

Human hibernation

Brain research raises the issue

by Patricia McBroom

The hypothalamus is a group of brain cells smaller than a prune, but with so many functions it has been called the mind-body crossroads.

Here are located the food, water and sex drives, as well as centers which signal fulfillment of those needs. Here is where sleep is turned on and off, where pleasure is experienced, where visceral reactions are controlled and the body temperature is maintained.

Stimulate the hypothalamus in one area and an animal will eat, no matter how little food he needs. Stimulate other areas and he will drink, sleep, make love, muse in pleasure or show all the signs of rage.

Heavily supplied by information from the major emotional centers on one hand and acting as the moderator of body functions on the other, the hypothalamus seems to be the point where physical activity is integrated with emotional.

Not surprisingly, scientists have been

the second lowers fever and compensates for heat.

Although both these chemicals are involved in activity throughout the brain they apparently act on temperature by triggering separate circuits in a two-millimeter cube in the hypothalamus. One circuit leads to the body's heating mechanism while the other leads to cooling.

Dr. Robert D. Myers, a physiologist at the Purdue University Laboratory of Neuropsychology, says his team has altered body temperature in monkeys as much as 3 degrees C. in either direction with the injection of serotonin or norepinephrine into the hypothalamus.

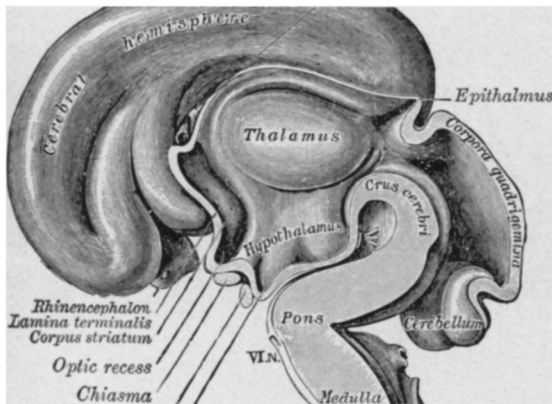
The experiment requires considerable care, says Dr. Myers. If the chemical injection is off by one millimeter, it causes the animal to eat and does nothing to temperature. Also, he says, the side effects make this method of temperature alteration useless for practical purposes. However, Dr. Myers believes substitute chemicals will be found that will have specific action on body temperature and not involve emotions. "I think all the information at present points to that possibility."

Raising body temperature, on the other hand, might be very useful to man in an abnormal environment. "It may be possible," said Dr. Myers, "to modify and then stabilize temperature at slightly higher or lower levels so that an uncomfortable environment would become more tolerable."

Strangely enough, not all animals react the same way to serotonin and norepinephrine injections. In the rat, cat, dog and primate, serotonin raises temperature, but in the rabbit and possibly the goat and sheep, the two chemicals reverse their effect. Since no experiments have been done on man, it is not known how he would react.

Dr. Myers has no immediate plans to try the experiment in man until much more information is gathered. But when that point is reached, he says, the implications will be profound.

"If you can hibernate a human and send him to Mars, you can hibernate him on earth," says Dr. Myers. However, the mystery of the intricate interplay between emotions and body functions is one that will not be quickly solved. Right now, no one has the slightest idea what kind of a man could wake up from a deep sleep lasting months or years.

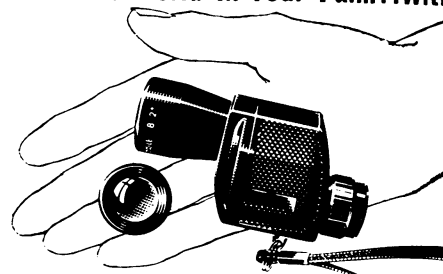


At the crossroads of the brain.

giving considerable attention to this small brain structure. From these investigations recently, a team of English and American scientists learned how to alter body temperature through the hypothalamus. They haven't yet found a way to weed out emotional side effects from the experiments, but they have been able chemically to raise and lower temperature, thereby pointing the way to a possible means of inducing hibernation in man.

Body temperature is maintained precisely at 98.6 F. by the interplay of two brain amines called serotonin and norepinephrine. The first brings on fever and keeps the body warm in the cold;

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