

Testosterone levels under stress

The importance of sexual and social stimuli in regulating testosterone secretion has been demonstrated in monkeys (SN: 4/29/72, p. 281). Leo E. Kreuz, Robert M. Rose and J. Richard Jennings of the Walter Reed Army Hospital in Washington now report similar findings in a group of 18 officer candidates.

By design, the first 12 weeks of the Army's 23-week intensive officer candidate training program puts the men under intensive psychological pressure. During the final four weeks there is much less pressure and the candidates enjoy more status and privileges. Plasma testosterone was monitored during the 3rd and 22nd weeks. Testosterone levels were lower, by an average of 32 percent, during the more stressful period. During the final period testosterone levels were comparable to those of control groups in non-stress situations. "This study," the researchers say, "represents the first report of the potential effects of chronic stress on gonadal secretion in humans by direct measurement of plasma testosterone levels."

Alpha waves produce boredom

A group of 31 volunteers were tested for alpha wave production (SN: 11/6/71, p. 314). In a four-hour period, using auditory feedback, they were able to produce an average of 51 percent alpha rhythm. The seven highest alpha producers were retested for a period of 12 consecutive hours. They averaged 70 percent alpha. When asked to keep alpha at a minimum during another 12-hour period, the group averaged 11 percent alpha.

Observations made following the experiments led the researchers to conclude that consciously sustained alpha wave production is not particularly stimulating to the individual. The subjects reported boredom rather than psychological stimulation. The researchers also concluded that any psychological benefits from the use of alpha-rhythm feedback machines now on the market may not be due to the alpha rhythm itself, but rather to the placebo effect resulting from the application of electrodes to the scalp.

Quentin R. Regestein of Harvard University Medical School reported these results at the recent meeting of the American Psychosomatic Society in Boston.

Heroin-maintenance proposal

One way to reach hard-core heroin addicts is to offer them free heroin. This would get them off the streets and bring them into contact with rehabilitative services. It would also cut into the illegal sale of the drug. Critics of such a plan cite the failure of a similar British program and question the morality and efficacy of heroin maintenance.

The Vera Institute of Justice in New York City feels that heroin maintenance does have some possibilities; it proposed last week a large-scale, long-term experiment to prove the point. The four-year experiment would gradually select 130 addicts who had failed on methadone maintenance programs. Each would be maintained on heroin, under close clinic supervision, for up to one year. The results would be compared to results from a similar group of addicts being maintained in a special methadone program. The New York City Mayor's Office has appointed a committee to review the proposal.

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MIF: Role in transplant rejection

Microbiologists are in disagreement over what actually happens when lymph cells, one of the body's main defenses against foreign objects, attack skin tissue from a transplanted organ. At the recent annual meeting of the American Society for Microbiology, R. J. Siebeling of Louisiana State University presented further evidence for the role of a chemical known as migrating inhibition factor (MIF) in lymph-cell rejection of foreign tissue.

Siebeling took donor skin tissue from guinea pigs and prepared soluble antigen, or foreign substance, from it. He had other guinea pigs which had already rejected donor tissue, and so were hypersensitive, or immune, to it. Siebeling took some immune cells from the latter group of animals and placed them in a test tube. He then placed antigen from the donor tissue into the test tube, thereby confronting the immune cells with antigen. As expected, the immune cells reacted with hostility, and the sign of their hostility was the production of the chemical known as MIF. All MIF is known to do in the test tube is keep macrophages, scavenger cells of the body, from migrating throughout the solution. But in the real-life situation, many microbiologists suspect that lymph cells give off MIF to recruit macrophages—to solicit their help in fighting off a foreign invader. Siebeling's work reinforces this hypothesis.

A serum against pregnancy

There have been attempts to influence fertility by immunization against sperm, but the results have not been conclusive. Erwin Goldberg and Jerrold Lerum of Northwestern University report in the May 12 *SCIENCE* on the use of an antibody that can disrupt pregnancy.

The isoenzyme of lactate dehydrogenase (LDH-X) is found only in the male reproductive system. A preparation of LDH-X was obtained from the testes of mice and used to induce antibody formation in rabbits. A serum containing the antibody was taken from the rabbits, deactivated by heat and administered to fertile female mice. Those who received it within four days after coitus had a significantly reduced number of pregnancies. The researchers believe the antiserum acts primarily by interfering with implantation of the egg or by causing abortion after implantation. The effects were temporary and there were no obvious side effects.

Smoking and thrombosis

The blood's ability to clot sometimes backfires, as in thrombosis, when a clot forms in the arteries and prevents flow of blood to the heart. Many studies have reported a relationship between smoking and coronary heart disease, so Rosemary Hawkins of the Huntington Research Centre in England decided to investigate the effect of smoking on the activity of platelets, structures in the blood that play a major role in clotting.

She measured rates of platelet aggregation induced by adenosine diphosphate in blood from smokers and non-smokers. Smoking did increase platelet aggregation, though some of the observed changes occurred only immediately after smoking while other changes were apparent in heavy smokers even during a nonsmoking period. The blood coagulation time of blood of smokers was significantly shorter. She concludes in *NATURE* that smokers run a greater risk of thrombus build-up.