

historical evidence concerning each link.

Status competition is not the only important influence on burial practices, Bartel adds. As populations grow, shifts in family structure and living arrangements inevitably alter burial arrangements, he contends.

Another problem for Cannon's theory is that the decorative aspects of a grave are not the only status symbols available to the upper classes, says Jeffrey Quilter of Ripon (Wis.) College. For example, the Victorian elite may have been buried more frequently in family vaults, in exclusive cemeteries or even in "better" sections of public cemeteries.

And while the historical pattern described by Cannon characterizes the simple burials of Greece during the 7th century B.C., frugal funerals again appeared in the 5th century B.C. as a result of laws reserving monumental tombs for the war dead, maintains Ian Morris of the University of Chicago.

Future research will help determine whether general historical forces such as status competition outweigh specific cultural influences in determining how people are buried, Cannon says.

For now, however, the Canadian investigator has struck a scientific nerve. Even if his theory has flaws, Morris remarks, "it remains a major contribution to the archaeology of death." □

Aha...



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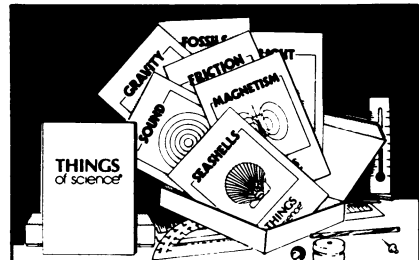
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News of the week continued from p. 327

Selecting survivors: Mother knows best?

In the novel *Sophie's Choice*, a Nazi doctor forces the title character to select one of her two children to send to an extermination camp. In some plants and animals, such choices may be a common part of natural selection, according to two ecologists in Europe.

Scientists have long recognized that many plants and animals mass-produce their eggs, only a few of which survive. An avocado tree, for instance, forms about 10,000 flowers for every fruit, and a pronghorn antelope produces only one birth from 50 to 100 eggs. Now, a novel mathematical analysis indicates organisms can sometimes benefit by taking an active — though not necessarily conscious — role in selecting which of their many fertilized eggs should survive. The researchers say they are the first to model the conditions under which it may pay a parent, in evolutionary terms, to kill its progeny.

Stephen C. Stearns, an American directing the Zoology Institute in Basel, Switzerland, and Jan Koslowski of the Institute of Environmental Biology at Jagiellonian University in Krakow, Poland, created mathematical models to test two hypotheses formulated earlier this decade to explain why many organisms overproduce zygotes, or fertilized

eggs. Under the "bet-hedging" hypothesis, a plant or animal in an environment that fluctuates yearly should produce as many zygotes as can survive in a good year. "And if it becomes clear that it's going to be a moderate or bad year, then she should cut back," Stearns says.

Under the "selective abortion" hypothesis, the organism somehow recognizes genetic weaknesses in developing zygotes and aborts those individuals.

The mathematical models confirm theoretically that both approaches, whether applied independently or together, can work to increase zygote production. Stearns and Koslowski say two key factors determine overproduction: year-to-year environmental fluctuations and the energy cost the plant or animal must pay in order to produce and carry a zygote. One model predicts that "the cheaper the zygotes, relative to fully reared offspring, and the more variable the optimal offspring number between the seasons, the greater the expected overproduction of zygotes," the researchers write in the November *EVOLUTION*.

"I think the most interesting part of this [the selective abortion hypothesis] is that natural selection would create an

adaptation which itself used selection to work," Stearns says.

Evolutionary biologist Andrew G. Stephenson of Pennsylvania State University in University Park says the new work is important because it recognizes that "parallels [between plants and animals] exist and can be modeled" and generates testable predictions. But Stephenson thinks there are other ways to explain why some zygotes survive, including competition among unborn "siblings."

In humans, Stearns says, the relatively high miscarriage rate early in pregnancy may offer an example of unwitting selective abortion. Researchers last year detected a 31 percent miscarriage rate among women attempting to conceive (*SN*: 8/6/88, p.86). Others have noticed that women who experience consecutive spontaneous abortions often genetically resemble the father of their fetuses (*SN*: 10/11/86, p.235). Babies who inherit similar genes from their parents may be especially prone to disease, Stearns notes. If the mother's body can biochemically discern such genetic disadvantages in a fetus, "then it actually pays her to throw that embryo away because she has a good prediction that it's going to die of disease," he says.

Stearns and Koslowski dedicate their paper to their mothers, "who let us through."
— D.E. Loupe