Running Out of Energy

By DONALD L. BARLETT and JAMES B. STEELE

IN 1973, WITH THE COUNTRY IMPORTING 6 million barrels of crude oil and petroleum products daily, President Nixon pledged that by virtue of his Project Independence "in the year 1980, the United States will not be dependent on any other country for the energy we need to provide our jobs, to heat our homes, and to keep our transportation moving." He advanced a catalog of energy proposals that covered everything from drilling on the outer continental shelf to building more nuclear power plants, from expanding the use of coal to conducting research on potential new sources. In the end it didn't work, and the U.S. failed to come close to his goal of energy independence. While the yearly numbers rose and fell, by 1980 net oil imports had increased 400,000 barrels a day over 1973.

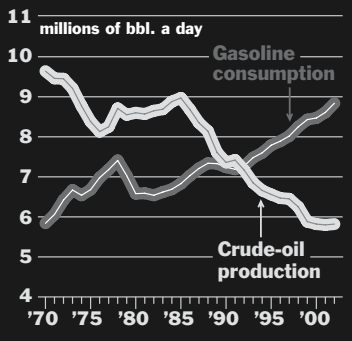
After the second oil shock hit America in 1979, Washington's wandering attention was focused again on energy. Following Nixon's lead, President Carter pushed development of synthetic fuels as part of his strategy to slash imports. When he signed the Energy Security Act into law in June 1980, Carter said it would "encourage production of 2 million barrels a day of synthetic fuels by 1992." That didn't work either: synthetic-fuel production ended up slightly in excess of zero, and oil imports totaled 6.9 million barrels a day that year.

Throughout the years, lawmakers and Presidents insisted that if they handed out enough incentives, U.S. oil production would rise, and there would be less need for imports. In each instance, legislation was accompanied by extravagant forecasts. In 1974 policymakers predicted that U.S. oil production "could increase to more than 17 million barrels a day, which is more than sufficient to be at zero imports by 1985." The Reagan White House shared the optimism. A spokesman said that "the ranges that any reasonable person is considering include zero [imports] by 2000." By that year, however, imports were at their highest level ever, and domestic production had declined to levels not seen since 1950. Now President Bush has his own plan to jump-start oil production. He wants to begin drilling in a portion of the 1.5 million-acre arctic coastal-plain area of the Alaska National Wildlife Refuge (ANWR). According to the White House, the President "believes that opening this small area to environmentally responsible exploration would provide the resources necessary to reduce our dependence on foreign sources of oil and provide for greater energy security."

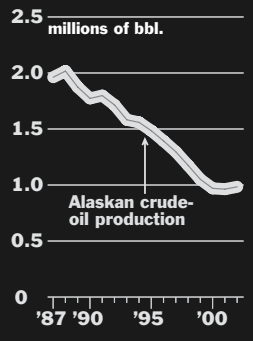
THE ENERGY PICTURE

Crude-oil production in the U.S. peaked in 1970, and domestic natural-gas production peaked in 1973. Despite various programs over the past three decades, imports account for an ever greater share of the U.S.'s energy

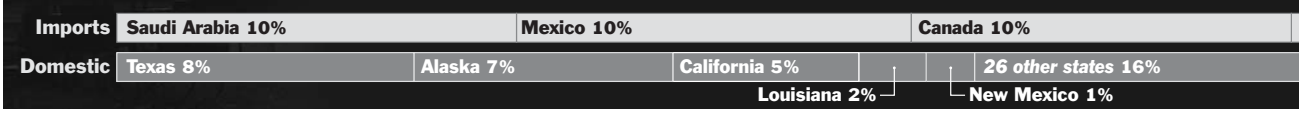
Gasoline consumption has climbed steadily as domestic production of crude oil has been dropping ...



... led by a sharp falloff in crude-oil production from Alaska ...



Where the U.S. gets its crude oil Percentages are each country or state's contribution to the total U.S. oil supply in 2002



CONSERVATION—BUT NOT FOR REAL MEN. After the 1973–74 energy crisis, when gas stations closed on Sundays and motorists waited in lines for hours to fill up, Congress enacted a series of tough conservation measures. The Energy Policy and Conservation Act of 1975 imposed stringent mileage requirements on automakers—an average of 27.5 m.p.g. on passenger cars by model year 1985—to curb gasoline consumption. It worked.

In the decade before the act's passage, gasoline consumption had risen 48%, to 6.5 million barrels a day in 1974. In years to follow, even with millions more cars on the highways, consumption remained largely unchanged. Beginning at 7 million barrels a day in 1976, demand went up and down in a narrow range and by 1991 was at just 7.2 million.

During the 1980s, as it became clear gasoline conservation was working, aided by a nasty recession, one energy forecast after another anticipated ever better mileage. The American Petroleum Institute, swept up by auto-industry fervor, announced in 1981 that "forecasts of fuel efficiency for new cars now exceed those mandates (27.5 m.p.g.), suggesting an industry-fleet average of 30 m.p.g. by 1985." Not exactly: this year the average is still 27.5 m.p.g. for vehicles officially labeled as passenger cars, but for the entire fleet of vehicles, including SUVs and trucks, it is much worse. The best overall fuel economy of 22.1 m.p.g. (for U.S.-made vehicles) was achieved in 1987–88. Aside from an occasional upward tick, that figure has inched steadily downward, to 20.4 m.p.g. last year.

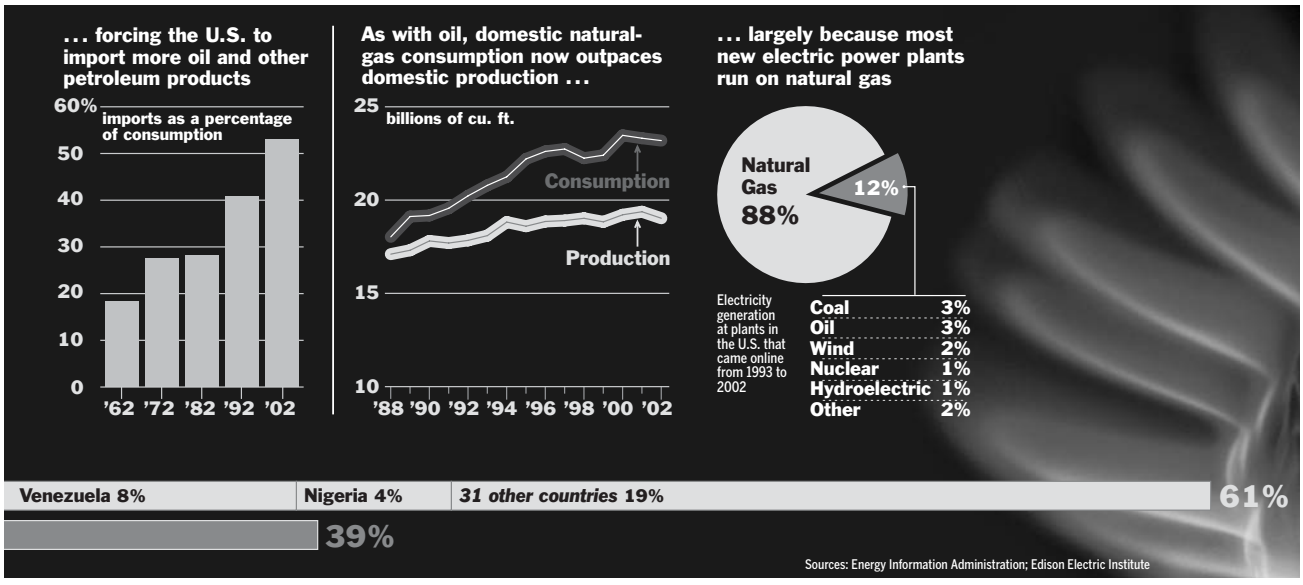
That's because Congress lost interest in conservation and failed to keep the pressure on the car companies. Lawmakers refused to set new mileage goals. Worse, they excluded from the existing requirements light trucks and SUVs, the fastest-selling vehicles and the ones that use the most gasoline. Contributing even more to the trend, they extended an extraordinary tax benefit to the gas guzzlers, so drivers who used a vehicle for work could write off the cost on their tax returns—even as much as $38,200 toward a new Hummer H2 that gets only 10 m.p.g. As might be expected, consumption rose 1.5 million barrels a day over the past decade, to 8.8 million last year. But for owners of pricey vehicles like the Hummer, it keeps getting better. The tax-cutting bill signed into law in May expanded the write-off to $100,000.

For its part, the Bush Administration is dismissive of serious conservation. Vice President Cheney, who headed an Administration task force to devise an energy strategy—a group whose work was carried out in secret and whose papers remain secret—expressed the attitude two years ago in a now infamous way: "Conservation may be a sign of personal virtue, but it is not a sufficient basis for a sound, comprehensive energy policy." ■

Questions

1. What is President Bush's solution to reducing U.S. dependence on foreign oil?

2. In what year did the U.S. achieve its best overall fuel economy of 22.1 m.p.g.?



Inside the Food Labs

A tantalizing tour of the kitchens where culinary scientists fine-tune the flavors and architecture of tomorrow's hit foods

By JEFFREY KLUGER

THERE ARE A LOT OF DIFFERENT FACTORS Micheale Kester has to juggle when she invents your next scoop of ice cream. Right now she's not as concerned about flavor or texture—although those are important—as she is about architecture. Kester, a food technologist in the Burbank, Calif., labs of ice cream giant Baskin-Robbins, has been fooling around with an idea for a flavor she calls Cinnamon Bun, but first she has to make sure the stuff will hold together. If you're not careful with the size and number of your chips, nuts or bun bits—what the ice cream techies call inclusions—even the densest scoop of the richest brand can fall apart. "Any inclusion larger than three-quarters of an inch may be too big," says Kester, scooping up a handful of cake pieces and tossing them into a bowl of white ice cream base. "Sometimes it's guesswork."

The food industry has become a place where product design is micromanaged as never before—where flavors are built literally by the molecule.

But Kester doesn't really have the luxury of guessing. Baskin-Robbins' trademark list of 31 flavors has expanded to almost 1,000 since the company was founded nearly 60 years ago. To keep that number growing, eight food technologists in the Burbank facility each come up with about 20 new flavor brainstorms a year; of those, perhaps three or four make it to the big leagues. The shelves of canisters filled with Oreos, M&M's and other colorful inclusions that line the laboratory walls certainly keep the ideas flowing. So too does the dream of being the person who develops the next Pralines 'n Cream—perhaps the most celebrated member of the company's flavor roster. "It's a fun job," says Kester. "I get to play with food every day."

Of course, play, as Kester is the first to admit, is only part of it. The food trade is a $500 billion industry in which uncounted new products jostle for space on overstocked shelves. Fully 25% of all meals are now consumed in restaurants, and of those eaten at home, two-thirds are either prepared entrees or restaurant takeout. With all that, Big Food has had to become Big Science. Companies that want to stay in the game can't afford to drift along with the same product line year after year until someone in R. and D. dreams up another Pop-Tarts or Pringles. Nor can they afford to have a good idea and then let it die from poor execution—simply that the corn in the corn puff was the wrong texture or the cavity in the cupcake crowded the filling.

As a result, the food industry has become a place where product design is micromanaged as never before—where flavors are built literally by the molecule, salt crystals are measured by the micron, manufacturers agonize over which side of a chip is the best place for the flavoring, and any new product under development must be focus-grouped and taste-tested down to its last scrap of fiber and last drop of corn syrup.

"The eating experience has so many different factors—smell, texture, taste and different combinations of all of those," says Nicole Ifcher, a marketing manager at Nestle. "If the idea doesn't resonate with consumers, they won't buy it."

Complicating things further is the speed with which American food fashions change. No sooner do manufacturers devise the perfect product for the perfect niche than new categories open up. What's a U.S. food company to do when Latino consumers—13% of the U.S. population and

growing—begin clamoring for the *aguas frescas* and spicy tamarinds they grew up with? Where do foodmakers turn when kids—who never met a food they wouldn't prefer sweeter, saltier, chewier or bluer—create a whole new demand for so-called extreme flavors? And what do they do when all those new choices begin contributing to an exploding American obesity epidemic and the same people who have done all the consuming suddenly demand the foods they love in lower-fat formulations?

FLAVOR WITHOUT THE FAT

The obesity problem in the U.S. has reached epidemic proportions, with 65% of the population considered overweight or obese. The pressure is increasing on restaurants and manufacturers to get at least some of the fat out of food. The difficulty, of course, is that fat is often where flavor lives.

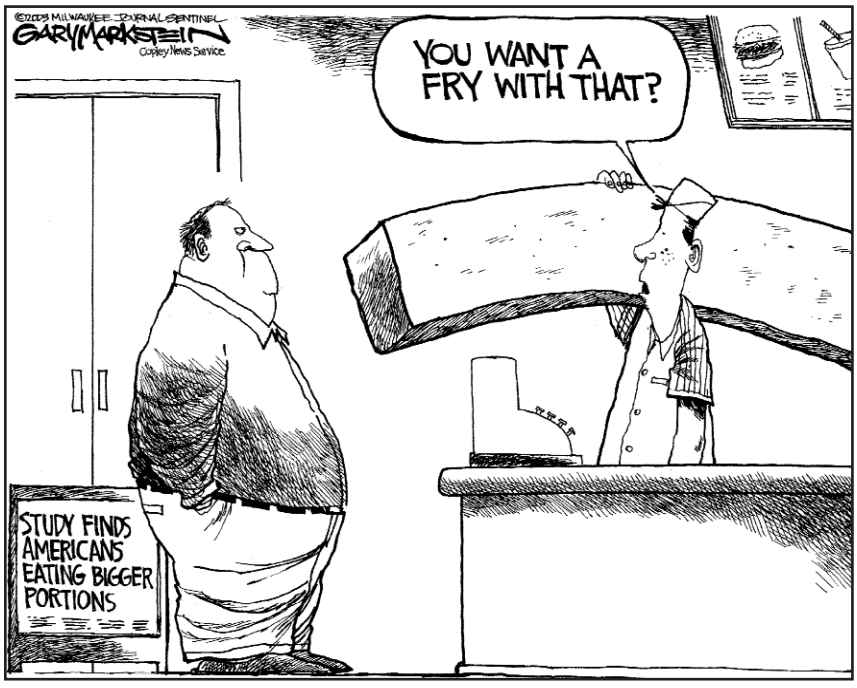
Researchers at International Flavors & Fragrances (IFF) and other flavor companies have ways to get around that. A critical element in fatty foods is mouth feel—the creamy, palate-coating character of, say, thick pudding or cheesy lasagna. Scientists can mimic that feel with substances such as starches, polysaccharides or lactones (a natural product of fermentation). These lower-cal alternatives can give food a higher-cal feel. "When you create the impression of fat," says Miller, "you also enhance flavor."

Other tricks are simpler. Stouffer's, for example, has found that crushed tomatoes in its Lean Cuisine line go a long way toward enlivening foods stripped of their fattier ingredients. "The tomatoes have more body and a riper taste," says Kathy Klingensmith, who works in R. and D.

Also important is avoiding dryness. Fatty food is usually moist, and for consumers accustomed to gooey cookies and premium ice cream, something that's both dry and fat-free might as well be tree bark. Developers thus fortify foods with substances known as humectants—glycerin, sucrose or similar ingredients that hold moisture.

Certainly not everybody needs or wants to know about the humectants in snacks. Scientific reductionism is fine in astronomy or physics, but it's another thing entirely when your dinner is involved. There are few things more intimate than the preparation of food—an ancient, imprecise craft built on pinches and dashes and tasting things at the stove. What are old-style cooks to do when this quiet craft is elbowed aside by an industry in which flavor concentrations are measured in parts per billion and companies like IFF can sell, without irony, a product called Fleximint, "a tool kit for mint work"?

Traditionalists may abhor all this, but the food scientists are only doing what we ask them to do: respond to the needs of 280 million people all trying to eat at once and do so in the most enjoyable, affordable and nutritious way possible. It's the industry's job to fill the national plate; it's our job to decide which parts of that vast meal we want to eat. ■



Questions

1. Of meals eaten at home, what percentage consist of prepared entrees or takeout from restaurants?

2. What statistic in the article shows that obesity in the U.S. has reached "epidemic proportions"?