

RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Big Dwarf and the Birth of Heavy Metal

Massive stars eventually collapse under their own weight and explode as supernovae. Smaller stars, like our sun, simply fizzle into so-called white dwarfs. Scientists are keen to know just where the cutoff point is, not least because supernova explosions are thought to create most of the universe's heavy elements—the building blocks of dust, planets, and people.

Now a team of Cambridge University astronomers says it has found a white dwarf that must have had a huge progenitor, suggesting it may take more mass than some had thought for

stars to culminate in supernovae. "This is pretty exciting," says astronomer Mike Bolte of the University of California, Santa Cruz. Scientists have assumed the "mass cutoff" point to lie between five and 10 times the mass of our sun. Now that window of uncertainty has been narrowed.

The astronomers, led by Rebecca Elson, located their dwarf while using the Hubble Space Telescope to investigate star formation in a star cluster (named NGC 1818) in the Large Magellanic Cloud, a small neighboring galaxy. They already knew that the cluster's stars were formed a

mere 40 million years ago. Only a massive star would burn out within that time. And the burnout was recent, because the dwarf is not only blue and therefore hot but also very bright.

Knowing its age, the team was able to estimate that the dwarf is the remains of a star of about 7.6 solar masses, says team member Steinn Sigurdsson. And that, he says, significantly hikes up the lower limit of a "very critical boundary." Their report will appear in a forthcoming issue of *Astrophysical Journal Letters*.



Heavy dwarf. Arrow marks dying star.

The new observation adds to knowledge about supernovae, the fertilizers of the universe. "Just when you stop making supernovae and

start making white dwarfs determines the whole chemical constitution of the universe," says Sigurdsson. A more precise supernova threshold could also hold clues to the rate at which massive stars were born earlier in cosmic history, he adds. "If you really need massive stars [to account for all the heavy elements around] and there aren't many now, there have to have been more in the past."

CHRIS SMITH

Euro-Biotechies

Looking for a way to polish that résumé? The European Association for Higher Education in Biotechnology has just named the first two recipients of certificates intended to boost cross-cultural, interdisciplinary research.

To qualify for what is being advertised as "the European Doctorate in Biotechnology," a candidate must have a Ph.D. from a European university, be proficient in a second language, do research

at a foreign university, and take courses prescribed by the association in such subjects as ethics, law, management, economics, and regulatory affairs.

Association chief Charles Kurland, a molecular biologist at the University of Uppsala in Sweden, says the certificates, in addition to making biotech researchers more marketable, could in the future enable students from some countries to make an "end run" around their poor-quality

Ph.D. programs. The association, founded in 1995, also hopes to drum up industry support for a foundation to help develop interdisciplinary Ph.D.-level courses in areas such as bioinformatics.

Asian Vaccine Institute Gets Rolling

This spring researchers in four East Asian countries will launch a study of the incidence of meningitis and other deadly bacterial infections in children. The 2-year

project also marks the scientific debut of the International Vaccine Institute (IVI), which last week in Washington, D.C., inked an agreement with the host country, South Korea.

Despite its current economic crisis, South Korea has pledged \$50 million to build a home for IVI at Seoul National University, and to cover 30% of IVI's estimated annual budget of \$15 million (*Science*, 6 December 1996, p. 1607). Researchers are already moving to track up to half a million children at four sites in Korea, Vietnam, Indonesia, and China to determine the prevalence of *Haemophilus influenzae* type b (Hib), the major cause of bacterial infections in young children. They will also administer an Hib vaccine, donated by five major pharmaceutical companies, that has proven effective in Western countries.

"There have never been good epidemiological studies of the disease in East Asia," says the chair of IVI's scientific advisory committee, vaccine researcher Joel Ward of the University of California, Los Angeles. "We want to prove that it exists and then use the available vaccines to prevent it." Officials are weighing a similar attack on diarrhea from rotaviruses, which kills nearly 1 million children a year.

Collision at Sea Aids Science

Scientists are enjoying a 50-ton bonanza: a rare blue whale that was found snagged on the bow of an oil tanker in Narragansett Bay, off the coast of Rhode Island, earlier this month.

The 20-meter-long cetacean, one of a dwindling North Atlan-



Gift from the sea. Whale being towed ashore. Close-up of larynx (inset) shows vocal folds.

tic population estimated at only a few hundred individuals, was apparently struck by the tanker somewhere on its course from Belgium. The find was hauled onto the beach; spotting a rare scientific opportunity, says whale biologist Phil Clapham of the National Marine Fisheries Service in Woods Hole, Massachusetts, "we basically called the world" to give scientists a chance for a closer look.

One who responded to the call is Joy Reidenberg of Mount Sinai School of Medicine in New York, a comparative anatomist interested in how whales vocalize. Reidenberg and colleague Jeffrey Laitman say they have examined a lot of whale larynges but have never seen one from the blue whale, which has the deepest voice of all. They measured the giant 2.5-meter-long larynx on the beach and removed tissue specimens, as well as a large sac attached to the larynx. This bag is of keen interest, says Reidenberg, because scientists don't know whether it functions as an air chamber or as a resonator to transmit sound through water.

MICHAEL MOORE/WHOI