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Polar icebreakers also make the Arctic Sea accessible for research vessels gathering information essential to improving climate models. As historian Melvin Kranzberg famously put it, "Technology is neither good nor bad; nor is it neutral."

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Nine reactors beat ZEEP into service

David Kramer's article on nuclear developments in my native Canada (PHYSICS TODAY, January 2021, page 23) was an enjoyable read. However, his assertion that the Zero Energy Experimental Pile (ZEEP) was the world's second operating nuclear reactor after Enrico Fermi's Chicago Pile-1 (CP-1) is erroneous; at least nine other stateside piles achieved criticality before ZEEP did so in September 1945.

Those nine US piles were CP-2 and CP-3 at Argonne National Laboratory (March 1943 and May 1944; CP-3 was the first heavy-water pile); the X-10 pilot-scale pile at Oak Ridge National Laboratory (November 1943); the 305 fuel-testing pile and the B, D, and F plutonium production piles at the Hanford Site (1944 to early 1945); and two small aqueous enriched-uranium devices, LOPO and HYPO, at Los Alamos National Laboratory (1944). ZEEP was the first pile outside the US to achieve criticality.

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"But what is physics?"

I took my first physics class ever at Stanford University in January 1960. The professor was Leonard Schiff, then also the chairman of the physics department. The lecture hall was full of mostly freshmen, some excited and some terrified at the thought of calculus-based physics taught by one of the most distinguished members of the department.

Leonard began by talking about the difference between basic and applied research, perhaps not a topic calculated to excite the group. But one guy (not I, let me assure you) raised his hand to stop the lecturer for a question: "Yes, but what is *physics*?" Leonard stopped in his tracks. I doubt he had ever been asked that question that way.

After thinking for a few moments, he responded, "Why, physics is whatever physicists do." In the 61 years of my career as a physicist, I've never heard a definition I liked better. Physics isn't the manipulation of mass and energy and the measurement of ever-more-precise quantities. Instead, it's whatever the people trained in those arts decide to do.

That's a definition I've used more than once as I've wandered from MeV- to GeV-range nuclear and particle physics, to planetary orbital mechanics, to strategic arms control, and to diplomacy with Chinese and Soviet colleagues. As long as I'm using the mental attitudes of a physicist, I'm doing physics and need not apologize for my changing interests and skills.

And so, my thanks for the February 2021 issue, which demonstrates and encourages the enormous range of activities that we can collectively call "physics": from neutrinos to rare-earth magnets, lunar exploration, tech transfer, and measurable differences between whisky and whiskey. I think Leonard would have been charmed and delighted. I wish I had a hundred copies to give to high school seniors, mid-degree undergraduate physics majors, grad students, and physicists who have left the lab for other careers.

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Corrections

February 2021, page 23—The article erroneously reported a \$1.8 million grant in 2020 to Ucore Rare Metals Inc from the US Army Research Laboratory. In fact, grants totaling \$1.8 million were awarded in 2014–16 to Innovation Metals Corp to help fund development of its proprietary rare-earth separation technology. IMC was acquired by Ucore in 2020.

February 2021, page 27—The device in the photo is incorrectly identified as "the inside of an acoustic cytometer." It is actually a close-up image of a DNA fragment-sizing flow cytometer. PT