

## Malnutrition of childhood emotions

Chronic but relatively mild malnutrition in infancy causes serious behavioral and emotional deficits in children, according to a study conducted in three rural villages in Guatemala over the past several years. Nourishment during the first two years of life seems furthermore to play a greater role than prenatal nourishment in social and emotional development.

According to Harvard University psychologist David E. Barrett, children from a chronically malnourished population were given either a high- or low-calorie food supplement from before birth to age four. When their social, emotional and intellectual development was evaluated a few years later, it was found that the children on the high-calorie diet were more

active, more socially involved with their schoolmates, and more apt to show emotion — both joy and anger. Although prenatal nutritional supplement did seem to account for some of the increased activity at school age, Barrett says, adequate nutrition during early infancy appears to be especially crucial for normal emotional development. The results were reported in the July *DEVELOPMENTAL PSYCHOLOGY*.

Barrett — who conducted the research with psychologist Marian Radke-Yarrow of the National Institute of Mental Health and Robert E. Klein of the Institute of Nutrition in Guatemala — also found that despite the emotional deficits of the children receiving low-calorie supplements, there was no apparent lag in intellectual development. Severe malnutrition is known to cause significant cognitive retardation and, according to Barrett, these new findings suggest that cognitive and emotional development may be mediated

in different ways. "It may be that severe malnutrition has strong enough effects on the central nervous system to affect information-processing and other mechanisms involved in higher cognitive skills," Barrett told *SCIENCE NEWS*. "What we're saying is that there may be some kind of milder stress working on the nervous system." The researchers did find that the undernourished children showed deficits in attention, and it is likely that attention plays an important role in early social interaction, he says. But the process is probably more complex than that, he adds; it is probable, too, that the mother, who is also undernourished, treats a malnourished infant differently than a well-nourished child gets treated.

The kind of mild undernourishment under study in the Guatemala project is not confined to developing nations, Barrett says; it is probably not uncommon even in developed nations, but its subtle behavioral consequences may go unnoticed.

According to Lehigh University psychologist Josef Brozek, who has studied the effects of food deprivation on adults, Barrett's findings confirm what he discovered by surprise in his own work — that tests of intelligence and cognitive skills simply cannot measure the subtle slowing down that results from prolonged malnourishment. "The engine is there and if you whip it up it can perform, but the spontaneous activity changes profoundly," Brozek says. —*W. Herbert*

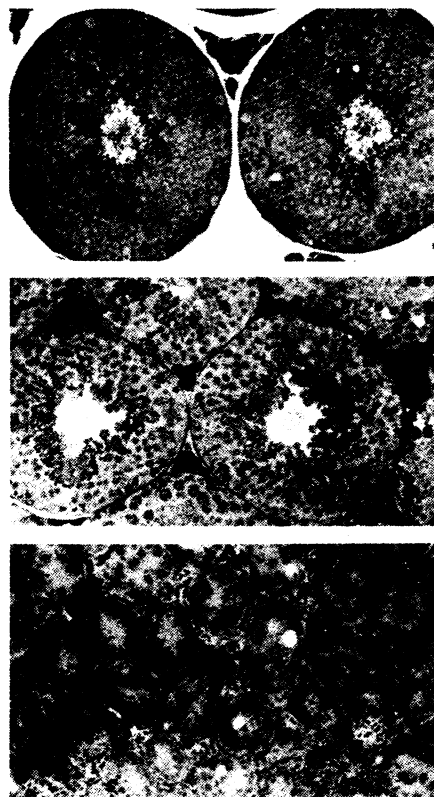
## Brain tissue transplants: More success

Mammalian brain tissue transplants can improve bodily function or behavior, two studies have suggested (*SN*: 5/12/79, p. 308; 12/27/80, p. 389). Now a third study supporting this view is reported in the July 29 *NATURE* by Dorothy T. Krieger of Mount Sinai Medical Center in New York City and colleagues.

Krieger and her team studied male mice deficient in gonadotropin releasing hormone (GnRH), a hormone made by the hypothalamus in the brain and a master switch that controls sex hormone production and sexual function in the body; these mice received transplants of hypothalamic tissue that produces GnRH. The researchers also studied male mice deficient in GnRH and getting no treatment, male mice deficient in GnRH and getting a transplant of brain cortical tissue, and healthy mice. The mice were then compared for the presence of GnRH in their hypothalami as well as for sexual function.

GnRH content was greater in the hypothalami of those GnRH-deficient mice that had gotten hypothalamic grafts than in the hypothalami of GnRH-deficient mice receiving no treatment or those receiving cortical transplants. (It did not, however, approach the GnRH levels in the hypothalami of healthy mice.) In addition, testes from the GnRH-deficient mice treated with hypothalamic transplants (middle illustration) showed sperm production comparable to the testes of healthy mice (top illustration), while testes from GnRH-deficient mice getting cortical transplants (bottom illustration) revealed the same low sperm production as did testes from untreated GnRH-deficient mice. Thus hypothalamic tissue transplants appear capable of largely correcting a GnRH deficiency in mice.

Krieger believes it is premature to apply



these particular findings to humans. However, the scientists who performed the first two studies suggesting that mammalian brain tissue transplants can improve function or behavior — Richard Jed Wyatt of St. Elizabeth's Hospital in Washington and colleagues and Don Gash of the University of Rochester School of Medicine and Dentistry and co-workers — have now extended their transplant experiments from rodents to primates in hopes that brain tissue transplants may eventually become clinically useful. —*J. A. Treichel*

## NRC gives breeder a boost

After two unsuccessful attempts earlier this year, the Department of Energy has gained approval from the Nuclear Regulatory Commission to begin clearing a 290-acre site for construction of the controversial Clinch River Breeder Reactor in Oak Ridge, Tenn. By waiving the normal licensing requirement, the 3-1 vote allows DOE to begin site preparation as early as this week. The Commission must still approve installation of the reactor itself, however.

The Clinch River project was authorized by Congress in 1972 to be a demonstration of breeder reactor technology. But public protest and opposition by the Carter administration (*SN*: 2/2/80, p. 70) have delayed it. Controversy over breeder technology stems from the fact that uranium-238 converted to plutonium-239 in these plants can be reprocessed for use in nuclear weapons as well as reactors. The Reagan administration has made expedition of Clinch River a major energy priority. "Acceleration of the project will result in substantial cost savings," said Shelby T. Brewer, assistant secretary for nuclear energy. Lawyers from the Natural Resources Defense Council and Sierra Club say they will ask the court to stop this first critical construction step. □