

CAREER CHOICES

Brewing the Perfect Pint

Many a physicist has whiled away many an hour over a nice cold pint of beer. For at least one physicist, that pint is also his livelihood.

Scott Robertson is head brewer at Brewerkz, a Singapore-based brewpub, and it's his job to produce and ensure the quality of all the beer that flows from the taps. It's hands-on, labor-intensive work; he and his assistant may spend an entire afternoon cleaning out empty tanks and then filtering beer into them. As Scott explains, basic beer consists of only four ingredients—water, hops, malt and yeast—which are by turns mixed, separated, boiled, cooled, fermented, aged, filtered and carbonated. Altering the mix of ingredients and varying the techniques used opens up an infinity of beer possibilities. Scott currently brews six different styles: pale ale, bitter ale, nut brown ale, golden ale, red ale and weizen (a German wheat beer), but plans to add more. “One of the rewarding things is the creativity, the freedom that I have to experiment,” Scott says. “I can try new ingredients, or play around with the temperatures during the mash [where crushed malt is soaked in hot water to break down the complex sugars].”

The work presents technical challenges as well. “There’s a lot of problem solving in brewing,” he notes. “If you have an off flavor, you have to be able to trace it back in a logical fashion.” Although beer making involves more chemistry than physics *per se*, brewing is, at its heart, an experimental science, and there is much about the process that would be familiar to the physicist. (And the finished product displays some fascinating physics; see, for example, the article by Neil Shafer and Richard Zare in *PHYSICS TODAY*, October 1991, page 48.)

Long popular in Europe, microbreweries and brewpubs like Scott’s have been proliferating in other parts of the world. The American Brewers Guild estimates that 250 to 500 brewpubs and microbreweries are opening in the US every year, and existing breweries are expanding, which means the demand for qualified brewers is on the rise.

The road to Singapore

But how does a physicist from Canada wind up brewing beer in Singapore? In Scott’s case, the path was not a direct one. After graduating from the

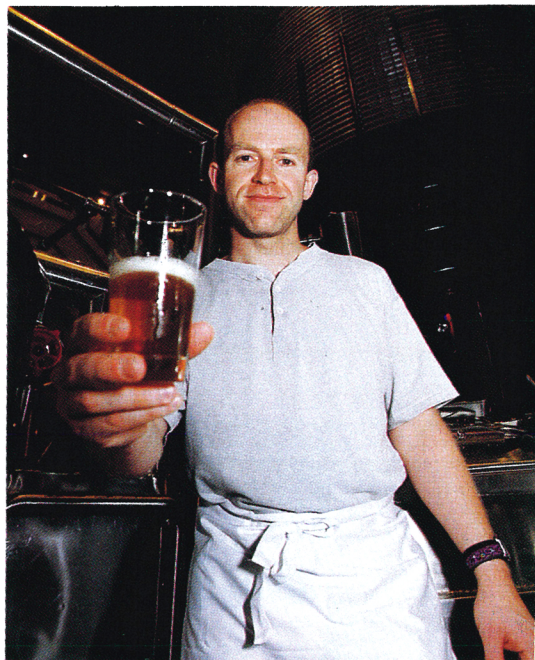
University of Victoria with a BS in physics, he says, “the natural progression was to go to grad school.” He started out studying low-temperature solid-state physics at the University of Alberta, but soon switched to medical physics, joining a research group doing nuclear magnetic resonance imaging. Inherent problems with the magnets were degrading the image quality, so Scott’s project was to pinpoint what those problems were. Such work was only being done in a few other places in the US and the UK, he says. “We were very cutting edge.” When it came time to defend his master’s thesis, the review committee urged Scott to continue on to a PhD.

“I thought about it for a few weeks,” he recalls. “It would only take another year or two to finish the PhD. But I was 24, I’d been going to school since kindergarten and I was tired. So I took my master’s and I left.”

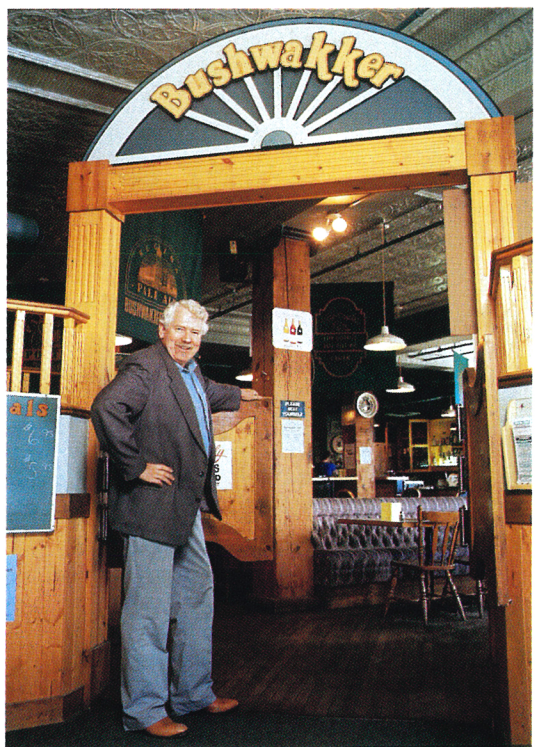
Scott set off on a long-planned trip to Central and South America. With backpack and toothbrush, he made his way across the continent, “met lots of great people, learned to speak Spanish, learned about American foreign policy, almost got married. . . . It was a wonderful year, a decision I’ll never regret.”

After a year abroad, he returned to Canada in the summer of 1990, intent on making some “quick money” and then traveling again. At the time the government was aggressively reforesting land that had been logged, so Scott spent a lucrative summer planting trees and contemplating his next voyage.

Those travels would have to wait. His parents



SCOTT ROBERTSON



BEV ROBERTSON

had just opened a brewpub in their home town of Regina, Saskatchewan, and Scott offered to take over the brewing operations. With no formal training, he learned on the job. "I read technical journals and textbooks on brewing, and my physics background certainly made that very easy—I could understand the terms and the concepts." (Several universities do offer courses and degrees in brewing science—the University of California, Davis, and the UK's Heriot-Watt University are two.)

The work was satisfying, and Scott's reputation as a brewer grew. In the spring of 1996, he was offered a two-month consulting position at a brewery in Japan, in the northern city of Niigata; earlier this year, he did another consulting stint in southern Japan. Upon his return, the Vancouver company that had arranged those positions made Scott a permanent offer, the one that took him to Singapore.

Like son, like father

If Scott's career path seems atypical, it is perhaps less so when one knows a little about his father, Bev. In addition to operating Bushwakker Brewing Co, the family-run pub where Scott learned the trade, the elder Robertson is also a professor of physics at the University of Regina, and he recently completed a term as president of the Canadian Association of Physicists.

In many ways, Bev has led the traditional life of an academic physicist. After earning a BS in physics from the University of New Brunswick in 1961, he went on to McMaster University, earning his MS in 1965 and his PhD two years later. He then took a chemistry postdoc at Cornell University, returning to Canada in 1969 to join the University of Regina faculty. In recent years, his research has been in charge-density crystallography, a technique for producing higher-resolution images. "At this resolution, we see the shapes of the molecules, not just their locations," he explains. "This accurate image can then be used to calculate the distribution of electrostatic potential around the molecule." His group just completed a study of how molecules recognize the drug AZT, used in treating people with AIDS.

Bev's taste for beer developed during a sabbatical year at the University of Stuttgart, in 1976–77. Once back home, he could find nothing comparable to the robust drink he had enjoyed in Germany. ("I no longer call the products made by the major North American companies beer," he says.) And so he decided to brew his own. Applying the same precision and methodicalness that had made him a

successful crystallographer, Bev soon mastered the art of home brewing. In time, he began entering, and winning, beer making competitions.

In 1991, Bev and his wife, Elaine, opened the Bushwakker. (In the parlance of cross-country skiing, a "bushwhacker" is one who blazes his or her own trail. During his early years in Regina, Bev and some colleagues would meet weekly during the winter months, strap on their skis and set off across the prairie. Later, several of them took up home brewing with Bev, and the group called itself the Bushwhacker Brewers.) Running a pub and restaurant demands a wholly different set of skills—to resolve personality conflicts and handle customers, among other things. "I think I bring to the business some things that I learned from managing research groups," Bev observes. "It has a lot to do with accepting ideas and input from people, acting more as a facilitator than as an order giver."

Physics and the world

Although his father's example clearly influenced Scott, he says he never felt any pressure to go into physics. It simply interested him. In high school, Scott recalls, "most things bored me. Physics was the most challenging." And he liked that "it was natural—human whims didn't come into it."

After he entered university, his interests broadened and evolved, as he discovered the arts, literature and history. In between problem sets and exams, he would read Dickens and Dostoyevsky. And he began to see physics as one of many types of human endeavor. "I've come to realize that human thoughts influence physics as well," he says. "What's going on in society at the time greatly influences where scientists look, what they study."

Scott's social awareness also grew. While at the University of Victoria, he served as president of the local chapter of Amnesty International, the human rights organization. And during his South American travels, he volunteered at an orphanage in Guatemala. "Seeing people in the third world tells you a lot about where you're from, about the unfairness in the world."

Scott likes that his work has given him further opportunities to travel and experience other cultures. Though currently based in Singapore, he will eventually oversee the company's brewing operations throughout the region. "It's a funny thing: I had been on my way to Southeast Asia before [the Bushwakker] opened. And seven years later, here I am! But I'm glad I did it this way," he adds, "because now I'm also making money."

JEAN KUMAGAI ■



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