"He's got millions of little old ladies out there who are going to send him a couple of million dollars, a dollar at a time, for his damned monument." Tulsans especially feel he can pull it off. They have watched Roberts evolve during the past 32 years from a sweaty, Bible-thumping faith healer who pitched his tent wherever he could find a weed-choked lot to a television personality who wears Brioni suits and flies around the country in a $2-million fan-jet. The man has magnetism, and when he gets on the tube before an audience estimated to range up to 10 million, he gets results.

All of which leads skeptics to ponder the obvious. "Who is going to raise all that money if he suddenly dies?" asked one. At 62, Oral is also concerned about the long-term stability of his empire, and is in the process of grooming a successor. There have been some problems, however. His son Richard, 30, the only one of his four children still in the family business, recently divorced and remarried—a violation of God's law in the eyes of many of Oral's partners. Richard, who once sang in a rock band and is now the titular head of the Oral Roberts Evangelical Association, married on 11 January 1980 an ORU graduate student. The incident caused a stir on campus, where people who leave their partners need permission of the board of regents in order to remarry. Richard did not first get permission, and a closed meeting for faculty and students was eventually called to explain the situation. Richard is not especially shaken by all this. Asked by a reporter from the Tulsa *World* if he will succeed his father, he shrugged and said: "I can only fill my shoes. But I fill them all the way to the toes."

God said, "I have worked through you as My chosen man."

The spouse of the Chosen Man has written an autobiography, *His Darling Wife, Evelyn*, and Richard, who could probably make it as a pop singer, has recorded an album entitled "My Father's Favorite Hymns." The Chosen Man himself has written three autobiographies and more than 50 other books, has produced for more than a decade "Oral Roberts and You" (which is now the largest syndicated TV show in the world), employs 2000 Tulsans in his tight-knit organization, named after himself a university (that now has schools of law, business, nursing, medicine, and dentistry), is on the board of the Bank of Oklahoma, Oklahoma Natural Gas, and the Tulsa Chamber of Commerce, drives a Seville and a Mercedes, and is in the process of building a quarter-billion-dollar monument to the medical arts.

Whether the long rise to power and the recent co-option of scientific medicine represents the will of God or the ego of Oral Roberts is a question not a few have pondered. Some observers, leaving aside the metaphysical aspects of the query, see clear historical trends that go something like this. Oral is approaching the golden years, and the closer he gets, the more of the status quo he seems able to stomach. After a couple of dozen years of fiery-eyed preaching and healing in his "tent cathedral," the Chosen Man took up television, built a university, and switched his religious affiliation from Pentacostal to Methodist. When the laying-on-of-hands became somewhat suspect in religious circles, he began talking of healing as something that could affect your finances, your job, your marriage. Now he has embraced science, in the form of the City of Faith.

BW and Recombinant DNA

The outbreak of anthrax at Sverdlovsk, allegedly because of an explosion at a biological warfare plant, raises a potential question about Soviet adherence to the Biological Weapons Convention of 1975, which forbids the development, production, and stockpiling of biological weapons. The U.S. State Department apparently puts sufficient credence in the reports to have asked the Soviet Union for an explanation of the incident.

What if the arms race in biological warfare should resume? One of the first tools to be considered would doubtless be the recombinant DNA technique, which came to prominence just after the United States and Soviet Union had ratified their failure to produce successful biological warfare agents with conventional techniques by signing the Biological Weapons Convention. The United States, which unilaterally renounced all offensive biological warfare in 1969, continues a modest program of defensive research. "We are not now using recombinant DNA techniques in any of these efforts, partly to keep ourselves out of trouble," says a Defense Department official, who notes that by "trouble" he means public protests.

The potential overlap between academic use of gene splicing and military interests is illustrated by the recent decision of the NIH Recombinant DNA Advisory Committee to permit the cloning of the exotoxin A of *Pseudomonas* under certain conditions. According to the Department of Defense's 1978 report on its chemical and biological warfare program, printed in the *Congressional Record* of 19 July 1979, the bacterial toxins under study included "the botulinum neurotoxins, anthrax toxins, several staphylococcal enterotoxins, enterotoxins produced by cholera and Shigella species, diphtheria toxin, and *Pseudomonas* exotoxin A and exoenzyme S."

Despite its presence in such unpleasant company, however, *Pseudomonas* exotoxin is not considered to be very potent. "It was never considered seriously as a biological warfare agent," says Norman Covert, public relations officer at the U.S. Army Medical Research Institute of Infectious Diseases, where defensive biological research is conducted. The reason for USAM-RIID's interest in the toxin is as a model to understand the mechanism of toxin action, and because of the danger of *Pseudomonas* infection to individuals who are burned or wounded.

The Biological Weapons Convention prohibits development of biological agents but does not bar research, although it can be seen as posing institutional impediments to an offensive research program. In the United States, the Department of Defense has endorsed the NIH guidelines on recombinant DNA—which require public reporting of experiments—but on one occasion asked to be relieved of the public registration requirement in periods of a national emergency. The request was not acted on and has not been repeated.—NICHOLAS WADE

Addendum. The NIH Recombinant DNA Advisory Committee at its most recent meeting passed a motion with the effect of exempting from its guidelines the cloning of the *Pseudomonas* exotoxin in *Escherichia coli* K-12, as recently noted (*Science*, 28 March). However, after a motion to reconsider, the committee decided instead to permit the experiment under the P1,EK1 conditions of the guidelines.

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