



Art that Jars

Some images are literally eyesores. Scientists have long known that the wrong mix of shapes and colors can cause discomfort, headaches, or even seizures. Now, they're starting to figure out why.

Psychologist Arnold Wilkins of the University of Essex, U.K., and artist Debbie Ayles—who creates paintings inspired by her migraines—used a Sciart grant from the Wellcome Trust to tease out the keys to annoying art. Focus groups at an exhibition of Ayles's work last year helped identify narrow stripes and juxtaposed complementary colors as inducers of discomfort. Wilkins then compared the subjective ratings of a variety of paintings with each picture's energy intensity, measured by Fourier analysis of stripes' spatial frequency.

At a talk in Cambridge, U.K., last week, Wilkins said the pictures the focus groups found unpleasant featured vertical stripes at the width that we're visually most sensitive to—about 3 stripes per degree of the visual field (a finger held at arm's length corresponds to about 1 degree). The stripe factor applies to type fonts, too—letter length and thickness make Times New Roman a slower read than Verdana, says Wilkins. He says his

Migraine-inspired painting.

results can be applied to design, from picking an optimal type size and font for children's books to choosing public murals.

What's Current In E-Chem



What happens when you zap a chemical solution is the electrochemist's bailiwick. However, general readers can charge up their brains on the field's applications and history at the *Electrochemistry Encyclopedia*,* edited by retired chemist Zoltan Nagy of the Argonne National Laboratory in Illinois. The subjects of the 25 expert-written chapters range from electroplating to electric fish to pioneering electrochemists. Read about electrochemical machining, which uses a current to shape hard-to-work alloys, or explore the life of the Italian scientist Alessandro Volta, who sparked the nascent discipline more than 200 years ago by building the first battery.

If your memory short-circuits over unfamiliar terms, click over to the linked dictionary † that furnishes 800 definitions. >>

* electrochem.cwru.edu/ed/encycl

† electrochem.cwru.edu/ed/dict.htm

The Health Benefits Of Paleocuisine

Swedish men with diabetes showed a dramatic drop in their blood sugar after 3 months on a "Paleolithic" diet, according to researchers in Sweden, who found that a diet free of grains and dairy products worked better than the

oft-recommended "Mediterranean" diet.

Of 29 men with heart disease and diabetic conditions, 14 showed blood sugar returning to normal after restricting themselves to lean meat, fish, fruits, root vegetables, eggs, and nuts. What's more, their glucose tolerance improved by 26%, as shown when glucose levels were tested after they ate sugars. But the 15 men on the Mediterranean diet, whose intake included grains and dairy products, showed only a 7% improvement in glucose tolerance, according to Lund University physician Staffan Lindeberg, whose study was published online this month in *Diabetologia*. Lindeberg says the study was

inspired when he learned in the 1990s that Papua New Guinea's Trobriand islanders, who live on a "preagricultural" diet, had no heart disease or diabetes.

Lindeberg speculates that a Stone Age diet may owe its success with diabetics to the absence of "bioactive substances," such as the casein protein in milk and lectin in grains, which may impair glucose tolerance—as they do in studies of rats.

Evolutionary nutritionist Loren Cordain of Colorado State University in Fort Collins says the study is "significant" because "it represents one of the first well-controlled trials of a modern paleo-like diet to ever have been conducted."

BEAUTY WITH BRAWN

Lustrous mother-of-pearl may fetch millions, but the material's might, not its iridescence, is what has scientists swooning. Mother-of-pearl, or nacre, is 3000 times stronger than the brittle mineral aragonite of which it's composed. Now, physicists at the University of Wisconsin, Madison, have shined synchrotron radiation on thin layers of nacre to reveal its secret: irregular columns of crystals, like clumsily stacked bricks, resist breaking. Their report is in the 29 June *Physical Review Letters*.

