

## Artificial Eye

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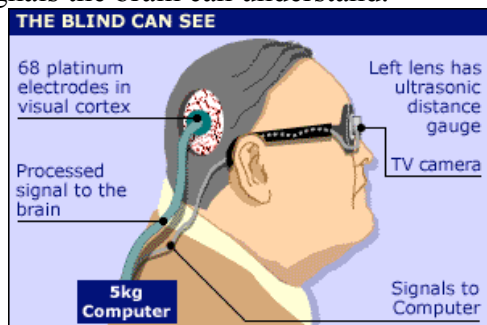
Blindness is common worldwide problem. "There are more than one million blind people living in North America today. That number is expected to double as the baby boom generation ages and their vision begins to fail." There are many issues with people who are blind because there are not many devices that can help them.

Phosphenes are activated by pressure, electrical and mechanical stimulation. For example, when rubbing your eyes, pressure phosphenes are activated.

This is why people see colored dots after rubbing their eyes. The goal of the artificial eye is to stimulate these phosphenes.

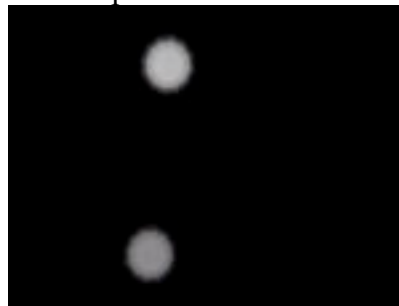
The artificial eye is composed of three major components. The first component is a camera that is mounted on a pair of glasses; the second is a processor that the patient must wear. The third is a variety of small platinum electrodes that are attached to the brain.

The sight process begins by implanting the platinum electrodes onto the visual cortex of the brain. These electrodes, as well as the external camera, are connected to the processor, which the patient must carry at all times. The processor receives the electrical information from the camera and translates it into signals the brain can understand.



The electrical stimulation only acts on certain parts of the visual cortex, which is why patients can only see phosphenes. Some patients can actually see these phosphenes in color, similar to rubbing your eyes and seeing the colored dots. The patient has to adapt to using these phosphenes as their primary vision.

It does take some time for the patient to learn how to see and process the information.



This particular method for artificial sight has been banned in many countries due to the surgical risks on the brain. There are cables that attach the visual cortex of the brain to the processor that hang freely by the way of a small biocompatible jack implanted in the skull.

The artificial eye was implanted on a man named Jens. The first process was to map out his phosphenes so they could be translated in a way that his brain would understand them. After this he went through a sort of rehabilitation for learning to use his new equipment and learning to see. In this case, Jens sees dots surrounding large shapes, so he can make out a car or a building and even a phone on a table.

The technique for installing this particular device is not approved in the U.S. and most customers travel to other countries to have the surgery. For this reason insurance will not cover any expenses which range up to \$125,000 including training.

<http://www.artificialvision.com/etumble.htm>

<http://www.cbc.ca/sunday/sight/procedure.html>

<http://en.wikipedia.org/wiki/Phosphe>