#1: Elephants on Acid

What happens if you give an elephant LSD? On Friday August 3, 1962, a group of Oklahoma City researchers decided to find out.

Warren Thomas, Director of the City Zoo, fired a cartridge-syringe containing 297 milligrams of LSD into Tusko the Elephant's rump. With Thomas were two scientific colleagues from the University of Oklahoma School of Medicine, Louis Jolyon West and Chester M. Pierce.

297 milligrams is a lot of LSD. It's—about 3000 times the level of a typical human dose. In fact, it remains the largest dose of LSD (that we know of) ever given to a living creature. The researchers figured that, if they were going to give an elephant LSD, they better not give him too little since they knew that elephants are highly resistant to many drugs.

Thomas, West, and Pierce later explained that the experiment was designed to find out if LSD would induce musth in an elephant. Musth is a kind of temporary madness male elephants sometimes exhibit during which they become highly aggressive and secrete a sticky fluid from their temporal glands. But one suspects a small element of ghoulish curiosity might also have been involved.

Whatever the reason for the experiment, it almost immediately went awry. Tusko reacted to the shot as if a bee had stung him. He trumpeted around his pen for a few minutes, and then keeled over on his side. Horrified, the researchers tried to revive him with antipsychotics, but about an hour later he was dead. The three scientists sheepishly concluded, "It appears that the elephant is highly sensitive to the effects of LSD."

In the years that followed controversy lingered over whether it was the LSD that killed Tusko, or the antipsychotics used in the attempt to revive him. So twenty years later, Ronald Siegel of UCLA decided to settle the debate by giving two elephants a dose similar to what Tusko received. Reportedly he had to sign an agreement promising to replace the animals in the event of their deaths.

Instead of injecting the elephants with LSD, Siegel mixed the drug into their water, and when it was administered in this way, the elephants not only survived but didn't seem too upset at all. They acted sluggish, rocked back and forth, and made some strange vocalizations such as chirping and squeaking, but within a few hours they were back to normal. However, Siegel noted that the dosage Tusko received may have exceeded some threshold of toxicity, so he couldn't rule out that LSD was the cause of his death. The controversy continues.
#5: The Isolated Head of a Dog

Ever since the carnage of the French Revolution, when the guillotine sent thousands of severed heads tumbling into baskets, scientists had wondered whether it would be possible to keep a head alive apart from its body, but it wasn't until the late 1920s that someone managed to pull off this feat.

Soviet physician Sergei Brukhonenko developed a primitive heart-lung machine he called an "autojector," and with this device he succeeded in keeping the severed head of a dog alive. He displayed one of his living dog heads in 1928 before an international audience of scientists at the Third Congress of Physiologists of the USSR. To prove that the head lying on the table really was alive, he showed that it reacted to stimuli. Brukhonenko banged a hammer on the table, and the head flinched. He shone light in its eyes, and the eyes blinked. He even fed the head a piece of cheese, which promptly popped out the esophageal tube on the other end.

Brukhonenko's severed dog head became the talk of Europe and inspired the playwright George Bernard Shaw to muse, "I am even tempted to have my own head cut off so that I can continue to dictate plays and books without being bothered by illness, without having to dress and undress, without having to eat, without having anything else to do other than to produce masterpieces of dramatic art and literature."
#2: The Obedience Experiment
Imagine that you've volunteered for an experiment, but when you show up at the lab you
discover the researcher wants you to murder an innocent person. You protest, but the
researcher firmly states, "The experiment requires that you do it." Would you acquiesce and kill
the person?

When asked what they would do in such a situation, almost everyone replies that of course they
would refuse to commit murder. But Stanley Milgram's famous obedience experiment,
conducted at Yale University in the early 1960s, revealed that this optimistic belief is wrong. If
the request is presented in the right way, almost all of us quite obediently become killers.

Milgram told subjects they were participating in an experiment to determine the effect of
punishment on learning. One volunteer (who was, in reality, an actor in cahoots with Milgram)
would attempt to memorize a series of word pairs. The other volunteer (the real subject) would
read out the word pairs and give the learner an electric shock every time he got an answer
wrong. The shocks increased in intensity by fifteen volts with each wrong answer.

The experiment began. The learner eventually got some answers wrong, and then some more,
and soon the shocks had reached 120 volts. At this point the learner started crying out, "Hey,
this really hurts." At 150 volts the learner screamed in pain and demanded to be let out.
Confused, most volunteers turned around and asked the researcher what they should do. The
researcher always calmly replied, "The experiment requires that you continue."

Milgram actually had no interest in the effect of punishment on learning. What he really wanted
to see was how long people would keep pressing the shock button before they refused to
participate in the increasingly sadistic experiment. Would they remain obedient to the authority
of the researcher up to the point of killing someone?

To Milgram's surprise, even though volunteers could plainly hear the agonized cries of the
learner echoing through the walls of the lab from the neighboring room, two-thirds of them
continued to press the shock button all the way up to the end of scale, 450 volts, by which time
the learner had fallen into an eerie silence, apparently dead. Milgram's subjects sweated and
shook, and some laughed hysterically, but they kept pressing the button. Even more
disturbingly, when volunteers could neither see nor hear feedback from the learner, compliance
with the order to give ever greater shocks was almost 100%.

Milgram later commented, "I would say, on the basis of having observed a thousand people in
the experiment and having my own intuition shaped and informed by these experiments, that if a
system of death camps were set up in the United States of the sort we had seen in Nazi
Germany, one would be able to find sufficient personnel for those camps in any medium-sized
American town."
The Initiation of Heterosexual Behavior in a Homosexual Male

In 1954, James Olds and Peter Milner of McGill University discovered that the septal region is the feel-good center of the brain. Electrical stimulation of it produces sensations of intense pleasure and sexual arousal. They demonstrated their discovery by inserting wires into a rat's brain and then showing that when the rat figured out it could self-stimulate itself by pressing a lever, it would maniacally bang on that lever up to two-thousand times an hour.

In 1970, Robert Heath of Tulane University dreamed up a far more novel application of Olds and Milner's discovery. Heath decided to test whether repeated stimulation of the septal region could transform a homosexual man into a heterosexual.

Heath referred to his homosexual subject as patient B-19. He inserted Teflon-insulated electrodes into the septal region of B-19's brain and then gave B-19 carefully controlled amounts of stimulation in experimental sessions. Soon the young man was reporting increased stirrings of sexual motivation. Heath then rigged up a device to allow B-19 to self-stimulate himself. It was like letting a chocoholic loose in a candy shop. B-19 quickly became obsessed with the pleasure button. In one three-hour session he pressed it 1500 times until, as Heath noted, "he was experiencing an almost overwhelming euphoria and elation and had to be disconnected."

By this stage of the experiment B-19's libido was so jacked up that Heath decided to proceed with the final stage in which B-19 would be introduced to a sexually-willing female partner. With permission from the state attorney general, Heath arranged for a twenty-one-year-old female prostitute to visit the lab, and he placed her in a room with B-19. For an hour B-19 did nothing, but then the prostitute took the initiative and a successful sexual encounter between the two occurred. Heath considered this a positive result.

Little is known of B-19's later fate. Heath reported that the young man drifted back into a life of homosexual prostitution, but that he also had an affair with a married woman. Heath optimistically decided that this showed the treatment was at least partially successful. However, Heath never did try to convert any more homosexuals.
#7: The Stanford Prison Experiment

Why are prisons such violent places? Is it because of the character of their inhabitants, or is it due to the corrosive effect of the power structure of the prisons themselves?

Determined to find an answer, Philip Zimbardo created a mock prison in the basement of the Stanford psychology department. He recruited clean-cut young men as volunteers — none had criminal records and all rated "normal" on psychological tests — and he randomly assigned half of them to play the role of prisoners and the other half to play guards. His plan was that he would step back for two weeks and observe how these model citizens interacted with each other in their new roles.

What happened next has become the stuff of legend.

Social conditions in the mock prison deteriorated with stunning rapidity. On the first night the prisoners staged a revolt, and the guards, feeling threatened by the insubordination of the prisoners, cracked down hard. They began devising creative ways to discipline the prisoners, using methods such as random strip-searches, curtailed bathroom privileges, verbal abuse, sleep deprivation, and the withholding of food.

Under this pressure, prisoners began to crack. The first one left after only thirty-six hours, screaming that he felt like he was "burning up inside." Within six days, four more prisoners had followed his lead, one of whom had broken out in a full-body stress-related rash. It was clear that for everyone involved the new roles had quickly become more than just a game.

Even Zimbardo himself felt seduced by the corrosive psychology of the situation. He began entertaining paranoid fears that his prisoners were planning a break-out, and he tried to contact the real police for help. Luckily, at this point Zimbardo realized things had gone too far. Only six days had passed, but already the happy college kids who had begun the experiment had transformed into sullen prisoners and sadistic guards.

Zimbardo called a meeting the next morning and told everyone they could go home. The remaining prisoners were relieved, but tellingly, the guards were upset. They had been enjoying their new-found power and had no desire to give it up.
In 1924, Carney Landis, a graduate student in psychology at the University of Minnesota, designed an experiment to study whether emotions evoke characteristic facial expressions. For instance, is there one expression everyone uses to convey shock, and another commonly used to display disgust?

Most of Landis’s subjects were fellow graduate students. He brought them into his lab and painted lines on their faces so that he could more easily see the movement of their muscles. He then exposed them to a variety of stimuli designed to provoke a strong psychological reaction. As they reacted, he snapped pictures of their faces. He made them smell ammonia, look at pornographic pictures, and reach their hand into a bucket containing slimy frogs. But the climax of the experiment arrived when he carried out a live white rat on a tray and asked them to decapitate it.

Most people initially resisted his request, but eventually two-thirds did as he ordered. Landis noted that most of them performed the task quite clumsily: “The effort and attempt to hurry usually resulted in a rather awkward and prolonged job of decapitation.” For the one-third that refused, Landis eventually picked up the knife and decapitated the rat for them.

Landis’s experiment presented a stunning display of the willingness of people to obey the demands of experimenters, no matter how bizarre those demands might be. It anticipated the results of Milgram's obedience experiment by almost forty years. However, Landis never realized that the compliance of his subjects was far more interesting than their facial expressions. Landis remained single-mindedly focused on his initial research topic. However, he never was able to match up emotions and expressions. It turns out that people use a wide variety of expressions to convey the same emotion — —even an emotion such as disgust at having to decapitate a rat.
#20: Heartbeat at Death

On October 31, 1938, John Deering took a last drag on his cigarette, sat down in a chair, and allowed a prison guard to place a black hood over his head and pin a target to his chest. Next the guard attached electronic sensors to Deering’s wrists.

Deering had volunteered to participate in an experiment, the first of its kind, to have his heartbeat recorded as he was shot through the chest by a firing squad. The prison physician, Dr. Stephen Besley, figured that since Deering was being executed anyway, science might as well benefit from the event. Perhaps some valuable information about the effect of fear on the heart could be learned.

The electrocardiogram immediately disclosed that, despite Deering’s calm exterior, his heart was beating like a jackhammer at 120 beats per minute. The sheriff gave the order to fire, and Deering’s heartbeat raced up to 180 beats per minute. Then four bullets ripped into his chest, knocking him back in his chair. One bullet bore directly into the right side of his heart. For four seconds his heart spasmed. A moment later it spasmed again. Then the rhythm gradually declined until, 15.4 seconds after the first shot, Deering’s heart stopped.

The next day Dr. Besley offered the press a eulogy of sorts for Deering, saying, "He put on a good front. The electrocardiograph film shows his bold demeanor hid the actual emotions pounding within him. He was scared to death."
#15: The Electrification of Human Corpses
In 1780, the Italian anatomy professor Luigi Galvani discovered that a spark of electricity could cause the limbs of a dead frog to twitch. Soon men of science throughout Europe were repeating his experiment, but it didn't take them long to bore of frogs and turn their attention to more interesting animals. For instance, they wondered what would happen if you electrified a human corpse.

Galvani's nephew, Giovanni Aldini, embarked on a tour of Europe in which he offered audiences the chance to see this stomach-turning spectacle. His most celebrated demonstration occurred on January 17, 1803 when he applied the poles of a 120-volt battery to the body of the executed murderer George Forster.

When Aldini placed wires on the mouth and ear, the jaw muscles quivered and the murderer's features twisted in a rictus of pain. The left eye opened as if to gaze upon his torturer. For the grand finale Aldini hooked one wire to the ear and plunged the other up the rectum. Forster's corpse broke into a hideous dance. The *London Times* wrote, "It appeared to the uninformed part of the bystanders as if the wretched man was on the eve of being restored to life."

Other researchers tried electrifying corpses with the hope of restoring them to life, but with no success. Early nineteenth-century experiments of this kind are considered to have been one of Mary Shelley's main sources of inspiration when she wrote her novel *Frankenstein* in 1816.