HAPPY BIRTHDAY ELECTRONICS WORLD!

Big Contrubution to Society

A 1928 book proposed a stationary satellite [1], however, the idea is usually attributed to Arthur C. Clarke in his article in Wireless World (now Electronics World) in 1945 [2]. This was the biggest contribution to society by this journal. [All references can be found online at http://www.ivorcatt.co.uk/x34.htm]

On another note, in 1985 a letter in Wireless World listed some eight authors who could not be published anywhere else except in Wireless World. Perhaps the biggest case is myself and my co-researchers, who have published some 40 articles in the journal, while publishing virtually nothing elsewhere [3].

In 1978 I phoned the late Tom Ivall, Editor, pointing out that he had published material by Dr David Walton and Malcolm Davidson, my co-researchers. I told him that electronics was rapidly changing from analogue to digital, and we could supply the missing digital electronics expertise. In less than ten minutes he asked, "May I come and visit you?".

Tom came to St. Albans, which was followed by many of our articles being published in this journal. After a short while I told him that we also had controversial material, to which he replied: "We welcome controversial material." I doubted this, but we submitted our short article *"Displacement Current"* [4], which goes to the core of classical electromagnetic theory.

The article was published in December 1978 and copies also reached The Atomic Energy Authority (UKAEA) in Culham [5]. This instigated a meeting of UKAEA scientists, who delegated to Dr B.G. Burrows the task of telling Ivall that if Wireless World published anything more by Catt it would be boycotted by the scientific community. Nevertheless, Ivall continued to publish Catt articles and the resulting letters, in virtually every issue for ten years.

This was the launch-pad for scientific advance in the twentieth century, the first century when science was controlled by professionals, a century deeply opposed to major scientific advance because of the damage it would do to careers and reputation.

With the retirement of Ivall, Wireless World went back to "normal". Also, Catt was trying (successfully) to get an airing for his new computer invention, "Catt Spiral", which had also been suppressed, so that the later investment of £12m was delayed for more than fifteen years. Because of the struggle to publish on "Catt Spiral", attempts to publish on electromagnetic theory lost top priority. Anyhow, it would have been difficult to get material past the new editor, Ogden, who preferred to publish bizarre material on electromagnetic theory.

The important next stage was the appointment of Eccles, a self-styled disciple of Ivall. He banned Catt from the journal for seven years. The next editor, Reed, however reinstated Catt's writings.

For me, a landmark in this Centenary issue is that it contains the first clear experimental proof that classical electromagnetism is fatally flawed. All our previous publications have been theoretical.

Ivor Catt, UK

Congratulations Electronics World. While pondering your centennial, we were reminded of Linear Technology's celebration of its 30th anniversary a year-and-a-half ago, and the key role of analog in electronics over the past century. Since Linear's founding in 1981, the worldwide analog market has grown from $2bn annually to $40bn today. That got us wondering how analog technology has changed over the years.

– Bob Dobkin, Linear Technology co-founder

(see the interview with him on page 26)

Electronics and The Evolution

In the 20th century the world underwent a deep transformation thanks to science and technology. Technological progress was supported by the development of electronics. Indeed, 50 years ago technologies were far from being similar to those of today. But although electronics continue to change and evolve, we cannot imagine what engineers of tomorrow may come up with. One thing is for sure and that's behind any innovation lie electronic components, like they have always been.

Take the electron tube for example, the ancestor of the transistor, and look at the transistor today – it is the main part of the processors which are absolutely everywhere.

In the early days vacuum diodes, triodes, tetrodes and pentodes were all active components. The first electron tube was implemented in 1902, followed by the appearance of the triode in 1907, and then the first oscillator was produced containing electronic components in 1913. The cathode ray tube came in 1914, and in 1919 one implemented the three-electrode tube. In 1948, the first transistor came about, earning a Nobel Prize for the researchers who developed it. In 1954 appeared the first radio based on transistors, and the first thyristor in 1956. The first integrated circuit (IC) was also made in 1956.

In 1960 the LED, and then the MOS transistor in 1962, were followed by the operational amplifier. In 1963 was the triac, and in 1964 it was the family of the TTL logic circuits, manufactured by Texas Instruments. The first electronic computer also made its appearance in 1964.

In 1969, 64-bit memory was developed; in 1970 it was the CCD (Charge Coupled Device); followed by the PROM; ASIC; PLA; IF; MSI; LSI and then VLSI. In 1972 was the introduction of the 8008 microcprocessor and 1974 it was the 6800. In 1990 GSM was quite talked about and 1991 Intel puts its Pentiums on the market. Over the next few years we saw analogue television and radio move to become all-digital.

In 2011 modulated light was transmitted at the speed of 8000Mb/s. Now we ask what's the next step in this evolution of electronic products. For sure they are likely to encompass the intelligence of ecosystems they are in, and become interconnected on a much bigger scale.

Let's see what the future holds.

Hafidh Merchegui, Tunisia