

ways of combatting the problem of electrical charges built up on spacecraft surfaces and components at high altitudes.

A key factor for the future, of course, is the success of the space shuttle's orbital trials, since the growing numbers of "space users" — including NASA itself — will have to depend on it for years to come. □

DSDP shifts gears

As it enters its second decade, the Deep Sea Drilling Project is shifting its objectives. The *Challenger's* most recent voyage, Leg 63, completed the transition, begun by Leg 62 (SN: 11/4/78, p. 309), from hard rock geophysics and tectonics to paleoenvironment — studies of changes in ocean ecology with time as reflected in the sediments.

Microfossils in Leg 63's 330 cores — the largest number of cores yet taken on one DSDP leg — will reconstruct the history of the boundary current — a surface ocean current that stretches along the California coast south to the equator and has a major effect on the southern California climate. Led by Bilal U. Haq of Woods Hole Oceanographic Institution and Robert S. Yeats of Oregon State University, the *Challenger* drilled at seven sites along the Pacific coast from Long Beach, Calif., to Mazatlan, Mexico.

Because different organisms require different climatic conditions for survival, the types and abundance of fossils in the sediments will help researchers map ancient ocean circulation and temperatures. However, according to Dick Poore of the U.S. Geological Survey in Menlo Park, Calif., who accompanied Leg 63, the fossil record is more fragmentary than expected. *Foraminifera*, fossils commonly used for paleoenvironmental studies, are poorly represented, he said, and analysis will depend on other fossils such as diatoms and radiolaria.

Despite its best intentions, the DSDP can't entirely avoid tectonics. Leg 63 also unearthed a little more about the history of the California continental margin.

About 20 million years ago, a deep-sea trench, like the Mariana trench that marks the subduction of the Pacific plate, lay off the California coast. Volcanic rocks recovered in earlier dredge samples were thought to have come from the volcanoes that should form near such a trench. However, the *Challenger* recovered similar volcanic rocks on this voyage and showed that the rocks are too young and lie too near the trench to have resulted from subduction-related volcanic activity. According to Jim Crouch of Scripps Institution of Oceanography, a geophysicist aboard Leg 63, these findings support previous theories that the rocks were formed when the mid-ocean spreading center called the East Pacific Rise, now far to the south, once lay near California. □

Alcohol metabolism: All in the family

There is growing evidence that alcoholism may "run in the family." Recent studies have shown as much as a fourfold increase in alcoholism among children of alcoholics over children of nonalcoholics. Other studies indicate a 25 to 50 percent lifetime risk for alcoholism in the sons and brothers of severely alcoholic men, and twins of alcoholics have about twice the chance of becoming alcoholics as do two non-twin brothers or sisters.

Such retrospective, epidemiological studies, however, are open to criticism because they deal with statistical probabilities which — no matter how accurate — frequently lack *physical* evidence that should underlie their conclusions. For example, how does one show a physical susceptibility to alcoholism? The answer may be found in the Jan. 5 SCIENCE.

University of Washington researchers report some of the most convincing evidence yet of a metabolic factor in alcoholism among the offspring or siblings of alcoholics. The study indicates that such persons react more intensely to alcohol — apparently by becoming more intoxicated — than do peers with similar backgrounds but from nonalcoholic families.

Marc A. Schuckit and Vidamantas Rayeses of the Alcoholism and Drug Abuse Institute at the University of Washington in Seattle were inspired by indications from several other studies of a genetic factor in alcoholism. They speculated that susceptible individuals might undergo "a possible unique reaction to a single dose of alcohol." They decided to measure the level of blood acetaldehyde produced through metabolism after drinking.

The researchers matched 20 young men (mean age 23) who had an alcoholic parent or sibling against a control group of males of similar age, race (all Caucasian), marital status and drinking history — most of the subjects in both groups reported drinking on one to four occasions per week, with an average intake of two to four drinks.

After fasting overnight, each man was seated in a quiet, temperature-controlled room where his vital signs were monitored and blood drawn. Each participant was given a comparable quantity of liquor (0.5 milliliter per kilogram of body weight) mixed with sugar-free 7-Up and drunk over a five-minute period. Blood samples were taken before drinking, at 15 and 30 minutes after, and every subsequent half hour for the following three hours.

The analyses show that "blood acetaldehyde concentrations were significantly elevated after a moderate ethanol dose" in the 20 men with family histories of alcoholism. The blood alcohol concentrations of the controls were considerably lower, Schuckit (now at the San Diego V.A. Hospital) and Rayeses report. Similar results had been found with recovered alcoholics,

"but our results indicate that young, healthy men with family histories of alcoholism who might be predisposed to alcoholism themselves also demonstrate increased acetaldehyde levels," say the researchers.

The findings — which the scientists say must be replicated in order to be conclusive — may mean that genetically predisposed persons are more easily intoxicated; more vulnerable to organ damage from alcohol metabolism; and more likely to produce morphine-like substances when the alcohol metabolites interact with those of monoamine chemicals in the central nervous system. "These possibilities, as well as others, can now be studied prospectively in healthy relatives of alcoholics and control groups," say the researchers. □

Feds should push 'passive' solar more

An "unacceptably large number of problems" with solar space- and water-heating systems has convinced a powerful congressional subcommittee that consumers need protection "with all practical speed." The subcommittee backs that assertion with a report that comes down strongly behind advocates of passive solar-energy systems as the least-costly, most cost-effective approach to use of solar energy in the home.

During the recent spurt of solar development, a handful of solar researchers have maintained that passive systems — those that require no mechanical devices to deliver collected heat — have a commercial edge: active systems, which use pumps or fans to deliver heat, require an energy input and maintenance. The subcommittee on oversight and investigations of the House of Representatives Committee on Interstate and Foreign Commerce concludes that "government programs have seriously underemphasized passive and lower cost active solar applications, which are the most cost-effective and least mechanically troublesome of existing, commercially available solar technologies," according to its report.

Under retiring Rep. John E. Moss (D-Calif.), the subcommittee pursued a wide range of investigations, including the one over alleged defects in Firestone tires that ultimately led to their recall. Although not a matter of human safety, as in the tire case, the subcommittee believes the government's imbalanced support favoring active systems threatens to "significantly distort American solar development." And if "problems with solar systems are not sharply reduced, the popularization of solar energy could be set back for years."