# Articles

## Earthquakes, Tsunamis, Russians, & Mistletoe

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On April 16, 1964, Frank Press had just returned from the site of a tsunami. Three weeks prior, an earthquake with a magnitude of 9.2—the highest ever recorded in North America—had struck the southern coast of Alaska. The four-minute-long quake shook hundreds of miles of seaside sediment loose. Alaska's shores tumbled into underwater mudslides, taking whole villages with them. Suburban homes sank into the sludge. Pavement cracked. Backyard bomb shelters crumbled. 131 people died. And with just two earthquake monitoring stations' worth of data to go on, the young expert in digital seismology was summoned to the scene to attempt to sort out what had happened.

Three weeks later, he was back in his office at Caltech's Seismological Laboratory and still poring over the Alaska quake data, when he found a note on his desk. The return address was in Soviet Russia.

That in itself wasn't unusual. Press, himself the son of immigrants from Belarus, had played a key role in a collaboration between seismologists from the U.S. and the U.S.S.R. However, while most correspondence back and forth concerned the exchange of microfilms full of data and visiting grad students, this note was different.

"*Dear Dr. Press*," the note began, "*I apologize very much but I have a great personal request to you. One of our theoreticians, B.J. Geltshinksy has an urgent need of a medicine*." Geltshinsky's father was dying of cancer, but he had heard tell of a drug called "iscador quercus," which could not be found anywhere in the U.S.S.R. The note's author—one Vladmir I. Keilis-Borok of the International Institute of Earthquake Prediction in Moscow—hoped that Press would reach out to stateside doctors, procure the medicine, and ship it to Russia.

Many American scientists would have ignored the request. Although geologists and seismologists in particular rely on international data for their work, cooperation between Soviet and American scientists in the early 1960s was often fraught. When a handwritten letter from an enthusiastic young Russian scientist arrived at the Seismological Laboratory praising work by Press and Charles F. Richter—for whom the Richter scale is named—and requesting copies of a few of their papers, Richter was dismissive, at best. When a Russian scientist declared, "I hope to get a copy of

it [Richter's most recent book] next year!"in a letter to the Caltech seismologists, Richter scrawled a note next to it, reading "*Maybe. So what? -CFR*"

Press later told a Caltech archivist that before his arrival at Caltech, the seismology department had been led by three iconoclastic heavyweights: Richter, Hugo Beinoff, and Press's predecessor as laboratory director, Beno Gutenberg. They were renowned for their theoretical work, but all three tended to keep the most exciting projects for themselves, throwing grad students only the scraps. Press, on the other hand, belonged to a younger generation of geophysicists who valued collaboration. Press's plans included "digitizing" earthquake data so that charts measuring the ground's vibrations could be shared and analyzed via computer terminals. But the budding field needed more data still. "This meant computers; this meant new types of seismographs; this meant more field exploration," Press said.

Press was adamant about the need for a global network that could collect information about earthquakes all over the world. As early as 1959, he was writing proposals to set up research stations in remote regions in present-day Tajikistan and Uzbekistan, which would be manned by joint U.S./U.S.S.R. teams. He wrote letters to Congress, urging them to ease the Cold War era test ban treaties. He even exchanged New Year's cards with many members of the Soviet Geophysics Committee and grad students he had met during his visits to U.S.S.R.

So when one of his closest Soviet collaborators sent him a note asking for help, Press didn't waste time. He called the American Cancer Society, as well as specialists from the Rockefeller, Sloan Kettering, UCLA's medical department, and the National Institute of Health. He scrawled notes from each call on the back of a "Caltech Weekly Events" calendar until he was satisfied on the cancer biologists' position. He wrote back to Keilis-Borok: "I was told that iskador querus is derived from mistletoe of oak. It was developed some 25 years ago by Rudolph Steiner, a Swiss (who is now dead), who operated a private cancer organization." No one else had been able to get the alleged medicine to work, and as such, no one else had bothered stocking up on mistletoe extract.

When Keilis-Borok continued to insist on the need for the mistletoe extract, Press shifted to a more personal tone: "Volodya—" he wrote, invoking Keilis-Borok's nickname, which rarely appears in the two labs' correspondence. "The best medical authorities in this country do not think this drug has any effect, and they questioned whether it was correct for me to obtain it under these circumstances and send it to you. *What is your opinion?*"

If Keilis-Borok ever pressed the issue, that letter didn't make into Press's files. However, the collaboration between the two men continued. In 1965, Press moved to MIT, where he headed the Department of Earth and Planetary Sciences for ten years, and began working with Keilis-Borok on a digital earthquake prediction system.

They never did develop a program that could predict earthquakes, but they did succeed in establishing a precedent for international and digital collaboration.