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Romancing the Atom

Uranium Prospecting, Once and Again

The development of the first atomic bomb was an astonishingly well-kept secret. A dead hush was maintained even as the American project grew to an enormous scale—eventually including more than a hundred thousand people and a cumulative budget of $2 billion. By 1943 the Oak Ridge, Tennessee processing facility—containing what was then the largest building in the world—was fully operational; the Hanford, Washington complex—employing as many people as the nation's automobile industry—was also running; and the Los Alamos Laboratory in New Mexico was assembling one of the greatest concentrations of scientific

genius ever to meet in one physical space. But very few outside these facilities knew what was going on inside, even at the highest levels of government.

It wasn't until April 12, 1945, the day President Franklin Roosevelt died of a massive stroke, that newly sworn-in Harry Truman learned of the Manhattan Project and the intention to develop an atomic bomb. Less than four months later, he made the final decision to drop Little Boy and Fat Man on Hiroshima and Nagasaki.

In an instant, the atomic bomb went from the biggest, best-kept secret in U.S. military history to the subject of intense public fascination, of countless articles, essays, and news reports. The potential for peaceful uses of atomic power—the idea that atoms could power cars, electric plants, and submarines—absorbed the attention of creative writers, filmmakers, and artists as well as engineers and scientists, although no scientific methods for such uses had been developed by the war's end. In 1946, President Truman established the Atomic Energy Commission (AEC), the civilian successor to the Manhattan Project, to pursue their development.

But while the fact of nuclear fission had become common knowledge, the logistics were still fiercely guarded as the country entered the Cold War nuclear arms race. The 1946 law that established the AEC also banned, in a highly unusual restriction on the freedom of speech, the dissemination of any technical information about atomic weapons, even to allies; violation of the ban could be "punished by death or imprisonment for life."

For civilian atomic energy to grow, however, the government needed the public's assistance. The first atomic bombs had all but depleted the country's stockpile of enriched uranium. It takes enormous amounts of raw uranium to make the fissionable materials necessary for bombs the size of the ones used in the war, and it would take even greater amounts to develop the new, more powerful bombs being planned. There were few known places in the world where significant quantities of uranium could be mined. The United States had drawn nearly all of its WWII uranium from the Belgian Congo, which was still a fruitful source for the richest uranium ore (known as pitchblende), and the Eastern European mines that Hitler had captured were temporarily available; but even with these reserves more uranium was needed. To this end, the federal government openly encouraged freelance uranium exploration.

Prospecting for precious metals has been a part of human endeavor since prehistoric times, including in North America. Ancient peoples traveled the vast distance from Asia to the Great Lakes and the Colorado Plateau five thousand years ago in search of copper. The region has historically yielded copper, iron, selenium, vanadium, and other metals necessary for industrial development, and minor rushes for these elements form a large part of the local history. However, the uranium

rush of the mid-twentieth century surged beyond the merely regional to sweep the nation.

In 1948, the AEC assigned a set price for uranium well beyond its market value and guaranteed to maintain that price for ten years. In addition, the commission began offering bonuses of $10,000 (raised to $35,000 for a time in the early 1950s) to individuals who found significant deposits of uranium on public or private lands. The AEC published a small pocket-sized manual titled *Prospecting for Uranium* that cost thirty cents and sold more than 16,000 copies within a year of its release. As the booklet explains, prospectors could stake claims on private land with no restrictions, and on public land they merely paid one dollar for the claim and then took their uranium for assay to AEC-run government offices. In some cases public lands were expanded to include national parks and monuments, such as Mount McKinley National Park, Glacier Bay National Monument, and Death Valley National Monument.

Thousands of hopeful prospectors, both amateur and professional, came to the American West, predominantly to the vast Colorado Plateau. Some certainly struck it rich, and their stories are often told in popular literature and histories written by regional authors. The best known story, one fit for Hollywood, is that of Charlie Steen. In 1948, he quit his job as an oil worker in Texas, took his wife and two sons with a small travel trailer into the back parts of the Plateau, and searched in vain for over three years. After nearly running out of money—his family was living on dried beans—Charlie found uranium at last: a strike not just of the ordinary yellowcake ore, but of the much richer pitchblende containing upwards of 70 percent pure uranium. He became fabulously wealthy and, by one account, became the richest man in Utah, garnering a fortune of about $130 million by 1955. Charlie would go on to squander his riches over the next decade through lavish living and poor investing, but his tale was an avaricious inspiration.

There were several other motherlode stories like Charlie's. A few prospectors made millions; some made tens of thousands; most were not so lucky—but their efforts fueled the hype. Several *New Yorker* "Talk of the Town" articles published between 1948 and 1953 offer a human angle on the frenzy. In the August 27, 1949 issue, Brendan Gill tells of a sale at Abercrombie & Fitch for "Sniffer" Geiger counters "for the benefit of sportsmen who want to take up uranium prospecting as a sideline." Investigating the uranium fever in Manhattan, Gill discovered that prospectors were not only going to Colorado in search of uranium, but they were "currently clambering up schist and down shale within a hundred miles" of New York. He visited the local AEC office and there encountered a Mrs. Muriel Mathez, the chief mineralogist of the Raw Materials Operations Laboratory. She said that her office had received "twenty-five hundred samples of rock . . . since the

government uranium-hunting program began last year." The government's assaying offices were "swamped," she said, adding that "ninety percent of the samples never get past our first Geiger-counter test, for the simple reason that they're not radioactive. Heaven knows why people send them in to us."

In the January 19, 1952 issue, Rex Lardner told of "The Radiac Company," a wholesale supplier that had seen such demand for its Geiger counters that it decided to go into the retail business and opened up shop on Fifth Avenue. The market, it seemed, was not confined to prospectors: the store's sales manager explained that teachers, for example, wouldn't want to neglect "the fourth R"—ranking radioactivity as an essential component of education right alongside reading, writing, and 'rithmetic. Teachers should let their students know that radioactivity "isn't dangerous, necessarily, and has always been with us. The hands on some people's watches are radioactive," the sales manager offered. "For centuries, glassmakers in Europe used uranium salt to give color to stained-glass windows. The windows of the Cathedral of St. John the Divine are radioactive. But harmless."

"Harmless" is hardly the right word. While uranium is not nearly as powerfully radioactive as, say, radium—exposure to which infamously killed the "Radium Girls," factory workers who painted watch dials with the glow-in-the-dark substance—it can still pose a health risk. However, the danger from exposure to radioactive substances was downplayed during the uranium rush. This was partly because the full extent of that danger was yet unknown. But the embargo on atomic information, though it did not extend to health risks, had the effect of hushing the discussion of what was already known. The government's interest in acquiring uranium and prospectors' interest in discovering it worked in this direction as well; and to prospectors, what danger they did know of—mining, after all, is always dangerous—simply paled before what they stood to gain.

Meanwhile, the same spirit of innocence and optimism that animated the Radiac sales manager helped bring the fourth R into the realm of games, toys, and science kits. Board games like the highly popular "Careers," first introduced in 1955 by Parker Brothers, had players compare eight career paths in terms of the fame, fortune, and happiness they could provide. One of the careers in the original version was uranium prospecting. "Uranium Rush," an award-winning game of the same era, was modeled after the uranium bonuses and government-prescribed procedures for staking a claim. Players spun a dial that designated where to go on the board to explore for possible uranium; once you landed on one of the geographic points represented on the board, a battery-run "Geiger counter" was placed on the point of the claim and, if it lit up and buzzed, then you won $50,000 from the government bank. The winner of the game was the

prospector with the most money—"just as in real life," as the promotional materials for the game proclaimed.

Touted as fun and educational, these and other board games were joined by the even-more-educational uranium-prospecting science kits. These included actual Geiger counters, cloud chambers for running experiments, and samples of uranium and radium to be used by the budding young scientists. Possibly the most elaborate of these kits was the Gilbert U-238 Atomic Energy Lab circa 1950-51. It was an expensive toy, costing about $50, and in addition to the Geiger counter and cloud chamber it included an electroscope, four types of uranium ore, the AEC's *Prospecting for Uranium* handbook, a sophisticated instruction manual with readings on the nature of atomic physics, and a reprint of a 1947 full-color comic book titled *Dagwood Splits the Atom*.

The thirty-seven-page comic is prefaced by a statement from General Leslie Groves of the Manhattan Project. It employs Mandrake the Magician as primary narrator and uses Dagwood, Blondie, Popeye, Wimpy, and other characters to explain the history and nature of atomic fission. The comic book concludes with a textbook-like set of questions and answers, and it overviews the potential for future scientists to develop miraculous, peaceful products for industry, medicine, and agriculture through the atom. The kit had a clear pedagogical intent: if Dagwood can split the atom, then anyone can, and more aspiring scientists would be encouraged to make the dream come true. *Dagwood Splits the Atom* was also handed out free at expositions promoting the peaceful uses of atomic energy, such as the Man and the Atom exhibit of 1948 in Central Park sponsored by General Electric and Westinghouse. "Over 250,000 copies were distributed, leading GE to order a further printing of several million," as Paul Boyer recounts in his 1985 book *By the Bomb's Early Light*.

Within ten years of Dagwood's amazing feat, the great uranium rush was nearly over: uranium stockpiles increased, new ore deposits were discovered around the world, and the price plummeted.

Uranium prices dropped again in the 1980s—but primarily because of changes on the demand side of the equation, rather than the supply side. The rise of the international anti-nuclear movement in the 1970s, and the Three Mile Island accident in 1979, increased Americans' unease with civilian nuclear energy. Construction of new nuclear power plants came to a virtual standstill.

But today, the uranium rush is making a comeback, as concerns about global warming have heightened the appeal of nuclear power as a promising source of "green" energy. To what extent nuclear power is actually "green" remains a matter for debate. Nevertheless, as the talk of new nuclear plants has grown louder, the price of uranium has risen; it was selling for about $10 per pound in 2002, and now goes for around $45 per pound. And

as the price has risen, more people have been drawn to prospecting. At the beginning of 2003, there were only ten open uranium mining claims within five miles of the Grand Canyon. In May 2008, there were reportedly 1,100 claims in that radius and a similar number in the five miles beyond that. In April 2009, the federal Bureau of Land Management authorized still more uranium permits for the same area. (At this point, no mining has yet begun there.)

In case you feel left out of the uranium rush, you still can experience a little of the thrill Charlie Steen and those other rough-and-tumble prospectors felt in the 1950s; all you have to do is contact United Nuclear of Albuquerque, New Mexico and arrange for a day-long prospecting trip. For only $100 per person, the company will take you out into the hinterlands with a guarantee that you will go home with some actual uranium ore—even pitchblende if you are lucky. The website advertises that "several customers have sold the ore they found and paid for their trip many times over." The whole family can go, including the dog.

Americans are witnessing a new uranium boom, the latest chapter in the complicated nuclear-energy saga. It is to be expected that the nation that first developed the atomic bomb—the only nation to unleash its hellish fury in warfare—would have a fraught and intense relationship with atomic power. For a time in the late 1940s and early 1950s, America was childishly infatuated with the atom's peaceful potential; not long after, atomic energy was on the outs. Now it is making a return. Will this time be different? How will the atom be unleashed for peaceful purposes—and might we find ourselves leashed to its tremendous powers? It seems, for good or ill, that we are drawn irresistibly to the atom, that object of enchantment and horror, of curiosity and awe.

—Robert R. Johnson *is professor of rhetoric, composition, and technical communication at Michigan Technological University. He is the author of* User-Centered Technology: A Rhetorical Theory for Computers and Other Mundane Artifacts *(SUNY Press, 1998).*