BEHAVIOR

'That time of the month' for Ralph

Hormonal changes that appear to affect emotional states have historically been thought to occur mainly in women—primarily because men do not experience monthly menstruation. Now, the results of a University of Chicago study suggest that men may undergo monthly cycles that similarly influence their behavior.

In a two-month study of 24 married couples, psychologist Alice J. Dan reports that "men also show a lot of variability in emotional states and behavior when they are measured over a month's time." Twice a week, Dan collected information from each couple—seven of the women were taking oral contraceptives—on occurrence of depression, anxiety, hostility, pleasure and general levels of activity and performance of ordinary daily tasks.

While there were clear cyclical changes in women who were not taking the pill, overall variability in moods and behavior "turned out to be no different for women than men, and not significantly different between women on the pill and 'normal' women," Dan says. The psychologist suggests the results seriously question the long-held assumption that men are "steady state" as compared to women. The findings raise further questions about the role of hormones, she says.

Rather than acting as a producer of additional or "special" behavior changes, the monthly cycle may be a natural way of organizing energy patterns over time, says the psychologist. "Rhythmic change is undeniably a characteristic of all human experience," she says, "one that psychology is only beginning to explore."

Light-hyperactivity link challenged

Three years ago, photobiologist John Ott of the Environmental Health and Light Research Institute in Sarasota, Fla., reported that improper fluorescent lighting in schoolrooms could trigger hyperactivity in children and that lighting which simulates the sun's ultraviolet levels could reduce hyperactivity. His experiments and findings were so impressive to Chicago school-system officials that they embarked on a program of controlled experiments in classroom lighting and employed Ott as a consultant (SN: 8/14/76, p. 104).

Now, the first serious challenge to Ott's results have come out of the Laboratory School of the State University of New York at Stony Brook. K. Daniel O'Leary, coordinator of the child psychology clinic at the university, reports that his own eight-week study of hyperactive and disturbed first graders showed no increase in hyperactivity under standard fluorescent lighting, and no advantage in the lighting that simulates daylight.

Each child was measured daily to determine attention span and general task orientation and levels of fidgeting, motor activity and body movement. Lighting conditions were alternated for one week at a time between standard, "cool white" fluorescent system and a "high-color rendering" system that mimics daylight conditions. O'Leary reported his results at the recent annual meeting of the American Society for Photobiology in Puerto Rico.

Women Ph.D.s reach all-time high

The number and proportion of women earning Ph.D.'s reached an all-time high in 1976, reports the National Research Council's Survey of Earned Doctorates. Women received 23.3 percent of the granted doctorates last year, the highest proportion yet in a steady rise from the 10.8 percent figure in 1965. The greatest increases for women came in education, the arts, humanities and social sciences. The greatest declines for men were in the physical sciences and engineering. Men gained in social science and education.

BIOMEDICINE

Human cholesterol levels in decline

The average American's cholesterol level has dropped 5 to 10 percent since the early 1960s, and this decline may have helped bring about the dramatic decline in heart disease deaths noted since 1975. This good news was reported last week at a National Heart, Lung and Blood Institute conference.

The drop in cholesterol consumption has been noted only in recent months with analysis of data on 70,000 persons under observation at 12 lipid-research clinics launched by the institute in 1971 and 1972. However, the cholesterol drop may be mostly confined to persons with higher education and higher-paying jobs and to low-pay workers whose jobs involve strenuous physical labor.

Evidence shows that not only dietary changes but also exercise and a less stressful lifestyle can help reduce cholesterol levels in the blood.

A new class of neurotransmitters?

Opiatelike proteins in the brain that relieve pain and that alter various mental states and behaviors have been exciting medical researchers recently. Called enkephalins and endorphins, they all derive from a larger parent protein—beta-lipotropin (see p. 62).

What is the role of these proteins in the brain? Research reported in the June PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES strongly suggests that they are a new class of neurotransmitters, that is, chemicals that help one nerve pass an electrical impulse to another nerve.

Roger A. Nicoll of the University of California at San Francisco and George R. Siggins, Nicholas Ling, Floyd E. Bloom and Roger Guillemin of the Salk Institute for Biological Studies evaluated both enkephalins and endorphins for their effects on nerves in several regions of the rat brain. They found most nerves in the cerebral cortex, brainstem, caudate nucleus and thalamus were not inhibited by the proteins, whereas nerves in the hippocampus tended to be excited by them. Both inhibitory and excitatory nerve responses were blocked by the narcotic antagonist naloxone. Responsive nerves in a particular brain region correlated with the density of opiate binding sites known to be present.

"The effects of opiatelike peptides on neuronal activity demonstrated in the present study," the researchers conclude, "taken with biochemical and histochemical evidence for their existence in the brain, are consistent with the hypothesis that these peptides are neurotransmitters in the central nervous system."

Lens protein changes

The proteins in the lens of the eye are among the most stable in the human body. Yet these proteins change their structure during cataract formation and aging of the lens. Might some physicochemical process be responsible for the structural changes in these proteins? Evidence reported in the July 7 NATURE suggests that it might, specifically that amino acid changes from optically active to optically inactive chemicals may be the culprit.

One amino acid at least—aspartic acid—changes from an optically active to an optically inactive chemical during cataract formation and lens aging, Patricia M. Master and Jeffrey L. Bada of the Scripps Institution of Oceanography and J. Samuel Zigler Jr. of Duke University Medical Center have found. Such amino acid changes might well alter the conformation of the lens proteins they constitute and thus contribute to cataract formation and lens aging.

Optical changes in aspartic acid have also been shown to accumulate in human tooth enamel with age.