

# Throwing Light on the Winter Blues

It is well known, especially among people who live at colder latitudes, that the vernal equinox has a psychological dimension. As the days get perceptibly longer, the "normal" winter doldrums begin to subside. But for some people the winter brings far more serious problems; the coming of spring is accompanied by a dramatic elevation of mood that, according to National Institute of Mental Health researchers, may signal recovery from a disabling brand of depression that is linked closely to changes of season.

The NIMH psychiatrists — Thomas Wehr, Norman Rosenthal, J. Christian Gillin and David Sack — have nearly completed the first year in a longitudinal study of what they call "winter depressives," and they are convinced that they have identified a clinical syndrome previously undocumented in the literature. And although they caution that their data are preliminary, the researchers say that they are encouraged from their first winter's experience that winter depressives can be effectively treated — not with mood-altering drugs or psychotherapy, but by using artificial light to mimic the longest day of the year.

The idea of seasonal mood swings is not new. The German diagnostician Emil Kraepelin described springtime mania at the turn of the century and, according to Wehr, epidemiological data indicate seasonal patterns for depression. But the NIMH study is the first to examine the biological and behavioral characteristics of patients who identify themselves as predictable winter depressives. When the researchers recruited patients for their study through a local newspaper, Rosenthal says, they suspected that they were dealing with a rare disorder. They were surprised, however, to receive thousands of responses from people claiming to suffer from depression every winter. They were equally surprised by the uniformity of symptoms these people described: they became lethargic as autumn turned to winter; they didn't want to go out or talk to people; they were unmotivated at work, lacking ideas and finding it difficult to concentrate. But most notable was that, unlike many depressives who have difficulty sleeping, winter depressives report going into a kind of hibernation—sleeping ten to 14 hours a day and napping frequently.

Wehr had become interested in winter depression because of his research on biological rhythms and behavior. Animal studies, he explains, show that seasonal behaviors such as migration, reproduction and hibernation are triggered by changes in day length, and animals have been successfully tricked into certain be-

haviors out of season by using artificial light to mimic seasonal change. It was also known that light, acting through the retina and the hypothalamus, affects animals by suppressing the secretion of melatonin, a hormone normally secreted by the pineal gland at night. Although the precise function of melatonin is mysterious, it is suspected of playing a role in animals' seasonal rhythms. Wehr and his colleagues became intrigued by the possible connections between mood, light, melatonin and the biological clock — which is known to function abnormally in some depressives.

The researchers have been studying 30 winter depressives since last summer. At that time they were all well, Wehr says, and during the fall the majority did become depressed as they said they would. Throughout the year, the researchers have been collecting data on the patients' sleep patterns, motor activity, body temperature, thyroid and adrenal activity and melatonin secretion. And although the biological data are not yet fully analyzed, Wehr and Rosenthal believe they are observing a syndrome quite different from normal wintertime funk. Most striking, Wehr says, is that patients who typically sleep five or six hours during summer may double that in the winter; their motor activity is significantly retarded; and with spring they often experience a burst of energy comparable in degree to a mild clinical mania.

But the most encouraging finding, Wehr and Rosenthal agree, is the apparent therapeutic value of light. Unlike animals,

humans are generally tolerant of light — that is, human melatonin level is not especially responsive to variation in lighting. Wehr wondered whether winter depressives might be peculiarly sensitive to light and darkness, and he began treating his subjects with light, filling their rooms with 20 times the normal room lighting for three hours every morning and night. In effect, Wehr explains, they were extending the patient's day, mimicking a summer day. Although the researchers are cautious about their early results, they say that the light seems to have a consistent therapeutic effect and that some patients have responded dramatically to the summer charade. A different kind of light, thought to be below the threshold for affecting melatonin secretion, did not produce comparable improvement in control subjects' depression.

Wehr and Rosenthal warn that there is some difficulty in interpreting the preliminary findings. They do not know whether it is the duration or the total amount of light that is important; nor do they know whether the reversal of depression might have resulted from unavoidable, light-induced sleep deprivation — which is known to ameliorate depression. And Wehr concedes that these patients may simply represent an extreme development of normal human changes through the year (traveling far south also improved depression in a few cases). "But I would emphasize," he says, "that the changes are extreme. These people are impaired."

— W. Herbert

## Blood-lead levels show dramatic drop

A 36.7 percent decrease in the average level of lead in blood of a representative U.S. population sample reflects a decline in lead used in gasoline production between 1976 and 1980, according to a Centers for Disease Control report released last week.

Analysis of data from the Second National Health and Nutrition Examination Survey (SN: 2/6/82, p. 88) showed overall blood-lead levels declined from 15.8 to 10.0 micrograms per deciliter. Decreases were found for all races, ages and both sexes tested in the survey. At the same time, lead used in gasoline production went from 190,000 to 90,000 tons. Vernon Houk, acting director of the Center for Environmental Health in Atlanta, says he knows of no other factor that would account for the drop in blood-lead levels. "We've looked at every possibility that we could possibly look at," he told SCIENCE NEWS.

However, the report notes, "Although the decrease in mean blood-lead levels

was dramatic, the problem of pediatric lead poisoning in the United States has not been solved." Houk says metabolic changes can be seen, particularly in children, at blood-lead levels between 10 and 15 micrograms per deciliter. This means about half the children in the population still have blood-lead levels higher than ones at which metabolic effects are detected. However, young children living in environments with high-dose sources of lead, such as leaded paint, now have a greater margin of safety.

The new data are sure to add fuel to the controversy over the Environmental Protection Agency's recent proposals to ease restrictions on amounts of lead in gasoline (SN: 2/27/82, p. 132). The EPA has scheduled public hearings for April 15-16.

Houk says the planned reduction of lead in gasoline should continue. "We demonstrated that it works," he says. "We should not retreat and allow more lead to be added to gasoline." □