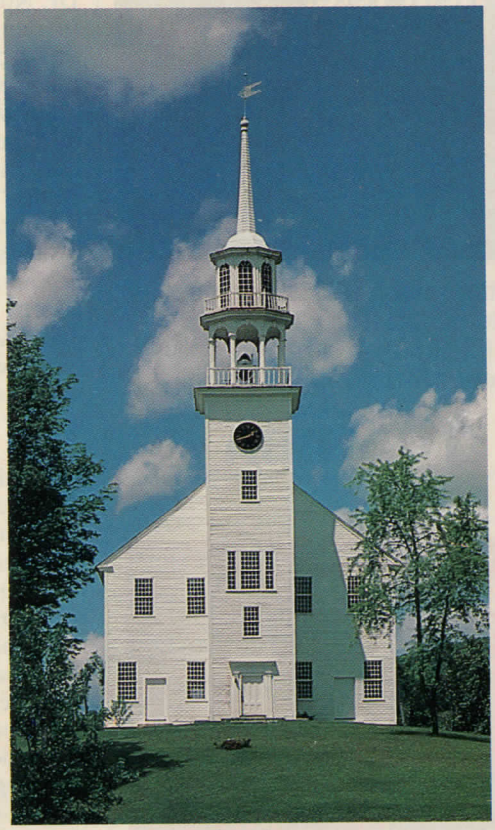
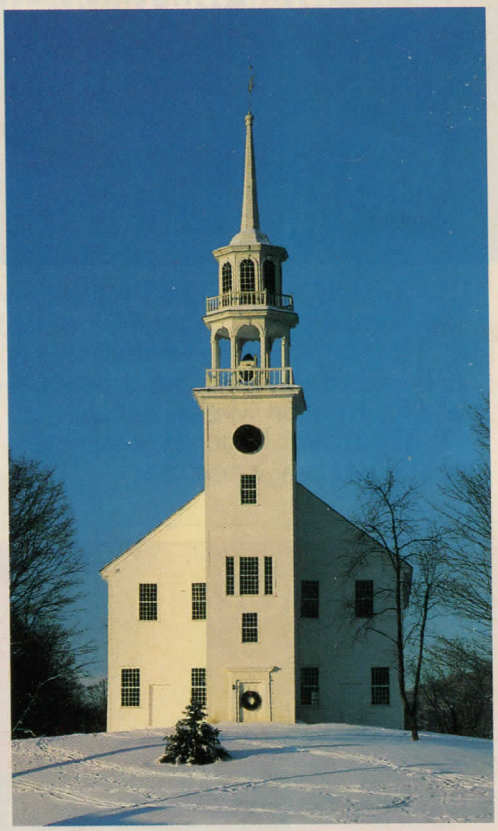
BY ANNE CASSIDY

If your humor plunges with the temperature, don't blame paranoia. And don't fret. There are remedies.

MOOD LIGHTING





It's the end of a glorious fall day, and the sun turns the sky from blue to orange to violet. There's only one problem: its's 4:45 PM, and you're watching this brilliant sunset from your office window. It was dark when you drove to work this morning, and will undoubtedly be the same when you leave.

From November through February, sunlight may seem like a distant memory. As we become more irritable and restless and start to dream wistfully of tropical beaches, we may begin to think that there's more to light than meets the eye. And we're right. Sunlight has a profound effect on our moods and health. New research shows that those of us who don't get enough of it may tire more easily, be less productive, have difficulty absorbing calcium, and even be susceptible to a "winter depression." Our sophisticated, artificially lighted environments may free us from dependence on natural light, but that doesn't mean we thrive without it.

Some people are more sensitive to light than others, of course. There are those who cringe when exposed to overhead lights, as if they were being subjected to the bare glare of an interrogator's bulb; those who claim to have a subterranean streak and prefer to relax in a room lit only by a couple of dim, well-shaded lamps or a handful of candles; those who indulge their dramatic natures with spotlights or track lighting; and those who prefer the best light of all—nature's own—and are constantly throwing open the curtains and pulling up the blinds.

The feelings evoked by different sorts of lighting are not simply products of our imaginations. The more scientists learn about our responses to light, the more they realize that human beings are not immune to the daily and seasonal rhythms that tell other animals when to sleep, breed, and hibernate. It's just that our information is processed in a more complicated way. We don't get light messages directly, as frogs and other amphibians and reptiles do (through what is called the "third eye," an area of light-sensitive pineal tissue on the top of the head); instead, the light enters our eyes and produces a complex set of nerve impulses. These travel to the pineal gland, a tiny organ located between the two hemispheres of the brain (which the philosopher Descartes once believed was the seat of the rational soul). The function of the pineal gland is to secrete melatonin, a hormone known to induce sleep and inhibit ovulation in laboratory animals.

For many years, scientists have known that in most mammals melatonin is released when it is dark and suppressed when it is light. It wasn't until 1980, however, that Dr. Alfred Lewy of the Oregon Health Sciences University in Portland proved that the same thing happens with humans. But it takes a very high intensity of light to lower melatonin levels in the human body—an intensity achieved by natural, outdoor light, but not by most levels of artificial, indoor light. This means that even though our eyes perceive artificial light, our bodies may still sense real darkness. Although this may not make much difference during the long days of summer, in the winter, when we get precious little sunlight,

PHOTOGRAPHS: FPG/FRED M. DOLE

people especially sensitive to melatonin levels can become sleepy, irritable, withdrawn, given to carbohydrate cravings, and depressed enough to seek psychiatric care. This phenomenon is called seasonal depression, or seasonal affective disorder (SAD).

Another prominent light researcher, Dr. Norman Rosenthal of the National Institute of Mental Health (NIMH), exposed SAD patients to high doses of full-spectrum light. (He used a product called Vita-Lite, a patented fluorescent tube manufactured by the Duro-Test Corporation that contains a balance of all the "rainbow" colors, plus infrared and ultraviolet rays). By giving these patients a dose of bright light at the beginning and the end of every day—in effect, extending the short winter day—Rosenthal found that he could relieve their depression within only two to four days of treatment, far more quickly than any medication.

Who is most likely to suffer from seasonal affective disorder? Researchers have found that women, especially those in their thirties and forties, are anywhere from two to four times more likely to experience this disorder. Some scientists speculate that this is due to a melatonin-ovulation connection, but there may be other reasons as well. For example, women are known to seek help more frequently for other forms of depression, so there may simply be more *reported* cases among women.

SAD strikes throughout the population, including youngsters. In a recent study, Rosenthal treated six children, ages 6 to 14, who had been sleepy, anxious, irritable, and unable to concentrate on schoolwork during the fall semester (when the days were growing shorter). Five out of the six were helped considerably by the light treatments.

The closer you live to the equator, or the more you work or play outside during the winter, the less likely you are to have SAD. (Then again, you may have chosen your job, hobby, or home partly because you do crave sunlight more than the average person.) Researchers still aren't certain what makes some people more sensitive to light and melatonin levels than others. One theory suggests that the biological clocks of SAD patients are slightly out of sync. Lewy believes that "owls" (people who go to bed late and get up late) are more

likely to suffer from SAD than "larks" (those who are early to bed and early to rise). It has been shown that people who change their work schedules and begin sleeping in the day and working at night take from 5 to 10 days to adapt to the new rhythms of the hormone cortisol, which usually peaks in the morning and ebbs in the evening.

If these seasonal depression symptoms sound uncomfortably familiar, though perhaps a bit extreme, don't panic. It may be perfectly normal to feel a tinge of SAD-ness as the days grow shorter. "There's a possibility that many people suffer from a mild form of light sensitivity," says Dr. Daniel F. Kripke, a member of the Department of Psychiatry at the University of California in San Diego. "The public response to press stories about winter depression and the association of winter's dreariness with gloomy moods in literature indicates that subclinical winter depression could be quite prevalent." Shakespeare might have agreed: in one play he wrote, "Now is the winter of our discontent," and in another, "A sad tale's best for winter." Another sixteenth-century writer, Thomas Nashe, also sounded such sentiments: "From winter, plague, and pestilence, good Lord, deliver us!"

But there's more to winter than lowered light. Lewy cautions against assuming that seasonal lethargy is due entirely to lack of exposure to light. "It's not that simple," he points out. "Winter is colder, and you get less exercise."

Regardless of the number of people who would actually be diagnosed as having SAD, however, plenty of people *think* they are influenced by winter's lack of light. When NIMH ran a small, inconspicuous ad in the *Washington Post* asking for SAD volunteers to take part in one of their first lighting and mood studies, 3,000 people responded.

Light research is new enough to raise as many questions as it answers, and scientists are just beginning to understand the biological effects of light. They're discovering how light therapy can help in treating psoriasis, jaundice in newborns, and some forms of leukemia, and can even affect our genetic material. Studies are also being conducted on jet lag and on how our sleep-wake habits—whether we're "larks" or "owls"—affect the way we use daylight

in general. "If you're an owl and you'd like to change that, try to get light in the morning," Lewy says. "If you're a lark, try to get more light in the evening." The same principle can be applied to help alleviate jet lag: west-east travelers should try to get more light in the morning and east-west travelers should get more light in the evening when they reach their destinations.

It is ironic that all this new information has emerged at a time when energy- and money-saving practices have brought about office light levels so low, as far as most parts of the spectrum are concerned, that some researchers claim we work in a perpetual "twilight zone." Certain indoor lighting levels are recommended for offices and public places, but these are based purely on visual factors rather than medical ones. Dr. Richard J. Wurtman, a professor of endocrinology at MIT and the dean of light research, reminded scientists of this last year at the first conference ever organized on the medical and biological effects of light: "The fact that we routinely live and work under less than a *hundredth* of the intensity of natural outdoor light is an accident of history. . . . I would not be surprised if future studies showed that health, as well as mood and productivity, would be improved by doubling and tripling the usual indoor light levels." His statement is supported by a survey conducted by Louis Harris Polls for the Steelcase Company. Employees ranked good lighting number one out of 12 factors that contribute to a good office environment.

Artificial light is usually either incandescent (at home) or fluorescent (at the office)—and there's a good reason why we feel "warmer" with the former. Incandescent light draws most of its radiance from the red end of the visible spectrum, so it gives off a warm glow; the bulbs are, in fact, hot to the touch. Most fluorescent tubes, on the other hand, are "cool white" and emit light primarily from the yellow-green part of the spectrum. Cool-whites are cheap sources of illumination; they produce more radiance per watt of electricity. They also give our skin a greenish tint. If you apply makeup under a cool-white fluorescent, you're likely to go overboard on the blusher. But there are other kinds of fluorescent tubes—warm whites, clear, frosted, and many

others—that are not as harsh. Best of all are the full-spectrum fluorescent lights such as Vita-Lite, which emit light from across the spectrum.

Apart from the melatonin connection that has made so much news lately, what makes natural light—or artificial light that most closely approximates natural light—so healthy? Think of sunlight as a nutrient, something the body needs just as it needs water or food. Human beings evolved in the bright climates of Mesopotamia and Egypt, and they suffered adverse effects when they moved north to colder, darker regions. There, people received less of the ultraviolet radiation that helps the body synthesize vitamin D and absorb calcium. And their exposure to light was reduced, which affected the functioning of the hormones that regulated their body temperatures, the amount of physical activity they could perform without growing tired, and even the amount of food they needed to eat.

Modern-day research confirms that these early humans may not have made the best choice by moving north. Elderly people who spend most of their time indoors in the winter, for example, have been shown to absorb only 40 percent of the calcium in their diets because they're not getting the ultraviolet rays needed to stimulate absorption. In two different studies, students and athletes showed less fatigue and more mental alertness when they exerted themselves under full-spectrum rather than other kinds of artificial light.

Most of these adverse effects from lack of light aren't immediately life-threatening, of course, and certainly the invention of incandescent and fluorescent lighting has made possible numerous health, medical, and other advances. Jim Nuckolls, director of lighting studies at the Parsons School of Design, says that so far the new light research isn't conclusive enough to make us redesign all our buildings or re-illuminate all our houses. After all, he says, "In the dark ages (which were really the bright ages), people got plenty of light and they died in their twenties. In the industrial era, people were shut away in factories all day and they died in their forties. Now that we're all working in offices under fluo-

CONTINUED ON PAGE 114

CONTINUED FROM PAGE 64

rescent lights, we're dying in our seventies and eighties."

Above all, the light research of the last five years reminds us that artificial light is a tool that we can modify for our own benefit. And we should never forget the importance of the natural light that we were meant for, especially in the winter. Going for an early-morning walk or run may lift your spirits for the rest of the day. If you work indoors all day, your lunch hour is the perfect time to take a "light break," especially in winter when ultraviolet is only one-fifteenth as strong as summertime rays.

Remember that the benefit we receive from light depends on three factors: its intensity, how long we spend in it, and whether we're receiving the full spectrum. Most office lighting is geared only to getting the task done; much of our lighting at home is dim, indirect, or both. Short of knocking windows in every outside wall and peppering ceilings with skylights, the best we can do is to put full-spectrum lights in the kitchen, bedroom, or office or any other room in which we spend a lot of time. (Full-spectrum lights are rather expensive, so it would be quite an investment to install them everywhere.) At the very least, we should make sure that indoor lighting—especially in a fluorescent-lit office—is as pleasant and balanced as possible. Choose a fluorescent tube other than cool-white, or warm up the fluorescent light with incandescent lighting. Nuckolls recommends using an incandescent arm lamp that can be moved to provide illumination wherever you need it. Take maximum advantage of any windows you do have by moving your desk, couch, or chair as close to them as possible. And whenever you can open a window, do so, because glass stops most of the ultraviolet rays.

Finally, consider color. Walls and ceilings should be painted a light color to reflect light. But flinty blues or whites can make a room seem aloof and cold. Warm hues such as orange, red, and yellow, create a pleasant glow and are bright antidotes to winter gloom. Be careful, though: an all-red room might not be conducive to either work or relaxation. Studies show that in addition to stimulating pleasant or unpleasant feelings, color can actually affect our pulse and breathing rates. Blue consistently evokes feelings of relaxation and helps to calm anxieties; red revs people up to a high pitch of tension and excitement. Keeping that in mind, choose a color you feel comfortable with. Use a bright color to liven up a room that's a bit dimmer than you would like it to be and to magnify what light you do have.

Light, after all, is made of color—and when you appreciate one, you're savoring the other, too. Each season has its color and light cycles: the subtle russets of autumn, the stark whites of winter, the newborn yellows of spring, and the vivid greens of summer. But keep in mind that, although each shade has its season, we need light and color all year long.