OF NOTE

ZOOLOGY

Male spiders amputate organs, run faster

Tiny male spiders of a species common to the southeastern United States routinely remove one of their two oversize external sex organs. It's an extreme act, but one that apparently enables them to run faster and longer, a potential advantage for winning mates, researchers say.

As is typical in spiders, a male of *Tidarren sisyphoides* develops two protrusions with hollow tips, or pedipalps, on the front of his body for delivering sperm, explains Duncan J. Irschick of Tulane University in New Orleans. The male spider grows to only about one-hundredth the size of a female, yet one pedipalp accounts for some 10 percent of his body mass.

Although these spiders haven't been studied in depth, researchers had noticed that within hours after a young male's penultimate molt prior to mating, he amputates one of his pedipalps. He does this by attaching a strand of web silk to one pedipalp, tightens the silk thread by turning in circles, and then pushing at the pedipalp with his legs.

TRACK STAR A male spider has removed a sex organ.

A potential benefit of such a practice became apparent in video recordings of the spiders made by Margarita Ramos, who worked with Irschick and Terry Christenson at Tulane. Ramos filmed 16 males sprinting along a strand of spider silk and found that their maximum speed increased 44 percent after losing a pedipalp. When Ramos chased young spiders around a sheet of paper in an endurance test, single-pedipalp males ran nearly three times as far as did young males that still had both organs.

Irschick rates the spiders as an "extreme example" of a species that "got stuck in a massive evolutionary conflict and had to evolve a behavior to get out." As males shrank and females enlarged during the course of *T. sisyphoides*' evolution, the species probably couldn't afford to reduce pedipalp size too much, says Irschick.

Ramos and her advisors report their findings in the April 6 *Proceedings of the National Academy of Sciences*. —S.M.

RAMOS

ASTRONOMY

Cassini spies storms on Saturn

Closing in on Saturn after a 7-year journey, the robotic spacecraft Cassini has discovered two storms on the ringed planet merging into a single, larger, hurricanelike disturbance. The only other time that astronomers have observed merging storms on Saturn was in 1981, when the two Voyager spacecraft flew past the planet.

Cassini first spied the storms in mid-February. They appeared as 1,000-kilometer-wide spots in Saturn's southern hemisphere. Traveling a few meters per second relative to the rotation of Saturn's gaseous interior, the storms—one moving twice as fast as the other—collided and spun around each other before merging over a 2-day period that began March 19. Cassini scientists posted the findings on the Internet on April 8 (*http://saturn.jpl.nasa.gov*).

Storms on Earth typically last for a week, fading after they can no longer gather energy from their surroundings. But storms on Saturn and the other giant planets, Jupiter and Uranus, can last from months to years. Merging is a characteristic feature of the atmospheric disturbances, notes Cassini mission scientist Andrew P. Ingersoll of the California Institute of Technology in Pasadena, Calif.

To see storms even before Cassini arrives at Saturn in July is an unexpected bonus, Ingersoll says. With the main mission still ahead, he adds, "the best is yet to come." —R.C.

PHYSICS

Particle breakdowns beat expectations

A type of disintegration of subatomic particles called kaons occurred more often than anticipated in two series of accelerator experiments performed between 1989 and 2002 at Brookhaven National Laboratory in Upton, N.Y. This intriguing new finding, based on limited data, hints that the experiments had tapped into previously unseen types of subatomic behavior, researchers say.

Kaons are short-lived particles that decay in various ways. The type of decay sought in these experiments is one of the rarest. In the studies of such decays at Brookhaven since the late 1980s, physicists there created kaon beams and observed the particles' fates using house-size detectors. The leading theory of particle physics had predicted only one of the extremely rare kaon decays in the first series, but two instances of the decay occurred, says Steven Kettell, a spokesman for the more recent series of experiments. Now, an analysis of data from that series reveals that yet another instance of the decay took place. The finding was announced March 23 at a Brookhaven colloquium.

One explanation for the extra instances of the decays may lie in an alternative theory called supersymmetry, which posits yet-undiscovered particles that could account for the disintegrations. With only three observations of the kaon breakdowns, however, it's possible that the result is merely an anomaly, Kettell notes.

No new kaon data are likely to come from Brookhaven anytime soon. In 2002, the U.S. Department of Energy shut down the second series of kaon experiments after only a fifth of its planned run. While the new results are exciting, Kettell says, they're also a painful reminder to kaon physicists of what they are missing. —P.W.

BIOMEDICINE

Gene ups oral-cancer risk for drinkers who smoke

People who have a particular variant of a single gene are at a disproportionate risk of oral cancer if they both smoke and drink, researchers have found. The gene variant codes for a slow-acting form of alcohol dehydrogenase, an alcohol-metabolizing enzyme.

Oral cancer generally strikes long-term users of both alcohol and tobacco. It's relatively rare in the United States but is the third most prevalent form of cancer in the world.

In the new study, Edward Peters of the Harvard School of Public Health in Boston and his colleagues recruited about 1,200 Boston-area volunteers, half of whom had oral cancer. The researchers asked each volunteer about his or her smoking and drinking habits and took blood samples