vent principle rather than the first-to-file system followed elsewhere. "Harmonizing the U.S. patent system with Europe and Japan is desirable," says NAS co-chair Hubert Schoemaker, who is chief executive officer of Centocor (Malvern, PA). Such an effort also would entail developing a better understanding of "what is and is not patentable," he says.

Seeing the U.S. biotechnology industry faced with this range of challenges, NAS panel members appeared uncomfortable trying to frame specific recommendations for changes in the U.S. system. Schoemaker says that a number of "very specific things could be done" through legislation "to reward innovators." Burrill points to a need for changes in the channeling of capital so that more consideration is given to long-term investment—and small company survival—in the U.S.

Panel members also say that a better effort is needed to bring disparate elements of the U.S. biotechnology effort into register. The administration's National Technology Initiative, coordinated by the National Institute of Standards and Technology (Gaithersburg, MD), marks a move in the right direction. The initiative encourages the transfer of federally developed technology to industry. Other recent developments include the federal biotechnology budget initiative, which set aside $4 billion for biotech research, and a broad endorsement of biotechnology by the administration's high-ranking Competitiveness Council. **—Jeffrey L. Fox**

They're brought in as adviseors and promoters of basic science." For example, when industry executives and the Ministry of International Trade and Industry think about doing something collectively, a key academician is identified as an academic "endorsement" for the line of research.

Given the imbalance in biotech accomplishment, could the U.S. benefit from Japan's existing strength in biotechnology? "The U.S. could get a lot of know-how from the Japanese biotech industry through cross-licensing or cooperative projects," says RCAST's Karube. In fact, notes Clymer, many U.S. firms could benefit substantially from Japanese firms. "A lot of U.S. companies have very sophisticated receptor-based assay systems for screening compounds," she says. "Japan has some of the largest natural-product libraries in the world. Where you'll see U.S. companies begin to benefit from Japanese research and technology will be in establishing alliances to utilize these libraries." **—Stuart M. Dambrot**

QUIETLY AMASSING MILLIONS

SECRET TO AGBIOTECH

SANTA CRUZ, Calif.—It's still a rarity for a biotechnology company to turn a profit, especially when it's an agbiotech company. It's even rarer for a firm to achieve such a milestone without vigorously tooting its own horn. But such is Idexx Laboratories (Westbrook, ME), a "biodetection" outfit. The company cleared $3.2 million last year and raised $30 million in a secondary offering in April. Its stock has by and large resisted the often-severe drops that have recently affected the sector. And this despite the fact that, until quite recently, analysts didn't even follow the firm.

What's the formula? Can we attribute it to Yankee ingenuity? Oppenheimer (New York) analyst Glenn Reicin, who picked up on the stock in February, says that, "above all, this is a management story." Idexx president and founder David Shaw explains that the company's business strategy has remained consistent from its start in 1983. "We try to participate only in those markets where we have all the ingredients to be a market-share leader," says Shaw.

Idexx makes money by targeting markets that are too small to attract big companies.

Shaw explains that Idexx targets markets that are too specialized or small to attract competiton from major companies. In animal health care, "large companies tend to focus more on drugs and vaccines than on diagnostics," he says. But one of the major problems in treating animal disease has always been to identify the causative agent early on.

So Idexx plunged into the animal-disease-diagnosis market. The company has also expanded into diagnostics to identify food and environmental contaminants. Today it sells over 70 products to both markets, to fit testing demands from high-volume-throughput laboratories to one-at-a-time users.

Idexx's first product was FlockChek, a computerized immunoassay system that monitors the health of flocks of chickens. Breeders monitor their flocks every few months by statistical sampling with assays that include about a dozen analytes for the major poultry pathogens, including Newcastle disease virus, infectious bursal disease virus, infectious bronchitis virus, and reovirus. From there, Idexx's animal-health product line expanded into livestock, and then into small animals and pets. The company now offers membrane-filter-based, non-instrumented test kits, using its concentration-immunoassay technology, to veterinary clinics and animal hospitals. It also sells instrument-based detection systems for testing large numbers of samples, mostly for disease surveillance and health monitoring in poultry and livestock. Oppenheimer's Reicin estimates that Idexx controls about 50 percent of the $50-million animal-diagnostics market, and it dominates in areas like poultry testing.

One explanation for Idexx's rapid rise to profitability is that it has licensed or purchased much of its basic technology, instead of spending time and money to develop the technology itself. For example, the vast majority of the company's products use modifications of available immunoassay-based detection methods. For high-throughput immunoassays, Idexx's technology of choice is a particle-concentration fluorescence immunoassay, which it licensed from Baxter International (Deerfield, IL). The lower-throughput immunoassays use patented immunoassay technology licensed from Hybritech (San Diego, CA). The company also offers a DNA-probe-based assay that employs PCR technology licensed from Hoffmann-La Roche (Nutley, NJ). Additionally, Idexx has acquired product lines from Fermenta Animal Health (Kansas City, MO) and VetTest, a Swiss firm that specializes in blood-chemistry analysis.

Indeed, Idexx's product revenues have continued to swell. Between 1989 and 1990, they jumped 41 percent, and they increased 23 percent from 1990 to 1991. How long can this earnings growth continue? Oppenheimer's Reicin foresees annual growth of 30 percent over the next three years; by 1995 he predicts Idexx will be a $110-million company. And what will account for the growth? Idexx's Shaw comments: "People can expect in the future what they've seen in the past." Company growth has come largely from a proliferation of products; Idexx intends to maintain that approach, developing new products for existing markets while simultaneously expanding into hitherto untapped niches. **—Jennifer Van Brunt**