RANDOM SAMPLES

edited by ANDREW LAWLER

Germans Discover Yet Another Element

After a 10-year lull during which no new elements were discovered, German scientists now claim to have discovered two new elements in the space of a month.

Researchers at the GSI Heavy Ion Research Laboratory at Darmstadt in Germany created several atoms of the as-yet-unnamed element 110 in November (*Science*, 25 November 1994, p. 1311) by using a particle accelerator to smash nickel ions into a lead target so that some of the nickel nuclei fused with lead nuclei. Then the GSI team switched to a heavier isotope of nickel as the projectile, aiming it at a target made of bismuth. On 8 December their efforts paid off. An atom of element 111 appeared with 272 protons and neutrons in its nucleus, and the team produced two more before the experiment ended on 18 December.

The discovery of element 111 does more than just add another entry to the periodic table, however. It also provides more evidence for the idea that nuclei have a more complex structure than the traditional model of a random bag of protons or neutrons. That picture predicts that larger elements will be increasingly unstable, but element 111 appears to be more stable than 110: It has a half-life of around 4 milliseconds, while element 110 has a half-life of roughly half a millisecond.

Many theorists believe that the protons and neutrons in nuclei are arranged in shells, with full shells giving a nucleus added stability over nuclei with partially filled shells. Element 114 is predicted to have a full shell of protons, and so element 111, with more protons than element 110, is closer to having a full shell and hence is more stable.

TOP 10 INFLUENTIAL SCHOOLS

	PHYSICS	CHEMISTRY
1	Harvard University	Harvard University
2	Princeton University	Caltech
3	University of California, Santa Barbara	University of Chicago
4	University of Chicago	MIT
5	University of Pennsylvania	Stanford University
6	Caltech	University of North Carolina
7	Yale University	University of Colorado
8	Stanford University	Yale University
9	SUNY Stony Brook	Univ. of California, Irvine
10	MIT	Univ. of California, Berkeley

Between 1981 and 1993, these schools had the highest citation impact per paper in physics and chemistry, according to the November/December issue of *Science Watch*, a publication of the Institute for Scientific Information. In the course of making the physics honor roll, the Massachusetts Institute of Technology turned out the most papers, nearly 8500, indicating that quantity and quality can mix.

Italy Will Stay in European Consortium

After threatening to quit a year ago, Italy announced late last month that it will stick with the consortium that runs the European Molecular Biology Laboratory (EMBL). That decision, which came after an agreement to create EMBL research groups in Rome, ends a long-running dispute between the Italian government and EMBL over the return Italy receives for its investment in the lab (*Science*, 16 December 1994, p. 1798).

Italy was one of the founders of the 15-nation research effort, but trouble started in 1989, when the EMBL Council rejected an Italian proposal to chip in its own funds to build a satellite lab of EMBL, or "outstation," in Rome. Germany hosts EMBL headquarters, and both France and the United Kingdom have outstations. The feud escalated until Italian officials declared last December they would quit the consortium, taking their 17% share of EMBL's annual budget with them.

But Fotis Kafatos, EMBL director general, brokered a deal that creates a cluster of four small EMBL groups in Rome. Each group will consist of a leader, a postdoc, a graduate student, and a technician—all together less than an outstation, but enough to placate Italian molecular biologists and politicians. In addition, Italy has a shot at hosting a new mouse genetic archive funded by the European Union at the same site. The compromise drew objections from some EMBL members, say officials familiar with the deal, but the grumbling has subsided.

Stricter Rules Readied For Infectious Materials

"Return to sender" might be stamped on many biological samples if researchers don't follow new U.S. and international regulations about packaging and shipping infectious materials.

Starting on 1 January, two new rules will go into effect. One pertains to all biological and diagnostic specimens containing infectious substances—which include everything from blood or urine samples to any genetically engineered material—transported on an airplane. This new rule, which affects carriers such as Federal Express, requires the outer packaging of these specimens to have a United Nations label certifying that the containers inside have passed stringent strength tests. The regulation comes from the International Air Transport Association (IATA), a Montreal, Canada–based organization that represents major airlines from around the world.

The second new rule is from the U.S. Department of Transportation, which oversees domestic shipping of goods. Until now, regulations exempted packages containing less than 50 milliliters of material from the strict rules on packaging and shipping. The new rule eliminates this exemption.

Steve Tipps, president of Casing Corporation in Dallas, Texas, which makes packaging for infectious substances, says he expects the new regulations will catch many people unawares. "Most researchers and the organizations they work for are not really tied into this," says Tipps. "But they'll become aware of this very quickly."

EPA Offers New Fellowships

Attempts by the Environmental Protection Agency (EPA) to put the agency's scientific research in the spotlight have illuminated some good news for graduate students. EPA officials plan to fund 300 new master's and doctoral fellowships at a cost of up to $15 million per year by 1997, beginning with 100 awards next year.

The quality of EPA science has come under criticism in recent years from Congress and industry, and the fellowships are part of a larger plan to cope with the problem. The EPA wants to "attract the very best students" and "supply a cadre of trained scientists and engineers for the future," says Robert Huggett, assistant administrator of the EPA's Office of Research and Development.

The awards will pay up to $34,000 per year for a stipend, tuition, and other expenses. Applications will be open to students in a broad range of disciplines, from chemistry and engineering to social sciences. The agency began soliciting applications last month; initial awards will be made in the fall. This month EPA is also asking for applications for $22 million in new extramural grants in 1995.