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Blacks sought to fill future surplus of jobs in science, engineering

By Nathan Gorenstein



When chemists Isaac B. Horton 3d and Tyraine D. Ragsdale set out to write one about love or sex. They wrote about black scientists - obscure ones at that. Master Inventor, the brother was mean. His specialty was building and repairing machines Here's how Elijah McCoy became so great.

He made a device that helped machines self-lubricate. The two local chemists wrote the above in an unconventional effort to lure more young blacks into science and engineering - fields where many thousands

of jobs may go beginning in this country into the next two decades.

White males have dominated American science since Benjamin Franklin flew his kite, but white males are becoming a smaller fraction of the workforce. And, for a variety of reasons, fewer of them are going into science and engineering.

"There are simply not enough white males going around, said Betty Vetter, executive director of the commission of Professionals in science and technology.

Women could take up the slack, but they aren't. After a 20-year period when the number of women earning undergraduate science and engineering graduates, for example, dropped 12 percent between 1978 and 1989.

And while there has been sharp increase in the number of Asian graduates in these fields, Asians - at less than 3 percent of the nation's population - are simply too small to fill the gap.

In the view of the people like Horton and Ragsdale, all this adds up to an enormous opportunity for the black youth of

America -if they can just be persuaded to seize it.

Accurately projecting future demands is notoriously difficult, but by one widely accepted estimate, America will be short up to 150,000 science and engineering doctorates by the year 2010.

This does not speak well for the nation's future, and a lot of people know it. Just this week, the council on Competitiveness, an organization of top leaders in business, education and labor, reported that the United States was losing badly to foreign competitors in many technological fields.

Calling on black students to fill a future shortage in the sciences

America already has fallen far behind in the fields of semiconductors, machine tools and the sophisticated robots used in factory automation, the council said. It added that the country could well lose the race to develop the multibillion-dollar market for the next generation of high-definition television, and that "even such American success stories as chemicals, computers aerospace have foreign competitors close on their heels".

Can rap music really help? It's hard to say, but anything seems worth trying. Benjamin S. Shen, an astronomy and astrophysics professor at the University of Pennsylvania, said the effort to attract more women and minorities "has been working too well. This is very worrisome, because by 2010 the U.S. population is about one-third black and Hispanic, and that is where the large pool of talent we are not tapping."

The number of blacks getting undergraduate science and engineering degrees has risen in the last decade from 9,000 to 13,000 - still not enough to change the national picture.

The situation for Hispanics is no better. The National Science Foundation is seeking \$32 million from congress this year for programs specifically to attract minorities, said Joseph G. Danek, the plan's director.

"There is a prevailing myth that the federal government, at least in science and engineering, has put an enormous amount of money in attracting minority and women scientists. Not true". He said.

"I Think what's different now from 20 years ago is the motive. Motive now is much more pragmatic and practical. We simply must develop a greater number of scientists and engineers."

Oddly, no one in engineering or the natural sciences has done a rigorous study to find out why Americans are losing interest in these fields.

Some say that professions like law and medicine are considered more prestigious. And a number of scientist and teachers wonder whether affluent Americans are simply turned off by the hard work it takes to become a mathematician, physicist or biochemist.

Finally, Money plays a role, especially the low stipends paid to doctoral students. A scientific career may not seem feasible for someone who doesn't give the matter much thought in high school and fails to algebra, geometry, chemistry and physics courses. The time they bit science in college, they are lost, it doesn't matter how bright they are. They are out of the pipeline," said a staff member at the national action council for minorities in engineering Inc., an industry funded group.

Social forces also discourage blacks from entering the sciences. "It was demonstrated to me as something really difficult. I don't know if it was intentional, but [during high school] I got it into my head this was something I couldn't be good at," said Kelly Woodland, who majored in journalism in college. He is now the future careers

center coordinator at the Franklin institute, where his duties include attracting more black high school students to the sciences.

Woodland says there is a large pool of potential black scientists not being tapped. Although blacks are more than 12 percent of the U.S. population, only 2.6 percent of all scientists and engineers are black. "If you look at statistics and see that 2 percent... and see military is 22 or 25 percent black, you get an idea of where kids think opportunities are."

Noting that blacks hold a variety of technical jobs in the military, Woodland says that if they had received the right grounding in high school, "they could be the scientists" the nation is seeking. The recent decline in the number of women in the sciences, Vetter says. Is because "we ran out of pioneers" she argues that fewer women are willing to jump into nontraditional roles because conservative social forces are reasserting themselves.

And Margrete S. Klein, director of women's programs for a division of the national science foundation, said sexism on the part of some male scientists still discourages women. Whatever the obstacles, scientists say there is no choice

but to look to minorities and women to overcome the looming shortage.

"This is a pool, this is what the demographics are going to be," said Joseph Bordogna, former dean of the University of Pennsylvania's school of engineering and applied science. "And the will really be in trouble unless we do this."

The rap tune "The list" (as in scientist) is now being eyed by epic records and Ragsdale will perform it next month on civic center rap concert following the Penn relays. The song is a spin-off of Horton's and Ragsdale work with the national organization for the professional Advancement of black chemists and chemical engineers. Horton, 34, who holds a doctorate and is a marketing director at Rohm & Haas, heads the organization's local chapter. It holds Saturday-morning seminars, competitive "Science Bowls" and after-school tutoring to attract black students.

Ragsdale, 25, a research chemist at R.W. Johnson Pharmaceutical Research Institute in Springhouse, is the first male in his family to graduate to college. Now, Ragsdale wants to convince students that a science career does not require a special genius. "All you have to do is drive"