sponse to it—eventually sent a copy to California's Department of Water Resources. By summer, Rouse's views had been widely reported in the California press, and, in essence, what he said was that a thin arch dam may be appropriately built in a narrow canyon, say 2000 feet across, but not in a valley nearly a mile wide, such as the one at Auburn. Also, according to Rouse, the allowable stresses postulated in the dam's design were much too high, especially inasmuch as there was "practically no available information on the response of arch dams" to earthquakes.

Then, on 1 August 1975, an earthquake of 5.7 magnitude on the Richter scale occurred near the Oroville Dam, a large, earthfill structure which had been built by the state of California. It was 50 miles away from the Auburn site but in the same foothills province—and, to everyone's surprise, some surface faulting was found to have occurred, upsetting previous assumptions that all faults in this province were inactive. The Rouse critique and the Oroville quake (which did little damage to the earthfill dam) had combined to raise potentially explosive new issues about the Auburn project. Many Californians still remembered that, in the 6.5 magnitude San Fernando earthquake of 1971, an earthfill dam constructed by a local flood control district had nearly failed, jeopardizing the lives of 100,000 persons (defenders of the Auburn project like to point out that a small concrete arch dam situated right above the fault had survived the quake apparently undamaged).

In the fall of 1975, the Association of Engineering Geologists (AEG) established a seismic hazards committee, and the safety of the Auburn Dam became its first order of business. Donald C. Rose, a member of the committee from San Francisco who is certified as a structural engineer as well as an engineering geologist, reacted with disgust and alarm to a Bureau of Reclamation report in early 1976 on how the Auburn Dam would respond to what the bureau then considered the "maximum credible event."

This event was defined as a magnitude 8 earthquake 50 miles away, producing acceleration forces of a little more than one-tenth the force of gravity ($0.12g$) at the dam site. The report said that all "stresses and stability factors" had been found to fall within allowable limits, but, as Rose has told *Science*, he felt that this represented a "deliberate attempt to cover up the serious implications of the computer output."

From this data, he said, one could see that, even under the impact of the modest $0.12g$ earthquake shock, cracks extending more than 2000 feet horizontally and over 300 feet vertically would have

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A Pyrrhonian Sledgehammer

A new committee has been formed with a high ambition: to combat the public's propensity for belief in the supernatural. Targets of the committee's attentions range from astrology and parapsychology to faith healing, "life after death," flying saucers, chariots of the gods, astral projection, Atlantis, kirlian photography, exorcism, pyramid power, poltergeists, psychic plants, sasquatches (a.k.a. Bigfeet) and of course the Bermuda triangle.

The antimystic band is known as the Committee for the Scientific Investigation of Claims of the Paranormal, and the sword of its faith is a magazine called *The Zetetic*, the name given to the followers of the ancient Greek skeptic philosopher Pyrrho. Its first issue Pyrrholyzes scientology, Uri Geller, and biorhythms as predictors of batting averages.

Moving spirits behind the *Zetetic* and its committee are members of the humanist movement such as Paul Kurtz, philosophy professor of the State University of New York, and Lee Nisbet, executive editor of the *Humanist*. The humanists believe there is a resurgence of belief in the far out which must be reined in. "It's a very dangerous phenomenon, dangerous to science, dangerous to the basic fabric of our society," says Nisbet.

The rising tide of occultism is a symptom of the public's being "increasingly wishy-washy about the way it thinks about important issues. We feel it is the duty of the scientific community to show that these beliefs are utterly screwball," Nisbet declares.

In the humanist view, the public's infatuation with newfangled fads is being abetted by the media, particularly the *National Inquirer* and NBC. The *Zetetic* committee has filed complaint with the FCC that NBC showed documentaries on Bigfoot and the "Outer Space Connection" which presented them as true.

NBC has replied that the film "Bigfoot, the Mysterious Monster" was shown as part of the entertainment series "NBC Monday Night at the Movies."

Two years ago the *Humanist* sent to every newspaper in the United States and Canada a statement endorsed by 186 scientists affirming that there was no scientific basis for astrology. The current issue of the magazine records the regrettable fact that, despite the statement, "very few (if any) newspapers have dropped their astrology columns."

To communicate with Mars, converse with spirits, to report the behavior of the sea monster, describe the horoscope—all these, a poet from St. Louis, Missouri, has observed, "are usual pastimes and drugs, and features of the press: and always will be, some of them especially when there is distress of nations and perplexity, whether on the shores of Asia, or in the Edgware Road."

Common Censorship

The nature of totalitarian states is often as evident in their mundane actions as in their grosser modes of repression. The Soviet Union's habit of censorship, for example, is well reflected in the Russian edition of *Science*, a facsimile of the English edition but which lacks such items as the Glavlit censor deems seditious.

The censor's general rule of thumb is to cut any article that criticizes the inter-

appeared in the dam, on both faces and in some places going all the way through the structure. Even at that, according to Rose, the computer study had not taken into account some serious aggravating factors, such as the effect of aftershocks on the badly cracked dam.

(Glenn Tarbox, supervisory engineer of the concrete dams section at the Bureau of Reclamation's Engineering and Research Center in Denver, says that Rose overstates the case and that, in any event, the latest bureau studies indicate that only superficial fracturing would occur, with no deep cracking and no joints opening to leave free standing blocks.)

Public comments by Rose and other members of the AEG committee, together with the letter which the AEG sent to the bureau in April 1976 warning that the dam would be unsafe in even a moderate earthquake, all contributed to the growing atmosphere of suspicion and doubt surrounding the Auburn project. Also, the collapse of the Teton Dam, an earthfill structure later officially determined to have failed as the result of incompetent engineering on a poor site, made it clear that the bureau was anything but infallible. After this disaster, Gilbert G. Stamm, the commissioner of reclamation, and H. G. Arthur, director of design and construction, were in a clearly precarious position—and, once the Carter Administration took office, both resigned.

The seismic hazards issue continued to grow in intensity through 1976 and early 1977, with California state authorities such as the Seismic Safety Commission and the Department of Water Resources becoming very much involved. Ronald B. Robie, director of water resources, informed the bureau that his department simply could not support the Auburn project until satisfied that the dam was safe. And, in the opinion of acting state geologist Thomas Gay, the dam might be unsafe unless redesigned to withstand a powerful earthquake (magnitude 7) occurring within 5 miles of the site.

In addition, Harry R. Cedergren, a consulting engineer in Sacramento with wide experience in the designing of earthfill dams, gave the debate a new dimension by insisting that the rock at the Auburn site was not dependable or homogeneous enough for a thin arch concrete dam—a weakness which he indicated was beyond remedy. "One can only wonder if their extensive efforts to improve the Auburn foundations with dental concrete [some 300,000 cubic yards of it] will be any more effective than their extensive efforts to improve the Teton foundations with grout," he observed.

The issue took a dramatic turn when

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nal policies of the Soviet Union or which compares it unfavorably with the United States. Of the 15 most recent available issues of the Russian edition, spanning a period from October 1976 to March 1977, seven have been censored, usually in the News and Comment, Letters, or Book Review sections.

In the 29 October 1976 issue, the censor took objection to the review of a biography of Edward Teller which made passing reference to Russian development of thermonuclear bombs. A news item in the 17 December issue about the imprisoned Russian biologist Sergei Kovalev was naturally blue-penciled: a more surprising excision was a story in the following week's issue chronicling repression of scientists by the right wing rulers of Argentina.

The censor felt his compatriots would be unable to handle the letters section of the 21 January 1977 issue. One letter discussed the Soviet civil defense effort; another announced the formation of a AAAS subcommittee on infringements of scientific freedom in foreign countries.

Russian readers of *Science* were not trusted to draw the right conclusions from a news story the following week about the CIA's estimates of the Soviet grain harvest. Nor were they judged mature enough to cope with a review in the 4 February issue of *Soviet-American Academic Exchanges, 1958–1975*. Several subsequent issues of *Science* contained no material threatening to the stability of the Soviet state until a profile of national security adviser Zbigniew Brzezinski on 11 March.

A curious feature of the censor's habits is the attempts he makes to hide his traces. There is an abashed half-heartedness about his actions which perfectly illustrates the saying that hypocrisy is the tribute vice pays to virtue. The censor does not like to leave vexatious white holes on the page and generally tries to cut an integral number of pages. Unfortunately this practice usually requires several innocent articles to be dropped along with the offensive item, which can make for a noticeable hiatus on the contents page. Regrettably, the censor does not trouble to reset the page in order to fill the gap. A more serious omission is the failure to repaginate: all of the Russian *Science*'s subscribers who can both count and read must be entirely aware of the censor's activities.

Cold Shower for Climatologists

A growing number of predictions, almost enough to constitute a fashion, have been made about disasters that could result from various perturbations of the climate. New ice ages, new drought ages, threats from the SST, threats from fluorocarbons—even the National Academy of Sciences joined the crowd with a recent report stating that the climatic effects of carbon dioxide release "may be the primary limiting factor on energy production from fossil fuels over the next few centuries."

All these are serious issues, but there is room for degrees of confidence in the various forecasts. A man who has little confidence in many forecasts is B. J. Mason, director of the English Meteorological Office. In an article in the 30 July *New Republic*, he lays into those who base their extrapolations on brief trends in a highly fluctuating record. Some scientists "unwisely predicted the onset of a new ice age" from the cooling trend in the Northern Hemisphere between 1940 and 1970; there are now signs that the trend has stopped. Other scientists interpreted the Sahelian drought years of 1970 to 1974 as evidence of a southward shift of the major climatic zones: it is now clear the zones moved slightly northward during the period, Mason avers.

Fluorocarbons may chew up the ozone layer and increase the flow of ultraviolet radiation but whatever the medical effects, the effects on climate will be "negligible and undetectable," and much the same is true of a fleet of Concordes, says Mason. As for the carbon dioxide effect, the atmosphere operates so many simultaneous mechanisms that the overall effect cannot be predicted and, in any case, may well be masked by natural variations.

Mason's moral: "The atmosphere is wont to make fools of those who do not show proper respect for its complexity and resilience."

Nicholas Wade