

This Month's Stiff: Sir John Ambrose Fleming

Entered Mortal Coil: 29 November 1849

Assumed Room Temperature: 18 April 1945

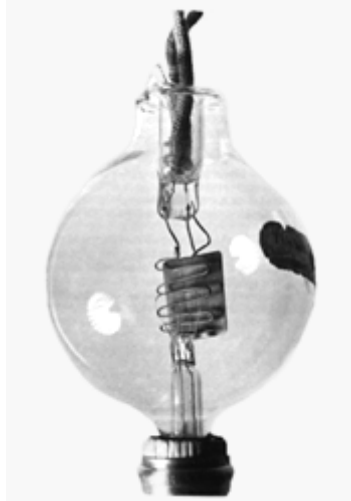


“Sorry, it only flows one way.”

Receiving wireless signals in The “Good Ole’ Days” was not an easy proposition. First, in order to generate any appreciable signal at the receiving end, your spark transmitter had to be tremendously powerful. Second, antennas were extremely large in order to extract every little bit of RF energy flashing through the ether and to be at least minimally efficient given the extremely low frequencies that the transmitter utilized. Why all the fuss? Well, consider that the state of the art at the time for radio detection consisted of a crude little gadget called a coherer. The induced voltage at the antenna would cause iron filings inside a glass tube to stick, or “cohere”, together a little bit, and electrical conduction would occur via external electrodes. After this cohesion took place, another gadget, a kludge, if you will, had to tap the tube to loosen the filings so another signal could be received. This “detector” didn’t detect very well at all. The operator had to wear a cumbersome headset that was strapped on so tight it would almost make the poor chap’s eyeballs pop out of his skull in order to silence every last bit of external noise. Remember, not only did the underpaid wireless operator have to keep from being annoyed by the boss, but the spark transmitter was both spectacular and LOUD. Often, the transmitter was in another room altogether. We’re talking weak signal work here, folks. It’s a wonder radio communication ever got off the ground in the first place. But, being unabashed capitalists as most inventors were, and still are, they just kept plugging away at the problem. Other detectors were tried utilizing various mineral substances and even electrolytic solutions, but the first really good detector was invented by this installment’s dude, Sir John Ambrose Fleming.

John’s first significant job consisted of working for the Edison Electric Light Company of London for a ten year period beginning in 1881. In 1883 he noticed a strange phenomenon inside the innards of common light bulbs. Carbon soot was being emitted by the filament and caused the bulbs to turn black with time. John inserted an electrode (what we now call a plate) inside in an effort to stop this undesired process. In further experiments he noted that a very small current flowed in the circuit when a positive voltage was applied to the plate. No current flowed when the voltage was negative in polarity. John applied an alternating voltage (Edison hated AC and didn’t care for Tesla much either), and noted that only half of the voltage passed through. *Voila!* A Eureka moment, unfortunately, did **not** occur, as Fleming applied for a patent some time later in

1905. Ambrose called his gadget a thermionic valve. At the time of its conception, the detector was an invention waiting for an application. So, in essence, Fleming put his modified light bulb away in storage and apparently didn't think much of it until the boys down at Marconi's shop began making noise. Literally.



One of Fleming's Glorified "Light Bulbs"

Since he was a long-time consultant for Marconi's wireless company, Fleming got together with the Maestro and divulged the secret of his new detector. Guglielmo was definitely interested, and found that the new thermionic valve worked wonderfully in radio receivers. The little light bulb started appearing in radio receivers all over the place, until a certain rogue by the name of Lee DeForest (See DED 9) messed up Fleming's happy state of affairs by inserting another wire into the light bulb, and then sued the Englishman to boot. Fortunately, Fleming won the court battle with a settlement in 1920, and the thermionic valve was declared a valid invention in its own right. However, the honeymoon was short as the cat's whisker detector was invented two years later. The little glowing light bulbs stayed in the radios, but now they were being used as amplifiers, and later, as oscillators.

In Fleming's later years he remained active in the burgeoning electronics field. John was also knighted in honor of his accomplishments. He remarried at the age of 84. John didn't die destitute or a broken man, but quietly as most of us would prefer. This Dude's story happily ended well.

References:

<http://chem.ch.huji.ac.il/~eugeniik/history/fleming.htm>

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