

RANDOM SAMPLES

edited by CONSTANCE HOLDEN

The Nuns' Story

Researchers studying elderly nuns have found that an imaginative, idea-filled youth appears to augur a long life. The analysis builds on their earlier findings that an active intellect seems to protect against dementia in old age.

David Snowdon at the University of Kentucky, Lexington, and colleagues have for over a decade been studying aging and cognition in a population exposed to the bare minimum of environmental "noise": 678 nuns aged 75 and over who live at convents around the country. The researchers tapped a unique resource, short autobiographical sketches written by 180 of the nuns when they took their vows more than 60 years ago. The

writings were analyzed according to two measures: "idea density," or speech content gauged by the number of ideas expressed per 10 words in a sentence, and grammatical complexity.

Between 1991 and last March, 58 nuns who had written bios died, Snowdon reported at a recent meeting in Paris sponsored by the IPSEN Foundation for research on medical therapies. The median age at death for nuns who had expressed low idea density was 81.7; for the high-density nuns, it was 88.5.

Because the nuns from early adulthood were cloistered from hazards such as poverty, drugs, and poor health care, the finding, says Snowdon, suggests that the



Ideas dense and intact. Nun Study participant Sister Augustine in 1994 at age 100.

differential could have "more to do with linguistic and cognitive abilities ... than to [adult] lifestyle and environmental risk factors." The researchers found no link between mortality and complex grammar, suggesting that

longevity is related more to "cognitive abilities" than "linguistic proficiency," the authors write.

Deeper thinking nuns may have richer, more redundant, less error-prone neuronal structures and thus be less susceptible to life-shortening dementia, Snowdon speculates. Indeed, of 24 brains examined post-mortem so far, he says, Alzheimer's lesions were about 10 times as prevalent in the low-octane thinkers as in the women who possessed a high density of ideas.

This is "an enormously creative, interesting, and important study," says Richard Suzman, chief of demography and population epidemiology at the National Institute on Aging. But, he cautions, "it cries out for replication."

New Promise for Silicon

A new process for putting pores into silicon chips may have brought the world closer to computer circuits based on light rather than electricity. These chips glow, which means they could be used as a cheap way to convert electrical pulses to visible light.

Because electric current makes porous silicon glow bright red, scientists have been eying it as a substitute for costly gallium ar-

senide in light-emitting diodes (LEDs), which are used in everything from sneakers to traffic lights. But in designing computer chips, a major challenge has been figuring out how to etch precise porous patterns for tiny circuits. Current etching techniques are too crude—like trying to draw a hair with a can of spray paint.

Scientists have now found a way to replace the paint can with a fine brush. David Lockwood, an

optical spectroscopist at Canada's National Research Council in Ottawa, and colleagues first injected extra silicon ions into precise locations in a silicon wafer, disrupting its crystal lattice. Next, they put the wafer in hydrofluoric acid and ran a current through it. Only the disrupted portions of the silicon dissolved, leaving sharply defined porous regions, they report in the 4 May *Physical Review Letters*.

"This is a very nice, impor-

tant result," says Philippe Fauchet of the University of Rochester in New York, who produced the first porous silicon LED. But he says practical problems remain: Porous silicon is much less efficient and burns out faster than gallium arsenide. "People in industry don't believe that porous silicon will be useful" at present, says Lockwood. Further advances could change their minds: Gallium is rarer than gold, while silicon is the second most common element in Earth's crust.

Eurobio Coming of Age?

The biotech industry in Europe is moving fast to try to catch up with the United States in the realm of new drugs and diagnostics, say market analysts Ernst and Young in a report released in Amsterdam earlier this month. "European Life Sciences 98" shows that while the drive to consolidate has reduced the number of biotech enterprises in the U.S., the number of companies in Europe increased by 45% last year (see chart).

Within Europe, the United Kingdom continues to lead in activity and investment in this sector. But

traditionally cautious German companies are mounting a strong challenge fueled by government money, says Paul McCubbin of Ernst and Young: "Attitudes are slowly changing to accept risk."

Europe's first fruits of biotech research, which include drugs to treat pain and osteoporosis, are expected to clear regulatory hurdles by early next year. But if the sector is to continue gaining, McCubbin says, the European Medicines Evaluation Agency needs to establish clearer procedures around approval for new drugs.

Germany and France are moving to smooth the way. Earlier this month science ministers of the two countries met and agreed on the need to reduce bureaucratic hurdles and alter patent policies to give biotech researchers more incentives.

ENTREPRENEURIAL MEDICAL BIOTECH FIRMS						
	Europe			U.S.		
	R&D (US\$ billion)	#cos.	workers	R&D (\$ billion)	#cos.	workers
1996	1.65	716	27,500	8	1287	118,000
1997	2.1	1036	39,045	9.1	1274	140,000

French Biologist Honored

French biochemist Pierre Chambon will be taking home the \$300,000 Welch Award in Chemistry for his pioneering work on how genes are turned on and off. Director of the Institute of Genetics and Molecular and Cellular Biology in Strasbourg, he is being honored for 40 years of work at the "forefront of the evolution of genetics," according to the Houston, Texas-based Welch Foundation. Chambon will receive his prize at an October ceremony in Houston.

