

Shocking Medical Devices From Another Century

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All photos: Tim Gruber/WIRED*



Electricity has a strange place in the annals of medicine. Its effects on the body have been known since ancient times. In the first century AD, the Roman physician Scribonius Largus described the salutary effects of applying an electric torpedo fish to the body for the relief of headaches, gout, or hemorrhoids. Since then, electric cures have fallen in and out of favor again and again, pursued and promoted by earnest scientists and profiteering quacks alike.

The devices in this gallery come mostly from the mid-20th century. They include Russian electrosleep machines, neurofeedback devices, and an electrical instrument that could be played by two people trying to synchronize their brain waves.

They are among the more than 2,300 devices at the Bakken Museum in Minneapolis. The museum's collection, which also includes some 11,000 books and scientific manuscripts dating back to the 13th century, focuses on the use of electromagnetism in medicine.



Assistant curator Adrian Fischer (below) compiled this selection of some of the Bakken's more rare and unusual devices, such as the Garceau Nerve Stimulator (above) that was made sometime between 1940 and 1970. Fischer says the documentation accompanying this device suggests it was used to stimulate the cerebral cortex during brain surgery, for example, to help surgeons pinpoint the source of a patient's epileptic seizures.



Ectron Mark 4 ECT apparatus (1960-1970) Electroconvulsive shock therapy aims to reboot the brain of someone deep in the grip of depression by applying a seizure-inducing jolt through electrodes placed on the head.

ECT got an unshakably bad reputation from its portrayal in the 1975 movie *One Flew Over the Cuckoo's Nest*, but it's still used today -- more safely and humanely -- as a last resort for people

with severe depression that doesn't respond to drugs and other treatments. It works for some patients, but memory loss is a common side effect. A manual accompanying the Mark 4 boasts of several features, including "Amnesia and Confusion reduced," and "Skin Burns eliminated."



Electrosleep machine (1955-1965) Electrosleep, also called “transcerebral electrotherapy,” is a method for stimulating the brain during sleep to improve the quality of sleep.

"As a result of the passage of the electrical current, there occurs a mild inhibition of the central nervous system, equivalent to that produced by a medium-strength tranquilizer," the manual for this model helpfully explains. Electrosleep research was booming in Russia in the 1950s. This model was the first made in the U.S.



Electroson (1969) This portable Russian electrosleep machine produces low-frequency pulses of electrical current to stimulate the brain during sleep.



Alpha-Stim 2000 (1981-1987). Transcutaneous electrical nerve stimulation is a method for passing currents between two electrodes placed on the body. "The Alpha-Stim 2000 is the fastest, most effective method of pain control on the market today," its manual boasts. "Its advanced circuitry uses 1983 electronic technology, and its advanced design utilizes an 'analytical-therapeutic loop' which allows for more operator variables than ever before available."

It also weighs more than 40 pounds and cost \$5,850, according to the website of EPI, the company that made it and still markets similar products today. EPI's founder, one Dr. Daniel L. Kirsch, explains the scientific rationale behind the Alpha-Stim thusly: "It is based on a theory of cellular resonance or biological harmonics, whatever you want to call it." Any questions? No? Good.



Cyborg P303 (1978-1983) Biofeedback was big in the 70s and 80s. The idea was that people can learn to control physiological processes such as digestion and muscle tone that don't normally enter conscious awareness -- with a little help from technology.

The Cyborg P303 converted electrical signals from the muscles into sounds (note the headphone jack). Tuning in to these sounds and learning to control them, the manual suggests, could be beneficial for a wide range of disorders, including "stress-related illnesses such as tension headaches, anxiety, and conversion reaction, as well as loss of motor function resulting from cerebral-vascular accidents and spinal cord injuries."



Cyborg Q700 (1977-1982) A "flexible, yet reasonably-priced data accumulator" for biofeedback therapy and research, according to its manual, the Q700 included a time period integrator for averaging signals over a fixed period of time.



Electrosone 50 (1973) This device sent very weak pulsating current through the patient's brain for "assisting in the fields of relaxation and sleep." It includes a set of electrodes to be placed on the back of the neck and over the closed eyelids. It was also apparently used in at least one study on altered states of consciousness.



Alpha Wave Sensor (1965-1979) Alpha waves, synchronized waves of brain activity at eight to 13 cycles per second, typically occur when a person is resting but awake. This device converts alpha waves into sound for biofeedback. According to patent filings, the big advance here was that the electrodes in the headset did not require a user to shave his head or apply "costly, aesthetically repugnant" electrode cream to make good contact.



Biofeedback Music Instrument (1974) This biofeedback device is made for two. Participants strap on the electrodes (see below) and the machine converts electrical signals from their brains into sound. Think of it as using your brain as a musical instrument.

John Cage and other avant garde composers experimented with neurofeedback (pdf) in the '60s and '70s. In one performance, a subject's brain waves set the rhythm of an Indian raga. But if that's too high concept or New Age-y for you, don't sweat it. Play some Skynyrd, man!