from Ray Peat's Newsletter (Feb, 1986)

Inhibition and Vitality. In the Achilles reflex test, slow relaxation of the calf muscle is used to demonstrate the low metabolism of hypothyroidism. In the high energy person, relaxation is instantaneous. This is a general principle for the brain and other tissues: the high energy state is relaxed. Epilepsy is an example of a very low energy state of brain cells. Insomnia is a low energy state, and is usually cured by the right dose of thyroid hormone, with adequate glucose and other nutrients. Insomnia is extremely common in aging people, and is the main problem at menopause. Inflammation is another example of a low energy state. Specific patterns of symptoms can be produced by reflexes, and these reflexes can be stuck in place by an energy deficiency. Focussed activity and an alert readiness to respond are prevented by a low energy state, which can cause us to get stuck in inappropriate activity, ranging from worry to "auto-immune" conditions. The inhibited state of nerves has not been a popular field for research in our culture, but the knowledge gradually accumulates. Another type of inhibition has been described recently, in "Acetylcholine hyperpolarizes central neurones by acting on an M_2 muscarinic receptor," by Egan and North, in *Nature 319*, 405-407, January 30, 1986.

Burton. Last year the Center for Disease Control tested some of Dr. Burton's immuno-augmentative therapeutic material, and found that 50% of it was contaminated with AIDS virus (at least the antibodies), and that all of it tested positive for hepatitis. Since he had been getting all of his blood from the U.S., from commercial sources, this sounded suspicious. In the 1960s he was highly respected. The year he got in trouble, 1975, was the year the cancer establishment decided to follow his leads in immunotherapy. Dr. Coley's toxins were removed from the "quack remedy" list. Last year, when Burton's institution was closed down because of the incredibly high rate of AIDS contamination, was the year that the biggest institutional researchers began their promotion of the tumor necrosis factor—which Burton discovered. Burton used a variety of blood derived materials, but purification will be necessary before a drug company can control it satisfactorily. If the stuff doesn't kill people, along with the cancer, it also has great financial potential as a weight-loss drug. I have been trying to learn his side of the contamination story, so I recently tried calling his 800 number, but I was too late, and the woman who answered said she had no knowledge of his organization, she just worked for the U.S. Army. If you know his address, please let me know.

Black Body Radiation. A red hot object radiates lower energy, longer waves than a very hot star does, and a warm person radiates slightly longer, lower energy waves than does the red hot object. The peak of our radiant emission is long infra-red, and we are fairly transparent to that wave-length, so we are black body emitters, regardless of our skin color. It has been calculated that 70% of our metabolic energy is spent as radiation. If we are surrounded by large amounts of mass at our own temperature, we will absorb about as much as we lose. Several years ago, lab rats were kept at a constant temperature, with constant 12 hour light periods, were found to experience a decline in thyroid function during the winter. I had noticed a similar effect in hamsters, atrophy of the thymus gland in the late autumn. Since long-wave infra-red and longer wavelength microwaves can penetrate walls to some extent, it could be that the absence of that kind of radiation during the winter is the stressor which causes these changes, and the mitochondrial damage which occurs in the winter. It could be that some of the therapeutic effects of natural hot springs are caused by gently appropriate radiation from the large masses of hot earth in the vicinity. I think these longer waves might also have an anti-free radical effect, possibly by acting on solvated electrons.

Forests. In the early 1950s I went back to a stream I had seen a couple of years earlier, in southern Oregon; it was one of the most beautiful places I had seen. On my second visit, it had been absolutely destroyed by loggers, who had bulldozed earth, broken logs, and rocks into it. It was just one of the many small streams where fish used to spawn, that have now been destroyed by loggers. A forester has said that much of southern Oregon will never be able to grow forests again, because the soil was eroded after the trees were cut.

A recent news item mentioned that the Atacama desert in Chile also used to be a humid coastal forest, and that it was destroyed by loggers. Another news item mentioned that removal of trees from the Mexican hill where the Monarch butterflies migrate for the winter, was lowering the humidity to such an extent that the butterflies might not be able to survive, even though their own trees are not removed. This effect of trees on humidity is very important, but it is usually overlooked. The concept of "desertification is widely accepted when it is applied to another continent (the Sudan, for example), but not when it might relate to a local resource which supports the area's biggest industry.

When I first went to Mexico in 1955, I was shocked by the huge gullies that were being eroded through the dark brown soil of the hilly grass-covered expanses in the western part of the State of Mexico. In later years those sharp cuts through the muddy earth had disappeared, and a smooth contour had returned, but the remaining soil was pale and rocky, and barely supported grass. A few years ago I learned that this region had been covered by the same dense pine forests which still exist in some parts of the state, but that a foreign company had removed the forests early in this century. A place there is still called El Yukon.

Now that most of the forests, from the California redwoods into Washington, have been destroyed, the center of the logging industry has moved north into Canada. Foresters describe the logging technique used there as "extraction," and say it won't be long until their forests are depleted, so that maybe Oregon's forests will regain their competitive position. Canada's Yukon might someday resemble El Yukon in Mexico. When a region doesn't go directly from a conifer forest to a desert, it may be replaced by deciduous shrubs and trees. The ultimate outcome of this replacement is unknown, but I think we are already seeing some of the effects. Conifers are good at conserving water: they transpire sparingly in the hot, normally dry summers of the Pacific coast region, but they do transpire a little in the winter. Humid air is lighter than dry air: a massive forest allows ocean air to circulate over the land in winter, yet a conifer forest does not extravagantly increase the humidity in the summer. A deciduous forest, leafless in winter, allows dense cold dry air to accumulate, which diverts the humid ocean air. In the summer, however, their intense transpiration tends to intensify the entry of air from the ocean, with the result that rainfall tends to become seasonally reversed, and some of the winter moisture is dumped further south. People who defend the lumber industry's practices say that the forces controlling weather are too big to be influenced by human activity, but several studies show otherwise. For example, the absence of vegetation in the city of St. Louis causes such intense summer heating and updrafts that corn production has doubled in an area down-wind, from the resulting increase in the summer rainfall.

Caffeine. A study in Israel, where there has been no publicity about a connection between caffeine and breast disease, found that using caffeine or avoiding it had no effect on breast disease. A letter in JAMA (Feb. 14, 1986, vol. 255(6), page 748) says "most reports show no significant correlation between fibro-cystic disease and methylxanthine intake." He says "there was considerable evidence to suggest that caffeine has antineoplastic effects." He also says that "caffeine intake had a significant association with tumor differentiation .... Since poor tumor differentiation is linked with decreased survival, the question is raised whether caffeine may have had a beneficial effect in these women." All of the experiments in cell culture similarly suggest that caffeine might be beneficial.

Cystic Fibrosis. Several years ago a "mutation" was discovered in a regional primate center which was said to be equivalent to human cystic fibrosis. A researcher there couldn't believe that an identical mutation could have appeared at the same time in five or six apes; he believed that their symptoms resulted from poisoning from the large amounts of unsaturated vegetable oil they were being fed. He was fired immediately; the new "gene" would have brought in large amounts of research money. A recent study of young adults with cystic fibrosis found that they had low serum levels of both selenium and vitamin E. This seems to support the ex-scientist's theory. (*Lancet* 2:862-863, 1985.)

Food Radiation. As sulfite is removed from foods, pressure will increase for wider use of radiation to extend shelf life of many foods. Proponents are saying that some public education will be necessary, because radiation causes instantaneous changes which modify flavor and texture of foods, making people think they are not fresh; people must be informed, they say, to realize that the spoiled taste and consistency actually means greater freshness, since their shelf life has been extended by many weeks. Radiation, of course, stimulates oxidation of fats, among other changes (called "unique radiolytic products," URP), and rancid fat is toxic and carcinogenic. ■

Ray Peat's Newsletter is available by subsciption: 12 issues for $18.00.
Order: P.O. Box 3427, Eugene, OR 97403.