Obituary

JANE PLANT (1945–2016)

JANE Plant, geochemist, award winning scientist, polymath, author, mother and cancer fighter died on the 4 March 2016. Born in 1945, she had a rather 'ordinary life' as a high-flying scientist, until she was struck by cancer in her 40ies. Her fight against the disease prolonged her life beyond any expectation, and perhaps, later, the life of many others. Instead of accepting her fate and the natural conclusion of a very bad prognosis, after the discovery of an aggressive cancer, Jane used her analytical mind to develop an understanding of the disease, and later a theory of how to fight it. Her concept certainly served her well, as she fought the disease several times in her life. Her ideas, however, were initially met with scepticism by the medical profession, on account of her unconventional, and seemingly unrelated, background. To give her ideas grounding, Jane worked with medical practitioners and nutritionists, and what began as an amateur effort to support fellow-sufferers turned into a thoroughly researched and medically valid lifestyle concept; her efforts were eventually recognized through the award of a Life Fellowship of the Royal Society of Medicine, an achievement that made her immensely proud. Of all her prestigious awards, and there were quite a few, this was the one she would occasionally speak about with joy.

But we should start our journey in Jane's life earlier. It is easy to forget that she was a leading geochemist, and much of what she achieved in her early career was in this field. Jane graduated with a Class I Honours degree in Geology at Liverpool University in 1967, which was followed by a PhD in Geochemistry at Leicester University ten years later. She worked on her doctorate part-time, whilst employed at the British Geological Survey (BGS). There, she was the first woman to be appointed to the role of Scientific Officer, rather than in a technical supporting grade. At BGS, Jane took a leading role in developing Britain's national geochemical database, initially, as a tool for mineral exploration. As part of that work, she developed the outstanding BGS Geochemical Baseline of the Environment (G-BASE) programme, which maps the distribution of different chemical elements on the land surface and allows their interactions to be studied systematically in space; traditionally this is used to locate ore

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deposits. The database very much depended on a method Jane developed to systematically and reproducibly sample and analyse sediments, soils and water samples, which was recognized widely as pioneering. Jane then made the leap to link the geochemical distribution maps to health, thus initiating the field of environmental health. She used geochemical maps to study problems related to human health in Asia and Africa helping, for example, to identify the relationship between a lack of available selenium in parts of China with the incidence of a type of heart disease. She also led the discovery of links between diseases in livestock and the geochemistry of the land on which they lived. In her career she led many other fundamental geological, metallogenic and environmental studies, and had a particular interest in radionuclides such as uranium and toxic elements such as arsenic. She reached senior positions in BGS, becoming their Chief Scientist from 2000 to 2005.

Her achievements were also recognized through other senior roles, including that of Vice President at Middleton Exploration during a sabbatical year in 1988–89; co-leadership of the International Geological Correlation Programme (IGCP) Project 360 – Global Geochemical Baselines in 1995; and the prestigious Tetelman Fellowship at Yale University in 2001. She also had a multitude of honorary doctorates and visiting chairs in the UK and abroad. Added to this, was a long string of prestigious awards and distinctions, including the chair of DEFRA's Advisory Committee on Hazardous Substances, membership of the All-Party Parliamentary Group for Earth Sciences, the presidency of the Institution of Mining and Metallurgy and more. In 1985 she received the Murchison Fund of the Geological Society, followed by a CBE for Services to Earth Sciences in 1997, Fellowship of the Royal Society of Arts in 2000, Fellowship of the Royal Society of Medicine in 2005 and Fellowship of the Royal Academy of Engineering in 2012.

Alongside the celebrated scientist, Jane also lived the life of a cancer fighter. She was first diagnosed with the disease in 1987 and by 1993 the disease had returned for the 5th time. Looking at the timing of her illness, it is remarkable to consider that many of her career achievements took place in the same period: Jane had unique strength and resilience. However, that was not enough to carry her through a bleak prognosis in 1993, but her scientific mind and problem solving skills came to the rescue. Given only months to live by doctors, Jane and her husband Peter, also a geoscientist,

FIG. 1. Jane panning for gold in Helmsdale, the first project she managed herself on behalf of BGS and which included a geological drilling campaign in the headwaters of the Helmsdale river.

started discussing the facts around cancer. Having both worked in China on environmental issues, they remembered being given an Atlas of disease incidence throughout China, which showed that breast cancer affected only one in 100,000 Chinese women, compared with one in 10 in the UK at that time. Jane was then undergoing chemotherapy, a treatment that would have paralysed physically and mentally most people, but not her. Approaching the problem as any other scientific study she undertook, she focused on the significance of breast cancer being rare in China. Yet if Chinese women adopted Western diets – for example by migrating to the West – within one generation their breast cancer rates became the same as Western women. So 'Why is it that Chinese women living in China don't get breast cancer?' Jane wondered. Peter then remembered that whilst in China, they could never get milk in any form other than powdered, because their Chinese colleagues never drunk it themselves. Peter's knowledge of the Chinese lifestyle after his extensive travels in the country made them realize that milk consumption was the single important dietary difference between a Chinese and a British

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lifestyle, and perhaps a key link to cancer incidence differences. Peter explained to me recently how later they 'translated' this into an epidemiological fact: cow's milk contains a chemical named Insulin-Like Growth Factor 1 (IGF1) designed to encourage the rapid growth of calves into cows, which is also naturally present in human milk. IGF1 carries with it the danger that in encouraging rapid growth of cells, it could also promote the growth of those cells with damaged DNA that could mature to form cancer.

With the discovery of this potential link between dairy-product consumption and cancer, Jane switched to a dairy-free, Asian-style diet virtually overnight. Miraculously, this produced the desired effect against her cancer; she was in remission in 7 weeks and remained cancer-free for 18 years. Convinced that her recovery was helped by her diet, Jane wanted to share this knowledge with others, but the only way she would feel comfortable pursuing would be the fact based scientific approach. She devised the Plant programme – a dairy-free diet, relying largely on plant proteins such as soy, inspired by the traditional diet of rural China – which was the result of extensive research in all medical, epidemiological and nutritional facts around cancer.

That started a new phase in her life: that of a celebrated popular book author. Although her books aimed to reach those who, like her, suffered from cancer, they were backed up by thorough investigation of medical facts; in her words: 'As a scientist, all I can do is tell the truth based on the evidence'. Her first book, "Your Life in Your Hands" caused a sensation when published in 2000 with many cancer patients claiming it helped them to recover. It has been translated into several languages, including Arabic, and remains a best seller. More books followed, all fuelled by her desire to share her discoveries and empower others to fight disease: "Eating for Better Health", "Beat Cancer: How to Regain Control of Your Health and Your Life", "The Plant Programme: Recipes for Fighting Breast and Prostate Cancer", "Beating Stress, Anxiety And Depression", "Prostate Cancer: Understand, Prevent and Overcome Prostate Cancer", "Understanding, Preventing and Overcoming Osteoporosis" and finally "Beat Cancer: The 10-Step Plan to Help you Overcome and Prevent Cancer'". Her last book, co-authored with Mustafa Djamgoz, Professor of Cancer Biology at Imperial College London and which included a foreword from Professor Sir Graeme Catto, President of the College of Medicine, gave her the recognition from medical science that she so much wanted and deserved and arguably brought a great closure to her publishing life.

But her fight against cancer was not over; the disease returned three more times. Jane blamed these recurrences on her becoming lax about diet and lifestyle. To those of us who knew her, it came as no surprise that in the end she had the last word, by depriving cancer from taking her life.

Jane's 'academic home' since 2000, was Imperial College, where she held a Chair in Geochemistry. Her relationship with Imperial was particularly successful; the University recognized her unique talents, but also her need to transgress disciplinary boundaries and explore new and often unconventional topics. It was one of those directions that allowed my path to cross hers. Jane realized very early that new hazards may come from modern technologies, particularly through human exposure to highly engineered nanomaterials. I was at the time freshly back from maternity leave, with a head buzzing with ideas, but very few people prepared to listen and support my efforts to turn them into successful research. Jane became my mentor, my friend and my inspiration. Together, and with Imperial College colleague Terry Tetley, a lung cell biologist, we set up NaNoRISK (Nanotoxicology Research in South Kensington), which became a forum for discussions, workshops, collaborations, at a time when the topic was too new to be mainstream. Jane never took any credit for it, but in the background supported the initiative with her reputation and connections and with her thoughtful guidance.

During the NaNoRISK days, we used to meet quite regularly and Jane would often use her favourite phrase: "been there, done that…", which was more than just words in her case. Her experience was invaluable and she would generously share her scientific ideas with us, just as she shared her cancer experience with the people on the street through her books. She was unique in combining the paradox of being incredibly busy, leading multiple lives as a university professor, a celebrated author, a cancer fighter in support of others, and often herself, but always finding times to meet and mentor her juniors. She thus inspired many, not least her own children, to follow in her footsteps.

Her unique style in science and life will be missed thoroughly.

EUGENIA VALSAMI-JONES

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