



TSCM LEGENDS

Dean La-Vey honours Lee Tracey and Charles Bovill, pioneers of TSCM

In July 2019, a genuine pioneer of TSCM passed away at the age of 93. Harold Lee Tracey (known as Lee) was the inventor of the Scanlock; the first truly dedicated TSCM detector for covert radio microphones. Based on his own prototype designs from the Forties and in a world free of GSM, wi-fi, 4G, Bluetooth and Tetra, Scanlock was the king of RF bug detection. Initially a government-only device in 1962, Scanlock detected and locked onto the RF signals local to the area being searched. Lee's initial design was based on his belief that a covert transmitter would always have a greater signal strength than the signal strength of distant signals in relation to the receiver; and this stronger signal could be rapidly detected. In most cases from 1962 to the early Eighties, 'rapidly detected by Scanlock' meant detected in seconds. The Scanlock is what was known then as a staircase receiver or harmonic receiver and scanned the radio spectrum up to 1GHz, and easily detected AM, FM and Sub-Carrier

transmitters. In actual fact the receiver itself only scanned 30 – 50MHz and the rest were harmonics. To enhance the Scanlock's usability, Lee Tracey added an 'automatic' mode whereby the receiver would automatically lock on to the strongest signal in the area being searched. There was also a 'soundwave' mode, which was a form of sonic looping whereby the receiver produced an audible tone. Finally, there was a 'locate' mode, which produced a changeable tone depending on the signal field strength of the detected signal (RSSI). All of these facilities were revolutionary and light years ahead of anything else at the time. Later models displayed the local oscillator frequency on an LCD display. To allow operators to check that the equipment was working correctly, Lee included various test transmitters and a mains carrier current device. Suffice it to say that most Western government sweep teams from the early Sixties to the late Eighties used a Scanlock of one generation or another. It was the complete package with the main unit and accessories all contained in a robust thick

Initially a government-only device, Lee Tracey's Scanlock detected and locked onto RF signals local to the area being searched

leather carry bag. In commercial TSCM terms, it was largely unheard of until 1975, but in real terms Scanlock had no credible rivals until the arrival of the Ranger, the CPM-700 broadband receiver and then the OSCOR 5000 in the Nineties; after which harmonic receivers were made virtually obsolete by fast TSCM spectrum analysers. Marketed first by Security Research and then Audiotel; Scanlock became a product known worldwide and the market leader in TSCM technology. In 1975 a new Scanlock would cost you £940, which at that time was a great deal of money.

Lee Tracey was a prominent MI6 Quartermaster having served first in the Royal Air Force as an engineer. It was during his time with MI6 that he perfected his 'staircase receiver' designs and it was put into production. He was a brilliant engineer and responsible for many other security-related products and inventions including the 'Delta V' RF Detector. This was a handheld broadband detector with the innovation of having two antennas, which made it much more effective in high RF environments. In the Fifties he invented the first silent drill that allowed specialised surveillance teams to covertly install audio and video devices through adjoining walls; and in the Nineties designed body-worn cameras for police and a torpedo sonar detection pod for detecting underwater objects. Most of his equipment and that of his friend Charles Bovill was initially sold through his first company Technical Security Ltd. in London in the early Seventies. It soon became the unofficial place for genuine spies to buy their equipment – and a great many Scanlocks were sold. In the early Eighties Lee continued to further develop the various Scanlock features into what was his last real involvement in the unit – The Scanlock 2000. Lee was a consultant to more than one UK police force at aged 90 and well versed in the latest computer technology. In his later years he was a mentor and an inspiration to many young air cadets in his home town of Oswestry.

Charles Bovill invented the Non-Linear Junction Detector that eventually became the restricted Super Scout in the United States and the original Broom in the UK. Charles, like Lee Tracey, was a brilliant RF engineer who had worked in the Special Operations Executive (SOE) during WWII. He was responsible for the 'S' Phone – the first ground-to-air tactical radio, however from the early Seventies he developed his idea conceived during WWII for finding corroded parts in aircraft. When metal within the aircraft's structure became corroded, he was able to detect this by sending out a radio signal (435MHz at the time) and receiving the harmonics created by the corroded metal junction. His original idea, however, came during the early days of radar when early radar signals gave multiple harmonic responses from the corrosion in the armour and rivets of enemy battleships. The first NLJDs were like the Scanlock – revolutionary. Now there was technical search equipment that could locate the electronics in a hidden listening device whether or not that device was operational at the time of the search. This was quite incredible at the time and changed the entire scope of TSCM searches. In the Eighties the second harmonic technology became commercially available and was known mainly as Broom and 'Locator

888 – the 888 being the primary output frequency in MHz. These things were pretty horrible to use, however, with the transmitter/receiver boxes weighing around 15kg due to the lead screening between the receiver and transmitter. Being second harmonic, there was also no way of differentiating a true electronic circuit and corroded metal junctions. Subsequently, many walls were knocked down and many floors ripped up only to find corrosive metal junctions producing the harmonic detection on the NLJD. Eventually, the technology moved on with third harmonic units such as Locator XD and Super Broom differentiating the second and third harmonics; and when RF screening material other than lead was developed, small NLJD formats such as the Orion HX 2.4GHz units went on to become industry standard. All of this technology is still based on Charles Bovill's original concept dreamt up in the Forties.

Like Lee Tracey, Charles was an inventor and innovator. In addition to the aforementioned 'S' Phone ground-to-air tactical radio, he also designed secret radios for the French resistance in WWII – many disguised as tree trunks. Charles Bovill passed away aged 90 in 2001.

MOST WESTERN SWEEP TEAMS FROM THE EARLY SIXTIES TO THE LATE EIGHTIES USED A SCANLOCK

Charles Bovill and Lee Tracey knew each other well having been friends and colleagues while working at MI6. They were, however, completely different in character. Charles was the quintessential English gent, very rarely seen without a tie and spoke with a polished upper class Surrey accent. Lee on the other hand wouldn't have been out of place in *Pirates Of The Caribbean* and was totally fearless. If something had to be tested, it had to be tested under operational conditions. To this end, Lee left holes of varying diameters through five-star hotel bedroom walls all over London when demonstrating his silent drill! Not to be outdone, Charles Bovill famously tested his prototype sub-sonic light crowd control device – on his wife! It was eventually used against prison riots in the United States.

This author knew Charles Bovill and Lee Tracey well, having worked with Charles Bovill for two years and having picked Lee Tracey's brain for more than 20. To hang around these guys in the Nineties was at times mesmerising and their stories could fill a book. Charles and Lee's workshops were TSCM history and they were always coming up with new ideas. They also lent me everything from WWII receivers to the latest variation of 'Broom' or Scanlock at the time. What was apparent about both, however, is that they were much better engineers and inventors than they were businessmen. Neither benefitted greatly from what they produced and they lived quite modestly.

Without the technical ingenuity of both of these remarkable men, we would not have the modern day variations of the technology they pioneered. Much of

▶ **CHARLES BOVILL TESTED HIS PROTOTYPE SUB-SONIC LIGHT CROWD CONTROL DEVICE ON HIS WIFE**

what they invented was done in the late Thirties and Forties. No computers or cad drawings; no printed circuit boards or surface-mounted components. Like their good friend Barnes Wallis who invented the bouncing bomb, it was very much trial and error until they got it right. Mention Barnes Wallis and most people think of the bouncing bomb. Mention Charles Bovill or Lee Tracey and most people have no idea who they are or what they did. They are, however, a part of TSCM history and should really be remembered. During the Cold War the equipment

they developed helped keep the world a little bit safer; and after that it enabled discovery of countless electronic eavesdropping devices for both governments and the private and corporate sectors. Sadly, there are not many characters of the standing of Lee Tracey and Charles Bovill left. Their legacy, however, is evident in the basics of TSCM equipment manufactured worldwide be it the UK, Russia or the United States.

Modern innovation and invention in TSCM equipment is like most modern technology greatly aided by high-grade computerised design. Everything from efficient battery design to flexible electronic circuit boards and intelligent software ensure modern TSCM equipment is reliable and accurate. Now take any modern TSCM receiver or Non Linear Junction Detector, and just think for a minute how two gentlemen from a different era conjured up such things on their own, with limited resources in what most of the time was a garden shed ●

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