POWER TO SAVE THE WORLD

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Rating: 5.0

POWER TO SAVE THE WORLD
The Truth About Nuclear Energy
Gwyneth Cravens
Richard Rhodes (Intro.)
Errata

Page 6: "In fact, for years I wasn't sure what my father did after he left the Forest Service to become a security-cleared civilian employed by the air force."
Capitalization: S/B "Air Force". This instance is doubly strange, since "Forest Service" is properly capitalized.

Page 12: "He mentioned the nuclear navy, which has demonstrated the successful operation of reactors for over fifty years without a harmful release of radioactivity, and..."
This is worded artfully enough to be a purposeful evasion, but I gather that isn't Rip's style. It may or may not be true even if narrowly interpreted to mean release of a radioactive substance that caused a dose large enough to injure or kill. In the larger sense, it's definitely untrue. See sidebar.

Page 12: "...he pointed out that in over forty years of operation no deaths attributable to nuclear power had occurred in the United States."
This too is untrue. See the sidebar.
Page 18: "Same with plutonium."
Except at Rocky Flats.

Page 18: "They're very clean and very safe. They have to be. Otherwise you durstn't set foot in one."
I dare not neglect to check the derivation of this word.

Page 33: "Volcanism on ancient Mars and currently on some of Jupiter's moons means they have or once had a radioactive core like we do."
As far as I know this is wrong. The cores of Jupiter's inner moons, especially Io, are molten because of the tidal stresses the giant planet imposes on them.

Page 44: "An analysis of nearly five decades of data by the Radiation Research Effects Foundation, a cooperative organization jointly sponsored by the United States and Japan..."
These words are transposed (not for the last time). S/B "Radiation Effects Research Foundation". See also page 84.

Page 57: "Nature has a way of controlling a chain reaction and of preventing radionuclides from bouncing around in the environment as they depart from their homes in atoms."
Misuse of "radionuclides". Probably S/B "radioactive particles".

Page 69: "Beta-emitters such as carbon-14 and iodine-131 can be dangerous if they get inside the body in any quantity, but they're also dangerous outside the body, because, unlike alpha particles, they can travel relatively long distances—a meter or more—through the air."
S/B "beta particles".

Page 74: "According to the National Council on Radiation Protection and Measurements (NCRP)...
NCRP or NCRPM?

Page 74: "Smoke of any kind picks up radionuclides and makes them available to lungs."
Missing word: S/B "available to the lungs".
Pages 81-82: Lists various "relatively sizable cohorts" of people exposed to radiation.

The Downwinders — Americans in Nevada and eastward exposed to bomb-test fallout — are omitted.

Page 105: "To put it in perspective, tobacco smoking will cause several thousand times more cancers [than Chernobyl] in the same population."

"Several thousand times more" seems excessive. If the IARC report predicts 41,000 cancers due to Chernobyl, smoking should cause 41 million to 205 million.

Page 115: "A dose is the amount of radiation someone is exposed to. An absorbed dose is how much energy he radiation actually deposits in the body."

This terminology differs from what Rip uses. Yet I like it better.

Page 115: "Thy were mostly smokers, and two packs a day adds up to 16,000 to 20,000 millirem per year to the lining of the lungs."

This whole paragraph is confusing. Is Gomez saying they received that much year after year, while remaining in good health? or is it the short-term (unquantified) high exposures that didn't harm their health?

Page 121: "Welding is associated with excess risk of lung cancer."

Why? The Ozone from electric arcs? Hydrocarbons from acetylene torches? The reason is not given.

Page 127: "Becker's research indicated that the local TV weather reporter seemed to be the person the public most trusts for guidance, since he or she is unaffiliated politically, is well known, and understands science."

Probably S/B "presumably understands science".

Page 167: "Every creative in the world owes a debt of gratitude to the Materials Testing Reactor."
Every creative... what?

Page 173: "After we had passed through security, Pugmire led us along a corridor. 'At Argonne, we're all about power reactors, and we have the facilities here to take the reactor from design to proof,' he said, pausing in front of a series of paintings [...] 'At Argonne we focus on power reactors,' Pugmire said. 'We're equipped to take a reactor from design to proof. We're not a weapons lab. We originate life-increasing technology for the world.' "

Is there an echo in there?
Page 175: "Those neutrons originated in pure, oxide-free metal that was enriched to about 60 percent—about 55 percent more than typical uranium reactor fuel."
S/B "15 to 20 times more".

Page 177: "...an electrical fire that started accidentally when workers using candles to test for air leaks in a pressurized spreading cable room ignited a polyurethane seal..."
Another case of transposed words: S/B "cable-spreading room".

Page 181: "'We did have a Chernobyl,' he replied softly. Was he revealing some secret catastrophe? No, he was referring to Three Mile Island."
Huh. I would have guessed the 1959 explosion of SL-1.

Page 190: "[Rickover] told the Three Mile Island commission that the nuclear industry could learn from the safety record of the nuclear navy, which has operated 254 reactors and never had a reactor accident."
Admiral Rickover claims too much credit. He forgets about the explosion at West Milton.

Page 203: "All nuclear plants must have multiple systems of backup electricity."
The author is correct, but she misunderstands the type of backup her interlocutor is describing in this paragraph. He refers mainly to backup sources of power for the plant's customers. However, he does mention battery backup, which is the type of backup Ms. Cravens means: a backup to keep the critical reactor control systems within the plant running.

Page 205: "The reactor cooling system also operates at a lower pressure than outside."
How is this possible?

Page 205: "Boron in the cooling water had corroded welds on the pressure head at Davis-Besse."
Right, and influenza virus made some people sick in 1918. Davis-Besse is called the worst-run plant in the country. See pages 210-211.

Page 222: "If the terrorists set off any kind of bomb in a negatively pressurized containment dome, the result would be only some contamination restricted to the interior of the building."
"Any kind of bomb" covers too much ground. And even with a plausible bomb, it's conceivable that the reactor might be damaged in ways that would cause a meltdown, leaving the community without power and the utility with a horrendously expensive cleanup.
Page 243: "The hydrogen is bottled and mostly used to refine crude oil and make carbon dioxide and fertilizer."
Hydrogen used to make carbon dioxide? Perhaps to make it into "dry ice".

Page 245: "Gasoline is denser and contains thousands of times more energy than its equivalent in hydrogen, so you can have a relatively small gasoline tank in your car."
Probably S/B "than its equivalent volume". Also, "thousands of times" is overstated.

Page 298: "Nevadans, who remember fallout from atomic tests being downplayed by the government, tend to assume they are being lied to about safety, as are antinuclear groups..."
S/B "as do".

Page 302: "The Desert Research Institute of the University of Nevada has been conducting studies here that show that, even though deserts are as effective as forests and grasslands in reducing the increase in atmospheric carbon dioxide from fossil fuel combustion..."
I just don't buy this assertion.

Page 303: "It suddenly occurred to me as Rip described this that the doors I'd seen in the side of my hollow mountain outside Albuquerque must be similar shutters that would rapidly close in the unlikely event of an accidental detonation of one of the weapons within."
Unlikely is the word for this conception of Gwyneth's. The doors she remembers might be as massive as the original shutter Rip described. Even so, his would be synchronized with a planned detonation; that 90-ton monster would probably start to drop just before the bomb went off. No such synchronization would prevail if the detonation were accidental.

Page 304: "As we drew nearer, we saw a gaping gray mouth in the side of Yucca Mountain. At its foot were corrugated prefab sheds, a few plastic-covered quonset huts, and a helipad. For the $8 billion spent thus far, you might expect more."
Uh, Ms. Craven, the expensive stuff is all inside the mountain.

Page 346: "Although enthusiastic about renewables, he also approved of nuclear plants, saying with a shrug, 'All energy is nuclear.'" This was spoken by Jeff Hahn, BNFL PR guy. Presumably it means that all terrestrial energy derives ultimately from the Sun, which is powered by nuclear fusion.

Page 355: "...while continuing to endorse the nonthreshold linear hypothesis..."
A third case of word transposition. S/B "the linear nonthreshold hypothesis" (or more commonly "linear nonthreshold theory (NLT)".

1 No relation to David Hahn, I presume. When I read page 69, I wondered if the author knows about him and his mad collection of americium-241 from smoke detectors. Rip certainly does.