ENERGY

Maximizing pedal power

Congress has described bicycles as "the most efficient means of transportation" and as offering workers "a viable commuting alternative...at speeds as fast as that of cars in urban areas." Yet in 1975 only 470,000 — roughly 0.6 percent of all commuters — biked to work. A study done by the Department of Transportation and sent to Congress last week seeks to break that cycle.

An estimated 3.8 million could pedal to work. Currently, however, streets not designed with bikes in mind—harboring narrow lanes, no shoulders and occasional prohibitions against bike traffic — inhibit cycle commuting. Add a lack of secure bike parking lots (thefts are a major factor discouraging nonrecreational biking) and few chomp at the bit for a chance to tool through lane upon lane of exhaust fumes.

But DOT is beginning a five-year program to counter that by developing driver-biker education curricula together with standards for bike construction and traffic laws. The goal of this and related DOT initiatives: to wean another 1.5 million to 2 million pedalers off of gas guzzlers by 1985.

For alcohol, few beat beets

When discussing production of ethanol for gasohol, most picture conversion of the Corn Belt to a fuel belt. But Devon L. Doney of Utah State University considers sugar beets a better bet. With a 90 percent conversion rate of sugars to alcohol, sugar beets offer a potential of 493 gallons of alcohol per acre, Doney says, versus 283 for corn, 82 for wheat, 316 for potatoes and 300 for sweet sorghum. Sugarcane offers more—roughly 650 gallons per acre — but doesn't generally grow far enough north to provide an alternative for grain growers.

Another advantage of the sugar beet is the low energy investment necessary via fertilizer. Speaking at the Bio-Energy '80 conference in Atlanta last week, Doney said only 11.9 percent of the energy in its distilled sugar beet product comes from fertilizer versus 15.6 percent for corn, 21.3 percent for winter wheat and 41.9 percent for potatoes.

But fodder beets are even better. Grown extensively in Europe, they've maintained a low profile in the United States. Doney says European fodder beets yield twice the tonnage of sugar beets per acre with 60 percent of the sugar yield per ton. Therefore, on a per acre basis, the fodder beet offers 15 percent more fermentable sugar than its sugar beet cousin. And, he adds, crossbreeding the pair could ultimately up the sugar yield another 15 percent over the best existing sugar beet hybrids.

Powering cattle on cellulose

More grain could be used as food or fuel for humans if crop residues could be turned to fodder. But many crop residues are unusable because bonds of lignin and cellulose restrict accessibility of enzymes to cellulose in the rumen, or first stomach, of ruminants. Without this obstruction, the cellulose could be broken down into glucose for use by the animal. Last week at Bio Energy '80 in Altanta, John D. Taylor and William Esdale of Stake Technology Ltd. in Ontario, Canada, described a process marketed by their firm that breaks the lignin-cellulose bind with high-pressure steam.

The process obtains acetic acid from hemicellulose (which together with lignin and cellulose form the three major components in higher plants). The acid catalyzes a large portion of the hemicellulose, and in so doing breaks down the lignin-cellulose bond. University of Florida tests, the authors say, show cattle fed a diet of 30 percent processed sugarcane bagasse gained three pounds daily, permitting substitution of the sugarcane waste for corn.

SCIENCE & SOCIETY

Cattlemen ignore DES prohibitions

Federal bans on use of diethylstilbestrol (DES) implants in cattle to spur weight gain (SN: 7/7/79, p. 4) are being flagrantly violated. At least 344,000 animals—and perhaps half a million—from feedlots in 16 states received illegal implants of the growth hormone, which the Department of Health, Education and Welfare classifies as a known human and animal carcinogen.

The July 13 cutoff date last year for shipment of implants was broken by 24 distributors. Similarly, at least 115 feedlot operators ignored the Nov. 1 cutoff for use. Known feedlot violators face fines and possible jail sentences. In addition, they have received letters from the government ordering removal of the implants from affected cattle by accredited veterinarians. Animals cannot be slaughtered for human consumption for at least 41 days following implant removal to permit excretion of the chemical from meaty tissues, 61 days if the kidneys or liver will be sold as food. In coordination with the Food and Drug Administration and state officials, the Agriculture Department announced last month that it is preparing a sampling of tissues from cattle in suspected herds and will test suspected carcasses for evidence of DES residues.

Abandoned tailings prove costly

A seven-year, $100 million program to clean up thousands of homes, schools and empty lots of radioactive mill tailings in 10 western states was proposed by the Environmental Protection Agency last month. The sand-like wastes, totaling an estimated 30 million tons, have blown freely from acreage surrounding 25 abandoned uranium mills (SN: 10/21/78, p. 279) and at times have been used as free filler in urban construction materials. Disposal of recovered tailings may run to $600 million.

Cap in store for fluorocarbons

Production of fluorocarbons — implicated in depletion of atmospheric ozone, a screen against harmful ultraviolet radiation (SN: 11/17/79, p. 340)—will be held to 1979 levels and later be cut back significantly more in the United States, said Barbara Blum, deputy administrator of the Environmental Protection Agency, at an international meeting in Oslo. Banned from use as a propellant in spray cans last year, the chemicals are still used extensively in refrigerators and automobile air conditioners as a refrigerant and as a bubble-making agent for foam insulation and cushions. Blum said the controversial proposed rules will be issued next fall and instituted late this year or early next year.

Fast-track deadlock ends

A four-month stalemate by a House-Senate conference committee over a bill to create the energy-mobilization board called for by President Jimmy Carter in his July energy message (SN: 7/21/79, p. 38) broke last week. Projects given the "fast track" would receive binding deadlines by which government agencies must reach key decisions involving a project's status. Agencies not meeting deadlines could be taken to court or even have their powers over the project exempted by the board.

In a defeat for environmentalists, the conferees also approved provisions permitting the five-member board to exempt certain key energy projects from substantive laws — such as the Clean Air Act — pending approval of the President and both houses of Congress. Only 12 requests for waivers would be allowed during a two-year congressional term, however. And to cut "red tape," all agencies — federal, state and local — must accept a single environmental impact statement; until now, each had been able to request its own.