environment

Phosphorus still the culprit

Last month, the Environmental Protection Agency told housewives that until a safe substitute is found, they had better use phosphate-containing detergents if they use detergents at all. The reason: Currently available substitutes are more harmful than phosphates.

But at the same time, the controversy over whether phosphates are the prime cause of eutrophication—hyper-abundant plant growth in waterways—goes on. The detergent companies claim phosphates are not the limiting nutrient in eutrophication in many cases.

Claire L. Schelske of the University of Michigan's Great Lakes Research Institute, in a paper presented recently to the International Association of Limnologists in Leningrad, said "phosphorus has and will control the rate of eutrophication in the three upper Great Lakes—Michigan, Huron and Superior."

The usual conception of phosphorus-caused eutrophication is that all nutrients for excessive plant growth except phosphorus exist in sufficient amounts; when enough phosphorus is added, then the growth occurs.

Schelske explained that the process is somewhat more complicated and occurs in essentially two stages. First, phosphorus is added and causes the plant growth—in the Great Lakes, primarily of diatoms, which also require silica as a major nutrient. As the excessive growth of the diatoms occurs, silica levels decline and silica in sufficient amounts is not available for diatom growth. At this point, another kind of alga, often the harmful blue-green type, then replaces the diatoms as the dominant alga. Additional phosphorus then further stimulates its growth, because it does not require large amounts of silica.

Mercury thins eggshells

It has been known for some years that DDT ingestion results in metabolic changes in large predatory birds that cause interference with reproduction by thinning eggshells.

Gilbert Stoeswand and Donald J. Lisk of Cornell University report that mercuric chloride causes the same effects in quail. Thus not only the greatly feared methyl mercury but also inorganic mercury compounds may be highly hazardous to living creatures. They stress, however, that mercury metabolism varies by species and that their results should not be carelessly extrapolated.

The two researchers report that high concentrations of mercury are found in quail feathers, kidney and liver and that thin eggshells were directly related to increased mercury consumption.

Environment and the news media

The mass media have consistently failed to provide specific, clear and hard-hitting information the public needs in order to take rational action toward solving environmental problems, say two Stanford University graduate students who spent 14 months surveying national and San Francisco Bay area media. The study was supported with a $53,600 National Science Foundation grant.

David M. Rubin (who recently received his Ph.D. in communications) and David P. Sachs, a medical student, were the lead researchers.

"Generally the media as a whole and the media in the Bay area have devoted more time and space to the subject dramatically since mid-1969," reports Rubin. "But they're not hiring people as environmental reporters, which would really indicate they give a damn. . . . Newsroom inertia takes over and only the red-hot issue gets covered."

The most pressing need, says Rubin, is for media to begin dealing with specific, long-term local problems, as opposed to fast-breaking dramatic events such as oil spills. Needed also is a willingness to name names—of companies and individuals involved in pollution.

"If [the media] are given a chance to name a company which has a record of violating antipollution standards, or to point the finger at a public official who has a poor voting record on environmental issues, they don't do it," Rubin says.

Solvent-refined coal is clean burning

The major approach to cleaning up emissions from coal-burning power plants and other installations has been to attempt to remove sulfur oxides and particulates from stack gases. Lately the emphasis has begun to shift toward cleaning the coal before it is burned (SN: 6/12/71, p. 401).

B. K. Schmid of the Pittsburgh and Midway Coal Co., a Gulf Oil Corp. division, reports that his company's solvent-refining process appears to offer great potential. A pilot plant is now being planned for Tacoma, Wash., under contract with the Interior Department's Office of Coal Research.

In the process, coal is pulverized and mixed with a coal-derived solvent. The slurry thus formed is pumped with hydrogen into a high-temperature, high-pressure dissolver. The solvent—containing the pollution-causing impurities—is removed for recycling, leaving a molten liquid coal suitable for burning in solid or liquid form. The heating value is greatly concentrated, a prime benefit if the fuel must be transported any distance. The final product has a value of 16,000 British thermal units per pound, compared with 12,000 for Eastern coals and 8,000 for Western coals.

A new taxicab concept

Using standard automobiles for urban taxicabs has been highly inefficient. They are not made for easy entry and exit, their usable-space-to-over-all-dimensions ratio is poor, and they are greatly overpowered for most urban needs.

Students and faculty at Brooklyn's Pratt Institute, in cooperation with the City of New York, have come up with a taxicab design that overcomes these liabilities; the institute hopes to manufacture prototypes to be in service in 18 to 24 months.

The Prattaxi is about the length of a Volkswagen—but inside it has chair-height seats, with 45 inches of head room and 64 inches of leg room. It will seat four passengers. Entry is through 60-inch doors, and large windows provide full views for passenger and driver.

The relatively low-powered engine is in the rear and is easily removable. A spare engine can quickly be fitted while the original is being repaired.