LETTERS

Juvenile-Onset Diabetes: Significance of Findings

The Research News article, "Virus isolated from juvenile diabetic" (15 June, p. 1187) by Thomas H. Maugh II, contains a misstatement of fact. It is not true that encephalomyocarditis (EMC) and Venezuelan equine encephalomyelitis (VEE) viruses do not infect humans. On the contrary, EMC virus causes occasional febrile illnesses in humans with symptoms of central nervous system (CNS) involvement and lymphocytic pleocytosis in the cerebrospinal fluid. Thousands of cases, during epidemics, with accompanying fever, headache, and CNS involvement, attest to the pathogenicity of VEE virus in humans.

Thus, Maugh's statement that ". . . the significance of these [diabetogenic] findings to the human condition was questionable" is incorrect.

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Chemical Coal Cleaning

Luther J. Carter's informative article on sulfur oxide emissions from burning coal (News and Comment, 15 June, p. 1179) omits mention of a developing technology that may play a large role in reducing such emissions. It concerns precombustion removal of sulfur by selective chemical reaction or more simply, chemical coal cleaning. A number of approaches are under development, for example, use of molecular oxygen, chlorine, ferric ion, or nitric acid to selectively oxidize and remove the sulfur; use of microwave heating in combination with aqueous leachants; and enhancement of the magnetic susceptibility of pyrites before a magnetic separation step. In contrast to solvent refined coal processing, in which coal passes through the liquid state, chemical coal cleaning methods leave the coal intact. All chemical cleaning approaches under active development are capable of removing over 90 percent of pyritic sulfur, and some are able to remove one-third or more of the organic sulfur in coal.

An economic evaluation of six of the most promising technologies estimated typical annualized costs (operating plus capital, but not including feed coal) in the range of from $15 to $23 per ton of clean coal in 1977 (*1*, *2*). Add a feed coal cost of $20 per ton with an assumed 90 percent process yield to the higher of the annualized costs. The result is an overall cost of approximately $1.93 per million Btu's (British thermal units) or $1.83 per gigajoule. An estimated cost for coal-derived distillate fuel in 1977 is $3.35 per million Btu's (*3*). Coal liquefaction removes more sulfur than does chemical cleaning, and most liquefaction processes yield fuel in a preferred form, distillate liquid. If a lower sulfur removal and solid form of fuel are acceptable, however, clearly chemical coal cleaning offers economies.

Further cost reduction may be possible by combining chemical cleaning with the less expensive physical cleaning, or washing, with only a fraction of the coal subjected to chemical cleaning. For example, 137 coals were considered that would meet current Environmental Protection Agency New Source Performance Standards if all pyritic sulfur were removed. The costs of chemical coal cleaning was taken as $15 per ton processed, and the cost of physical cleaning ranged from $1.50 to $5 per ton depending on top size. By using the combinational approach, 93 percent of the coals could be cleaned at a cost less than $12 per ton and 70 percent for $6 or less (*1*). Again, to these figures must be added the cost of feed coal.

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References

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2. R. R. Oder, L. Kulapaditharom, A. K. Lee, E. L. Ekholm, *Mining Congr. J.* **63**, 42 (1977).
3. W. L. Nelson, *Oil Gas J.* **77** (No. 17), 67 (1979).

Scientific Cooperation with Vietnam

The Vietnam war has been over for Americans for 4 years, but the Vietnamese are still living with its terrible aftermath. Each of the undersigned coordinators of the newly formed U.S. Committee for Scientific Cooperation with Vietnam has recently visited the major scientific institutions in Vietnam and witnessed the heavy responsibilities faced by our Vietnamese scientific colleagues in the rebuilding of their war-torn society. Because of the dominant role played by science and technology in the de-