REPORTS

COMPUTERS REDUX

*Deconstructing the PC
for fun and profit*

The idea for recycling computers came from my brother's father-in-law, an entrepreneur who made his fortune in the '60s and '70s recovering metal from telephone scrap. He pointed out that much of the newfangled electronic waste—the stuff from computers—wound up at ill-equipped scrapyards. The equipment was plundered for steel, then crushed for disposal in landfills across the United States. Going to waste was all that nickel-cobalt alloy in the disk drives, all that copper in the transformers, and most disastrously, all those precious metals—including silver, gold, palladium, and platinum—layered through the circuit boards and chips.

Not one to let a few free weekend hours go to waste, my brother, Alan Weintraub, a lawyer by day, began haunting scrapyards in New York and New Jersey. For a few dollars here and there he purchased the metal-rich boards and stored them in boxes in his garage. When he had enough, he sent them for recycling to specialized refineries in England, Belgium, and Sweden.

Alan made a small but gratifying profit selling the resulting gold, silver, and palladium. But scrutinizing the lay of the high-tech-waste land, he realized there was more than a little gold in them thar hills—much of it in the hands of all the law firms, brokerage houses, and computer-leasing companies that were discarding old, inefficient mainframes and PCs for new.

"I began making thousands of phone calls all around the country looking for truckloads of this equipment," my brother explains, "and I found quite a few people willing to pay me just to cart the stuff away."

Casting around for serious space and a partner, he soon found copper-wire-recycling expert Salvatore Massaro, who was already running a thriving business called Monmouth Wire Recycling in Tinton Falls, New Jersey. Alan would call around to locate the equipment and arrange for shipping, and Sal would handle the equipment once it arrived.

To harvest the riches of high-tech waste, my brother and Sal developed an elaborate disassembly and sorting process. "A normal scrapyard

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would just crush these machines like they crush cars," Sal explained to me. "They would recover the steel, perhaps some aluminum and copper, but the lion's share of the other materials would be lost. We get the most out of computer scrap by separating literally hundreds of parts and even sorting boards by metal content and type."

My brother and his partner are not alone. All around the United States entrepreneurs with some high-tech know-how have begun to harvest cast-off computers for their cornucopia of valuable waste. In Phoenix, Bud Levey and Bill Woosley, with backgrounds in chemical engineering and business respectively, founded Electronic Materials and Computers in 1986. They started out buying obsolete computer and electronics equipment for recyclable parts and precious metals. These days they also operate a warehouse that sells $1 million worth of printers, terminals, computers, and miscellaneous parts a year. "People want decent equipment without a high price, and they're always looking for deals," says Woosley. "That's what we offer."

In San Jose, California, the Micro Metallics Corporation, a subsidiary of Canada's Noranda, harvests the huge volume of computer scrap emerging from Silicon Valley. According to Steve Skurnac, president of Micro Metallics, the materials he recycles from obsolete machines "might otherwise contaminate groundwater in areas in which they were disposed." The booming business includes recycling arrangements with the likes of Texas Instruments, Hewlett Packard, and Apple Computer. Micro Metallics ships the scrap to Canada, where Noranda uses

specialized smelting techniques to recover precious metals such as copper, silver, platinum, palladium, and gold.

As the stream of high-tech waste continues to flow, computer manufacturers have become involved in the business of recycling as well. According to Omar Khalifa, manager of the sustainable technology group at Apple, in Cupertino, California, his company has started a take-back program in Germany, where such services will soon be required by law. This experimental program, variations of which Apple hopes to institute around the world, accepts all Apple equipment, from laser printers to computer terminals and monitors.

But the biggest player in computer reclamation may turn out to be IBM. According to Bill Engels, program manager for the company's corporate environmental staff, IBM plans to announce a take-back program for all its equipment within the year. "We're starting with two recycling centers, based in New Haven, Connecticut, and Raleigh, North Carolina," he explains. "Then we'll establish these centers across the USA." The vast recycling network envisioned by IBM will be based on an in-depth technical knowledge of every machine that passes through. "It's an environmental issue," Engels explains. "If we are to recycle a machine, we must understand how to

deal with the thousands of parts inside."

IBM engineers are also working at eliminating highly toxic lead from the cathode-ray tubes in monitors, and a design team in Raleigh is working on one of the major stumbling blocks to the development of a truly recyclable computer—a high-tech plastic that can be melted down and reused. —*Pamela Weintraub*

SIBERIA FOR SALE

A Russian timber rush in a regulatory void

Anton Chekhov once described Siberia as "a sea of forests." A century later, the view from the windows of the Trans-Siberian Railroad more closely resembles the Great Plains of the western United States. Hours pass without sight of the pine forests and birch groves that fill Russian folklore.

The more remote forests of Siberia survived decades of Soviet inefficiency

Piling the remains: From tree to chips to pulp, forests in Siberia have something for everyone.