

any religious instruction or reference to religious writings."

Wendell Bird, an attorney associated with the Institute for Creation Research, based in El Cajon, California, and a specialist in First Amendment law, describes the Arkansas Balanced Treatment Act as "constitutionally very strong." He contends that it is entirely consistent with the neutral approach allowed by the Constitution. Bird was one of the many consultants who advised Ellwanger on the bill's drafting.

The ACLU decided to take action against the Arkansas statute within days of its enactment. The suit was filed on 27 May and it lists 23 plaintiffs, more than half of whom are individuals or organizations representing several branches of religion. "By initiating this action," states the complaint, "plaintiffs are neither antireligion nor asserting the final truth of any theory of evolution. Many of the plaintiffs are deeply religious and believe religion is important in personal, family, and community life." The ACLU was very anxious to avoid the case being branded as simply "the action of a bunch of atheists," says Ennis.

After consultation with ACLU and other lawyers in Little Rock, Ennis decided to file suit in Federal District Court rather than state court, for two reasons. First, the constitutional issues involved make the case appropriate for federal court. Second, the subject is so emotionally charged in Arkansas that a state judge who might soon be up for election would find himself under intolerable political pressure. Circuit judges, by contrast, are appointed for life and are therefore free of such immediate pressure.

Overton, who was appointed under President Carter, is a local man, a former trial lawyer, and is described as a nonsense judge. Creationists are, however, somewhat concerned by what they see as his liberal record.

The focus of the ACLU case, that creationism is not a science but a religion, will be a tough issue to encompass in legal terms. In the past, creationists have been content to allow that creationism is not a science, so long as evolutionary theory is similarly labeled. Next week's trial will be the first time that creationism will be put to the legal test as a science.

The ACLU will be calling three or four expert witnesses to try to demonstrate that creationism is not a science: Michael Ruse, a philosopher of science at the University of Guelph, Canada; Brent Dalrymple, a geologist at the United States Geological Survey, Menlo Park; Stephen Jay Gould, a paleontologist at

Harvard University; and Francisco Ayala, a geneticist at the University of California, Davis.

Any science, in order to qualify as such, must be falsifiable and have the power of prediction. Evolutionary theory, because it is a historical theory, is often said to be untestable on both counts. But, as Porter Kier, a paleontologist at the Smithsonian's Museum of Natural History, frequently points out, the confirmed discovery of a mammalian fossil in strata, say, 500 million years old would immediately falsify the theory. Similarly, prediction does not have to refer to future events, but simply be a statement about the unknown. The charge that the historical nature of evolutionary theory forbids its status as a science is not tenable, as Ruse will argue.

Ennis points out, however, that evolutionary theory is not on trial in Arkansas: creationism is. The defense will have a difficult time establishing creationism as a science, not least because Duane Gish, associate director of the Institute of Creation Research, has written the following: "We do not know how the Creator created, what processes he used, for he used processes which are not now operating anywhere in the natural universe. This is why we refer to creation as special creation. We cannot discover by scientific evidence anything about the creative processes used by the Creator." For this reason, there is no satisfactory answer to the question, "What piece of data would prove that God did not create the world and the living organisms in it?" In other words, creationism is not falsifiable.

In the many debates between creationists and evolutionary biologists (most of which, incidentally, creationists have "won") there is typically not so much a case for creation as arguments against evolution. Such arguments frequently draw on the current disagreements over the mechanism, not the fact, by which evolution operates. Clark says that scientific evidence for creationism is "the abrupt appearance of complex organisms in the fossil record and the gaps between different kinds in the record." This is a great simplification of the actual observations, and the defendants' case will be weak if it cannot go much beyond such assertions.

Simply establishing that creationism is not a science would not, however, win the ACLU's case. Creationism must be shown to be a religion if the law is to violate the First Amendment. "Creation, as used in the Creationism Act, neces-

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Diablo Canyon License Suspended

The nuclear power industry was dealt a couple of serious blows last month, all in one day. On 19 September, the Nuclear Regulatory Commission (NRC) voted to suspend the license for the Diablo Canyon nuclear power plant in California. Earlier at a House hearing, commission chairman Nunzio J. Palladino, a Reagan appointee, testified that there is a "serious breakdown" in quality control by industry and the NRC.

The Diablo Canyon plant was initially scheduled to begin low-power operation next September. But the NRC voted four to one to suspend its license because of recently discovered design errors that are related to earthquake safety (*Science*, 30 October, p. 528). The dissenting vote was cast by Reagan's newest appointee on the NRC, Thomas Roberts.

In a separate vote, the commission unanimously decided that the Pacific Gas and Electric Company (PG & E), which operates the plant, should not even be allowed to load uranium fuel into the facility. The plant is located in southern California, 2½ miles from the Hosgri fault. The license will be reissued and loading will be allowed only after completion of an independent audit of the plant's design, the commission said.

Palladino told the House nuclear oversight subcommittee, "After reviewing both industry and NRC performance in quality assurance, I readily acknowledge that neither has been as effective as they should have been in view of the relatively large number of construction-related deficiencies that have come to light." He said that the industry must "reorient its thinking" if it is to retain public confidence.

In September, PG & E notified the commission that it had inadvertently mixed up some of the charts for the plant's design. As a result, certain structural supports were located in the wrong place. Subsequently, 13 more mistakes in design and calculation were found that cast further doubt about quality control by the company.

In a prepared statement PG & E said that the company was "disappointed" that the NRC suspended the license "especially since nothing has

been discovered to date that would indicate that the plant is unsafe."

Spokesmen for the commission and PG & E say that it is uncertain when the license may be restored.

—Marjorie Sun

Koop Confirmed as Surgeon General

After 9 months of debate that has waxed and waned, C. Everett Koop was confirmed by the Senate as Surgeon General on 16 November. The Senate voted 68 to 24 to approve the Philadelphia pediatric surgeon.



C. Everett Koop

In the end, there was little doubt

Groups such as the National Organization for Women argued that Koop was unqualified for the country's top medical post because of his staunch antiabortion views and, in their opinion, his insensitivity to women's issues. The American Public Health Association and others opposed him because he has been primarily a clinician rather than an administrator in public health policy.

Senator Orrin Hatch (R-Utah) defended Koop during floor debate, declaring that the physician had the requisite credentials and that his views on abortion and traditional roles for women should not affect his fitness as Surgeon General.

The Senate debated Koop's confirmation for an hour and there was little question that he would be approved.

Health and Human Services Assistant Secretary of Health Edward Brandt, Jr., was apparently successful in his efforts to assure many legislators that Koop would be subordinate to his policy decisions.

Last summer Congress enacted special legislation that waived the 64-year-old age limit on the surgeon general job. Koop is 65 and has served as a deputy assistant to Brandt since last spring.—Marjorie Sun

The Purge of Leafy Spurge

In what may rival the Southeast's battle against creeping kudzu, central and northern states are stepping up their campaign to purge themselves of leafy spurge.

The pesky perennial, *Euphorbia esula*, has now sunk its deep roots into more than 3 million acres of rangeland in at least six states and its growth is doubling every year. Last month, the United States Department of Agriculture (USDA) put up \$200,000 to study ways to arrest the weed's growth. The money will go to land-grant universities in Wyoming, Montana, and North Dakota.

The narrow-leaved plant, which grows 1 to 3 feet tall, cuts land productivity 40 to 70 percent and propagates easily in uncultivated land. For a variety of reasons, leafy spurge has been a dickens to control. Cultivation has proved to be an effective measure on cropland, but is an impractical and high-priced method of control on grazing land that has relative marginal worth to begin with. Herbicides are partially successful in killing the plant but chemical control is again too costly. Moreover, the herbicides usually only wither the top part of the plant. The root system of the tenacious plant penetrates 3 feet into the soil, successfully shielding itself from chemical warfare by ranchers.

Some researchers are scheming about ways to attack the roots. Others are testing methods of biological control with the use of a number of insects, including a species of moth. But insect control sometimes requires 15 to 20 years of testing before widespread use may be safely permitted,

according to Suzanne Batra, a USDA entomologist at Beneficial Insect Introduction Laboratory, located on Pesticide Road, Beltsville, Maryland.

In the best of all worlds, livestock



Poisonous Plants of the U.S. (Macmillan 1975)

Pesky Perennial

Covering 3 million acres and spreading

would find the weed tasty and nutritious but apparently animals are not impressed. In fact, cattle become quite indisposed if they lunch on leafy spurge. The side effects include dermatitis of the mouth and diarrhea. Leafy spurge researcher D. Stuart Frear at the USDA station in Fargo, North Dakota, says that sheep in Montana seem to have taken a liking for the weed although another USDA scientist, Warren C. Shaw, says the plant is probably toxic to sheep as well.

Frear says that seeds of the weed were reportedly transported here by European immigrants during the early 1800's. He says the seeds were perhaps inadvertently mixed with other seeds for crops or purposely imported because its yellow flowers were considered ornamental.

Some researchers are trying to discover if there is anything redeeming about the weed. Its stems contain a milky, latex liquid similar to that of milkweed and dandelions and a few scientists are looking for some beneficial use. But, Frear says, "Right now, leafy spurge is just a weed and a problem."—Marjorie Sun