

## The Lessons of Dr. Browning

*When a self-taught climatologist predicted a major quake for the Midwest, seismologists ignored him, but leaving the field to pseudoscience proved a big mistake*

Boulder, Colorado—JILL STEVENS WANTED to alert millions of Midwesterners to the earthquake threat beneath their feet. As head of the information side of the Center for Earthquake Research and Information at Memphis State University, she had been warning, with limited success, that much remained undone to protect the citizenry from rare but lethal quakes. But to the average Midwesterner, earthquake country stopped at the California border, so why worry—until in the winter of 1989, when one Dr. Iben Browning came along.

A self-taught climatologist, Browning did Stevens' job for her—and more. He predicted that a catastrophic earthquake would strike the Mississippi Valley during the first week of December 1990. The media leaped on the prediction, and suddenly the populace became all too aware of the threat. That might have been to the good, says Stevens, except that the prediction was scientifically groundless—and so specific and apocalyptic as to provoke near hysteria. Stevens recalls a 6-year-old girl whose earthquake fears could not be soothed on the phone, and elderly callers to her center who worried how they would get back in their wheelchairs after the big one struck. Schools and factories closed on the target day, 3 December, and groups such as the Red Cross wasted precious funds in their efforts to calm the public.

Although ultimate responsibility for the misleading quake prediction has to rest with Browning (who died 3 weeks ago), Stevens and others who gathered here last month for the sixteenth Annual Hazards Research and Applications Workshop lay a healthy share of blame at the feet of a group that wanted no part of Browning or his prognostications: the scientific community. "If I have any criticism," said Lacy Suiter, director of the Tennessee Emergency Management Agency, "it's why the scientific community that had the ultimate responsibility

didn't call Browning a quack early on." And it was this concern that led participants of the meeting to hope that the next time a bogus earthquake prediction surfaces—and there are sure to be more (see box)—scientists will recognize its potential for touching off a frenzy and promptly do their part to squelch it.

In retrospect, Browning's winter 1989 prediction gained credibility because it contained a grain of truth. As Stevens and federal and state authorities had been telling Midwesterners throughout the 1980s, the New Madrid Fault—a zigzagging fissure buried beneath northeast Arkansas, southeast Missouri, and far southern Illinois—had produced three of the country's greatest earthquakes ever in the winter of 1811–1812. More than likely in the coming decades, the scientists had been saying, moderate quakes would hit the fault from time to time.

Earthquake sensitivities became still more acute in October 1989, when the Loma Prieta earthquake hit northern California. It was a long way from the Midwest, but, says Stevens, the television coverage provided "a graphic description of U.S. earthquake damage that [Midwesterners] could identify with." Then came Browning's prediction, first appearing a month later in a short Associated Press wire story. According to Browning, then a business consultant in Albuquerque, the subtle bulging of Earth caused by the gravitational pull of the sun and moon—which was to peak on 3 December 1990—would trigger a quake on any fault that was already on the verge of rupturing. Browning identified the New Madrid fault as a likely break point.

Ridiculous precision, any seismologist would have called it, but hazard experts

offer two reasons for the prediction's air of scientific plausibility. For one thing, Earth tides were indeed scheduled to peak on the date Browning had identified. And seismologists have long toyed with the possibility that tidal forces trigger some earthquakes and volcanic eruptions.

For anyone who doubted that Browning could pinpoint where the quake might strike, there was his putative track record. To read the newspapers, it was impressive. "He is known to have predicted the 1989 San Francisco earthquake a week in advance" reported *The New York Times*. Not to be outdone, *The San Francisco Chronicle* declared: "He missed by just 6 hours hitting the Oct. 17 San Francisco quake on the nose in a forecast published in 1985 and by only 5 minutes in an update a week before the disaster." Seismologist Arch C. Johnston, director of the Memphis State center and Stevens' boss, says he couldn't get away from this undocumented claim. Whenever he'd give his stock talk about how unscientific the prediction was, "almost to a person, the response was: Yes, but he predicted Loma Prieta."

What's more, to the eyes of the average reporter Browning had credentials—a Ph.D. (albeit in zoology) and the support of a bona fide member of the seismology community. David Stewart, a Ph.D. in geophysics, was director of Southeast Missouri State University's Earthquake Information Center, and a past interim director of the Central United States Earthquake Consortium (CUSEC), a federally sponsored group of state emergency agencies.

After almost a year, during which Browning and Stewart rebuffed every challenge, the scientific community finally counterattacked. Just 6 weeks before the 3 December target date, the U.S. Geological Survey's (USGS) National Earthquake Prediction Evaluation Council (NEPEC) called a press conference announcing that Browning's prediction was "theoretically implausible." His claim to have predicted Loma Prieta

### Day the Earth stood still

Quake projection becomes 'old news'

By Mark Bliss Staff Writer

NEW MADRID — Moodily was supposed to be the "Day of the Big One." But for Clement Cawson, co-editor of the "Midwest Record," New Madrid's weekly newspaper, the prediction of a major earthquake is expressed as "old news."

How Big? How Bad? Bootheel

Understanding how earthquakes are measured

### Prediction striking fear

us expected before Dec. 3, climatologist expects quake.

JOE MILLER

A climatologist's forecast of a earthquake at first may have seemed talked about the trend to "Bootheel disaster."

Iben Browning



Wide World

## In Shock

Panicky Reaction To Quake Forecast Causing

**A** prediction of a major earthquake in the San Francisco Bay area has been projected by Dr. Iben Browning to strike on December 3, 1990...

**A Major Earthquake**  
has been projected by Dr. Iben Browning to strike on December 3, 1990...

was baseless; a video and a transcript of two of his talks showed that he had not even mentioned California—he had predicted nothing more than vague geologic unrest around the world. And his claimed 5-year-long record of prediction success was no better than chance. Then, a few days later, the last leg of support was cut out from under Browning. The *St. Louis Post-Dispatch* reported that David Stewart, the media's sole scientific support for Browning, believed that "psychic phenomena is [sic] a fact." And this was not Stewart's first questionable quake prediction episode: He had once employed a psychic in a prediction for North Carolina (see box).

But this debunking came too late: By then the frenzy, fueled by an uncritical media, "was absolutely uncontrollable," observes Stevens. For months, harried school principals, factory operators, and local authorities had been besieging officials such as Jerry Hauer, director of Indiana's emergency response agency and chairman of the board of the earthquake consortium. Hauer and his CUSEC colleagues had asked NEPEC in mid-May to step in—to no avail. "NEPEC did an excellent job," he now says. "Unfortunately, it was too late. The earlier we could have gotten NEPEC involved, the earlier we could have negated [Browning's] supposed expertise."

Why did the seismological community wait so long to counterattack? The ammunition was there: plenty of scientists knew about Stewart's previous psychic prediction, for example. But "scientists don't like to play on that level," notes seismologist Thomas Heaton of the USGS in Pasadena, a NEPEC working group member. Johnston, too, didn't think dragging in personalities and history was called for. "I just thought that all you had to do was present the scientific argument as clearly as possible" and that would debunk Browning. "In retrospect, that was a very naive expectation...we should have gone to Stewart's track record a lot earlier."

Johnston, at least, was willing to criticize the substance of Browning's prediction. Many earth scientists and the scientific community as a whole held back from even that. In essence, says Brian Mitchell of St. Louis University, a member of NEPEC's working group, they didn't want to dignify Browning with a response. In such a situation, he says, "we're caught. The hope is that if we don't respond, people will forget it and it will go away. If we do respond, it gives the prediction a certain amount of credibility."

That's an unfounded and dangerous attitude, responds Richard Eisner, director of the Bay Area Regional Earthquake Pre-

paredness Project in Oakland. "We constantly deal with seers, channelers, experimenters, and backyard seismologists who are making predictions. If you let it ride—as scientists and preparedness people did in New Madrid—you're ignoring that these things have a life of their own."

Some seismologists are beginning to accept as much. But could it all happen again, despite the lessons learned? "The Midwest has had its first bit of prediction 'flu,'" says Joanne Nigg, a social scientist who has studied previous quake prediction episodes. "That will at least begin to make more people more skeptical, but only if the level of public discourse is raised over time." And

there are other vulnerable areas that have not yet been immunized, notes Nigg. One is the Pacific Northwest, where large quakes have struck in the past but residents are seismically naive—two critical elements of the Browning fiasco.

At the Boulder workshop, Dennis Mileti of Colorado State University was not optimistic that scientists will respond more aggressively to the next Browning-style prediction. He pointed out that the same lessons about how pseudoscientific quake predictions, if left unchecked, can run wild had been learned three times before. And so Mileti asks: "When are we going to institutionalize lessons we've learned four times already?"

■ RICHARD A. KERR

## Will the Fourth Time Be a Charm?

Iben Browning, who roiled the Midwest with his seemingly credible quake prediction (see main story) was hardly unique in the annals of pseudoscience. Browning's successful scare was based on classic ingredients: a predictor with apparently solid credentials, a prediction method that sounds scientific, and unsupported claims of previous prediction successes. Indeed, his was the fourth such event in only 15 years.

■ **Southern California, 1975**—Henry Minturn, boasting a Ph.D. in geophysics, claims to have predicted earthquakes successfully in Southern California on the basis of Earth tides. The media takes an interest when he forecasts a damaging temblor in the Los Angeles area on 20 December. With but a month to go, an enterprising reporter, George Alexander of the *Los Angeles Times*, reveals that Minturn's degree was acquired by mail order. The day of the predicted quake passes uneventfully.

■ **Wilmington, North Carolina, 1975**—David Stewart, later to play point man for Iben Browning and his New Madrid prediction (see main story), forecasts a magnitude 6+ earthquake to strike the coastal Wilmington area near a nuclear reactor under construction. Stewart's Ph.D. in geophysics and his (untenured) post at the University of North Carolina at Chapel Hill lend him credibility when he cites an apparent bulge in the crust and a suspicious pattern of low-level seismic activity near the nuclear plant. When he advises the governor to stop the reactor from going operational, the state requests advice from USGS scientists, who conclude that the "bulge" is an erroneous data point and that seismic records show no evidence of an imminent quake.

Undeterred, Stewart calls in California psychic Clarissa Bernhardt—of *National Enquirer* fame. After touring the area, Bernhardt predicts a magnitude 8.0 quake within a year, after which the demand for earthquake insurance skyrockets. But Stewart's university is unimpressed. It denies him tenure.

■ **Peru, 1981**—Brian Brady sports a bona fide Ph.D., a respectable position as a federal researcher—lab work studying quake-like rock bursts in mines—and a superficially scientific prediction method based on seismic patterns supposed to precede large quakes. He even has a reputable supporter in seismologist William Spence of the U.S. Geological Survey in Golden, Colorado. So when Brady calls for two mammoth earthquakes in Peru, one of which would be magnitude 9.8 (larger than any historic earthquake), the media there takes him very seriously indeed.

Only as doomsday—10 August—approaches, and as the Peruvian anxiety mounts toward a fever pitch, does the U.S. National Earthquake Prediction Evaluation Council pronounce Brady's claims devoid of scientific credibility. When the required precursory tremors fail to materialize, even Brady abandons his prediction. Still, Lima is unusually quiet on the target date—with many of the locals waiting out the Yankee-predicted disaster out of town.

■ R.A.K.