THE BIONIC EAR

"Genius is one percent inspiration and ninety-nine percent perspiration." – Thomas Edison

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History and Australia's role:

In my 30+ years as an audiologist no invention has been hailed more in this country than the bionic ear or what is correctly known as the cochlear Implant.

Former Australian of the year, professor Graeme Clarke, is upheld as a genius and rightly so. However, despite conventional wisdom and whatever Google might tell you, professor Clarke did not invent the bionic ear. The first cochlear implants were actually performed in the early 1960s in the United States by Ear Surgeon William House. So, trivia buffs please take note, this is not strictly an Australian invention.

However, what professor Clarke did was to make the most dramatic leap in the development of the bionic ear. He invented a 22 electrode array device in the 1970s, which is still the prototype of all modern devices.

Clarke started his research in 1967 as a PhD student. One day when holidaying on the NSW coast, he was sitting on the beach contemplating his studies and began threading reeds of long grass into a seashell ironically shaped like the human cochlear (or inner ear). Clarke immediately knew the electrode design for the implant must mimic this. It was truly an apple on the head Newtonian moment. But how could it be done? Material which would be minute and flexible enough to be inserted into the human cochlear had never been invented. This was Australia in the late 60s, a land of meat pies, Holden cars and footballers who still did drop kicks. But perseverance saw professor Clarke perform his first implant in August 1978 on a recently deafened 48-year-old man. Four weeks later when the wound was healed, the patient was tested to see if he could recognise the rhythm of human speech. Clarke's team played the then national anthem, God Save the Queen to the patient and he bolted upright. The news received widespread coverage.

What is a Bionic Ear?

For many, the word 'bionic' conjures up images of the Six Million Dollar Man. In reality the word describes the merging of the world of electronics with that of biology. A cochlear Implant consists of a speech processor which captures and converts sound into electrical impulses, which are then transmitted to an implanted device below the skull. An electrode array then stimulates nerve endings within the inner ear to simulate hearing. Success is never achieved overnight. Just like the Edison quote, Australia's pre-eminent position with this technology is the result of decades of hard work and strategic investment by government and the private sector. Also, the depth of expertise we have in audiology, speech pathology, biomechanical engineering and ear, nose and throat surgery have all played their part in the success of the Bionic Ear.

When hearing aids no longer provide assistance, cochlear implants are considered. As of 2013, 320,000 people worldwide had been fitted with Cochlear implants, with 60 per cent of recipients being children. However, hearing aid fittings still dwarf cochlear implant fittings with more than one thousand aids fitted for every implant.

For more information or to make an appointment contact the Bendigo Hearing Clinic on 5442 5800 or visit

www.bendigohearingclinic.com.au ■