Stan's Safari Part 7

(First published in Hi-Fi Critic September 2009)

I recently spent some hours on the internet endeavouring to buy some depleted uranium. My first surprise was to find that the world seems to awash with the stuff with over a million tonnes lying in stockpiles and with a price so low that it is routinely given away to ammunition manufacturers who are willing to "dispose" of the material. My second surprise was to discover that DU, as it is benignly referred to, can be freely imported into the UK with no need for a licence or special authority. So far so good but after I made a few phone calls it became apparent that I was in danger of being lit up like the proverbial Christmas tree on every terrorist database in the Western world. This rather brought my ambitions to a sudden halt.

None the less DU is an interesting material having almost twice the density of lead; a very low rate of corrosion in normal atmospheres and, with sensible precautions, being no more dangerous than any other heavy metal. I'm tempted to fabricate some organ pipes with a uranium alloy with tin and a dash of antimony, in place of the usual lead-tin alloy. The formulation of the alloy and its thickness has a great influence on the timbre of the sound produced and each organ maker has his own favourite recipe although I'm not aware of any serious scientific studies of the material technology. Pipe organs have always been one of my abiding passions although sadly as a listener rather than as a practitioner. Although I play the Hammond organ tolerably well my lessons with a Cambridge college organist came to an end when I repeatedly demonstrated that my attempt to emulate Edwin LeMare always descended into a train wreck when the essential synchronisation between two hands and two feet (plus two thumbs in LeMare's case) became unhinged.

The organ can, because of its ability to sustain notes, ideally demonstrate the limitations of our chosen musical scale; the so-called equal temperament scale. We owe our musical scale of twelve notes to the Greeks worked out the mathematics of octaves and then the intervals called "fifths". Subsequently

the “thirds” interval joined the list and the basis of Western music was in place. This is not the place for music theory but essentially all the notes that are octaves; thirds and fifths blend together in a way that is pleasing to our ear; they are in harmony. This musical scale worked perfectly with most instruments but came seriously unstuck when keyboard instruments came along. Try to tune a five or six octave keyboard and you can have all the octaves in tune with each other; all the thirds in tune or all the fifths but not all three. This is just the way the mathematics works out and suggests some sloppy work on the part of Pythagorous or whoever. I did read somewhere that the Chinese solved the problem with a 53 note scale but that’s hardly practical.

Until the mid to late 19th century keyboard instruments were tuned to the mean-tone temperament where the octaves and thirds were in perfect tune but the fifths finished up being flat. In some keys this was a perfectly acceptable arrangement but in other keys a major chord would be out of tune and result in a sound referred to as “the howling of wolves” and so some fifth intervals became known as “wolf” notes. An organist playing alone could often transpose the key and so avoid the problem without anyone noticing but this option was not open to a pianist playing with an orchestra. Several piano manufacturers, including Broadwood in the UK, presumably with an eye to increased sales, led a campaign to encourage the adoption of the equal temperament tuning system where almost every interval is out of tune, but only by a small amount, but no interval is out of tune by enough to be noticed or at least, objected to by the listener. This is the system in universal use today and persevere dear reader because this will lead somewhere eventually.

This topic of tuning still causes passions to run high in some niches of the musical world and harpsichords and clavichords remain tuned to a mean temperament because they simply sound awful if you tune them like a piano. On several occasions organs have been re-tuned to mean temperament to allow pieces of music to be played in the manner the composer would have heard. Recordings exist of pieces played before and after so that a

comparison can be made. As it happens re-tuning several thousand organ-pipes is not a trivial or inexpensive matter but a simpler alternative exists today in the form of electronic sampling organs whose tuning can be changed in seconds. Now here's the rub. Listening to a piece of music, in my opinion, played with the two different temperaments is almost the same as listening to two different pieces of music. The change is dramatic and the emotional character and impact of the music changes. We are not talking subtlety here; I think most listeners would hear the difference. Yet the differences in mathematical or measurable terms are small; a few percent at most. Think about this; a few small almost insignificant changes in the relationship of the harmonics in a piece of music are enough to completely change its emotional impact.

And it is this sensitivity to often subtle changes in the presentation of music that is both the rational and the biggest frustration of our interest, namely high-fidelity reproduction of music. For the most part my music playback systems are left as they are, switched on whenever they are needed and producing an adequate standard of music reproduction. From time to time the odd adjustment will be made or a component changed but rarely do I experience one of those "life-changing" experiences that some of the more verbous reviewers seem to undergo on a regular monthly basis. Yet every so often time will be spent messing about with a system; a process usually precipitated by an enthusiastic mate with a list of often impractical "what if" queries. In the days when I designed Rotel products I'd meeting with Tony Mills once a fortnight ostensibly to liase on progress but instead we'd listen to one modification after another as ideas and components were subjected to the soldering iron until we sat back and decided that this was the best rendition of "Love over Gold" we'd yet heard.

And the Depleted Uranium? Well my piece on CD players in the last issue led me to remember the effectiveness not to say sheer brilliance of the lead beam suspension in the Cambridge Audio CD1 player. A suspension whose isolation enabled a massively reduced number of reading errors from a disc; errors caused by microscopic movements of the disc during the scanning

process. As I doodled a number of improved versions I remembered that the system would now be banned under the RoSH regulations which outlaw the use of lead in consumer electronics. In fact four metals are listed; lead, cadmium, mercury and hexavalent chromium; but not you will notice, depleted uranium. It seems to me that when machined and nickel plated, it would do the job very well indeed. Except of course I would have the hopeless task of convincing the men from Special Branch that the half ton of uranium in my garage was harmless and simply needed for building some CD players.