

French advertisers feel the heat

The ads urge consumers to be frugal in their use of fuel and electricity, for in France those who write ad copy about energy-using products are persistently prodded by the government's energy conservation program. The Exxon tiger, for instance, is no longer in the tank. He's advising drivers to check their tires and tune their engines to save gas.

France's Energy Conservation Agency, set up in 1974 after the Arab oil embargo, enforces legislation that "prohibits all advertising which favors an increase in the consumption of energy." French manufacturers or retailers of electric heaters, for example, cannot proclaim that electric heating is the best form of heating. But they can claim that their heaters use energy more efficiently than other comparable heaters. A company does not have to get advance permission for an ad campaign, except when it is on television. But a company that does not get authorization runs the risk of having the agency step in with a complaint.

The experiment in ad control is being watched with interest by the U.S. Federal Trade Commission. Says Robert Reich, the chief of the FTC's office of policy planning: "There would be some real pitfalls in trying to imitate the French and create in this country an elaborate regulatory framework to scrutinize all advertising. Only as a last resort would we consider looking for mandatory methods to ensure that people are provided with enough alternative sources of energy information. I hope we won't have to go that far."

Booze fuels cars in Brazil

In 1975 the President of Brazil, Ernesto Geisel, took a drive in a car that had been modified to burn pure alcohol. He liked it. Today, the Brazilian government is plunging ahead with a \$1.6 billion program that hopes to turn all the cars in the country into alcoholics by the end of the century.

The reason? Brazil is oil-poor. Its reserves would be sufficient to supply the country for just two years at the present rate of consumption. It also spends about \$4 billion each year on oil imports. The country is rich, however, in sugar cane and a staple root called manioc, both of which can be distilled into 190-proof alcohol. And they are being distilled. There are already 500 alcohol-powered Volkswagen Beetles being driven by telephone repairmen around the streets of Sao Paulo. An alcohol-based fuel, called gasohol, is also being tested in the United States (SN: 10/29/77, p. 280). Backers claim it would help solve the energy shortage and the farm-surplus problem at the same time.

The performance of Brazil's experimental cars is so encouraging that the government has approved the building of 170 sugar-cane distilleries. Each will cost an average of \$1.5 million, and will be financed by government loans to private investors. The Brazilians say they can produce all of the needed machinery themselves. The government is also financing the development of new sugar-cane farms.

It costs about \$350 to convert the Volkswagen Beetle engine to burn pure alcohol, according to Urbano Stumpf, a scientist at the Aerospace Research Center at San Jose dos Campos, Brazil. First the compression ratio is increased, then the ignition timing is changed and the blend of air and fuel in the carburetor is made richer. The alcohol is also pre-heated before it enters the combustion chamber because it vaporizes at a higher temperature than gasoline.

The results are impressive. An alcoholic VW can go from a standing start in fourth gear without any knocking and can accelerate up steep hills without so much as a cough. That's because ethanol has an octane rating of about 120, compared with 73 for regular gasoline in Brazil and with about 90 for regular unleaded gasoline in the United States.

JULY 29, 1978

Enzymes crystallize sugar structure

Molecules made partly of sugars and partly of protein appear to be important in the "social functions" of cell surfaces — intercellular communication, regulation of growth and development, immunity and even malignancy. The geometry of the sugar portions has been inaccessible to chemists, but recent purification of enzymes that make specific cuts has "opened a new age in structural studies of complex carbohydrates," Akira Kobata told the Conference on Complex Carbohydrates in Biological Recognition at the National Institutes of Health. Using enzymes characterized in his laboratory at the Kobe University School of Medicine in Japan, Kobata examined the carbohydrate portion of hen ovalbumin, a major component of egg white. He was surprised to find two different arrangements of sugars linked to the protein at the amino acid asparagine. One arrangement he calls the "high mannose" type. It includes seven mannose sugar residues in a branched pattern. The second arrangement contains an almost equal number of molecules with "hybrid" sugar chains, a branched structure of five mannose residues and two or three residues of a different sugar. Kobata also reports a basic 7-sugar common core for high mannose-type sugar chains in a variety of glycoproteins. Nathan Sharon of the Weizmann Institute of Science in Israel and an organizer of the conference predicts an imminent explosion of information about the sequences of carbohydrates.

Erythromycin under construction

Chemists are catching up to fungi in the ability to synthesize antibiotics. The July 5 JOURNAL OF THE AMERICAN CHEMICAL SOCIETY reports a major step toward laboratory production of erythromycins, drugs widely used in treating respiratory, skin and soft tissue infections. Twelve Harvard University chemists, led by Elias J. Corey, have synthesized the 13-carbon lactone ring that is the erythromycins' natural precursor. The chemical procedure involves joining two carbon chains into a long-chain hydroxy acid and then closing the circle. Next the researchers plan to add carbohydrate groups to form a true erythromycin.

Drugs and nitrites don't mix

Nitrosamines, a group of potent cancer-causing chemicals, are formed inside the body from digested food. But some common drugs may contribute to nitrosamine formation, William Lijinsky, director of the Frederick Cancer Research Center in Maryland, reported to a recent American Chemical Society regional meeting in Boston. Among animals fed a diet containing nitrites, chlordiazepoxide (Librium) was found to be associated with nervous system tumors, disulfiram (Antabuse) with esophageal tumors and antibiotic oxytetracycline, analgesic aminopyrine and antihistamine methapyrilene with liver tumors. The drugs are all secondary or tertiary amines.

Life forms selected by clay

Clay was the key to organizing life from components scattered throughout the primitive ocean, according to James Lawless and colleagues at NASA's Ames Research Center in Mountain View, Calif. (SN: 10/29/77, p. 277). Certain clays attract and link the amino acids found in modern protein, and clay with zinc attracts basic units of the genetic material DNA. Now the group reports a fine distinction. Zinc clay preferentially attracts the most common DNA nucleotide in its biological configuration, over two other adenosine monophosphate nucleotides differing in the position of the sugar-phosphate link. The group is looking for clay "life-form" preferences among other nucleotides.

73