

## Biomedicine

### Dog parasite worms its way into humans

Gardeners and barefoot strollers may be inviting a common canine hookworm to take up residence in their intestines — unless they take precautions, researchers warn.

John Croese of the University of Queensland in Australia and his colleagues recently diagnosed nine cases of human infection with the hookworm *Ancylostoma caninum*. The worm normally resides in man's best friend but appears to threaten people as well, the researchers report in the March 1 *ANNALS OF INTERNAL MEDICINE*.

The patients, all dog owners, probably became infected when they touched soil or grass contaminated with dog feces, the researchers report.

Since the 1920s, physicians have sporadically reported cases of human infection with *A. caninum*. However, until 1991, no one had linked the worm to an intestinal disease.

*A. caninum* "is a cosmopolitan species, exceedingly common in both tropical and temperate areas, including North America," Gerhard A. Schad of the University of Pennsylvania School of Veterinary Medicine in Philadelphia writes in an editorial accompanying the report. A number of different drugs can be used to rid dogs of the worms, he adds.

Croese and his coworkers removed the worms from patients during a colonoscopy or other medical procedure. "After removal of the worm, all patients recovered and have remained well," they report.

People infected with *A. caninum* may have no noticeable symptoms. The patients in this study, however, all had diarrhea, abdominal pain and distension, weight loss, rectal bleeding, and elevated IgE, an immunoglobulin, they report.

Diagnosis of this hookworm infection proved difficult. Because *A. caninum* does not lay eggs in humans, stool samples contain no telltale ova, explains Schad. Sometimes, only one small, elusive worm sets up house in the intestine. Croese and his colleagues identified the worms under the microscope or by testing patients for the antibody to the parasite, they write.

### Cats share their bugs with humans, too

Cats are everywhere. More than one-third of U.S. households own a cat, and health care professionals sometimes advise the sick and elderly to seek out feline companionship.

A new study, however, may make cat owners wish they had never adopted their beloved puss. Physicians from the University of California, San Francisco, report that people, particularly those with weak immune systems, can contract a serious bacterial infection from their meowing mouser. But the news isn't all bad: A course of antibiotics usually gets rid of it in both humans and cats, Jane E. Koehler and her colleagues report.

These researchers examined four patients diagnosed with a bacterial infection called bacillary angiomatosis (BA). All had had contact with cats. When Koehler's group ran blood tests on the cats, they found that the animals were infected with *Rochalimaea henselae*, the bacterium that causes BA.

While the humans suffered from skin lesions, fever, and other complications, their feline friends showed no symptoms. Three of the humans, who had advanced HIV infection, were particularly vulnerable to the bacterium, Koehler and her colleagues write in the Feb. 16 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

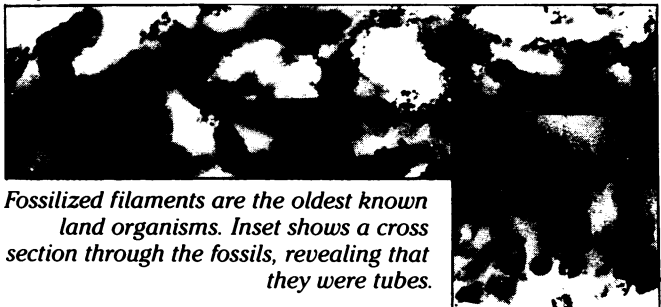
The physicians also found *R. henselae* in 25 of 61 additional pet or stray cats they examined. They even detected DNA from *R. henselae* in one cat's fleas. All of the patients had numerous flea bites, which suggests that these bugs may help transmit the bacterium, the authors contend.

Researchers have recently implicated *Rochalimaea* bacteria as the cause of trench fever and cat scratch disease, two other human illnesses.

## Earth Science

### When life first sprouted on land

The oceans have teemed with life for 3.5 billion years, but the continents apparently remained sterile for most of Earth's history. The oldest known land fossils date back only a half billion years, a short span compared to the planet's age of 4.6 billion years. The idea of such a delayed colonization of the continents has always troubled some paleontologists; now, they can rest easier.



Fossilized filaments are the oldest known land organisms. Inset shows a cross section through the fossils, revealing that they were tubes.

In the Jan. 28 *SCIENCE*, Robert J. Horodyski of Tulane University in New Orleans and L. Paul Knauth of Arizona State University in Tempe report the discovery of the earliest known land life—tubular microorganisms that colonized ancient soils. One set of such fossils, found in Arizona, dates to 1.2 billion years ago; a second set, from California, has an age of 800 million years.

The fossils are hollow filaments that stretch as long as 150 micrometers but measure only a micrometer or two in diameter, less than one-tenth the thickness of a human hair. The organisms that made these structures could have been cyanobacteria, other bacteria, or even fungi, says Horodyski.

Knauth suspected that ancient life might have colonized the Arizona and California locations because he had previously found an unusual ratio of carbon isotopes in rocks there. The deposits held less carbon-13 than normal, a feature that develops in modern soils when photosynthetic plants and microbes release carbon dioxide through respiration. The same process must have occurred 1.2 billion years ago, say Horodyski and Knauth.

By pushing back the record of life on land, the new discovery raises important questions about the evolution of animals on the continents. "If we had life on land 1,200 million years ago and these communities were extensive, then there was a source of food on land. There could have been other organisms utilizing that food." If so, these animals would be more than twice as old as the most ancient land creatures now known.

### Ice coring heats up in Antarctica

A U.S. drilling crew in Antarctica has pulled up a 554-meter-long ice core packed with information about how the climate has behaved over the last 20,000 to 30,000 years. The success of this project sets the stage for American researchers to embark on a much more ambitious deep-drilling project in Antarctica within the next several years.

The team drilled in McMurdo Dome, located about 150 kilometers west of the main U.S. research camp in Antarctica. The researchers hope to use the ice core to help decipher how the Ross Ice Shelf and local glaciers have advanced and receded over the millennia. Analysis of the core can also address questions about global climate change, says project leader Pieter M. Grootes of the University of Washington in Seattle.

The crew at McMurdo Dome used the same drill that had recently bored a 3,200-meter-deep hole in Greenland. That ice core, reaching back 250,000 years, revealed that Earth has a naturally unstable climate—a finding Grootes and others hope to confirm in the future by drilling a deep core in Antarctica.