behavioral sciences

Psychological aspects of acupuncture

Acupuncture works but Western researchers are still asking how. Ronald Melzack of McGill University in Montreal has offered a physiological answer. He suggests that acupuncture needles trigger one part of the nervous system to "close the gate" on pain signals entering the brain from other parts of the nervous system. But this hypothetical gate has not been established as part of the human anatomy, argue Theodore X. Barber and John F. Chaves of the Medfield Foundation in Medfield, Mass. They suggest some psychological factors that might explain acupuncture's success.

Patients who are accepted for surgery with acupuncture, the psychologists say, strongly believe in its efficacy and are not fearful or anxious. The patients are usually exposed to special preparation and indoctrination prior to surgery. Barber and Chaves further note that the pain normally associated with surgery is less than is generally assumed. And the acupuncture needles, they say, distract patients from the pain of surgery. "It appears to us," they conclude, "that the success of acupuncture analgesia underscores the importance of psychological factors in the control of pain."

Variables of violence

Aggressive and violent tendencies have been related to a number of biological variables. Examples are EEG abnormalities, epilepsy, mental retardation, chromosomal abnormalities and neurological abnormalities. Psychiatrists have now correlated a number of medical and psychiatric variables with violence. Carlos E. Climent, Ann Rollins, Frank R. Ervin and Robert Plutchik studied 95 women prison volunteers at the Massachusetts Correctional Institution in Framingham. Their findings are reported in the September AMERICAN JOURNAL OF PSYCHIATRY.

Violence was rated on five scales: a self-evaluation questionnaire, the MMPI, rating by correctional officers, criminal history (type of crime) and length of prison sentence. Those who scored high on all five variables were considered to be violent. Nine variables were found to be correlated with this violence. Nonmedical variables included easy access to weapons, loss of one or both parents, homosexuality and severe parental punishment. Nearly significant variables (those correlating with four of the five measures of violence) were divorce of parents, violence in the family, suicide attempts, menstrual problems, head injury after the age of ten and increased use of medically prescribed drugs.

Indifference to TV violence

Televised violence has been accused of being a model for increased personal aggression. The evidence for this is inconclusive, but physiological evidence now suggests that excess televised violence might lead to an attitude of indifference to and unconcern for the victims of violence, say psychologists in the September JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY.

Measures of autonomic activity (such as galvonic skin response) were taken before, during and after 80 young boys were exposed to filmed violence. Half of the subjects had regularly watched television for more than 25 hours a week. The others had been exposed to less than four hours a week for the two years prior to the experiment. The high-exposure boys showed significantly less arousal on all measures. This, say the authors, suggests a desensitization to violence and probably a turning off of the normal emotional responses to violence.

environmental sciences

The first recycled house

A group of private American corporations, led by the Reynolds Aluminum Co., have provided materials to build the country's first almost completely recycled house, a four-bedroom tri-level dwelling in a fashionable Richmond, Va., suburb. With concrete containing fly ash collected in air pollution control equipment, a driveway made from reclaimed rubber tires and glass bottles gathered from California parks and joists and framing of aluminum from recycled beverage cans, the new house is expected to provide new ideas and new incentive to companies looking for useful ways to dispose of recycled materials. In addition to aluminum and glass, waste paper and wood products were used extensively, particularly in interior paneling made from recycled paper with vinyl covering. Quarry tailings were used to make brick; steel mill slag, to make insulation. W. B. Moore, Reynolds' vice president for architectural and building products, says the costs of the building materials were, or could be, comparable to conventional materials. He anticipates "a huge volume of recycled materials will be used by the construction industry."

Liquid gas for Moscow's trucks

While American auto manufacturers try to find ways to make the gasoline engine less polluting, the Soviet Union is experimenting with alternate fuels, principally liquefied natural and synthetic gas. Beginning next year, Moscow's 35,000 trucks will be converted to liquid gas, with similar measures instituted in other major Soviet cities. Moscow taxicabs will also use the new, cleaner fuel, and after evaluating the performance of these commercial vehicles, the Soviets hope to begin mass production of gas-powered cars for private use.

The Soviet Union has had an active environmental program for several years, and Moscow is already one of the world's cleanest major cities, having reduced sulfur pollution by around a quarter to a third in the last 15 years.

Waste paper to clean up oil spills

The fibers of waste paper have been used successfully to clean up oil spills, according to a report in the Aug. 24 SCIENCE. J. Fred Oesterling and Leo A. Spano of the U.S. Army Natick Laboratories say the critical element is fiber size, which depends on the milling process used to pound the paper down to fiber. Maximum absorbency comes from fibers 0.01 to 0.1 millimeters in diameter and 0.75 to 10.0 mm in length. When spread over a floating oil slick, these fibers can absorb some 28 times their weight in oil. They absorb oil much more readily than water—the opposite has been true for some of the substances used to clean up previous oil spills. The process has been successfully tested in a small lagoon with a man-made oil spill, and the Army plans further large-scale tests.

First solar-heated office building

The new headquarters of the Massachusetts Audubon Society will be heated and cooled by solar energy. Designed by Peter Glaser of Arthur D. Little, Inc., the Lincoln, Mass., building will use solar energy to provide 60 to 85 percent of required heat and will have the capacity to store energy to last through three cloudy days. Although solar heating of smaller buildings has been tried for several years, the society believes this will be the first office building to use the technique to provide most of its heating and cooling.