

# medical sciences

## Vigorous exercise and the physically fit heart

Vigorous exercise can prevent heart attacks, J. N. Morris and his colleagues at the London School of Hygiene and Tropical Medicine report in the Feb. 17 *LANCET*.

From 1968 through 1970 they had 16,882 middle-aged male executives and office workers from various areas of Britain report their weekend exercise habits. After 1970, 232 of the men suffered a first heart attack. The researchers then compared the previous weekend exercise habits of these men with those of their colleagues who had not had heart attacks. They found that only 11 percent of the men who suffered an attack had engaged in strenuous activity, whereas 26 percent of the men who had not experienced an attack had engaged in vigorous activity. Vigorous exercise appeared to help prevent heart attacks regardless of how old a man was or even whether he smoked, although many of the men who had attacks were smokers. Lighter exercise showed no such protection.

Morris and his co-workers believe vigorous exercise may protect the heart by enlarging coronary arteries and by exercising smaller blood vessels throughout the body.

## More fuel for protein role in memory

One of the hottest arguments biologists are waging has to do with whether memory is retained in molecules of protein (SN: 3/24/73, p. 181). However some University of California researchers have evidence that even if protein does not contain memory, it is still implicated in the memory process.

During the past two years Larry R. Squire, Gary A. Smith and Samuel H. Barondes of the university's department of psychiatry at San Diego found that if mice were trained to run through a maze, and a chemical that inhibits protein synthesis was then injected into their brains, the mice recalled their training three hours later but forgot it six hours later. So the investigators conclude that protein synthesis in the brain is required for memory, not right after learning but several hours afterward. Now they report, in the March 16 *NATURE*, that by using another kind of training—teaching the mice to avoid shock—and then injecting the protein inhibitor into their brains, the mice forgot their learning only minutes afterward. "This suggests," the authors conclude, "that in some circumstances cerebral protein synthesis may be required for normal expression of memory within minutes after learning has begun."

## Cancer oncogene: Onward and upward

C-type (RNA) virus particles have been linked with many tumors in a number of animal species. C-type particles have also been observed in presumably normal cell cultures in the laboratory, which suggests that cancer virus genes might be part of the normal genetic makeup of living organisms and trigger cancer only under specific environmental influences. More support for this so-called oncogene theory is provided in the March 30 *SCIENCE*, by S. S. Kalter and his team at the Southwest Foundation for Research and Education in San Antonio. They observed C-type particles in normal human and monkey placentas at different stages of pregnancy.

C-type particles from these tissues, the authors propose, should now be isolated and cultured to see whether they harbor other characteristics of RNA cancer viruses, such as the reverse transcriptase enzyme and group-specific antigens.

# behavioral sciences

## Follow the leader

Traditionally, males have been vested with the leadership roles in society. Women's liberation groups have attempted to change the passive acceptance by women of such sex role ascription, but there are indications that these attempts have been less than successful. Marietta Coleman, David K. McElroy and Carol A. Whitehurst of the University of California at Riverside set up an experiment in which groups of three subjects participated in a game. After the game each person was asked to select the person who had acted as group leader. In mixed groups, women selected themselves or other women only 17 percent of the time. Men selected themselves or other men 50 percent of the time. The researchers, who observed group interaction through a two-way mirror, used objective criteria (number, duration and quality of interactions) to judge leadership. They noted that women were often leaders in an objective sense even though they were rarely judged so by themselves or the men.

## Marijuana accused of breaking chromosomes

LSD was accused of causing chromosome damage (SN: 6/3/67, p. 518), but when all the evidence was in the drug was found not guilty (SN: 7/31/71, p. 74). Now another drug has been indicted as the culprit in the crime of chromosome breakage. Noting that almost all LSD users are also marijuana users, Morton A. Stenchever of the University of Utah Medical Center in Salt Lake City says, "The blame that has been placed on LSD as a chromosome breaking agent may indeed have belonged to marijuana."

Researching this possibility, Stenchever tested 49 marijuana users and 20 controls who had not been exposed to any drugs or medications for six months prior to the study. The user group showed an average of 3.4 cells with broken chromosomes per 100 cells. The control group had the normal average of 1.2 cells with broken chromosomes per 100. This, says Stenchever, could mean that marijuana use is related to birth defects and cancer. The prosecution will now rest while the defenders of marijuana prepare their case.

## Instant replay

Instant replays have become an indispensable part of football watching. A similar technique might become an important part of studies in experimental, developmental and sensory psychology as well as in the fields of psychopharmacology and clinical neurology. William M. Smith of Dartmouth College has devised a video-disc recording and playback device that can delay the vision of a person's own behavior. He has found that this delay exaggerates what happens naturally.

In laboratory studies a subject wears a device that prevents direct vision of arms, hands and task area. The subject observes actions (such as writing) on a large television while Smith introduces varying amounts of delay in the camera feedback. Smith says even a small delay (one-thirtieth of a second) amplifies the slightest discoordination. In this manner the technique can be used to study the effects of drugs, fatigue and other forms of stress on visual-motor coordination. For instance, alcohol must be absorbed in substantial amounts before its effects are directly observable. Using the delayed vision machine, only a small amount of alcohol (or whatever agent is being tested) would be needed to obtain a sensitive measure of its effects.