



Celebrate the achievements made in medical engineering and take a glimpse into the future.

- As told by UK Sepsis Ambassador Patrick TJ Kane
- Phenomenal artwork by highly acclaimed artist Samuel Rodriguez
- The first of its kind - a book that celebrates the history of medical implantables and prosthetics
- The forefront of diversity - featuring stories from celebrities and people around the world

THE FIRST PROSTHESES

For as long as humans have been around, we have been losing limbs, or we have lost them. Whether due to an injury or combat-related impairment (a condition that is present from early people have been trying to replace missing arms, legs, fingers and hands for thousands of years. Early prostheses were revolutionary for their time, and their inventors did not have the technology needed to provide better functionality and comfort. Even so, some of these early prostheses closely resemble those that exist today.

Count Götz von Berlichingen Perhaps the most famous example of an early prosthetic is that belonging to the German knight, Count Götz von Berlichingen, who lost his hand during battle in the early 1500s. Count Götz asked his craftsmen to create an iron hand with hinges, rings, and joints that could be used to hold a sword. He had to find a way to make his hand work with a sword. He had to find a way to make his hand work with a sword.

The earliest known example of a prosthetic can be traced back to a 4,600-year-old Egyptian mummy. It is believed that the mummy's right hand was replaced with a wooden prosthetic. The prosthetic was made of wood and was attached to the mummy's hand with a metal band. It is believed that the prosthetic was used to hold a bow or a spear.

The earliest written mention of a prosthetic dates to around 770 BC, and describes the hand of a man belonging to the Roman general Marcus Sergius. Sergius was said to be one of the finest generals of his time, especially because of his bionic hand. After he was wounded in battle, he was replaced with a prosthetic hand. Sergius's replacement hand was compared to his arm, perhaps allowing him to hold a shield like his other hand.

HOW PACEMAKERS WORK

Pacemakers are small devices that monitor and regulate the electrical impulses controlling the heart. Beyond, the heart requires its own timing through a network of cells that carry electrical currents. These cells are coordinated by something called the sinoatrial node, which is often referred to as the "natural pacemaker." Medical conditions that affect the sinoatrial node or any of the other parts of the heart can be diagnosed and require a pacemaker to correct them.

There are different types of pacemakers for different heart issues, but the most common is the single-chamber pacemaker. These devices only monitor and regulate the heart's rhythm. There are also dual-chamber pacemakers, which monitor and regulate both the heart's rhythm and the heart's rate.

Inside the pacemaker box
The battery inside a pacemaker is made of lithium ions, and it is the most common type of battery used in pacemakers. It is a small, rectangular battery that is about the size of a coin. It is connected to the pacemaker's circuitry, which is used to monitor and regulate the heart's rhythm.

1. The pacemaker box is implanted in the chest, under the skin.
2. The pacemaker box is connected to the heart by wires called leads.
3. The pacemaker box sends electrical impulses to the heart to regulate its rhythm.

PROSTHETIC HANDS THROUGH THE AGES

Hands are one of our most valuable and versatile body parts. We use them to pick up objects, use tools and feel textures, but also to communicate and bond with others through touch and emotional gestures. It comes as no surprise that humans have been desperate to replicate hands for those who were born without them, or lost them through accidents, injury or disease. Because of the high priority of tasks we use our hands for, this has been incredibly challenging, but it is fascinating to look back at over 300 years of advancement.

1697 The first known example of a prosthetic hand is a wooden hand made for a man who lost his hand in a battle. The hand was made of wood and was attached to the man's arm with a metal band. It was used to hold a sword.

1711 The first known example of a prosthetic hand that was made of metal is a hand made for a man who lost his hand in a battle. The hand was made of metal and was attached to the man's arm with a metal band. It was used to hold a sword.

1789 The first known example of a prosthetic hand that was made of metal and was used to hold a pen is a hand made for a man who lost his hand in a battle. The hand was made of metal and was attached to the man's arm with a metal band. It was used to hold a pen.

1917 The first known example of a prosthetic hand that was made of metal and was used to hold a pen and was also used to hold a book is a hand made for a man who lost his hand in a battle. The hand was made of metal and was attached to the man's arm with a metal band. It was used to hold a pen and a book.

1941 The first known example of a prosthetic hand that was made of metal and was used to hold a pen and was also used to hold a book and was also used to hold a book is a hand made for a man who lost his hand in a battle. The hand was made of metal and was attached to the man's arm with a metal band. It was used to hold a pen, a book, and a book.

1961 The first known example of a prosthetic hand that was made of metal and was used to hold a pen and was also used to hold a book and was also used to hold a book is a hand made for a man who lost his hand in a battle. The hand was made of metal and was attached to the man's arm with a metal band. It was used to hold a pen, a book, and a book.

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BEYOND BIONICS

So far, bionic devices have been playing catch-up with the body parts they are trying to emulate. While the devices available today have changed lives, they are still not as multi-functional, reliable and efficient as the organs and limbs that biology has provided. As we look at the rapid advancements that have been made since the start of the last century, we can be certain that technology will improve. However, instead of asking how we can replace an arm, leg or eye, the question engineers ask today is "How can we improve upon what an arm, leg or eye is?"

Science and technology will continue to provide new options that are less expensive, more durable and better at copying what humans can do. But there may come a point where we will ask what exactly makes a 'good' limb. For example, a bionic arm is currently slower and less versatile than a human one. It needs to be charged and can't be submerged under water. But already bionic hands can hold onto objects that are very hot or cold without damaging themselves, which human hands cannot. A human leg can position itself on uneven ground without needing to go for maintenance, but running prostheses of the future may allow humans to run far quicker than biology ever could. There is no need to stop there – the fastest prosthetic leg of the future could even have wheels and an engine.

As technology continues to challenge what is possible, it is the human brain that will become the limiting factor. Where do we stop? Is there a limit? Different prostheses for specific tasks may become as commonplace as changing into running shoes or putting on scuba-diving equipment.

Looking further ahead, it could be possible to replace all of our body parts with bionics. Neurons in the brain could become fibre optic cables and muscles could be replaced with synthetic fibres capable of moving faster than a biological muscle. The difficult question we would then face is what that means for being human, and that, no one yet has an answer to.

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