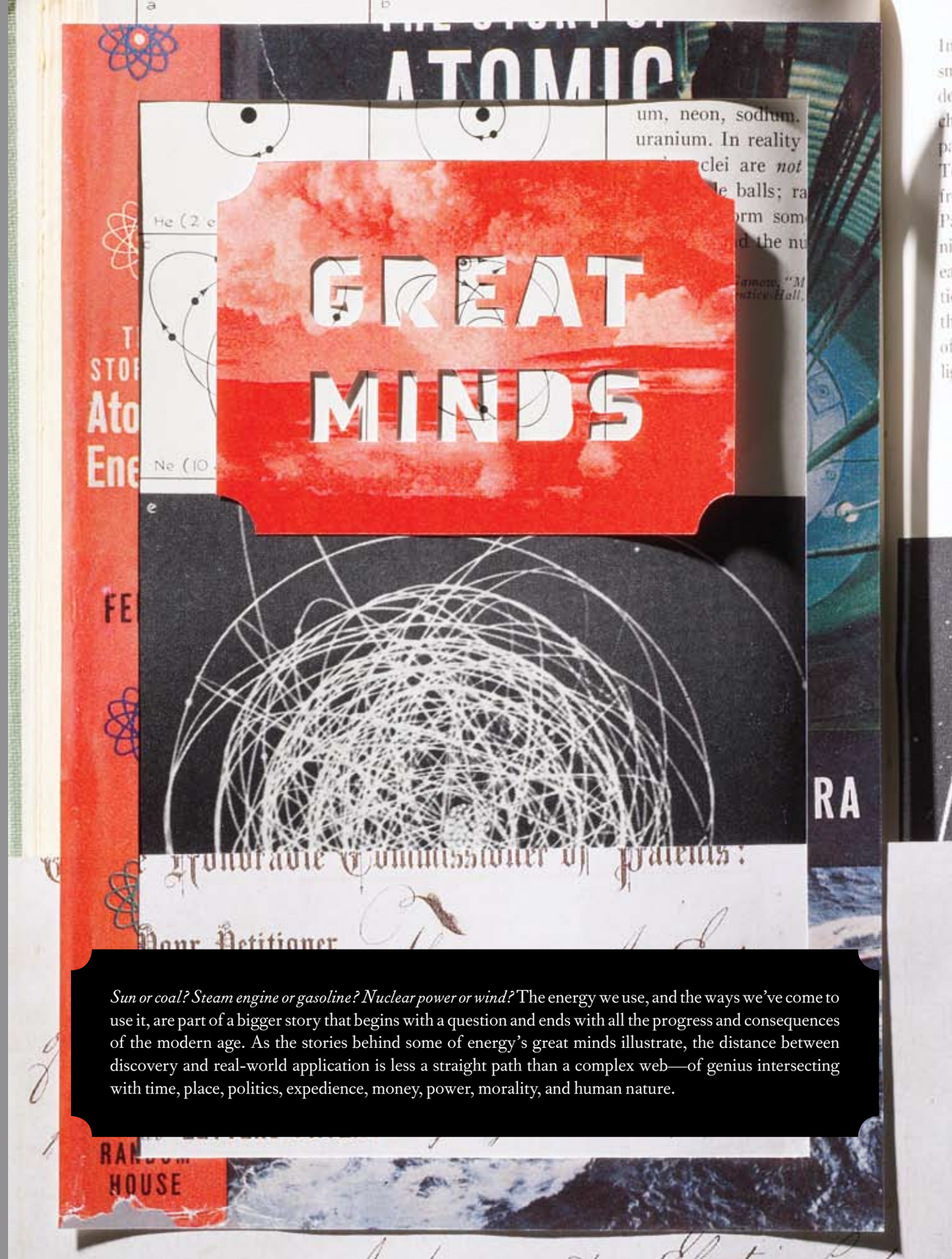
Only after the last tree has been cut down. Only after the last fish has been caught. Only after the last river has been poisoned. Only then will you realize that money cannot be eaten.

CREE NATION TRIBAL PROPHECY



Sun or coal? Steam engine or gasoline? Nuclear power or wind? The energy we use, and the ways we've come to use it, are part of a bigger story that begins with a question and ends with all the progress and consequences of the modern age. As the stories behind some of energy's great minds illustrate, the distance between discovery and real-world application is less a straight path than a complex web—of genius intersecting with time, place, politics, expedience, money, power, morality, and human nature.

Leonardo da Vinci
& Solar Power

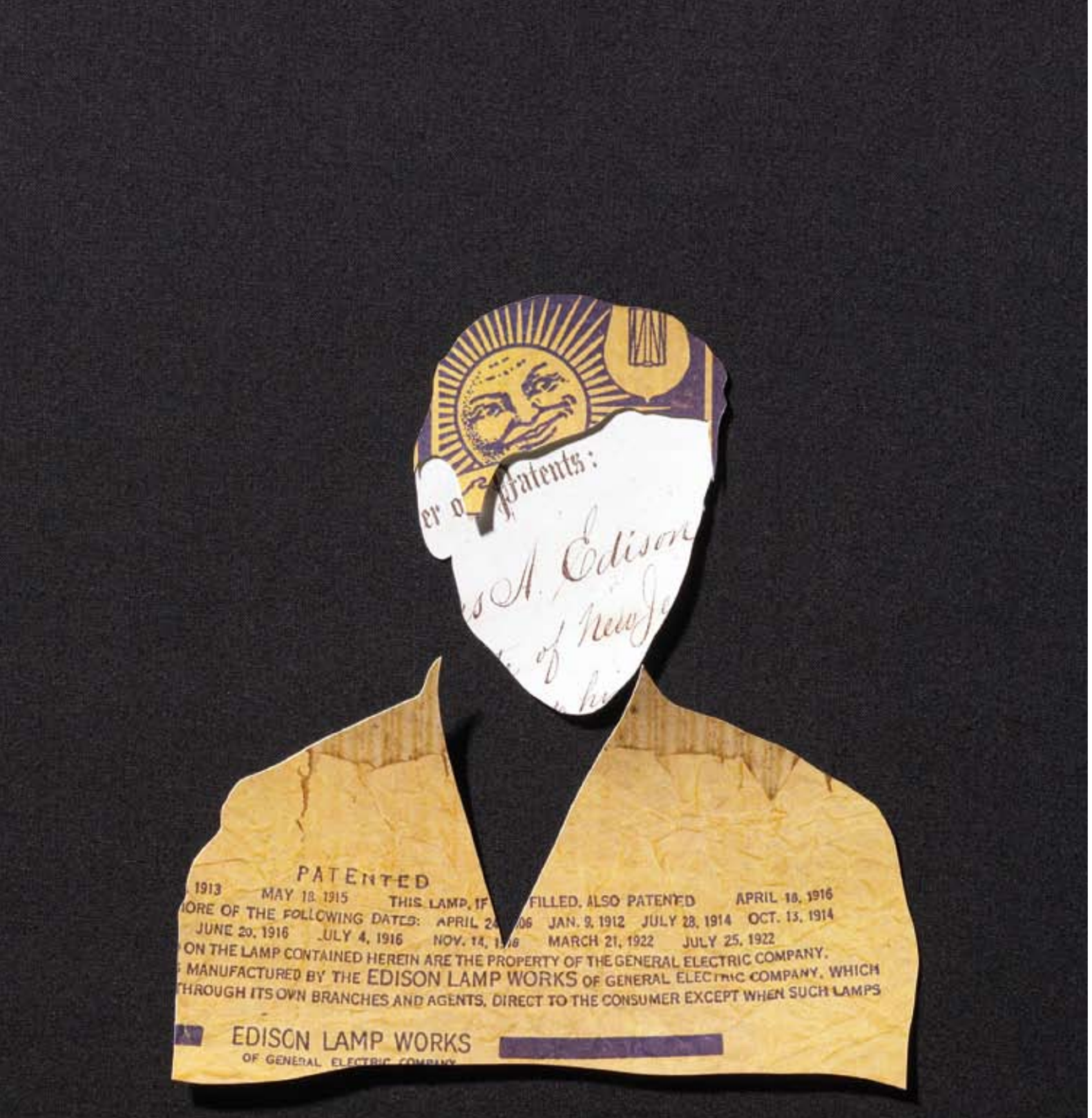
"Every action done by nature
is done in the shortest way,"

Leonardo da Vinci observed in 1515, upon watching the sun heat the water in a small pond. That simple observation became the catalyst for the world's first known exploration of solar power. That year, while in residence at the Vatican, the renaissance artist and inventor began a series of experiments in which he used mirrors of various concavities to collect and concentrate the sun's energy to create enough heat to kindle flame. That flame, in turn, he used to boil water, successfully converting the sun's raw energy to usable power.

Long before coal had replaced wood as a common fuel source in Europe, da Vinci began developing a plan to employ solar energy for industrial purposes. He intuitively grasped the transformative, democratic potential of harnessing the world's most ubiquitous power source for the benefit of industry and the common man. "With this," he wrote, "any poor dyer's cauldron can be made to boil; and by it, a pool will be heated, and there will always be boiling water."

IN 2007, SOLAR POWER ACCOUNTS FOR LESS THAN .01 PERCENT OF THE COUNTRY'S ELECTRICITY SUPPLY. And though billions are being spent on research, the U.S. Department of Energy estimates that even 30 years from now, solar power may account for, at best, two to three percent of the electricity on the country's grid. Meanwhile, coal-burning power plants are being built around the world at a rate of one per week.

American Electric Power announces the largest demonstration of sequestration, a process that captures carbon dioxide from coal-fired plants and pumps it deep underground.



THOMAS EDISON
& Electricity

Thomas Edison didn't really invent the electric light bulb.

"Anything that won't sell, I don't want to invent," Thomas Alva Edison once proclaimed—a sentiment that not only defined his approach to invention, but influenced the industrialized world's widespread adoption of electricity. Edison was nothing if not a visionary of the business potential of new ideas—of those he invented, and those he merely helped along.

The light bulb is just one case in point: At least 23 other incandescent lamp patents pre-date the one he filed in 1879. In fact, Edison's light bulb patent was actually revoked ten years later for being too closely based on the work of a man named William Sawyer. But Edison aggressively pursued the matter, and after much legal wrangling, the award was later re-instated. Today, Sawyer (and his bulb) remain largely lost to history.

Edison immediately grasped the mega-market possibilities for his patented gadget. "We will make electricity so cheap that only the rich will burn candles," he said in 1879. His point: economy pricing facilitates mass-adoption, which leads to profit. He also recognized that a single bulb is worthless without the generator needed to make it glow, the transmission system needed to carry power to it, and importantly, the infrastructure required to bring this wonder to the American home. So, Edison developed, patented, and set into motion an entire integrated system for electric lighting, including the Edison Jumbo Generator, the Edison Main and Feeder, the Parallel Distribution System, and, of course, Consolidated Edison, the company that still provides New York City's electricity, generating $12 billion in annual revenues.

IN 2007, THE AGE OF ELECTRICITY CELEBRATED ITS 125TH BIRTHDAY. On September 4, 1882, Edison's Pearl Street Electric Generating Station—the first of its kind—opened in New York City, distributing 110 volts of direct current (DC) power to 59 customers. The station produced electricity by piping hot water from massive boilers to a steam engine driving six dynamos. Since then, little has changed—most modern coal, nuclear, geothermal, and solar power facilities still use steam to turn their turbines. The type of power they transmit, however, is different. Today, DC has mostly been replaced by alternating current (AC). On November 14, 2007, the last building operating with Edison's original DC current flow, 10 East 40th Street in Manhattan, was converted to AC power, drawing a portion of the Edison legacy to a close.

The Chief Executive of French energy corporation Total, one of six "supermajor" global oil companies, is formally placed under investigation for receiving kickbacks from Middle Eastern energy deals.

LEO SZILARD
& Nuclear Power

The course of human history changed at a stoplight.

In 1933, physicist Leo Szilard, who had recently fled to London from Nazi Hungary, read an article in the London Times dismissing the practical possibility of nuclear power. Annoyed with the article's conclusion, Szilard conceived the idea of the nuclear chain reaction while waiting for traffic lights to change on Southampton Row in Bloomsbury. His idea worked; the following year he filed for a patent on the concept; and in 1935 Szilard emigrated to America.

While Szilard's initial vision was to apply nuclear power as "a new source of energy for industrial purposes," he ended up unwittingly instrumental in its development as a weapon. Robert Oppenheimer is the most well-known scientific name associated with the Manhattan Project, but it was the then-unknown Szilard who, in 1939, wrote a letter to President Franklin Roosevelt (signed, for credibility, by his mentor Albert Einstein) introducing the idea of developing a nuclear weapon. "Dr. Szilard put before me his views concerning the potential importance of uranium for national defense," the letter says. "He was greatly disturbed by the potentialities involved and anxious that the United States Government be advised of them as soon as possible…There is currently inadequate contact between the scientists doing this work and those members of your Cabinet responsible for formulating policy. I wish to express the hope that you will be able to give his presentation of the case your personal attention." As a result, a government committee was appointed, the Manhattan Project was initiated, and, five years later, under Szilard and Oppeinhimer's explicit protests, Hiroshima and Nagasaki were wiped out.

Szilard spent the rest of his life actively opposing the atomic weapons he helped invent, and in 1962 he founded the Council for a Livable World, a group of scientists that warned the public and Congress of the threat of nuclear war.

TODAY, NUCLEAR POWER PROVIDES JUST 6.5 PERCENT OF THE WORLD'S ENERGY. Concerns about safety (after accidents like Chernobyl), terrorism, high cost, and waste storage have slowed the development of nuclear power as a commercial source. But a looming energy shortfall has quickened the pace of production around the world. In the U.S. alone (where no new nuclear power plants have been built for over a decade), between August and October 2007, three new nuclear power plants were approved to begin construction, scheduled to go online in 2014.