiction to the early who the Hell is he question).

What was worse, this crank had advertised himself on his website as a Mensan, which to some is to be a crankmaster in chief. All this brouhaha blew up some time ago. Ford has moved on.

His latest theory, which has yet to get the

blogger going at full speed, possibly because it has only been current for a few weeks, is one which offers an explanation of a phenomenon that has perplexed scientists for centuries – spontaneous human combustion. Now, though I've never been a dinosaur obsessive, SHC has fascinated me for 30 or more years. I had one or two theories of my own, but never tested them out. After reading of Ford's research I've thrown them all away... because I'm convinced that Ford has solved the problem. And what is more, he's done it by testing his theory under strict scientific conditions. Apparently, it's all down to acetone.

As I read the article in New Scientist, based on Ford's theories, it all began to make sense. As a diabetic I know more about this highly inflammable ketone than most people, outside the environs of a chemical laboratory at least. Acetone is produced by the body when ketosis, or metabolism of fat, occurs under certain circumstances. Drastic slimmers, including those with anorexia nervosa, can become ketonic, as can insulin dependent diabetics which, as yet, I'm not. With the latter, the smell of acetone on the breath is a key feature of the condition. I wanted to quiz him about this clever deduction – perhaps not so surprising as it comes from a biologist who has written extensively on nutrition. What's more surprising, however, is that no medic had ever made a similar connection.

Once I learned of the experiment I examined the video online and then e-mailed Ford and arranged an interview. He and his wife met me under the 17th Century market hall at Peterborough. He was on time, as I had expected he would be and as smartly dressed as I also expected. As we drove back to his home, on the north-western end of the Fens, taking 'the scenic route', I gained further proof of his extensive knowledge, as he dilated on the history of Fen drainage from Roman times. Ford himself has a keen sense of history. As we drew up at his stone-built house I noticed that the date stone

over the door read 1775. Inside, I noticed a bookcase held several volumes, which I was told were early editions of Robert Hooke's *Micrographia*, a work which holds a central place in Ford's life as a micro-biologist.

Over lunch, where we drank wine from Georgian glasses, we discussed his radical new theory about acetone, starting with the famous wick effect. Ford was not impressed by this age-old theory.

"People talk airily about the wick effect and connect spontaneous combustion to SHC. Now if you pile up dead vegetation it may spontaneously catch fire. As a child I recall smelling burning in the garden and was intrigued when the family gardener poked his foot in the straw heap and a flame leapt up. Now people compare this with people catching fire. In fact, it's nothing like it. Straw is inflammable. People aren't. Yes, people will catch fire, but it's the clothes that are burning. The mystery is how such a wet body can continue to burn so fiercely for so long that almost the whole of it is reduced to ashes. This wick effect cannot explain the phenomenon.

"Look at a candle. The wick is specifically designed so that as the heat of the flames burns the wax the wick continues to burn and as it runs up the length of the candle the whole candle is consumed efficiently because there is nothing between the wick and the wax. In a human other non-combustible substances, including water, prevents efficient combustion. Also, clothes do not aid efficient combustion, because once they are consumed, there is no more fuel to sustain combustion."

But why acetone, I wondered? He replies: "Curiously, years ago, when I was nursing one of my children I could smell acetone. I felt it was odd that when children are unwell they sometimes go into a ketonic state.

"Also, I had a friend who was diabetic and when you bent over his chair you could catch the smell of acetone.

"And I knew that people who had a high fat diet also developed ketosis. Acetone, of course is extremely inflammable, so I wondered whether if acetone began to be secreted among the fatty tissue of the body a spark or static could ignite the vapour and initiate combustion.

"In 1998 the BBC did a programme on SHC in which all these ridiculous so called 'scientists' solemnly agreed that it was all natural. People caught fire and burnt and they demonstrated this fact by bringing on a chair and setting light to it. And I thought hang on, that chair's made of wood and wood is flammable. People aren't flammable. The amazing thing to me was that no-one admitted that they couldn't explain why a moist body can catch fire. And of course their wick experiments would take at least 20 hours for the human body to be reduced to ashes compare with the half hour that has been calculated with SHC."

I wondered if there was sufficient acetone in an affected body to sustain such combustion. Ford was positive about this.

"Yes. It's all pervasive in the body and present in the breath, but because acetone has an affinity for fat it would accumulate there.

"And as I sat there I thought, well someone is bound to come up with this theory soon, but in fact nobody did. So I decided to publish my theory. The claim appeared in a book published in 1999."

Ford now disappears into his study, brought out the book in question and opened it at a particular page. "Here it is, on page 49. I said that the answer lies in a 'error of human metabolism with the formation of acetone... Many illnesses cause subtle changes. Acetone is a metabolic by-product... it can saturate the fatty layers...'

"I waited for someone to pick on it, but no-one did. Recently, I repeated it in another article. Still, no one picked up on it. By this time I felt that I needed to go further. My theory needed to be tested.



So in February this year I went to the butcher and bought some belly pork, which is a nice mixture of fat and tissue, and we made a twelve scale model of a human, about the same size as a Barbie doll, and we marinated the meat in full strength acetone, dressed it appropriately and seated it on a chair. You could smell the acetone quite distinctly. It was like leaning over a victim of ketosis, but much stronger. We brought a light close to the model and it went up like a rocket.

"In 20 minutes it had burned away almost to nothing. The reports of SHC in action state that the flames, which were blue, would jet out like those of a blow torch and that's exactly what happened here. It was quite extraordinary. So we repeated the experiment with another model of the same size and this too burned to ashes in the same way. We videotaped the combustion, of course, and stuck a digital watch near the model so that spectators could see how quickly the whole combustion process took place."

At this point Ford showed me the video. I was impressed, but what about

those who had spontaneously combusted. Had he looked at their case histories? He had.

"In almost every case the victims were in poor health. Every time that the state of health was mentioned, they are unwell; some were very ill, some were very old, some were diabetic, some complained of feeling ill for the first time... but there wasn't an example of someone in prime health who suddenly caught fire. Many were obese and therefore inactive. There would need to be a bit of static, from say, clothes, or stroking a cat, for ignition to take place."

But why had alcohol always been blamed?

"People moralise. According to them, those who succumbed were alcoholics whose tissues absorbed alcohol and became inflammable. Some victims were found near an open fire, so it was assumed that a stray spark had set them alight, possibly while they dozed. But this ignition process was disputed by the great 19th Century chemist Liebig who remarked that although specimens in his lab were immersed in 70 per cent alcohol, which was twice the strength of

anything an alcoholic might buy, they didn't burn. So, before we did the experiment with acetone we tried alcohol. We marinated the pork in alcohol for a week and placed alcohol-soaked gauze over the meat to represent clothes, but when we lit this gauze it burnt, but the pork soaked in alcohol didn't burn."

Do we need to worry? Do I, as a diabetic, need to keep away from open fires? Ford offered comfort. "The short answer is no. This is an extremely rare occurrence. Because all cases, being so extraordinary, were always recorded, we know that there are only about 50 to a hundred at the most cases every thousand years. It is vanishingly rare. Having said that, it is fascinating to think that today, when we live much more sedentary lives than we did even 40 years ago – watching TV or using our computers – we are fatter and perhaps because of this the incidences of Type 2 diabetes are escalating. Together with the fact that in our modern rooms air flow is often restricted, could it be possible that statistically SHC will become more widespread than it was before? Indeed there have been a number of cases recently. Within a week of my New Scientist article coming out a woman who hadn't actually read my article, but knew of my interest in SHC, phoned to inform me that a man of 90 had been found burned in his chair in Portsmouth. That was just last week. So, it just might be becoming more common."

As Ford explains his novel theory his machine-gun delivery and tendency to go off at a tangent without the least provocation make me fear that he is going to give me far too much material for a conventional interview. But it's all part of his burning passion for science, and in particular for experimentation. In addition, he seems, like all good Mensans, to be one of life's natural dissenters, ever questioning, ever challenging accepted explanations. When I asked him if he had always been interested in science he immediately recalled a childhood instance of such dissent. "I've always been interested in life. I remember at school a teacher declaring that a thistle is so designed to prevent it being eaten and consequently becoming extinct. I quickly responded by listing all the animals that actually enjoy consuming thistles."

“When a new idea is launched into science it always provokes hostility... science dislikes new theories”



In fact he so scorned conventional education that he had to be convinced that university was a worthwhile step onwards from school – and in the end, as I mentioned earlier, he never finished his university course.

"I was told at school that I ought to apply to university, but after I left I was already earning money by writing a science column for the local paper and playing in a jazz band. Why did I need university? However, after a while I did agree to fill in the forms and I did become a student at Cardiff, where my parents lived, but after one year the idea of returning to the labs and student life and perhaps giving up my newspaper column and the music didn't appeal.

So, I talked to the head of department, explaining that I was quite aware that the normal course of a scientist was to do a BSc, then do PhD research on a specialist topic and end up becoming a world expert on somethingology, but that I wanted to pursue other branches of science, and I wanted to continue writing.

"The head of department's response was to insist that science was divided into disciplines for good reasons and that such interdisciplinary work was impossible. I was also told that I had to give up the column, I was either a journalist or a scientist; I couldn't be both. So I left. But 50 years later I seem to have won that battle.

"The university has now appointed an interdisciplinary scientist and more recently, someone who promotes the interaction of science with the media.

"The reason I have always been opposed to standing on the academic escalator and pursuing an orthodox career in science was, I suppose, that one always seemed to be expected by the academic establishment to learn what they wanted you to learn and to think in the ways that they wanted you to think. I wanted to think in revolutionary new ways and I couldn't have done this in the academic establishment."

This encounter with academic intransigence has coloured his view of conventional science. An early book, *Nonscience*, sought to explode some of the pretensions of scientific research, while in *The Cult of the Expert*, he argued that experts can manipulate universities, grant-givers and the public. His views seem to have hardened over the years since the book appeared in 1983.

"I really deplore the whole funding system for science nowadays. Science nowadays is all about conning money out of funding organisations. It's a big commercial exercise and the trouble is that the Government, who want to be seen as encouraging science don't actually understand it, which is why they are easily conned. Take the Large Hadron Collider project at Cern. This attracted hundreds of millions of Euros and a lot

of this was spent on PR. The idea that there might be an elementary particle – the Higgs Boson – which could confer mass upon other particles is so obvious that a bright ten year old might think of it. It's simple. It's the sort of idea that a shop assistant might have or that might occur to me while gardening. And yet millions are being thrown at it and these people at Cern are having a whale of a time spending the money without advancing science one bit."

I wondered if others involved in science agreed with him.

"Well some do and have said so publicly. During a discussion chaired by Jeremy Paxman in which I discussed the issue with Brian Cox and Sir Dave King, the former chief scientific advisor, King actually questioned whether the results from CERN were worth the money expended on it, and at this even Jeremy Paxman looked shocked. The trouble is that other top scientists feel the same way but aren't express their reservations in public for fear of undermining the whole scientific edifice. Some confess in private to me. One of these was Sir Sam Edwards, who used to be chairman of the Science Research Council."

It is natural, I suppose, for someone without a science degree to feel resentful that despite all

**“** *I was told I was either a journalist or a scientist, I could not do both. So I left. Fifty years later I seem to have won that battle* **”**

their many achievements outside academia, they are never considered, when funding is allocated. However, although Ford is still regarded by many as an amateur, a 'crank', it is a designation he seems happy to accept as a badge of honour. The history of science, he argues, is a story of amateurism.

"Science has rarely been advanced by anyone other than amateurs. Pasteur was a chemist; Dunlop was a vet; Einstein a patents clerk. Watson and Crick were told not to continue their work on DNA but to stick to their assigned research on haemoglobin, and to treat DNA research as a hobby.

"Watson, of course, began as an ornithologist and was a junior quiz champion. And to those who argue that things are different today in our high-powered scientific world, I say look at Steve Jobs, or Bill Gates, or indeed our own Sir Clive

Sinclair. Here are three of the leading figures in the development of the personal computer who didn't stay behind at university to gain a degree, but who made great achievements in science and technology nevertheless."

Inevitably, we got onto the subject of dinosaurs.

"Experts can be wrong and amateurs can be right, so to say that only palaeontologists should pronounce on palaeontology is a bit dangerous. I might not have a doctorate in the field, but my theory that dinosaurs evolved because they were essentially aquatic makes perfect sense for many reasons. For instance, all its legs are around the same length, which suggests that it evolved to live in water. Models show it with its tail on the ground, which is correct, but it is also shown carrying it in the air, which is absurd. I've calculated that if the creature was terrestrial, the amount of energy required for a tail of that weight to be carried in the air amounts to thousands of litres of oxygen.

"However, when the BBC's Today programme ran the story and the case of Galileo was mentioned in reference to my own, listeners were incensed that I had compared myself to Galileo, which was ridiculous. Comparing me to Galileo is a bit like comparing an ant to a lobster.

"However, in some ways there are some similarities regarding the reactions to his theory and mine. No-one at the time tried to prove that Galileo was wrong – the Church simply poured a tirade of insults at him and demanded that he recant. In my case a petition was drawn up and sent to the BBC demanding an apology and that I recant. No scientist offered to refute my theory.

"I gave a public lecture on the issue recently and after detailing the irrational response to my theory asked the obvious question. Does this failure to address my argument mean that all these learned palaeontologists are wrong and I am right? The answer, I suggested, must be yes."

According to Ford, the response from the scientific community to any new theory is always the same.

"When a new idea is launched in science it always provokes hostility, and when it is finally accepted, it is usually when the proposer is dead. Science dislikes new theories because it gets all its funding by adhering to the old ones. Heterodoxy, which I adore, is something sciences abhors."

Finally, I wondered if there was room within academia for someone like him who ruffled feathers.

There was a shake of the head, but a hint of defiance, rather than bitterness, in the answer.

"No, there isn't," he said. "Not at all. No."