

GENERAL SCIENCE

Anti-Evolution Law Tested

Forty years after the famous Scopes Trial, the 1928 anti-evolution law in Arkansas has been seriously challenged by a high school biology teacher.

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► THE FIRST SERIOUS CHALLENGE to Arkansas' 1928 anti-evolution law has been initiated by Mrs. Susan Epperson, a 24-year-old biology teacher at Little Rock's Central High School.

Filing her petition in Chancery Court, Mrs. Epperson stated that as a responsible teacher and American citizen she could no longer avoid the examination of Darwin's theory in her classroom. While the petition cites the violation of Amendments 1 and 14 of the U.S. Constitution, the real hope of Mrs. Epperson and the Arkansas Educational Association, a state-wide teacher's organization whose Board is backing the legal move, is the setting aside of the law by state courts based on Arkansas' own Constitution which states in Article II, section 6:

"The free communication of thoughts and opinions is one of the invaluable rights of man; and all persons may freely write and publish their sentiments on all subjects, being responsible for the abuse of such right."

Object of Challenge

The object of the challenge is Arkansas' law dating back to Oct. 6, 1928, when Initiated Act No. 1 was submitted to the voters of Arkansas and was passed by an overwhelming majority of 108,991 to 63,406. The law is unique among the sizable group of anti-evolution laws passed in various states during the 1920s in that the issue was submitted to the general electorate. Such laws in other states were passed by state legislatures.

In more recent years, a few individual legislators have attempted to stir some new action toward repeal but not one of these has enjoyed any success beyond a polite hearing by his fellow legislators.

In September of 1965, Forrest Rozzell, executive secretary of the large and influential Arkansas Educational Association, submitted to his Board and to a state newspaper what he called a "position statement" calling for repeal of the statute on the grounds that it inhibited teachers in the exploration of truth and denied the teacher freedom of speech necessary for educating children and youth. The issue was immediately picked up editorially by other newspapers in the state. Most editorials called for repeal but none offered a plan which would persuade Arkansas' presumably reluctant electorate.

Of course, appeals for reforms from the editorial pages of the state's newspapers are not met with serious attention in most communities. However, two factors entered the Arkansas picture in late September and October. First was Governor Orval Faubus' defense of the anti-evolution law on the grounds that it was, he thought, the will of the people; and secondly that the Genesis account of creation was "good enough for me." Thus the Governor revealed by his statement that repeal was becoming a discussed issue in the state.

The other factor was a rash of statements and resolutions passed by fundamentalist ministerial associations and conventions affirming their belief in Genesis as an accurate, scientific account of creation, and their wholehearted support of the anti-evolution law.

In the midst of this, Little Rock's TV Station KTHV produced a series of Sunday afternoon programs in which a Presbyterian clergyman and a Church of Christ minister debated the issue of repeal, the relation of the Genesis account of creation to modern scientific thought, and the relation of the concept of academic freedom to legal restraints placed on teachers.

Meanwhile, Susan Epperson was looking ahead in her lesson planning to the time when she would have to discuss Darwin's evolution theory with her students at Central High and subsequently violate the law—or compromise her conscience. Her feelings were made known to Forrest Rozzell who in turn asked her if she would be willing to file a petition asking the courts to declare the law unconstitutional. Consulting legal counsel, Mr. Rozzell proceeded to inform Central High Superintendent Floyd W. Parsons of the situation. Mr. Parsons discussed the matter fully with the Little Rock School Board and all agreed with a position later to be taken by the A.E.A. Board on Dec. 4, 1965: that recourse to judicial process is a proper procedure for any citizen including Susan Epperson. All concerned parties were thus advised of the situation. On Monday, Dec. 6, 1965, Mrs. Epperson filed a lawsuit in Little Rock's Chancery Court asking that the law prohibiting the teaching of evolution in Arkansas be ruled unconstitutional.

Her petition states that the belief that Darwinian theory and religion conflict is erroneous; but that the law prohibiting the teaching of evolution "constitutes action by the state to enter the field of religion," which is also prohibited by the state and Federal constitutions.

Mrs. Epperson feels that it is her professional duty and responsibility to explain

and discuss all scientific theories with her students so that they may be enlightened citizens. Her petition states that she does not plan to ask or require her students to accept the Darwinian theory that man descended or ascended from a lower order of animals.

Acquaintance with the theory of evolution is no new development for Susan Epperson. A graduate of the College of the Ozarks, she grew up on this small Presbyterian college campus where her father, today professor emeritus of biology, began teaching in 1919. Of her parents she says, "they are both dedicated Christians who see no conflict between their belief in God and the scientific search for truth." Then she added, "I share this belief."

Thus Central High School, already famous for the 1957 School Crisis, is the scene of another historical development. So far Susan Epperson has not violated the law. She will do so if such is required. But unlike 1957, there will be no violence in the street; the battles will be fought in the courts . . . hopefully in the state courts, so that in some sense the redress of grievance will be granted by the same state which has permitted such a law for 37 years. Forrest Rozzell stated that on Dec. 4, 1965, the Board for the A.E.A. had voted for "using the judicial process for determining the constitutionality of this law."

If she violates the law, Mrs. Epperson may be fined \$500 and lose her job. But this is not likely. The sponsors of the action have planned carefully and are convinced that there will be no sidestepping of the legal issues this time; but if they have to do so, they plan to take the issue all the way to the U.S. Supreme Court. Such an event as the latter would unfortunately say a great deal about Arkansas' unwillingness to overthrow the particular law in question; however, it would have the advantage of automatically overturning the anti-evolution laws in the two other holdout states, Tennessee and Mississippi.

40 Years After Scopes

Forty years after the famous Scopes Trial, the issue reenters the courts, ironically by an Arkansas teacher the exact age that Scopes was when the Dayton Trial began in 1925.

But what does the man in the street feel? Is he anxious about the possibility of his children being taught Darwin's theory? Does he have a twinge of conscience about the "image" of his state being considered backward or old-fashioned in its concept of education with such a law still on the books? If he is a hard-shell fundamentalist, is he angered and threatened by what he feels is an assault on cherished religious convictions?

Of course, there is no average man in

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Test Anti-Evolution Law

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the street. Practically all of the teachers and perhaps the professional people of the state favor repeal.

Most people would agree, however, that there is little chance for the passing of a repeal by the general electorate, such as was the method in 1928 for getting the statute on the books. And there is no significant sentiment in the General Assembly, Arkansas' legislative body, for an initiating move.

But the real issue is not religion, science or academic freedom. The real issue for many Arkansans is *change*. And many hold to this resistance as dearly as to their fundamentalism. The Arkansan is still fiercely individualistic, intensely protective of local values, and believes less government means slower changes. But it just may be that when the petition is docketed—and many expect that to be soon—a native Arkansan, waging her fight in her state's own courts, will help Arkansas become the first of three remaining states with evolution laws still on the books to say "yes" to a new day of religious insight, scientific inquiry, and academic freedom.

• Science News Letter, 89:7 January 1, 1966

CHEMISTRY

Slush Hydrogen Seen As Rocket Engine Fuel

➤ A MIXTURE of solid and liquid hydrogen, called slush hydrogen, is being investigated as a possible rocket fuel at the cryogenics laboratory of the National Bureau of Standards Institute for Materials Research in Boulder, Colo.

D. B. Mann and D. B. Chelton and associates have developed a laboratory method of producing slush hydrogen, involving a freeze-thaw process, which could be used to manufacture large quantities of slush hydrogen in batch-type slush generators or in large hydrogen storage dewars.

As a fuel for sophisticated rocket engines such as the Saturn and Centaur, slush hydrogen would have two advantages over the presently used liquid hydrogen. Slush hydrogen requires less storage space because of its greater density, and it has a considerably longer storage time.

In the newly developed process, solid hydrogen is formed on the surface of liquid hydrogen by vacuum pumping. Then, after careful pressure modulation, the solid, porous mass breaks loose from the container walls, sinks to the bottom of the tank and breaks into very fine particles. These very fine, solid particles in liquid make up the desired form of slush hydrogen.

Experimental and analytical interests are centered primarily on the shape and distribution of the solid hydrogen particles, and the effects of aging upon them. It is believed that slurry flow, developed for pipeline transport of crushed ore or coal in water, could be applied to the case of hydrogen slush. Data on particle size and terminal velocity of the particles as they settle in the liquid are being accumulated and analyzed with the aid of high-speed photography and a computer.

• Science News Letter, 89:11 January 1, 1966

Nature Note

The Quiet Oyster

➤ THE OLD SAYING, "a noisy noise annoys an oyster," is quite true, for the soft-bodied mute creature quietly lives in sedimentary retirement between two stony grey shells in protected seas, bays and sounds.

When the transparent baby larvae oysters are first born, they swim freely in the water. In about 32 hours they start to secrete a shell, and within six days they are enclosed in their life-time shell that grows as they grow. When they are only two weeks old, they go through a "spat" stage of development during which they must attach themselves to some solid object or else they die. Once attached, they stay the rest of their lives.

Members of the phylum Mollusca, oysters have no foot, and have only one muscle to open and close the shell, unlike the two muscles of other bi-valve or two-shelled animals. The two parts of the oyster shell are unequal in size and shape: one is large, round, thick and securely fastened to some stone or object; the other is flattened, smaller and thinner. An undisturbed oyster can grow 18 inches long, but oystermen usually harvest them when they are four or five inches long.

Men cultivate these marine animals somewhat as they raise chickens or hogs. Of the hundred living species, only about four oyster species are important to the fishing industry—the European, Portuguese, Japanese and the American, *Ostrea virginica*, native of the Atlantic Coast. Oysters should be provided a quiet sea bottom with flowing fresh water, enough space to prevent overcrowding, and protection from sea stars and snails. Latest serious hazard to the oyster industry is the increasing pollution from chemicals and other wastes that are killing off oysters in large numbers.

Although all oysters may sometimes grow pearls, most of our gem pearls come from "pearl oysters" found off the Pacific Coast, northern Australia, East India and in the Persian Gulf.

• Science News Letter, 89:11 January 1, 1966

Do You Know?

Visitors to the permanent exhibition of child art at Frunze in the Soviet Republic of Kirghizia are guided by a remote-controlled robot, bilingual in Russian and Kirghiz.

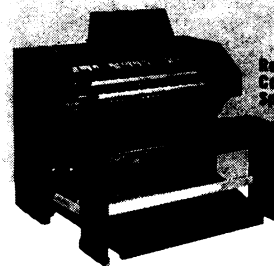
The rib of a severely handicapped thalidomide child was transplanted to her abortive arm, taking the place of the radius, and the child can now stretch the arm and pick up things.

Natives of the Solomon Islands chew certain roots and, reportedly, achieve permanent barrenness.

Sigmund Freud believed that someone other than William Shakespeare wrote the plays attributed to him.

• Science News Letter, 89:11 January 1, 1966

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