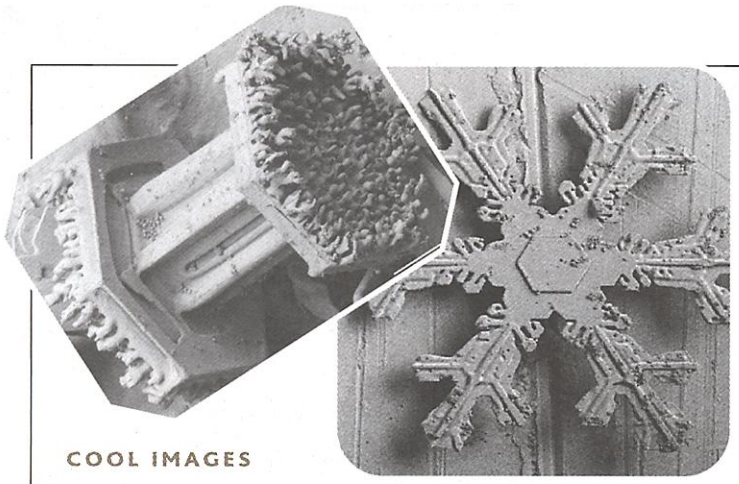


CREDIT: (TOP) E. F. ERBE/ARS/USDA

COOL IMAGES

Snow Up Close

Although it doesn't look much like the lacy crystal next to it, the chunky dumbbell shape above is also snow. The white stuff falls not only as six-sided dendritic crystals but also as needles, columns, and plates (and stuck-together combinations). But scientists got a really close look at these shapes just 7 years ago when cytologist William Wergin's group at the Agricultural Research Service chose a snowflake to test a liquid nitrogen–cooled scanning electron microscope stage. The lab's snow imaging techniques have since yielded pictures that are not just stunning—they're also in demand for everything from avalanche research to estimating the amount of water locked in the winter snowpack. Take a cool break from the summer heat at Wergin's site: www.lpsi.barc.usda.gov/emusnow

HOT PICKS

Analyze this. From electrophoresis to electronic noses, The Analytical Chemistry Springboard brims with links on techniques and resources. You'll find spectroscopy databases (atomic to x-ray), tutorials (need to understand a Fourier transform?), online journals, software, and more. Also check out the page of teaching links. www.anachem.umu.se/jumpstation.htm

Biotech for the Third World. What can agricultural biotechnology offer developing countries? A lively discussion on everything from animal cloning to terminator technology and trees has been going on at this site since March, with e-mails coming in from Indonesia to Mali. Log in now to join a livestock forum; fish are next. www.fao.org/biotech/forum.htm

Transcending science. Had a vision? If you're a scientist, send it off to Charles Tart, a psychologist known in the 1970s for his consciousness research who now works to "[bridge] the scientific and spiritual communities." Tart's online journal offers a "safe place" for scientists to relate shared dreams, near-death brushes, and other transcendent experiences—such as a biochemist's report that her "boundaries dissolved" one day in the reading room. www.issc-taste.org/index.shtml

NET NEWS

Milestone for Linked Computers

Another devilishly hard computational problem has cracked under the coordinated assault of computers linked by the Internet. An alliance of 2500-some computer processors took just a week to solve "nug30," a problem that had resisted mathematicians' best efforts for 3 decades.

So-called distributed computing has already become a popular alternative to fighting for time on a supercomputer for some researchers. Perhaps the best known example is SETI@home, in which volunteers' PCs comb tiny chunks of data for radio signals from alien life. It was another collaborative effort, called MetaNEOS, that tackled the nug30 quadratic assignment problem (www-unix.mcs.anl.gov/metaneos). First posed in 1968, nug30 is an optimization problem—akin to the traveling salesman problem where someone tries to visit the state capitals while putting the minimum number of miles on his car.

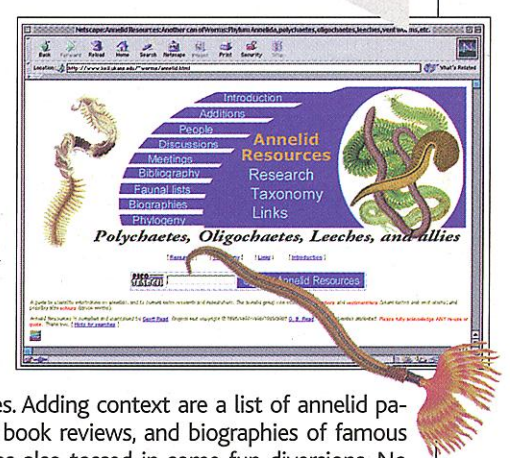
The MetaNEOS team, based at Argonne National Lab in Illinois, solved nug30 in 7 days in June, using up to 1009 processors simultaneously at eight institutions to crunch the numbers. The feat marks perhaps the biggest distributed computing success yet outside of special demos or applications, says participant Miron Livny of the University of Wisconsin, Madison. The 96,000–CPU-hour problem could have been completed as quickly on a 1000-node supercomputer—but only if you could win time on one, says Livny. His goal "is to allow every scientist to do an order of magnitude more computing than they do today."

SITE VISIT

Can of Worms

Hooked on earthworms, Charles Darwin whiled away months watching the slippery creatures mate and mine, even noting their reaction (indifference) when his family played different musical instruments. Keep abreast of what Darwin's successors have discovered about annelids—the segmented worms that include earthworms, leeches, and bristly marine worms called polychaetes—with the Annelid Resources page. Created by New Zealand taxonomist Geoff Read and hosted by the University of New Orleans, the site provides researchers with the latest on annelid taxonomy, ecology, and distribution.

biodiversity.uno.edu/~worms/annelid.html



The 4-year-old site includes an annelid discussion group, an annotated bibliography of recent papers on worm phylogeny, a directory of worm experts, and geographical taxonomic lists for some of the 9000 annelid species. Adding context are a list of annelid papers dating back to 1705, book reviews, and biographies of famous worm researchers. Read has also tossed in some fun diversions. No annelid page would be complete without photos of engorged leeches feasting on human blood. You can also download a clip from the 1990 film *Tremors*, in which man-eating worms pursue Kevin Bacon. Join an online expedition to visit stands of deep-sea tubeworms, or "ice worms" prospering on slabs of frozen methane.

Science ONLINE

As a supplement to this week's special issue on violence, the staff of *Science* Online has assembled a collection of links to interesting sites focused on violence research. www.sciencemag.org/feature/data/violence-links.shl

Send Internet news and great Web site suggestions to netwatch@aaas.org