reducing crime is surprising in view of the fact that achievements in this area are not considered particularly likely."

To seek closer measures of public reaction to "scientific endeavor and technological advances" the survey's designers singled out for special study three specific issues that have received much publicity. These were space exploration, food additives, and siting of nuclear power plants.

Space exploration seems to be in the curious position, at least since space spectaculars dwindled in magnitude, of having a healthy majority of the public favoring exploration of outer space (60 percent) but at the same time lacking real enthusiasm for spending public funds on the endeavor. Some 61 percent of the attentives see only benefits and no harm in space exploration compared with 42 percent of the total public. The attentives, however, also rank space exploration as an also ran in the preference list for public funding—ninth out of 14 compared to 13th ranking by the total public. Toward chemical food additives both groups have mixed feelings, but a much larger proportion of total public (30 percent) saw harms and no benefits in additives than the attentives (12 percent).

On the siting of nuclear power plants the two groups were quite close in their views. Roughly similar minorities at the extremes saw either only harms or only benefits. Taking the middle ground that there were both harms and benefits involved were 50 percent of the attentives and 46 percent of the total public. The authors suggest that the reactor accident at Three Mile Island which occurred in the year that the survey was done probably hardened public opinion against nuclear power, but cite other studies that show majority opinion remains in favor of developing nuclear power. As for locating nuclear power plants in their own areas, 51 percent of attentives and 64 percent of the total public were opposed.

The NSF-sponsored survey on which the section is based involved a national sample of 1635 people over the age of 18. To make comparisons with 1957 data possible, some questions in the 1979 survey were designed explicitly to conform to questions in the earlier survey. Extra effort was also made at what survey experts call "back analysis" to assure that results were consistent.

NSF officials say that the use of the "attentives variable" was novel in surveys of public attitudes toward science and technology. The distinguishing characteristic of the attentives was education—55 percent of those in the sample

Hayflick Case Settled

An out-of-court settlement was reached in September which brings to a close a bitter 6-year conflict between microbiologist Leonard Hayflick and the National Institutes of Health (NIH) concerning proprietorship of a cell line Hayflick developed almost 20 years ago.

In the 1960's, while working at the Wistar Institute in Philadelphia, Hayflick developed cell lines known as WI-38 and WI-26, the first normal human cells to be established in culture. He subsequently sold some of the cells for profit to hundreds of recipients around the world. NIH has claimed that the cells and proceeds from their sale belong to the government.

The agreement states that the title to both the cells and the proceeds "are in reasonable dispute." NIH is allowed to keep the 19 ampuls of WI-38 cells that have been in its possession since 1975, and Hayflick is allowed to keep the money from cell sales, now totaling $90,000, which has been in escrow since 1975. Hayflick is also allowed to retain the six ampuls of cells that NIH gave him last January for a research project being funded by the National Institute on Aging (NIA).

Hayflick says he regards the agreement as "exoneration" from all the charges contained in two NIH reports released in 1976 which accused him of various irregularities in his stewardship of the cells (*Science*, 9 April 1976, p. 125). "All those allegations were totally false," he told *Science*.

The auditor who produced the reports disagrees. James W. Schriver, former head of the NIH Division of Management Survey and Review (now retired), says "the settlement is no vindication at all. . . . They didn't prove anything erroneous" in the reports.

NIH lawyers will not comment on the case. But according to William Raub, director of extramural research, the government does not regard the agreement as an exoneration of Hayflick; rather, it indicates that the two parties have "agreed to continue to disagree." Raub says there was extensive debate over whether to award the NIA grant but it was finally decided that that was a separate issue from the lawsuit.

Hayflick's case is without precedent. It all began in 1962 when he successfully established two lines of cells from human embryonic lung tissue. They provide the basis for Hayflick's discovery that human fetal cells go through about 50 doublings before dying out. The cells, preserved at various stages by freezing, are widely used in vaccine production as well as research.

In 1968 Hayflick left the Wistar Institute for Stanford University, taking the cells with him. NIH claimed they were its property because they were developed under an NIH contract. The government eventually began an investigation, took possession of remaining cells, and issued two reports that discussed, among other things, Hayflick's commercial dealings with the cells and his handling of a problem of bacterial contamination. Hayflick resigned from Stanford, which was conducting its own investigation of him, and sued NIH.

Hayflick alleged that NIH had violated his rights under the Privacy Act by publicly issuing damaging reports before his rebuttal had become available. He also claimed title to all the remaining cells. NIH countersued, claiming the cells belonged to the government.

Hayflick believes his career was wounded by the affair. Nonetheless in 1979 he was awarded a 3-year grant of $562,000 from the NIH despite Schriver's recommendation that future funding be denied him. Hayflick has been working at Children's Hospital Medical Center in Oakland since he left Stanford, and this month will move to Gainesville to head the University of Florida's Center for Gerontological Studies.

Many scientists have been upset over the Hayflick affair, which has been perceived as a case where the government marched unhindered into a private laboratory and publicized what it pleased with no peer review or outside verification. Bernard Strehler, biologist at the University of Southern California, has prepared a letter in Hayflick's support (p. 240), bearing the signatures of 85 scientists.—CONSTANCE HOLDEN

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