yield of a Spartan missile warhead to be used in the Safeguard ABM system. The warhead is designed to intercept enemy missiles above the atmosphere and deactivate them with X-rays.

The Committee for Nuclear Responsibility and six other environmental groups tried to obtain a court injunction against the test on grounds that the AEC failed to give proper consideration to environmental hazards. After ordering the release of hitherto secret Government documents on the subject, a U.S. District Court ruled Monday that the dangers had been sufficiently considered. The attorney for the seven environmental groups said they would appeal the ruling.

Meanwhile, time was running out. The warhead had been lowered to the bottom of the 6,000-foot test shaft and the shaft was being plugged. The test could still be postponed, though rescheduling would cost an estimated $50 million to $100 million. Fishing boats had been warned away from the area, and it seemed unlikely that the test would be either halted or postponed. □

Learning and memory transfer: More experimental evidence

Until recently the transfer of learning and memory from one brain to another brain was straight out of science fiction. Then in the early 1960's investigators turned fantasy into reality by feeding brains from flatworms trained to respond to light or to navigate a maze to untrained flatworms, and found that the recipients aped the donors' behavior. In 1965, Ejnar Fjerdingstad of the University of Copenhagen took a crucial experimental leap from the worm to a vertebrate, the rat. He trained rats to go to light in order to receive water, then injected the brain material from trained rodents into naive ones. The recipients did not imitate the donors' learned habit right off, but they did acquire it faster than control rats that had not been injected, implying that the injected brain material indeed boosted learning.

There are now some 32 laboratories in the United States injecting brain extracts from trained amphibians, fish, mice and rats into untrained recipients, and the work seems to be achieving ample success in modifying the behavior of the recipients. Most brain transfers are limited to one species, although several labs are transferring brain material from one species to another, with some positive results.

What's more, the first memory molecule has been isolated, characterized and synthesized by Georges Ungar of Baylor University in Houston and by Wolfgang Par of the University of Houston. They first announced the achievement last December, and a technical report will appear soon in NATURE. What these investigators did was slowly to accumulate several pounds of brain from rats that had been shocked in the dark. They tested different fractions of this brain material for memory transfer ability in recipient rats until they narrowed the material down to what appears to be the actual memory molecule. It is a protein and dubbed "scotophobin," after the Greek words for "fear of the dark."

Several groups are now working with scotophobin. William Braud, a psychologist at the University of Houston, for example, reported at the first annual meeting of the Society for Neuroscience last week in Washington that he has been injecting extracts of crude rat brain (which he believes are scotophobin) into fishes' brains. The recipient fish indeed exhibited fear of the dark. The fear lasted up to 10 days in some fish, but usually not more than six days and was an on-again off-again phenomenon.

Rodney Bryant of the University of Tennessee confirms this short, transient effect. He reported at the neuroscience conclave that he has injected synthetic rat scotophobin into the brains of hundreds of goldfish. While the fish indeed exhibited fear of the dark and resisted learning to swim into the dark, the fear was of brief duration. "I would not say scotophobin is a memory molecule at this point, but memory linked," he said.

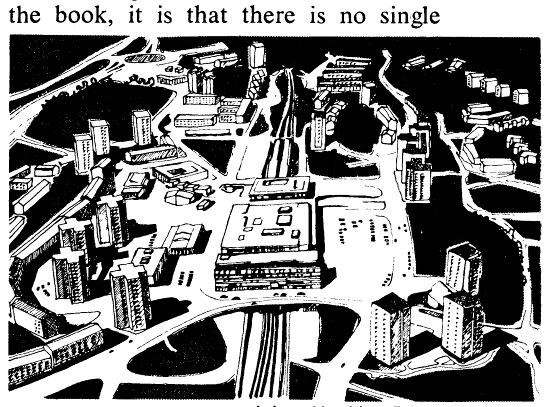
Then Ronald Hoffman, a biophysicist at the University of Houston, reported that after teaching goldfish to swim through a triangle to get food, he injected their brains into other fish. All swam to the triangle without prompting. Yet here again instilled learning lasted but a day or two. Hoffman is now working on the isolation and purification of the learning molecule involved. He thinks it is a protein-RNA complex.

Even these vertebrate experiments, though, haven't convinced everyone that learned information can be transferred chemically from one organism to another. Scientists who believe that memory is primarily a function of the neural pathways of the brain, requiring an intact brain, particularly score the possibility that memory is solely a cellular, or biochemical, phenomenon. Nonetheless those investigators doggedly pursuing biochemical packets of learning and memory avow that they have analyzed their results statistically and that the behavior of recipients is definitely not chance. Those workers tend to agree, though, with William Byrne of the University of Tennessee and author of a book on learning and memory molecules that far more brain material must be obtained, scrutinized and tested before biochemistry's true role in learning and memory can be delineated. □

Humans and cities: The European answer

It has become a kind of truism that the United States lags far behind Europe in urban planning—and that such land-use planning may be a fundamental determinant of the quality of peoples' lives and environments. In a book published this week by Johns Hopkins Press, Ann Louise Strong, director of the University of Pennsylvania's Institute for Environment Studies, provides a detailed description of some of the key European urban developments. The book, *Planned Urban Environments,* amply proves United States' backwardness—but the author is often remiss in producing evidence that the quality of the lives of the residents of the European developments matches the glitter and attractiveness of the developments.

If a single conclusion comes from the book, it is that there is no single way to approach urban planning problems and thus to produce habitable human environments. In the United States, for instance, environmentalists have sometimes tended to see high-rise apartment buildings as unmitigated evils. In Tapiola, a newly planned city outside of Helsinki, however, high-rise buildings are made harmonious with the natural environment through careful spacing and imaginative architecture. Other European developments likewise have aimed at meeting local or national needs in diverse ways.



Johns Hopkins Press

Stockholm's Vällingby Center.

"In the Netherlands, amenity is the national government's basic reason for wishing to limit metropolitan growth. . . . Most nations, including Sweden, Finland, France and Israel, are concerned primarily with the economic implications of concentrated economic growth. . . . France and Finland fear that further concentration in Paris and Helsinki will contribute to the weakening of other urban centers." And, the author continues, a prime concern in Israel (as well as the Netherlands) is preservation of limited arable land for agricultural use. These diverse needs