# OF NOTE

BIOMEDICINE

## Waking up that lazy eye

In amblyopia—"lazy eye"—the brain prefers images from one eye over the other. Most doctors treat the condition in children by patching the good eye for part of each day, but assume that the practice doesn't work past age 10. Some doctors give up on patching at age 7.

A U.S.-Canadian study now finds that children up to age 17 can make significant gains in vision by wearing a patch.

Researchers identified 507 children with amblyopia and randomly assigned half of them to wear a patch from 2 to 6 hours a day for 24 weeks. If needed, the kids also received prescriptions for eyeglasses. All the children were between 7 and 17 years old.

Children ages 7 to 12 who wore patches were four times as likely as those who didn't to improve their vision in the weak eye by two rows on the standard 11-line eye chart that doctors use to assess eyesight, the scientists report in the April *Archives of Ophthalmology*. Kids with amblyopia usually have a lazy eye that reads down to only the middle of the chart. People with normal vision see down to about the 10th row.

Children 13 to 17 also gained some visual clarity by wearing a patch, but only if they hadn't received such therapy earlier in their lives. Their gains were smaller than those of 7-to-12-year-olds but still significant, says study coauthor Richard W. Hertle of the University of Pittsburgh.

Long-term follow-up might reveal whether the vision improvements are permanent, Hertle says. —N.S.

AGRICULTURE

## Air pollution linked to wheat diseases

Wheat is vulnerable to fungal maladies, known as septoria-blotch diseases, that reduce the ability of the plants' leaves to carry out photosynthesis. For reasons unknown, the relative roles played by the two fungi that cause these diseases—*Phaeosphaeria nodorum* and *Mycosphaerella graminicola*—vary from country to country and from decade to decade.

To examine possible factors behind these variations, plant pathologist Bart A. Fraaije of Rothamsted Research in Harpenden, England, and his colleagues tested a library of wheat samples grown on a British farm and archived for most years since 1843. For each year, the team identified which pathogen's DNA was more plentiful.

J. LUCAS/ROTHAMSTED RESEARCH

SICK GRAIN **Sulfur dioxide pollution may alter the ecological balance between two fungi that cause blotch disease in wheat.**

They then compared those data with estimates of emissions of several air pollutants and with meteorological and agricultural records.

After the researchers took into account influences such as growing and harvesting methods and the amount and timing of rain and sun, the effect of sulfur dioxide stood out. The researchers found that as the combustion by-product became more abundant during Britain's industrial revolution, *P. nodorum* grew more successfully. *M. graminicola* was relatively more abundant prior to the 1870s and since the 1970s, the latter pattern reflecting recent reductions in sulfur dioxide emissions due to environmental regulations. The team reports its findings in the April 12 *Proceedings of the National Academy of Sciences*.

The finding doesn't have immediate implications for fighting the agricultural pathogens, Fraaije says. "But it's important to see why these diseases are changing over time," he adds. —B.H.

CHEMISTRY

## Crystal clear

Growing drug crystals on polymer surfaces could greatly improve a critical step in the development of pharmaceuticals, a new study suggests.

Many drug molecules can assume a variety of crystal structures, or polymorphs. Because polymorphs can differ in their ease of manufacture and in their medicinal properties, drug companies try to control crystal growth and discover new polymorphs (*SN: 8/21/04, p. 122*). However, there's no simple chemical route to making varieties of polymorphs. Conventional methods, which typically involve varying the temperature of a crystallizing solution or changing solvents, take a lot of time and are hit-or-miss.

In the April 20 *Journal of the American Chemical Society*, Adam Matzger and his colleagues at the University of Michigan in Ann Arbor report that certain polymers can induce a drug to assume one crystal structure over another. The researchers created a library of 436 polymer films and crystallized a variety of drug-related molecules on the films.

To test the effectiveness of their strategy, the researchers tried it with a common pharmaceutical-industry chemical called ROY, which is famous for having six fully characterized polymorphs, more than any other molecule.

Various polymer films produced all six polymorphs. Using the same technique, the Michigan group discovered two previously unknown polymorphs of the antibiotic sulfamethoxazole.

Expanding the group's polymer library is likely to yield even more polymorphs, predicts Matzger. For instance, most of the polymorphs in the experiment could be made on any of several members of the 436-polymer library, but one of the two new forms of sulfamethoxazole grew on only one polymer. "This indicates that we should be trying many more polymers," Matzger says. —A.G.