RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Another Bose-Einstein Condensate

It took 70 years for experimentalists to verify a prediction that if a cloud of atoms called bosons could be chilled to near absolute zero, the individual atoms would be brought to a near-standstill and their identities would merge, creating a new state of matter. Now, just a month after a University of Colorado team first identified the so-called Bose-Einstein condensate (*Science*, 14 July, p. 152), a group at Rice University led by Randall Hulet is reporting a second sighting.

Although the groups worked with different atoms—the Colorado group used rubidium-87, while the Rice team chose lithium-7—they followed a similar strategy to create the condensate. They first slowed the atoms down with laser beams and then allowed the hottest ones to evaporate from a magnetic trap where they were confined. But from there the experiments diverge. The Colorado group was able to shut off its trap after producing the condensate and let the atoms fly outward, yielding a relatively large object—roughly 30 microns across—with clearly observable signatures of the phenomenon. The Rice group, however, used a differently shaped trap, which required the use of stronger magnets that couldn't be shut off to let the gas expand.

"I think the results are reasonably convincing," says Dan Kleppner of the Massachusetts Institute of Technology. But he notes that because the Rice group wasn't able to let their atoms fly outward to form an easily observed remnant of the condensate, it had to rely on "inferential, indirect" evidence. Hulet is nonetheless convinced that the evidence is strong. "Theoretically, there is no other explanation" for the cold, dense, 3-micron cloud he observes in his trap, he says.

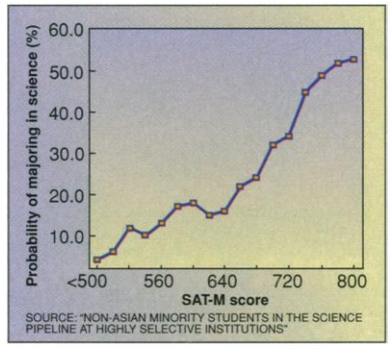
If the result—to be published in a forthcoming *Physical Review Letters*—holds up, says Kleppner, it could lead to major revisions in theories that predict that cold lithium atoms, unlike rubidium atoms which repel each other, should collapse into a conventional liquid or solid before forming a Bose-Einstein condensate. What overcomes the lithium atoms' mutual attraction is something that still needs to be sorted out, he says. Looking into such issues is "going to be tremendously exciting over the next few years," says Hulet .

Gene Hacking

Geneticists: Ever wonder how a computer hacker might view your craft? Take a look at the September issue of *Wired*, the hip magazine for computer jocks and cyber surfers, which carries an article on geneticist Leroy Hood of the University of Washington. Called "Hacking the Mother Code," the article explains genes in language any nerd can understand. Taking off from a quote by Microsoft king Bill Gates—"The gene is by far the most sophisticated program around"—author Ed Regis writes:

"The gene is the monster program of all history. ... Millions of lines long. ... They're the ultimate code, the mother of us all." Most programs, though, "are largely unread [and] often full of bugs—system defects, flaws, errors—that cause them, when run, to produce anomalous results. ... You might think you could correct those defects and wipe out the diseases—if only you had a way of reading those programs, debugging them, and putting the upgraded versions back into the original gene. Then the next time it ran ... the gene would produce a healthy organ instead of some flawed and corrupt outgrowth. ...You could perform these miracles if you had a radically new type of read/write head, one that would read from, and write to, not magnetic media, not optical disk, but the genetic storage medium, DNA.

"But those read/write heads already exist. Their development is largely the work of one man ... Leroy Hood."



Who does science? Probability of majoring in science goes up linearly with math score on the Scholastic Aptitude Test.

No Hostile Climate Found for Minorities

In attempting to explain why disproportionately few black students choose to major in science, some educators have suggested that an "inhospitable" environment in higher education—or even "institutional racism"—is to blame. But Dartmouth psychologist Rogers Elliott and colleagues at Dartmouth, Yale, Cornell, and Brown universities have evidence that precollege achievement is enough to explain the ethnic disparities in college science.

In a study for the National Science Foundation on "the role of ethnicity in choice of and persistence in science majors," the researchers based findings on data from 3534 whites, 355 blacks, 582 Asian Americans, and 216 Hispanics who entered one of the four colleges in 1988. The sample included 1625 science majors.

The researchers found that a larger fraction of blacks than whites expressed interest in science when they first got to college. But only 34% of the blacks who expressed interest ended up majoring in science, compared with 60% of the whites. Ethnicity did not stand up as a predictor for any of the disparity. Rather, the authors write, "it was the preadmission variables describing developed ability—test scores and science grades," as well as the number of high school science courses taken, that counted. Furthermore, none of the comments in questionnaires administered to the group in 1991 "constitute[d] even a small indictment of these institutions as being inhospitable, much less racist," the researchers report.

Math scores on the Scholastic Aptitude Test (SAT-M) are an excellent predictor of who will major in science, say the researchers. And they found that, among students with SAT-M scores of 650 or more, all groups were equally likely to major in science (except for Asians, who were more likely to do so). In sum, "equal developed ability among students interested in science predicts equal persistence, regardless of ethnic or racial affiliation."

The new report is a complement to one produced last year in which the researchers used the same subjects to investigate the theory that a "chilly climate" in academia freezes women out of science. But, says Elliott, they found that "if you take account of grades and test scores, then in no field save math is there anything left for a gender-based factor to explain."

India's Ph.D. Glut

India has got a Ph.D. problem: inflation and devaluation of its doctorates in science and engineering. It is producing too many—some 5000 a year as of 1993, while total employment of Ph.D.s in R&D is only just over 15,000, according to the Ministry of Science and Technology—and the quality of training is often poor. The powers governing higher education, such as the Association of Indian Universities (AIU), have been pondering the problem for some time and have finally taken one concrete action: creating a data bank of university researchers to examine the theses of Ph.D. candidates, making it harder for lackluster candidates to slip through.

India's Ph.D. glut and the ac-

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companying decline in quality, says radiation biologist Pratap Narain Srivastava, President of the Society for Scientific Values, is the result of government policies that encourage people to get higher degrees—it only costs $50 a year to pursue a doctorate at a state-supported university—rather than follow more vocational paths. While some schools have tried to raise standards in graduate study, there has been no national strategy for addressing the problem.

But now the AIU hopes to improve matters by setting up an information bank that will "allow heads of universities to make the right choices of examiners for Ph.D. theses," says AIU secretary general, geologist Krishnapratap Bhagwantrao Powar. The AIU has sent questionnaires to all of India's 183 universities asking respondents to list their areas of expertise. So far, it has gotten about 5000 replies (a 50% response rate) and is hoping for more.

Many Indian scientists are skeptical that this will change anything. Says Srivastava: "In our system there seems to be a lot of importance given to gathering a lot of statistics [but] rarely is anything done with all that information." Nonetheless, some, such as Powar and Armaity Desai, chair of the University Grants Commission, are optimistic, saying the data bank will help universities battle cronyism and instead look for expertise in the selection of Ph.D. examiners—which in the long run might lead to fewer and better Indian Ph.D.s.

Old World Tree Found in Colombia

It was first spotted in a remote Colombian rain forest in 1988, and researchers have finally confirmed its significance: A species of dipterocarp, a tree native to Africa and tropical Asia, has been found to be alive and well in the New World, according to researchers in Colombia and the New York Botanical Garden (NYBG). "This discovery is the botanical equivalent of finding a population of [African] gorillas living in the Colombian rain forest," says Brian M. Boom, NYBG's vice president for botanical science, in a press release.

Enrique Forero, director of NYBG's Institute of Systemic Botany, says another member of the dipterocarp family was found earlier, in 1977 in Guyana. But the identification was "doubtful" until two Colombian students came across the new species—dubbed *Pseudomonotes tropenbosii*—on a mountainside in Colombia. "With this finding there is no doubt that it is actually here," says Forero. The definitive identification of the species means that it is extremely old—around 80 million years—and must have arrived before the American and African continents separated, the scientists say. More importantly for the future of the world's forests is that "it shows that we know so little about the tropical forest," says Forero. "It is a common tree in the forest where it grows," yet this area had never been explored before by scientists, he says. A paper describing the tree will appear in the journal *Brittonia* in September.

Peter Raven, director of the Missouri Botanical Garden, calls the tree "a fantastic find." He adds: "If we're finding forest trees 250 feet high in northwest South America" that were never noticed before, "shouldn't we get going and find out what's there before we cut it all down in the next 30 or 40 years?"

PHOTOS BY BRIAN BOOM

Hidden treasure. Area where new species was found (leaves above).

Japan's Prizes

Ecologists often complain that politicians pay too little heed to their discipline. But they can't complain about Japanese foundations, which have established the world's most munificent prizes for ecology and the environment.

The latest is the Cosmos Prize, administered by a foundation set up with the proceeds of a world garden exposition held in Osaka in 1990. Last month the foundation decided to give the third annual prize—carrying with it 40 million yen ($500,000)—to Tatuo Kira, professor emeritus at Osaka City University and a leader in establishing tropical plant studies in Japan. The first two Cosmos prizes went to Ghillean Prance, director of the Royal Botanical Gardens at Kew in London, and ethnobotanist Jacques François Barrau of the Paris National Museum of Natural History.

Peter Raven, head of the Missouri Botanical Garden and the only U.S. scientist on the Cosmos prize committee, says the National Academy of Sciences recently made up a list of international prizes showing that Japan's leading the pack. In addition to the Cosmos and the 50-million yen Blue Planet Awards, sponsored by the Asahi Glass Foundation, five other major international prizes (with rewards ranging from 10 million to 50 million yen) in science or technology have been created by the Japanese since 1983. The only prizes of comparable value established outside Japan have been the the King Faisal International Prize in Science (1983), the National Academy of Engineering's Charles Stark Draper prize (1988), and the Amsterdam Prizes for Medicine and the Environment (1989–90).

Who's Postdocing Now?

The National Research Council's biennial Survey of Doctorate Recipients is chock-a-block with statistics revealing everything you ever wanted to know about the fate of Ph.D. recipients. But the report containing the data, which the National Science Foundation will release later this year, will be missing one set of numbers that is of great interest these days to young scientists: How many people are still doing postdocs several years out from their degree?

According to Prudy Brown of the NRC's Office of Science and Engineering Personnel, many respondents to the 1993 survey on which the report will be based misunderstood a key question. When asked if their job as of April 1993 was a "postdoctoral appointment," many apparently translated that to mean "the job I got after getting my Ph.D.," says Brown. As a result, the number of people doing postdocs apparently "more than doubled" between 1991 and 1993. Brown says it's obvious the question was misconstrued because some who answered in the affirmative revealed elsewhere in the survey that they were full professors or had high salaries.

So there will be no authoritative word in this year's report on the postdoc question. Interested parties will have to wait until late next year when data from the 1995 survey become available.

PETA on the Move

People for the Ethical Treatment of Animals (PETA), the scourge of animal researchers, is planning to move its headquarters from the Washington, D.C., suburb of Rockville, Maryland, to Seattle next spring. PETA officials won't comment on the move except to say it will consolidate the 80-person headquarters with a fund-raising office that is already on the West Coast. But the Foundation for Biomedical Research (FBR), a Washington, D.C.–based organization set up to defend the use of animals in research, says PETA wants to buy a building and finds the Washington area too expensive—despite an annual budget that has grown to $12 million.

PETA spokesperson Kathy Savory says there are no firm plans on whether to keep an office near Washington. But the FBR says it has learned from a confidential memo that PETA, whose nonprofit status precludes it from lobbying, plans to set up a Washington lobby group tentatively called the Council for Compassionate Governance, and has been asking ex-members of Congress if they're interested in applying for a job as director. In any case, PETA continues to proliferate. It has opened three European offices, in London; Amsterdam, the Netherlands; and Stuttgart, Germany, and claims 500,000 members worldwide.