

'Boring' reading and nearsightedness

Glasses worn for nearsightedness are a common sight among those who love to read, a studious relationship that has been attributed to everything from lack of eye exercise to improper diet. But nearsightedness may actually be a reflection of "nonstimulating" viewing that visually starves certain areas of the eye, say scientists at the City University of New York. They further suggest that the black-and-white page might do well with a splash of color.

"It's always been assumed that reading is related to myopia [nearsightedness caused by lengthening of the eyeball] because of the closeness of the page," says project leader Josh Wallman. But he attributes at least some myopia to what he calls "the peculiarities of the page," where the majority of characters are black and uniformly small. "Reading is a kind of mild deprivation of the retina,

mainly because the cell's away from the [center of the retina] cannot distinguish between the little characters of the typical printed page," he told SCIENCE NEWS. The New York group tested the effects of visual deprivation on those areas of the retina other than the center, which sees images most clearly.

By covering the eyes of chicks with translucent "blindings" of different shapes, the scientists blocked visual images from being "seen" by part or all of the retina. The experiments induced local myopia-mimicking changes in the shape of the animals' eyes, which became enlarged only in the regions deprived of visual images. Previous laboratory experiments by other groups have focused on global, or overall, changes in the shape

of the eye caused by image deprivation, the scientists report in the July 3 SCIENCE.

Why the changes are so localized is unknown, says Wallman. But the group currently is searching for diffusible chemicals that may be signals sent by the understimulated retina to the corresponding outside layers of the eye, subsequently encouraging the changes in eye shape.

Wallman and his coauthors say it is likely that further research will confirm several of the theories on myopia. Because many questions remain unanswered, identifying a possible chemical cause would offer no clear message on ways to prevent all myopia, says Wallman. However, he does suggest that revised page design, with large, colored forms scattered amid the black-and-white print, may stimulate broader areas on the retina.

— D.D. Edwards

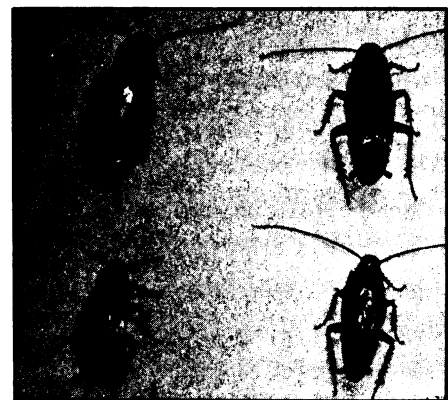
Will the real Asian roach please stand up?

Possibly the only redeeming value of roaches is that they scatter when the light's turned on.

Ah, but wait. Enter the Asian cockroach, *Blattella asahinai*. Unlike its cousins it's liable to just stand there and get in the way of the mustard jar when you get up for a midnight snack. And if that's not bad enough, it's likely to take wing and follow you to the next place you flick on the light switch.

To the novice, the Asian roach — first found in Florida just three years ago — is easily mistaken for North America's most prevalent household variety, the German cockroach. In fact, even the experts have a hard time telling the difference. But researchers at the U.S. Department of Agriculture in Gainesville, Fla., have recently developed a detection technique using a chemical assay that distinguishes the Asian roach from the German variety 100 percent of the time, says organic chemist David A. Carlson. The technique will allow other researchers to monitor the spread of the Asian cockroach, says Carlson, who developed it with Richard J. Brenner. Carlson will present his findings later this year at the annual meeting of the Entomological Society of America in Boston.

Carlson's technique is an adaptation of one he developed to differentiate Africanized bees from their European cousins (SN: 4/4/87, p.218). To identify the Asian roach, researchers experimented with roaches using an assay for cuticular hydrocarbons, the chemicals found in the outer waxy layer that covers the roach's whole body. The technique involves washing the roach, or any part of it, in hexane to remove the wax. The solution is then injected into a gas chromatograph, which measures the quantity of different hydrocarbons. Readings from the chromatograph show distinct peaks



The female and male German cockroaches, left, show a striking resemblance to their Asian counterparts, right.

corresponding to the different molecular weights of chemicals in the wax of each species.

Currently, U.S. scientists have only confirmed the Asian roach in Florida, where it has taken up residence in 800 square miles near the Tampa area and can occur in concentrations of 100,000 per acre, says entomologist Philip G. Koehler of the University of Florida in Gainesville. Mostly an outdoor roach, it will infest an entire yard, showing frenzied activity each day shortly after sunset, crawling to the top of grasses and leaves and possibly getting into the house. It then begins calming down and mates at about 2 a.m., only to become active again just before dawn to return to the leaf mulch. Three weeks after mating, the female develops a capsule filled with about 40 eggs, which develop into adults some seven weeks after birth, Koehler says.

Some entomologists believe the roach could reach into the Gulf states, up the East Coast to Maryland and New Jersey, and up the West Coast as far as Washington state.

— K. Hartley

Syphilis on the rise

More than 8,200 new cases of syphilis were reported in the United States during the first three months of 1987, an increase of 23 percent over the number of cases seen during the same period in 1986, scientists at the Centers for Disease Control in Atlanta announced last week. The recent jump in the venereal disease is the largest in more than a decade and reverses a five-year trend of decreasing incidence, according to the July 3 MORBIDITY AND MORTALITY WEEKLY REPORT.

The latest figures also expose a new profile of infection, says coauthor Peter Crippen. During the 1970s, most men with early-stage syphilis were either homosexual or bisexual; however, the latest figures indicate a decrease of cases among these groups, offset by relatively large increases among heterosexuals. "The fear of AIDS among homosexuals and bisexuals has changed their [sexual] behavior substantially," Crippen told SCIENCE NEWS.

Although the reasons for higher heterosexual incidence are unknown, scientists suspect increased drug use leading to prostitution, as well as scarcity of local medical and educational resources, which have been stretched thin by AIDS patients and drug addicts. Whatever the reasons, says Crippen, "the consequences are still very real, especially in congenital syphilis [which mothers give their unborn children]." Health officials also are concerned about evidence that people with syphilis or other venereal diseases may be more likely to develop AIDS. Infection with the AIDS virus apparently also alters the course of syphilis (SN: 6/20/87, p.391).

— D. D. Edwards